

# Beyond the Exceptional Events Rule: How the Local Implementation of Air Quality Regulations Affects Wildfire Air Policy

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*What can be done about the recent phenomenon of intense wildfire air pollution in the American West? Wildfire science emphasizes the importance of using fire as a natural, regenerative process to maintain forest health and reduce large wildfire air pollution events. But forestry management policy has long emphasized suppressing wildfires, loading forests with fuel and increasing the risk of catastrophic wildfires. As a result, using prescribed fire to restore Western forests and reduce long-term air pollution creates tension with air quality law, because in the short term, prescribed fires will worsen air quality. Despite the exceptional events rule of the Clean Air Act allowing the use of prescribed fire as a wildfire management tool, the local implementation of air quality laws hinders the use of prescribed fire for forest management. Looking to California and more specifically the San Joaquin Valley as a case study, this Note uses new data to show that while land managers and air quality regulators in the San Joaquin Valley have drastically increased their use of prescribed fire, this increase is not sufficient to return the southern Sierra Nevada to a natural fire-adapted ecosystem. Policy makers should pursue even more aggressive options to encourage prescribed fire by modifying the structure of air quality law. Subjecting large wildfires to the requirements of the Clean Air Act would incentivize local air managers to develop plans on how to mitigate the effects of wildfire in the long term. Limiting local air quality regulators' authority over land managers' use of prescribed fires would also encourage the use of prescribed fire.*

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## INTRODUCTION

The Western United States has recently experienced increasingly problematic wildfires tied to climate change, drought, and poor forest management. The Camp Fire, as of December 2018, caused at least eighty-five fatalities, making it the deadliest and most destructive fire in California’s history.<sup>1</sup> The Mendocino Complex Fire, burning during the summer of 2018 and destroying over 500 square miles, was the largest recorded wildfire in California’s history.<sup>2</sup> The Tubbs Fire in October 2017 was the second most destructive fire in the state’s history, destroying roughly 5,500 structures, over 4,000 of which were located in the city of Santa Rosa, and leading to the “worst air quality ever recorded for smoke in many parts of the Bay Area.”<sup>3</sup> While the

1. See Adam Brinklow, *Three People Still Missing in Camp Fire*, CURBED SAN FRANCISCO (Dec. 4, 2018), <https://sf.curbed.com/2018/12/4/18125807/death-toll-camp-fire-butte-county-declines>; Erin Baldassari, *Camp Fire Death Toll Grows to 29, Matching 1933 Blaze as State’s Deadliest*, E. BAY TIMES (Nov. 11, 2018), <https://www.eastbaytimes.com/2018/11/11/crews-continue-to-battle-strong-winds-in-deadly-camp-fire/>; TOP 20 MOST DESTRUCTIVE CALIFORNIA WILDFIRES, CALFIRE, [http://www.fire.ca.gov/communications/downloads/fact\\_sheets/Top20\\_Destruction.pdf](http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Destruction.pdf) (last visited Dec. 12, 2018).

2. Robinson Meyer, *Why the Wildfires of 2018 Have Been So Ferocious*, THE ATLANTIC (Aug. 10, 2018), <https://www.theatlantic.com/science/archive/2018/08/why-this-years-wildfires-have-been-so-ferocious/567215/>.

3. See TOP 20 MOST DESTRUCTIVE CALIFORNIA WILDFIRES, *supra* note 1; Denis Cuff, *Wildfires Have Created ‘Worst Air Quality Ever Recorded for Smoke’*, E. BAY TIMES (Oct. 10, 2017), <https://www.eastbaytimes.com/2017/10/10/wildfires-have-created-worst-air-quality-ever-recorded-for->

damage and destruction posed by these fires is heartbreaking and alarming, this Note focuses on fires' effects on air quality, which has widespread, detrimental impacts on public health. As a result of increasingly severe fires, particulate matter, one of the worst forms of air pollution emitted from wildfires, has decreased in all areas of the nation since the 1980s other than the American Northwest.<sup>4</sup>

Policy makers are beginning to respond to these problematic fires. In 2018, the California legislature passed a series of bills to devote more funds to, and reduce regulatory obstacles for, projects designed to manage wildfire risk, such as prescribed fires.<sup>5</sup> In enacting these new reforms, however, policy makers should assess two main systemic questions about wildfires and air policy. First, what is the proper balance in using prescribed fires to manage wildfire risk based on tradeoffs in air quality? While in the short term, prescribed fires will create localized air pollution, in the long term, prescribed fires could improve forest health and reduce the risk of severe fires and extreme air pollution events. Second, what more can be done to reduce wildfire air quality risks?

This Note attempts to resolve these questions by examining fire science, forestry policy, and air quality law, and proposing policy options to improve wildfire air quality. In Part I, this Note details how fire science recognizes the long-term air quality benefits of managed wildfires and prescribed burns in forests. Part II describes how federal forestry policy recently has shifted towards recognizing the importance of managed wildfires and prescribed burns, departing from its long history of encouraging the suppression of wildfires. It also surveys some of California's recent changes in state forestry policy that encourage prescribed fire.

In Part III, this Note lays out how air quality laws apply to wildfires, describes recent key development in air law, and shows how local regulators implement that air law. Part III also examines recent air quality law developments, focusing on *Natural Resources Defense Council v. EPA*, where the D.C. Court of Appeals upheld EPA's "exceptional events" rule, exempting certain events like wildfires and prescribed burns from compliance with the Clean Air Act.<sup>6</sup> Using California's San Joaquin Valley as a case study, this Note

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smoke-in-bay-area/; Priya Krishnakumar et al., *Here's Where More than 7,500 Buildings Were Destroyed and Damaged in California's Wine Country Fires*, L.A. TIMES (Oct. 23, 2017), <https://www.latimes.com/projects/la-me-northern-california-fires-structures/>.

4. See Crystal D. McClure & Daniel A. Jaffe, *US Particulate Matter Air Quality Improves Except in Wildfire-Prone Areas*, 115 Proceedings of the Nat'l Acad. of Sci. of the U.S. 7901 (2018).

5. See Assem. Comm. on Local Gov't, S.B. 1260 (June 27, 2018), <https://alcl.assembly.ca.gov/sites/alcl.assembly.ca.gov/files/SB%201260%20analysis.pdf>. Humans intentionally ignite prescribed fires to meet forest management objectives. A prescribed fire is distinct from an uncontrolled wildfire, which is a forest fire ignited naturally or by humans but not used for forest management objectives. Land managers control and monitor some naturally-ignited wildfires for forest health purposes, and this Note refers to these fires as managed wildfires. U.S. Nat'l Park Serv., *Wildland Fire: What is a Prescribed Fire?* (Feb. 13, 2017), <https://www.nps.gov/articles/what-is-a-prescribed-fire.htm>.

6. See *Nat. Res. Def. Council v. EPA*, 896 F.3d 459, 461 (D.C. Cir. 2018).

also shows how the implementation of air regulations at the local level limits the ability of land managers to use prescribed burns for forest management.

In Part IV, this Note draws on new data to show that land managers and local air regulators in the San Joaquin Valley have significantly increased the use of prescribed burns for forest management. While significant progress has been made in increasing the use of prescribed burns, more work should be done: this Note concludes with several suggested paths forward for air quality policy. Policy makers should consider both subjecting wildfires to the air emission requirements of the Clean Air Act, as well as reducing the discretion of local land managers to restrict the use of prescribed burns.

#### I. THE SCIENCE OF FIRE'S CRUCIAL ROLE IN SUSTAINING FOREST ECOSYSTEMS

Scientific research demonstrates that fire is an integral part of forest ecosystems and sustains forest ecosystem health. In addition, periodic fire reduces the total size and emissions of wildfires, because smaller burns produce less smoke and particulate matter, reduce the buildup of fuel for future fires, and promote a forest structure which holds more biomass during wildfires. Thus, scientific research provides substantial support for the proposition that policy makers should use prescribed burns and managed wildfires in order to reduce the incidence of catastrophic wildfires and improve air quality.

All fires create harmful air pollution whether they are prescribed or natural. The smoke produced by both prescribed and natural fires contains Fine Particles (hereafter, "PM<sub>2.5</sub>"), as well as other toxic chemicals.<sup>7</sup> Researchers have studied PM<sub>2.5</sub> extensively, tying it to harmful health impacts like respiratory illnesses and increased mortality rates.<sup>8</sup> The composition of smoke itself does not vary whether the fire is prescribed or natural. One study on prescribed burns in a Western U.S. forest indicated that prescribed burn smoke was just as harmful as wildfire smoke based on levels of PM<sub>2.5</sub> and carcinogens.<sup>9</sup> In considering the overall quantity of emissions produced by prescribed fires and wildfires, some authors have developed high-level literature review studies finding that wildfires typically create a lower quantity of emissions than prescribed burns overall.<sup>10</sup> This research is in tension with more narrowly focused studies on fires in specific forests or ecosystems, which generally find that prescribed fires reduce overall wildfire emissions.<sup>11</sup> However, differences in measurement methods largely

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7. See J. C. Liu et al., *A Systematic Review of the Physical Health Impacts from Non-Occupational Exposure to Wildfire Smoke*, 136 ENVTL. RESEARCH 120, 121 (2015).

8. See *id.*

9. Marin S. Robinson et al., *Characterization of PM<sub>2.5</sub> Collected During Broadcast and Slash-Pile Prescribed Burns of Predominately Ponderosa Pine Forests in Northern Arizona*, 45 ATMOS. ENV'T 2087 (2011). Scientists conducted this study to test whether slash pile prescribed burns might have less of an air quality impact than an ordinary fire. *Id.*

10. See, e.g., Kathleen M. Navarro et al., *A Review of Community Smoke Exposure from Wildfire Compared to Prescribed Fire in the United States*, 9 ATMOSPHERE 185 (2018).

