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September 7, 2005

Marvin Brown, State Forester  
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Marvin

I am pleased to provide you the final report of the Smoke Management Review Committee containing our findings and recommendations. As you know, the Committee worked over two years and developed some 39 recommendations for the Department of Forestry to consider to improve Oregon's Smoke Management Plan.

As chair of the committee, I appreciate the hard work and dedication of Committee members who took significant time out of their busy schedule to participate in this important endeavor.

Sincerely,

A handwritten signature in black ink that reads "Stephen A. Fitzgerald". The signature is written in a cursive style and is positioned to the left of a vertical red line.

Stephen A. Fitzgerald,  
OSU Extension Forestry Specialist and  
Committee Chair  
Smoke Management Review Committee

# Smoke Management Review Committee Report

September 7, 2005



*"STEWARDSHIP IN FORESTRY"*

**OREGON DEPARTMENT OF FORESTRY**  
Protection From Fire Program  
**Meteorology and Fire Intelligence Section**

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# **I. Executive Summary**

## EXECUTIVE SUMMARY

### Review Process

Oregon's Smoke Management Plan (SMP) has been a very successful program for safeguarding public health and maintaining forest landowners' ability to burn in order to meet land management objectives. The review of Oregon's SMP was undertaken because a periodic review is required, and 10 years has passed since the last formal review. In addition, changes in demographics, population spread into the wildland-urban interface (WUI), continuing changes in air quality standards, and changes in forest management practices in recent years necessitate a thorough review of the SMP.

The Smoke Management Plan Review Committee (hereafter referred to as 'committee') was a diverse group with many interests and backgrounds (Appendix 1) including representatives from the general public, small woodland owners, federal agencies, forest industry, air regulators and staff support from Oregon Department of Forestry (ODF) and the Department of Environmental Quality (DEQ). All committee members were knowledgeable about smoke management issues and the SMP and all were actively engaged in the process.

The primary charge of the committee as described in the official charter (Appendix 2) is:

*“Consistent with requirements of the Federal Clean Air Act, and in consideration of forest management and forest health conditions, recommend what, if any, modifications are necessary to statutes, rules and directives affecting prescribed burning and the Smoke Management Plan to meet air quality standards and to protect the health of Oregon forests.”*

Members of the committee were asked to seek consensus on recommendations, when possible, and clearly articulate the range of views when consensus was not possible.

The committee was given eight areas of consideration associated with the goals, operations, and future of the SMP. Each consideration was presented in the form of a question. The committee was directed “to consider, but not be limited to” the questions posed. Through their deliberations, an additional three areas of consideration were added to address funding/economics, communication/educational and intrusions/visibility/citizen complaint aspects of the SMP.

The eleven areas of consideration included:

- A. Are air quality standards being met? (The final version to this question also included Matrix Question K because the two questions are related.)
- B. Are burning objectives being met?
- C. What changes may be needed to address projected increases in prescribed burning for forest health reasons?
- D. How should wildfire vs. prescribed fire impacts be addressed?
- E. Are changes needed to improve regional air quality and visibility in the Oregon Smoke Management Program (hereafter referred to as 'program')?
- F. Are Designated Areas and Smoke Sensitive Areas adequately identified?

- G. Will committee recommendations require a change in statutes, rules, directives, or require a MOU?
- H. What feasible alternatives to prescribed burning exist, and how can they best be implemented?
- I. What does the SMP truly cost; how can it best be funded for today and tomorrow?
- J. Can effective communication and education of the public and natural resource managers, regarding the program, improve operational abilities?
- K. What are the best approaches to address intrusions, visibility issues, and citizen complaints of nuisance smoke?

Each question above was analyzed by asking an additional six sub-questions and placing this information into a standard matrix format (Appendix 7). These additional sub-questions are:

- 1. Is there a problem?
- 2. Will there be a problem in the future?
- 3. What are the options to deal with it?
- 4. Will it require changes in rules, statute or directives?
- 5. What are the barriers and opportunities?
- 6. How will success be measured in the future?

The matrix became the basis for committee discussion and debate. For each question (A-K), the committee answered the six sub-questions, based on the knowledge and experience of committee members and input from ODF, DEQ, USDA Forest Service (USFS), and Bureau of Land Management (BLM) experts. Input (testimony) from landowners, the general public, and consultants was also included.

Following this matrix exercise, members of the committee with expertise in each of the areas in question, developed narratives that included the essence of the discussion and dialog for each question. The committee reviewed the draft narratives and the recommendations for each question. Approved revisions were incorporated until final committee approval was gained. This effort, while quite time-consuming, was a key component in the eventual level of support for the final recommendations.

### **Unanticipated Committee Tasks**

During the course of the committee's deliberations, two additional and significant issues were presented to the committee and addressed. First, the Oregon Board of Forestry (BOF) had embarked on developing broad support for their all-inclusive operating document, *Forestry Program for Oregon* (FPFO). The committee was asked to review the draft FPFO specific to the SMP. It was suggested by the committee that the FPFO should recognize the value of air-shed protection, as well as the coordination among various agencies to meet the public's health and visibility needs and opportunities to meet forest management objectives (see Appendix 3 for committee's comments on the FPFO).

Second, DEQ was concerned about the burning of slash piles covered by plastic sheeting. There were confusing, if not contradictory, Oregon Administrative Rules (OARs) regarding the use and burning of plastics and petroleum products. The committee spent a significant amount of time and effort addressing the DEQ Open Burning Rules pertaining to the burning of plastic used to cover slash and the use of petroleum products, both prohibited by OAR 340-264-0060. A review of the scientific literature on the burning of plastics funded by the USFS resulted in a report to

the committee (Appendix 4) that identified the burning of piles covered with pure polyethylene sheeting is an effective emission reduction technique. Because they are drier, covered slash piles burn at higher temperatures, consuming more material and resulting in reduced emissions. The committee sent a letter (Appendix 4) to the State Forester with recommended Best Management Practices (BMPs) for the use of polyethylene in pile burning operations. The committee then left it to ODF and DEQ to establish a Memorandum of Understanding (MOU) on how to implement these proposed BMPs (which has been completed).

### **Recommendations**

The committee developed 39 recommendations for the BOF and ODF to consider. These recommendations not only provide direction for improving the SMP in the near term, but they are forward-looking to maintain Oregon's SMP as the national leader. The committee **reached consensus** on all 39 recommendations.

Several of the committee recommendations may be perceived as controversial by those who have been involved with the Smoke Management Program for a long time, or individuals operating outside the current Restricted Area. The committee recognizes these stakeholder concerns, but remind program users that with anticipated increased regulations it is far better, and in everyone's best interests, to design changes that maintain or improve operational abilities before changes are mandated or legislated for program users. Although the committee did consider economic, social, and operational implications for all recommendations, it did not let these potential implications constrain the recommendations for improving the SMP.

The committee, through their extensive deliberations, proposes that the overarching goal of the program read as follows:

*To provide the maximum opportunities for land management objectives to be met while maintaining air quality, health standards and visibility objectives. Burning can be managed more effectively with improved coordination, communication, technology, public education, increased utilization of forest fuels and maximizing burning during optimum burning conditions whenever possible.*

Provided is a brief summary of the most far-reaching recommendations. By listing these 16 recommendations, we do not want to imply that the other 23 recommendations developed by the committee are less important. The 39 recommendations appear in Section VI (Recommendations in Brief) of the report. For detailed background information for each recommendation, readers are referred to Section V (The Matrix Questions). Exact recommendation wording is shown below in bold type.

- **AK-2 – Develop reporting systems for daily and annual emission inventories for both wildfire and prescribed burning.** This will allow us to better track emissions for Regional Haze Rule requirements and to maximize burning while minimizing impacts to human health. It will require a rule change.
- **AK-4 – Improve the citizen complaint tracking system (see Matrix Question J). Use this system to improve the Smoke Management Program. Use the complaint system as an educational outreach opportunity.** No changes to statute, rule, or directive are needed.

- **B-1 - The entire state should become a Regulated Area. Smoke Management Program Rules should expand the program from Class 1 forestland to all forestland now within and outside state protected areas. This decision affects all forest, rangeland, underburning, maintenance, habitat restoration, and forest health burning within the state of Oregon and will require that all burns that are accomplished be reported, tracked, and monitored. Discontinue use of Restricted Area terminology in lieu of Regulated Area references. These changes will allow total smoke emissions to be more effectively tracked and inventoried as required by the Regional Haze Rule.** The move provides the authority to track emissions statewide and to eliminate designated and restricted areas and create Smoke Sensitive Receptor Areas (SSRAs) in their place. Changes in rule and possibly statute would be required.
- **C-2 – Forest health burning will no longer be exempt from fees.** Because increases in forest health burning and subsequent maintenance burns are expected to increase, requiring smoke management services, this recommendation will provide funding to support those services. This will require statute and rule changes.
- **D-1 – Establish a smoke tracking system for all wildfires based on existing state and federal reporting and data collection procedures.** This will require a rule change and create an additional workload in some areas of the state.
- **D-2 – Implement a statewide system to collect both prescribed fire and wildfire emissions data in order to develop emissions inventories (EI).** This action will allow us to track total emissions reductions or increases for the purposes of determining progress for Regional Haze Rule regulations. It will also allow us to evaluate the tradeoffs between wildfire and prescribed fire smoke emissions. It will require a rule change.
- **F-1 – Establish Smoke Sensitive Receptor Areas.** This replaces Designated Areas and does away with Restricted Area terminology and reduces confusion. This will require rule and directive changes.
- **F-2 – Smoke Sensitive Receptor Areas should be comprised of the existing Exhibit 2 map identified in OAR 629-43-0043 and the communities specified in the Northeast Oregon and Lake and Klamath County agreements.** This will require a rule change.
- **H-1 – Increase commitment to alternatives to burning by revising OAR 629-043-0042 (1) as shown below:**

*(1) Objective: To prevent smoke resulting from burning on forest and range lands from being carried to or accumulating in Designated Areas or other areas sensitive to smoke, and to provide maximum opportunity for essential forest and rangeland burning while minimizing emissions; to coordinate with other state smoke management programs; to ~~conform~~ comply with state and federal air quality and visibility requirements; to protect public health; and to promote the reduction of*

*emissions by encouraging cost effective utilization of forest and rangeland biomass, alternatives to burning, and alternative burning practices.*

This will require rule and directive changes.

- **H-3 – Create a new position at ODF for a Biomass Utilization Specialist.** This position will assist forest landowners with evaluating non-burning alternatives and fuel treatments and will have knowledge about biomass markets, mechanical removal equipment and costs, tax incentives, and emission reduction techniques. This recommendation will require legislative approval.
- **I-1 – ODF should develop a business plan that identifies positions, technology, and program enhancement costs to implement recommendations of this committee.** This will help prioritize program improvements and determine funding needed to implement improvements identified by the COMMITTEE. This will be especially important for seeking General Fund dollars to support the program.
- **I-3 – Allow the USDA Forest Service and BLM to pay a single, flat fee for smoke management services each year. Base each agency’s fee on the portion of acres burned that each contributes to the state’s total. Do not assess a fee to the National Park Service or the Fish and Wildlife Service. These agencies burn a comparatively small amount and any fees required of these agencies can be paid by the BLM, a sister agency in the US Department of the Interior (DOI) by including burning acreage from these entities in the program.** This will require a rule change and possibly a change in statute and supplemental agreements with federal agencies.
- **I-5 – General Fund dollars are an appropriate component of the program. ODF should develop a strategy to secure additional General Fund dollars.** The public benefits from the program and, therefore, should provide an appropriate level of funding support. This recommendation will require legislative approval.
- **I-6 – Add another meteorologist to the program in order to provide increased services over the near term.** An additional meteorologist would allow increased services in the near term as burning levels are projected to increase. This will require legislative approval.
- **I-8 – The standing Smoke Management Advisory Committee should convene to address funding issues. The standing committee should be directed to include a wide variety of landowners who burn and don’t burn to provide input to ODF on a funding structure. This committee would consider, but not be limited to, the following concepts:**
  - a. **Monetary incentives for using alternatives to burning (i.e., tax credits, discounted fees).**
  - b. **A working capital fund to collect monies to purchase new equipment and services to improve technology and infrastructure. A portion of the burn fees should be the source of revenue for this fund.**

- c. **Fees charged for all Class I forestland with no exemptions. Rangeland should be part of the daily burning inventories, but fees would not be assessed on this type of burning. Continue to assess fees to private landowners on a ‘per acre’ basis in areas currently paying fees. Assess a flat fee for each acre, regardless of the type of burn conducted, in order to minimize record keeping and monitoring.**
- d. **A minimum fee for any burning in areas where fees apply.**
- e. **Include program fees in the harvest tax, which minimizes ODF role as a bill collector.**

This will require a rule change and possibly legislative approval.

- **J-2 - Develop a comprehensive education and outreach program for the SMP that may include any of the following activities:**
  - a. **Develop smoke management education kits in cooperation with other agencies to be used by agencies that target specific groups and provide consistent and coordinated messages.**
  - b. **Provide a one-page description of SMP to operators and landowners when they file a ‘notice of operation.’**
  - c. **Include information on the SMP in various training opportunities and training modules**
  - d. **Develop an integrated website that describes the SMP and how it dovetails with other smoke management programs in the state.**
  - e. **Duties of the Biomass Utilization Specialist (from Matrix Question H) should include education and outreach. However, because this is a big job, a Smoke Management and Communication Outreach Committee should be formed and coordinated by the specialist position. This committee would identify the educational task to be accomplished, who would do these tasks, and coordinate educational efforts with other programs and agencies. The committee could be comprised of PNWCG, ODA, OFRI, KOG, ODF Public Affairs, and representatives from other agencies involved in smoke management. If this position is not created and funded, we suggest that this committee still be formed.**
  - f. **Work with OFRI to develop a color publication highlighting how the SMP works and protects Oregonians. Also, develop questions specific to the topic of smoke that can be incorporated into OFRI’s public opinion survey and is conducted periodically to gauge the public’s knowledge and attitudes about smoke.**

As Oregon’s population grows and more and more people build and live in or adjacent to forest and rangelands, a comprehensive outreach program is needed to continually inform existing and new residents about the program and its benefits. This recommendation would require changes to procedural guidance.

## **II. The Smoke Management Plan Review Process**

## **The Smoke Management Plan Review Process**

The Smoke Management Plan (SMP) has resulted in a very successful program for safe-guarding public health and maintaining forest landowners' ability to burn to meet land management objectives, particularly in a management climate that is getting increasingly complex. The review of Oregon's SMP was undertaken because a periodic review is required, and 10 years has passed since the last formal review. In addition, changes in demographics/population spread into the wildland-urban interface, changes in air quality standards, and changes in forest management practices in recent years (i.e., increased burning to reduce accumulated fuels to create fire-resistant forests) necessitated a thorough look at the SMP.

The Smoke Management Plan Review Committee was a diverse group with many interests and backgrounds (Appendix 1), including representatives from the general public, small woodland owners, federal agencies, forest industry and air regulators. Staff support was provided by the Oregon Departments of Forestry (ODF) and Environmental Quality (DEQ). All committee members were knowledgeable about smoke management issues and the SMP and all were actively engaged in the process. The entire committee developed and authored this report.

The primary charge of the committee, as described in the committee's official charter (Appendix 2) is:

*“Consistent with requirements of the Federal Clean Air Act, and in consideration of forest management and forest health conditions, recommend what, if any, modifications are necessary to statutes, rules and directives affecting prescribed burning and the Smoke Management Plan to meet air quality standards and to protect the health of Oregon forests.”*

The committee was asked to seek consensus on recommendations, when possible, and clearly articulate the range of view when consensus was not possible.

In reviewing Oregon's SMP with the possibility of recommending changes, the committee had three overarching considerations. First, we wanted to keep the SMP in a leadership position. It is one of the best state models anywhere in the United States. Second, we wanted to build a program capable of responding to changes in air quality regulations while still achieving fuels and forest management goals. Third, we wanted to adequately fund the program for the future. The public contributes relatively little (from the General Fund), yet benefits immensely. Currently, funding is from burn fees, harvest, tax, contract services, and federal sources.

The committee was given eight areas of consideration associated with the goals, operations, and future of the SMP. Each consideration was presented in the form of a question. The committee was directed “to consider, but not be limited to” the questions posed. Through its deliberations, an additional three areas of consideration were added to address funding/economics, communication/educational and intrusion/visibility/citizen complaint aspects of the SMP.

The eleven areas of consideration included:

- A. Are air quality standards being met? (The final version to this question also included Question K because the two questions are related.)
- B. Are burning objectives being met?

- C. What changes may be needed to address projected increases in prescribed burning for forest health reasons?
- D. How should wildfire vs. prescribed fire impacts be addressed?
- E. Are changes needed to improve regional air quality and visibility in the Oregon Smoke Management Program?
- F. Are Designated Areas and Smoke Sensitive Areas adequately identified?
- G. How may the Administrative Rules be changed to reflect current and future fuels and operational issues? Will committee recommendations require a change in statutes, rule, directive, or require a MOU?
- H. What feasible alternatives to prescribed burning exist, and how can they best be implemented?
- I. What does the SMP truly cost; how can it best be funded for today and tomorrow?
- J. Can effective communication and education of the public and natural resource managers, regarding the program, improve operational abilities?
- K. What are the best approaches to address visibility issues, intrusions, and citizen complaints of nuisance smoke?

Each question above was analyzed by asking an additional six sub-questions and placing this information into a standard matrix format (Appendix 7). These additional sub-questions are:

1. Is there a problem?
2. Will there be a problem in the future?
3. What are the options to deal with it?
4. Will it require changes in rules, statute or directives?
5. What are the barriers and opportunities?
6. How will success be measured in the future?

The matrix became the basis for committee discussion and debate. For each question (A-K), the committee answered the six sub-questions based on the knowledge and experience of committee members and input from ODF, DEQ, USDA Forest Service, and Bureau of Land Management (BLM) experts. Input (testimony) from landowners, the general public, and consultants was also included.

Following this matrix exercise for each question, members of the committee with expertise in each of the areas in question, developed a narrative that included the essence of the discussion and dialog of the committee for each question. The committee reviewed draft narratives for each question. Approved revisions were incorporated until final committee approval was gained. This effort, while quite time-consuming, was a key component in the eventual level of support for the final recommendations.

The committee, through its extensive deliberations, proposes that the overarching goal of the plan read as follows:

*To provide the maximum opportunities for land management objectives to be met while maintaining air quality, health standards, and visibility objectives. Burning can be managed more effectively with improved coordination, communication, technology, public education, increased utilization of forest fuels and maximizing burning during optimum burning conditions whenever possible.*

### **III. Unanticipated Committee Tasks**

### **Unanticipated Committee Tasks**

During the course of the committee's deliberations, two additional and significant issues were presented to the committee and addressed. First, the Oregon Board of Forestry (BOF) had embarked on developing broad support for its all-inclusive operating document, *Forestry Program for Oregon* (FPFO). The committee was asked to review the document specific to the SMP. During the review of the document, there were several sections that commented on the values of sound forestry with benefits to clean water and wildlife habitat.

As suggested by the committee, alternative language was provided to recognize the value of airshed protection and the coordination among various agencies to meet the public's health and visibility needs, as well as opportunities to meet forest management objectives (see Appendix 3 for committee's comments on the FPFO). The BOF acknowledged the committee's recommendation and added appropriate wording to the FPFO.

Second, DEQ was concerned about the burning of slash piles covered by plastic sheeting. There were confusing - if not contradictory - Oregon Administrative Rules (OARs) regarding the use and burning of plastics and petroleum products. The committee spent a significant amount of time and effort addressing the DEQ Open Burning Rules pertaining to the burning of plastic used to cover slash and the use of petroleum products, both prohibited by OAR 340-264-0060. The USFS assisted in this process by funding a literature review on emissions resulting from the burning of plastics.

This review resulted in a report to the committee (available on the web at: [http://oregon.gov/ODF/FIRE/SMP/smokemgt\\_onthe\\_web.shtml](http://oregon.gov/ODF/FIRE/SMP/smokemgt_onthe_web.shtml)) that identified the burning of covered piles with polyethylene sheeting as an effective emission reduction technique that also controls and minimizes the public's exposure to smoke over extended periods of time. Because they are drier, covered slash piles burn more efficiently at higher temperatures resulting in reduced emissions despite consuming more material. A secondary benefit of covered slash piles is the extended burning window that allows for taking advantage of optimum mixing days, more time to accommodate various landowner needs, and the ability to ignite piles when surrounding forest fuels are moist, minimizing the risk of a fire escape.

This report resulted in the preparation of a letter by the committee (see Appendix 4) to the State Forester with recommended Best Management Practices (BMP) for the use of polyethylene in pile burning operations. The committee then left it to ODF and DEQ to establish a MOU on how to implement these proposed best practices. This work has been completed (see Appendix 4).

## **IV. History of the Smoke Management Plan, Changes in Demographics, and Evolving Air Quality Standards**

## **History of the Smoke Management Plan, Changes in Population Demographics, and Evolving Air Quality Regulations**

The Oregon Smoke Management Plan (SMP) was the first state smoke management plan in the nation and was developed as a voluntary program in 1969. It was incorporated into administrative rule as a regulatory program by the State Forester and the Environmental Quality Commission (EQC) in 1972. The SMP has gone through several major revisions; the last in 1995.

A statutorily described Smoke Management Advisory committee had met at least annually to review program operations in the 1990s. Expected changes in national air quality standards and federal regulations pertaining to visibility protection requirements, however, have delayed the process of making further major revisions to the SMP since 1995.

The current (1995) SMP is challenged because it must balance diverse and sometimes conflicting objectives (i.e., the need to reduce hazardous fuels and achieve land management objectives while protecting health and visibility objectives). The initial SMP was developed at a time when forestry, as practiced in the state, was mostly a conversion from old-growth to regulated, second-growth forests. This was before the development of the wildland-urban interface (WUI) issue and the forest health/restoration efforts that further challenge policy and program accomplishments. Oregon's SMP was also developed before the adverse effects of particulate air pollution on human health were as widely known and understood as they are today.

When the current SMP was adopted in 1995, the state had a number of urban areas. Some were classified as Designated Areas (DA) in the plan; others were not. Some did not attain the National Ambient Air Quality Standards (NAAQS) that are human and environmental health standards required by the federal Clean Air Act and set by the Environmental Protection Agency (EPA). Until 1997, there was only a NAAQS for coarse particulates (particulate matter measuring 10 microns in aerodynamic diameter and smaller, or PM<sub>10</sub>). The EPA adopted a PM<sub>2.5</sub> NAAQS in 1997, which is particulate matter that measures 2.5 microns or smaller. Based on recent advances in epidemiological, cardiovascular and respiratory research, it is expected that the EPA will review the standard shortly and consider how to make it more protective of public health. The significance of this is that smoke particles that are in the smallest size ranges have the most potential for adverse health impacts.

Those areas of Oregon that were out of attainment for the PM<sub>10</sub> NAAQS in 1992 now have, or are developing, maintenance plans as required by the federal Clean Air Act. Even though there are unknowns about the nature of EPA's refinements to the PM<sub>2.5</sub> NAAQS, they most likely will be met in the future through a variety of air pollution control programs, including a proactive and progressive smoke management program.

Further, although Oregon had a Visibility Protection Plan for twelve congressionally designated Class I areas (i.e., selected wilderness areas and one national park), additional federal Regional Haze Rule requirements are being developed and will be implemented through State Implementation Plan amendments based on the guidance and policies developed by the Western Regional Air Partnership (WRAP) and EPA.

The WRAP is a collaborative effort of tribal governments, state governments, and various federal agencies to implement the Grand Canyon Visibility Transport Commission's recommendations and

to develop the technical and policy tools needed by western states and tribes to comply with the EPA's regional haze regulations. It is administered jointly by the Western Governors Association and the National Tribal Environmental Council. The WRAP recognizes that residents of western states have the most to gain from improved visibility and that many solutions are best implemented at the local, state, tribal, or regional level with public participation.

Historically, funding for the ODF Smoke Management Program which has dual goals – air quality protection and forest management – was provided through the state’s General Fund and the Harvest Tax. The 1989 Oregon Legislature adopted statutes that allowed for the collection of registration and burning fees on a per-acre basis in addition to the funding provided by the General Fund and Harvest Tax. The 1991 Legislature amended maximum burning fees to \$5/acre while maintaining a \$0.50/acre registration fee maximum. Effective in 1992, there was a fee structure that applied different fees to pile burning, broadcast burning, and under-burning. The 2003 Legislature removed most of the General Fund support for operations of the Smoke Management Program. Legislative direction was to support the program through user fees with continued availability of harvest tax money. This was done in spite of the fact that the broad citizenry of the state benefit from the program. Fees were raised to the statutory maximum in January 2004. Throughout the years, monetary support was also furnished through a Memorandum of Understanding (MOU) with the USDA Forest Service and DOI Bureau of Land Management.

