

# Legal Appendix

## An Overview of the Clean Air Act and State-Level Air Quality Regulation

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### LEGAL APPENDIX FOR:

*Ecosystem Workforce Program Working Paper #86 and Public Lands Policy Group Practitioner Paper #2:*

*Prescribed Fire Policy Barriers and Opportunities,  
A Diversity of Challenges and Strategies Across the West*



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## Legal Appendix: An Overview of the Clean Air Act and State-Level Air Quality Regulation

This document serves as an appendix to the University of Oregon Ecosystem Workforce Program Working Paper #86 and Colorado State University Public Lands Policy Group Practitioner Paper #2, completed in collaboration with the University of Oregon School of Law's Environmental & Natural Resource Law Center, and entitled "Prescribed Fire Policy Barriers and Opportunities: A Diversity of Challenges and Strategies Across the West." The report is available at <https://ewp.uoregon.edu/publications/working>. The report and this appendix are products of a Joint Fire Science Program project (16-1-02-8) investigating policies that limit managers' ability to conduct prescribed fire on US Forest Service and Bureau of Land Management lands in the eleven Western states. The primary objectives of this project are to:

1. Identify current perceived policy barriers to implementing prescribed fire and how these vary across the West, and
2. Characterize actionable opportunities and mechanisms for overcoming barriers.

The aforementioned report details our findings from our initial phases of project research, including a legal analysis and approximately sixty interviews with key informants (e.g. land managers, air regulators, and state agency partners). This appendix provides additional detail from our legal research on air quality law and policy. The following sections include overviews of the federal Clean Air Act, followed by details for each of the 11 western states in our study. In the main report (Working Paper #86 available at <https://ewp.uoregon.edu/publications/working>), Table 1 on pp. 14-16 provides a state-by-state overview of air quality regulatory processes and interagency relationships to support burning in each state; please refer to the table for a quick reference guide that summarizes the information for states covered in this appendix.

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## I. Prescribed Fire and The Federal Clean Air Act

### A. Overview

The federal Clean Air Act requires the federal Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS), while “states have the primary responsibility for achieving and maintaining” these standards.<sup>1</sup> The EPA has established standards for carbon monoxide, lead, nitrogen dioxide, ozone, particle pollution, and sulfur dioxide,<sup>2</sup> and states must outline their strategies for achieving, enforcing, and maintaining these standards via “state implementation plans” (SIPs) covering each of these pollutants.<sup>3</sup> The Clean Air Act and implementing regulations (promulgated by the federal EPA) establish minimum standards for SIPs, with differing “requirements and procedures . . . triggered depending on the degree of attainment or nonattainment of the NAAQS.”<sup>4</sup> Areas are designated as “attainment,” “nonattainment,” or “unclassifiable” based on available information,<sup>5</sup> with carbon monoxide and particle pollution nonattainment areas further classified as “moderate” or “serious,” and ozone nonattainment areas further classified in one of six categories ranging from “marginal” to “extreme.”<sup>6</sup> SIP requirements for nonattainment areas vary depending on degree of nonattainment.<sup>7</sup>

### B. Exclusion of Prescribed Fire Emissions from SIP and Attainment/Nonattainment Determinations

In November of 2015, the EPA proposed a revised version of its “Exceptional Events Exclusion Rule,” which exempts emissions from qualifying prescribed fires from NAAQS violations and the consequences those NAAQS violations would otherwise have (such as re-designation of an attainment area to a non-attainment area).<sup>8</sup> The revised rule was finalized in October of 2016, with an effective date of September 30, 2016.<sup>9</sup>

The EPA’s Exceptional Events Exclusion Rule allows a “State, federal land manager or other federal agency”<sup>10</sup> to request that the EPA exclude “data showing exceedances or

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<sup>1</sup> The Clean Air Act Handbook at 49.

<sup>2</sup> See <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

<sup>3</sup> Handbook at 49.

<sup>4</sup> Handbook at 49.

<sup>5</sup> Handbook at 51.

<sup>6</sup> Handbook at 85 (carbon monoxide), 79 (particle pollution), 68 (ozone).

<sup>7</sup> See Handbook at 64-86.

<sup>8</sup> 80 Fed. Reg. 72,840 (November 20, 2015).

<sup>9</sup> 81 Fed. Reg. 68,216 (October 3, 2016) (codified at 40 CFR §§ 50.1(j),(k) & (m) through (r) (“Definitions”), 50.14 (“Treatment of air quality monitoring data influenced by exceptional events”) and 51.930 (“Mitigation of Exceptional Events”).

<sup>10</sup> A “federal land manager or other federal agency” may initiate a data exclusion request only after the state in which the affected air quality monitor is located concurs with the federal submittal. 40 CFR § 50.14(a)(1)(ii)(A)(2). The proposed rule allowed federal land managers to initiate exclusion requests without state concurrence, however this was dropped in the

violations” of NAAQS “from use in determinations” when those exceedances or violations were “directly due to an exceptional event.”<sup>11</sup> The particular “regulatory determinations” encompassed by the rule are as follows:

- Actions designating areas as “attainment,” “nonattainment,” or “unclassifiable” for particular NAAQS;
- Actions redesignating areas to different designation (e.g., from “attainment” to “nonattainment” or vice versa);
- “The assignment or re-assignment of a classification category to a nonattainment area” (e.g., reassignment of a carbon monoxide nonattainment area classified as “moderate” to a classification of “serious”);
- Determinations “regarding whether a nonattainment area has” achieved a specified NAAQS level by a particular deadline;
- Determinations that NAAQS data for a particular area “qualify the area for an attainment date extension;”
- Determinations based on NAAQS violations that a SIP is inadequate; and
- “Other actions on a case-by-case basis as determined by the Administrator.”<sup>12</sup>

Requesters of exceptional event data exclusions must demonstrate to the EPA’s satisfaction that the particular event “caused a specific air pollution concentration at a particular air quality monitoring location.”<sup>13</sup> Exclusion requests must include the following information:

- “A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s);”<sup>14</sup>
- “A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation;”<sup>15</sup>

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final rule in light of the fact that “the large majority of commenters disagreed with th[e] proposed provision.” 81 Fed. Reg. 68,223. “State and local air agencies, as well as several regional planning organizations, commented that it is inappropriate for the EPA to allow agencies that are not directly responsible and accountable for managing and/or assuring air quality to submit exceptional event demonstrations or data exclusion requests.” *Id.*

<sup>11</sup> 40 CFR § 50.14(a)(1)(ii).

<sup>12</sup> 40 CFR § 50.14(a)(1)(i)(A)-(F). Prior to the 2016 amendments, the rule did not specify what “determinations” were covered by the rule.

<sup>13</sup> 40 CFR § 50.14(a)(1)(ii).

<sup>14</sup> 40 CFR § 50.14(c)(3)(iv)(A).

<sup>15</sup> 40 CFR § 50.14(c)(3)(iv)(B).

- “Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times to support the [preceding] requirement;”<sup>16</sup>
- “A demonstration that the event was both not reasonably controllable and not reasonably preventable;”<sup>17</sup> and
- “A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event.”<sup>18</sup>

Exclusion requests must also document that the requester followed a prescribed public comment process,<sup>19</sup> and must include public comments received.<sup>20</sup> The exclusion request must specifically address “those comments disputing or contradicting factual evidence provided in” the exclusion request.<sup>21</sup>

Prescribed fires can qualify for exceptional event exclusion when they are shown to be not reasonably controllable, not reasonably preventable, and not likely to recur at a particular location. The rule spells out how prescribed fires can meet these requirements. In order for a prescribed fire to be considered “not reasonably controllable,” “the State must either certify to [the EPA] that it has adopted and is implementing a smoke management program or . . . that the burn manager employed appropriate basic smoke management practices.”<sup>22</sup>

In order for a prescribed fire to meet the “not reasonably preventable” criterion,

the State may rely upon and reference a multi-year land or resource management plan for a wildland area with a stated objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire provided that the Administrator determines that there is no compelling evidence to the contrary in the record and the use of prescribed fire in the area has not exceeded the frequency indicated in that plan.<sup>23</sup>

Finally, with regard to the requirement that a prescribed fire must be “unlikely to recur at a particular location,” “the State must describe the actual frequency with which a burn was conducted,” but similar to the “not reasonably preventable” requirement, the state

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<sup>16</sup> 40 CFR § 50.14(c)(3)(iv)(C).

<sup>17</sup> 40 CFR § 50.14(c)(3)(iv)(D).

<sup>18</sup> 40 CFR § 50.14(c)(3)(iv)(E).

<sup>19</sup> 40 CFR § 50.14(c)(3)(v)(A).

<sup>20</sup> 40 CFR § 50.14(c)(3)(v)(B).

<sup>21</sup> 40 CFR § 50.14(c)(3)(v)(C).

<sup>22</sup> 40 CFR § 50.14(b)(3)(ii)(A). “Basic smoke management practices” are identified in Table 1 of rule.

<sup>23</sup> 40 CFR § 50.14(b)(3)(ii)(C).

may rely upon and reference an assessment of the natural fire return interval or the prescribed fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem contained in a multi-year land or resource management plan with a stated objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire.<sup>24</sup>

Distilled to its essence, the EPA's Exceptional Events Exclusion Rule allows for exclusion of prescribed fire emissions data from various SIP/attainment/nonattainment-related determinations when emissions from prescribed fires trigger exceedances or violations of air quality standards. In order to qualify for such exclusion, smoke management must be employed, and prescribed fires must be properly included in land or resource management plans. However, the implication of this regulation is not that prescribed fire can be planned to trigger an exceedance.

### C. Prescribed Fire Emissions and Visibility/Regional Haze

Congress amended the Clean Air Act in 1977 to include a requirement that SIPs include “a long-term (ten to fifteen year) strategy for making reasonable progress toward meeting the national goal”<sup>25</sup> of preventing future/remedying existing “impairment of visibility in mandatory class I federal areas.”<sup>26</sup> Class I areas primarily consist of wilderness areas over 5,000 acres in size and national parks over 6,000 acres in size.<sup>27</sup> In 1980, the EPA promulgated regulations implementing the 1977 visibility amendments while at the same time “explicitly defer[ing] action on regional haze . . . until some future date when improvement in monitoring techniques provided more data on source-specific levels of visibility impairment, regional scale models became refined, and our scientific knowledge about the relationships between emitted air pollutants and visibility impairment improved.”<sup>28</sup>

Congress subsequently amended the Clean Air Act in 1990 to address regional haze, requiring “the promulgation of regulations . . . to address long range strategies for addressing regional haze which impairs visibility in affected class I areas.”<sup>29</sup> Regional haze is “visibility

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<sup>24</sup> 40 CFR § 50.14(b)(3)(iii).

<sup>25</sup> 42 U.S.C. § 7491(b)(2)(B).

<sup>26</sup> 42 U.S.C. § 7491(a)(1).

<sup>27</sup> 42 U.S.C. § 7472(a). There are a total of 108 such areas in the eleven western states covered by this project. *See* 40 CFR §§ 81.403 (Arizona (12 areas)), 81.405 (California (29 areas)), 81.406 (Colorado (12 areas)), 81.410 (Idaho (5 areas)), 81.417 (Montana (12 areas)), 81.418 (Nevada (1 area)), 81.421 (New Mexico (9 areas)), 81.425 (Oregon (12 areas)), 81.430 (Utah (5 areas)), 81.434 (Washington (8 areas)), and 81.436 (Wyoming (7 areas)). Note that some areas occur in multiple states, and the total of 108 has been adjusted so as to account for these areas just once. Expressed as a percentage, over sixty nine percent of class I areas are in this eleven state region.

<sup>28</sup> 81 Fed. Reg. 26,945 (May 4, 2016).

<sup>29</sup> 42 U.S.C. 7492(d)(2)(C).



impairment that is produced by a multitude of sources and activities that are located across a broad geographic area and emit PM<sub>10</sub>, PM<sub>2.5</sub> (e.g., sulfates, nitrates, organic carbon, elemental carbon and soil dust) and their precursors (e.g., SO<sub>2</sub>, NO<sub>x</sub> and, in some cases, ammonia and volatile organic compounds).<sup>30</sup>

The EPA promulgated the required regulations in 1999, and they require implementation plans for regional haze. The 1999 regulations provided two primary pathways for states to address regional haze during the initial regional haze implementation period.<sup>31</sup> The first pathway (“308”<sup>32</sup>) was open to all states, while the second pathway (“309”<sup>33</sup>) was an alternative pathway open to nine “transport region states,”<sup>34</sup> and applied to “regional haze visibility impairment in the 16 Class I areas covered by the [June 10, 1996] Grand Canyon Visibility Transport Commission Report.” It appears that only New Mexico, Utah, and Wyoming chose the 309 pathway.<sup>35</sup> The 309 pathway allowed transport region states to achieve compliance with the haze regulations by implementing the recommendations of the Grand Canyon Visibility Transport Commission contained in the aforementioned report. With regard to prescribed fire, the 309 pathway requires that haze implementation plans include the following:

- Documentation that prescribed fire programs in the state (whether federal, state, or private) “evaluate and address . . . visibility impairment;”
- “smoke management programs that include all necessary components including, but not limited to, actions to minimize emissions, evaluation of smoke dispersion, alternatives to fire, public notification, air quality monitoring, surveillance and enforcement, and program evaluation;”
- “A statewide inventory and emissions tracking system (spatial and temporal) of VOC, NO<sub>x</sub>, elemental and organic carbon, and fine particle emissions from fire;”

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<sup>30</sup> 81 Fed. Reg. 26,942, 26,946 (2016).

<sup>31</sup> The initial haze implementation period for the 309 pathway is December 17, 2007 to December 31, 2018 (i.e., initial plans were due to the EPA by December 17, 2007 and consisted of the submitting states’ strategies for addressing haze through the end of 2018). Until fairly recently, the initial implementation period for the 308 pathway was December 17, 2007 through July 31, 2018, however the EPA extended the 2018 deadline to July 31, 2021. 82 Fed.Reg. 3,078 (January 10, 2017) (“The EPA also is making a one-time adjustment to the due date for the next periodic comprehensive SIP revisions by extending the existing deadline of July 31, 2018, to July 31, 2021.”)

<sup>32</sup> 40 CFR § 51.308.