11. See *infra* notes 18–28.

explain the discrepancy, because prescribed burn smoke measurements occur closer to the location of a prescribed fire.<sup>12</sup>

While all fires impact air quality, there is a strong body of research which demonstrates the ecological benefits of prescribed fires and managed wildfires for forest ecosystems. Fires reduce unhealthy density and vegetation growth within forests, clearing space for wildlife and improving biodiversity.<sup>13</sup> They improve soil quality by increasing nutrient levels and organic matter.<sup>14</sup> Fires are also essential to the development of some species of plants, demonstrating their importance in maintaining a balanced and healthy ecosystem. For example, fire triggers the release of seeds from the sequoia tree seed cone, and clears land to allow for seed germination and early sequoia tree growth.<sup>15</sup> Additionally, low-intensity fires help sequester carbon in forests.<sup>16</sup> And allowing wildfires to burn in forests reduces the obvious ecological damage of suppressing fire. Firefighting activities cause erosion, contamination of soil and water, clearing, and disruption of habitat.<sup>17</sup>

Ecological studies also show that prescribed and low-intensity fires effectively reduce the size and scope of subsequent severe wildfires. Without periodic wildfires, trees and vegetation grow below a forest's tree canopy, essentially loading a forest with fuel and increasing its density.<sup>18</sup> In fuel-loaded forests, even a small fire could trigger a fire reaching the crown of the forest canopy, clearing an entire stand of trees.<sup>19</sup> But when forest managers treat forests with prescribed burns or allow natural fires to periodically burn at low levels, subsequent wildfires have a lower spread rate and reaction intensity, and do not reach the forest canopy.<sup>20</sup> These studies on the mechanics of wildfire present a strong case for using prescribed fire in low-density forests with a distinct tree canopy, such as sequoia or conifer forests.<sup>21</sup> But the benefits of prescribed fire have a broader application as well. One study focusing on four federally

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12. See NAVARRO, *supra* note 10, at 191 (“[T]he prescribed fire studies used air monitoring methods that focused on characterizing PM<sub>2.5</sub> exposures and emissions directly from and next to the burns. Wildfire and prescribed fire smoke exposure, similar to other emissions, is dependent on proximity to the source.”).

13. See Craig D. Allen et al., *Ecological Restoration of Southwestern Ponderosa Pine Ecosystems: A Broad Perspective*, 12 *ECOLOGICAL APPLICATIONS* 1418, 1421 (2002).

14. *Id.* at 1425.

15. Bruce M. Kilgore, *The Ecological Role of Fire in Sierran Conifer Forests*, 3 *QUATERNARY RESEARCH* 496, 499 (1973).

16. Matthew D. Hurteau et al., *Carbon Protection and Fire Risk Reduction: Toward a Full Accounting of Forest Carbon Offsets*, 6 *FRONTIERS IN ECOLOGY & THE ENV'T* 493, 495 (2008) (analyzing four large U.S. wildfires to find that thinning and prescribed burns would have reduced CO<sub>2</sub> emissions from the fires as much as 98 percent).

17. See Dana M. Backer et al., *Impacts of Fire-Suppression Activities on Natural Communities*, 18 *CONSERVATION BIOLOGY* 937, 939 (2004).

18. Bruce M. Kilgore & Rodney W. Sando, *Crown-Fire Potential in a Sequoia Forest after Prescribed Burning*, 21 *FOREST SCI.* 83, 83 (1975).

19. *Id.* at 86.

20. *Id.*

21. See *id.* at 83; Kilgore, *supra* note 15, at 496.

protected forests with a variety of different mixes of tree species in the Western United States found that “[w]ildland fire clearly acts as a fuel break and is a barrier to subsequent fire spread.”<sup>22</sup> Other researchers have noted that “[w]hether fire comes as a megafire or is managed for forest health with prescribed and managed natural ignition is largely a matter of policy,” based on the finding that smaller, managed burns would reduce the scope of subsequent burns.<sup>23</sup>

Managed and prescribed fires tend to reduce high-intensity wildfire air emissions over time. In one recently published modeling study of PM<sub>2.5</sub> in the Sierra Nevada from 2006 through 2015, researchers found that fires before 2015 in a single monitoring area had not exceeded federal air quality standards.<sup>24</sup> However, the Rough Fire in 2015 did exceed federal air quality standards for PM<sub>2.5</sub>.<sup>25</sup> The researchers noted that when the Rough Fire hit the perimeter of the previous fires in the monitoring area, its emissions slowed down and dipped below federal standards, demonstrating the air quality benefits of previous burns and the danger of fire suppression.<sup>26</sup> Another study, which modeled the emissions of different fires in the Sierra Nevada, found that larger wildfires exceeded federal air quality standards whereas managed burns did not.<sup>27</sup> The study relied on the differences in air emissions between the devastating 2013 Rim Fire in the Sierra Nevada, and smaller prescribed and managed wildfires allowed to burn under the supervision of the National Park Service in Yosemite.<sup>28</sup>

These studies relied on comparisons between managed or prescribed fires and recent high-intensity fires to show that smaller prescribed and managed fires produce fewer air pollutants than severe fires. Essentially, periodic burning reduces fuel in forests and decreases crown fires, shrinking the size of a fire.<sup>29</sup> Unlike uncontrolled natural fires, managed and prescribed fires do not reach the

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22. Sean A. Parks et al., *Wildland Fire as a Self-Regulating Mechanism: the Role of Previous Burns and Weather in Limiting Fire Progression*, 25 *ECOLOGICAL APPLICATIONS* 1478, 1479–82, 1489 (Sept. 29, 2015) (studying forests with tree species such as ponderosa pine, Douglas fir, lodgepole pine, and Englemann spruce, at both high and low elevations and with varying levels of density).

23. Don W. Schweizer et al., *Using National Ambient Air Quality Standards for Fine Particulate Matter to Assess Regional Wildland Fire Smoke and Air Quality Management*, 201 *J. ENVTL. MGMT.* 345, 346 (2017).

24. *Id.* at 354.

25. *Id.* at 349. The Rough Fire was a high-intensity wildfire which burned 151,000 acres in the Sierra Nevada in 2015. Mike Theune, *The Rough Fire: One Year Later*, NAT'L PARK SERV. (July 22, 2016), <https://www.nps.gov/seki/learn/news/2015-rough-fire-one-year-later.htm>.

26. Schweizer, *supra* note 23, at 354 (“[e]missions slowed when the Rough Fire entered the 2010 Sheep Fire perimeter. When the Rough Fire burned in this area, AQI impacts reduced into the good range for a number of days. Later, the fire became more active as it again entered areas of higher fuel loads (caused by a century of fire suppression) . . .”).

27. Jonathan W. Long, *Aligning Smoke Management with Ecological and Public Health Goals*, 116 *J. FORESTRY* 76, 80 (2017) (“[d]aily emissions from both prescribed burns and resource objective wildfires [naturally ignited and managed fires] remained well below 500 tons PM<sub>2.5</sub>, whereas the Rim Fire had 20 days exceeding that threshold.”).

28. *Id.*

29. *See id.* at 81.

size necessary to loft smoke and have a lower risk of fire spread, resulting in lower emissions that do not reach a threshold harmful to human health.<sup>30</sup> Thus, overall smaller prescribed and managed fires will contribute to lower levels of human exposure to air pollution over time.<sup>31</sup> Without allowing more of these smaller fires in the near term, some researchers argue that land managers are merely “deferring human health risks to the future.”<sup>32</sup>

Lastly, because most small fires do not violate air quality standards, increasing prescribed burns will have few impacts on air quality. In a study of air quality of the Central Valley spanning between 2002 and 2009, wildfires did not violate federal standards at measuring sites in the Western Sierra Nevada, including during months in the high fire season.<sup>33</sup> Similarly, a case study of the Lion Fire, a naturally ignited fire that was within normal historical fire size burning in the Southern Sierra Nevada, showed minimal impacts on PM<sub>2.5</sub> levels in the area. The fire’s emissions did not violate federal PM<sub>2.5</sub> standards, and the Air Quality Index generally remained at “good” or “moderate” during the extent of the burn.<sup>34</sup> These studies indicate that particularly in the Central Valley and Sierra Nevada, most small fires do not pose health risks for humans. Instead, it is only a limited number of severe wildfires that present serious air quality concerns.<sup>35</sup> Thus, allowing more prescribed, smaller burns will not negatively impact overall air quality.

## II. FORESTRY POLICY’S IMPACTS ON WILDFIRES AND PRESCRIBED BURNS

In stark contrast to scientific research showing that prescribed and managed burns have few impacts on air quality and reduce the overall impact of catastrophic wildfires, fire policy in the United States has long focused on suppressing fires. Decades of fire suppression by federal and state land managers led to fuel loading in forests.<sup>36</sup> One way for land managers to address the legacy of fire suppression is to use prescribed fires to clear forests of excessive fuel. But fire policy has been slow to break with the practice of fire suppression, due to concerns over human safety and air quality. This Part will first examine historic patterns of fire suppression, then analyze the federal government’s efforts to

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30. *Id.* at 81–82.

31. Ricardo Cisneros & Don Schweizer, *Forest Fire Policy: Change Conventional Thinking of Smoke Management to Prioritize Long-Term Air Quality and Public Health*, 10 AIR QUALITY, ATMOSPHERE & HEALTH 33, 35 (2017).

32. *Id.*

33. Ricardo Cisneros et al., *Spatial and Seasonal Patterns of Particulate Matter Less than 2.5 microns in the Sierra Nevada Mountains, California*, 5 ATMOSPHERIC POLLUTION RES. 581, 589 (2014).

34. Don Schweizer & Ricardo Cisneros, *Wildland Fire Management and Air Quality in the Southern Sierra Nevada: Using the Lion Fire as a Case Study with a Multi-Year Perspective on PM<sub>2.5</sub> Impacts and Fire Policy*, 144 J. ENVTL. MGMT. 265, 273–74 (2014).

35. See Baldassari, *supra* note 1; Meyer, *supra* note 2; Cuff, *supra* note 3; Cisneros & Schweizer, *supra* note 31.

36. Fuel loading is the process by which, in the absence of periodic fires, forests become loaded with fuel and susceptible to catastrophic wildfires.

reverse and update federal fire policy, and finally contrast federal forestry policy with California's more proactive approach to forest management.

*A. The History of Fire Suppression Policies in the American West*

Massive wildfire suppression has been the de facto land management policy in the American West since European colonization. A wide variety of factors have influenced this policy such as urban development, a concern for human life, and economic interests in the exploitation of natural resources.