It is also recognized that burning and registration fees collected provide support only to the Salem program operations. No portion of funding collected from fees is distributed to the local districts for field program administration. This makes the evaluation and calculation of complete program costs difficult. Field administration of the SMP is funded by both the Forest Practices and Industrial Fire Prevention Programs.

Statewide, the operational accomplishments of the SMP have been very successful in meeting the program’s dual requirements (see sidebar, statute ORS 477.013). However, variability does occur not only because of geographic differences but also because of topographic conditions, changing demographics, forest ownership patterns, increasing populations in forested areas, atmospheric and weather conditions, land use restrictions, and a growing smoke-sensitive population. The growing populations in forested areas and growing smoke-sensitive populations are two distinctly different, but relevant issues. Program needs are also challenged by lack of adequate funding, obsolete technology, reduced staffing levels, lack of public education, tightening regulations, and the changing particulate matter and visibility standards described above.

#### OREGON REVISED STATUTES

**“477.013 Smoke management plan.** (1) For the purpose of maintaining air quality, the State Forester and the Department of Environmental Quality shall approve a plan for the purpose of managing smoke in areas they shall designate. The plan shall delineate restricted areas to which this subsection applies. The plan shall also include but not be limited to considerations of weather, volume of material to be burned, distance of the burning from Designated Areas, burning techniques and provisions for cessation of further burning under adverse air quality conditions. All burning permitted within the restricted areas shall be according to the plan. The plan shall be developed by the State Forestry Department in cooperation with federal and state agencies, landowners and organizations that will be affected by the plan. The approved plan shall be filed with the Secretary of State and may thereafter be amended in the same manner as its formation. (2) The State Forester shall promulgate rules to carry out the provisions of the smoke management plan approved under this subsection. (1997 c.274 s.47)”

Additionally, the role of fire in forest and rangeland ecology has become better understood. Natural fire patterns have been altered by public and landowner pressures (to extinguish all fires) dating back to the late 1800s that changed forest conditions and fuel loads, culminating in today's catastrophic and costly wildfires. These changes are particularly evident in the fire-dependent ecosystems of southwest, central and eastern Oregon. Each year forest managers and the public are faced with difficult tradeoffs in fire and ecosystem management (i.e., prescribed burning on marginal days in the WUI and meeting statutory reforestation requirements).

Loss of ecosystem function, changes in forest structure, and increased fuel loads due to fire exclusion can have serious negative public health consequences because wildfires can generate four to five times the amount of fine particulate matter (PM2.5) as prescribed burning. The differences are in the magnitude and duration of smoke exposure as well as the extent of an impact over a large geographic area, rather than the relatively localized prescribed fire smoke impacts. The time of the year during which air stagnation conditions may occur and when active burning occurs are also factors that play a role in potential health impacts from the different types of fires.

Air pollution is generated from many different sources, many of which are invisible to citizens. Motor vehicles (mobile sources), industrial facilities (point sources), and pollution generated from many small sources in large metropolitan areas (area sources) are only noticed when atmospheric stability traps and concentrates this pollution where we live and work. On the other hand, smoke from wildfires or from a prescribed fire is very obvious to our citizens. Wildfires are generally accepted as random natural events, while prescribed burning is criticized even though it can have a direct effect on reducing wildfire acres burned and emissions that occur during fire season.

The landscape of forest and rangeland management continues to evolve faster than the state's ability to adjust under the present SMP. Because a large portion of the state's population lives within or adjacent to forest or rangelands, it is difficult to completely avoid exposure to all levels of smoke. This situation is not expected to lessen, but rather will grow. Many of these vegetative communities have evolved with flammable fuels and are more susceptible to larger, more intense fires now than they have been historically. However, levels of particulate matter and smoke exposure can be controlled with effective use of prescribed burning, thinning, and wood utilization and other alternatives in an effective resource management plan. Such a plan is best conducted under optimum conditions, rather than being left to destructive, uncontrolled seasonal wildfires.

The existing Statute from 1969 and the latest 1995 ODF Directive (see sidebar) clearly outline the potential for conflict in the delicate balance between maintaining air quality, while at the same time providing maximum opportunity for essential forestland burning.

**DIRECTIVE-OBJECTIVE (1-4-1-601)**

"To prevent smoke, resulting from burning on forestlands, from being carried to or accumulating in Designated Areas or other areas sensitive to smoke; to provide maximum opportunity for essential forestland burning; to coordinate with other state smoke management programs; to conform with state and federal air quality and visibility requirements; to protect public health and to encourage the reduction of emissions."

## **A. Participants, Stakeholders, and Regulators**

There are a variety of participants, stakeholders, and regulators involved in smoke management in Oregon. They range from individual citizens who may be negatively impacted by smoke, to active members of local communities, to tribal governments, to state and federal agencies, to not-for-profit associations, and to large and small forest landowners.

## **B. Relevant Facts and Trends**

Oregon's Smoke Management Program started in 1969. Program decisions must consider:

- Geographic variations in fuels, weather patterns, and topography;
- The changing nature of burning goals and prescriptions (the current emphasis is on hazardous fuels reduction and eco-system health);
- Industrial use of fire for silvicultural benefits and slash abatement has remained static;
- Increases in sensitive populations and changing demographics;
- Public-private-homeowner smoke management objectives (WUI);
- Current limitations to program funding, staffing, and access to new technology;
- Adjacent communities, states, and regions;
- Citizens are increasingly turning to their legislators for narrow and or prescriptive relief, thus complicating overall program objectives;
- The public's blurring line between urban and forest zones seems to have eliminated the 'rural' transitional zones;
- The public's increased expectation for accessibility and timeliness of information through the internet demands more real-time information regarding burning in their local areas;
- The myriad of different counties, state agencies, and tribal nations with some level of responsibility in the smoke management arena. These include local, state, and regional organizations such as: ODF, DEQ, Oregon Department of Agriculture, rural fire districts, county air pollution control associations, EPA and tribal nations;
- The protection of Visibility in Class 1 Wilderness Areas and Crater Lake National Park;
- Evolving health research; and
- Changing NAAQS standards.

Significant population increases in the WUI areas have occurred throughout the state. Changes in demographics are leading to increasing numbers of complaints about any level of smoke, regardless of whether it causes a documented intrusion, a NAAQS violation, or simply a temporary impairment of visibility or perceived nuisance. This is true regardless of whether or not a Designated Area is affected. 'Not in my back yard' is increasingly heard.

Program staff continues to maximize 'best day' burning conditions as interpreted through the use of existing forecasting tools, technology, and communication methods. This strategy minimizes potential operational impacts while meeting health and visibility objectives. 'Best day' burning incorporates optimum ventilation, local and sub-regional micro-forecasting, distance from Designated Areas or other populated areas, and maximum tonnage ignitions. While these strategies are followed in an attempt to achieve everyone's expectations, these optimum conditions cannot always be assured.

Under current program standards, burning for forest and rangeland management continues as a viable tool. Forestry burning accomplishments seem to be at acceptable levels while meeting statutory air quality standards. However, these accomplishments continue to be challenged locally due to weather and proximity to Designated Areas in some geographic areas. This is primarily in the Coast Range, where on-shore flow impacts populated areas in interior valleys while off-shore flow presents fire control concerns and impacts to coastal communities. In WUI areas, the primary concern is proximity of fuels to residential areas.

Effective program management has thus far resulted in zero exceedances of the particulate NAAQS and relatively few intrusions into Designated Areas on an annual basis. In fact, the only recent violations of the NAAQS have come from wildfire events (1996, 2002, and 2004). Although EPA is willing to overlook these violations under its Natural Events Policy, the negative health consequences to smoke-impacted communities are nonetheless real. The potential risk for NAAQS violations in Designated Areas is heightened by anticipated increases in forest and rangeland burning, as well as by further tightening of the PM2.5 NAAQS.

The committee spent considerable time discussing the various types and methods of prescribed burning. Each method is unique in its application, desired effects, or outcomes and amount of emissions generated. It was recognized that each one generated some level of smoke emissions. Consequently, it was agreed that use of the term ‘prescribed fire’ in the report would represent all forms listed below, unless specifically mentioned.

The committee recognized that there was no definition for prescribed burning contained in the department directives. It was agreed to adopt a portion of the definition of prescribed burning as found in National Fire and Aviation Executive Boards Directives Task Group Briefing Paper #3 dated January 19, 2005 (Appendix 5):

*“Any fire ignited by management actions to meet specific objectives.”*

The committee used ‘Prescribed Burning’ in the various general terms and applications including all of the following, unless specifically stated:

1. *Broadcast Burning*: Used to remove logging debris (slash) from clearcut areas before replanting.
2. *Pile Burning*: Machine or hand piling following harvest activities.
3. *Underburning*: Understory fuel reduction while maintaining overstory stand characteristics. Usually this would be the first burn associated with forest health restoration activities. Prior mechanical or hand treatments to reduce risks associated with heavy fuel loadings may be necessary.
4. *Maintenance Burning*: After initial fuel reduction activities and/or underburning. Used to maintain an area in an appropriate condition class over time.
5. *Forest Health Ecosystem Burning*: Including the reasons above, it includes burning for insect and disease control as well as wildlife habitat restoration as performed by U.S. Fish & Wildlife Service.
6. *Wildland Fire Use Burning*: The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas outlined in Fire Management Plans (FMP). (Reference footnote 2, page 29, Matrix Question C.)

7. *Rangeland Burning*: Burning associated with maintenance and restoration of vegetation, minimizing juniper encroachment and restoring wildlife habitat.
8. *Wildland-Urban Interface Burning*: Reduction of forest fuels from around homes to reduce the risk of property damage and improve firefighter safety in these populated areas adjacent to forestland.
9. *Grassland/Grazing Burning*: Burning to maintain an appropriate volume of grazing material for stock feeding. Reduces invasive species and controls insect and disease outbreaks.

### **C. Changing Standards and Regulations**

From a visibility protection perspective, there has been a significant evolution in the Smoke Management Plan from its inception in 1969. Beginning in the 1980's, the congressionally mandated federal Class I Area (National Parks and Wilderness) visibility protection program (Phase I), was only a consideration during the summer months. Now the visibility program is evolving to a year-round program encompassing the entire region and nation. The DEQ has responsibility through the Clean Air Act State Implementation Plan (SIP) for meeting the requirements for the protection of federal Class 1 visibility protection areas.

Furthermore, the federal visibility regulations of the Clean Air Act evolved from Phase I visibility rules (i.e., direct impacts of plumes into Class I Areas) to Phase II Regional Haze Rules in 2003. These rules emphasize the need for greater interstate and regional visibility protection for Class 1 Areas and not solely on impacts in Oregon Class I Areas. Prescribed burning on forest and rangelands is known to be one of several significant sources of regional haze. Air monitoring data have shown that smoke emissions can typically contribute anywhere from 5% to 25% of the regional haze in Class 1 areas in the West. The contribution of burning - both wildfire and prescribed - to regional haze in the West includes organic and elemental carbon, sulfates, nitrates, and dust (Source: Colorado State Interagency Monitoring of Protected Visual Environments (IMPROVE) data). The Regional Haze Rule identifies smoke management controls and the use of alternatives to burning as ways to reduce the contribution of prescribed burning smoke to regional haze. These alternative methods, as well as methods to reduce actual emissions, are referred to as emission reduction techniques.

It is difficult to answer the question 'to what degree is the health of Oregon's citizens being impacted by prescribed burning smoke?' This remains unknown because most affected areas are not presently being monitored for health impacts at levels below the NAAQS. It is recognized that adverse health effects can occur at levels below the NAAQS for some individuals. Compounding this problem, recent efforts promoting forest health and reducing wildfire risk (fuels) in the WUI have the potential to increase burning near many populated areas (both Designated Areas and non-Designated Areas).

Further complicating future Smoke Management Program operations, some of those areas that currently meet PM<sub>2.5</sub> standards may have difficulty meeting a stricter, revised NAAQS if EPA does adopt one. Recent health research has been focusing on smaller particulate matter (PM<sub>2.5</sub> and smaller, so-called ultra fine PM); this will increase attention on prescribed burning because approximately 80% of the smoke from prescribed fire is PM<sub>2.5</sub> or smaller (Source: EPA for the 80% PM<sub>2.5</sub>).

Recent work on particulate matter and health effects is voluminous and compelling. It does establish that short-term exposures to various smoke levels are hardest on sensitive populations (i.e., children, the elderly, and those with pre-existing respiratory conditions). It is also known that smoke affects all humans, albeit at different levels and in different ways. Respiratory function was originally thought to be the only health issue. We now know there are cardiovascular effects, with research also linking elevated particulate levels to adverse neural effects. To use Jackson County, Oregon, as an example, it is estimated that more than 20% of the County's population has asthma, Chronic Obstructive Pulmonary Disease or heart disease. This represents 35,000 people in one county alone, and does not consider all possible cardiovascular or neural effects. As our population ages, so does the percentage of individuals with these types of health concerns.

Therefore, while it is difficult to determine the impact of prescribed burning smoke on the health of Oregon's citizens, it is clear the program's future success relies on an ability to effectively track and monitor smoke in a timely manner.

An additional aspect of future program operations is Wildland Fire Use (WFU), which allows a natural ignition to burn within previously identified geographic areas. WFU is considered the same as wildfire, but one that is meeting a resource objective of the federal land management agency responsible for the fire. Implementation decisions for WFU currently need to consider smoke impacts in the initial decision tree process required for each new ignition.

In the future, federal land managers will approach WFU from a perspective of applying the most 'Appropriate Management Response Options.' These options will range from 'Monitoring from a Distance,' where fire situations show inactive fire behavior and low threats for the fire escaping, to 'Total Control and Extinguishment.' In all cases, the event is considered a wildfire and is handled as such.

Anticipation of future federal regulation is woven throughout the committee's recommendations. As an example, the committee moved to expand the SMP to cover the entire state by recommending that all of Oregon become a 'Regulated Area' (Recommendation B-1). This was done because ultimately Oregon will have to account for all of its open burning emissions in order to meet the requirements of the Regional Haze Rule and the implementation of the PM2.5 NAAQS. The intent is to not increase fees, but rather to be able to track all burning so that emission inventories can be developed to show how much prescribed burning contributes to regional haze and public health impacts.

## **V. The Matrix Questions**

## **Matrix Question A/K:**

**Are Air Quality Standards being met? This includes the committee's Subset K: What are the best approaches to address visibility issues, intrusions, and citizen complaints of nuisance smoke?**

### **1. Is there a problem?**

Currently, the federal health-based National Ambient Air Quality Standards (NAAQS) are being met in Oregon. All areas of the state that were out of attainment with the federal particulate (PM10) standards now have, or are developing, maintenance plans as required by the federal Clean Air Act. This means that they all have at least three consecutive years' worth of 'clean' air monitoring data. Although a NAAQS exceedance may rarely be caused by a prescribed burn in Oregon, such exceedances are much more commonly caused by wildfires (i.e., Klamath Falls and Bend in 2002).

### **2. Will there be a problem in the future?**

As Oregon's population grows and the WUI expands, more and more people will be living in rural, forested situations, and may be inadvertently impacted by smoke from prescribed burns. The potential for such impacts on sensitive individuals as defined by the US EPA (the very young, the aged, and people with pre-existing health conditions such as asthma, emphysema, chronic obstructive pulmonary disease, or heart conditions) will increase. Enhanced management of prescribed fires will be necessary to reduce these potential impacts even outside of Designated Areas.

Further, although we have not yet seen an increase in the number of acres being burned, there is a general sense that this number will increase. The potential increase in smoke may occur, in part, due to projected increases of prescribed burning on federal lands in southwestern Oregon and east of the Cascades.

The EPA adopted new standards for fine particulates (PM2.5) in 1997. Most smoke particles are in this size fraction or smaller. Even areas that currently meet the PM10 standards may have difficulty meeting the PM2.5 standards, and prescribed burning may impact such areas (e.g., Oakridge and Grants Pass). To compound matters, the EPA is considering setting the PM2.5 standards at lower, more protective levels.

Also, although the NAAQS are currently being met, the SMP needs to consider three other air quality related factors: intrusions, visibility, and citizen complaints of nuisance smoke. Finally, those areas (i.e., Medford, Klamath Falls, and LaGrande) that have recently come into attainment for PM10 and have submitted maintenance plans to stay in attainment, may be negatively impacted by increased levels of background particulate due to prescribed burning.

A number of the same factors that are discussed in Matrix Question B "Are Burning Objectives Being Met?" must also be considered here. These include a greater number of growing and expanding populated areas and urban centers; expanding WUI areas statewide; and more prescribed burning especially on federal lands, both in and out of the Restricted

Area. From these may come new Designated Areas (see Matrix Question F). Additionally, there is a need for improved emissions tracking, a need for more accurate tonnage and emissions estimates, and better spot or micro-weather forecasting.

In addition, the new federal standards for PM<sub>2.5</sub> mentioned above, and the new regional haze rules, suggest further change is on the way. The scope and complexity of the impacts of these standards and rules on prescribed burning is not known, especially when considering a potential increase in federal land burning.

### **3. What are the options to deal with potential future problems?**

There are a number of options, but each is fraught with benefits, consequences, and costs. The Smoke Management Program could seek to further refine forecasting and emissions tracking, to invest in improved technology, and to use state of the art models (such as the federal Blue Sky model) to predict emissions.

ODF could use DEQ's existing nephelometer network, currently being supported in part by the federal land managers, to fill data gaps. Or they could use conversion factors from nephelometer data (expressed as Beta scattering) to gravimetric data (in micrograms/meter<sup>3</sup>) to accurately assess the real time impacts of smoke on a Designated Area or smoke sensitive area. ODF could use the IMPROVE monitoring network in Class 1 Areas to determine impacts of smoke. Program managers could achieve a better estimate of fuel loading and consumption for individual burns, thus strengthening emissions predictions.

Coordination with the Oregon Department of Agriculture (ODA) on Willamette Valley field burning tracking and monitoring efforts could be increased. Improvements in the program to address the sources of smoke, impacts, and complaints could include the following elements:

- Program managers could develop a Restricted Area or Designated Area protocol that can be revised as needed, based on annual review and monitoring (i.e., adaptive management; see Matrix Question F).
- Expanding the SMP to encompass prescribed burning on all forestlands in the state, as well as wildlife/rangeland burning done by federal and state agencies. Tracking burning activities by large industrial private landowners (range/ranch operations) may be included as well.
- Developing a system to accurately track citizen complaints, improve communications among agencies concerning complaints, and improving response to citizen complaints. Additional resources could be put into public education and communications, including a website with real time data.
- Encouraging the use of alternatives to burning, where feasible, to minimize smoke impacts on citizens.

#### **4. Will these options require changes in statutes, rules or directives?**

Certainly some of the options would require such changes. As is discussed under Matrix Question B, expansion of the responsibilities of the SMP may require legislative review for some of the committee recommendations. Specifically, the following changes would probably be necessary. A primary statute change might be expansion of the SMP to cover all forest and rangelands, especially related to fees on forestland.

Rule changes could encourage increasing operational flexibility to allow more burning opportunities, reducing potential adverse health impacts on affected communities, promoting alternatives to burning where feasible, considering new Designated Areas or boundary changes to existing Designated Areas (see Matrix Question F), and establishing the entire state as a regulated area.

Directive changes would be left to ODF managers to determine. They would include topics such as fuel loading assessments, complaint tracking, and the use of state of the art models.

#### **5. What are the barriers and opportunities?**

In general, the barriers are political, institutional, and financial. Any changes in statutes needed to expand the SMP might meet with resistance from various stakeholders, and would require the coordination of responsibilities of several state agencies (i.e., ODF, DEQ, and ODA). New work in public education, coordination with other agencies, improved forecasting, etc., would all require additional staff resources. Also, the implementation of new technology will cost additional money, at least initially.

The opportunities include - first and foremost - the ability to accomplish more prescribed burning without adversely impacting air quality, human health, or contributing significantly to regional haze. Improved forecasting and the use of state-of-the-art models should help to achieve this additional burning. Increased public awareness might allow acceptance of additional treatment burns in the WUI as citizens come to understand the alternatives.

#### **6. How will success be measured in the future?**

There are several measures of success that can be used to determine if the objective of protecting air quality is met. These include:

National Ambient Air Quality Standards will not be exceeded due to prescribed burning. Coordination of burning programs among ODF, DEQ, ODA, federal and county agencies will be achieved and function effectively. This may include an annual coordination meeting, regular contact among staff, and a commitment to resolving issues.

New Designated Areas will be established if necessary and boundaries of existing areas will be modified as needed (see Matrix Question F).

The number of intrusions will remain low. Citizen complaints of nuisance smoke will be few and citizens who do call will receive accurate information about prescribed burns that may be impacting them.

**7. Committee recommendations:**

1. Continue to take all necessary steps to assure current and future NAAQS and Regional Haze Rule requirements are met.
2. Develop reporting systems for daily and annual emission inventories for both wildfire and prescribed burning.
3. Increase real-time air monitoring in SSRAs as needed.
4. Improve the citizen complaint tracking system (see Matrix Question J). Use this system to improve the Smoke Management Program. Use the complaint system as an educational outreach opportunity.
5. Improve the smoke tracking system by strengthening the real time observation of smoke as a means to enhance ODF's forecasting ability.

## **Matrix Question B:**

### **Are burning objectives being met?**

#### **1. Is there a problem?**

Currently, there does not appear to be a wide-spread problem. However, some industrial land managers, especially within the Coast Range sub-region, believe a problem exists due to tonnage limitations, carryover costs, and risk tolerance levels. No conclusive data exists to indicate a consistent problem with attaining forest and range management goals (e.g., statutory reforestation standards). The more urban or populated the area is (Designated Area or other populated center), the greater is the likelihood for issues to arise.

#### **2. Will there be a problem in the future?**

It is probable that problems associated with the use of fire will exist and will likely increase. Industrial forestland burning levels remain static. Federal ownership burning trends do not seem to be approaching historic levels (acres or tons) although more agencies do seem to be burning for ecosystem management and forest health benefits. Agriculture burning trends, in fact, are significantly below prior decades. Yet, there is evidence of:

- More WUI areas statewide.
- More burning especially on Federal lands (both forest and range), in and out of the current restricted area.
- A greater number of populated areas and urban centers (neither is well-defined).
- Poorly integrated regulations and loosely defined jurisdictions exist between local, state and federal authorities.
- More accurate fuel consumption tonnage estimation and better spot or micro-weather forecasting as well as improved real time emissions tracking being needed.
- Increasing restrictions in air quality and human health matters, (i.e. PM2.5 revisions and the EPA Regional Haze Rule).
- More NIMBY-ism (Not in My Back Yard), more sensitive populations (i.e., elderly, children, and those with respiratory ailments), and growing population areas that are not currently established as DAs.

#### **3. What are the options to deal with it?**

Options fall into three broad categories:

**Forecasting and Assessment** – ODF should continue to maximize ‘best burn’ day strategies and reduce ‘marginal day’ ignition volumes in proximity to Designated Areas and other sensitive areas. ODF should provide forecasting capability during all times of potential prescribed burning activity. Achieving more accurate fuel loading and emissions/consumption estimates could result in more accurate assessments of what is being burned. Daily allowable tonnage volumes could be determined by ODF meteorologists based on existing meteorological and forecasted air quality conditions, eliminating the need for specific absolute limits in rule (e.g., tons/150,000 acres).

**Area or Geography** – Establish daily allowable tonnage guidelines by geographic area (i.e., Coastal, Valley, Southwest, Northeast, and Central Oregon) to reflect geographic needs or delete specific tonnage limitations. Develop a Restricted Area or Designated Area protocol that can be revised as needed (i.e., adaptive management) based on annual review and monitoring of the SMP's dual objectives. Expand the SMP to encompass all prescribed burning in the state and wildlife/range land burning done by federal and state agencies, as well as large private landowners (range/ranch operations).

**Operation and Monitoring** – Invest in improved technology for forecasting, communication, tracking, monitoring, and public education. Develop a fee schedule that is both equitable and encompasses emission sources by future burning type and across all ownership. Prepare for Phase II requirements of EPA's Regional Haze Rule in 2007 by including an Oregon-wide smoke management program with integrated statewide forecasting and tracking systems.

**4. Will it require changes in rules, statutes or directives?**

Changes are expected to be needed, especially with regard to the OAR and directives even if the SMP remains solely a forestland program. If a more coordinated and encompassing approach is recommended for overall smoke management, then a larger change to the statutes, OARs, and directives is certain.