<sup>33</sup> 40 CFR § 51.309.

<sup>34</sup> Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, and Wyoming. 40 CFR § 51.309(b)(2).

<sup>35</sup> 81 Fed. Reg. 26,942, 26,950 (May 4, 2016). In addition to provisions pertaining to prescribed fire, the 309 pathway also includes provisions pertaining to stationary sources, mobile sources, and dust emissions from roads. 40 CFR §§ 51.309(d)(4), 51.309(d)(5), 51.309(d)(7).

- “Identification and removal wherever feasible of any administrative barriers to the use of alternatives to burning;”
- “Enhanced smoke management programs for fire that consider visibility effects;” and
- “Establishment of annual emission goals for fire, excluding wildfire, that will minimize emission increases from fire to the maximum extent feasible.”<sup>36</sup>

The regulations for implementation plans under the 308 pathway (chosen by the forty-seven states that did not choose the 309 pathway described above, and applicable to all fifty states for the comprehensive SIP revisions due by July 31, 2021) include the following “core requirements:”

- Establishment of goals “that provide for reasonable progress towards achieving natural visibility conditions,”<sup>37</sup> as well as analysis and determination of “the rate of progress needed to attain natural visibility conditions by the year 2064,”<sup>38</sup> and
- “[A] long-term strategy that addresses regional haze visibility impairment for each mandatory Class I Federal area within the State and for each mandatory Class I Federal area located outside the State that may be affected by emissions from the State.”<sup>39</sup>

These core implementation plan requirements appear to be the ones most relevant to prescribed fire emissions—the other core requirements are “[c]alculations of baseline and natural visibility conditions,” and various monitoring, reporting, inventorying, and recordkeeping requirements.<sup>40</sup>

In January of 2017, the EPA finalized proposed amendments to the regulations governing the requirements for visibility/haze implementation plans, and among the amendments was one allowing states to “add the estimated impact(s) [from certain prescribed fires] to the natural visibility condition” for purposes of determining the “uniform rate of progress” necessary to achieve the goal of natural visibility by 2064.<sup>41</sup> In other words, this recent amendment allows emissions from certain prescribed fires to be treated as if they were

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<sup>36</sup> 40 CFR § 51.309(d)(6).

<sup>37</sup> 40 CFR § 51.308(d)(1).

<sup>38</sup> 40 CFR § 51.308(d)(1)(i)(B).

<sup>39</sup> 40 CFR § 51.308(d)(3). It should be noted that a significant portion of the regional haze regulations is directed at stationary sources and “best available retrofit technology” (BART) requirements for such sources. Because these requirements do not apply to prescribed fire, they are outside the scope of this document.

<sup>40</sup> 40 CFR §§ 51.308(d)(2) & 51.308(d)(4).

<sup>41</sup> 40 CFR § 51.308(f)(1)(vi)(B).

natural or non-anthropogenic.<sup>42</sup> The particular prescribed fires to which this amendment applies are “wildland prescribed fires that were conducted with the objective to establish, restore, and/or maintain sustainable and resilient wildland ecosystems, to reduce the risk of catastrophic wildfires, and/or to preserve endangered or threatened species during which appropriate basic smoke management practices were applied.”<sup>43</sup> The EPA noted that such prescribed fires “can be consistent with the goal of making reasonable progress towards natural visibility”<sup>44</sup> and “can result in net beneficial impacts on visibility.”<sup>45</sup> The EPA also noted that since the initial implementation of regional haze requirements “the few [Class I areas] that have experienced degradation have not done so because of impacts attributable to prescribed fire,” and that this is expected to continue to be the case.<sup>46</sup> The EPA has acknowledged the need for an increasing amount of prescribed fire: “we do not expect the total acreage subject to prescribed fires on wildlands to decrease in the future because prescribed fire is needed for ecosystem health and to reduce the risk of catastrophic wildfires.”<sup>47</sup>

## D. Conclusion

Emissions from prescribed fires would normally come within the scope of various requirements of the federal Clean Air Act and implementing regulations, however the EPA has carved out what appear to be significant exceptions for emissions from qualifying prescribed fires. These exceptions reflect the EPA’s recognition of the role of prescribed fire in establishing/restoring/maintaining “sustainable and resilient wildland ecosystems,” and in “preserv[ing] endangered or threatened species.”

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<sup>42</sup> The 1977 visibility amendments to the Clean Air Act were specifically aimed at “manmade air pollution.” § 42 U.S.C. 7491(a)(1).

<sup>43</sup> *Id.* This language is very similar to language from the Exceptional Events Exclusion Rule.

<sup>44</sup> 82 Fed. Reg. 3,106-3,107 n. 114 (2017).

<sup>45</sup> 82 Fed. Reg. 3,107 (2017).

<sup>46</sup> 82 Fed. Reg. 3,108 (2017).

<sup>47</sup> 81 Fed. Reg. 26,959 (2016).

## II. Summary of State Prescribed Fire Laws in Eleven Western States

### A. Arizona<sup>48</sup>

Implementation of prescribed fire in Arizona is primarily governed by specific provisions of the Arizona Administrative Code, with the Arizona Department of Environmental Quality (ADEQ) designated as the state agency charged with administering those provisions.

#### 1. Annual Prescribed Fire Planning & Evaluation

Land managers must register all planned burn projects annually with ADEQ.<sup>49</sup> “[B]est efforts” must be made to register before December 31, with a hard deadline of January 31.<sup>50</sup> Along with contact information, registration forms must include:

- All prescribed burn projects and potential wildland fire use areas planned for the next year;
- Maximum project and annual acres to be burned, maximum daily acres to be burned, fuel types within project area, and planned use of emission reduction techniques<sup>51</sup> to support the annual emissions goal<sup>52</sup> for each prescribed burn project;
- Planned use of any smoke management techniques<sup>53</sup> for each prescribed burn project;
- Maximum project and annual acres projected to be burned, maximum daily acres projected to be burned, and a map of the anticipated project area, fuel types and loading within the planned area for an area the [land manager] anticipates for wildland fire use;
- A list of all burn projects that were completed during the previous year;

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<sup>48</sup> It should be noted that it appears that Maricopa County and Pima County each have their own additional requirements for prescribed fires. These requirements are outside the scope of this state law summary.

<sup>49</sup> ARIZ. ADMIN. CODE § R18-2-1503.A.

<sup>50</sup> *Id.* § R18-2-1503.B.

<sup>51</sup> “Emission reduction techniques (ERT)” is defined as “methods for controlling emissions from prescribed fires to minimize the amount of emission output per unit of area burned.” *Id.* § R18-2-1501.8. *See* section II.A.4 for a list of emission reduction techniques.

<sup>52</sup> “Annual emissions goal” is defined as the “planned quantifiable value of emissions reduction from prescribed fires and fuels management activities.” *Id.* § R18-2-1501.3.

<sup>53</sup> “Smoke management techniques (SMT)” is defined as “management and dispersion practices used during a prescribed burn or wildland fire use incident which affect the direction, duration, height, or density of smoke.” *Id.* § R18-2-1501.19. *See* section II.A.5 for a list of smoke management techniques.

- Project area for treatment, treatment type, fuel types to be treated, and activity fuel loading to support the annual emissions goal for areas to be treated using non-burning alternatives to fire;<sup>54</sup> and
- The area treated using non-burning alternatives to fire during the previous year including the number of acres, the specific types of alternatives utilized, and the location of these areas.<sup>55</sup>

ADEQ is required to

hold a meeting after January 31 and before April 1 of each year between ADEQ and [state and federal land managers] to evaluate the program and cooperatively establish the annual emission goal. The annual emission goal shall be developed to minimize prescribed fire emissions to the maximum extent feasible using emission reduction techniques and alternatives to burning subject to economic, technical, and safety feasibility criteria, and consistent with land management objectives.<sup>56</sup>

## 2. Authorization of Individual Prescribed Fires: Burn Plans & Daily Burn Requests

Land managers must submit a “Burn Plan”<sup>57</sup> form “no later than 14 days before the date on which the [land manager] requests permission to burn.”<sup>58</sup> In addition to “[t]he name of the official submitting the Burn Plan on behalf of the [land manager],”<sup>59</sup> an emergency phone number “that is answered 24 hours a day,”<sup>60</sup> and “[t]he number of acres to be burned, the quantity and type of fuel, type of burn, and

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<sup>54</sup> “Non-burning alternatives to fire” is defined as follows: “[T]echniques that replace fire for at least five years as a means to treat [fuels created by human activities such as thinning or logging] to achieve a particular land management objective (e.g., reduction of fuel-loading, manipulation of fuels, enhancement of wildlife habitat, and ecosystem restoration). These alternatives are not used in conjunction with fire. Techniques used in conjunction with fire are referred to as emission reduction techniques (ERTs).” *Id.* § R18-2-1501.13.

<sup>55</sup> *Id.* § R18-2-1503.C.

<sup>56</sup> *Id.* § R18-2-1503.G. “At least once every five years, ADEQ shall request long-term projections of future prescribed fire and wildland fire use activity from the [state and federal land managers] to support planning for visibility impairment and assessment of other air quality concerns by ADEQ.” *Id.* § R18-2-1503.H.

<sup>57</sup> “Burn plan” is defined as “the ADEQ form that includes information on the conditions under which a burn will occur with details of the burn and smoke management prescriptions.” R18-2-1501.4.

<sup>58</sup> *Id.* § R18-2-1504.

<sup>59</sup> *Id.* § R18-2-1504.8.

<sup>60</sup> *Id.* § R18-2-1504.1.



the ignition technique to be used,”<sup>61</sup> the form must contain the burn prescription,<sup>62</sup> the smoke management prescription,<sup>63</sup> “[t]he land management objective or purpose for the burn,”<sup>64</sup> and (unless waived) “[a] map depicting the potential impact of the smoke.”<sup>65</sup> Additionally, unless waived, “[m]odeling of smoke impacts” is required for all burns in excess of 250 acres and for burns in excess of fifty acres that are within fifteen miles of a smoke-sensitive area.<sup>66</sup>

Prior to igniting a prescribed burn, land managers must receive ADEQ approval<sup>67</sup> of a “Daily Burn Request,” which must be submitted to ADEQ via form by 2 P.M. on “the business day preceding the burn.”<sup>68</sup> The form must contain contact information, information on the area to be burned, “[p]rojected smoke impacts,” and “local conditions or circumstances known to [land manager] that, if conveyed to ADEQ, could impact the Daily Burn authorization process.”<sup>69</sup> Land managers must implement as many emission reduction techniques and smoke management techniques “as are feasible subject to economic, technical, and safety feasibility criteria, and land management objectives.”<sup>70</sup> ADEQ evaluates daily burn requests using the following twelve factors “for each smoke management unit.”<sup>71</sup>

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<sup>61</sup> *Id.* § R18-2-1504.4.

<sup>62</sup> *Id.* § R18-2-1504.2. “Burn prescription” is defined as “the pre-determined area, fuel, and weather conditions required to attain planned resource management objectives.” R18-2-1501.5. “Planned resource management objectives” is defined as “public interest goals in support of land management agency objectives including silviculture, wildlife habitat management, grazing enhancement, fire hazard reduction, wilderness management, cultural scene maintenance, weed abatement, watershed rehabilitation, vegetative manipulation, and disease and pest prevention.” *Id.* § R18-2-1501.15.

<sup>63</sup> *Id.* § R18-2-1504.3. “Smoke management prescription” is defined as “the predetermined meteorological conditions that affect smoke transport and dispersion under which a burn could occur without adversely affecting public health and welfare.” *Id.* § R18-2-1501.18.

<sup>64</sup> *Id.* § R18-2-1504.5.

<sup>65</sup> *Id.* § R18-2-1504.6. “Potential impact” must be determined “by mapping both the daytime and nighttime smoke path and down-drainage flow for 15 miles from the burn site, with smoke-sensitive areas delineated.” *Id.*

<sup>66</sup> *Id.* § R18-2-1504.6. “Smoke-sensitive areas” include Class I Areas, particulate non-attainment areas, and carbon monoxide non-attainment areas. *Id.*

<sup>67</sup> *Id.* § R18-2-1505.D.

<sup>68</sup> *Id.* § R18-2-1505.C. If ADEQ does not approve a burn request by 10 P.M. on the day on which the request was submitted, the request is “approved by default after the burner makes a good faith effort to contact ADEQ to confirm that the Burn Request was received.” *Id.* § R18-2-1505.D.2.

<sup>69</sup> *Id.* § R18-2-1505.A.

<sup>70</sup> *Id.* §§ R18-2-1509.A. & R18-2-1510.A. *See* sections II.A.4 & II.A.5. below for a complete list of emission reduction techniques and smoke management techniques.

<sup>71</sup> *Id.* § R18-2-1506. “Smoke management unit” is defined as “any of the geographic areas defined by ADEQ whose area is based on primary watershed boundaries and whose outline is determined by diurnal windflow patterns that allow smoke to follow predictable drainage

1. Analysis of the emissions from burns in progress and residual emissions from previous burns on a day-to-day basis;
2. Analysis of emissions from active wildland fire use incidents, and active multiple-day burns, and consideration of potential long-term emissions estimates;
3. Analysis of the emissions from wildfires greater than 100 acres and consideration of their potential long-term growth;
4. Local burn conditions;
5. Burn prescription and smoke management prescription from the applicable Burn Plan;
6. Existing and predicted local air quality;
7. Local and synoptic meteorological conditions;
8. Type and location of areas to be burned;
9. Protection of the national visibility goal for Class I Areas under § 169A(a)(1) of the [Clean Air] Act and 40 CFR 51.309;
10. Assessment of duration and intensity of smoke emissions to minimize cumulative impacts;
11. Minimization of smoke impacts in Class I Areas, areas that are non-attainment for particulate matter, carbon monoxide non-attainment areas, or other smoke-sensitive areas; and
12. Protection of the National Ambient Air Quality Standards.<sup>72</sup>

### 3. Reporting & Monitoring

Land managers must submit “Burn Accomplishment” forms to ADEQ “by 2:00 p.m. of the business day following the approved burn.”<sup>73</sup> These forms must contain “[a]ny known conditions or circumstances that could impact the Daily Burn decision process,” “[t]he date, location, fuel type, fuel loading, and acreage accomplishments,” and emission reduction techniques and smoke management techniques used.<sup>74</sup> Unless waived, “for burns greater than 250 acres per day, or greater than 50 acres per day” within 15 miles of a smoke-sensitive area, land managers must monitor burns using smoke plume measurements and pilot balloons or test burns.<sup>75</sup> ADEQ may also require land managers to monitor air quality before and during prescribed burns “if necessary to assess smoke impacts”<sup>76</sup> and may require land managers to “monitor weather before or during” prescribed burns “if necessary to predict or assess smoke

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patterns.” *Id.* § R18-2-1501.20. It appears that a map of Arizona’s smoke management units is available at <http://legacy.azdeq.gov/environ/air/smoke/images/mgmt.jpg>.