Before European contact in the Americas, scholars hypothesize that the Western United States was frequently on fire. Before 1800, an estimated 1.8 million hectares, an area slightly larger than the state of Connecticut, burned within the state of California each year.<sup>37</sup> Fires varied in type and frequency, with some stand-replacing fires destroying entire forests, and smaller brush-clearing fires thinning forests of their lower vegetation.<sup>38</sup> Native Americans also used fire for agricultural, ecological, and military purposes, but it is difficult to measure these practices' overall impact on large-scale patterns of forest growth.<sup>39</sup>

European contact in the West brought about a century of wildfire suppression. Early settlers initially used fire for land management, like in other areas of the United States such as the Southeast.<sup>40</sup> But Western settlers also experienced catastrophic wildfires, which turned public opinion against the use of fire. During the 1910 fire season, uncontrolled wildfires in Idaho and Montana burned three million acres, destroying several towns and killing eighty-five people.<sup>41</sup> President Taft ultimately deployed the Army to control the fires, and the federal government footed a \$1.1 million bill for the suppression effort.<sup>42</sup> These early catastrophic fires led to the consensus that government should play a larger role in wildfire suppression.<sup>43</sup>

At roughly the same time, land managers within the federal government sought to protect forests from fire in the name of efficiently exploiting the

37. Scott L. Stephens et al., *Prehistoric Fire Area and Emissions from California's Forests, Woodlands, Shrublands, and Grasslands*, 251 *FOREST ECOLOGY & MGMT.* 205, 213 (2007). The landmass of the state of Connecticut is 1.44 million hectares. 1,435,720 hectares, The Measure of Things. Bluebulb Projects' The Measure of Things, (2019), <https://www.bluebulbprojects.com/MeasureOfThings/results.php?p=1&comp=area&unit=h&amt=1435720&sort=p>.

38. Robert B. Keiter, *The Law of Fire: Reshaping Public Land Policy in an Era of Ecology and Litigation*, 36 *ENVTL. L.* 301, 314 (2006). Stand-replacing fires are those which reach the crown of the forest canopy and clear an entire stand of trees. See Kilgore & Sando, *supra* note 18, at 83.

39. Stephens, *supra* note 37, at 305.

40. *Id.* at 306. European settlers in the Southeast frequently and effectively used fires to manage forest growth. Cynthia Fowler & Evelyn Konopic, *The History of Fire in the Southern United States*, 14 *HUM. ECOLOGY REV.* 165, 169 (2007). These practices continued until the 1930s, when federal agencies instituted a policy of fire suppression. *Id.* at 171.

41. Keiter, *supra* note 37, at 306.

42. Rebecca K. Smith, *War on Wildfire: The U.S. Forest Service's Wildland Fire Suppression Policy and Its Legal, Scientific, and Political Context*, 15 *U. BALT. J. ENVTL. L.* 25, 27 (2007).

43. *Id.*; Keiter, *supra* note 37, at 306.

nation's natural resources. Gifford Pinochet, the first head of the Forest Service, was a utilitarian conservationist who wanted to optimally exploit federal land for timber and grazing.<sup>44</sup> From his utilitarian perspective, he wrote that "fires do vast harm," and that it was a matter of "first interest and importance" that they "be prevented or extinguished."<sup>45</sup> Pinochet merely wanted to suppress fires so as not to waste valuable forest resources.<sup>46</sup>

Building off of both a concern for public safety and protecting natural resources, the federal government soon passed a series of laws allowing the newly established U.S. Forest Service to coordinate and fight large-scale wildfires. The Weeks Act of 1911 permitted the U.S. Forest Service to purchase private forest lands, expanding the scope of the agency's forest protection efforts.<sup>47</sup> The Act also enhanced fire protection cooperation between the federal government and states in order to protect nonfederal lands, administering matching firefighting funds to states with forest protection agencies.<sup>48</sup> The Clarke-McNary Act of 1924 further expanded the scope of federal and state cooperation on firefighting, providing substantial federal funds to states for fire protection efforts on both state and private lands.<sup>49</sup>

While early Western settlers and the U.S. Forest Service favored fire suppression to protect humans and natural resources from harm, the federal government lacked the funding and technology to carry out large-scale suppression until the 1930s. The New Deal created programs like the Civilian Conservation Corps (CCC), which brought a new labor force into rural Western areas.<sup>50</sup> An emphasis on road construction also opened up the wilderness to human contact, allowing firefighters to access remote areas.<sup>51</sup> New labor crews and roads allowed the Forest Service to establish the "10:00 A.M. policy," declaring that all fires should be extinguished by 10:00 A.M. the day after igniting.<sup>52</sup> World War II also led to rapid industrialization and a suburban expansion across the United States, placing more homes, roadways, property, and lives in areas previously uninhabited by European settlers and subject to natural wildfires. The expansion required new fire suppression efforts to cover these areas where fire was not ordinarily suppressed.<sup>53</sup> After the war, the Forest

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44. See Ashley K. Hoffman & Sean M. Kammer, *Smoking Out Forest Fire Management: Lifting the Haze of an Unaccountable Congress and Lighting Up A New Law of Fire*, 60 S.D. L. REV. 41, 59 (2015).

45. *Id.* at 66. See also Gifford Pinochet, *The Relation of Forests and Forest Fires*, *Forest History Today*, Spring 1999, at 29, 29–32 (reprinted from *National Geographic*, Vol. X, 1899).

46. Hoffman & Kammer, *supra* note 43, at 59.

47. *Id.* at 66.

48. See Lewis F. Southard, *The History of Cooperative Forest Fire Control and the Weeks Act*, *Forest History Today*, Spring/Fall 2011, at 18.

49. *Id.* at 19.

50. Keiter, *supra* note 37, at 307.

51. *Id.*

52. *Id.*; Lisa Dale, *Wildfire Policy and Fire Use on Public Lands in the United States*, 19 SOC'Y & NAT. RESOURCES 275, 275 (2006).

53. Keiter, *supra* note 37, at 307.

Service received military surplus dollars to fight fires, and nearly \$200 million of this surplus went to state and local entities collaborating with the Forest Service.<sup>54</sup> These developments improved the effectiveness of the federal government's fire suppression efforts. Between 1946 and 1978 less than one million acres of land across the U.S. burned in wildfires each year, whereas in preceding years over two million acres burned each year.<sup>55</sup>

*B. Forestry Policy's Shifting Approach: Fire Suppression to Prescribed Burns*

In the 1960s, advances in scientific research and the environmental movement forced federal land management agencies to scale back their fire suppression policies. Researchers introduced the idea that fire was a natural process required to maintain forest health and reduce the intensity of subsequent fires.<sup>56</sup> The 1970 fire seasons in California and Washington confirmed that fuel loading, the buildup of organic matter in forests as a result of fire suppression, had become a serious issue. Excess fuel left in forests from decades of suppression led to intense conflagrations.<sup>57</sup> At the same time, the burgeoning environmental movement emphasized the importance of wilderness and refraining from interfering in natural processes, leading to the enactment of the Wilderness Act of 1964.<sup>58</sup> As a result of these changes, the National Park Service began to allow naturally ignited fires to burn if they served wildlife or vegetation management purposes in some Western parks.<sup>59</sup> The Forest Service also began to permit prescribed fires, and in 1977 dropped the 10:00 A.M. policy.<sup>60</sup>

However, public resistance to new prescribed fire policies tempered the ability of federal land managers to adopt a science-based approach to forest management. In the summer of 1988, park managers in Yellowstone National Park allowed a collection of naturally ignited fires to burn for roughly one month under its new natural and prescribed fire rules.<sup>61</sup> Drought and high wind conditions then expanded the fires beyond the estimates of park managers, requiring extensive fire suppression efforts.<sup>62</sup> These "Yellowstone Fires" destroyed 1.5 million acres of land and affected 36 percent of the land in the park.<sup>63</sup> Prolonged political scrutiny and media attention helped contribute to a public backlash against new prescribed burn and natural-ignition fire policies.<sup>64</sup> Although the Forest Service and the National Park Service did not drop their new

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54. Smith, *supra* note 41, at 28.

55. Keiter, *supra* note 37, at 307.

56. Hoffman & Kammer, *supra* note 43, at 67; Keiter, *supra* note 37, at 307.

57. Keiter, *supra* note 37, at 308.

58. *Id.*

59. *Id.*

60. *Id.*

61. 1988 FIRES, NAT'L PARK SERV. (Dec. 14, 2018), <https://www.nps.gov/yell/learn/nature/1988fires.htm>.

62. *Id.*

63. Keiter, *supra* note 37, at 309.

64. *Id.*; 1988 FIRES, *supra* note 60.

prescribed fire rules in the aftermath of the Yellowstone Fires, some scholars allege that both agencies ordered their managers to suppress all wildfires after the 1988 fire season, at least temporarily.<sup>65</sup>

A general hesitancy to allow natural fires to burn appears to continue today, at least with respect to the Forest Service. Stuck in a pattern of suppression and fuel loading, as of 2015 the Forest Service spent more than 50 percent of its annual budget on fire suppression, struggling to keep up with increasingly damaging fires.<sup>66</sup> Ninety-eight percent of wildfires in the United States are also actively suppressed and contained.<sup>67</sup> Thus, current policy fails to adequately balance an inevitable tension between fire suppression and prescribed fires. Land managers are prone to public backlash both when forest fuel loading leads to large destructive fires and when the prescribed fires combatting fuel loading burn out of control.

### C. Current Federal Forestry Policy

Current federal wildfire policy reflects an increased, but limited, acceptance of using prescribed fires to manage forests. A variety of agencies within the Department of Interior (DOI) and Department of Agriculture (USDA) are responsible for managing public lands, and as a result the federal government has established interagency programs, such as the Interagency Fire Center, to coordinate wildfire responses.<sup>68</sup> However, federal agencies have few statutory planning requirements related to wildfires, and Congress only required federal agencies to develop a plan to manage wildfires starting in 2009.<sup>69</sup> As a result, the federal government only offers limited guidance on long-term planning to manage wildfires.