**5. What are the barriers and opportunities?**

Barriers to these options include: 1) natural resistance to change and increased regulation; 2) increased workload for the program; 3) perceived loss of individual state agencies' programs; 4) funding; and 5) technology.

Opportunities that could be gained by adopting the options include: 1) a streamlined statewide program (rather than many programs); 2) more effective and greater efficiencies within the department and across state agencies; 3) consolidated OARs, directives, and statutes to minimize conflicting and confusing direction; 4) an ability to respond better to citizen's questions and improved perception of ODF by citizens as being credible and responsive; and 5) greater equity among stakeholders and participants.

**6. How will success be measured in the future?**

Success in the future will be measured by several means by each of the Smoke Management Program's beneficiaries. In addition, the program will continue to be recognized throughout the region and nation as a model program for both wildland management accomplishments and air quality protection.

Landowners and land managers will determine success because land management objectives will be more consistently achieved in all geographic areas, but mostly in the Coast Range. Complaints by landowners over burning opportunities - whether real or perceived - will decrease. Success will also be noted by a greater public understanding and acceptance of the

need for and benefit of a well managed Smoke Management Program. This will be evident by the number of complaints and media interest. The general public, healthcare professionals, and those individuals sensitive to smoke will determine success when burning objectives are met along with National Ambient Air Quality Standards and visibility goals.

**7. Committee recommendations:**

1. The entire state should become a Regulated Area. Smoke Management Plan rules should expand the program from Class 1 forestland to all forestland now within and outside state protected areas. This decision affects all forest, rangeland, underburning, maintenance, habitat restoration, and forest health burning within the state of Oregon and will require that all burns that are accomplished be reported, tracked, and monitored. Discontinue the use of Restricted Area terminology in lieu of regulated references. These changes will allow total smoke emissions to be more effectively tracked and inventoried as required by the Regional Haze Rule.
2. Maximize burning opportunities through utilization of ‘best day’ burning strategies while minimizing ‘marginal day’ burning in proximity to SSRAs and other smoke sensitive areas. This could be accomplished through improved forecasting and tracking capability and technological advances and field data measurements.
3. Provide access to “Photo Series for Quantifying Forest Residue” for managers to better quantify fuel volumes.
4. Develop a formal protocol to enable local managers to work with landowners using department guidance to prioritize units to be burned.
5. Eliminate references in the SMP Administrative Rule to “per 150,000 acres on any one-day.”

## Matrix Question C:

**What changes may be needed to address projected increases in prescribed burning for forest health<sup>1</sup> reasons?**

### **1. Is there a problem?**

There are currently problems in determining how exactly to describe the amount to be burned (either acres or tons of fuel), how best to pay the fees for the Smoke Management Plan (a blanket fee, per ton fee, or per acre fee), how smoke from some unplanned ignitions (i.e., Wildland Fire Use (WFU) fires<sup>2</sup>) should be managed, how to more accurately forecast smoke dispersion, and adequacy of the smoke impacts monitoring network.

The committee recognizes that more acres may be burned in the future for forest health reasons. However, it must be recognized that most of this burning will take place in the drier forest types in eastern and southwestern Oregon. This increase in forest health burning, where normally 5-20 tons per acre of biomass would be burned, must be contrasted with the substantial reduction in the broadcast burn acres of the mid-1980s, where typically 30 or more tons of material per acre were burned.

Reliable estimates of acres to be burned by the federal agencies in Oregon for the next three to five years are not yet available. Work is progressing in developing estimates.

### **2. Will there be a problem in the future?**

Unless they are resolved now, all of the currently identified problems are likely to persist for some time.

It is acknowledged that both wild fires and prescribed fire ignitions may cause National Ambient Air Quality Standards (NAAQS) to be exceeded, and that human health as well as visibility may be impacted. Impacts from unplanned ignitions (WFU) can be potentially long-lasting and variable over their lifespan. Smoke will remain a consideration in the decision to implement WFU fires. Since 2000, approximately six fires and 1000 acres per year are burned in WFU fires by the federal land management agencies in Oregon. Most of these fires occur in designated wilderness, some distance from population centers, and typically have little impact on air quality near population centers.

The number of WFU fires in Oregon has been quite low in recent years, but it is anticipated that this number will slowly grow as more federal land managers complete the required planning to implement the concept. It is envisioned that many more acres will be under-burned in the future, as a way of maintaining forest health once an area has been restored to a more historic fuel loading.

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<sup>1</sup> Described in Oregon Administrative Rule (OAR) 629-43-0041, section 3(d) A-E.

<sup>2</sup> Wildland Fire Use (WFU) is defined in the 2005 National Fire and Aviation Executive Board Directives Task Group, Briefing Paper #03 dated January 19, 2005, as “*The application of the appropriate management response to naturally ignited wildland fires to accomplish specific resource management objectives in predefined Designated Areas outlined in Fire Management Plans.*”

### **3. What are the options to deal with the current problems?**

Fuel loading and consumption issues can be resolved by agreement among all parties concerned as to how the data will be used and how it will be collected. The two main reasons to collect loading and consumption data are to determine program fees and to assess potential smoke impacts to communities downwind. If loading and consumption data are to be used to determine program fees, then one data set and system may be required. If loading and consumption data are to be used to determine potential smoke impacts to downwind communities, then perhaps other sets and systems may be required.

New smoke dispersion models are now available, and forecasters are beginning to use them operationally. These models will improve with time and should become more effective in the future.

Fee collection will be more thoroughly discussed in Matrix Question I - Economics/Funding. Currently, a prescribed burn undertaken for forest health reasons is exempt from Smoke Management Program fees. As more forest health burns are anticipated in the future, smoke management services will still be required, but will not generate any program fees. Thus, a change in the program's fee structure to include these burns is advocated.

A consistent definition of the term 'prescribed burning' could be developed to clarify burning that comes under Smoke Management Plan requirements and also addresses Matrix Question D. A definition might be that which is found in the National Fire and Aviation Executive Board Directives Task Group Paper #03 (January 19, 2005). That definition is "Any fire ignited by management actions to meet specific objectives."

### **4. Will these options require changes in statutes, rules, or directives?**

There are a variety of statutes, department directives, and rules governing the program. The parent statute was enacted in 1969 with current program directives and rules last updated in 1995. Forest health burns are currently exempted from fees, and have been since 1990.

Changing the manner in which fuel loading and consumption data are collected may result in a change in the current directives.

No changes in statutes or rules are anticipated with the adoption of more sophisticated smoke prediction models. However, changes in directives may be needed.

Changing the way the program fees are generated and collected may require both statute and rule changes. See Matrix Question I for further discussion.

### **5. What are the barriers and opportunities?**

Should additional services from the ODF Smoke Management Program be required as forest health burning increases, then funding, necessary technology, and enough staffing to provide those services may be limiting factors. As forest health burning accelerates, healthier landscapes and more acres less prone to stand-replacing wildfires will likely result.

Improved and changing smoke modeling technologies will require time and effort to train people in their use and it will require additional resources. However, it is anticipated that the use of new models will enable more forest health burning to be undertaken. This is generally considered to be a desirable outcome.

Improving forest health requires at least two fundamental steps - restoration and maintenance. The stands currently most in need of restoration are generally the drier stands of eastern and southwest Oregon that would typically support a small number of large trees per acre. Many of these stands now contain hundreds of stems per acre, but igniting a prescribed burn in them in their current condition would kill the desirable trees. Such a burn would be very difficult to manage and an escaped fire would be likely.

One or more preliminary mechanical entries are required to remove the small, undesirable stems (also called thinning from below) to allow the remaining stems to grow and flourish, and allow them to withstand either a wildfire or a maintenance burn. This sequence of activities is often referred to as 'restoration'.

Once a stand has been restored to a fire-resilient condition, measures will need to be taken to maintain that condition. Typically, maintenance burns (or under-burns) are employed. This practice is relatively easy to implement, is reasonably cost effective, and effectively mimics a more natural condition.

The use of maintenance burns requires that sufficient biomass has first been removed to preclude fire from entering the tree crowns. It is assumed that the biomass will be used off-site in some way to benefit society. Less smoke would be generated because less material would be burned. Costs of mechanical treatments necessary to reduce biomass to a more burnable level may prove to be a barrier to implementation.

An effort to change the fee structure of the existing program may engender some opposition. However, it is expected that a streamlined and strengthened fee collection system is desirable, and better program management is likely to result.

An opportunity for increased biomass utilization would likely result from the thinning mentioned above. Coordination among various federal agencies, state agencies, and the private sector, as well as possible subsidies, would be necessary to improve the utilization of biomass. This concept is more fully explored in Matrix Question H.

No data gaps are currently believed to exist to manage forest health burning. The burn data ODF needs can likely be supplied by most, if not all, users of the program. Upper air weather data collection tools such as LIDAR and SODAR are commercially available and would likely aid in improving forecasts. Other specialized and more sophisticated weather forecasting tools may be needed, but funding has not been available, so little investigation of these tools has taken place.

Sufficient models, such as CONSUME, exist to accurately predict and calculate emissions and consumption. Other opportunities will arise for forecasters to use new smoke dispersion

models that are available, especially when models are further validated and become more effective.

**6. How will success be measured in the future?**

Successes as described in Matrix Questions A, B, and H are likely to result if more forest health burning is accomplished.

**7. Committee recommendations:**

1. Review how the land manager determines total tons consumed and how ODF calculates emissions, in order to more accurately reflect the amount of emissions produced.
2. Forest health burning will no longer be exempt from fees.
3. Prior to the declaration of a Wildland Fire Use fire, the responsible Federal land management agency will consult with the Oregon Smoke Management Program on potential air quality impacts.
4. Adopt the definition of prescribed burning (fire) as found in the first line of National Fire and Aviation Executive Board Directives Task Group Briefing Paper #03 dated January 19, 2005, as “Any fire ignited by management actions to meet specific objectives.”
5. Assess staffing and technology needs to meet anticipated increases in forest health burning based on annual surveys of land management agencies.

## **Matrix Question D:**

### **How should wildfire vs. prescribed fire impacts be addressed?**

#### **1. Is there a problem?**

A problem exists because smoke from wildfires has historically been more of a health risk than all forms of prescribed burning combined. The current SMP is silent on the public health concern and visibility impacts of wildfire smoke. The concept of considering wildfire smoke emission within the SMP is new, but without this inventory and tracking consideration it will be difficult to chart further progress under the Regional Haze Rule and to track substantive change in total emissions (i.e., wildfire and prescribed fire) under the SMP as a way to demonstrate potential trade-offs.

Annual tracking of prescribed fire emissions compared against estimated historical wildfires smoke emissions has been done in northeast Oregon in order to demonstrate the tradeoff between wildfire and prescribed fire emissions (Operational Guidance for the Oregon Smoke Management Plan, Directive 1-4-1-601, p.67, Appendix 5).

#### **2. Will there be a problem in the future?**

A problem will exist because wildfire frequency and acres burned are generally increasing throughout the state. The highest levels of wildfire acres burned and smoke emissions are occurring in those areas that have the highest fuel hazard and ignition risk. This is primarily in the southwestern and eastern geographic areas of the state. The northwest portion of the state carries a high fuel hazard but a significantly lower risk of wildfire occurrence.

The public may not universally understand the logic and theory behind the premise that increasing the level of prescribed burning will ultimately reduce the wildfire acreage burned and total smoke emission produced over time.

#### **3. What are the options to deal with the current problems?**

An option is to expand the SMP emission tracking responsibility to include wildfire emissions in order to develop emission inventories for both public and private land wildfires within the state (See Matrix Question C which includes definitions for prescribed fire and wildland fire use fires). The basic data to be collected are total acres burned, wildfire location, fire behavior, and fuel consumed. These data are required by the state for all prescribed fire data reported through FASTER (SmokeTRAC) for federal burns, and as part of the permitting process for all private land prescribed burning.

Another option is to encourage ODF to assume the leadership role in the development of an emission tracking system that will include all prescribed burners within the state (i.e., agricultural and rangeland). The data will be used in the development of a statewide emission inventory.

The emission inventory will be invaluable in the development of the Regional Haze Rule component of the State Implementation Plan (SIP) and development of control strategies for

potential PM2.5 non-attainment areas. Shared responsibility for management of the database between DEQ, ODF, and ODA is anticipated. This activity could be contracted or shared among the three primary state agencies.

The emission inventory will improve the geographic area specific forecast for total emissions produced along with improved science for emission estimations and validation. The process is also expected to include protocols for complaint tracking and identification of health, visibility, and nuisance smoke impacts.

#### **4. Will these options require changes in statutes, rules, or directives?**

Additional tracking responsibility can be accomplished as part of the SMP administrative rule.

State agencies should develop cooperative agreements for tracking and storage of the data and information. Securing state wildfire emission estimates may require a change in state and local county fire reporting requirements.

#### **5. What are the barriers and opportunities?**

Opportunities related to this issue include:

1. Increased public acceptance of prescribed fire based on increased awareness of the use and impacts of prescribed fire vs. wildfire. This will benefit the long-term maintenance of any prescribed fire program regardless of the geographic area in which it is being planned.
2. Using various modeling protocols for specific geographic area analyses to develop a process for prioritizing where and when to treat fuels and to display the long-term (100-300 year) emission production by vegetative type for both wildfire and prescribed fire emissions.

Barriers that may hinder success include the concepts that:

1. Getting state agencies to collaborate on the need for data collection and the methods for implementing the process is critical to meeting the overall objective of emission tracking. It would be beneficial if SMP participants statewide have to view the collection of wildfire and prescribed fire information as being a high priority and a long term benefit.
2. The protocols for tracking emissions and complaints are not highly developed nor well coordinated. There is a need to modify the existing system for tracking emissions and complaint in order to facilitate a public dialogue and public education on the reason for using prescribed fire and the expected trade off between prescribed fire and wildfire emissions over time.

The primary barrier is the availability of additional funding and staffing to operate the tracking and data storage system.

## **6. How will success be measured in the future?**

Tracking changes in wildfire and prescribed fire acres burned and fuel consumed over time is the key to gaining both public understanding and acceptance of the long-term strategy needed to meet emission reduction objectives on a statewide basis.

A measure of success would be having in place, comprehensive emission inventories (EI) for all open burning sources in Oregon. These EIs will allow tracking of total emission reductions/increases for purposes of determining reasonable further progress by 2064 as required under the Regional Haze Rule (RHR). The EIs will also be used to evaluate whether wildfires emissions have been reduced as a result of the increased use of prescribed fire.

Public understanding of the need to use prescribed fire will be enhanced and there will be fewer complaints from citizens concerned with the impacts of smoke generated from prescribed burning. Overall, there will be more informed decision-making on smoke management and the use of alternative treatments and emission reduction techniques by geographic areas.

Another measure of success would be that the SMP acknowledges the trade off between prescribed fire smoke and wildfire smoke and that it sets objectives that attempt to reduce total smoke emissions as part of the SMP, RHR and SIP. Mechanical treatments are also effective in reducing emissions where conditions warrant. Landscape level use of prescribed fire and other fuels treatments will be needed to reduce the size and intensity of highly destructive wildfires which routinely occur within the state. The trade off between prescribed fire and wildfire emissions will show a net reduction in total emissions over time.

Overall, there will be better coordination among the state smoke regulatory agencies. Less overlap for specific seasonal and geographic area allocation of burn days would be achieved. Potentially, there would be less competition among land managers and agencies and there would be a more equitable approach to allocation of opportunities to burn. Additionally, costs per acre could be less if the fee program were to be expanded to include all forestry and rangeland burning on a statewide basis. Expanding the fee area is not a recommendation of this committee but should be part of the discussion referenced in Matrix Question I.

## **7. Committee recommendations:**

1. Establish a smoke tracking system for all wildfires based on existing state and federal reporting and data collection procedures.
2. Implement a statewide system to collect both prescribed fire and wildfire emission data in order to develop emission inventories (EI).
3. Compare the EIs developed from this tracking system to monitoring data to assess whether there are actual reductions in emissions resulting from prescribed burning vs. wildfire.

## **Matrix Question E:**

### **Are changes needed to improve regional air quality and visibility in the Oregon Smoke Management Program?**

#### **1. Is there a problem?**

Yes. The current SMP only addresses regional smoke management in terms of interstate smoke management coordination with the state of Washington for prescribed fire. It does not address regional prescribed fire issues with other neighboring states (Idaho, Nevada, and California).

In addition, the SMP does not address regional smoke management coordination between prescribed fire and major agricultural burning within Oregon, such as in the Willamette Valley, rangeland burning east of the Cascades, and general residential open burning around the state. It does not address agricultural and rangeland burning outside the state, (i.e., southwestern Idaho). However, it should be noted that most of the major agricultural burning takes place during the summer months, when little or no prescribed fire is taking place in Oregon.

Finally, in addition to state coordination, the SMP does not address burning coordination with tribal lands. However, at this time it is unknown how significant this problem is.

#### **2. Will there be a problem in the future?**

Yes. From a regulatory standpoint, the new Regional Haze Rule (RHR) requires Oregon to protect visibility by adopting 'enhanced' smoke management programs that include regional planning and coordination of all open burning sources. This requires addressing prescribed fire both inside Oregon and in neighboring states such as Washington, Idaho, Nevada, and California, that can affect visibility in any Class I Area. This coordination of burning also needs to take into account areas of agricultural burning both inside and outside the state that can affect visibility. DEQ will need to address regional coordination of prescribed fire, agricultural and rangeland burning in the next phase of regional haze plan development scheduled for 2007.

Related to regional haze is the need to protect visibility in the Columbia Gorge National Scenic Area. In the upcoming years, DEQ and the state of Washington will be working jointly to develop a visibility protection plan that will be adopted by the Columbia Gorge Commission. Enhanced smoke management protection in the Gorge may be an important part of that plan.

In addition to the need to protect visibility, there may be future situations where regional smoke management is needed to better protect public health from short-term smoke impacts. For prescribed fire, there have been recent cases of interstate smoke problems between southern Oregon and northern California, northern Oregon and southern Washington, and eastern Oregon and western Idaho. Although these cases are rare, they may be a problem in the future if prescribed fire levels increase. Improving regional coordination between

numerous state agencies could be a major challenge. This coordination is needed to better protect against future interstate smoke impacts.

### **3. What are the options to deal with potential future problems?**

For regional smoke management of prescribed fire, interstate coordination between Oregon, Washington, Idaho, Nevada, and California could be addressed through interagency agreements or MOUs between the state agencies. Daily smoke management coordination of planned burning activity, projections of interstate smoke transport and emissions reporting should be included in these agreements. In addition to prescribed fire, these agreements could also address regional smoke management coordination of agricultural and rangeland burning, where it has the potential of causing Class I visibility (regional haze) impact or public health problems.

Within the state, improved coordination of prescribed fire, agricultural, and rangeland burning could also be accomplished through agreement or MOU. This coordination would primarily be between ODF, ODA, and the counties that operate local smoke management programs. Other agencies and organizations may also need to be involved.

In terms of improving coordination with tribal lands, the EPA could be more closely involved in this effort. This could also be addressed through similar types of agreements.

### **4. Will these options require changes in statutes, rules or directives?**

Increased regional smoke management coordination could be addressed through interagency agreement/MOU, or by administrative rule. No statutory changes are likely needed. However, in most cases it would also require DEQ to revise the Oregon Clean Air Act State Implementation Plan to incorporate these changes.

### **5. What are the barriers and opportunities?**

One barrier to improving regional smoke management coordination is the overall complexity of coordinating burning on a daily basis with so many states and smoke management programs. A second barrier is finding additional funding for the work associated with daily forecasting and projecting smoke transport on a regional level. A third barrier is possible resistance by states to make any changes to their existing programs to address regional transport out of concern that this may limit burning opportunities. Finally, it may be difficult for states to reach agreement on a protocol for conducting burning to avoid regional/interstate smoke problems.

One opportunity for overcoming these barriers is assistance from the Western Regional Air Partnership (WRAP). The WRAP has been helping states adopt enhanced smoke management programs to meet the RHR. For regional smoke management, they could provide technical assistance for fire and emission modeling, meteorological forecasting, and assistance in preparing interagency agreements and MOU for states and tribes.

Another opportunity for overcoming these barriers is assistance from EPA through funding or other support similar to the WRAP.

**6. How will success be measured in the future?**

Success in terms of increased regional smoke management coordination for prescribed fire would be measured by improvements in Class I area visibility, fewer interstate smoke intrusions, and fewer public complaints from interstate smoke transport. This would be accomplished while continuing to meet the objectives of the Oregon SMP. Success in terms of increased coordination of prescribed fire, agricultural burning, and rangeland burning would be greater knowledge of all emission sources in the region and those indicators mentioned above.

**7. Committee recommendations:**

1. Address interstate coordination between Oregon (involving DEQ and ODF), Washington, Idaho, Nevada, and California through interagency agreements or MOU. Daily smoke management coordination of planned burning activity, projections of interstate smoke transport, and emissions reporting should be included. These agreements should also address regional smoke management coordination of agricultural and rangeland burning.
2. Address intrastate coordination of prescribed fire, agricultural, and rangeland burning through agreement or MOU among ODF, DEQ, ODA, tribes, LRAPA, rural fire districts, protection associations, and the counties that operate local air quality and smoke management programs.

## Matrix Question F:

### Are Designated Areas and Smoke Sensitive Areas adequately identified?

#### 1. Is there a problem?

There is not a problem from the standpoint of the protection of existing Designated Areas (DA) and Smoke Sensitive Areas (SSA). However, it is confusing because of the number of definitions, the mixture of source and receptor terms, the lack of documentation, and the absence of any criteria for establishment of new DAs or SSAs. The DA map, Exhibit 2, in the current rule (see Appendix 6) is very large scale and incomplete with regard to eastern Oregon agreements. Also, maps are no longer displayed in rules. Communities within the state do not have a single source for information.

Some background will assist in understanding the present and the future issues. Oregon Revised Statute states:

**“477.013 Smoke management plan.** (1) For the purpose of maintaining air quality, the State Forester and the Department of Environmental Quality shall approve a plan for the purpose of managing smoke in areas they shall designate. The plan shall delineate Restricted areas to which this subsection applies. The plan shall also include .... distance of the burning from Designated Areas, ..... All burning permitted within the restricted areas shall be according to the plan. ....”

Current Definitions are described in OAR 629-43-0043 or ODF directive:

- **“Designated Area”** (DA) - Those areas delineated in Exhibit 2 (*a map in this rule*) as principal population centers (*this includes the entire Willamette Valley*). *Italicized wording added for clarification.*
- **“Restricted area”** (RA) - That area delineated in Exhibit 2 for which permits to burn on forestland are required year around, pursuant to rule 629-43-041.
- **“Other Areas Sensitive to Smoke”** are intended to consider specific recreation areas during periods of heavy use by the public, such as coastal beaches on special holidays, federal mandatory Class I Areas during peak summer use, (and) special events. (Heavy use is defined as “unusual concentrations of people using forestland for recreational purposes during holidays, (and) special events.” All Oregon and Washington Class I Areas shall be considered as areas sensitive to smoke during the visibility protection period, defined in the Oregon Visibility Protection Plan, OAR 340-20-047 Section 5.2.
- **“Special Protection Zone”** - A Special Protection Zone (SPZ) is a geographic area that is defined in operational guidance (Directive 1-4-1-601, p. 61; Appendix 4; 08/95), rather than in the administrative rule. SPZ provisions shall apply to the following PM10 non-attainment areas from November 15 through February 15 each year: Klamath Falls, Medford, Oakridge, LaGrande and Lakeview. Only the contingency plan requirements of this appendix shall apply to the Eugene/Springfield and Grants Pass non-attainment areas. Prescribed burning in the SPZ will be allowed

only when the ODF smoke management meteorologist believes there will be no measurable smoke impacts within the PM10 non-attainment area.

A non-attainment area is a receptor term that defines a geographic area in non-compliance with federal air quality standards. DEQ rules (OAR 340-200-0020(73)) state that a non-attainment status “means a geographical area of the State, as designated by the Environmental Quality Commission or the EPA, that exceeds any state or federal primary or secondary ambient air quality standard.” DEQ does not define attainment area.

The Federal EPA established area designations years ago as:

“(i) nonattainment, any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant,” or

“(ii) attainment, any area (other than an area identified in clause (i)) that meets the national primary or secondary ambient air quality standard for the pollutant,” or

“(iii) unclassifiable, any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.”