<sup>72</sup> ARIZ. ADMIN. CODE § R18-2-1506.

<sup>73</sup> *Id.* § R18-2-1507.A.

<sup>74</sup> *Id.*

<sup>75</sup> *Id.* § R18-2-1511.C.

<sup>76</sup> *Id.* § R18-2-1511.A.

impacts.”<sup>77</sup> ADEQ can also require land managers to establish “remote automated weather stations or their equivalent” for monitoring weather.<sup>78</sup>

#### 4. Emission Reduction Techniques<sup>79</sup>

Emission Reduction Techniques include:

1. Reducing biomass to be burned by use of techniques such as yarding or consolidation of unmerchandisable material, multi-product timber sales, or public firewood access, when economically feasible;
2. Reducing biomass to be burned by fuel exclusion practices such as preventing the fire from consuming dead snags or dead and downed woody material through lining, application of fire-retardant foam, or water;
3. Using mass ignition techniques such as aerial ignition by helicopter to produce high intensity fires of high fuel density areas such as logging slash decks;
4. Burning only fuels essential to meet resource management objectives;
5. Minimizing consumption and smoldering by burning under conditions of high fuel moisture of duff and litter;
6. Minimizing fuel consumption and smoldering by burning under conditions of high fuel moisture of large woody fuels;
7. Minimizing soil content when slash piles are constructed by using brush blades on material-moving equipment and by constructing piles under dry soil conditions or by using hand piling methods;
8. Burning fuels in piles;
9. Using a backing fire in grass fuels;
10. Burning fuels with an air curtain destructor, as defined in R18-2-101, operated according to manufacturer specifications and meeting applicable state or local opacity requirements;
11. Extinguishing or mopping-up of smoldering fuels;
12. Chunking of piles and other consolidations of burning material to enhance flaming and fuel consumption, and to minimize smoke production;
13. Burning before litter fall;
14. Burning before green-up of fuels;
15. Burning before recently cut large fuels cure in areas with activity; and
16. Burning just before precipitation to reduce fuel smoldering and consumption.

#### 5. Smoke Management Techniques<sup>80</sup>

Smoke management techniques include:

1. Burning from March 15 through September 15, when meteorological conditions allow for good smoke dispersion;
2. Igniting burns under good-to-excellent ventilation conditions;

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<sup>77</sup> *Id.* § R18-2-1511.B.

<sup>78</sup> *Id.*

<sup>79</sup> *Id.* § R18-2-1509.B.

<sup>80</sup> *Id.* § R18-2-1510.B.

3. Suspending operations under poor smoke dispersion conditions;
4. Considering smoke impacts on local community activities and land users;
5. Burning piles when other burns are not feasible, such as when snow or rain is present;
6. Using mass ignition techniques such as aerial ignition by helicopter to produce high intensity fires with short duration impacts;
7. Using all opportunities that meet the burn prescription and all burn locations to spread smoke impacts over a broader time period and geographic area;
8. Burning during optimum mid-day dispersion hours, with all ignitions in a burn unit completed by 3:00 p.m. to prevent trapping smoke in inversions or diurnal windflow patterns;
9. Providing information on the adverse impacts of using green or wet wood as fuel when public firewood access is allowed;
10. Implementing maintenance burning in a periodic rotation to shorten prescribed fire duration and to reduce excessive fuel accumulations that could result in excessive smoke production in a wildfire; and
11. Using wildland fire-use strategies to shift smoke into more favorable smoke dispersion seasons.

## B. California

Implementation of prescribed fire in California is primarily governed by California's "Smoke Management Guidelines for Agricultural and Prescribed Burning,"<sup>81</sup> which is administered by California's Air Resources Board and California's thirty-five air districts.

### 1. General Requirements

"The Guidelines are intended to provide for the continuation of . . . prescribed burning, as a resource management tool, and provide increased opportunities for prescribed burning . . . while minimizing smoke impacts on the public."<sup>82</sup> The Guidelines require California's Air Resources Board (ARB) to make a daily determination for each of California's fifteen air basins regarding whether meteorological criteria indicate a "permissive burn day" or a "no-burn day."<sup>83</sup> The ARB must announce the burn status of a particular day by 3:00 p.m. on the preceding day, unless "conditions preclude a forecast until the next day," in which case the ARB must make its burn status announcement by 7:45 a.m.<sup>84</sup> The ARB may declare "marginal burn days" "if meteorological conditions approach the [meteorological] criteria . . . for permissive burn days."<sup>85</sup> "A marginal burn day allows [for] limited amounts of burning for individual projects in an air basin or other specified area if . . . smoke impacts to smoke sensitive areas are not expected as a result of that burning."<sup>86</sup>

#### Air District Daily Smoke Management Programs & Burn Authorization Systems

Individual burns in California are permitted by one of California's thirty-five air districts or by a "designated agency."<sup>87</sup> "Designated agency" is defined as "any agency designated by the Air Resources Board as having authority to issue agricultural burning, including prescribed burning, permits."<sup>88</sup> Air districts may request designation of agencies, and the Guidelines

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<sup>81</sup> CAL. CODE REGS. tit. 17, §§ 80100 – 80330.

<sup>82</sup> *Id.* § 80100. "Prescribed burning" is defined as "the planned application of fire to vegetation to achieve any specific objective on lands selected in advance of that application." *Id.* § 80101(a)(3).

<sup>83</sup> *Id.* § 80110(a). The Guidelines contain specific meteorological criteria for each basin for determining whether a particular day is a permissive burn day. *See id.* §§ 80180–80330. For a map depicting California's fifteen air basins, *see* <https://www.arb.ca.gov/ei/maps/2017statemap/abmap.htm>

<sup>84</sup> CAL. CODE REGS. tit. 17, § 80110(b).

<sup>85</sup> *Id.* § 80110(c).

<sup>86</sup> *Id.* "Smoke sensitive areas" is defined as "populated areas and other areas where a district determines that smoke and air pollutants can adversely affect public health or welfare. Such areas can include, but are not limited to, towns and villages, campgrounds, trails, populated recreational areas, hospitals, nursing homes, schools, roads, airports, public events, shopping centers, and mandatory Class I areas." *Id.* § 80101(II).

<sup>87</sup> *Id.* § 80120(a). Given that fact that there are over twice as many California air districts as there are air basins, many districts encompass just a portion of a basin (as opposed to entire basins). For a map depicting California's air districts, *see* <https://www.arb.ca.gov/capcoa/dismap.htm>.

<sup>88</sup> *Id.* § 80101(j).



specify that the U.S. Forest Service and the California Department of Forestry and Fire Protection are designated agencies.<sup>89</sup> Each air district is required to “adopt, implement and enforce a smoke management program consistent with the[] Guidelines,”<sup>90</sup> and a “daily burn authorization system” “developed by the air district in consultation with the ARB” is one of the required elements of these smoke management programs.<sup>91</sup> The purpose of these daily burn authorization systems is “to minimize smoke impacts on smoke sensitive areas, avoid cumulative smoke impacts, and prevent public nuisance.”<sup>92</sup> Burn authorization systems cannot “allow more burning on a daily basis than is appropriate for the meteorological or air quality conditions” and must “specify the amount, timing and location of each burn event.”<sup>93</sup> Burn authorizations must “consider the following factors as necessary:”

- “air quality”
- “meteorological conditions expected during burning, including wind speeds and directions at the surface and aloft, and atmospheric stability”
- “types and amounts of materials to be burned”
- “location and timing of materials to be burned”
- “locations of smoke sensitive areas”
- “smoke from all burning activities, including burning in neighboring air districts or regions which may affect the district or region.”<sup>94</sup>

Air districts’ burn authorization systems must include procedures “for authorizing . . . prescribed burns 24 hours prior to ignition”<sup>95</sup> as well as “[p]rocedures for issuing 48-hour forecasts, 72-hour outlooks, and 96-hour trends for specific prescribed burns.”<sup>96</sup>

## 2. Additional Requirements for Districts with Prescribed Burning in Wildlands

The Guidelines impose a number of additional requirements on smoke management programs for districts with “prescribed burning in wildlands or urban interfaces.”<sup>97</sup> Additional requirements for smoke management programs for these districts include:

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<sup>89</sup> *Id.*

<sup>90</sup> *Id.* § 80140(a). The Guidelines also allow for multiple districts to jointly implement regional smoke management programs. *See id.* at § 80140(b).

<sup>91</sup> *Id.* § 80145(a).

<sup>92</sup> *Id.*

<sup>93</sup> *Id.*

<sup>94</sup> *Id.* § 80145(a)(1)-(6).

<sup>95</sup> *Id.* § 80145(g).

<sup>96</sup> *Id.* § 80145(f). Air districts “may request that the ARB provide these forecasts for specific prescribed burns,” *id.*, which are “prediction[s] of the meteorological and air quality conditions that are expected to exist for a specific prescribed burn in a specific area [the specified number of] hours from the day of the prediction.” *Id.* §§ 80101(p), (u), & (hh).

<sup>97</sup> *Id.* § 80160.

- “[R]egistration of all planned burn projects annually or seasonally”<sup>98</sup>
- “[S]moke management plans for all burn projects greater than 10 acres in size or estimated to produce more than 1 ton of particulate matter,” with such plans at minimum containing:
  - “Location, types, and amounts of material to be burned”
  - “Expected duration of the fire from ignition to extinction”
  - “Identification of responsible personnel, including telephone contacts”
  - “Identification and location of all smoke sensitive areas”<sup>99</sup>
- More extensive smoke management plans “for burn projects greater than 100 acres in size or estimated to produce more than 10 tons of particulate matter,” with such plans at minimum containing the following additional information (i.e., in addition to the requirements listed above for burns greater than ten acres or estimated to produce greater than one ton of particulate matter):
  - “Identification of meteorological conditions necessary for burning”
  - “The smoke management criteria the land manager or his/her designee will use for making burn ignition decisions”
  - “Projections, including a map, of where the smoke from burns are [sic] expected to travel, both day and night”
  - “Specific contingency actions (such as fire suppression or containment) that will be taken if smoke impacts occur or meteorological conditions deviate from those specified in the smoke management plan”
  - “An evaluation of alternatives to burning considered,” with relevant NEPA or CEQA documentation sufficient for satisfying this provision (and attachment of this documentation required if it exists)
  - “Discussion of public notification procedures”<sup>100</sup>
- Districts may require that burn plans include “appropriate monitoring” for burns that “may impact smoke sensitive areas,” including (but not limited to) burns near smoke sensitive areas, burns that exceed 250 acres, and those that “will continue burning or producing smoke overnight”<sup>101</sup>
- “[A]s appropriate, daily coordination between the land manager or his/her designee and the air district or the ARB for multi-day burns which may impact smoke sensitive areas”<sup>102</sup>

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<sup>98</sup> *Id.* § 80160(a).

<sup>99</sup> *Id.* § 80160(b)(1)-(4). Where “consistent with the intent of [§ 80160],” districts may specify alternative acreage and tonnage thresholds to those specified in § 80160(b), (c), and (d). § 80160(f).

<sup>100</sup> *Id.* § 80160(c)(1)-(6).

<sup>101</sup> *Id.* § 80160(d). “[A]ppropriate monitoring . . . may include visual monitoring, ambient particulate matter monitoring or other monitoring approved by the district.” *Id.*

<sup>102</sup> *Id.* § 80160(e).

- “[D]istrict review and approval of smoke management plans” and district notice to the ARB regarding “large or multi-day burns” and “consult[ation] with the ARB on procedures for ARB review and approval of large or multi-day burns”<sup>103</sup>
- “[P]ost-burn smoke management evaluation by the burner for fires greater than 250 acres”<sup>104</sup>
- “[P]rocedures for public notification and education, including appropriate signage at burn sites, and for reporting of public smoke complaints”<sup>105</sup>
- Requirements for “vegetation to be in a condition that will minimize the smoke emitted during combustion when feasible, considering fire safety and other factors”<sup>106</sup>
- Requirements for “material to be burned to be piled where possible, unless good silvicultural practices or ecological goals dictate otherwise”<sup>107</sup>
- Requirements for “piled material to be burned to be prepared so that it will burn with a minimum of smoke”<sup>108</sup>
- For burns “primarily for improvement of land for wildlife and game habitat,” requirements for “a statement from the Department of Fish and Game certifying that the burn is desirable and proper.”<sup>109</sup>

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<sup>103</sup> *Id.* § 80160(g). It appears that “large or multi-day burns” in this context translates to burns in excess 250 acres and burns that may affect smoke sensitive areas over the course of more than one day. *Id.* §§ 80160(d) & (e).

<sup>104</sup> *Id.* § 80160(k).

<sup>105</sup> *Id.* § 80160(l).

<sup>106</sup> *Id.* § 80160(m).

<sup>107</sup> *Id.* § 80160(n).

<sup>108</sup> *Id.* § 80160(o).

<sup>109</sup> *Id.* § 80160(p).

## C. Colorado<sup>110</sup>

Implementation of prescribed fire in Colorado is primarily governed by the Colorado Air Quality Control Commission's "Regulation Number 9,"<sup>111</sup> which is administered by the Commission and the Air Pollution Control Division of Colorado's Department of Public Health & Environment.