Congress has provided little statutory guidance to federal agencies on how to manage and respond to the threat of wildfires, particularly with respect to the use of prescribed fires, indicating its inability to form adequate fire forestry policy. For example, the National Forest Management Act is the statute which establishes standards for how the Forest Service should manage land within the National Forest System. It requires the Forest Service to develop “land and resource management plans” for units of the National Forest System which weigh “physical, biological, [and] economic” factors.<sup>70</sup> The 2012 rules promulgated under the Act’s planning requirements do address fire management, but do not instruct managers on how to implement fire management to serve

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65. Keiter, *supra* note 37, at 309 (“[t]he agencies ordered land managers to control all fires regardless of origin or location.”).

66. Scott L. Stephens et al., *U.S. Federal Fire and Forest Policy: Emphasizing Resilience in Dry Forests*, 7 *ECOSPHERE* 1 (2016).

67. Michael P. Dombek et al., *Wildfire Policy and Public Lands: Integrating Scientific Understanding with Social Concerns across Landscapes*, 18 *CONSERVATION BIOLOGY* 883, 885 (2004).

68. Keiter, *supra* note 37, at 308.

69. 43 U.S.C. § 1748(b) (2009).

70. 16 U.S.C. § 1604 (2018).

competing priorities. The rules emphasize fire as a stressor and driver of “ecological integrity,” but provide no guidance on how to balance these priorities, and do not mention prescribed fires.<sup>71</sup>

Other federal statutes define wildfire management requirements, but provide little guidance on how federal agencies specifically manage fires in the long run. The Healthy Forests Restoration Act of 1993 ostensibly provided forest management tools to reduce the risk of wildfire, but has been routinely criticized as promoting logging interests rather than forest health.<sup>72</sup> For example, in order to reduce excess fuel in forests, the Act waived some National Environmental Policy Act (NEPA) requirements for logging and prescribed burning projects within the wilderness-urban interface.<sup>73</sup> Although the purpose of the Act was to “reduce wildfire risk” and the effects of “catastrophic wildfire,” it offered little direction on how to manage forest ecosystems in the long run, other than making it easier to execute specific types of logging projects and prescribed burns.<sup>74</sup>

In the absence of statutorily-imposed planning requirements for wildfires, federal agencies have created their own ad hoc wildfire policy through agency manuals and policy statements. For example, the Clinton administration issued the National Fire Plan, a planning document focused on how to reduce fire risk and implement fire management efforts.<sup>75</sup> The Forest Service also updated the Forest Service Manual in 1995 to indicate that “[w]ildland fire will be used to protect, maintain and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role.”<sup>76</sup> But it offered no specific guidance on how to manage competing priorities, like how prescribed fires would both impact air quality and benefit forest ecosystems.<sup>77</sup>

The Federal Land Assistance, Management, and Enhancement Act of 2009 (“FLAME” Act) was the first statute which required DOI and USDA to create a long-term wildfire management plan. The Act forced agencies to plan how to address wildfires in the long term, creating a “cohesive wildfire management strategy.”<sup>78</sup> It required that DOI and USDA’s plan provide for “allocation of hazardous fuels reduction funds based on the priority of hazardous fuels reduction projects” and “assess[] the impacts of climate change on the frequency

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71. National Forest System Land Management Planning, 77 Fed. Reg. 21,167 (Apr. 9, 2012); National Forest System Land Management Planning, 77 FR 21162-01.

72. One scholar wrote that the goal of the Act was “not to stop suppressing fires, but instead to replace wildfire with prescribed burning and mechanical management—including commercial logging.” Smith, *supra* note 41, at 34. See also Reda M. Dennis-Parks, *Healthy Forests Restoration Act-Will It Really Protect Homes and Communities?*, 31 ECOLOGY L.Q. 639, 653–57 (2004).

73. Hoffman & Kammer, *supra* note 43, at 60, 71; 16 U.S.C. § 6514(d) (2003) (reducing NEPA requirements for projects in the “wildland-urban interface”).

74. See 16 U.S.C. § 6501 (2003).

75. Keiter, *supra* note 37, at 311.

76. *Id.* at 327.

77. *Id.*

78. 43 U.S.C. § 1748(b) (2009).

and severity of wildfire,” but went no further in attempting to prescribe solutions or policies to resolve these serious problems.<sup>79</sup>

DOI and USDA have since developed the “National Cohesive Wildland Fire Strategy” promulgated under the FLAME Act, but the policy has not resulted in concrete changes in federal land management practices with respect to prescribed burns. The Strategy focuses on three goals: Resilient Landscapes, Fire Adapted Communities, and Safe and Effective Wildfire Response.<sup>80</sup> The plan is intended as a “new starting point” to develop methods for agencies to align on goals and focuses more on guiding principles for agencies rather than ordering discrete policy changes.<sup>81</sup> Whereas state and nonfederal entities have increased their prescribed burns from under one million acres a year to nearly five million acres a year over the past five years, federal agencies such as the Forest Service and Bureau of Land Management have maintained roughly similar levels of prescribed burning over the same time period.<sup>82</sup> Thus, the national strategy has not yet resulted in concrete steps to modify federal policy and encourage prescribed fires as a tool to manage forests.

Overall, federal actions attempting to reverse and correct a history of fire suppression have been vague and unsatisfying. Thus, federal policy makers could improve forestry policy to explicitly prioritize prescribed burns, benefitting forest health and reducing wildfire risk.

#### *D. Current California State Forestry Policy*

In contrast to the federal government’s sluggish approach to reversing the historic policy of fire suppression, California has taken recent, aggressive steps to encourage prescribed burning and correct fuel imbalances in forests. The state has not only authorized prescribed fire as a forestry management technique by statute, but is also amidst a legislative overhaul intended to increase state land managers’ use of prescribed fire.

Similar to the federal government’s earlier fire suppression policy, California law has not always incentivized the use of prescribed burns, which makes recent changes in state law particularly significant. The state’s public nuisance law forbids uncontrolled burning on any land within the state, providing

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79. *Id.*

80. U.S. DEP’T OF THE INTERIOR & U.S. DEP’T OF AGRIC., THE NATIONAL STRATEGY: THE FINAL PHASE OF THE DEVELOPMENT OF THE NATIONAL COHESIVE WILDLAND FIRE MANAGEMENT STRATEGY (Apr. 2014), <https://www.forestsandrangelands.gov/strategy/thestrategy.shtml> (last visited Dec. 14, 2018).

81. *Id.* at 55 (“[e]fforts have been progressively moving from goals and principles to actions.”).

82. NAT’L INTERAGENCY FIRE CTR., PRESCRIBED FIRES AND ACRES BY AGENCY, [https://www.nifc.gov/fireInfo/fireInfo\\_stats\\_prescribed.html](https://www.nifc.gov/fireInfo/fireInfo_stats_prescribed.html) (last visited Dec. 15, 2018). In contrast to other federal agencies, the National Park Service conducted more acres of prescribed burning in 2017 than in any previous year since the National Interagency Coordination Center began collecting prescribed burn data in 1998. *Id.*

strong financial incentives not to allow any type of fire to run out of control.<sup>83</sup> These nuisance laws are not without exception, however, as the Health and Safety Code provides that “[a]ny public agency authorized to engage in fire protection activities . . . may use fire to abate a fire hazard.”<sup>84</sup> The state also manages its forests under the Forest Practices Act of 1973, which focuses on forestry practices and sustainably harvesting timber resources rather than fire management. While the Act allows and encourages lumber projects that could reduce the risk of wildfire, it does not specifically authorize the use of prescribed fire.<sup>85</sup> Moreover, some industry groups argue that California state laws are too restrictive and prevent timber harvesting that would thin forests and reduce the risk of wildfire.<sup>86</sup>

The legislature did not address prescribed fire as a forest management tool until it passed the Wildland Fire Protection and Resources Management Act of 1978. The Act ordered the Department of Forestry and Fire Protection to prepare two pilot plans, one in Northern and one in Southern California, using prescribed burning activities as a means to reduce high-intensity wildfires.<sup>87</sup> Nevertheless, the scope of prescribed burning initially allowed under the plan was limited. The Act still subjected prescribed burn plans to approval under the California Environmental Quality Act (CEQA), and did not exempt individual prescribed burns from requirements like air quality compliance.<sup>88</sup>

Even after serious engagement with prescribed fire as a forestry management tool for several decades, California made a significant push after recent high-intensity fires, such as the Tubbs and Mendocino Complex Fires, to encourage even more prescribed burning. In May 2018, Governor Jerry Brown

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83. “Any uncontrolled fire burning on any lands covered wholly or in part by timber, brush, grass, grain or any other flammable material, without proper precaution being taken to prevent its spread notwithstanding the origin of such fire, is a public nuisance by reason of its menace to life and property.” Cal. Pub. Res. Code § 4170 (West 1968).

84. Cal. Health & Safety Code § 13055 (1981).

85. The legislative purpose of the Act acknowledges that “[p]rudent management of timberlands can decrease the potential for large wildland fires, that release greenhouse gases, by creating forests that are less susceptible to ignition and that reduce the intensity of wildland fires, thereby allowing for more successful fire suppression efforts.” Cal. Pub. Res. Code § 4598(d) (West 2014).

86. Louis Sahagun, *As Trump Tweets about California Fires, His Administration Wants to Expand Logging*, L.A. TIMES (Aug. 7, 2018), <https://www.latimes.com/local/california/la-me-logging-wildfire-risk-20180807-story.html>.

87. Wildland Fire Protection and Resources Management Act of 1978, ch. 1118, § 2, 1978 Cal. Stat. (1978) (codified as Cal. Pub. Res. Code § 4466(a) (West 2019)).