There are other OARs that add complexity to the outdoor and open burning and air quality issue setting. DEQ rules dating from the 1970s establish “open burning control areas (OBCAs).” OBCAs are those areas around more densely populated locations in the state, and valleys or basins that restrict atmospheric ventilation. The areas, and the attendant restrictions, are listed in OAR 340-264-0100 through 340-264-0170 by county. DEQ rules use a combination parameters to determine OBCAs. These include: population, distance from city limit/ urban growth boundary (UGB)– (three miles for populations of 1,000 to 45,000; six miles for cities over 45,000 people), proximity to an Air Quality Maintenance Area (AQMA) or non-attainment area, common boundary (determines population threshold) and separation between cities of less than three miles.

Smoke Management Plan Designated Areas, Restricted Areas and other protected sites have evolved piecemeal, but no criteria by which these areas are designated have been clearly established. Exhibit 2 in OAR 629-43-0043 and the various agreements and directives do not concisely list the DAs or other smoke sensitive areas, nor do they further establish or describe criteria for additions/deletions/revisions to the list of areas.

Currently in the SMP, Exhibit 2, and the appendices to the ODF Smoke Management Directive, the following areas are established (they are organized below on a receptor or source basis):

### **Receptor Based**

- **DAs** – Astoria, Tillamook, Lincoln City, Newport, Coos Bay-North Bend, Grants Pass, Ashland-Medford (Rogue Valley), Roseburg, Bend, and the entire Willamette Valley (Willamette Valley not defined).
- **Northeast Oregon Agreement** – Baker City, Burns, Enterprise, John Day, LaGrande, Prineville, and Pendleton (plus protection given to Idaho and Washington

cities as well as other Oregon communities in northeast Oregon). These are so-called ‘protected areas.’

- **Class I Areas** – These are 11 federal Wildernesses and one National Park designated by Congress (ref: Oregon DEQ’s Visibility Protection Plan for Class I Areas).

### **Source Based**

- **Special Protection Zone (SPZ)** – This term applies November 15 - February 15 of each year to Klamath Falls, Medford, Oakridge, LaGrande and Lakeview, and to Eugene/Springfield and Grants Pass on a contingency basis (the SPZ is an approximate 20-mile zone around the cities or non-attainment area, or the AQMA).
- **Restricted Area (RA)** – All forestlands west of the Cascades and forest protection areas of Mt Hood and Deschutes National Forests east of the Cascades.

Smoke Management operations that have evolved over the years further complicate the picture regarding protected areas or areas receiving additional smoke protection consideration. Two worthwhile examples are:

**Restricted Area** - In addition to the present Designated Areas, consideration is given to a community of significance when approving a burn. Examples include communities like Coquille, Lakeside, and Sisters. Staff and field personnel try to minimize the chances of impacting these communities. These actions protect communities over and above the Designated Areas list (OAR Exhibit 2).

**Non-Restricted Area (Eastern Oregon)** - The SMP defines as ‘Protected Areas’ certain communities in eastern Oregon, where it is desirable to exclude smoke. Although they carry a different designation, because they are outside the restricted area (Western Oregon), a level of protection similar to a Designated Area is provided. Also, similar to Western Oregon, there are communities that receive special consideration, for example, Redmond, Prineville, Heppner, etc.

A community does not have to be a Designated Area to receive protection under the SMP at a level commensurate with Designated Area status. In reality, two-dozen communities in Oregon receive protection under the SMP at a level consistent with being a Designated Area. All of this has evolved without formal criteria, consistency across the state, or good documentation.

## **2. Will there be a problem in the future?**

Yes, because certain difficulties can be expected. It is not tenable that DAs and other smoke sensitive areas have been defined on an ad hoc or as needed basis without criteria as the state develops a new Smoke Management Program required under the Regional Haze Rule. Furthermore, the increasingly urbanized nature of Oregon’s communities and populations will require rational and documented criteria for protection of cities and populations to meet statutory and ODF policies. AQMA communities are very concerned about so-called ‘backsliding’ from the air quality improvements seen in the last two decades.

Terms such as DAs, SPZs and SSAs are difficult for the public to understand and are a mix of receptor and source areas. A simpler system that focuses on receptors (i.e., where the impact occurs), would be advantageous to all. Poorly integrated regulations and loosely defined jurisdictions exist among local, state, and federal authorities.

Current maps delineating areas are inconsistent in scale, and boundaries are not always clear. Current administrative rule protocols do not allow maps or exhibits to be displayed as part of the rule compilation. Text documentation of boundaries is necessary. All areas in need of protection may not be identified (i.e., emerging population areas, increasing population may expand boundaries, and WUI).

There is a considerable probability that EPA will adopt new, stricter PM2.5 standards. This may thrust some communities into protected status by designating them as nonattainment. There are also geographical differences within the state (i.e., WUI areas where more burning is anticipated) that could also affect standards.

The current SMP Designated Area concept was predicated on 1) burning of old-growth logging residue; 2) a number of non-attainment areas; 3) little prescribed burning; 4) no regional haze rules; and 5) widespread wood stove use. These conditions have changed and will continue to evolve.

### **3. What are the options to deal with it?**

One option would be to make no changes, but the committee does not see that as prudent. Rather, a major reorientation of the Designated Areas protocols is appropriate. The SMP could more clearly define boundaries of Designated Areas and Smoke Sensitive Areas with clear criteria utilizing GIS/GPS maps on a computer-based system. The plan could aim for one receptor-based community designation.

However, some areas may require more intense management (e.g., those with a high potential for wintertime temperature inversions, those with significant wood stove use, or those with increased prescribed burns). ODF could establish clear criteria for defining DAs or alternate terms such as Smoke Sensitive Receptor Areas (SSRA) and criteria for them (e.g., population and proximity to prescribed burning as well as AQMA status). SSRAs could be defined as ‘areas where smoke impacts should be avoided’.

### **4. What are the barriers and opportunities?**

Anticipated barriers include: 1) organizational and partner resistance to change; 2) increased workload for program staff during changeover to new system; 3) staffing and funding; and 4) technology adoption, (e.g., GIS).

Possible opportunities include: 1) a more streamlined SMP (fewer, rather than more definitions, and receptor-based only); 2) a more effective program with greater efficiencies; 3) enhanced clarity in the SMP; 4) consolidated OARs, directives, and statutes (to minimize conflicting and confusing direction); 5) greater partnerships with local, state, and federal stakeholders; and 6) greater responsiveness to, and increased credibility with citizens.

## **5. How will success be measured in the future?**

A measure of success would be that SSRA criteria are adequate to identify and protect communities at risk. ODF would continue to minimize the number of intrusions into SSRAs (see Matrix Question A/K on a possible quality assurance protocol). Another measure of success would be requests for addition to SSRA or other areas status remain low (e.g., fewer areas requesting SSRA status means that air quality objectives are being met). Fewer concerns from program staff or land managers that criteria are unclear or inequitable would assist in administering the program. Clean Air Act, regional haze, and other air standards being met would also be a measure of success. Reducing the number of citizen smoke-related complaints would be a measure of success.

## **6. Will it require changes to rules, statutes or directives?**

Changes in rules and directives would be necessary, but no statute changes are likely. However, if legal review by ODF staff determines the existing statutes would need revision, then a back-up plan for the OARs and directive would need to be developed, (i.e., elimination of the DA term and adoption of smoke sensitive receptor areas).

## **7. Committee recommendations:**

1. Establish Smoke Sensitive Receptor Areas (SSRAs).
  - SSRAs are defined as areas around communities and ‘areas’ where smoke intrusions should be avoided. These generally will be principal population centers and/or a sub-region, (i.e., the Willamette Valley).
  - Criteria to consider when making additions/revisions to the SSRA list should include:
    - Frequency of intrusions and complaints.
    - Nature of other pollution impacts.
    - Proximity to areas of increased prescribed burning.
    - Existence of any known tracking or monitoring in potential SSRA.
    - Population, smoke sensitive groups, meteorology and trends.
    - Existing wood stove curtailment programs.
    - Eliminate ‘source’ terminology (i.e., Special Protection Zone terminology).
    - Eliminate current ‘Designated Area’ definition in administrative rule.
2. SSRAs should be comprised of the existing Exhibit 2 Map and the communities specified in the northeast Oregon and Lake and Klamath County Agreements.
  - Willamette Valley is an SSRA. The area includes portions of Benton, Clackamas, Lane, Linn, Marion, Multnomah, Polk, Washington, and Yamhill Counties (using current Exhibit 2 map).
  - AQMAs or non-attainment areas (boundaries will be those as used by DEQ). This includes: Lakeview, Klamath Falls, LaGrande, Oakridge, and Medford-Ashland-Grants Pass area (Eugene/Springfield is within the Willamette Valley sub-region).

- Astoria, Tillamook, Lincoln City, Newport, Coos Bay-North Bend, Roseburg, and Bend (Exhibit 2 map).
  - Baker City, Burns, Enterprise, John Day, LaGrande, and Pendleton (northeast Oregon Agreement will need to be re-assessed by parties).
  - The SSRA boundary for the above communities will be the urban growth boundary for all cities outside the Willamette Valley sub-region and the Medford-Ashland AQMA.
3. Retain Other Areas Sensitive to Smoke category and definition.

**Matrix Question G:**

**Will committee recommendations require a change in statutes, rules, directives, or require a MOU?**

**Summary Statement or Table**

Those recommendations in bold indicate some of the more far-reaching recommendations.

Recommendations	Statute, Rule, or Directive Change, development of a MOU, or other ODF action needed.
AK-1	Directive
<b>AK-2</b>	<b>Rule</b>
AK-3	Other ODF action
<b>AK-4</b>	<b>Changes to procedural guidance</b>
AK-5	Other ODF action
<b>B-1</b>	<b>Statute and Rule</b>
B-2	Rule and Directive
B-3	Other ODF action
B-4	Directive or other ODF action
B-5	Rule
C-1	Other ODF action
<b>C-2</b>	<b>Statue and Rule</b>
C-3	Directive
C-4	Rule
C-5	Other ODF action
<b>D-1</b>	<b>Rule</b>
<b>D-2</b>	<b>Rule</b>
D-3	Other ODF action
E-1	MOU
E-2	MOU
<b>F-1</b>	<b>Rule and Directive</b>
<b>F-2</b>	<b>Rule</b>
F-3	Rule
<b>H-1</b>	<b>Rule and Directive</b>

H-2	Changes to procedural guidance
<b>H-3</b>	<b>Legislative approval needed</b>
H-4	Rule
H-5	Rule
<b>I-1</b>	<b>Other ODF action</b>
I-2	Rule
<b>I-3</b>	<b>Statute (?) and Rule</b>
I-4	Other ODF action
<b>I-5</b>	<b>Legislative approval needed</b>
<b>I-6</b>	<b>Legislative approval needed</b>
I-7	Legislative approval needed
<b>I-8</b>	<b>Rule and possible legislative approval</b>
J-1	Changes to procedural guidance
<b>J-2</b>	<b>Changes to procedural guidance</b>
J-3	Other ODF action

## **Matrix Question H:**

**What feasible alternatives to prescribed burning exist, and how can they best be implemented?**

### **1. Is there a problem?**

Yes. Increasing fuel buildup on forestlands has led to greater fire hazard conditions, which in turn have caused increases in wildfire severity and subsequent increase of emissions across the West. There is a significant need to address the fuel buildup, but there is also limited airshed capacity in which to emit smoke.

Combined with more stringent air pollution regulations and concerns about smoke impacts, this has led many states to take steps to make significant smoke management improvements. The Environmental Protection Agency (EPA) has for many years encouraged states to adopt Best Available Control Measures (BACM) for prescribed fire, which includes mandatory smoke management programs, promoting the use of alternatives, and utilizing emission reduction techniques. The federal Regional Haze Rule now requires states to adopt 'enhanced' smoke management programs, remove administrative barriers to the use of non-burning alternatives, and track the use of emission reduction techniques and quantify the emission reductions they provide.

While forestland managers in Oregon practice alternatives to burning, there is little documentation of this, nor is there a concerted effort by ODF to promote or track the use of non-burning alternatives. ODF rules (OAR 629-43-0043 (1)) do mention as an objective the need to "encourage the reduction of emissions", but nothing more specific.

The Operational Guidance for the Oregon Smoke Management Program, Directive 1-4-601, states that the policy is to "minimize emissions from prescribed burning, where appropriate, by encouraging cost effective utilization of forest residue, alternatives to burning, and alternative burning practices." There is similar language in the *Special Guidance* section that encourages the "utilization of residue" and "alternate treatment practices that are consistent with the purposes of the Forest Practices Act". These are the only references in the Operational Guidance to alternatives.

### **2. Will there be a problem in the future?**

Yes. In the West, significant increases in prescribed fire are anticipated. There has already been some increase in central and eastern Oregon, and this is expected to continue in the future. In areas such as Deschutes County, this increase in burning is being accompanied by significant population growth. Greater use of non-burning alternatives in these areas will be needed. Concerns about fire danger in the wildland-urban interface (WUI) combined with population growth will also put greater emphasis on applying non-burning fuel treatments in these areas.

From a regulatory standpoint, the federal Regional Haze Rule will play a significant role in future prescribed fire use. DEQ's Oregon Regional Haze Plan, submitted to EPA in 2003, must be updated periodically to demonstrate that smoke management controls are effective,

and that alternatives to burning are also effective in reducing emissions from prescribed burning. In addition to regional haze, EPA is considering lowering the federal particulate air quality standard in order to provide greater protection of public health. This will put more pressure on smoke management programs to further minimize smoke intrusions, and will likely place greater emphasis on non-burning alternatives as well.

### 3. What are the options to deal with it?

A. Add a greater commitment to alternatives in ODF rules.

As pointed out above, the Oregon Smoke Management Plan (SMP) does not put much emphasis on promoting the use of non-burning alternatives. Adding a greater commitment in ODF rules is an option. The following is suggested language (in bold) taken from the Operational Guidance that could be added to the objectives statement in OAR 629-043-0043 (1):

*(1) Objective: To prevent smoke resulting from burning on forest and range lands from being carried to or accumulating in Designated Areas or other areas sensitive to smoke, and to provide maximum opportunity for essential forest and range land burning while minimizing emissions; to coordinate with other state smoke management programs; to ~~conform~~ **comply** with state and federal air quality and visibility requirements; to protect public health; and to **promote the reduction of emissions by encouraging cost effective utilization of forest and rangeland biomass, alternatives to burning, and alternative burning practices.***

B. Identify a process for evaluating alternatives and Emission Reduction Techniques (ERTs).

DEQ's Oregon Regional Haze Plan, adopted in 2003, contains a commitment to identify a process for overcoming 'administrative barriers' to the use of alternatives, and a process for tracking Emission Reduction Techniques (ERTs) and estimating the emission reductions that occur. In order to accomplish this, the plan identifies two guidance documents prepared by the Western Regional Air Partnership (WRAP) related to non-burning alternatives and ERTs. The first WRAP document entitled "Non-burning Alternatives for Vegetative and Fuel Management" is for overcoming the administrative barriers to alternatives. It is intended to be used by forest landowners and managers as a tool for evaluating alternatives to prescribed burning, by identifying the different non-burning management options, as well as potential markets and funding sources for utilizing forest materials. It provides a 'decision-tree' for considering treatment options, and a list of the different types of equipment associated with mechanical removal. The second WRAP document entitled "Annual Emission Goals for Fire Policy" is intended to be used primarily by state smoke management staff and air regulators to encourage the use of ERTs, track their use, and estimate the emission reductions they provide. The estimated emission reductions are then compared to the total estimated emissions from prescribed burning, in order to satisfy the annual emission goal requirement in the Regional Haze Rule (RHR).

The purpose of citing these two documents in the regional haze plan is to show that they will be relied upon to promote alternatives and track ERT emission reductions. There is a need to identify and describe these documents in the Operational Guidance to the SMP to assist forestland owners and managers in making decisions on the feasibility of using alternatives and ERTs.

C. Create a new position at ODF for a Biomass Utilization Specialist.

To assist forestland managers in evaluating non-burning alternatives and fuel treatments, a new Biomass Utilization Specialist position should be created at ODF. This specialist would have specific knowledge and experience about current biomass markets, mechanical removal equipment and costs, tax incentives for alternative use, and current fuel treatment methods and ERTs being practiced. This specialist would be available to consult directly with land managers, to help them increase their use of alternatives by identifying viable options, and work with other agencies to identify new options and coordination opportunities. This specialist could also track the use of alternatives in the state and maintain an up-to-date database, as described in Option D below. The creation of this position could be done in conjunction with Option B identification of a process for using the WRAP “Non-burning Alternatives for Vegetative and Fuel Management.” Also, several full and part-time positions were identified by the Fuels Subcommittee for the ODF Fire Program Review in 2004. It’s possible that duties for the Biomass Utilization Specialist identified here could be combined with one of those positions. A funding source would need to be identified by ODF to create this position, as well as position authority regardless of the funding source.

D. Develop a tracking system and implement an up-to-date data base on use of alternatives to burning and ERTs.

This option involves setting up a system for tracking the use of alternatives by forestland managers who conduct prescribed burning under the Oregon Smoke Management Program. States such as Utah have provisions in their smoke management plans to identify what alternatives were considered prior to burning. Current Operational Guidance *requires* forestland managers to identify basic burn unit information, such as fuel loading, type of burn, and primary reason for burning. Forestland managers could also be asked to indicate any alternatives they considered, evaluated, or successfully implemented.

Acceptable use of alternatives to burning should consider, but not be limited to: utilization processes used during the forest operation, including diameter limits, stand age, species, bucking instructions, whole tree yarding, no yarding of unmerchantable material, removal of pulp wood, firewood cutting or other methods effective in reducing the volume of material to be burned. In addition, ODF would compile an up-to-date data base of available fuel-reduction methods, equipment, contractors, vendors, etc., and to make this information available on their website. This option can be tied to the Option A commitment to promote alternatives under the Oregon SMP Operational Guidance, and the Option B process for evaluating alternatives. This option could also be part of the new specialist duties under Option C.

E. Provide greater incentives to land managers for using alternatives.

There are currently few financial incentives, such as tax credits, for forestland managers who want to use alternatives. Oregon DEQ's Pollution Control Tax Credit currently provides a tax credit for purchasing wood chippers. Expanding this tax credit to include other equipment or non-burning practices could be explored, as well as pursuing other tax credits. This option could be combined with Option 3, in terms of work that could be conducted by the Biomass Utilization Specialist.

In terms of other incentives besides tax credits, there could be special consideration given under the program to forestland managers who increase their use of alternatives. For example, special burn opportunities could be provided for burn units where mechanical treatments were used to significantly reduce the fuel load or the size of the burn (note: this is connected to Option D, where this information would be provided by the landowner to ODF). Another example could be a burn unit that would not normally be burned due to proximity to a populated area or WUI, but where significant fuel removal has taken place to reduced the risk of fire escape, and where rapid mop-up will be conducted.

**4. Will these options require changes in statutes, rules or directives?**

These options would require changes to ODF administrative rules and the Operational Guidance for the Oregon Smoke Management Plan. A change in statute is not anticipated.

**5. What are the barriers and opportunities?**

There are several barriers to the use of alternatives. Not all alternatives are feasible, due to various technical, economic, environmental, and sociopolitical factors. Many forestland managers do not have access to up-to-date information on the cost of different alternatives and treatments, mechanical equipment costs, new biomass markets, available tax credits, and funding sources. There is also general resistance to change. The lack of funding to create economic incentives for using alternatives is also a barrier. It should also be recognized that the increased cost of alternative treatments or administrative requirements could result in fewer acres being treated, having the negative effect of increasing fuels and wildfire hazards.

The opportunities that may result from using alternatives involve providing all forestland managers with both non-burning and burning treatment options to manage their forestlands. This in turn has economic benefits. Improved forest management (utilization and health) will result in less intensive wildfires, and lower the risk to loss of life, health problems, and property damage. As energy demands increase, this may create opportunities for new biomass markets, making it more cost-effective for land managers to invest in equipment for mechanical removal, transportation of the material to existing biomass plants, development of extended transportation infrastructure, constructing new biomass facilities and opportunities for rural employment and development. Finally, as described in Option E above, some additional burning opportunities could be provided to land managers who increase their use of alternatives to significantly reduce emissions and the risk of fire escape.

## 6. How will success be measured in the future?

Success will be measured in several ways. One measure will be improved forest resource utilization and forest health. From a smoke management and air regulator perspective, the more widespread use of alternatives will result in lower emissions and less intensive wildfires, and increased fire safety for the public and firefighters in the WUI. This can be measured statistically in terms of fewer deaths, health problems, property damage, and smoke complaints. Continuing to meet air quality health standards and improved visibility in Class I Areas such as Crater Lake National Park will be other measures of success.

## 7. Committee recommendations

1. Increase commitment to alternatives to burning by revising OAR 629-043-0043 (1) as shown below:

*(1) Objective: To prevent smoke resulting from burning on forest and range lands from being carried to or accumulating in Designated Areas or other areas sensitive to smoke, and to provide maximum opportunity for essential forest and range land burning while minimizing emissions; to coordinate with other state smoke management programs; to ~~conform~~ **comply** with state and federal air quality and visibility requirements; to protect public health; and to **promote the reduction of emissions by encouraging cost effective utilization of forest and rang land biomass, alternatives to burning, and alternative burning practices.***

2. Identify a process in the Operational Guidance for land managers to evaluate the feasibility of using alternatives and emission reduction techniques (ERTs) prior to burning, and include a reference and description of the two WRAP documents.
3. Create a new position at ODF for a Biomass Utilization Specialist.
4. Develop a tracking system and implement an up-to-date database on use of alternatives to burning and ERTs.
5. Provide land managers with greater economic incentives, and other incentives or rewards, for using alternatives.

## **Matrix Question I:**

**What does the SMP truly cost; and how can it best be funded for today and tomorrow?**

### **1. Is there a problem?**

Yes. The Smoke Management Program was well funded and adequately staffed in the late 1980's and early 1990's, but that is not the case now. Currently, the Oregon Smoke Management Program is funded through a combination of user fees applied to western Oregon burning (and the Deschutes National Forest); a portion of the harvest tax; a contractual arrangement with DEQ for open burning forecast support services; a minimal amount of General Funds; and through a MOU with the USDA Forest Service and BLM for program support in northeast Oregon. Certain categories of burning are exempt from fees. These include forest health burning, landings, and burns two acres or less in size. The forest health exemption is a statutory requirement.

The revenue to the program supports a staff that is directed by a full-time meteorological and fire intelligence manager and includes a staff of two other full-time meteorologists and a full-time staff assistant. One-fourth of one of the meteorologist's salary is funded by a small amount of General Fund associated with the program's participation and support of fire danger rating activities. Fees also support the equivalent of an administrative position in ODF's Finance Section to cover administrative costs associated with fee collection. There is no source of smoke management funding that directly supports operations and administration of the Smoke Management Plan at ODF field offices.

Revenue to the program basically supports headquarter's staff personnel costs for operational needs. Virtually the entire program's costs are fixed (i.e., personnel, overhead) with little discretionary spending. Funds have not been available for infrastructure improvements (i.e., upper air meteorological equipment and other technological advances). Support for aerial monitoring in southwest Oregon had occurred in the past, but has been inconsistent because of cost concerns. Program forecasting coverage is expanded and contracted as needed, thus seven day per week coverage is available during the peak burning periods. Forecast services are provided statewide, but not all areas or types of burning are subject to fees that support the program.

Program costs have ranged from approximately \$315,000 to \$400,000 annually to operate at current service levels, and are anticipated to be approximately \$550,000 annually assuming an increase in burning on federal land. The majority of the previous General Fund support for the program was removed due to state revenue shortfalls per the direction of the 2003 Oregon Legislature. The burn fee structure was changed in 2004 to cover the loss of General Fund dollars. Fees and federal contract money received to support the program are supplied by the burners. In any given year, Federal contributions have ranged between 42% and 52% since 1998, and fees from private landowners have ranged between 58% and 48%.

Program expenditures for the past two biennia and the authorization for the 2003-05 biennium are shown in the table below. The loss of General Fund support is readily apparent. The 03-05 budget increase assumes a projected increase in burning, primarily on federally administered lands. Such an increase has yet to materialize.

<b>Smoke Management Actual Expenditures - 99-01 and 01-03; and Adopted Budget 03-05<sup>3</sup></b>			
<b>Fund</b>	<b>99-01 Expenditure</b>	<b>01-03 Expenditure</b>	<b>03-05 Adopted Budget</b>
General Fund	\$241,790	\$174,772	\$30,535
Harvest Tax	\$168,409	\$116,595	\$150,328
Burn Fees	\$293,113	\$247,769	\$630,607 <sup>1</sup>
Federal & DEQ Contract	\$91,923	\$93,893	\$296,503 <sup>2</sup>
Total	\$795,235	\$633,029	\$1,107,973

<sup>1</sup>This budgeted amount is an approximately \$91,000 increase from the 01-03 budgeted amount with the estimate that burning fee revenues would increase in 03-05 because of an increase in burning. The budgeted amount is an expenditure limit.