### 1. Permit Applications & Conditions

Colorado requires permits for both "planned ignition fires"<sup>112</sup> and "unplanned ignition fires,"<sup>113</sup> with both types of fires encompassed by Colorado's definition of "prescribed fire."<sup>114</sup> Applications for planned ignition fire permits "must demonstrate that the planned ignition fire can and will be conducted in a manner that minimizes the emissions from the burn and the impacts of the smoke on visibility and on the health and welfare of the public."<sup>115</sup> In determining whether to grant a permit (and what conditions to include in the permit if granted), Colorado's Department of Public Health & Environment or an "authorized local agency"<sup>116</sup> must consider numerous factors, including:

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<sup>110</sup> Colorado's regulations provide for an alternative "de minimus" permitting pathway for planned ignition fires with "a low potential for smoke impacts," which is determined via consideration of project size, fuel type, duration, and proximity to smoke-sensitive areas. *See* 5 CODE COLO. REGS. § 1001-11 IV.A.1. and Appendix A to 5 CODE COLO. REGS. § 1001-11. Forest burns of less than five acres are "considered to have low potential for smoke impacts" for purposes of size, fuel type, and duration, with proximity to smoke-sensitive areas for such burns addressed via permit conditions. *Id.* at Appendix A. This legal summary focuses on the non-de minimus/normal planned ignition fire-permitting pathway.

<sup>111</sup> *Id.* § 1001-11. The Colorado Air Quality Control Commission is a nine member governor-appointed/Colorado Senate-confirmed body charged with promulgating regulations implementing Colorado's air quality laws. *See* COLO. REV. STAT. §§ 25-7-104, 25-7-105, and 25-7-102.

<sup>112</sup> 5 CODE COLO. REGS. § 1001-11 V.A. "Planned Ignition Fire" is defined as "[a] prescribed fire ignited by a specific man-made action intended for the purpose of using the fire for grassland or forest management," *Id.* § 1001-11 II.N. Planned ignition fires with low potential for smoke impacts require open burning permits instead of prescribed fire permits. *Id.* § 1001-11 V.A.

<sup>113</sup> *Id.* § VI.A. "Unplanned Ignition Fire" is defined as "[a] prescribed fire ignited by natural phenomena or by military munitions." *Id.* § 1001-11 II.T.

<sup>114</sup> "Prescribed Fire" is defined as "[f]ire that is intentionally used for grassland or forest management, including vegetative, habitat or fuel management, regardless of whether the fire is ignited by natural or human means." 5 *Id.* § 1001-11 II.M.

<sup>115</sup> *Id.* § 1001-11 V.C.

<sup>116</sup> The Air Pollution Control Division of the Department is authorized to delegate permitting authority to "authorized local agencies." *See id.* § 1001-11 II.C.

- the location of the burn and its proximity “to any building or other structure”<sup>117</sup> as well as its proximity to “smoke-sensitive areas and class I areas;”<sup>118</sup>
- meteorological conditions (including “measures that the applicant will take to ensure that the burn will be conducted only during those . . . meteorological conditions” identified in the permit application;<sup>119</sup>
- “[w]hether the applicant evaluated the use of non-burning fuel treatments in place of the proposed burn;”<sup>120</sup>
- the “smoke risk rating” for the burn;<sup>121</sup>
- proposed “smoke mitigation techniques;”<sup>122</sup>
- “[w]hether the applicant has demonstrated, through an emissions and smoke generation projection based on a model approved by the Division, the conditions under which the proposed prescribed fire will be conducted and that the applicant will protect scenic and/or important vistas and visibility in class I areas, will minimize the impacts of emissions and smoke and will not cause a violation of any ambient air quality standards;”<sup>123</sup>
- “[w]hether the applicant” demonstrates that the burn will comply with Colorado’s State Implementation Plan;<sup>124</sup> and
- “[w]hether the applicant will conduct the burn in accordance with a “smoke management”<sup>125</sup> plan or narrative that requires:
  - a. That best smoke management methods will be used to minimize or eliminate smoke impacts at smoke-sensitive receptors;
  - b. That the burn will be scheduled outside times of significant visitor use in smoke-sensitive receptor areas that may be impacted by smoke and emissions from the fire;

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<sup>117</sup> *Id.* § 1001-11 IV.B.1.a.

<sup>118</sup> *Id.* § 1001-11 V.D.3. “Smoke Sensitive Areas or Receptors” is defined to include Class I areas, “urban and rural population centers, schools, hospitals, nursing homes, transportation facilities such as roads and airports, recreational areas, and other locations that may be sensitive to smoke impacts for health, safety, and/or aesthetic reasons.” *Id.* § 1001-11 II.R.

<sup>119</sup> *Id.* § 1001-11 V.D.4.

<sup>120</sup> *Id.* § 1001-11 V.D.2.

<sup>121</sup> *Id.* § 1001-11 V.D.5. “Smoke risk rating” is calculated via a worksheet available from the Division.

<sup>122</sup> *Id.* § 1001-11 V.D.6. The term “smoke mitigation technique” is not defined in the regulation.

<sup>123</sup> *Id.* § 1001-11 V.D.7. The regulation does not elaborate on the referenced “emissions and smoke generation projection.”

<sup>124</sup> *Id.* § 1001-11 V.D.9.

<sup>125</sup> Colorado’s regulation does not specifically define the term “smoke management plan,” but does define “smoke management” as follows: “Use of techniques to reduce smoke emissions, dilute smoke, identification and reduction of the impact of smoke on smoke-sensitive areas, monitoring and evaluation of smoke impacts from individual and collective burns and coordination among land managers for these purposes.” *Id.* § 1001-11 II.Q.



- c. A monitoring plan to allow appropriate evaluation of smoke impacts at smoke-sensitive receptors;
- d. That smoke management contingency measures will be taken if unacceptable smoke impacts occur at smoke-sensitive receptors; and
- e. That measures will be taken to notify the public in smoke-sensitive areas at least twenty-four hours, and not more than 120 hours, in advance of the planned ignition of the fire regarding the location, expected duration and projected smoke impacts from the fire.”<sup>126</sup>

Burn permits must include those conditions “necessary to ensure that the burn will be conducted so as to minimize the impacts of the fire on visibility and on public health and welfare.”<sup>127</sup> More particularly, permits must include conditions that:

- Prohibit burns “during periods of publicly announced air pollution emergencies or alerts in the area of the proposed burn;”<sup>128</sup>
- Require the use of “the best smoke management techniques appropriate to the proposed burn;”<sup>129</sup>
- Require that, “[t]o the degree practical,” all burning “shall be conducted during periods conducive to smoke dispersal;”<sup>130</sup>
- Require burn supervision “by a responsible person who shall have available the means to suppress the burn if the fire does not comply with the terms and conditions of the permit;”<sup>131</sup>
- Allow for inspection of burning operations by the Air Pollution Control Division of Colorado’s Department of Public Health & Environment and/or an authorized local agency;<sup>132</sup>
- Indicate that the permit applies only to “state air pollution control requirements,” and not to any local laws with which the permit holder must also comply<sup>133</sup>;

The Division must evaluate burn permit applications to determine whether proposed burns “pose a high smoke risk,” and if the Division makes an affirmative determination then it must provide public notice and “issue a draft permit for public comment.”<sup>134</sup> The Division must consider comments received “in determining whether to issue a permit and what conditions to impose,” and must grant or deny the permit within thirty days of the close of the comment period.<sup>135</sup>

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<sup>126</sup> *Id.* § 1001-11 V.D.8.

<sup>127</sup> *Id.* § 1001-11 V.E.2.

<sup>128</sup> *Id.* § 1001-11 IV.C.1. This prohibition can be waived via “direct written permission” from the permit-granting authority. *Id.*

<sup>129</sup> *Id.* § 1001-11 IV.C.2.

<sup>130</sup> *Id.* § 1001-11 IV.C.3.

<sup>131</sup> *Id.* § 1001-11 IV.C.7.

<sup>132</sup> *Id.* § 1001-11 IV.C.8.

<sup>133</sup> *Id.* § 1001-11 IV.C.9.

<sup>134</sup> *Id.* § 1001-11 V.F.2.

<sup>135</sup> *Id.*

## 2. Standard and Non-Standard Permits

The Division issues standard and non-standard burn permits<sup>136</sup> because prescribed fire regulations give it significant discretion to determine permit conditions.<sup>137</sup> Standard conditions “are a predictable and consistent set of permitting constraints that are relevant for most but not all burns.”<sup>138</sup> Although the standard conditions to apply to a particular project depend on fuel type and the burn’s proximity to communities, they generally “reflect near-upper limits of what had successfully been burned in the past in Colorado without known undue smoke impacts.”<sup>139</sup> Applicants requesting standard conditions for prescribed fire permits must complete application Form B and submit it to the Division for review.<sup>140</sup>

Applicants requesting non-standard permit conditions must complete and submit Form C, in addition to Form B.<sup>141</sup> Non-standard conditions can be “looser, tighter, or otherwise different from standard.”<sup>142</sup> The Division cites three principal reasons for non-standard permits.<sup>143</sup> First, some projects require more restrictive permit conditions due to the project’s unique characteristics. An example is allowing fewer acres of burning per day for projects in areas with low potential for smoke dispersion.<sup>144</sup> The second reason for non-standard permit conditions is that they allow the Division to participate in experiments that may help loosen standard conditions in the future.<sup>145</sup> Finally, the third reason for non-standard conditions is that they allow applicants to exchange constraints when the net smoke risk is essentially unchanged.<sup>146</sup> For example, a non-standard permit could allow an applicant to trade fewer daily acres burned for the ability to burn in any wind direction if the Division determines that the net smoke risk would be the same.<sup>147</sup>

Although the Division can initiate non-standard permit conditions, permit applicants typically propose their own non-standard conditions by completing and submitting Form C.<sup>148</sup> Applicants requesting less stringent conditions must provide justification and a

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<sup>136</sup> See AIR POLLUTION CONTROL DIVISION, COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, COLORADO SMOKE MANAGEMENT PROGRAM MANUAL 50 (2017).

<sup>137</sup> Permits shall include, but not be limited to, “all permit conditions necessary to ensure that the burn will be conducted so as to minimize the impacts of the fire on visibility and on public health and welfare.” 5 CODE COLO. REGS. § 1001-11 V.E.2.

<sup>138</sup> AIR POLLUTION CONTROL DIVISION, COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, COLORADO SMOKE MANAGEMENT PROGRAM MANUAL 50 (2017).

<sup>139</sup> *Id.*

<sup>140</sup> See *id.* at 22.

<sup>141</sup> *Id.* at 51.

<sup>142</sup> *Id.* at 50.

<sup>143</sup> See *id.* at 50-51.

<sup>144</sup> *Id.* at 50.

<sup>145</sup> *Id.*

<sup>146</sup> *Id.* at 51.

<sup>147</sup> *Id.*

<sup>148</sup> *Id.*

statement of reasons supporting their request.<sup>149</sup> The Division will review non-standard permit applications for consistency with prescribed fire regulations<sup>150</sup> and to consider appropriate monitoring requirements and opportunities to share information.<sup>151</sup> Even though the Division must approve or deny the non-standard permit application within 30 days of submittal, it is more likely to talk with the applicant to revise conditions rather than deny the application.<sup>152</sup>

### 3. Additional Requirements for Significant Users of Prescribed Fire

“Significant users of prescribed fire”<sup>153</sup> in Colorado are required to submit plans to the state “addressing the use and role of prescribed fire and the air quality impacts resulting there from [sic].”<sup>154</sup> Specifically, significant users must submit “planning documents for each area in which the user intends to use prescribed fire” to the Colorado Air Quality Control Commission.<sup>155</sup> These planning documents must “[e]xplain the decision process and criteria considered or applied” in identifying “fuel treatment alternatives to achieve . . . fuel, habitat, and/or vegetative land management goals” and in selecting among these alternatives,<sup>156</sup> and must discuss how prescribed fire “minimizes risk of wildfire” where it is the selected alternative.<sup>157</sup> Planning documents must also demonstrate consideration of the following state standard and how compliance with this standard will be achieved: “minimize emissions using all available, practicable methods that are technologically feasible and economically reasonable in order to minimize the impact or reduce the potential for such impact on both the attainment and maintenance of national ambient air quality standards and achievement of federal and state visibility goals.”<sup>158</sup> The Air Pollution Control Division of Colorado’s Department of Public Health & Environment must review planning documents submitted to the Commission, and “present its comments and recommendations to the Commission.”<sup>159</sup> The Commission must hold a public hearing “and complete its review of

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<sup>149</sup> *Id.*

<sup>150</sup> 5 CODE COLO. REGS. § 1001-11.

<sup>151</sup> AIR POLLUTION CONTROL DIVISION, COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, COLORADO SMOKE MANAGEMENT PROGRAM MANUAL 51 (2017).

<sup>152</sup> *Id.*

<sup>153</sup> Colorado defines “Significant User of Prescribed Fire” in pertinent part as “[a] federal, state, or local agency or significant management unit thereof” that “[c]ollectively manages or owns more than 10,000 acres of grassland and/or forest land within the state” and whose planned use of prescribed fire in a calendar year “will generate more than ten tons of PM<sub>10</sub>.” 5 CODE COLO. REGS. § 1001-11 II.P. Appendix B of the regulation contains guidelines for estimating PM<sub>10</sub> emissions from prescribed fires.

<sup>154</sup> *Id.* § 1001-11 VII.B.1.

<sup>155</sup> *Id.* § 1001-11 VII.B.1. “Planning Document” is defined as “[a] document that summarizes the use of prescribed fire as a grassland or forest management tool and the associated discharge or release of air pollution.” *Id.* § 1001-11 II.P.

<sup>156</sup> *Id.* § 1001-11 VII.B.2.d.

<sup>157</sup> *Id.* § 1001-11 VII.B.2.e.

<sup>158</sup> *Id.* §§ 1001-11 VII.B.2.f. and 1001-11 VII.C.

<sup>159</sup> *Id.* § 1001-11 VII.D.2.

the planning document within forty-five calendar days of receipt of the document unless the significant user of prescribed fire agrees to a longer review period.”<sup>160</sup>

#### 4. Payment of State Fees

Prescribed fire permittees that receive permits from the state<sup>161</sup> must pay the state fees to cover “the direct and indirect costs incurred” by the state in operating and administering its smoke management program.<sup>162</sup> Significant users of prescribed fire must pay additional fees to the Division “for the direct and indirect cost of evaluating [planning] documents” submitted.<sup>163</sup>

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<sup>160</sup> *Id.* § 1001-11 VII.D.3.

<sup>161</sup> As opposed to receiving permits from an authorized local agency. *See id.* § 1001-11 VIII.C.1.