88. Wildland Fire Protection and Resources Management Act of 1978, ch. 1118, § 2, 1978 Cal. Stat. (1978) (codified as Cal. Pub. Res. Code § 4467 (West 2019) (stating that a “plan shall be prepared in accordance with the California Environmental Quality Act (commencing with Section 21000) and, when approved, shall constitute the environmental impact report for the implementation of the plan for each area of wildlands designated by the board.”)). CEQA is one of the most stringent environmental disclosure laws in the U.S., which requires state and local agencies in California to evaluate potential adverse environmental effects of their actions. See Jennifer Hernandez, *California Environmental Quality Act Lawsuits and California’s Housing Crisis*, 24 HASTINGS ENVTL. L.J. 21, 21 (2018). The law has been criticized for imposing overly burdensome disclosure requirements and allowing litigants to stall environmentally-friendly projects. *Id.*

issued an executive order to expedite prescribed burns and the use of restorative techniques in forest management.<sup>89</sup> The state also enacted two separate bills to alter state fire policy in light of recent destructive fires.<sup>90</sup> S.B. 1260 reduced state-level regulations on conducting prescribed burns, such as by limiting an entity's liability for conducting prescribed burns, authorizing more individuals as eligible to manage prescribed burns, and simplifying the requirements to obtain a permit for a prescribed burn.<sup>91</sup> In conjunction with these looser requirements for prescribed burns, the bill directed the California Air Quality Board (CARB) to develop a new program to enhance smoke monitoring and provide public awareness around prescribed burns.<sup>92</sup> The provision thus helped mitigate the impact of increased prescribed fire burns on the public, providing them with better information about when to avoid being outdoors and when air quality is safe. Similarly, S.B. 901 increased funding for the use of prescribed burns.<sup>93</sup> It eased tree clearing rules, provided \$1 billion over five years for fire prevention efforts, and required utilities to develop wildfire response plans.<sup>94</sup> The fire prevention funds provide \$35 million a year for Cal Fire to devote to prescribed burns and fuel-reduction projects.<sup>95</sup>

Forestry management policy has long emphasized fire suppression, a trend which states and the federal government are only now beginning to reverse. Fire suppression has had, and will have, long-lasting effects on forests, making them more prone to catastrophic wildfire. Thus, any changes in air quality regulations designed to increase the use of prescribed burns and reduce the air impacts of wildfire must include measures to reverse the harmful effects of fire suppression.

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89. Exec. Order No. B-52-18 (May 10, 2018), <https://www.gov.ca.gov/wp-content/uploads/2018/05/5.10.18-Forest-EO.pdf>.

90. See Press Release, Office of Governor Edmund G. Brown Jr., *Governor Brown Signs Legislation to Strengthen Wildfire Prevention and Recovery* (Sept. 21, 2018), <https://www.ca.gov/archive/gov39/2018/09/21/governor-brown-signs-legislation-to-strengthen-wildfire-prevention-and-recovery/index.html>.

91. S.B. 1260, 2017-18 Sess. (Ca. 2018). See Assem. Comm. on Local Gov't, S.B. 1260 (June 27, 2018), <https://alcl.assembly.ca.gov/sites/alcl.assembly.ca.gov/files/SB%201260%20analysis.pdf>.

92. See Cal. Pub. Res. Code § 4495 (West 2019).

93. S.B. 901, 2017-2018 Session (Ca. 2018). The bill primarily reduces utilities' liability for wildfires, revising the state's existing law on inverse condemnation. See Hudson Sangree, *California Wildfire Bill Goes to Governor*, RTO INSIDER (Sept. 1, 2018), <https://www.rtoinsider.com/california-sb-901-wildfire-jerry-brown-99037/> (“[p]roponents argued it was a way to keep Pacific Gas and Electric and other utilities solvent at a time when wildfires are larger, more intense and far more costly than in prior years . . . . A July 24 proposal by Brown would have done away with California's broad use of inverse condemnation, a legal doctrine that holds utilities strictly liable for fire damage.”).

94. Sangree, *supra* note 93.

95. See S.B. 901 (“[t]hirty-five million dollars (\$35,000,000) shall be appropriated from the Greenhouse Gas Reduction Fund in the annual Budget Act each year through the 2023-24 fiscal year to the Department of Forestry and Fire Protection to complete prescribed fire and other fuel reduction projects through proven forestry practices consistent with the recommendations of the Forest Carbon Plan.”).

### III. AIR QUALITY LAW'S IMPACTS ON FOREST FIRE SUPPRESSION

Even though forest science emphasizes the importance of prescribed burns in reducing catastrophic forest fires, and forest policy is shifting from emphasizing fire suppression to prescribed burning, air law presents tension with prescribed burning. Because prescribed burns worsen air quality, any prescribed burns must comply with air quality rules. This tension is more apparent in local, rather than national, law. Federal Clean Air Act rulemakings, such as the exceptional events rule, allow air quality exemptions for prescribed fires, promoting the use of prescribed fire. Recent litigation over the exceptional event rule in *NRDC v. EPA* demonstrates that these rules are entitled to substantial deference and are unlikely to change. But local implementation of federal air quality standards and the exceptional event rule may limit the use of prescribed fires due to local agencies' focus on human health and the perceived dangers of smoke. This narrow focus on the air quality impacts of prescribed burns potentially worsens air quality in the future: increased fire suppression leads to higher chances of catastrophic wildfires with harmful air pollution.

#### A. Air Quality Law and the Exceptional Events Rule

The EPA imposes air quality standards under the Clean Air Act through a system of National Ambient Air Quality Standards (NAAQS) and State Implementation Plans (SIP). Under Clean Air Act section 109, NAAQS function as metrics for acceptable air concentrations of pollutants deemed by the administrator of EPA as "requisite to protect the public health."<sup>96</sup> EPA has established NAAQS for six designated "criteria" air pollutants.<sup>97</sup> For example, for the pollutant PM<sub>2.5</sub>, a primary pollutant in wildfire smoke, EPA measures an annual and twenty-four-hour air concentration averaged over three years.<sup>98</sup>

States create SIPs to comply with these NAAQS. The SIPs are detailed technical reports which show how the state is either in compliance with NAAQS or will reach compliance with NAAQS.<sup>99</sup> The plans mandate particular technical air emission controls in order to comply with federal standards. For example, the San Joaquin Valley Air Quality Control District requires that oil and gas operators trap waste natural gas produced from drilling for processing rather than immediately flare waste gases.<sup>100</sup> SIPs are subject to approval by EPA. If a state fails to fulfill the requirements of its SIP and attain its NAAQS, EPA subjects polluters in the state to harsh control measures. Nonattainment areas must implement "New Source Review," where new or modified stationary sources emitting a criteria pollutant must either comply with a strict technical standard

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96. 42 U.S.C. § 7409(b)(1) (2012).

97. See 40 C.F.R. § 50 (1971).

98. NAAQS TABLE, EPA (Dec. 20, 2016), <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

99. 42 U.S.C. §§ 7407(a), 7410 (2012).

100. 2018 PLAN FOR THE 1997, 2006, AND 2012 PM<sub>2.5</sub> STANDARDS: DRAFT, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DIST. C-15 (Aug. 31, 2018).

known as the “Lowest Achievable Emission Rate,” or offset any new emissions by reducing existing emissions by an equal amount.<sup>101</sup>

In response to concerns from federal, state, and local air pollution officials who noted that counting the air emissions of “exceptional events” pushed control areas out of attainment of SIPs, and would therefore lead to regulatory burdens, EPA modified SIP requirements to exclude exceptional events.<sup>102</sup> The agency was sympathetic to states’ concern that pollution from activities like “severe recurring dust storms, forest fires, volcanic activity, and other natural sources” should be treated differently under the Clean Air Act.<sup>103</sup> These events were out of states’ control but would nonetheless affect SIPs.<sup>104</sup> EPA agreed that it was “possibly uncontrollable or unrealistic” to control these events at all through the SIP process.<sup>105</sup> EPA first issued guidance documents defining exceptional events as those “not expected to recur routinely at a given location, or . . . possibly uncontrollable or unrealistic to control through the [SIP].”<sup>106</sup> The guidance documents initially set up a reporting system, where states would indicate to EPA that an exceptional event had affected air quality data, allowing EPA to exclude that data from monitoring.<sup>107</sup> Congress then codified an exception for these events in the Clean Air Act, such that “exceptional events” would not count against SIP compliance.<sup>108</sup>

#### B. NRDC v. EPA

In *NRDC v. EPA*, the D.C. Circuit Court of Appeals extended significant deference to EPA’s interpretation of exceptional events, demonstrating that EPA has broad authority to exempt prescribed fires and wildfires from NAAQS as exceptional events.

*NRDC v. EPA* centered around a dispute over the meaning of the word “natural” in the definition of an exceptional event. Section 319 of the Clean Air Act defines an exceptional event as one that is caused by (1) “human activity that

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101. See 42 U.S.C. § 7411 (2012); 40 C.F.R. § 51.165 (2011); TECHNOLOGY TRANSFER NETWORK CLEAN AIR TECHNOLOGY CENTER - RACT/BACT/LAER CLEARINGHOUSE, EPA, <https://www3.epa.gov/tncatc1/rblc/htm/welcome.html>.

102. See *Nat. Res. Def. Council v. EPA*, 896 F.3d 459, 462 (D.C. Cir. 2018).

103. EPA, GUIDELINE ON THE IDENTIFICATION AND USE OF AIR QUALITY DATA (July 1986), at 2.

104. *Id.*

105. *Id.* at 8.

106. *Id.* at 1. EPA Guidance documents are the equivalent of informal administrative rules, in that they clarify the agency’s interpretation of notice and comment rulemaking. In this case, EPA’s guidance clarifies its understanding of 40 C.F.R. 51, pertaining to SIP implementation, and 40 C.F.R. 50, pertaining to NAAQS. *Id.* at 2. See also *Nat. Res. Def. Council*, 896 F.3d at 462.

107. *Guideline on the Identification and Use of Air Quality Data*, *supra* note 103, at 5.