<sup>2</sup>This budgeted amount has increased because of projected increases in federal burning that would support the hiring of an additional meteorologist. The budgeted amount is an expenditure limit

<sup>3</sup>The adopted budget is a spending limit as compared to the expenditure which is actual dollars spent.

The following questions arose during the Review Committee's tenure:

- Is it best to continue to fund the Smoke Management Program in the current manner?
- Is funding truly adequate, or is more (or less) funding required to meet current and future needs?
- Is the staffing at the correct level if the Matrix recommendations are adopted?
- Is the current fee structure appropriate, or can it be improved upon, or perhaps streamlined?
- Are the current and future expectations and responsibilities of the program effectively funded?
- Should fees be based on emissions, or remain area based?
- Is the current practice of registering burns, and charging a registration fee, still a valid practice?
- Should any allowance (credit) be made for the use of employing emissions reduction techniques (ERT)?
- Should fees apply to Wildland Fire Use (WFU) fires on federally managed lands?
- Would increased capability of forecasting tools and staff minimize adverse public health impacts from smoke exposure and allow for increased landowner burning accomplishments?

## **2. Will there be a problem in the future?**

Yes. The recent reduction in General Fund required an increase in pile burning fees. Also, the recommendations that are being proposed by the committee to maintain the program, and meet Western Regional Air Partnership (WRAP), Regional Haze Rule (RHR) and potential PM2.5 standard requirements will impact the program's funding. The cost of the program would be expected to increase because of complexities associated with increased monitoring and administration (i.e., forecasting, data systems, etc). However, the funding issues, if not addressed, will continue.

The committee has discussed the need for a Biomass Utilization Specialist (see Matrix Question H). More detailed forecasting services may be required throughout the state (and to meet interstate coordination needs), especially if burning on federal land substantially increases, requiring the hiring of at least one additional meteorologist. Each of the Biomass Utilization Specialist and Meteorologist positions would cost approximately \$90,000 per year, including services and supplies. EPA's Regional Haze Rule may require more extensive program activities that may not be met under the existing funding model.

### **3. What are the options to deal with the current problems?**

The committee believes that where fees are charged, they should be uniform and consistent across all ownerships. Both private landowners and the Federal land managers should contribute commensurate with needed program service levels. The committee believes that since the program also exists to help protect the health and well being of all of Oregon's citizens, an increased contribution to program costs should be paid by the General Fund.

Smoke management programs in other states are funded in a variety of manners. Washington's program, for example, is funded largely through its General Fund.

Daily planning and reporting of burning, as recommended by the committee for all landowners, may add to program and burners' costs. The committee believes that, in general, fees charged should be uniform and consistent across all ownerships. However, it is recognized that land values east of the Cascades are less than forestland values west of the Cascades (i.e., rangeland/Class 2 vs Class 1 forestland). Similarly, Class 3 grazing land in southern Oregon has a different value than Class 1 forestland in that area. Reporting of data on burn units for future emission inventories and RHR implications should be accounted for in the cost structure.

The committee considered that one way to assess fees would be through a system based on emissions produced. That is, those producing more smoke (burning more fuel) should pay more for smoke management services than those burning comparatively less fuel, and thus producing fewer emissions. The committee doesn't recommend an emissions-based fee system. An emissions-based fee system has proven difficult to manage in Washington State, and may not be easily implemented in Oregon. This option was also considered when the fee system was originally established in Oregon, but not accepted because of potential equity issues when determining fuel consumption and emissions.

Federal land managers have expressed a desire to be assessed an annual flat fee for smoke management services. This concept would reduce administrative costs incurred by ODF and federal agencies and would also ensure a consistent federal funding base for ODF.

Private land owners could be invoiced by ODF monthly as is currently done, or charged a flat, yearly assessment as proposed for the federal agencies. Fees could be included in the timber harvest tax assessment and be billed by the Department of Revenue. A landowner assessment could also be implemented. Each of these options would be administratively simpler, but would affect landowners and timberowners whether or not they engage in prescribed burning.

#### **4. Will these options require changes in statutes, rules, or directives?**

If it is decided that a portion of the program should be funded by an increase of the General Fund portion, then legislative approval would be required. Otherwise, any changes implemented would result in changes to the burn fee rule, at a minimum. Statutes would need to be changed if maximum burn fee amounts would be increased or if other funding methods were to be implemented (i.e., flat fee or uniform statewide assessment).

#### **5. What are the barriers and opportunities?**

Several types of silvicultural burning are currently exempt from fees. These exemptions include burning for forest health reasons, burning areas two acres or less in size, burning right-of-way slash, burning some landing piles, burning on land other than Class 1 forestland, and WFU burns. Also, the SMP currently does not apply to rangeland burning east of the Cascades. Forestland burning outside of ODF Protection Districts within the Restricted Area in western Oregon is not currently managed under the SMP.

The committee believes that burning on all forest and range lands in the state should be regulated, as per the previous discussion in Matrix Question B. All burning would be tracked as required by the RHR and to address any PM2.5 standards issues. Initial changes under this proposal would not require fees for those burners who do not currently pay to support the program.

Adding additional forestland classifications (beyond Class 1 forestland) to the fee structure could be controversial. Any effort that would add significant financial or administrative requirements to landowners could have a negative effect that results in increased fuel loading and fire hazards. However, charging fees for these currently exempt forms of burning could result in increased revenues, or a reduction in the fees currently paid by other forestland managers. This could be viewed by some as an opportunity and by others a barrier. Charging a landowner a flat fee assessment may be deemed unfair to landowners who do not burn and would therefore be asked to monetarily support a program in which they perceive they have no stake.

The Oregon Legislature has continually been looking at reducing the General Fund support to state programs, not adding programs that could increase it. Thus, the option of seeking additional General Fund support could be a formidable barrier. Increasing the knowledge and understanding of the program's success in contributing to improved public health, safety, and forest fuels reduction could help change this opinion.

Currently, the program is funded as part of the ODF Private and Community Forests Program. An opportunity for broader funding may be created by moving the program into the ODF Fire Protection budget. This would appear to be a logical change since the program operates through the Protection from Fire Program and provides fire weather support and significant support to fire danger rating activities.

The Oregon Forestland-Urban Interface Fire Protection Act of 1997 (SB 360) requires fuels treatment in identified wildland-urban interface areas. Hazardous fuels treatment could result in the use of fire in these areas. At this time, it is unclear as to the potential magnitude and impacts from these treatments and what Smoke Management Program services would be required for such burning.

Staffing for the current (and near future) program described in the matrix questions is considered to be adequate. However, should seven day per week services be required year-round or more intensive and site specific forecasting be needed, then at least one additional forecaster would need to be hired. This is expected to cost about \$90,000 annually.

Other data and technology gaps may also be a barrier for future operations of the program. Forecasting equipment and infrastructure need to be updated and improved. A more intensive upper air meteorological data network could improve the program's ability to meet short-term and micro- or meso-scale weather forecasting needs. Technology could be updated, but is not critical for the continued viability of the program as it currently operates. The purchase of data systems and instrumentation (e.g., one NOAAPORT and two SODARs) would cost about \$350,000.

Funding for the additional meteorologist and equipment is not currently available, which could be considered a barrier. This position and equipment would help keep the program moving forward. Future needs as identified by the committee, indicate that there will be gaps between current services and what the program requirements will be to meet increased burning, more detailed forecast services and more land under program administration.

Lack of a Biomass Utilization Specialist is considered to be a barrier to fully developing alternatives to burning as a means to reduce fuel loadings and increasing utilization, as described in Matrix Question H. The cost of this position is also estimated to be about \$90,000 annually.

Basing fees on actual emissions produced is considered by many to be fair and equitable, but it is data intensive and estimates of actual fuels consumed would need to be closely monitored. This may be difficult to accomplish administratively for land managers, landowners, and ODF, and is considered to be a barrier.

## **6. How will success be measured in the future?**

Success can be considered as a fully operational program, with no breaks in forecast or other program services, and full funding that allows burning to continue without adversely impacting air quality standards or impeding the use of the tool for forest and range management purposes. Consistent and stable support and funding for the program that allows for adequate staffing, the acquisition of services and new technology as needed to meet all program objectives (i.e., public health, landowner objectives, visibility protection, Clean Air Act provisions) would also be a measure of success.

## **7. Committee recommendations:**

1. ODF should develop a business plan that identifies positions, technology, and program enhancement costs to implement recommendations of this committee.
2. Do not charge a fee for WFU burning. This program is quite small, and is not expected to grow appreciably in the near term. Any fees paid by the federal land management agencies can be assumed to cover WFU fires by including WFU fire acreage in the program. Continue to consider the impacts of smoke from WFU fires in the decision to permit them to burn. Costs for WFU burning would be included in the federal payments.
3. Allow the USDA Forest Service and Bureau of Land Management (BLM) to pay an annual flat fee for smoke management services. Base each agency's fee on the portion of acres burned that each contributes to the state's total. Do not assess a fee to the National Park Service or the Fish and Wildlife Service. These agencies burn a comparatively small amount and any fees required of these agencies can be paid by the BLM, a sister agency in the US Department of the Interior (DOI) by including burning acreage from these entities in the program.
4. The Smoke Management Program will remain available to the sovereign Indian nations if they choose to use it. Reporting requirements and fees that are currently paid should be continued on tribal lands where participation exists. Burning on additional lands will remain exempt from fees for the program unless agreement is reached with the nations that funding support is acceptable. However, ODF should coordinate with EPA and tribes on Tribal Implementation Plan development.
5. General Fund dollars are an appropriate component of the program. ODF should develop a strategy to secure additional General Fund dollars.
6. Add another meteorologist to the program, in order to provide for increased services over the near term.
7. Add a Biomass Utilization Specialist to the program. This recommendation is consistent with recommendations of several work groups in the Fire Program Review and is discussed in length in Matrix Question H of this report.
8. The standing Smoke Management Advisory Committee should convene to address funding issues. The standing committee should be directed to include a wide variety of landowners who burn and don't burn to provide input to ODF on a funding structure. This committee would consider, but not be limited to the following concepts:
  - a. Monetary incentives for using alternatives to burning (i.e., tax credits, discounted fees).

- b. A working capital fund to collect monies to purchase new equipment and services to improve technology and infrastructure. A portion of the burn fees should be the source of revenue for this fund.
- c. Fees charged for all Class I forestland with no exemptions. Rangeland should be part of the daily burning inventories, but fees would not be assessed on this type of burning. Continue to assess fees to private landowners on a per acre basis in areas currently paying fees. Assess a flat fee for each acre, regardless of the type of burn conducted, in order to minimize record keeping and monitoring.
- d. A minimum fee for any burning in areas where fees apply.
- e. Include program fees in the harvest tax, which minimizes ODF role as a bill collector.

## **Matrix Question J:**

**Can effective communication and education of the public and natural resource managers, regarding the program, improve operational abilities?**

### **1. Is there a problem?**

Yes. Much of the general public does not realize that Oregon has a smoke management plan in place to protect air quality, nor do they have any way to judge its effectiveness. While most forest landowners and natural resource managers are aware of the Oregon SMP, many are not very familiar with how it works and there is some confusion over its requirements (i.e. reporting). Therefore, there is a need to improve education and communication with both the general public and, to some degree, with landowners and natural resource managers.

Another concern is coordination among state agencies for the various types of burning and the confusion this can cause with the public. Forestry, agricultural, and general open-burning programs in Oregon are run by different agencies and jurisdictions. While most of the agricultural field burning and forestland prescribed burning occur at different times of the year, there is still considerable overlap in terms of different sources of burning operating on a given day. The greatest need for coordination would appear to be between general open burning, which is regulated by DEQ, counties, and local air quality agencies, and forestry and agricultural burning, which are regulated by ODF and ODA, respectively. Better education and communication is needed with the public to explain the rules and programs that apply to these different types of burning and how, on a given day, the public can find out who to contact if there is a smoke problem.

The public needs to be better informed about the benefits of prescribed burning, whether to reduce fuels from timber harvest activities, for ecological restoration, or for protection from wildfire, especially near the wildland/urban interface areas. The public also needs to know how the Oregon SMP has been an effective program in protecting air quality and minimizing smoke impacts. Equally important is communication and accountability. The SMP needs to be responsive to public complaints about smoke impacts when they occur.

Natural resource managers and landowners and program administrators need to know details about the SMP. New management trainees often do not understand the ‘why’ of the SMP. Even experienced managers know little about the basic regulations contained within the SMP. Managers are often frustrated by SMP regulations in general, which affects how, what, and when they can burn. This is seen as creating additional burdens that keep them from accomplishing their burning objectives.

Finally, making the entire state a regulated area under the SMP will dictate the need for new outreach, particularly to those landowners (some forest and rangeland owners) not previously regulated under the SMP.

### **2. Will there be a problem in the future?**

Yes. Increases in the state’s population, combined with the need for increased burning by private landowners, and state and federal land management agencies, are likely to create

problems in the not-too-distant future. This is particularly true in areas of the state with a rapidly expanding wildland-urban interface (WUI). Landowners and land managers will need to become familiar with SMP regulations so that impacts are avoided in the ever-changing WUI and surrounding communities.

The passage of Senate Bill 360, the Oregon Forestland-Urban Interface Fire Protection Act of 1997, requires homeowners to clean up and create defensible space around their homes and driveways. Often times, homeowners cut vegetation, pile it, and later burn it when it is safe to do so. This may create local smoke problems within subdivisions and between neighbors. Promoting alternatives to burning to homeowners and homeowner groups would be important for reducing conflicts and local smoke impacts in the greatest proximity to individuals.

As the population in the state continues to grow, a key measure to the continued success of the Oregon Smoke Management Program will be the public's tolerance and acceptance of smoke impacts. Public education, communication, and accountability will likely become increasingly important in the future.

### **3. What are the options to deal with it?**

- A. Set up integrated procedures and standards for handling smoke complaints. The goals would be to be accessible to the public, to provide accurate information on the smoke problem, and to provide the best information possible on the cause of the smoke generating the complaint. Although this could be incorporated into a website, many people prefer talking to a real person when lodging a complaint. These procedures need to ensure that a knowledgeable person responds to each complaint. The procedures should also consider responding to certain complaints by letter, based on severity of the smoke problem, and including educational material (see B below) that highlights the objectives and operation of the Oregon Smoke Management Program. Unless additional ODF personnel can be hired through increased funding, this effort will need to reflect improvements that can be made with existing staff and resources. This option dovetails with Matrix Question D, which suggests better tracking of emissions, and Matrix Question A/K.
- B. Develop factsheets, brochures, and website information about the Oregon Smoke Management Program that targets specific groups, (i.e., ranchers, WUI residents, community organizations and citizen groups). Distribute information on a periodic basis to these groups.
- C. Create special smoke education kits that could be used by practitioners (air quality specialists, media, etc.) for communicating and getting the word out about the SMP and how it works for the benefit of all Oregonians. These kits would be distributed to air quality managers and regulators.
- D. Develop direct communication via one-on-one, direct letter, and meetings with local stakeholders, i.e. landowners, tribes, fire districts, OFRI, Oregon Agriculture Council, Oregon Seed Growers, Oregon Cattlemen's Association, Oregon Wheat Growers, Oregon Farm Bureau, Keep Oregon Green, Oregon Grange, Oregon Small

Woodlands Association, Oregon Forest Industries Council, 1000 Friends of Oregon, The Nature Conservancy, etc.

- E. Develop coordinated outreach with other groups, such as the Pacific Northwest Wildfire Coordinating Group (PNWCG). The PNWCG has a prevention and education committee that works on developing educational and outreach products.
- F. Ensure that education and communication are part of the duties of the proposed ODF Biomass Utilization Specialist position (see Matrix Question H).
- G. Provide a mandatory segment on how the SMP works within training modules for managers.
- H. Provide a one-page description of the SMP to operators and landowners when they file a 'notification of operation' for timber harvesting. This same concept could be used for those conducting prescribed burning, such as federal land managers, to continually educate managers about the SMP.
- I. Strengthen coordination with ODF, ODA, and DEQ by assigning a liaison to regularly discuss issues or pending issues. The goal is to create more open dialog between agencies.
- J. Develop annual communication and outreach plans for the program in a coordinated fashion with cooperating agencies. When the burning season is getting underway, make sure that the ODF Agency Affairs staff issues a news release that burning is being conducted under the requirements and regulations of the SMP. This outreach effort could be regionalized to improve efficiencies and ensure consistent messages. It should be noted that this is done in some locations (i.e., the Deschutes National Forest and some forest protection districts), but the effort is not consistent across the state. Successful outreach efforts should be shared.
- K. Develop an integrated website that provides an overview of the SMP, describes the regulations for the use of fire, identifies the needs and trade offs and value of the use of fire under controlled conditions, and provides contact information about specific aspects of the SMP. Create links to other agency websites and ensures the information on these websites is consistent and accurate.
- L. Work with OFRI to develop a special report on the topic of smoke and the SMP. Publications produced by OFRI have been a highly successful communication tool. Use the smoke management issue to tie previous publications together to complete a forest management series rotation. Previous publications discussed topics such as sustainability, fire in the forests, forest fire risk and restoration and the federal Healthy Forests Initiative.

OFRI also educates the forestry work force (mill workers and others) and if a fact sheet could be developed to educate them, they could then answer forestry-related questions from friends and neighbors. In addition, smoke-related questions could be added to OFRI's public opinion survey, (which is repeated every few years) to determine what Oregonians think when it comes to forestry issues and concerns. Repeat surveys could indicate whether the public is aware of the Smoke Management Program, and if educational efforts have been successful in changing the level of understanding or acceptance of the program.

**4. Will these options require changes in statutes, rules or directives?**

The items discussed above can be resolved through changes in the directives and operational procedures. Changes to statutes or rules are not needed.

**5. What are the barriers and opportunities?**

There is a great opportunity to better communicate with, and educate, the public and media about the SMP and how it operates and functions. Improved communication can be accomplished with some of the media-related items mentioned above. Public education efforts could be enhanced by partnering with OFRI to educate Oregonians about smoke and the SMP.

Consistent communication and education efforts would require a long-term commitment. Multiple approaches would be needed to reach various segments of the public over time but this effort fits nicely with the goals and objectives of the Forestry Program for Oregon (FPFO) and with those of other public education partners (i.e., Keep Oregon Green, OFRI). Finally, there is an opportunity here to develop an improved complaint tracking system to gauge how the program is doing, and to use this information to make improvements.

Funding to jump-start a coordinated educational program is probably the biggest barrier to implementation. Also, legislative approval would be needed for the ODF Biomass Utilization Specialist position (Matrix Question H). A portion of the duties of this position would include education and outreach. Funding would be needed to support an integrated complaint logging and tracking effort, which would also require hiring personnel to receive and track complaints.

**6. How will success be measured in the future?**

From the standpoint of the general public, measuring success of the Oregon SMP can be difficult. Some smoke impacts are going to occur each year. Public acceptance of infrequent smoke impacts will be based, to a certain degree, on the effectiveness of public education and communication efforts.

One indicator of success is simply a trend in the number of annual complaints and recorded smoke impacts that declines or is steady from year to year. Significant increases in complaints and impacts would be an indicator that improvements are needed.

Another indicator of success is in the type of complaints received. Reoccurring complaints about frequent smoke impacts, complaints that cite lack of responsiveness from ODF, and complaints from citizen groups, civic leaders, and local governments are clearly a concern. Increases in the number of complaints to DEQ or the Governor's office are also a concern. Keeping complaints such as these to a minimum can be considered a measure of success.

Another measure of success would be a record showing that ODF sent follow-up responses for these types of complaints. Also, the OFRI surveys could indicate whether the public is aware of the program, and if educational efforts have been successful in changing the level of

understanding or acceptance of the program. Finally, a more direct measure of success would be to conduct periodic surveys on public satisfaction with the Oregon Smoke Management Program. This would require additional funding and resources.

A measure of success for natural resource managers and landowners would be that they embrace the SMP and view it as helping get their job done. Having nearly all who are involved with the direct management of prescribed burning on federal, state, and private forestlands receive the training and tools they need to operate and comply with Smoke Management Plan regulations would be another measure of success.

## **7. Committee recommendations**

1. Develop and implement integrated procedures and standards for taking and following up on complaints.
2. Develop a comprehensive education and outreach program for the Smoke Management Program that may include any of the following activities:
  - a. Develop smoke management education kits in cooperation with other agencies to be used by agencies that target specific groups and provides consistent and coordinated messages.
  - b. Provide a one-page description of the program to operators and landowners when they file a 'notification of operation.'
  - c. Include information on the Smoke Management Plan in various training opportunities and training modules.
  - d. Develop an integrated website that describes the SMP and how it dovetails with other smoke management programs in the state.
  - e. Duties of the Biomass Utilization Specialist (from Matrix Question H) should include education and outreach. However, because this is a big job, a Smoke Management and Communication Outreach Committee should be formed and coordinated by the specialist position. This committee would identify the educational task to be done, who would do it, and coordinate educational efforts with other programs and agencies. The committee could be comprised of PNWCG, ODA, OFRI, KOG, ODF Agency Affairs, and representatives from other agencies involved in smoke management. If this position is not created and funded, we suggest that this committee still be formed.
  - f. Work with OFRI to develop a color publication highlighting how the Smoke Management Program works and protects Oregonians. Also, develop questions specific to the topic of smoke that can be incorporated into OFRI's public opinion survey that is conducted periodically to gauge the public's knowledge and attitudes about smoke.

3. Improve coordination among state agencies, local air quality managers, land managers, and partners to improve education and provide timely feedback to the public through a variety of methods identified in Recommendations 1 and 2.

## **Matrix Question K:**

**What are the best approaches to address visibility issues, intrusions, and citizen complaints of nuisance smoke?**

The committee initially began discussions of this question as a separate topic. However, they found many of the same issues, concerns, and options were part of the responses to Matrix Question A. Therefore, this discussion and recommendations are included in Matrix Question A (also referred to as Matrix Question A/K).

## VI. Recommendations in Brief

Several of the committee recommendations may be perceived as controversial by those who have been involved with the Smoke Management Program for a long time, as well as those individuals operating outside the current Restricted Area. The committee recognizes these stakeholder concerns, but we remind program users that with anticipated increased regulations it is far better and in everyone's best interests to design changes that maintain or improve operational abilities before changes are mandated or legislated for program users. Although the committee did consider economic, social, and operational implications for all recommendations, the committee did not let these potential implications constrain the recommendations for improving the Smoke Management Plan.

The committee, as a result of their extensive deliberations, proposes that the overarching goal of the Oregon Department of Forestry's Smoke Management Program read as follows:

*To provide the maximum opportunities for land management objectives to be met while maintaining air quality, health standards, and visibility objectives. Burning can be managed more effectively with improved coordination, communication, technology, public education, increased utilization of forest fuels and maximizing burning during optimum burning conditions whenever possible.*

## **Matrix Question A/K**

**Are Air Quality Standards Being Met? This includes the committee's Subset K: What are the best approaches to address visibility issues, intrusions, and citizen complaints of nuisance smoke?**

### **Committee recommendations**

1. Continue to take all necessary steps to assure current and future NAAQs and Regional Haze Rule requirements are met.
2. Develop reporting systems for daily and annual Emission Inventories for both wildfire and prescribed burning.
3. Increase real-time air monitoring in SSRAs, as needed.
4. Improve the citizen complaint tracking system (see Matrix Question J). Use this system to improve the Smoke Management Program. Use the complaint system as an educational outreach opportunity.
5. Improve the smoke tracking system by strengthening the real time observation of smoke as a means to enhance ODF's forecasting ability.

## **Matrix Question B:**

**Are burning objectives being met?**

### **Committee recommendations**

1. The entire state should become a Regulated Area. Smoke Management Plan Rules should expand the program from Class 1 forestland to all forestland now within and outside state protected areas. This decision affects all forest, rangeland, underburning, maintenance, habitat restoration, and forest health burning within the state of Oregon and will require that all burns that are accomplished be reported, tracked, and monitored. Discontinue the use of Restricted Area terminology in lieu of Regulated Area references. These changes will allow total smoke emissions to be more effectively tracked and inventoried as required by the Regional Haze Rule.
2. Maximize burning opportunities through utilization of ‘best day’ burning strategies while minimizing ‘marginal day’ burning in proximity to SSRAs and other smoke sensitive areas. This could be accomplished through improved forecasting and tracking capability and technological advances and field data measurements.
3. Provide access to “Photo Series for Quantifying Forest Residue” for managers to better quantify fuel volumes.
4. Develop a formal protocol to enable local managers to work with landowners using department guidance to prioritize units to be burned.
5. Eliminate references in the SMP Administrative Rule to “per 150,000 acres on any one-day.”