<sup>162</sup> *Id.* § 1001-11 VIII.C.3.

<sup>163</sup> *Id.* § 1001-11 VIII.B.1.

## D. Idaho

Implementation of prescribed fire in Idaho is unique among the eleven western states inasmuch as implementation is primarily administered by the Montana/Idaho Airshed Group (the Group), which “is composed of state, federal, tribal and private member organizations who are dedicated to the preservation of air quality in Montana and Idaho,” with members consisting of “prescribed burners and the public health and regulatory agencies . . . working cooperatively to prevent smoke impacts while using fire to accomplish land management objectives.”<sup>164</sup> Members of the Group commit (via a memorandum of understanding) to abide by an agreed-upon smoke management program and an operating guide (“which details the policy and procedures to which all members agree”).<sup>165</sup> The operating guide encourages land managers to “consider and evaluate alternative treatments to fire to achieve land management objectives,” and in instances in which there are “no feasible alternatives,” the guide requires land managers to utilize emission reduction techniques “as appropriate,” and to conduct proper smoke management.<sup>166</sup>

### 1. Airshed Units & Airshed Management System

The Group is divided into three geographic airshed units (Montana, North Idaho, and South Idaho),<sup>167</sup> with each of these units “further divided into geographically defined airsheds.”<sup>168</sup> Additionally, there is also a Missoula-based “Smoke Management Unit” that “coordinates the prescribed burning activities of the three [geographic] units” and administers operating procedures aimed at “prevent[ing] adverse smoke impacts.”<sup>169</sup> The Smoke Management Unit “is responsible to the [Airshed Group executive] board, the [Idaho and Montana regulatory agencies], and each member burner for the daily operation and management of the Smoke Management Program.”<sup>170</sup>

The Group operates the “Airshed Management System” (AMS), which is used by Group member organizations “to coordinate burning through the Smoke Management Unit,”<sup>171</sup> and

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<sup>164</sup> MONTANA/IDAHO AIRSHED GROUP, MONTANA/IDAHO AIRSHED GROUP OPERATING GUIDE 1 (2010). Land managers in Montana “must own or manage over 5,000 acres and must use fire as a management tool on these lands as an ongoing program” in order to be members of the airshed group. *Id.* at 4. This requirement does not appear to apply to land managers in Idaho. *Id.* Montana DEQ “is not a member of the Airshed Group but is the regulatory entity authorized to issue Major Open Burning Permits to Montana members of the . . . Group . . . [and] acts solely as an advisor to the . . . Group.” *Id.* at 33. . See separate Montana summary for Montana-specific requirements.

<sup>165</sup> *Id.* The smoke management program is incorporated within the operating guide.

<sup>166</sup> *Id.* at 3.

<sup>167</sup> *Id.* at 1.

<sup>168</sup> *Id.* at 6. Appendix 5 of the operating guide includes maps depicting these airsheds for each state and textual descriptions of each airshed. *Id.* at 36.

<sup>169</sup> *Id.* at 1.

<sup>170</sup> *Id.* at 6. The Airshed Group Executive Board includes members from Idaho and Montana regulatory agencies, federal land management agencies, and private industry. *Id.*

<sup>171</sup> *Id.* at 4.

allows burners to “enter, track and report prescribed fire data.”<sup>172</sup> The Group provides “daily decision support” to burners during two times of year: a spring season lasting from March 1 to May 31, and a fall season lasting from September 1 to November 30.<sup>173</sup> Burners are expected to enter preseason burn lists into the AMS during the interim periods between these burn seasons.<sup>174</sup> Burners propose burns via the AMS by noon the day before the proposed burn after reviewing the dispersion forecast posted on the Group’s home page.<sup>175</sup> The Smoke Management Unit includes a program coordinator, who “is responsible for reviewing appropriate air quality monitoring data, evaluating planned burning data against the forecast meteorology, and posting daily burn recommendations.”<sup>176</sup> To arrive at this daily burn recommendation, the program coordinator “reviews current and forecast air quality data, forecast dispersion, burn location, and other environmental factors as appropriate to evaluate burn data for units proposed for the following day.”<sup>177</sup> After noon each day (by which time proposed burns for the following day must be entered in the AMS), the program coordinator “evaluates burn information airshed-by-airshed to anticipate cumulative smoke effects for the following day.”<sup>178</sup> Key factors in this evaluation include “burn elevation, wind speed and direction, type of burn, proximity to smoke-sensitive features, [and] anticipated impacts from non-member burners.”<sup>179</sup> The program coordinator posts any restrictions to the Airshed Group home page by 4 PM each day.<sup>180</sup> Burners must “[o]btain daily burn recommendation[s] from the [Smoke Management Unit’s] website before ignition.”<sup>181</sup>

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<sup>172</sup> *Id.* at 14.

<sup>173</sup> *See id.* at 12. “Summer operations support (June 1st to September 1st) is provided to burners on an as-needed basis,” while “Winter burning [December 1 to the end of February] *in Montana* is conducted with special authorization obtained from MT DEQ.” *Id.* The status of winter burning in Idaho is unclear.

<sup>174</sup> *Id.*

<sup>175</sup> *Id.* at 11. During burn seasons, Smoke Management Unit meteorologists post smoke dispersion forecasts by airshed to the Airshed Group web page by approximately 10:00 am” Monday through Friday (with Friday forecasts encompassing Saturday, Sunday, and Monday). *Id.* at 6, 14. Burns proposed for Saturday, Sunday, or Monday must be entered in the AMS by noon on Friday. *Id.* at 14.

<sup>176</sup> *Id.* at 11.

<sup>177</sup> *Id.* at 15. These reviews take place Monday through Friday, with burn units for Saturday, Sunday and Monday assessed on Fridays. *Id.*

<sup>178</sup> *Id.*

<sup>179</sup> *Id.*

<sup>180</sup> *Id.* The Idaho and Montana DEQs and local air agencies “may review the forecast and burn proposals by 2:30 pm Mountain Time and relay any issues or concerns to the Program Coordinator.” *Id.*

<sup>181</sup> *Id.* at 11.

## 2. Additional Requirements & Provisions

In addition to process outlined above, the operating guide:

- Provides for requests for exceptions where “local air quality and dispersion conditions may indicate that a restricted burn may be successfully accomplished;”<sup>182</sup>
- Specifies that “Local regulatory authorities (County air programs in MT; regional DEQ offices in ID) may impose additional burn restrictions after the [Smoke Management Unit] burn recommendations have been posted” and that these restrictions supersede Smoke Management Unit decisions;<sup>183</sup>
- Specifies that “Burns that will require more than one consecutive day of ignition to complete require additional coordination outside the AMS process;”<sup>184</sup>
- Specifies that “Special notification and direct approval from both DEQs” is required for “Extended-duration Landscape-scale Prescribed Burns.”<sup>185</sup>

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<sup>182</sup> *Id.* at 16.

<sup>183</sup> *Id.*

<sup>184</sup> *Id.* at 17.

<sup>185</sup> *Id.* at 18. While not specifically defined, “Extended-duration Landscape-scale Prescribed Burns” are characterized as “ignited and managed over weeks of time to mimic the natural progression of fire on the landscape within parameters identified in the burn plan” and as “monitored, additionally ignited, or partially extinguished until season-ending precipitation puts them out completely.” *Id.*

## E. Montana

As noted in the previous section, the Montana Department of Environmental Quality is not an official member of the Montana/Idaho Airshed Group, instead serving in an advisory capacity to the Group. Therefore, unlike Idaho, Montana has requirements in addition to those of the Group.

Prescribed fires in Montana are categorized as “prescribed wildland open burning,” which is a particular type of “open burning.” “Prescribed wildland open burning,” is defined as follows:

“any planned open burning, either deliberately or naturally ignited, that is conducted on forest land or relatively undeveloped rangeland to:

- (a) improve wildlife habitat;
- (b) improve range conditions;
- (c) promote forest regeneration;
- (d) reduce fire hazards resulting from forestry practices, including reduction of log deck debris when the log deck is close to a timber harvest site;
- (e) control forest pests and diseases; or
- (f) promote any other accepted silvicultural practices.”<sup>186</sup>

Montana classifies open burning sources as either “minor” or “major,” with more stringent and detailed requirements for “major open burning sources”<sup>187</sup> than for “minor open burning sources.”<sup>188</sup>

### 1. Burns by Minor Sources

Burns by minor sources occurring from March through August are the least restricted type of burn in Montana, and “must conform with BACT” (best available control strategy). BACT is defined as

those techniques and methods of controlling emission of pollutants from an existing or proposed open burning source which limit those emissions to the maximum degree which the [Montana D]epartment [of Environmental

<sup>186</sup> MONT. ADMIN. R. 17.8.601(8).

<sup>187</sup> “Major open burning source’ means any person, agency, institution, business, or industry conducting any open burning that, on a statewide basis, will emit more than 500 tons per calendar year of carbon monoxide or 50 tons per calendar year of any other pollutant regulated under [Montana’s air quality regulations], except hydrocarbons.” *Id.* 17.8.601(5). “Under normal forestry conditions, anyone who burns over 250 acres/year is classified as a Major Outdoor Burner.” MONTANA/IDAHO AIRSHED GROUP, MONTANA/IDAHO AIRSHED GROUP OPERATING GUIDE 26 (2010).

<sup>188</sup> “Minor open burning source’ means any person, agency, institution, business, or industry conducting any open burning that is not a major open burning source.” MONT. ADMIN. R. 17.8.601(6).



Quality] determines, on a case-by-case basis, is achievable for that source, taking into account impacts on energy use, the environment, and the economy, and any other costs, including cost to the source.”<sup>189</sup>

BACT “techniques and methods may include the following:”

- (i) scheduling of burning during periods and seasons of good ventilation;
- (ii) applying dispersion forecasts;
- (iii) utilizing predictive modeling results performed by and available from the department to minimize smoke impacts;
- (iv) limiting the amount of burning to be performed during any one time;
- (v) using ignition and burning techniques which minimize smoke production;
- (vi) selecting fuel preparation methods that will minimize dirt and moisture content;
- (vii) promoting fuel configurations which create an adequate air to fuel ratio;
- (viii) prioritizing burns as to air quality impact and assigning control techniques accordingly;
- (ix) promoting alternative treatments and uses of materials to be burned; and
- (x) selecting sites that will minimize smoke impacts.<sup>190</sup>

BACT includes an additional requirement for burns taking place between September 1 and the end of February: burns during these months may take place “only during the time periods specified by the department, which may be determined by calling the department.”<sup>191</sup>

Minor sources conducting burns in September, October, or November “must adhere to the burning restrictions established by the department that are available by calling the department.”<sup>192</sup> Minor sources conducting burns in December, January, or February are subject to two different sets of additional requirements depending on whether the burns take place inside or outside the “Eastern Montana open burning zone.”<sup>193</sup> Minor burns occurring inside this zone during December, January, or February are “allowed when ventilation conditions are good or excellent,” and require telephonic notification to the department by the source of the burn.<sup>194</sup>

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<sup>189</sup> *Id.* 17.8.601(1).

<sup>190</sup> *Id.* 17.8.601(1)(a).

<sup>191</sup> *Id.* 17.8.601(1)(b) & (c).

<sup>192</sup> *Id.* 17.8.606(3).

<sup>193</sup> *See id.* 17.8.606(3) & (4). “Eastern Montana open burning zone” means the following counties or portions of counties: Big Horn, Blaine, Carbon, Carter, Cascade, Chouteau, Custer, Daniels, Dawson, Fallon, Fergus, Garfield, Glacier, Golden Valley, Hill, Judith Basin, Liberty, McCone, Meagher, Musselshell, Park (that portion north of Interstate 90), Petroleum, Phillips, Pondera, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Stillwater, Sweet Grass, Teton, Toole, Treasure, Valley, Wheatland, Wibaux and Yellowstone.” *Id.* 17.8.601(3).

<sup>194</sup> *Id.* 17.8.606(4)(b). “Ventilation conditions are determined by the department using a ventilation index, which is defined as the product of the mixing depth in feet at the time of

Sources wishing to conduct minor burns *outside* the Eastern Montana open burning zone in December, January, or February must “submit a written request to the department” that demonstrates that the burn will take place “prior to reopening of open burning in March.”<sup>195</sup> Sources must receive specific permission from the department for these burns, and must “adhere to the time periods set for burning by the department.”<sup>196</sup>

## 2. Burns by Major Sources

Major sources must “submit an application to the department for an air quality major open burning permit” prior to burning, and this application must include the following information:

- (a) a legal description of each planned site of open burning or a detailed map showing the location of each planned site of open burning;
- (b) the elevation of each planned site of open burning;
- (c) the method of burning to be used at each planned site of open burning;
- and
- (d) the average fuel loading or total fuel loading at each site to be burned.<sup>197</sup>

Major sources must also provide the department with “[p]roof of publication of public notice.”<sup>198</sup> Publication must be “by legal publication, at least once, in a newspaper of general circulation in each airshed (as defined by the department) affected by the application. . . . published no sooner than ten days prior to submittal of an application and no later than ten days after submittal of an application.”<sup>199</sup>

As is the case with all prescribed burns in Montana, burns by major sources must meet BACT requirements (discussed above in the context of minor sources).

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the daily maximum temperature, times the average transport wind in knots through the mixed layer divided by 100. Good or excellent ventilation conditions exist when the ventilation index is 400 or higher. Forecasts of ventilation conditions may be obtained by calling the department.” *Id.*

<sup>195</sup> *Id.* 17.8.606(4)(a)(i).

<sup>196</sup> *Id.* 17.8.606(4)(a)(ii) & (iii).

<sup>197</sup> *Id.* 17.8.610(1).

<sup>198</sup> *Id.* 17.8.610(2).