108. 42 U.S.C. § 7619(b) (2012). The statute notes “[i]n promulgating regulations under this section, the Administrator shall follow (v) the principle that air quality data should be carefully screened to ensure that events not likely to recur are represented accurately in all monitoring data and analyses.” *Id.* § (b)(3)(A).

is unlikely to recur at a particular location” or (2) “a natural event.”<sup>109</sup> According to EPA, an event caused by human activity unlikely to recur included emissions from “chemical spills, industrial accidents, or structural fires.”<sup>110</sup> A natural event qualified as a “natural [disaster,] such as tornados and volcanic eruptions; cosmic episodes, such as comets and harvest moons; and organic processes, such as viral epidemics and seasonal changes.”<sup>111</sup> Notably, EPA’s definition of a natural event did not include routine human activity linked to natural events, such as power plant pollution carried away in a windstorm. However, in 2015 EPA proposed and adopted a definition of natural events under the exceptional events rule as those events caused by both natural and routine human activity, so long as the human activity complied with environmental regulations.<sup>112</sup>

NRDC and the Sierra Club objected to EPA’s definition of a natural event as one caused by both natural and human activity, and filed a petition for review of the rule. The petitioners argued that the new rule would lead to a loophole for polluters under the Clean Air Act. They were concerned that emissions regulated and in compliance with the Clean Air Act in a particular region could blow to another region and register as out of compliance, but still be exempt from NAAQS under the new rule.<sup>113</sup> For example, suppose that a coal plant in Pennsylvania was in compliance with state SIP requirements, but its summertime emissions blew into New York City based on an abnormal wind event, driving New York’s PM<sub>2.5</sub> and Ozone NAAQS out of compliance. Petitioners hypothesized that in such a case, the current interpretation of the exceptional events rule would allow EPA to classify the Pennsylvania coal plant emissions as part of an exceptional event, because the emissions were in compliance in Pennsylvania and the event was natural based on the presence of the wind. Thus, under EPA’s interpretation of the exceptional events rule, the emissions would not count towards NAAQS and EPA would not have to force the coal plant to reduce its emissions.<sup>114</sup>

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109. 42 U.S.C. § 7619(b) (“[t]he term “exceptional event” means an event that—(i) affects air quality; (ii) is not reasonably controllable or preventable; (iii) is an event caused by human activity that is unlikely to recur at a particular location or a natural event; and (iv) is determined by the Administrator through the process established in the regulations promulgated under paragraph (2) to be an exceptional event.”).

110. Treatment of Data Influenced by Exceptional Events, 72 Fed. Reg. 13,560, 13,564 (March 22, 2007).

111. *Nat. Res. Def. Council*, 896 F.3d at 464.

112. *Id.* at 462. See Treatment of Data Influenced by Exceptional Events, 80 Fed. Reg. 72,840, 72,854 (Nov. 20, 2015) (“an event with a mix of natural emissions and reasonably controlled human-affected emission sources may be considered a natural event”); Treatment of Data Influenced by Exceptional Events, 81 Fed. Reg. 68,216, 68,231 (Oct. 3, 2016) (“natural event means an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.”).

113. *Nat. Res. Def. Council*, 896 F.3d at 465.

114. See *id.*

Nevertheless, the court found that EPA's rule was consistent with the Clean Air Act. In order to evaluate the validity of the rule, the court applied the test from *Chevron v. NRDC*. Under *Chevron*, Congress assigns interpretive authority to administrative agencies to fill gaps in ambiguous statutes.<sup>115</sup> When applying the test, the court asks two questions: (1) whether Congress has spoken directly to the precise question at issue through the words of the statute, and (2) when Congress has not spoken to the precise issue, whether the agency has made a reasonable choice in interpreting the statute.<sup>116</sup>

Under the first step of *Chevron*, the court assessed whether the words of the statute resolved the meaning of the term "natural." The petitioners argued that EPA's rule defied the plain meaning of the word "natural" because "an event caused by human activity cannot be a natural event."<sup>117</sup> However, the court highlighted that despite the statute naming human activity and natural events individually, the distinction between human activity and a natural event was "blurry at best," citing examples where events are often mixed.<sup>118</sup> For example, a mixed event could be a "windstorm that sweeps dust into the air so that it is emitted as small particulate matter, which is subject to the NAAQS," but the windstorm only swept the dust into the air because a construction site had loosened the ground's surface.<sup>119</sup> Because of this ambiguity, the court found that the statute was "a classic example of Congress leaving a gap to fill with reasonable regulations."<sup>120</sup>

Moving to the second step of *Chevron*, the court assessed whether the agency's interpretation was reasonable. Invoking the power plant hypothetical, the petitioners argued that it was "unreasonable for EPA to assume that human activity did not cause an event simply because that activity complied with environmental regulations."<sup>121</sup> However, the court did not accept the petitioner's reasoning and found that in its current state, EPA's regulations were reasonable. First, EPA's new rule still required an exceptional event to "deviat[e] from normal or expected conditions."<sup>122</sup> In the power plant hypothetical, the court recognized that the emissions would be produced under normal or expected conditions, so could not be classified as an exceptional event.<sup>123</sup> Furthermore, the court made a causation argument that a natural event must cause emissions to be an exceptional event, because EPA's own rules define a natural event as "an event and its resulting emissions."<sup>124</sup> Thus, in the power plant hypothetical, the court recognized that it was the power plant, not the wind, that caused the

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115. See *Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 843 (1984).

116. See *id.*

117. *Nat. Res. Def. Council*, 896 F.3d at 462.

118. *Id.* at 464.

119. *Id.*

120. *Id.*

121. *Id.* at 465.

122. *Id.* See Treatment of Data Influenced by Exceptional Events, 81 Fed. Reg. at 68,228.

123. See *Nat. Res. Def. Council*, 896 F.3d at 465.

124. 40 C.F.R. § 50.1(k) (2016).

pollution.<sup>125</sup> Therefore, the natural event did not cause the emissions, and so the pollution could not be classified as an exceptional event without a causal link to a natural event.<sup>126</sup> Finding that the rule was reasonable, the court upheld EPA's interpretation of the statute.

Overall, the decision in *NRDC v. EPA* was slightly unfavorable for environmentalists, because petitioners were not able to prove that the new exceptional events rule created a loophole for polluters.<sup>127</sup> However, the court also left the door open for further "as applied" challenges, stating that "if EPA applies the rule in a way that the Act would not permit, an injured party can petition us to review the agency's actions at that time."<sup>128</sup> As a result, petitioners could bring a further claim should EPA misuse the rule.

As it relates to air pollution from wildfires, *NRDC v. EPA* reinforces the flexibility of the exceptional events exception under section 319 of the Clean Air Act, because the court is willing to apply *Chevron* deference to rules promulgated by EPA related to exceptional events. Currently, EPA interprets section 319(b) to exclude all wildfires and prescribed burns from SIP compliance. In current rulemakings, wildfires are "considered natural events[,] even though humans usually cause wildfires,<sup>129</sup> and the conditions which cause large wildfires are related to anthropogenic climate change.<sup>130</sup> Rulemakings also consider prescribed burns exceptional events because they are "events caused by human activity" that are "not likely to recur," even though these burns routinely recur on the same forest lands as part of forest management plans.<sup>131</sup> The rules allow states to exempt the events from compliance with the PM<sub>2.5</sub> NAAQS, and *NRDC v. EPA* only strengthens the likelihood that a court would uphold the rules based on *Chevron* deference.

### C. Local Implementation of Wildfire Air Policy

This Note uses the San Joaquin Valley in California as a case study to demonstrate how the implementation of *NRDC v. EPA* and the exceptional events rule leaves discretion over prescribed burns in the hands of local officials.

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125. *Nat. Res. Def. Council*, 896 F.3d at 465.

126. *Id.*

127. *See id.* at 466.

128. *Id.*

129. Treatment of Data Influenced by Exceptional Events, 80 Fed. Reg. 72,840, 72,867 (Nov. 20, 2015). Humans ignited 84 percent of all U.S. wildfires between 1992 and 2012. Jennifer K. Balch et al., *Human-started Wildfires Expand the Fire Niche Across the United States*, 114 PNAS 2946, 2947 (Mar. 14, 2017).

130. *Id.*

131. Treatment of Data Influenced by Exceptional Events, *supra* note 129. *See, e.g., Yosemite Prescribed Fire History by Decade*, DEP'T OF INTERIOR, <https://www.nps.gov/yose/learn/management/upload/ynprxhistory.pdf>; Alison E. Stanton & Bruce M. Pavlik, *Analysis of 15 Years of Data From the California State Parks Prescribed Fire Effects Monitoring Program*, Cal. State Parks, [https://www.fs.fed.us/psw/partnerships/tahoescience/documents/final\\_rpts/P012CSP\\_Burning\\_Final\\_Report.pdf](https://www.fs.fed.us/psw/partnerships/tahoescience/documents/final_rpts/P012CSP_Burning_Final_Report.pdf), (analyzing prescribed burn plan in place since 1984).

The exceptional events rule allows the exemption of prescribed burns from federal air quality compliance, which is a positive development because it encourages prescribed burns. But in areas like the San Joaquin Valley, which faces serious air quality issues, local air managers are tasked with discretionary choices which often incentivize blocking prescribed burns. This local discretion negatively impacts long-term air quality because it has the potential to increase catastrophic wildfires.

The San Joaquin Valley is a major agricultural hub, and as a result activities like soil tilling, agricultural crop burning, crop harvesting, water pumping, and trucking lead to high levels of PM<sub>2.5</sub> in the region's air.<sup>132</sup> The Valley's geography, spanning from the coastal Diablo Range to the Sierra Nevada, acts as an emissions sink and traps emissions blown into the area from the San Francisco Bay Area.<sup>133</sup> The Valley also abuts the Sierra Foothills, a fire-dependent ecosystem, which presents another potential source of major air pollution from smoke.<sup>134</sup> The consequences of climate change such as changes in weather patterns, increased temperatures, and drought tend to exacerbate the effects of poor air quality.<sup>135</sup>

Because of these factors, the Central Valley has some of the worst air quality in the nation. As of April 2017, the San Joaquin Valley Air Quality Management District was not in compliance with the federal NAAQS standard for PM<sub>2.5</sub>.<sup>136</sup> One study noted that “the four metropolitan areas in the United States with the highest levels of particle pollution are all located in California's Central Valley.”<sup>137</sup> Poor air quality in the region leads to increases in ER visits and mortality linked to respiratory and cardiovascular diseases, and the region's low-income, minority population largely bears the burden of this pollution.<sup>138</sup>

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132. Mai A. Ngo et al., *Airborne Particles in SJ Valley May Affect Human Health*, 64 CAL. AGRIC. 12, 12 (2010).