## **Matrix Question C:**

**What changes may be needed to address projected increases in prescribed burning for forest health<sup>3</sup> reasons?**

### **Committee recommendations:**

1. Review how the land manager determines total tons consumed and how ODF calculates emissions, in order to more accurately reflect the amount of emissions produced.
2. Forest health burning will no longer be exempt from fees.
3. Prior to the declaration of a Wildland Fire Use fire, the responsible federal land management agency will consult with the Oregon Smoke Management Program on potential air quality impacts.
4. Adopt the definition of prescribed burning (fire) as found in the first line of National Fire and Aviation Executive Board Directives Task Group Briefing Paper #03 dated January 19, 2005, as “Any fire ignited by management actions to meet specific objectives.”
5. Assess staffing and technology needs to meet anticipated increases in forest health burning based on annual surveys of land management agencies.

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<sup>3</sup> Described in Oregon Administrative Rule (OAR) 629-43-041, section 3(d) A-E.

## **Matrix Question D:**

**How should wildfire versus prescribed fire impacts be addressed?**

### **Committee recommendations:**

1. Establish a smoke tracking system for all wildfires based on existing state and federal reporting and data collection procedures.
2. Implement a statewide system to collect both prescribed fire and wildfire emission data in order to develop emission inventories (EI).
3. Compare the EIs developed from this tracking system to monitoring data to assess whether there are actual reductions in emissions resulting from prescribed burning vs. wildfire.

## **Matrix Question E:**

**Are changes needed to improve regional air quality and visibility in the Oregon Smoke Management Program?**

### **Committee recommendations:**

1. Address interstate coordination between Oregon (involving DEQ and ODF), Washington, Idaho, Nevada, and California through interagency agreements or MOU. Daily smoke management coordination of planned burning activity, projections of interstate smoke transport, and emissions reporting should be included. These agreements should also address regional smoke management coordination of agricultural and rangeland burning.
2. Address intrastate coordination of prescribed fire, agricultural, and rangeland burning through agreement or MOU among ODF, DEQ, ODA, tribes, LRAPA, rural fire districts, protection associations, and the counties that operate local air quality and smoke management programs.

## **Matrix Question F:**

**Are Designated Areas and Smoke Sensitive Areas adequately identified?**

### **Committee recommendations:**

1. Establish Smoke Sensitive Receptor Areas (SSRAs).
  - SSRAs are defined as areas around communities and ‘areas’ where smoke intrusions should be avoided. These generally will be principal population centers and/or a sub-region (i.e., the Willamette Valley).
  - Criteria to consider when making additions/revisions to the SSRA list should include:
    - Frequency of intrusions and complaints.
    - Nature of other pollution impacts.
    - Proximity to areas of increased prescribed burning.
    - Existence of any known tracking or monitoring in potential SSRA.
    - Population, smoke sensitive groups, meteorology and trends.
    - Existing wood stove curtailment programs.
    - Eliminate ‘source’ terminology (i.e., Special Protection Zone terminology).
    - Eliminate current ‘Designated Areas’ definition in administrative rule.
2. SSRAs should be comprised of the existing Exhibit 2 Map and the communities specified in the northeast Oregon and Lake and Klamath County Agreements.
  - Willamette Valley is an SSRA. The area includes portions of Benton, Clackamas, Lane, Linn, Marion, Multnomah, Polk, Washington, and Yamhill Counties (using current Exhibit 2 map).
  - AQMAs or non-attainment areas (boundaries will be those as used by DEQ). This includes: Lakeview, Klamath Falls, LaGrande, Oakridge, and Medford-Ashland-Grants Pass area (Eugene/Springfield is within the Willamette Valley sub-region).
  - Astoria, Tillamook, Lincoln City, Newport, Coos Bay-North Bend, Roseburg, and Bend (Exhibit 2 map).
  - Baker City, Burns, Enterprise, John Day, LaGrande, and Pendleton (northeast Oregon Agreement will need to be re-assessed by parties).
  - The SSRA boundary for the above communities will be the urban growth boundary for all cities outside the Willamette Valley sub-region and the Medford-Ashland AQMA.
3. Retain Other Areas Sensitive to Smoke category and definition.

**Matrix Question G:**

**Will committee recommendations require a change in statutes, rules, directives, or require a MOU?**

**Summary Statement or Table**

Those recommendations in bold indicate some of the more far reaching recommendations.

Recommendations	Statute, Rule, or Directive Change, development of a MOU, or other ODF action needed.
AK-1	Directive
<b>AK-2</b>	<b>Rule</b>
AK-3	Other ODF action
<b>AK-4</b>	<b>Changes to procedural guidance</b>
AK-5	Other ODF action
<b>B-1</b>	<b>Statute and Rule</b>
B-2	Rule and Directive
B-3	Other ODF action
B-4	Directive or other ODF action
B-5	Rule
C-1	Other ODF action
<b>C-2</b>	<b>Statute and Rule</b>
C-3	Directive
C-4	Rule
C-5	Other ODF action
<b>D-1</b>	<b>Rule</b>
<b>D-2</b>	<b>Rule</b>
D-3	Other ODF action
E-1	MOU
E-2	MOU
<b>F-1</b>	<b>Rule and Directive</b>
<b>F-2</b>	<b>Rule</b>
F-3	Rule
<b>H-1</b>	<b>Rule and Directive</b>

H-2	Changes to procedural guidance
<b>H-3</b>	<b>Legislative approval needed</b>
H-4	Rule
H-5	Rule
<b>I-1</b>	<b>Other ODF action</b>
I-2	Rule
<b>I-3</b>	<b>Statute (?) and Rule</b>
I-4	Other ODF action
<b>I-5</b>	<b>Legislative approval needed</b>
<b>I-6</b>	<b>Legislative approval needed</b>
I-7	Legislative approval needed
<b>I-8</b>	<b>Rule and possibly legislative approval</b>
J-1	Changes to procedural guidance
<b>J-2</b>	<b>Changes to procedural guidance</b>
J-3	Other ODF action

## Matrix Question H:

**What feasible alternatives to prescribed burning exist, and how can they best be implemented?**

### Committee recommendations:

1. Increase commitment to alternatives to burning by revising OAR 629-043-0043 (1) as shown below:

*(1) Objective: To prevent smoke resulting from burning on forest and range lands from being carried to or accumulating in Designated Areas or other areas sensitive to smoke, and to provide maximum opportunity for essential forest and range land burning while minimizing emissions; to coordinate with other state smoke management programs; to ~~conform~~ **comply** with state and federal air quality and visibility requirements; to protect public health; and to **promote the** reduction of emissions **by encouraging cost effective utilization of forest and rangeland biomass, alternatives to burning, and alternative burning practices.***

2. Identify a process in the Operational Guidance for land managers to evaluate the feasibility of using alternatives and emission reduction techniques (ERTs) prior to burning, and include a reference and description of the two WRAP documents.
3. Create a new position at ODF for a Biomass Utilization Specialist.
4. Develop a tracking system and implement an up-to-date database on use of alternatives to burning and ERTs.
5. Provide land managers with greater economic incentives, and other incentives or rewards, for using alternatives.

## **Matrix Question I:**

**What does the SMP truly cost; and how can it best be funded for today and tomorrow?**

### **Committee recommendations:**

1. ODF should develop a business plan that identifies positions, technology, and program enhancement costs to implement recommendations of this committee.
2. Do not charge a fee for WFU burning. This program is quite small, and is not expected to grow appreciably in the near term. Any fees paid by the federal land management agencies can be assumed to cover WFU fires by including WFU fire acreage in the program. Continue to consider the impacts of smoke from WFU fires in the decision to permit them to burn. Costs for WFU burning would be included in the federal payments.
3. Allow the USDA Forest Service and Bureau of Land Management (BLM) to pay a single, flat fee for smoke management services each year. Base each agency's fee on the portion of acres burned that each contributes to the state's total. Do not assess a fee to the National Park Service or the Fish and Wildlife Service. These agencies burn a comparatively small amount and any fees required of these agencies can be paid by the BLM, a sister agency in the US Department of the Interior (DOI) by including burning acreage from these entities in the program.
4. The Smoke Management Program will remain available to the sovereign Indian nations if they choose to use it. Reporting requirements and fees that are currently paid should be continued on tribal lands where participation exists. Burning on additional lands will remain exempt from fees for the program unless agreement is reached with the nations that funding support is acceptable. However, ODF should coordinate with EPA and tribes on Tribal Implementation Plan development.
5. General Fund dollars are an appropriate component of the program. ODF should develop a strategy to secure additional General Fund dollars.
6. Add another meteorologist to the program, in order to provide for increased services over the next term.
7. Add a Biomass Utilization Specialist to the program. This recommendation is consistent with recommendations of several work groups in the Fire Program Review and is discussed in length in Matrix Question H of this report.
8. The standing Smoke Management Advisory Committee should convene to address funding issues. The standing committee should be directed to include a wide variety of landowners who burn and don't burn to provide input to ODF on a funding structure. This committee would consider, but not be limited to the following concepts:
  - a. Monetary incentives for using alternatives to burning (i.e., tax credits, discounted fees).

- b. A working capital fund to collect monies to purchase new equipment and services to improve technology and infrastructure. A portion of the burn fees should be the source of revenue for this fund.
- c. Fees charged for all Class I forestland with no exemptions. Rangeland should be part of the daily burning inventories, but fees would not be assessed on this type of burning. Continue to assess fees to private landowners on a per acre basis in areas currently paying fees. Assess a flat fee for each acre, regardless of the type of burn conducted, in order to minimize record-keeping and monitoring.
- d. A minimum fee for any burning in areas where fees apply.
- e. Include program fees in the harvest tax, which minimizes ODF role as a bill collector.

## **Matrix Question J:**

**Can effective communication and education of the public and natural resource managers, regarding the program, improve operational abilities?**

### **Committee recommendations:**

1. Develop and implement integrated procedures and standards for taking and following up on complaints.
2. Develop a comprehensive education and outreach program for the Smoke Management Program that may include any of the following activities:
  - a. Develop smoke management education kits in cooperation with other agencies to be used by agencies that target specific groups and provides consistent and coordinated messages.
  - b. Provide a one-page description of the program to operators and landowners when they file a 'notification of operation.'
  - c. Include information on the Smoke Management Plan in various training opportunities and training modules.
  - d. Develop an integrated website that describes the SMP and how it dovetails with other smoke management programs in the state.
  - e. Duties of the Biomass Utilization Specialist (from Matrix Question H) should include education and outreach. However, because this is a big job, a Smoke Management and Communication Outreach Committee should be formed and coordinated by the specialist position. This committee would identify the educational task to be done, who would do it, and coordinate educational efforts with other programs and agencies. The committee could be comprised of PNWCG, ODA, OFRI, KOG, ODF Agency Affairs, and representatives from other agencies involved in smoke management. If this position is not created and funded, we suggest that this committee still be formed.
  - f. Work with OFRI to develop a color publication highlighting how the Smoke Management Program works and protects Oregonians. Also, develop questions specific to the topic of smoke that can be incorporated into OFRI's public opinion survey that is conducted periodically to gauge the public's knowledge and attitudes about smoke.
  - g. Improve coordination among state agencies, local air quality managers, land managers, and partners to improve education and provide timely feedback to the public through a variety of methods identified in Recommendations 1 and 2.

## **Matrix Question K:**

**What are the best approaches to address visibility issues, intrusions, and citizen complaints of nuisance smoke?**

### **Committee recommendations:**

The committee initially began discussions of this question as a separate topic. However, they found many of the same issues, concerns, and options were part of the responses to Matrix Question A. Therefore, this discussion and recommendations are included in Matrix Question A (also referred to as Matrix Question A/K).

## *Appendix 1*

### *Committee Members and Other Attendees*

## Smoke Management Review Committee

Name	Organization
Stephen Fitzgerald, Chair	OSU Extension
Stan Benson	Public
Mike Dykzeul	Oregon Forest Industries Council
Jim Brown*	Public
Lee Miller	Small Woodland
Jim Russell	USFS
Erik Christiansen	BLM
Brian Jennison**	Lane Regional Air Pollution Authority (LRAPA)/Public
Greg McClarren	Public
Geoff Babb ***	The Nature Conservancy
Gary Stevens	Jackson County
Vacant****	Lane Regional Air Pollution Authority
<b>Advisory/Support:</b>	
Brian Finneran *****	DEQ
Mike Ziolko	ODF

*\*Jim Brown resigned November 2004*

*\*\*Brian Jennison originally represented the LRAPA. His status changed to that of a public representative effective January 2005.*

*\*\*\*Geoff Babb resigned from the Smoke Management Review Committee in October 2003*

*\*\*\*\*LRAPA representatives were unable to attend meetings in 2005*

*\*\*\*\*\* Brian Finneran replaced David Collier representing DEQ*

## Other Attendees

Name	Organization
Kim Metzler	Lane Regional Air Pollution Authority (LRAPA)
Geri Cholewinski	Idanha Resident
Steve Garza	USFS - Siuslaw National Forest
Rex Storm	Associated Oregon Loggers
Sue Stewart	BLM – Proxy for Erik Christiansen
David Collier	DEQ
Felicia Sonnenschien	DEQ
Patti Gentiluomo	Department of Agriculture
Jim Little	Department of Agriculture
Harold Merritt	Plum Creek Timber
Mike White	Coos Forest Protective Association (CFPA)
Chris Cline	CFPA
Roddy Baumann	US Fish and Wildlife Service (USF&W)
Rick Gibson	ODF
Charlie Stone	ODF
Jim Trost	ODF Meteorologist
Nick Yonker	ODF Meteorologist
Noelle Saint-Cyr	Proxy for Geoff Babb
Larry Calkins	DEQ
Mike Cunningham	Bureau of Indian Affairs (BIA)
Rick Smedley	National Park Service
Chris Jarmer	Proxy for Mike Dykzeul
John Head	Proxy for Gregory McClarren
Randy Clark	Grayback Forestry
Gerry Shipps	Confederated Tribes of Warm Springs
Jim Peterson	Rainbarrel Industry Inc.
Steve Williams	Hood River County
Jerry Anderson	Boise Cascade
Rudy Frazzini	Boise Cascade
Rian Strong	McFarland Bark
David Cramsey	Roseburg Resources, Eugene
Mark Wall	Roseburg Resources, Waldport
Marvin Brown	State Forester
Tim Reinhardt	URS Corporation
Karen Willoughby	Capital Press
Ken Ockfen	ODF
David Hampton	Hampton Affiliates
Nancy Wilson	BLM - Proxy for Erik Christiansen
Mike Cloughesy	Oregon Forest Resource Institute
Rod Nichols	ODF
Rick Harvey	Douglas Forest Protective Association (DFPA)
Jim Langdon	Douglas Forest Protective Association (DFPA)

## *Appendix 2*

### *Committee Charter and Decision Protocol*

# **CHARTER OF THE SMOKE MANAGEMENT PLAN REVIEW COMMITTEE**

December 5, 2002

## **Background and Purpose**

The Smoke Management Plan is administered by the Oregon Department of Forestry (ODF) to manage prescribed burning on private, federal and other public land to protect air quality and maintain forest productivity and forest health. The SMP is approved by the Board of Forestry and the Environmental Quality Commission. The approved SMP is a part of the Oregon Clean Air Act State Implementation Plan that is submitted to the Environmental Protection Agency as part of the state's efforts to attain and maintain air quality standards. The Smoke Management Plan requires periodic review by the State Forester and the Department of Environmental Quality (DEQ) to ensure its adequacy in meeting its objectives.

The Smoke Management Plan Review Committee has been formed and charged to address this task.

## **Parameters and Assumptions**

The State Forester recognizes that smoke management rules, incentives, and voluntary measures are all important elements in an integrated effort to attain and maintain air quality standards. Committee recommendations may include regulatory or statutory changes, incentives and/or voluntary measures that address the use of prescribed fire. Committee recommendations will be evaluated by the State Forester in consultation with DEQ for adequacy in addressing forest management and air quality requirements.

The committee will seek consensus about recommendations when possible and clearly articulate the range of views when consensus is not possible. Significant differences of opinion, if any, will be highlighted in the committee's report to the State Forester. Suggested revisions to the committee charter will be subject to ODF approval.

## **Charge for the Committee (Objectives)**

Consistent with requirements of the Federal Clean Air Act, and in consideration of forest management and forest health conditions, recommend what, if any, modifications are necessary to statutes, rules and directives affecting prescribed burning and the Smoke Management Plan to meet air quality standards and to protect the health of Oregon forests.

The committee should consider, but not be limited to, questions such as:

- Are air quality standards being met?
- Are burning objectives being met?
- What changes may be needed to address projected increases in prescribed burning for forest health reasons?
- What changes may be needed to address regional (i.e. multi-state) air quality issues?
- How should wildfire vs prescribed fire smoke impacts be addressed?
- Are Designated Areas and Smoke Sensitive Areas adequately identified?
- How may the administrative rules be changed to reflect current and future fuels and operational issues?

- What are feasible alternatives to burning and how should they be applied in the administration of the Smoke Management Plan?

Committee deliberations should result in specific recommendations in a report prepared for the State Forester.

The committee will:

1. Determine the committee's decision-making process, work schedule, and meeting mechanics.
2. Develop a common understanding of the science, policy, and operational considerations for forest management, prescribed burning and air quality.
3. Evaluate how well the smoke management rules and directive meet air quality standards, recognizing that Environmental Quality Commission approval of substantive changes is required.
4. Consider the feasibility of alternatives to burning and alternative burning practices. This discussion should include consideration of the relative impacts on landowners and consideration of alternatives including non-regulatory approaches and alternatives which could achieve the desired level of protection.
5. Address how the Smoke Management Plan should be administered in the different fire and fuel regimes in the state.
6. Develop specific recommended rule wording changes, if necessary.
7. Prepare a written report identifying issues and recommendations, including the range of views and rationale when consensus is not possible. Included in the report should be any significant public comments that are received.

### **Membership, Roles, and Responsibilities**

#### Chair

Directs the development of agendas, runs the meetings, and ensures that the minutes are correct and approved by the committee.

#### Committee Members

Determine committee work schedule, analyze issues, network with others, provide input and guidance to staff, and make recommendations to the State Forester.

Stephen Fitzgerald, Chair, OSU Extension Service

Geoff Babb, The Nature Conservancy, Conservation Representative Stan Benson, Public, Hood River

Jim Brown, Public, Portland

Erik Christiansen, DOI/Bureau of Land Management Representative

Mike Dykzeul, Oregon Forest Industries Council Representative

Brian Jennison, Lane Regional Air Pollution Authority, Air Quality Representative Gregory

McClarren, Public, Bend/Redmond

Lee Miller, Small Woodland Owners, Philomath

Jim Russell, USDA Forest Service Representative

Gary Stevens, Jackson County, County Representative

### Technical Staff

Provide technical and policy information and advice, answer questions on technical, policy and legal issues, and offer issue presentations to aid committee deliberation. Identify scientists and others that have information of value to the committee and invite these parties to present information to the committee. Provide logistical support.

The following staff will sit at the table to provide support:

Protection/Smoke Management: Mike Ziolk, ODF  
Air Quality: David Collier, DEQ  
Administrative Support – Cindy Smith, ODF

### Other State and Federal Agency Participants

Provide technical and policy information and advice upon request of the committee and answer committee questions.

### Citizen and Scientist Participants

Provide information and input to the committee at specified times to be determined by the committee.

### **Statement of Individual Commitment and Accountability; Working Guidelines**

Working guidelines are statements of behavior, which, if mutually understood, accepted, and supported by members of a group or team, improve the flow of useful information and create a climate for increased effectiveness and enjoyment of work.

Members commit to participate actively and will strive to attend all meetings and field trips.

Members will foster collaborative discussion by:

- Listening actively and demonstrating that you understand.
- Making clear if you are speaking for yourself or the group.
- Respecting the difference between fact and opinion.
- Avoiding jargon and ‘loaded’ words.
- Remaining focused on the charges outlined in the charter and refraining from pursuing additional issues or objectives.

Members will be respectful of a diversity of opinion and allow for an open, constructive dialogue.

Members will be sensitive to time constraints and keep remarks concise and to the point.

Members will focus on interests/ideas not on positions and persons.

Members will strive for seeking a range of information sources, recognizing that good information is needed for good decisions.

Members recognize that appropriate humor is important to enjoying the process and building a team and that inappropriate humor may have the opposite result.

## **Decision Protocol for the Smoke Management Plan Review Committee**

**Committee Charter:** The committee's charter directs the committee to seek consensus when possible and clearly articulate the range of views when consensus is not possible. Significant differences of opinion will be included in the committee's report.

**Quorum:** A quorum of nine committee members or designated proxy must be present to deliberate on recommendations for inclusion into the committee's report.

**Voting:** Each of the eleven interests, as identified in the committee charter, will have one vote.

**Proxy:** Committee members will designate one individual as their proxy for the duration of the committee's deliberations. The proxy will not be a chartered committee member and will not be designated as a proxy for more than one committee member.

**Support:** 'Consensus' support means all committee members, present or represented by their proxy at the meeting where the recommendation was discussed, expressed support. 'Strong Agreement' means no more than three of the eleven committee members expressed nonsupport. 'Majority' support referenced in the body of the report means at least six committee members expressed support, but two to five committee members expressed nonsupport.

**Options:** Options considered and discussed by the committee but not supported by consensus, strong agreement, or majority agreement will be documented in the committee's report. The specific views and points of disagreement between committee members will be included.

*Appendix 3*

*Letter to the Board of Forestry*

*Forestry Program for Oregon*

April 22, 2003

Mr. Howard Sohn, Chair  
Oregon Board of Forestry  
c/o Oregon Department of Forestry  
2600 State Street  
Salem, OR 973310

Dear Mr. Sohn and Board of Forestry Members:

The Oregon Department of Forestry's Smoke Management Review Committee appreciates the opportunity to provide comments on the Forestry Program For Oregon (FPFO). We believe this to be an important document that will provide the vision for sustainable management of Oregon's forests. Our committee represents diverse groups that are impacted by the Oregon Department of Forestry's Smoke Management Program. With our diverse views towards forest management, public review, operational practices and other differences, we offer general comments and suggestions for refinement of the FPFO. These comments do not necessarily reflect a consensus of our committee.

We have had the opportunity to review and discuss the March 5<sup>th</sup>, 2003 draft. The draft focuses primarily on the benefits of active forest management in maintaining clean water and healthy soils. However, we found no reference to air quality and the role the Smoke Management Program (SMP) has played in maintaining air quality in Oregon. Since soil, water and air resources are basic components of Oregon's livability, we believe the role of the SMP should be referenced, as appropriate, throughout the FPFO. Our committee suggests this highly effective program is a critically important component of the FPFO Strategies.

ODF's Smoke Management Program has been the leader among western states in maintaining or improving air quality while allowing sufficient burning opportunities for enhancement of forest productivity and health and the reduction of fuels. This has been a significant challenge due to increasing public demands and expectations for clean air, visibility, and maintaining air quality standards.

There will continue to be challenges to meet the needs and expectations of private forestland owners and state and federal land managers in ensuring stable and sustainable ecosystems as competition for available air shed capacity increases. This is because of anticipated increases in federal fuels prescribed fire treatments under the National Fire Plan and the Western Governor's 10-year Comprehensive Strategy.

The expected increase in fuel hazard abatement activities will require better coordination and monitoring, more sophisticated forecasting, and increased educational efforts. In addition, industry and public acceptance of alternatives to burning may offer the best opportunity to reduce emissions. Alternatives include effective utilization and mechanical treatments of excess forest fuels.

Increased demand for limited burning opportunities could negatively impact the timely establishment of the next rotation and the statutory reforestation “free-to-grow” requirement. If managers do not have the option of burning to reduce vegetative competition in the early stages of plantation establishment, this may result in an increased use of herbicides. The use of fire more closely approximates a natural process, and poses fewer long-term perceived risks to desirable vegetation, wildlife and humans. The contributions to restoring critical wildlife habitat through the use of fire is also far greater than with herbicide use.