<sup>199</sup> *Id.*

## F. Nevada<sup>200</sup>

The Nevada Division of Environmental Protection administers Nevada's Smoke Management Program, the stated purpose of which is "to coordinate and facilitate the statewide management of prescribed outdoor burning on lands in the state of Nevada."<sup>201</sup>

Nevada's Smoke Management Program includes the following statement regarding "program support" and cooperation between land managers and air regulators:

Land managers and air regulators will work together to assess program implementation needs and to develop a mechanism for providing adequate program support. Program support may be in the form of in-kind services, equipment and space. Program support agreements will be formalized under an MOU and an Interagency Agreement between the Nevada Division of Environmental Protection and the land management agencies. The agreement will be evaluated periodically to ensure that implementation needs continue to be met.<sup>202</sup>

### 1. Open Burn Authorizations

"Land managers must obtain a permit called an Open Burn Authorization from the [Division] for . . . prescribed fires which emit greater than 1.0 ton of PM<sub>10</sub>."<sup>203</sup> For fires projected to emit between 1.0 and 10.0 tons of PM<sub>10</sub>, applications must be submitted to the Division "at least two weeks prior to the planned date of ignition," and for fires projected to emit more than 10.0 tons of PM<sub>10</sub>, applications must be submitted "at least 30 days prior to the planned ignition date."<sup>204</sup> The Division reviews and (if approved) signs and returns applications to applicants "as soon as possible, but at least one week prior to the planned date of ignition."<sup>205</sup>

The application for 1.0 to 10.0 PM<sub>10</sub> fires is a single page application, while applications for "fires emitting more than 10 tons of PM<sub>10</sub> and located more than 15 miles from a smoke sensitive area, Class [I] area or carbon monoxide or particulate matter non-attainment area" must be accompanied by a burn plan that includes elements such as a burn prescription,

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<sup>200</sup> Nevada's Smoke Management Program does not apply to Washoe or Clark counties, which have their own provisions pertaining to prescribed fire. Nevada Smoke Management Program 4 (2013).

<sup>201</sup> *Id.* at 1.

<sup>202</sup> *Id.* at 18.

<sup>203</sup> *Id.* at 6 (2013). "Prescribed fire includes any fire purposefully ignited by management actions to meet specific land management objectives." *Id.* at 3.

<sup>204</sup> *Id.* at 6. Additionally, the Division allows for exceptions to the normal application deadlines when "circumstances occur which will not allow the land manager to submit a completed permit application 14 or 30 days prior to the burn," in which case "the Division will make a good faith effort to work with the land manager to issue the permit as soon as possible." *Id.* at 7.

<sup>205</sup> *Id.* at 6-7.

modeling of impacts on “smoke sensitive receptors,” and “[e]valuation of alternative treatments.”<sup>206</sup> Applications for fires “emitting more than 25 tons of PM10, or more than 10 tons if the burn is within 15 miles of a Class I area, an area that is non-attainment for particulates, a carbon monoxide non-attainment area, or other smoke sensitive area” additionally require elements such as a smoke management plan, emission estimates, safety and contingency plans, and anticipated monitoring.<sup>207</sup>

In reviewing permit applications, the Division considers the following factors:

- “Consideration and evaluation of alternatives to burning;”
- “Proximity to populated areas and points of nearest public access;”
- “Climatic conditions on the day or days of burning;” and
- “Potential contribution to area air pollution.”<sup>208</sup>

Open burn authorizations are “valid for up to three months”<sup>209</sup> and are not final approval to burn.<sup>210</sup> Land managers must “notify the Division as soon as practicable, but no later than 2 pm of the business day preceding the burn.”<sup>211</sup> “For those prescribed burns estimated to emit 10 tons of PM10 or greater, the land manager shall not ignite the prescribed burn without first receiving the approval” from the Division, with the Division required to issue final decisions (“approval, approval with conditions, or disapproval”) “by 5 pm on the business day prior to ignition.”<sup>212</sup> “For prescribed fire projects that emit more than 10 tons of PM10 and are within 15 miles of the state border, BIA trust lands managed under the jurisdiction of a tribal air quality agency, or the borders of Washoe or Clark counties, the air regulators of those counties, tribes or bordering states must be notified prior to the burn.”<sup>213</sup>

## 2. Smoke Management & Emission Reduction

Land managers must implement “as many smoke management and emission reduction measures as are feasible for the specific burn and shall include a description of the emission reduction techniques used” in the required post-burn activity report.<sup>214</sup> The Division

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<sup>206</sup> *Id.* at 7. “Smoke sensitive areas include but are not limited to Class I areas as well as other designated scenic and/or important views especially during times of significant visitor use, urban and rural population centers, homes, schools, hospitals, nursing homes, transportation facilities such as roads and airports, recreational areas, and other locations that may be sensitive to smoke impacts for health, safety, and/or aesthetic reasons.” *Id.* at 3. Class I areas generally include national parks larger than 6,000 acres and wilderness areas larger than 5,000 acres, and the only Class I area in Nevada is Jarbridge Wilderness. *Id.* at 2. Nevada’s Smoke Management Program does not appear to define the term “smoke sensitive receptors.”

<sup>207</sup> *Id.* at 8.

<sup>208</sup> *Id.* at 9.

<sup>209</sup> *Id.*

<sup>210</sup> *Id.* at 7.

<sup>211</sup> *Id.* at 11.

<sup>212</sup> *Id.*

<sup>213</sup> *Id.* at 12.

<sup>214</sup> *Id.* at 18.

provides the following list of smoke management and emission reduction techniques that it considers to be best management practices:

- “Reducing the biomass by use of techniques such as yarding or consolidation of unmerchandisable material, multi-product timber sales or public firewood access, when economically feasible. When allowing public firewood access, the public must also be informed of the adverse impacts of using green or wet wood as fuel;”
- “Burning in seasons characterized by meteorological conditions that allow for good smoke dispersion;”
- “Using mass ignition techniques such as aerial ignition by helicopter to produce high intensity fires with short duration impacts;”
- “Igniting burns under good-to-excellent ventilation conditions and suspending operations under poor smoke dispersion conditions;”
- “Considering smoke impacts on activities conducted by local communities and land users;”
- “Burning only those fuels essential to meet resource management objectives;”
- “Minimizing duff consumption and smoldering through fuel moisture considerations;”
- “Minimizing dirt content when slash piles are constructed by using a root rake on material-moving equipment and by constructing piles under dry soil conditions or by using hand piling methods;”
- “Burning piles when other burns are not feasible, such as when snow or rain is present;”
- “Using all opportunities that meet the burn prescription and all burn locations to spread smoke impacts over a broader time period and geographic area;”
- “Burning during optimum mid-day dispersion hours, with all ignitions in a burn unit completed by 3 p.m. to prevent trapping smoke in inversions or diurnal wind flow patterns;”
- “Using chunking of piles and other consolidations of burning material to enhance fuel consumption and to minimize smoke production;”
- “Implementing maintenance burning in a periodic rotation mimicking natural fire cycles to reduce excessive fuel accumulations and subsequent excessive smoke production through smoldering or wildfire;” and,
- “Managing smoke impacts as follows:
  - Limiting smoke impacts to roads, highways, and airports to the amounts, frequencies, and durations consistent with any guidance provided by highway and airport personnel;
  - Using appropriate signing if smoke will impact any point of public access, i.e. highways, dirt roads, trails, campgrounds, etc.
  - Notifying the public at potentially impacted smoke sensitive areas; and
  - Determining nighttime impacts and taking appropriate precautions.”<sup>215</sup>

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<sup>215</sup> *Id.* at 18-19.

## G. New Mexico

Implementation of prescribed fire in New Mexico is primarily governed by specific provisions of the New Mexico Administrative Code, with the New Mexico Environment Department of (NMED) designated as the state agency charged with administering those provisions.

Burns in excess of ten acres per day in New Mexico come under the state's smoke management regulation,<sup>216</sup> which has two different sets of smoke management requirements depending on whether emissions are below one ton of PM-10 per day,<sup>217</sup> or are instead one ton or more of PM-10 per day.<sup>218</sup> The former requirements are referred to as "SMP I" in the regulation,<sup>219</sup> while the latter requirements are referred to as "SMP II."<sup>220</sup>

### 1. Requirements Common to Both SMP I & SMP II

The following requirements apply to burns under both SMP I and SMP II. Burners under both sets of requirements must:

- "[N]otify the local fire authority prior to igniting a burn;"<sup>221</sup>
- "[R]egister . . . burn project[s] with the [D]epartment" (with time of registration differing depending on whether the burn falls under SMP I or SMP II);<sup>222</sup>
- Submit a tracking form to the Department "no later than two weeks following" completion/end of the burn;<sup>223</sup> and
- Burners must "maintain all records of actions performed pursuant to the requirements of [the regulation] for a period of at least one year."<sup>224</sup>

### 2. SMP I-Specific Requirements (for burns emitting less than one ton of PM-10 per day)

Burns with emissions of less than one ton of PM-10 per day may take place "only under appropriate dispersion conditions," and burners have two options for achieving compliance with this requirement.<sup>225</sup> Under the first option, the burner must "ignite burns only during the hours from one hour after sunrise until one hour before sunset"<sup>226</sup> and "conduct burn projects at least 300 feet from any occupied dwelling, workplace, or place where people

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<sup>216</sup> N.M. CODE R. §§ 20.2.60.111.A.(1), 20.2.65.100.A.(1).

<sup>217</sup> *Id.* § 20.2.65.102.

<sup>218</sup> *Id.* § 20.2.65.103.

<sup>219</sup> *Id.* § 20.2.65.102.

<sup>220</sup> *Id.* § 20.2.65.103.

<sup>221</sup> *Id.* §§ 20.2.65.102.B. & 20.2.65.103.F.

<sup>222</sup> *Id.* §§ 20.2.65.102.C. & 20.2.65.103.G.

<sup>223</sup> *Id.* §§ 20.2.65.102.E. & 20.2.65.103.I.

<sup>224</sup> *Id.* §§ 20.2.65.102.F. & 20.2.65.103.K.

<sup>225</sup> *Id.* § 20.2.65.102.A.

<sup>226</sup> *Id.* § 20.2.65.102.A.(1)(a).

congregate” that is on property not owned by the burner.<sup>227</sup> (It should be noted that both of these requirements can be waived by New Mexico’s Environment Department.<sup>228</sup>) Under the second option for complying with the dispersion condition requirement, burners may burn only “during times when the ventilation category is good or better”<sup>229</sup> and must “conduct visual monitoring” and “document the results” of this monitoring and “maintain records of those results for a period of one year.”<sup>230</sup> As is the case under the first dispersion condition option, the requirements under the second option may also be waived by the Department.<sup>231</sup>

In addition to the dispersion condition requirements outlined above, burns subject to SMP I must register the burn with the Department “no later than 10:00 a.m. one business day prior to the planned ignition.”<sup>232</sup> For burns “within a one-mile radius of a population,” the burner must “conduct visual monitoring and document the results,” and must notify “populations within a one-mile radius of the burn project no later than two days prior to, and no earlier than thirty days in advance of, igniting [the] burn project.”<sup>233</sup>

### 3. SMP II-Specific Requirements (for burns emitting one ton or more of PM-10 per day)

For SMP II burns, burners must:

- “[R]eview smoke management educational material supplied by the department or complete an approved smoke management training program prior to initiating burning.”<sup>234</sup>
- “[C]onsider alternatives to burning and . . . document this consideration and rationale for not using alternatives,”<sup>235</sup>

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<sup>227</sup> *Id.* §§ 20.2.65.102.A.(1)(b).

<sup>228</sup> *Id.* §§ 20.2.65.102.A.(1)(a) & 20.2.65.102.A.(1)(b).

<sup>229</sup> *Id.* §§ 20.2.65.102.A.(2)(a).

<sup>230</sup> *Id.* § 20.2.65.102.A.(2)(b). The Department may also require “instrument monitoring in addition to visual monitoring” for burns within a mile of “a population.” *Id.* The regulation defines the term “population” (“the total of individuals occupying an area”) but does not make clear the threshold population for consideration of instrument monitoring. It is also unclear from the wording of the regulation whether the Department or the burner performs instrument monitoring where it is required.

<sup>231</sup> *Id.* §§ 20.2.65.102.A.(2)(a) & 20.2.65.102.A.(2)(b).

<sup>232</sup> *Id.* § 20.2.65.102.C. “For burn projects longer than seven days, the burner shall notify the department separately for each seven days of burning to be conducted under that burn project registration.” *Id.*

<sup>233</sup> *Id.* § 20.2.65.102.E.

<sup>234</sup> *Id.* § 20.2.65.102.A.

<sup>235</sup> *Id.* § 20.2.65.102.B.

- “[I]mplement at least one emission reduction technique and . . . document this implementation”<sup>236</sup>
- Burn only “during times when the ventilation category is ‘good’ or better.”<sup>237</sup>
- “[C]onduct visual monitoring and . . . document the results,”<sup>238</sup>
- Register burns with the Department “no later than two weeks prior to planned ignition;”<sup>239</sup>
- “[N]otify the department of the intent to burn on a specific date no later than 10:00 a.m. one business day prior to the planned burn project;”<sup>240</sup> and
- “For burns planned to be conducted with the wind blowing toward a population, or within a fifteen-mile radius of a population if wind direction is not considered,” the following additional requirements apply:
  - “The department may require that the burner notify the department no later than two business days prior to the planned burn so that the department may determine whether to conduct instrument monitoring in addition to visual monitoring conducted by the burner;”
  - The burner must “conduct public notification no later than two days prior to, and no sooner than thirty days in advance of, ignit[ion].”<sup>241</sup>

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<sup>236</sup> *Id.* § 20.2.65.102.C. Burners may apply to the Department for waivers of this condition.  
*Id.*

<sup>237</sup> *Id.* § 20.2.65.102.D. Burners may apply to the Department for waivers of this condition.  
*Id.*

<sup>238</sup> *Id.* § 20.2.65.102.E.

<sup>239</sup> *Id.* § 20.2.65.102.G.

<sup>240</sup> *Id.* § 20.2.65.102.H.

<sup>241</sup> *Id.* § 20.2.65.102.J.