133. *Clean Air Primer: Why the Air Gets Trapped?*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DIST., [http://www.valleyair.org/newsd/ca\\_primer/bigpicture/iiii4.html](http://www.valleyair.org/newsd/ca_primer/bigpicture/iiii4.html).

134. See, e.g., Kilgore, *supra* note 15.

135. Chandrakala Ganesh & Jason Smith, *Climate Change, Public Health, and Policy: A California Case Study*, 108 AJPH 114, 115 (2018).

136. Cisneros et al., *Understanding Public Views about Air Quality and Air Pollution Sources in the San Joaquin Valley, California*, 2017 J. ENVTL. & PUB. HEALTH 1 (Apr. 2, 2017). The District encompasses the entire San Joaquin Valley, as well as portions of the Sierra Nevada. It includes the following California counties: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and a portion of Kern. See SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DIST. (last visited Feb. 25, 2019), [https://www.valleyair.org/General\\_info/aboutdist.htm](https://www.valleyair.org/General_info/aboutdist.htm).

137. Jonathan W. Long et al., *Aligning Smoke Management with Ecological and Public Health Goals*, 116 J. FORESTRY 76, 77 (2017).

138. See Ying-Ying Meng et al., *Outdoor Air Pollution and Uncontrolled Asthma in the San Joaquin Valley, California*, 64 J. EPIDEMIOLOG. & COMMUNITY HEALTH 142, 142–44 (2010); Jane V. Hall et al., *Measuring the Gains from Improved Air Quality in the San Joaquin Valley*, 88 J. ENVTL. MGMT. 1003, 1011 (2008). Six of the San Joaquin Valley legislative districts “have populations that are at least 65% African American, Latino, or Native American and at least 15% noncitizen.” Tess Thorman et al., *2020 Census: Counting the San Joaquin Valley*, PUB. POL'Y INST. OF CAL. (Aug. 30, 2018), <https://www.ppic.org/blog/2020-census-counting-the-san-joaquin-valley/>.

California addresses the air pollution challenges of areas like the San Joaquin Valley through the SIP system. CARB is the body responsible for state air quality planning and preparing state SIPs in accordance with federal NAAQS. Regional air pollution control districts sit below CARB. CARB supervises the local districts forming regional plans to meet individual NAAQS goals, and the state SIP references and incorporates plans developed by individual regions. This Note examines the San Joaquin Valley Air Pollution Control District (hereafter “the District”), which has individual plans for each of the NAAQS pollutants, as well as a statewide SIP plan developed by CARB specific to the District which attempts to curtail excessive PM<sub>2.5</sub> emissions in the Valley.<sup>139</sup>

The District SIP Plan for PM<sub>2.5</sub> implements EPA’s exceptional events rule by excluding wildfires from PM<sub>2.5</sub> measurements. The plan classifies wildfires as a natural source of PM<sub>2.5</sub>, and references EPA’s exceptional events rule in stating that it excludes these events from its overall PM<sub>2.5</sub> compliance measurements.<sup>140</sup> The plan states “[w]ith proper documentation and EPA concurrence, data influenced by exceptional events can be excluded from official attainment demonstration design value calculations.”<sup>141</sup> The District appears to rely on submitting exemptions in order to meet its attainment goals, because it acknowledges the immense challenges posed by fire emissions. The plan indicates that “[a]ir pollution generated from wildfires is enormous and can well exceed total industrial and mobile source emissions in the San Joaquin Valley, overwhelming all control measures and resulting in periods of excessively high particulate matter.”<sup>142</sup> For example, the report cites the Rough Fire in Fresno in 2015, which created 105 times the regular amount of PM<sub>2.5</sub> of all stationary, area, and mobile source emissions in the District at the time of the fire.<sup>143</sup> But the District does not always apply for exemptions for wildfires, likely when the effect of a wildfire on PM<sub>2.5</sub> does not risk surpassing federal guidelines. The plan states that “[a]lthough not every [wildfire] event results in a formal submittal to EPA, the District tracks these events and their impact on attainment as part of its ongoing air quality analysis.”<sup>144</sup>

The District regulates prescribed burns under its own discretionary local and state rules rather than using the Clean Air Act’s exceptional events rule, giving local officials discretion over the approval of prescribed burns. Under the

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139. See SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2018 PLAN FOR THE 1997, 2006, AND 2012 PM<sub>2.5</sub> STANDARDS (Aug. 31, 2018), <http://www.valleyair.org/pmplans/documents/2018/pm-plan-adopted/2018-Plan-for-the-1997-2006-and-2012-PM2.5-Standards.pdf> [hereinafter 2018 Plan]; San Joaquin Valley Air Pollution Control District, 2016 MODERATE AREA PLAN FOR THE 2012 PM<sub>2.5</sub> STANDARD (Sept. 15, 2016); SAN JOAQUIN VALLEY SUPPLEMENT TO THE 2016 STATE STRATEGY FOR THE STATE IMPLEMENTATION PLAN (Cal. Air Res. Bd. ed., Oct. 25, 2018).

140. 2018 PLAN, *supra* note 139, at A-5.

141. *Id.* at A-6. Attainment demonstration design value calculations are the official values for assessing attainment of NAAQS. *Id.*

142. *Id.* at A-5–A-6.

143. *Id.* at A-6.

144. *Id.* at A-5.

District's Rule 4106, the District only allows prescribed burns "when air quality and dispersion conditions are favorable."<sup>145</sup> The District adopted the rule in order to comply with Title 17 of the California Code of Regulations, which requires local air board approval of agricultural burning and prescribed burn plans.<sup>146</sup> The District implements Title 17 and Rule 4106 by requiring land managers to submit "burn plans" to the District under Title 17.<sup>147</sup> The District then approves and schedules the burns in those plans based on its monitoring of prevailing air quality.<sup>148</sup> While the California Code of Regulations does stipulate favorable air quality and dispersion conditions for allowing burns, it also states that a burn or no-burn decision may be changed "if the meteorological and air quality situation that actually unfolds so warrants it."<sup>149</sup> Thus, Title 17 vests significant discretionary authority in regulators to approve prescribed burns.

After the fire season in 2015, the District adopted a new policy under the direction of its Governing Board that "the District has become even more flexible when identifying permissive burn days for prescribed burning."<sup>150</sup> The policy responds to the rise in catastrophic fires in the state, specifically in the Sierra Nevada contributing to air pollution in the District, and attempts to encourage prescribed burns. However, the 2018 plan does not indicate how the Board has specifically created a more lenient system for prescribed burns in the District. Guidelines under the California Code of Regulations for approving prescribed burns have also remained the same since 2001.<sup>151</sup> As a result, it appears that the District continues to regulate prescribed burns under its own discretion.

The District's discretion over prescribed burns is largely based on perceived risks associated with smoke, illustrating the tension between a scientific approach to wildfire management which emphasizes the necessity of prescribed burns and current air quality law. The purpose of Title 17's prescribed burn regulations is to "minimize smoke impacts on smoke sensitive areas, avoid cumulative smoke impacts, and prevent public nuisance."<sup>152</sup> Similarly, District Rule 1406 is aimed at "reducing health impacts and air quality impacts."<sup>153</sup> The plain text of the regulations and policies governing prescribed burns explicitly seeks to regulate prescribed burns out of a concern for their air quality health impacts. But the state guidelines set out for prescribed burns in the San Joaquin

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145. *Id.* at C-34.

146. 2018 PLAN, *supra* note 139, at C-34; 17 CAL. CODE REGS. § 80145 (West 2001); 17 CAL. CODE REGS. § 80260 (West 2001).

147. 17 CAL. CODE REGS. § 80100 (West 2001); Telephone Interview with Daniel Martinez, Supervising Air Quality Inspector, San Joaquin Valley Air Pollution Control District (Dec. 13, 2018).

148. Interview with Daniel Martinez, *supra* note 147.

149. 17 CAL. CODE REGS. § 80260(e)(2).

150. 2018 PLAN, *supra* note 139, at C-44.

151. 17 CAL. CODE REGS. § 80260.

152. 17 CAL. CODE REGS. § 80145.

153. 2018 PLAN, *supra* note 139, at C-34.

Valley do not explicitly limit burns based on NAAQS.<sup>154</sup> Instead, the guidelines for determining the timing of prescribed burns focuses on temperature gradients and wind speeds, emphasizing the importance of dispersion on apparent air quality.<sup>155</sup> Thus, regulators appear to focus on minimizing the visibility and impact of smoke when regulating prescribed burns, rather than on the actual health outcomes associated with smoke exposure determined under NAAQS. This conclusion is also consistent with the work of scholars who argue that a public which expects “smoke free skies” and threatens political backlash in response to regular prescribed burns poses a serious limitation for air managers who seek to promote prescribed burns.<sup>156</sup>

#### IV. ADAPTING AIR QUALITY LAWS TO ENCOURAGE THE USE OF PRESCRIBED FIRES

As local air quality regulations emphasize the need to mitigate the impacts of smoke and protect human health, fire science and decades of wildfire suppression require an increase in prescribed fires to restore forest health and reduce long-term wildfire air emissions. Data from the San Joaquin Valley Air Pollution Control District demonstrates that while prescribed fires are on the rise within the District, forests require much more prescribed burning to restore a fire adapted ecosystem.<sup>157</sup> In its current form, air quality law likely stymies an appropriate level of prescribed fire. As a result, this Note proposes changes to air quality law to further incentivize prescribed burns. These proposals consist of including emissions from large wildfires in NAAQS, or limiting the discretion of local air regulators to block prescribed fire projects.

##### *A. Implementation of Prescribed Burns in the San Joaquin Valley Air Pollution Control District*

This Note draws on new data obtained from the San Joaquin Valley Air Pollution Control District to find that while the District has made some positive changes aimed at encouraging prescribed burns, it should make even stronger efforts to do so. Over the past five years, there has been a dramatic increase in the number of prescribed burns within the District, from 2,524 acres burned in 2012, to 44,716 acres burned in 2017, as shown in the figure below.<sup>158</sup> The “Acres Planned” metric reflects the total number of acres approved by the

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154. That is not to say that regulators do not take NAAQS into account. In an airshed like the San Joaquin Valley where NAAQS are routinely violated, regulators might have to apply for exceptional event waivers when they approve additional prescribed burn emissions.