While we are not, in general, providing specific wording recommendations, we think the most appropriate locations for placement of references to the Smoke Management Plan and clean air would be:

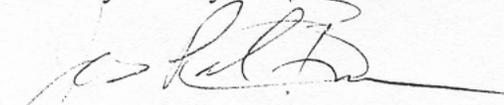
1. The Board of Forestry's Mission Statement on page 9 should be amended to include a reference to clean air in the third bullet.
2. Strategy F, described on page 10 should be amended to add an air quality component in addition to the ecosystem and watershed components.
3. The background section on Strategy F, which begins on page 60, should be revised to include and expand references to prescribed fire, air quality and the success of the Smoke Management Plan. Line six on page 65 could be modified to acknowledge the success of the Plan.
4. One specific wording change we suggest in this section is on Page 64, where the sub-title "Air Pollution" would be changed to "Air Quality" and the following wording be inserted as a second paragraph in that sub-section:

"Visibility in forested areas is impacted not only by prescribed fire and wildfire, but also by non-forest-related air pollution from factories, vehicles, woodstoves, agricultural burning, and other sources. Restoring and maintaining visibility in Class I wilderness areas and national parks is a state and national goal under the Clean Air Act. Oregon's Class I areas have some of the best visibility in the country and the Oregon Smoke Management Plan has been instrumental in making that happen. Regional haze goals have also been established under the Act and the Plan will need to be key to ensuring that those goals are also met."

Letter – Mr. Howard Sohn  
April 22, 2003  
Page 3

There are likely many other opportunities to insert the need for prescribed burning and the clean air contributions of an integrated Smoke Management Program into the FPFO; We request that Department staff be asked to do so. The Committee would appreciate, at a minimum, that Department staff include the above four suggestions to address and recognize our concerns. The importance of the Smoke Management Plan should be recognized as a vital and direct mitigation program for clean air in Oregon while maintaining burning as a forest management tool. The Departments of Forestry and Environmental Quality have provided leadership and worked very closely to successfully manage the Smoke Management Program and that should continue.

Thank you for your time and consideration of our comments and suggestions for the FPFO.



Stephen A. Fitzgerald, Chairman  
Smoke Management Review Committee

James Paul Brown for Stephen  
Fitzgerald

SAF:cls

## *Appendix 4*

*Letter to the State Forester*  
*RE: The Use of Plastics on Burn Piles*  
*and*  
*Memorandum of Understanding*  
*Between The*  
*Oregon Department of Forestry*  
*And The*  
*Oregon Department Of Environmental Quality*  
*Re: The Use Of Plastics On Burn Piles*

\* The USFS commissioned report "Review of Potential Air Emissions from Burning Polyethylene Plastic Sheeting with Piled Forest Debris" from the URS Corporation, October 28, 2003, mentioned in these documents can be found on the web at:  
[http://oregon.gov/ODF/FIRE/SMP/smokemgt\\_onthe\\_web.shtml](http://oregon.gov/ODF/FIRE/SMP/smokemgt_onthe_web.shtml)



# Oregon

Theodore R. Kulongoski, Governor

## Department of Forestry

State Forester's Office

2600 State Street

Salem, OR 97310

503-945-7200

FAX 503-945-7212

TTY 503-945-7213 / 800-437-4490

<http://www.odf.state.or.us>

January 27, 2004

Marvin Brown, State Forester  
Oregon Department of Forestry  
2600 State Street  
Salem, OR 97310



Dear Marvin

The Smoke Management Program Review Committee has been evaluating the use of plastic -- specifically polyethylene (PE) -- to facilitate the burning of forest fuels and for the reduction of smoke emissions. The open burning of all plastics is not allowed under "prohibited substances" as defined in OAR 340-264-0060(3) and falls under the oversight of the Department of Environmental Quality (DEQ). However, not all plastics are created equal when it comes to potential toxic effects when combusted.

Evidence presented to our committee shows that burning small amounts of PE poses no risk to air quality or human health. Further, PE is very durable and provides forest operators with improved ignition and combustion efficiency, thus reducing emissions. In addition, the use of PE extends the opportunity to burn forest fuels during the optimum weather conditions to reduce health hazards from emissions and the potential for escapes preventing resource loss and additional emissions. The burning of these fuels under controlled conditions is a significant benefit for forest landowners and the general public.

After hearing an abundance of testimony and conducting a detailed literature review on toxic emissions of PE, the Smoke Management Review Committee has reached consensus and recommends that PE be allowed for "forest practices burning." Currently it is prohibited, as are petroleum products used as ignition devices under OAR Section 340-264-0060(3). We further recommend that liquid or gelled petroleum products used solely to ignite prescribed burns (including piles) be specifically allowed. These recommendations are consistent with OAR sections 340-264-0050(4)(a) and 340-264-0040(3)(6). The reason for making this recommendation is the long-standing inconsistency in OAR and the desire to reduce emissions and improve air quality.

[Information That Supports Our Recommendation to Allow the Use of PE and Ignition Accelerants](#)

- Dry debris piles when ignited produce significantly less emissions than wet piles. Reductions in emissions can be projected using computer emission models (e.g., CONSUME). In addition, far less petroleum accelerant is used when igniting piles that are dry.
- The USDA Forest Service contracted to have a literature review conducted to ascertain potential toxic effects of PE and treated paper products. The literature review by URS Corporation (attached) showed that PE toxic emissions are negligible.
- Based on the URS Literature Review, it appears that emissions from treated paper products are similar to PE emissions. In several cases, it was pointed out to our committee that the chemicals used to “treat” the paper (e.g., paraffin) are also prohibited.
- PE is more durable than treated paper or other paper products. Because PE tends to stretch rather than puncture when placed over debris piles, it keeps the center of the pile drier resulting in more efficient combustion and less emissions. PE can remain longer on piles exposed to the elements without breaking down. This is an important consideration for forest operators, particularly if the debris piles are not burned in the anticipated time frame and need to be held over another season.
- Testimony by various forest operators informed our committee that treated paper products are far more difficult to handle in the field because of their extra weight, and are far less durable and puncture easily. In addition, treated paper breaks down and falls apart in less than one season. This is an important point because some piles may not get burned within one season.

#### Possible Best Management Practices (BMPs) for Use of PE for Forest Practices Burning

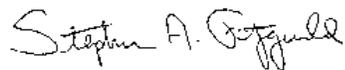
In making this recommendation, we also offer suggestions for Best Management Practices (BMPs) that could be developed for the use of PE for forest practices burning operations. These could include, but are not limited to, the following:

- Use only PE as opposed to other plastics. Certification of PE use would be required and administered by ODF through their “notification of operation” process and the State Forester’s representative. On federal lands, this “certification” concept would be administered through the Smoke Management Plan.
- Limit the quantity of PE to the coverage (size of sheeting) needed to ensure efficient ignition and combustion.
- Use the minimum PE thickness to achieve efficient ignition, combustion and durability determined by site specific conditions.
- Removal of PE prior to burning piles if/where/when practical.

There is agreement by DEQ representatives, who attend our meetings, on many aspects of this issue, but DEQ has additional questions that need to be addressed, which, at this point, can only be done between ODF and DEQ. The committee has worked hard on this PE issue over the last several months and would like to see it move to the next step of consultation between ODF and DEQ.

Further, consideration should be given to amending ODF and DEQ regulations so that the use of PE and petroleum-based ignition accelerants for forest management related burning be administered by ODF's Smoke Management Plan. DEQ and the Environmental Quality Commission have joint approval responsibility of the Smoke Management Plan requirements, so concerns they may have on exceptions can be addressed in the Smoke Management Plan. This change would simplify and strengthen rule administration by having all forest land burning under one agency (ODF).

Thank you.

A handwritten signature in cursive script that reads "Stephen A. Fitzgerald".

Stephen A. Fitzgerald, Chair  
Smoke Management Program Review Committee

*Memorandum of Understanding  
Between The  
Oregon Department of Forestry  
And The  
Oregon Department Of Environmental Quality  
Re: The Use Of Plastics On Burn Piles*

**MEMORANDUM OF UNDERSTANDING**  
**Between the**  
**OREGON DEPARTMENT OF FORESTRY**  
**And the**  
**OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY**

This **MEMORANDUM OF UNDERSTANDING** is hereby entered into by and between the Oregon Department of Forestry, hereinafter referred to as ODF, and the Oregon Department of Environmental Quality, hereinafter referred to as DEQ.

**A. PURPOSE**

The purpose of this MOU is to establish new requirements related to reducing smoke from slash pile burning on forestlands in Oregon, and to clarify provisions in DEQ Open Burning rules related to the burning of prohibited substances.

First, this MOU identifies Best Management Practices (BMPs) that will be used to reduce smoke emissions when burning slash piles covered with polyethylene (PE) covers. Covering slash piles before burning is a common practice in Oregon. The covers help keep the piles dry, make them much easier to ignite, improve combustion, and when BMPs are employed, can significantly reduce emissions.

Currently, DEQ open burning rules prohibit the burning of plastic and other waste that emits dense smoke or noxious odors. These rules address the waste disposal aspects of burning plastic rather than the intentional use of plastic as a best management practice to reduce emissions. This MOU clarifies that the use of PE covers on slash piles is a long-used prescribed burning practice that has been managed through the ODF administration of the Oregon Smoke Management Plan, and establishes BMPs that will be applied to this practice and regulated by ODF under the Oregon Smoke Management Plan.

Second, this MOU clarifies that the use of petroleum-based accelerants to help ignite slash material is also a common prescribed burning practice. Currently, DEQ open burning rules prohibit the burning of ‘petroleum products’ related to waste disposal. As is the case with plastics, the disposal of petroleum products is not the issue. Accelerants have historically been used in prescribed burning operations for many years throughout Oregon for ignition purposes. The prohibition on burning of petroleum products under DEQ rules does not apply to the use of petroleum-based accelerants to ignite slash material.

**B. STATEMENT OF MUTUAL BENEFIT AND INTERESTS**

Combustion and Health Effects

It is acknowledged by both parties that the use of PE covers on slash piles can help improve combustion when these piles are burned. When BMPs are employed, this can significantly reduce emissions. The net air quality benefit in burning a pile that has been covered as compared to one which has not can also be significant. There is presently no evidence to conclude that burning small amounts of PE in a slash pile poses any appreciable health risk. (See *Review of Potential Air Emissions From Burning Polyethylene Plastic Sheeting With Piled Forest Debris*,

*Final Report*, Wrobel, Christopher and Reinhardt, Tim, URS Corporation, October 28, 2003.) Conversely, there is considerable evidence that poor combustion does produce more smoke and toxic air pollutants than good combustion. Evidence suggests the use of petroleum-based accelerants on slash material improves combustion, and the use of these accelerants also poses no appreciable health risk.

### Regulatory Background

ORS 477.013 requires the State Forester and DEQ to approve a plan for managing smoke from prescribed burning. The same statute requires ODF to develop rules to carry out the provisions of the Smoke Management Plan. OAR 629-043-0043 establishes the Smoke Management Plan. This rule references the ODF “Smoke Management Directive 1-4-1-601”, which contains specific requirements forestland owners must follow when conducting prescribed burning in Oregon.

ORS 477.552 specifies that it is state policy to minimize emissions from prescribed burning. To meet this objective, ORS 477.554 requires the State Forester to implement programs, including those involving “prescribed burning and other alternative slash management techniques” to be administered by ODF. ODF Directive 1-4-1-601 specifies the need to “minimize emissions from prescribed burning” (Policy section) and utilize “low emission-producing burning methods” (Special Guidance section).

DEQ’s Open Burning Rules (Division 264) address the burning of ‘waste’, and classify seven different types of burning: agricultural, commercial, construction, demolition, domestic, industrial and slash. Of these, agricultural and slash burning are exempt from DEQ regulation. (Note: for purposes of this MOU, slash burning and prescribed burning are considered the same.) OAR 340-264-0040(6) exempts slash burning from DEQ regulation, and states that it is regulated by ODF. With regard to open burning, DEQ rule 340-264-0060(3) prohibits the burning of any plastic, petroleum product, and other waste products that emit “dense smoke or noxious odors”. This prohibition applies to “all open burning, unless expressly limited by any other rule, regulation, or permit...or other agency having jurisdiction.” OAR 340-264-0050(4) (a) requires “covering combustible material when practicable” to promote efficient burning and prevent excessive smoke.

### General Agreement

Based on these statutory and rule requirements, both parties agree it is important to establish BMP’s to reduce smoke emissions when burning slash piles with PE covers. It is acknowledged that using these covers to improve combustion and reduce emissions is consistent with ORS 477.552, OAR 629-043-0043, OAR 340-264-0050(4)(a), and the objectives of the Oregon Smoke Management Plan.

It is also mutually acknowledged by both parties under this MOU that the use of BMPs needs to be combined with other methods to minimize smoke emissions. Under the Smoke Management Plan, increasing the use of non-burning alternatives and emission reduction techniques (ERTs) are important objectives. This is especially true near populated areas and in the wildland-urban interface, where a combination of burning and non-burning approaches is needed. In addition, public concerns on the burning of plastic (i.e., PE) on slash piles needs to be addressed through

education and outreach. As a result, this MOU identifies the need for alternatives, ERTs, and public education to be used in conjunction with these BMPs.

Section E1 of this MOU identifies the BMPs agreed to by both parties.

C. ODF AGREES TO:

1. Perform outreach to inform private, state and local government, and federal forest landowners and protection districts in Oregon of the BMPs and other elements in this MOU.
2. Encourage that PE covers on slash piles only be used where needed, and encourage removal of the covers prior to burning if practicable.
3. Have the responsibility for ensuring compliance with BMPs identified in this MOU.
4. Incorporate the BMPs into prescribed burn permits, in accordance with ORS 477.515.
5. Develop a monitoring process to verify (1) that only PE is being used as a cover; (2) the thickness of the PE; and (3) the size of the covering, in accordance with Section E1 below.
6. As part of the current Smoke Management Plan review, revise ODF rules and Operational Guidance to the Smoke Management Plan to indicate that the use of PE covers on slash piles are subject to BMPs. During the interim, ODF will use its current authority to implement these BMPs and ensure compliance.
7. Include information on the ODF website on these BMPs, the need to use BMPs in conjunction with non-burning alternatives and ERTs, and the emission reduction benefits associated with using BMPs.
8. As part of the current Smoke Management Plan review, revise ODF rules and Operational Guidance to the Smoke Management Plan to indicate that the use of petroleum-based accelerants on slash material for ignition purposes shall be managed by ODF under the Oregon Smoke Management Plan.
9. Develop a work schedule for the tasks identified above in this section.

D. DEQ AGREES TO:

1. If requested, assist ODF in outreach efforts, per Section C1.
2. If requested, assist ODF in developing language to modify burn permits and revising rules and guidance, per Section C4, C6, and C8.
3. Use this MOU as policy guidance regarding the burning of PE covers on slash piles, when such burning is conducted under the Oregon Smoke Management Plan using the BMPs described in Section E1. DEQ shall continue to regulate the burning of plastic under its open burning rules where such burning is not associated with prescribed burning conducted under the Oregon Smoke Management Plan.
4. Use this MOU as policy guidance regarding the burning of petroleum-based accelerants on slash material, when such burning is conducted under the Oregon Smoke Management Plan. DEQ shall continue to regulate the burning of petroleum products under its open burning rules where such burning is not associated with prescribed burning conducted under the Oregon Smoke Management Plan.

E. IT IS MUTUALLY AGREED AND UNDERSTOOD BY BOTH PARTIES

1. Best Management Practices. The purpose of these BMPs is to improve combustion and minimize emissions from slash piles. If these objectives can be accomplished without the use of PE covers, this is the first BMP. Some of the criteria for BMPs (monitoring, minimum size, minimum thickness, and removal where practicable) are based on recommendations from the Oregon Smoke Management Plan Review Committee, from a letter sent to Marvin Brown, State Forester, on January 27, 2004. ODF shall not authorize a pile burn that fails to meet conditions (b) (d) (e) and (f) below, or if determined by ODF that cover removal is practicable, per condition (c) below. ODF may also require removal of any PE cover on a case-by-case basis using its discretion, if specific conditions warrant such action. Any burning that fails to comply with BMP conditions set forth in burn permits may be subject to ODF enforcement action. Additionally, any burning where the primary objective is the disposal of plastic waste shall be referred to DEQ for possible enforcement action under DEQ's open burning rules. Where practicable and economically feasible, BMPs will be used in conjunction with alternatives to burning. This includes chipping, yarding, marketing, and reducing pile size through mechanical removal. This will be strongly encouraged near sensitive populations and within the wildland-urban interface.

The following BMPs apply to the burning of slash piles with PE covers:

- a) No PE covers shall be used if the pile is dry and good combustion can be achieved without the use of PE covers.
  - b) If PE covers are necessary, only polyethylene (PE) shall be used. Other plastics are prohibited.
  - c) PE covers shall be removed where practicable. Removal near a major roadway, community, city or any smoke sensitive population is strongly encouraged. Limits on cover size and thickness shall not apply if the cover is to be removed prior to burning.
  - d) The size of the PE cover shall not exceed 100 square feet. For small piles, covering only the ignition area instead of the entire pile is strongly encouraged.
  - e) The thickness of the PE cover shall not exceed 4 mil.
  - f) Layering of multiple covers within a pile is not permitted, unless authorized by ODF to meet ignition needs.
2. Petroleum-based Accelerants. The use of petroleum-based accelerants on slash material for ignition purposes is a recognized prescribed burning practice and shall be managed by ODF through the administration of the Oregon Smoke Management Plan.
  3. Modification. Any modification of this MOU shall be made in writing by mutual consent of both parties, signed and dated by all parties, prior to any changes being made.
  4. Commencement/Expiration Date. This MOU is effective as of the date of last signature and until December 31, 2008 at which time it will expire unless extended.
  5. Termination. Either party, in writing, may terminate the MOU in whole, or in part, at any time before the date of expiration.
  6. Principal Contact. The principal contacts for this MOU:

**ODF Contact**

Mike Ziolko  
Oregon Department of Forestry  
2600 State St.

Salem, OR 97301  
Phone: 503-945-7452  
[mziolko@odf.state.or.us](mailto:mziolko@odf.state.or.us)

**DEQ Contact**

Brian Finneran  
Oregon Dept. of Environmental  
Quality

811 SW 6<sup>th</sup> Ave.  
Portland, OR 97204  
Phone: 503-229-6278  
[finneran.brian@deq.state.or.us](mailto:finneran.brian@deq.state.or.us)

- 7. Non-fund obligation. This MOU is neither a fiscal nor a funds obligation document. Any endeavor to transfer anything of value involving reimbursement or contribution of funds between the parties to this instrument will be handled in accordance with applicable laws, regulations, and procedures including those for Government procurement and printing. Such endeavors will be outlined in separate agreements that shall be made in writing by representatives of the parties and shall be independently authorized by appropriate statutory authority. This MOU does not provide such authority. Specifically, this MOU does not establish authority for noncompetitive award to the cooperator of any contract or other agreement. Any contract or agreement for training or other services must fully comply with all applicable requirements for competition.

THE PARTIES HERERTO have executed this MOU:

/s/ Marvin Brown  
MARVIN BROWN  
State Forester  
Oregon Department of Forestry

3/28/05  
Date

/s/ Stephanie Hallock  
STEPHANIE HALLOCK  
Director  
Oregon Department of Environmental Quality

3/07/05  
Date

*Appendix 5*

*National Fire and Aviation Executive Board  
Directives Task Group  
Briefing Paper #3  
January 19, 2005*




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## National Fire and Aviation Executive Board

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### Directives Task Group Briefing Paper #03

January 19, 2005

Subject: Three Kinds of Wildland Fire

The Interagency Strategy for Implementation of the Federal Wildland Fire Policy has established that there are three kinds of Wildland Fire. The definitions are as follows:

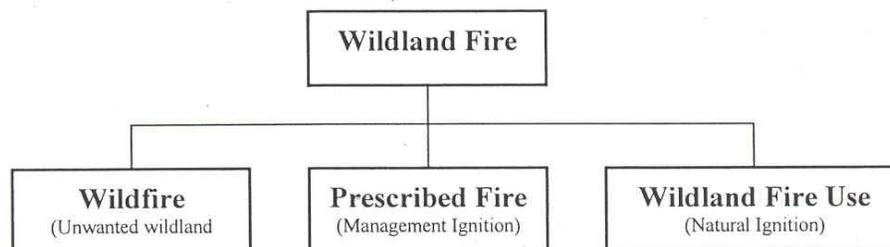
**Wildland Fire.** Any non-structure fire, that occurs in the wildland. Three distinct types of wildland fire have been defined and include **wildfire**, **wildland fire use** and **prescribed fire**.

**Wildfire.** An unplanned, unwanted wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out.

**Wildland Fire Use.** The application of the appropriate management response to naturally ignited wildland fires to accomplish specific resource management objectives in predefined designated areas outlined in Fire Management Plans.

**Prescribed Fire.** Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements (where applicable) must be met, prior to ignition.

The following diagram depicts the relationship between these terms:

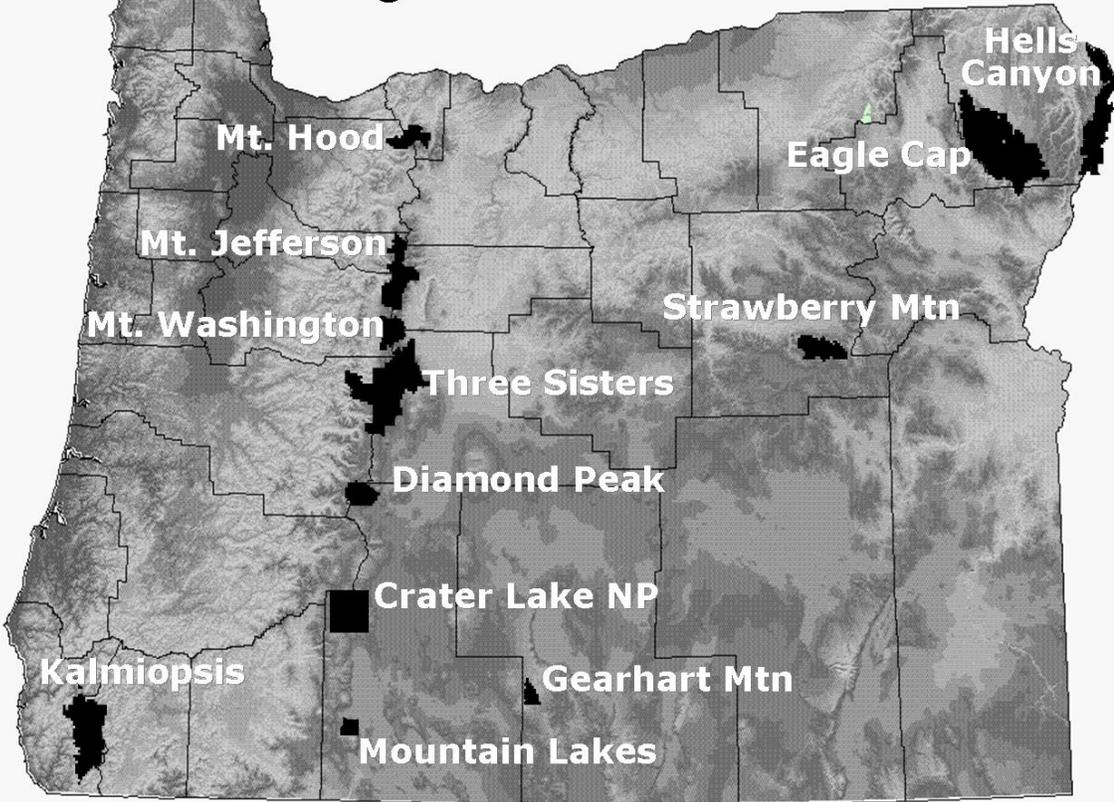


“Use of Wildland Fire” or “Fire Use” are terms that are used to describe the two types of wildland fire that provide for resource benefits; Prescribed Fire and Wildland Fire Use.