## H. Oregon

Implementation of prescribed fire in Oregon is primarily governed by Oregon's Smoke Management Plan, which is comprised of regulations promulgated by the State Forester, along with an administrative directive entitled "Operational Guidance for the Oregon Smoke Management Program."<sup>242</sup>

Oregon's Smoke Management Plan has the following objectives:

- "Prevent smoke resulting from prescribed burning on forestlands from being carried to or accumulating in smoke sensitive receptor areas (SSRAs) or other areas sensitive to smoke, and to provide maximum opportunity for essential forestland burning while minimizing emissions;"
- "Coordinate with other state smoke management programs;"
- "Comply with state and federal air quality and visibility requirements;"
- "Protect public health; and"
- "Promote the reduction of emissions by encouraging cost effective utilization of forestland biomass, alternatives to burning and alternative burning practices."<sup>243</sup>

Oregon's regulations include a general air quality maintenance objective "to minimize the amount and duration of smoke that comes in contact with humans at their places of residence or at other places where they normally gather in numbers such as to work, conduct commerce or participate in public events,"<sup>244</sup> along with an objective to prevent "intrusions" to SSRAs.<sup>245</sup> The regulations "encourage[e] forestland owners to burn only those units which cannot otherwise meet forest management objectives in cost effective alternative ways such as wood or biomass utilization,"<sup>246</sup> and "to employ the emission reduction techniques . . . to ensure the least emissions practicable" "[w]hen prescribed burning is used."<sup>247</sup>

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<sup>242</sup> OR. ADMIN. R. 629-048-0010(3).

<sup>243</sup> *Id.* 629-048-0010(4)(a)-(e). An SSRA (as referenced in the first plan objective) is an "area designated for the highest level of protection under the Smoke Management Plan," *Id.* 629-048-0005(28), and these areas are specifically listed in Oregon's regulations. *Id.* 629-048-0140. "Other areas sensitive to smoke" means specific recreation areas not listed as SSRAs . . . but that are intended to receive consideration for focused forecasting attention for limited times during periods of heavy use by the public such as coastal beaches on holidays and other areas during special events." *Id.* 629-048-0005(22).

<sup>244</sup> *Id.* 629-048-0120(3).

<sup>245</sup> *Id.* 629-048-0120(1). A "smoke intrusion" is "the verified entrance of smoke from prescribed burning into a Smoke Sensitive Receptor Area at ground level." *Id.* 629-048-0005(26).

<sup>246</sup> *Id.* 629-048-0120(4).

<sup>247</sup> *Id.* 629-048-0120(5).

Additionally, for prescribed burns *outside* of Class I Areas,<sup>248</sup> “an objective of the Smoke Management Plan is to minimize any smoke that impairs visibility *inside* the Class I Area.”<sup>249</sup> Oregon has an “Enhanced Smoke Management Program”(ESMP) aimed at “protecting Class I Area visibility.”<sup>250</sup> Criteria in the ESMP include:

- “Actions to minimize emissions;”
- “Evaluation of smoke dispersion;”
- “Alternatives to fire;”
- “Public notification;”
- “Air quality monitoring;”
- “Surveillance and enforcement;”
- “Program evaluation;”
- “Burn authorization; and”
- “Regional coordination.”<sup>251</sup>

### 1. Registration, Burn Plans & Burn Permits

Federal land managers must register prescribed burns on federal lands in Oregon with Oregon’s State Forester (or the State Forester’s authorized representative)<sup>252</sup> “at least seven days before the first day of ignition”<sup>253</sup> unless the State Forester waives the seven day waiting period due to “conditions of federally prescribed fire policies having already been met.”<sup>254</sup> The State Forester generally has the discretion to require a burn plan as a condition precedent to the issuance of a burn permit, however burn plans and burn permits are not required of federal land managers by Oregon’s prescribed fire regulations. The regulations instead rely on federal policies to fulfill the roles that would otherwise be served by burn plans and burn permits. With regard to burn plans, the regulations note that “[a] prescribed fire plan is required under federal policy for all prescribed burning on federal lands.”<sup>255</sup> With

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<sup>248</sup> “National parks and certain wilderness areas designated by Congress in 1977 as federal Class I Areas that are subject to visibility protection under the Environmental Protection Agency’s Regional Haze Rule and the federal Clean Air Act.” *Id.* 629-048-0005(5).

<sup>249</sup> *Id.* 629-048-0130(3).

<sup>250</sup> *Id.* 629-048-0130(2).

<sup>251</sup> *Id.*

<sup>252</sup> *Id.* 629-048-0005(15).

<sup>253</sup> *Id.* 629-048-0300(1).

<sup>254</sup> *Id.* 629-048-0300(2).

<sup>255</sup> *Id.* 629-048-230(2).

regard to burn permits, the regulations require that “Federal land management agencies must follow agency policies that provide for an affirmative ‘go-no go decision’ before ignition of any prescribed burning as documented and approved by the federal land management agency’s line officer.”<sup>256</sup> In sum, Oregon’s regulations pertaining to prescribed fire have requirements related to burn registration, burn plans, and burn permits, but the regulations relax all of these requirements in deference to federal requirements when it comes to prescribed fires on federal lands. Specifically, Oregon’s regulations:

- Allow for waiver of the usual seven day waiting period between burn registration and ignition;
- Defer to federal prescribed fire plans in place of burn plans; and
- Defer to federal “go-no go” decision policies in place of burn permits.

## 2. Daily Forecasts & Fire Information Transmittal

The Oregon Department of Forestry’s Smoke Management forecast unit prepares a forecast for each day on which prescribed burning is planned, and unit meteorologists “determine if and where conditions will be favorable to accomplish burning” based on this forecast.<sup>257</sup> Forecasts and instructions “as to what tonnages, in what weather zones and at what distances from [Smoke Sensitive Receptor Areas] prescribed burning may be permitted” are issued by 3:15 p.m. the day before planned burning.<sup>258</sup> “[B]urn bosses must provide specific information to be transmitted to the Smoke Management forecast unit in a standard format acceptable to the forester, regarding unit location, method of burning, and fuel loading tonnages by the day of the burn.”<sup>259</sup> Burn bosses also “must obtain the current Smoke Management forecast and instructions” prior to ignition and “must conduct the burning in compliance with the instructions.”<sup>260</sup>

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<sup>256</sup> *Id.* 629-048-230(5)(a).

<sup>257</sup> *Id.* 629-048-220(3).

<sup>258</sup> *Id.* 629-048-220(5). Instructions are based on dispersion models that take into account forecasts along with information such as “location of planned burns, and the tonnage of fuel that is expected to be consumed,” and “what level of pollutants may already be present in a given area.” *Id.* 629-048-220(3) & (4). “For prescribed burn operations with large tonnages (greater than 2000 tons) or burns that will occur over multiple days, burn bosses may request . . . a special forecast and instructions” “at least two days in advance” of the planned burn. *Id.* 629-048-230(7).

<sup>259</sup> *Id.* 629-048-230(4).

<sup>260</sup> *Id.* 629-048-230(6).

## I. Utah

Implementation of prescribed fire in Utah is primarily governed by specific provisions of Utah's Administrative Code, with the Division of Air Quality of Utah's Department of Environmental Quality designated as the state agency charged with administering those provisions.

### 1. Annual Planning

The director of the Utah Department of Environmental Quality's Division of Air Quality must "provide an opportunity for an annual meeting with land managers" to evaluate and adopt the "annual emission goal," which must be "developed in cooperation with states, federal land management agencies and private entities, to control prescribed fire emissions increases to the maximum feasible extent."<sup>261</sup> The annual emission goal is established "prior to the beginning of the fire season, either at the beginning of the calendar year or before the year begins,"<sup>262</sup> and is "determined by quantifying the emission reductions obtained through the use of emission reduction techniques (ERT) on a project specific basis."<sup>263</sup> The term "emission reduction techniques" is defined as "techniques for controlling emissions from prescribed fires to minimize the amount of emission output per unit or acre burned."<sup>264</sup>

By March 15th each year, land managers must provide the director with "long-term projections of future prescribed fire activity"<sup>265</sup> and "a list of areas treated using non-burning alternatives to fire during the previous calendar year."<sup>266</sup> Land managers planning prescribed fire that will burn more than 50 acres annually must also submit a "burn schedule" to the director by March 15.<sup>267</sup> The burn schedule must include "the following information for all prescribed fires:"

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<sup>261</sup> UTAH ADMIN. CODE r. 307-204-4(4). "Land Manager" means any federal, state, local or private entity that owns, administers, directs, oversees or controls the use of public or private land, including the application of fire to the land." *Id.* 307-204-3. "Annual Emissions Goal" means the annual establishment of a planned quantitative value of emissions reductions from prescribed fire." *Id.*

<sup>262</sup> ANNUAL EMISSIONS GOAL, in Part G of UTAH TECHNICAL SUPPORT DOCUMENTATION SUPPLEMENT TO UTAH REGIONAL HAZE 2011 State Implementation Plan <https://deq.utah.gov/Pollutants/R/regionalhaze/rhsip/docs/2008/06Jun/AnnualEmissionsGoal1.pdf>.

<sup>263</sup> *Id.*

<sup>264</sup> UTAH ADMIN. CODE r. 307-204-3. Appendix A of Utah's Smoke Management Plan includes a list of fifteen "Emission Reduction & Dispersion Techniques." UTAH SMOKE MANAGEMENT PLAN 18-20. "There are six general categories of ERT: reduce the area burned, reduce fuel load, reduce fuel production, reduce fuel consumed, schedule burning before new fuels appear, and increase combustion efficiency." STATE OF UTAH, ANNUAL EMISSIONS GOAL FOR FIRE 1 (2008).

<sup>265</sup> UTAH ADMIN. CODE r. 307-204-4(3) & (5).

<sup>266</sup> *Id.* 307-204-4(3). This list must include "location of these areas," as well as "the number of acres" and "the specific types of alternatives used." *Id.*

<sup>267</sup> *Id.* 307-204-5.

- “Project number and project name;”
- “Air Quality Basin, UTM coordinate for the central point of the prescribed fire, project elevation, and county;”
- “Total project acres, description of major fuels, type of burn, ignition method, and planned use of emission reduction techniques to support establishment of the annual emissions goal;” and
- “Earliest burn date and burn duration.”<sup>268</sup>

Utah administrative law recognizes two main types of prescribed fire: small prescribed fires (covering fewer than twenty acres),<sup>269</sup> and large prescribed fires (covering twenty acres or more).<sup>270</sup>

## 2. Small Prescribed Fires

Small prescribed fires are subject to the following requirements:

- They can be ignited when the National Weather Service Clearing Index is 500 or greater, or with the approval of the Air Quality Division Director when the clearing index is between 400 and 500.<sup>271</sup>
- Land managers must notify the Air Quality Division Director by fax, e-mail, or phone prior to ignition when the National Weather Service Clearing Index is between 400 and 500.<sup>272</sup>
- Land managers must take hourly photographs, and record complaints, hourly meteorological conditions and hourly descriptions of the smoke plume and submit this information to the Air Quality Division.<sup>273</sup>

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<sup>268</sup> *Id.*

<sup>269</sup> *Id.* 307-204-6.

<sup>270</sup> *Id.* 307-204-8.

<sup>271</sup> *Id.* 307-204-6(1) & (2). The Clearing Index is an Air Quality/Smoke Dispersal Index used to regulate open burning and as input for other air quality decisions throughout Utah. The Clearing Index is defined as the Mixing Depth (depth of the mixed layer in 100s of feet above ground level) multiplied by the Transport Wind (average wind in the mixed layer in knots). Clearing Index values below 500 are considered poor ventilation and open burning is restricted under these conditions. Any Clearing Index values above 1000 are considered excellent ventilation and are referred to as 1000+. National Weather Service, Salt Lake Office. <http://www.airmonitoring.utah.gov/clearingindexarchive/>

<sup>272</sup> *Id.* 307-204-6(2)(b).

<sup>273</sup> *Id.* 307-204-6(2)(c).

### 3. Large Prescribed Fires

#### a. Pre-Burn Information

Land managers must submit “burn plans” that include fire prescriptions for large prescribed fires to the director.<sup>274</sup> Burn plans “must be prepared by qualified personnel and approved by the appropriate agency administrator prior to implementation. . . . [and] follow specific agency direction and must include critical elements described in agency manuals.”<sup>275</sup> Land managers must also submit “pre-burn information” to the director for approval “at least two weeks before the beginning of the “burn window.”<sup>276</sup> The required pre-burn information includes the following:

- A “[s]ummary of burn objectives, such as restoration or maintenance of ecological functions or indication of fire resiliency;”
- “Any sensitive receptor within 15 miles, including any Class I or nonattainment or maintenance area, and distance and direction in degrees from the project site;”
- “Planned mitigation methods;”
- “The smoke dispersion or visibility model used and results;”
- “The estimated amount of total particulate matter anticipated;”
- “A description of how the public and land managers in neighboring states will be notified;”
- “A map depicting both the daytime and nighttime smoke path and down-drainage flow for a minimum of 15 miles from the burn site with smoke-sensitive areas delineated;”
- “Safety and contingency plans for addressing any smoke intrusions;” and
- “If the fire is in a nonattainment or maintenance area and is subject to general conformity (42 U.S.C. 7506(c)), a copy of the conformity demonstration showing that the fire meets the requirements of the Clean Air Act and conforms with the applicable State Implementation Plan;”
- “Planned use of emission reduction techniques to support establishment of an annual emissions goal” (if not previously submitted as part of the annual burn schedule);
- “Any other information needed by the director for smoke management purposes, or for assessment of contribution to visibility impairment in any Class I area.”<sup>277</sup>

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<sup>274</sup> *Id.* 307-204-8(1). “Fire Prescription” means the measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicates other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.” *Id.* 307-204-3.

<sup>275</sup> *Id.* 307-204-3.

<sup>276</sup> *Id.* 307-204-8(1). “Burn window” is defined as “the period of time when the prescribed fire is scheduled for ignition.” *Id.* 307-204-3.

<sup>277</sup> *Id.* 307-204-8(2)(a) – (l).