*Appendix 6*

*Map of Oregon Class 1 Areas  
and  
Exhibit 2 Map from Oregon Administrative Rules  
629-43-0043*

# Oregon Class I Areas



# Exhibit 2 Map from Oregon Administrative Rules 629-43-0043

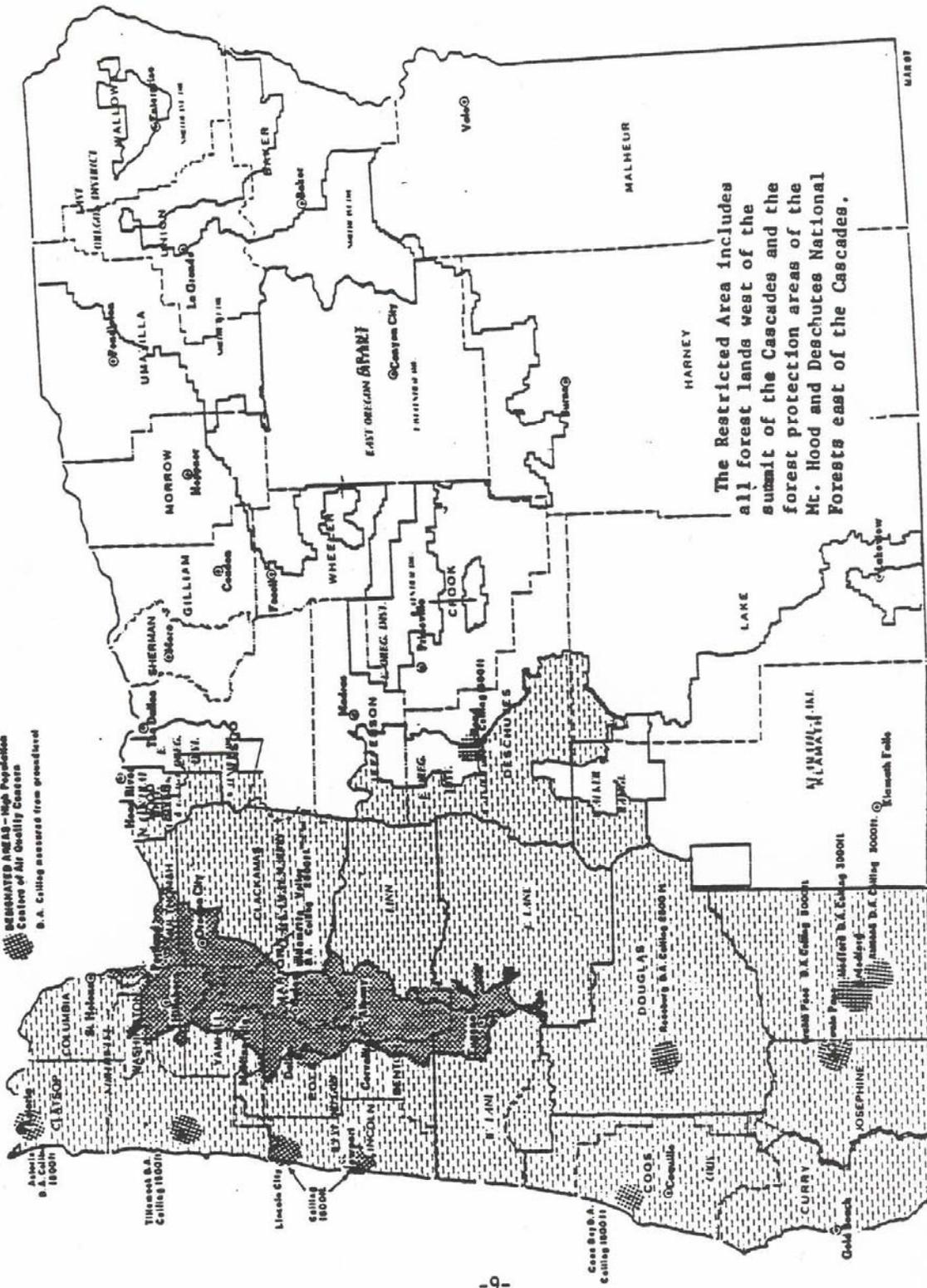
## EXHIBIT 2

### LEGEND

RESTRICTED AREA - Barring  
Permits Required Year Round as per O.A.R. 629-43-0041

DESIGNATED AREAS - High Population  
Centers of Air Quality Concern

D.A. Cutting measured from groundlevel



## *Appendix 7*

### *The Matrix*

Responses to Questions - Updated 3/18/04

	Is there a problem?	Will there be a problem in the future?	What are the options to deal with it?	Will it require changes in rules, statute or directive?	What are the barriers and opportunities?	How will measure success in the future?
A. Are air quality standards being met?	<ul style="list-style-type: none"> <li>No. Standards are met. Governor letter all state be declared "attainment" or unverifiable.</li> <li>Need to identify trends around the state.</li> </ul>	<ul style="list-style-type: none"> <li>Possibly due to: <ul style="list-style-type: none"> <li>Population Growth</li> <li>Possible Incr in burning – spatially and temporally specific</li> <li>Chg in PM2.5 Std/visibility</li> <li>Potential impacts to maintenance areas</li> <li>Neighbors to the south (CA) and east (ID) will be burning</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Better forecasting →</li> <li>Better idea of fuel →</li> <li>loading &amp; consumption</li> <li>Blue Sky →</li> <li>Operational → Flexibility</li> <li>Use alternatives → where appropriate</li> <li>Expand the Smoke → Management Program in some areas</li> </ul>	<ul style="list-style-type: none"> <li>NO</li> <li>Directive Change</li> <li>Directive Change</li> <li>Rule Change</li> <li>Rule Change</li> <li>Statute, Rule &amp; Directive change</li> </ul>	<p><b>Barriers:</b></p> <ul style="list-style-type: none"> <li>Funding (personnel)</li> <li>Training</li> <li>Acceptance / Compliance by landowners &amp; tribes</li> <li>Willingness of ODF to take on an expanded program</li> <li>Experience/Focus of ODF is not as sharp in burning of non-forest lands (rangeland) – assuming ODF controlling rangeland and forest burning, and ODA controlling Ag burning)</li> <li>Complicates the prioritization of rangeland and forest burning - assuming ODF controlling rangeland and forest burning, and ODA controlling Ag burning)</li> </ul> <p><b>Opportunities:</b></p> <ul style="list-style-type: none"> <li>Coordination</li> <li>Take adv of burn days</li> </ul>	NAAQS met
B. Burning objectives being met?	<ul style="list-style-type: none"> <li>Not always, but fuels treatment needs may be met.</li> </ul>	<ol style="list-style-type: none"> <li>More burners (NPS, USFS, BIA)</li> <li>Desire to burn more acres</li> <li>new AQ regulations</li> </ol>	<ul style="list-style-type: none"> <li>Same as above →</li> <li>Relax Standards →</li> <li>Prioritize burning <ul style="list-style-type: none"> <li>- by landowner →</li> <li>- by regulator →</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Same as above</li> <li>ALL</li> <li> <ul style="list-style-type: none"> <li>- Directive</li> <li>- Rule</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- same as above</li> <li>- Political/jurisdiction (barrier)</li> <li>More burn days (opportunity)</li> <li>- <i>Reaching consensus (barrier)</i></li> <li>- <i>More efficient use of</i></li> </ul>	<ul style="list-style-type: none"> <li>Land objectives met</li> <li>NAAQS Met</li> <li>Nuisance visibility problems not increased</li> </ul>

	Is there a problem?	Will there be a problem in the future?	What are the options to deal with it?	Will it require changes in rules, statute or directive?	What are the barriers and opportunities?	How will measure success in the future?
<b>B.</b> Burning objectives being met? (Cont.)					<i>burn day –opportunity</i> - Antitrust – barrier - Funding, Personnel – barrier Improve tracking – opportunity	
<b>C.</b> (rephrased at Sue S. suggestion) Evaluate the SMP 1. Underburn increase (yes) 2. Re: forest health	<ul style="list-style-type: none"> <li>Problem quantifying acres/tons burned.</li> <li>Fees (connection with economic &amp; funding)</li> <li>Management of unplanned ignitions ( i.e. not addressed)</li> <li>Adjust forecasting of smoke dispersion.</li> <li>Hardware for measuring atmospheric info.</li> </ul>	<ul style="list-style-type: none"> <li>Same as current situation</li> </ul>	1. Refined Forecasting 2. Better idea of fuel loading and consumption 3. Preliminary mechanical treatment 4. Collect Fees	<ul style="list-style-type: none"> <li>None</li> <li>Directive</li> <li>(Optional for landowners)</li> <li>Statute &amp; Rule Changes</li> </ul>	<ul style="list-style-type: none"> <li>Funding, Technology, Personnel – barriers More burning – opp</li> <li>Training &amp; Tech – barriers More burning – opp</li> <li>Less Smoke –opp Better utilization– opp</li> <li>Cost – Barrier</li> <li>Political – barrier</li> <li>Streamline Fee Collection Better Prog Mgt – opp</li> </ul>	<ul style="list-style-type: none"> <li>Same as above</li> <li>Fees match services required (self sustaining) for increased program</li> </ul>
<b>E.</b> Evaluate the SMP re: regional AQ issues?	<ul style="list-style-type: none"> <li>Problem – Does not address regional issues other than Washington.</li> <li>Problem – does not address Ag or range burning in or out of state.</li> </ul>	<ul style="list-style-type: none"> <li>Yes – because of 309 requirements</li> <li>Regional Hazel Rule</li> <li>SW Idaho, NE CA &amp; Se WA concerns &amp; the Gorge</li> </ul>	- Daily SM coordination between states including agreements - Try to make contact w/ tribes -Enhanced SMP  - other types of burning	<ul style="list-style-type: none"> <li>Directive and /or rule</li> <li>? new ground</li> <li>Rule – SIPs</li> <li>Rule</li> </ul>	<ul style="list-style-type: none"> <li>Funding to ramp up and operate program</li> <li>Bring in new clients               <ul style="list-style-type: none"> <li>Barrier – resistance</li> </ul> </li> <li>Cover all smoke emissions w/in the State &amp; improve coordination</li> <li>Bring in new clients Barrier – resistance to new regulation</li> </ul>	<ul style="list-style-type: none"> <li>All landowners treated fairly</li> <li>no haze or intrusions</li> <li>fewer interstate impacts</li> <li>meet 309 requirements/standards</li> <li>shared responsibility/equity the public shares a portion of this responsibility</li> </ul>

	<b>Is there a problem?</b>	<b>Will there be a problem in the future?</b>	<b>What are the options to deal with it?</b>	<b>Will it require changes in rules, statute or directive?</b>	<b>What are the barriers and opportunities?</b>	<b>How will measure success in the future?</b>
<b>D.</b> How should wildfire vs. prescribed fire impacts be addressed?	<ul style="list-style-type: none"> <li>• Current plan is silent on the issue.</li> <li>• Concepts and related issues are “new”.</li> <li>• No mechanism to allow PF impact in lieu of WF impact.</li> </ul>	<ul style="list-style-type: none"> <li>• Current plan does not allow logical trade off analysis</li> </ul>	<ul style="list-style-type: none"> <li>• 12-month SMP</li> <li>• Improved site specific analysis – forecast</li> <li>• Need to look at the WUI treatment</li> <li>• Alternatives to burning</li> <li>• Improve Science, emission estimations, &amp; forecasting</li> <li>• Develop protocol for complaints/nuisances and track it</li> <li>• Tool/process to allow for a cost/benefit analysis from emissions perspective with a long term vs short-term.</li> <li>• Education – why we prescribe burn or do other fuels treatments</li> </ul>	<ul style="list-style-type: none"> <li>• It exists</li> <li>• No</li> <li>• Maybe (rule)</li> <li>• Maybe</li> <li>• No</li> <li>• Directive</li> <li>• No</li> <li>• Maybe (Directive/Rule)</li> </ul>	<ul style="list-style-type: none"> <li>• Funding needed</li> <li>• Balancing priorities (this) needs to be determined in local area</li> <li>• Research/funding/legal appeals</li> <li>• Tech development &amp; funding</li> <li>• Protocol for tracking complaints.</li> <li>• Not currently very well coordinated – need to modify existing system - Opportunity to educate the public</li> <li>• Opportunity – existing tools – FETM or equivalent. Barrier – req more staff time &amp; what will be done w/info</li> <li>• Barriers- Additional funding would be needed. Might need a third party to do it</li> <li>• Can’t change NAAQS (– and don’t want to).</li> <li>• Coordinated common system for all sources of emissions (ag, forest, backyard)</li> </ul>	<ul style="list-style-type: none"> <li>- More fuel reduction, less wildfire w/ equal or less emissions</li> <li>- How did 3 – yr pilot work? Violations of NAAQS? Acres at what cost?</li> <li>- Are planned burns completed? – can we measure this?</li> <li>- Need to have entire state report.</li> <li>- Fewer complaints.</li> <li>- More burns done.</li> <li>- Better, more informed decision making – “this could include using more alternatives</li> <li>- SMP acknowledges trade off between PF and wildfire</li> <li>- Better coordination/less competition for burn days between landowners and agencies.</li> </ul>

	<b>Is there a problem?</b>	<b>Will there be a problem in the future?</b>	<b>What are the options to deal with it?</b>	<b>Will it require changes in rules, statute or directive?</b>	<b>What are the barriers and opportunities?</b>	<b>How will measure success in the future?</b>
<b>F. Are Designated Areas and Smoke Sensitive Areas adequately defined?</b>	<ul style="list-style-type: none"> <li>• Adequately protected but not adequately defined.</li> <li>• Linkage needed between DA,SPZ, non-attainment, protected area, and parameters that identify each.</li> <li>• Public safety - roadways</li> <li>• Issues/Questions <ul style="list-style-type: none"> <li>- Different labels - SPZ, DA, etc</li> <li>- Maps need to be better</li> <li>- Will different approach be needed for each</li> </ul> </li> </ul>	<p>Yes</p> <ul style="list-style-type: none"> <li>- Population growth may change the need for DA</li> </ul> <p>- How do you add a DA? Lack of clarity</p>	<ul style="list-style-type: none"> <li>- Re-evaluate boundaries.</li> <li>- What are definitions for creating a DA?</li> <li>- Adopt DEQ protocols for open burning</li> </ul> <ul style="list-style-type: none"> <li>- Look at ODOT &amp; local jurisdiction for roadway safety &amp; forecasting to account for road hazards.</li> <li>- Develop clear criteria of DA and better maps – refer to the SPZ pages as example</li> </ul>	<ul style="list-style-type: none"> <li>- rule</li> <li>- rule</li> <li>- rule</li> <li>- directive</li> <li>- rule</li> </ul>	<ul style="list-style-type: none"> <li>- topographic research to define the zone (Barrier cost/personnel)</li> <li>- population changes (Barrier cost/personnel)</li> <li>- Ability to manage smoke (Barrier)</li> <li>- Rules that aren't integrated between agency or geographic boundary (Klamath/Jackson boundary) – barrier</li> <li>- Opportunity – increased coordination</li> <li>- Opportunity – education</li> <li>- Better Maps/boundaries opportunity</li> <li>- Increased costs for burning adj to roads</li> </ul>	<ul style="list-style-type: none"> <li>- burn bosses &amp; others, that are familiar with &amp; knowledgeable of SMP</li> <li>- minimize intrusions</li> <li>- No traffic accidents due to smoke</li> </ul>

	Is there a problem?	Will there be a problem in the future?	What are the options to deal with it?	Will it require changes in rules, statute or directive?	What are the barriers and opportunities?	How will measure success in the future?
<p>F. Continued on 2/18/04</p> <p><b>Are Regional Areas (neighboring states adequately defined?)</b></p>	<ul style="list-style-type: none"> <li>• No. →</li> <li>• The plan is silent with regards o coordination with other states except WA</li> <li>• Possibly for visibility, we have coordination with WA, ID, NV and CA for Class 1 Areas. →</li> <li>• Yes, with respect to the Columbia River Scenic Area, the SMP is silent on this. →</li> </ul>	<ul style="list-style-type: none"> <li>• An emerging interstate issue because smoke travels both ways between OR and CA, , OR and WA, and OR and ID</li> <li>• Next RHR in 2008 will require a strategy to protect visibility in neighboring Class 1 Areas.</li> <li>• Yes, the bi-state commission adopted a “no degradation “ standard.</li> <li>• If there are significant increases in prescribed burning, the potential for problems may increase.</li> </ul>	<ul style="list-style-type: none"> <li>• Set up through WRAP for interstate transport and tracking of smoke. SMP would adopt WRAP protocols and beyond for populated areas.</li> <li>• Periodic meetings between state SMP representatives to discuss issues and concerns.</li> <li>• May require special designation ie. “other sensitive area” →</li> </ul>	<ul style="list-style-type: none"> <li>• Rule – “policy section” that we adopt the WRAP protocols. Part IV of Rules w/regards to “administration” and Part III, “Control” - Directive – at a minimum it will be referenced ie in the policy &amp; scope sections of the directive.</li> <li>- MOA – possibly between the states &amp; key federal agencies and bi-state commissions.</li> <li>• Directive →</li> <li>• Rule →</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunity – Taking advantage of tools that have already been developed by WRAP</li> <li>• Opportunity – consistency</li> <li>• Barrier – involve more time &amp; prioritization →</li> <li>• Barrier – Prohibitions on out-of-state travel</li> <li>• Barrier – Do other states want to play the game</li> <li>• Opp – continuity &amp; Consistency</li> <li>• Opp – Supports the mgt plan →</li> <li>• Bar – Political football – real separation between county politics and state-level politics.</li> <li>• Bar – Real or perceived thoughts on add'l burning. restrictions</li> </ul>	<ul style="list-style-type: none"> <li>• Interstate smoke emissions &amp; impacts are managed to the benefit fewer interstate impacts &amp; complaints) of all states (visibly, health, mgt objectives)</li> <li>• Participants perceive meetings as valuable in the endeavor to manage smoke emissions and impacts.</li> <li>• Non-degradation of air quality</li> </ul>

	Is there a problem?	Will there be a problem in the future?	What are the options to deal with it?	Will it require changes in rules, statute or directive?	What are the barriers and opportunities?	How will measure success in the future?
<b>G.</b> How may Admin. Rules be changed?						
<b>H.</b> What feasible alternatives to burning...	<ul style="list-style-type: none"> <li>No →</li> </ul>	<p>Yes</p> <ol style="list-style-type: none"> <li>No Trade-off analysis</li> <li>Based on the 2003 SIP</li> <li>Increased quantity of fuel to be treated</li> <li>Population increases /changing demographics</li> <li>Lack of Public Knowledge/ Understanding</li> <li>People don't know the rules</li> </ol>	<ul style="list-style-type: none"> <li>New position at ODF – alternative fuels utilization person</li> <li>Incentives (i.e. Tax credits) to assist landowners for improved utilization</li> <li>Process to provide information on alternatives</li> <li>WRAP document – alternatives to burning wildlands</li> <li>Analysis and decision process /protocol for selecting alternatives specific to site in or adjacent to DA</li> <li>Grant program to Jumpstart the alternatives</li> <li>Target WUI for alternatives depending on risk.</li> </ul>	<ul style="list-style-type: none"> <li>Legislative authority</li> <li>Statutory</li> <li>None</li> <li>None</li> <li>Rule/Directive</li> <li>Fed \$ -No</li> <li>Policy – directive</li> <li>Mandatory – statute/rule</li> </ul>	<ul style="list-style-type: none"> <li>Not all alternatives are feasible – economically, ecologically, and operationally. – Barrier</li> <li>Lack of understanding of the process of how alternatives work – barrier</li> <li>Bio-Mass utilization – opportunity</li> <li>Lack of the WRAP document – barrier</li> <li>Resistance to change – barrier</li> <li>Create jobs – opportunity</li> <li>No funding – barrier</li> <li>Different Jurisdictions - barrier</li> <li>Utilization – opportunity</li> <li>Divide the state into climate/weather/ burnday and social areas - opp</li> <li>No weight &amp; assist. Given to alts – barrier</li> <li>Unreliable \$– barrier</li> <li>Change in direction for grant awards –opp</li> <li>Funding –Barrier</li> <li>Defining Treatment alts in WUI area – barrier</li> </ul>	<ul style="list-style-type: none"> <li>All user objectives are met.</li> <li>Increased use of appropriate alternatives to burning.</li> <li>Public Nuisance and complaints decrease</li> <li>Demonstrate increased use of appropriate alternative increases acres burned where burning is the only alternative.</li> <li>All geographic areas submit planned activities by January 1</li> </ul>



	Is there a problem?	Will there be a problem in the future?	What are the options to deal with it?	Will it require changes in rules, statute or directive?	What are the barriers and opportunities?	How will measure success in the future?
			<p>news release that burning is being done under SMP requirements</p> <ul style="list-style-type: none"> <li>• An integrated website that describes the use and regs for use of fire</li> </ul>	Dir	<p>survey</p> <ul style="list-style-type: none"> <li>• Develop a complaint tracking system</li> </ul>	

	Is there a problem?	Will there be a problem in the future?	What are the options to deal with it?	Will it require changes in rules, statute or directive?	What are the barriers and opportunities?	How will measure success in the future?
K. AQ Objectives (Not "A" in Matrix)	1) Intrusion	<ul style="list-style-type: none"> <li>Intrusions have declined over time – see annual report</li> </ul>	<ul style="list-style-type: none"> <li>Convert B-scat data to use ug/m3 for forest and range fuels</li> <li>Better tracking &amp; communication between agencies</li> <li>Quality assurance system – “feedback loop” – where do we need to clamp down? What is the source? How is the burning being done?</li> </ul>	<ul style="list-style-type: none"> <li>Rule change</li> </ul>	<ul style="list-style-type: none"> <li>Available Data (barrier)</li> <li>Process to look at exceptions and find solutions (opportunity)</li> <li>Develop a web-based response system for smoke complaints/concerns for the public- <b>applies to intrusions, visibility &amp; nuisances.</b></li> </ul>	<ul style="list-style-type: none"> <li>Quantitative measure of what an intrusion is.</li> <li>No or minimal intrusions</li> </ul>
	2.) Visibility	<ul style="list-style-type: none"> <li>DEQ Data did not show conclusive trends.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor the effects of burning in Class 1 areas</li> <li>Regional Haze SIP designed to reduce likelihood of an impact.</li> </ul>	<ul style="list-style-type: none"> <li>None</li> <li>Rule →</li> </ul>	<ul style="list-style-type: none"> <li>Year-round SMP-bar.</li> <li>Funding for monitoring – barrier</li> <li>Whether monitoring network is expanded – barrier</li> <li>Expand SMP to Central and E. OR.- barrier</li> </ul>	<ul style="list-style-type: none"> <li>Continued trend (no worsening) of Class 1 Visibility trends</li> <li>No loss in visibility days.</li> <li>All objectives being met.</li> </ul>
	3.) Nuisance / complaints	<ul style="list-style-type: none"> <li>Inconclusive - Complaints aren't tracked</li> </ul>	Yes	<ul style="list-style-type: none"> <li>Track them and better communication between agencies</li> <li>Feedback loop to matrix Question F – consider changes in DA boundary</li> <li>Increase monitoring</li> <li>Do we want to have a complaint tracking system for each burn?</li> </ul>	<ul style="list-style-type: none"> <li>Rule Change</li> <li>Directive</li> <li>None – see F →</li> </ul>	<ul style="list-style-type: none"> <li>Funding to track them - barrier</li> <li>New Work for agencies – barrier</li> <li>Recognize when we are getting complaints in geographic areas.</li> </ul>

## *Appendix 8*

### *Glossary*

AQ	Air Quality
AQMA	Air Quality Maintenance Area
BACM	Best Available Control Measures
BLM	Bureau of Land Management
BMPs	Best Management Practices
BOF	Board of Forestry
CA	California
Committee	Smoke Management Plan Review Committee
DA	Designated Area
DEQ	Department of Environmental Quality
DOI	Department of Interior
EI	Emissions Inventory
EPA	Environmental Protection Agency
ERT's	Emissions Reduction Techniques
EQC	Environmental Quality Commission
FMP	Fire Management Plan
FPFO	Forestry Program for Oregon
GIS	Geographic Information System
ID	Idaho
IMPROVE	Interagency Monitoring Protected Visual Environment's
KOG	Keep Oregon Green
LIDAR	Light Detection and Ranging
LRAPA	Lane Regional Air Pollution Authority
MOA	Movement of Air
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NV	Nevada
OARs	Oregon Administrative Rules
OBCA	Open Burning Control Area
ODA	Oregon Department of Agriculture
ODF	Oregon Department of Forestry
OFRI	Oregon Forest Resource Institute
OR	Oregon
ORS	Oregon Revised Statutes
PF	Prescribed Fire
PNWCG	Pacific Northwest Wildfire Coordinating Group
PROGRAM	Smoke Management Program
RA	Restricted Area

RHR	Regional Haze Rule
SE	Southeast
SIP	State Implementation Plan
SMP	Smoke Management Plan
SODAR	Sound Detection and Range
SPZ	Special Protection Zone
SSA	Smoke Sensitive Area
SSRA	Smoke Sensitive Receptor Areas
SW	Southwest
UGB	Urban Growth Boundary
USDA	United State of Agriculture
USFS	United States Forest Service
WA	Washington
WF	Wildland Fire
WFU	Wildland Fire Use
WRAP	Western Regional Air Partnership
WUI	Wildland-Urban Interface