### b. Emission Reduction and Dispersion Techniques

Land managers must “take measures to prevent smoke impacts,” and these measures “may include best management practices such as dilution, emission reduction or avoidance in addition to others described in the pre-burn information form provided by the Division of Air Quality.”<sup>278</sup>

### c. Burn Requests

Land managers must submit “burn requests” for large prescribed fires to the director by 10 AM “at least two business days before the planned ignition time,”<sup>279</sup> and fires may not be ignited “before the director approves the burn request.”<sup>280</sup>

### d. Daily Emissions Reports

Land managers must submit daily emissions reports to the director by 8 AM “on the day following the prescribed burn” for large prescribed fires for each day of prescribed fire activity covering 20 acres or more.”<sup>281</sup> The Division of Air Quality provides forms for daily emissions reports, which must include the following information:

- “The start and end dates and times of the burn
- “Emission information including black acres, tons fuel consumed per acre, and tons particulate matter produced;”
- “Public interest regarding smoke;”
- “Daytime ventilation;”
- “Nighttime smoke behavior;”
- “Evaluation of the techniques used by the land manager to reduce emissions or manage the smoke from the prescribed burn; and”
- “Emission reduction techniques applied.”<sup>282</sup>

### e. Monitoring

Land managers must monitor the effects of large prescribed fires “on smoke sensitive receptors and on visibility in Class I areas, as directed by the burn plan,” and must conduct “[h]ourly visual monitoring and documentation of the direction of the smoke plume.”<sup>283</sup>

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<sup>278</sup> *Id.* 307-204-8(5).

<sup>279</sup> *Id.* 307-204-8(3)(a).

<sup>280</sup> *Id.* 307-204-8(3)(b).

<sup>281</sup> *Id.* 307-204-8(4).

<sup>282</sup> *Id.* 307-204-8(4)(c)-(i).

<sup>283</sup> *Id.* 307-204-8(6). “Smoke Sensitive Receptors” is defined as “population centers such as towns and villages, campgrounds and trails, hospitals, nursing homes, schools, roads, airports, Class I areas, nonattainment and maintenance areas, areas whose air quality monitoring data indicate pollutant levels that are close to health standards, and any other areas where smoke and air pollutants can adversely affect public health, safety and welfare.” *Id.* 307-204-3.

## J. Washington

The Washington Department of Natural Resources (DNR) administers Washington's Smoke Management Plan, which required the establishment of an emissions baseline, followed by multiple stages of emission reduction from the established baseline.<sup>284</sup> Washington divides prescribed fires into two main categories—small and large, with small fires generally defined as those “that consume less than 100 tons of material in a 24-hour period”<sup>285</sup> and large fires defined to include those:

that have the potential to create significant smoke impacts beyond the immediate fire area. The threshold for what makes up a large fire varies by geographic area, topography, and distance to communities. In areas near communities or prone to inversions the threshold will be 100 tons per burn.<sup>286</sup>

Small prescribed fires are approved by calling a toll-free number and “follow[ing] the instructions that apply for the day and location of the proposed burning.”<sup>287</sup>

### 1. Large Prescribed Fires on Federal Lands

For large prescribed fires on federal lands, federal land managers “pre-approve and prioritize burns daily, and then submit those prioritized pre-approvals to the [DNR] Smoke Management Section. The Smoke Management Section . . . in turn approves or disapproves each burn and notif[ies] the affected manager of the decision.”<sup>288</sup> Burn approval criteria include the following:

- “[L]ikelihood of an ‘intrusion’ of smoke into ‘designated areas,’ which includes air space 2,000 feet above the ground, or ‘sensitive areas,’ such as population centers;”
- “[L]ikelihood of an over-flight of smoke above a designated area or special public events specified by DNR Region Managers;”
- “[W]hether the burn will fail to comply with Washington’s state implementation plan (SIP) for visibility protection;”
- Potential for violation of air quality laws;
- Whether “[b]urning will knowingly violate another state’s published air quality standards;”
- Whether “[s]moke will not significantly disperse within approximately eight hours of ignition, and be fully dispersed by 12:00 PM the next afternoon unless the burn meets the criteria and requirements of a multiple day burn. This does not include residual smoke in the immediate burn area itself.”<sup>289</sup>

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<sup>284</sup> State of Department of Natural Resources, Smoke Management Plan 14-15 (1998).

<sup>285</sup> *Id.* at 10.

<sup>286</sup> *Id.* at 7.

<sup>287</sup> *Id.* at 10.

<sup>288</sup> *Id.* at 9.

<sup>289</sup> *Id.* at 8.



For burns that are approved by the Smoke Management Section, federal land managers then grant or deny final approval, considering the following factors:

- “Elimination of fire hazard or ‘extreme fire hazard’ . . . .;”
- “Burning conducted in eastern Washington for the purpose of restoring forest health or preventing the additional deterioration of forest health as determined by the Department;”
- “Burning to maintain fire dependent ecosystems to preserve rare or endangered plants or animals within state, federal, and private natural area preserves, natural resource conservation areas, parks and other wildlife areas;”
- “Burns using burning techniques that will produce the least particulate emissions per acre treated, as predicted by the USFS PNW Research Station computer model;”
- “Proposed burns from landowners who have an active program of using alternative slash management techniques;”
- “Whether fire is the only viable tool to accomplish the fuel reduction, silvicultural practice, or other purpose for proposing burning” and
- “The risk of smoke intrusion.”<sup>290</sup>

## 2. Prohibitions for Visibility Protection

It should be noted that large burns are generally prohibited on weekends (“midnight Thursday through midnight Sunday”), Independence Day, and Labor Day between June 15 and October 1 in order to protect visibility in Washington’s eight national parks and wilderness areas pursuant to federal Clean Air Act visibility protection requirements.<sup>291</sup>

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<sup>290</sup> *Id.* at 9.

<sup>291</sup> *Id.* at 12.

## K. Wyoming

Implementation of prescribed fire in Wyoming is primarily governed by specific provisions of Wyoming's Administrative Rules, with the Air Quality Division of Wyoming's Department of Environmental Quality designated as the state agency charged with administering those provisions.

### 1. Long-Term Planning

Wyoming requires long-term planning by burners/land managers “whose total planned burn projects in a year are projected to generate greater than 100 tons of PM10 emissions.”<sup>292</sup> Burners/land managers subject to this requirement must submit written reports to the Administrator of the Wyoming Department of Environmental Quality's Air Quality Division “by January 31 every third year starting in 2005,”<sup>293</sup> and these reports must “include documentation of all of the following:”

- “The long-term burn estimates for the next three years, including the location, burn area or pile volume, vegetation type, and type of burn for each planned burn project;” and
- “The alternatives to burning considered and utilized during the previous three years and planned for the next three years, including the location and area of treatment(s), the vegetation type(s), and the specific technique(s).”<sup>294</sup>

### 2. Smoke Management Programs: SMP-I & SMP-II

There are two main regulatory frameworks for planned burn projects<sup>295</sup> in Wyoming: SMP-I (applicable to projects that are “projected to generate less than two tons of PM10 emissions per day”<sup>296</sup>) and SMP-II (applicable to projects that are “projected to generate greater than or equal to two tons of PM10 emissions per day”<sup>297</sup>).

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<sup>292</sup> 020.0002.10 WYO. CODE R. § 4(h).

<sup>293</sup> *Id.*

<sup>294</sup> *Id.* §§ 4(h)(i) & (ii).

<sup>295</sup> The term “planned burn project” is defined as “burn area(s) or pile(s) of vegetative material that are being treated or managed utilizing planned fire for the same management objectives and that are on a contiguous land area.” *Id.* § 4(b)(x).

<sup>296</sup> *Id.* § 4(f). “SMP” means the Smoke Management Program that specifies requirements for planned burn projects (SMP-I and SMP-II) and unplanned fire events.” *Id.* § 4(b)(xiii). There is also a third pathway for burns projected to generate less than 0.25 tons of PM10 emissions per day, however this pathway is outside the scope of this summary. *See Id.* § 2(g)(ii).

<sup>297</sup> *Id.* § 4 (g).

### 3. Project Registration (SMP-II only)

SMP-II projects must be registered with the Division “by January 31 or no later than two weeks prior to the ignition.”<sup>298</sup> The registration form must document that the burner:

- Has “reviewed smoke management educational material supplied by the Division or completed a smoke management training program;”<sup>299</sup>
- Will “consider the use of alternatives to burning for each planned burn project, and document the consideration of such alternatives;”<sup>300</sup>
- Will “implement a minimum of one emission reduction technique for each planned burn project;”<sup>301</sup> and
- Will ignite a project only “when smoke will disperse from its source.”<sup>302</sup>

### 4. Pre-Ignition Notification Requirements

Unlike the registration requirement discussed above, pre-ignition notification to “the jurisdictional fire authority(ies) responsible for the geographic area in which the planned burn project is to occur” is required for both categories of burns.<sup>303</sup> Similarly, “public notification no sooner than 30 days and no later than two days in advance of the ignition of the planned burn project”<sup>304</sup> is required for both types of burns, though the geographic radius covered by this public notification requirement differs between the two types. The SMP-I public notification requirement applies “[w]hen there is a population within a 0.5-mile radius of the planned burn project,”<sup>305</sup> and the SMP-II public notification requirement

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<sup>298</sup> *Id.* § 4(g)(i).

<sup>299</sup> *Id.* § 4(g)(i)(A).

<sup>300</sup> *Id.* § 4(g)(i)(B). “Alternatives to burning” means manual, mechanical, chemical or biological treatments designed to replace the use of fire to manage vegetation.” *Id.* § 4(b)(i).

<sup>301</sup> *Id.* § 4(g)(i)(C). “Emission reduction technique” means manual, mechanical, chemical or biological treatments used in conjunction with fire to minimize emissions, including, but not limited to, methods that minimize the burn area, reduce the fuel load, or increase the efficiency of combustion.” *Id.* § 4(b)(iv). This requirement may be waived by the Administrator. *Id.* § 4(g)(i)(C).

<sup>302</sup> *Id.* § 4(g)(i)(D). Smoke dispersal requirements are discussed below.

<sup>303</sup> *Id.* §§ 4(f)(ii)(A) & 4(g)(iii)(A). “Jurisdictional fire authority” “means an agency, organization or department whose purpose is to prevent, manage, and/or suppress fires in a designated geographic area, including, but not limited to, volunteer fire departments, fire districts, municipal fire departments and federal fire staff.” *Id.* § 4(b)(v). The regulation does not include a timeframe for fire authority notification.

<sup>304</sup> *Id.* §§ 4(f)(ii)(B) & 4(g)(iii)(B). “Public notification” is defined broadly to mean “a method that communicates information regarding planned burn projects or unplanned fire events to the public.” *Id.* § 4(b)(xii).

<sup>305</sup> *Id.* § 4(f)(ii)(B). “Population” means “all individuals, other than the burner, occupying a fixed area. Fixed areas include, but are not limited to, portions of property normally occupied as residential, recreational, institutional, commercial, or educational premises, but do not include fixed areas under control of the burner.” *Id.* § 4(b)(xi). For SMP-I burns, notification to jurisdictional fire authority(ies) fulfills the public notification requirement

applies “[w]hen there is a population within a 10-mile radius of the planned burn project.”<sup>306</sup> Both SMP-I and SMP-II projects require notification to the Air Quality Division prior to ignition, with SMP-I projects requiring notification one hour prior to ignition, and SMP-II projects requiring notification by 10 A.M. on the business day prior to ignition.<sup>307</sup>

## 5. Pre-Ignition Smoke Dispersal Requirements

Both categories of burns can be ignited only “when smoke will disperse from its source.”<sup>308</sup> For SMP-I burns, this requirement translates to ignition “during the daytime hours, when there is a slight breeze and there is no population within 0.5 mile of the planned burn project in the downwind trajectory.”<sup>309</sup> For SMP-II burns, the smoke dispersal requirement can be met either by ignition “when the ventilation category is ‘Good’ or better,”<sup>310</sup> or by ignition “when the ventilation category is ‘Fair’ if there is no population within 10 miles of the planned burn project in the downwind trajectory.”<sup>311</sup>

## 6. Monitoring

The SMP-I and SMP-II frameworks differ significantly in terms of monitoring requirements. The only monitoring requirement for SMP-I burns is that burners “attend and observe each planned burn project periodically to determine the dispersion, direction, and impacts of the smoke.”<sup>312</sup> For SMP-II burns, on the other hand, burners must “conduct and document visual monitoring, in accordance with the visual monitoring process approved by the Administrator . . . to determine the dispersion, direction, and impacts of the smoke.”<sup>313</sup> Additionally, the Administrator may require ambient air quality monitoring for SMP-II burns “[w]hen there is a population or Nonattainment Area within 10 miles of the planned burn project in the downwind trajectory,”<sup>314</sup> and may require “ambient air quality and/or visibility

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“[w]hen it can be shown that the population within a 0.5-mile radius of the planned burn project is in an area of low population density.” *Id.* § 4(f)(ii)(B). “Area of low population density” is defined as “[a]n average of one dwelling unit per ten acres.” *Id.*

<sup>306</sup> *Id.* § 4(g)(iii)(B).

<sup>307</sup> *Id.* §§ 4(f)(i) & 4(g)(ii). SMP-I notifications must include “burner contact information, the location of the planned burn project, and other information required by the Administrator of the Division,” *Id.* § 4(f)(i), while SMP-II notifications must include “the planned burn project identification information, planned burn date(s), daily burn area or daily pile volume, and other information required by the Administrator of the Division.” *Id.* § 4(g)(ii).

<sup>308</sup> *Id.* §§ 4(f)(iii) & 4(g)(i)(D).

<sup>309</sup> *Id.* § 4(f)(iii). This requirement is subject to waiver by the Administrator. *Id.*

<sup>310</sup> *Id.* § 4(g)(i)(D)(I). “Ventilation category” must “be obtained from a source approved by the Administrator,” *id.*, and is defined as “the classification describing the potential for smoke or other pollutants to disperse from its source, and that is expressed in terms of Excellent, Very Good, Good, Fair or Poor.” *Id.* § 4(b)(xvi).

<sup>311</sup> *Id.* § 4(g)(i)(D)(II). As is the case with SMP-I, smoke dispersal requirements for SMP-II are also subject to waiver by the Administrator. *Id.*

<sup>312</sup> *Id.* § 4(f)(iv).

<sup>313</sup> *Id.* § 4(g)(i)(E)(I).

<sup>314</sup> *Id.* § 4(g)(i)(E)(II).

monitoring” for SMP-II burns “[w]hen there is a Class I Area within 30 miles of the planned burn project in the downwind trajectory.”<sup>315</sup>

## 7. Reporting

Burners must submit reporting forms to the Division for both SMP-I and SMP-II burns “no later than six weeks following completion of the planned burn project.”<sup>316</sup>

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<sup>315</sup> *Id.* § 4(g)(i)(E)(III).

<sup>316</sup> *Id.* § 4(g)(iv).





Colorado State University