155. See 17 CAL. CODE REGS. § 80260(b) (requiring that the “expected daytime temperature at 3,000 feet above the surface is colder than the expected surface temperature by at least 11 degrees Fahrenheit for 4 hours” and that the “daytime wind speed at 3,000 feet above the surface is at least 5 miles per hour”).

156. Cisneros & Schweizer, *supra* note 31, at 34–35.

157. See *infra*, notes 163–64.

158. Public Records Request, San Joaquin Valley Air Pollution District, Control Number C-2018-11-81 (Dec. 12, 2018).

District for a prescribed burn as part of a Title 17 burn plan. A variety of land management entities, such as Southern California Edison and Cal Fire, submitted burn plans to the District under Title 17.<sup>159</sup> The “Acres Burned” metric reflects prescribed burns executed under the burn plans.<sup>160</sup> Any number of factors could contribute to not burning planned acreage, such as resource constraints of the applying agency, unfavorable weather for fire ignition, or poor air dispersion conditions.<sup>161</sup>

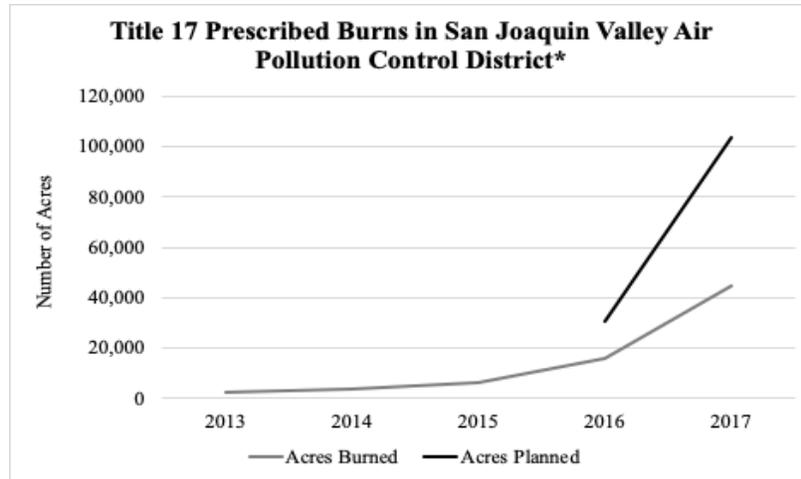


Figure 1<sup>162</sup>

The dramatic increase in prescribed burns is a positive development in terms of correcting forest health and promoting long-term air quality policy. Scientific literature demonstrates that prescribed fires will reduce long-term air emissions, and frequent use of prescribed fire will help correct fuel loading created by decades of fire suppression in Western Forests.<sup>163</sup> The increasing volume of burns also indicates that even if local air regulators have broad discretion over approving prescribed burns, this local discretion has not resulted in limiting prescribed burns.

Despite the San Joaquin Valley Air Pollution District’s progress in approving prescribed burns, the District can do even more to change its policies to promote the use of prescribed fire. The gap between planned and executed prescribed burns demonstrates that some factors still limit conducting prescribed burns. While there may not be one specific factor responsible for the gap between expected and prescribed burns, one possibility is the District’s discretion over

159. *Id.*

160. *Id.*

161. Interview with Daniel Martinez, *supra* note 147.

162. Public Records Request, San Joaquin Valley Air Pollution District, Control Number C-2018-11-81 (Dec. 12, 2018).

163. See Schweizer et al., *supra* note 23, at 345; Schweizer et al., *supra* note 27, at 35.

allowing prescribed fires based on prevailing air quality conditions results in fewer planned burns being carried out.

In addition, the District could work to improve its prescribed burn policies because the number of acres subject to prescribed burns here falls far short of what is required to restore a natural fire-adapted ecosystem to forested areas of the District. To return to a natural fire-adapted forest ecosystem, one internal Forest Service study estimated that the agency would have to burn 488,000 acres, or roughly 10 percent, of its 4.8 million acres of forested land in the Sierra Nevada each year.<sup>164</sup> Even granting that the District only encompasses the southern half of the Sierra Nevada, its 44,716 acres of prescribed burns in 2017 still likely falls far short of the 10 percent of its forested land it must burn each year to return to a fire-adapted forest regime.<sup>165</sup> Thus, it is worth considering what other options policymakers can consider to further promote the use of prescribed fire.

### *B. Policy Solutions to Improve the Use of Prescribed Fire*

While the District's increase in prescribed burns demonstrates progress in forest management policy, the gap between expected and actual prescribed burns demonstrates the need for policy changes. First, one concrete way to increase the use of prescribed fire would be for EPA or states to reduce the discretion of air boards over the approval of prescribed burns and managed wildfire projects. The exceptional events rule already provides exemptions for prescribed burns from compliance with NAAQS under the Clean Air Act.<sup>166</sup> But exempting prescribed burns from NAAQS does not help further the policy goal of incentivizing prescribed fire, because most prescribed burns and managed fires release so few emissions that they do not affect NAAQS.<sup>167</sup> Instead, local air quality regulators might impose stringent controls on prescribed fires based on external pressures to limit the dispersion of smoke, even if that smoke does not exceed NAAQS.<sup>168</sup> Federal or state governments should limit the discretion of air quality regulators to control prescribed burns through legislation, preempting regulations such as California's Title 17. Such a model preemption law would require districts to approve prescribed burn plans when their projected emissions comply with existing NAAQS.

Second, EPA should exclude uncontrolled wildfires from the exceptional events rule in order to incentivize the use of prescribed fires and managed

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164. U.S. FOREST SERV., MANAGING SIERRA FORESTS, GENERAL TECHNICAL REPORT PSW-GTR-237 168 (Malcolm North ed., 2012) (noting that approximately 488,000 acres burned annually before the arrival of Europeans).

165. Given that the U.S. Forest Service estimate excludes National Park Service land in the Sierras, the District would likely need to treat far more than 24,400 acres each year in order to treat 10 percent of its land.

166. See 80 Fed. Reg. 72,840, 72,847.

167. See *supra* notes 33–35.

168. See 17 CAL. CODE REGS. § 80260.

wildfires for air quality management. As EPA currently interprets the exceptional events rule, all fire events are exempt from Clean Air Act compliance regardless of whether the fire is a prescribed fire, managed wildfire, or uncontrolled wildfire. Yet, climate change and decades of fire suppression have drastically increased the risk of severe fires in the West, and federal policy has done little to proactively manage this risk in the long term.

Including uncontrolled wildfires within Clean Air Act compliance incentivizes states and local air management districts to use prescribed and managed fires to reduce the risk of severe fires. First, most wildfires do not pose a risk of violating existing federal NAAQS standards.<sup>169</sup> Instead, it is only those large, severe uncontrolled wildfires tied to climate change which violate NAAQS standards.<sup>170</sup> Removing wildfires in general from the exceptional event category in the Clean Air Act would only put air standard compliance at risk for these large fires whose emissions pose threats to human health. The practical effect of districts like the San Joaquin Valley District being unable to apply to EPA for exemptions for these fire events would force the District to integrate wildfire planning into its SIPs in order to meet NAAQS.

Forcing states and local air districts to integrate substantive wildfire planning into their Clean Air Act compliance efforts would also reverse how the current exceptional events rule allows districts and states to abdicate responsibility over air quality planning related to wildfires. Local air quality districts understand that fires pose a risk to air quality. The District's 2018 SIP noted that "[d]ue to the excessively dry conditions, the buildup of combustible materials, and the mortality of millions of trees from the drought and bark beetle infestation, the region has experienced a number of large wildfires and California has reached an all-time high for fire danger."<sup>171</sup> This fire danger is increasing over time, with the District writing that "[t]he 2017 wildfire season has brought more wildfires across California compared to last year and the 5 year average through the same time period."<sup>172</sup> But beyond flagging these issues and indicating that they are available for exceptions, the PM<sub>2.5</sub> Plan for the District does nothing to address its wildfire problem. In fact, even CARB's supplementary control measures for the District to reduce PM<sub>2.5</sub> only relate to the transportation and agricultural sectors, ignoring events like the Rough Fire which resulted in 105 times the regular amount of PM<sub>2.5</sub> in the District.<sup>173</sup>

Instead of abdicating responsibility over wildfire air emissions, including uncontrolled wildfires in SIP compliance standards would incentivize air managers to engage in long-term air planning related to wildfires. A mandate to include fires in Clean Air Act compliance would force state air regulators to devote more resources to protecting forests from outsized, damaging fires. The

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169. See Cisneros et al., *supra* note 33, at 589.

170. See *supra* note 25.

171. 2018 PLAN, *supra* note 139, at A-6.

172. *Id.*

173. See Ganesh & Smith, *supra* note 135, at 115; 2018 PLAN, *supra* note 139, at A-6.

best way to protect forests from these larger, more polluting burns is to use managed wildfires and prescribed burns to reduce forest fuel loading, likely encouraging states to devote resources to allowing the low-level fires necessary to reduce air emissions from catastrophic fires. It would also put the burden of long-term air management related to fires in the hands of local air management agencies, incentivizing agencies to allow more prescribed burns in order to avert larger fires in the long term, rather than bending to public pressure in the short term to prohibit prescribed burns.

In contrast with this Note's proposal to remove only uncontrolled fires from the list of exceptional events under the Clean Air Act, other authors have advocated for removing all types of fires from the list of exceptional events. Kristen H. Engel argues for a "smoke is smoke" rule which would make all emissions from any fire count towards air quality compliance.<sup>174</sup> However, such a policy proposal does not go far enough in order to incentivize air regulators to reduce long-term wildfire emissions and promote the use of prescribed burns. Prescribed burns and managed wildfires have long-term air quality benefits, since they reduce the frequency and magnitude of catastrophic wildfires whose emissions exceed NAAQS. As a result, prescribed burns should be counted as exceptional events and entitled to additional protection under air law should their emissions ever impact NAAQS requirements, even though they ordinarily pose no threat of exceeding NAAQS. Only uncontrolled wildfires should count towards Clean Air Act compliance, because the purpose of air quality law should be to reduce the prevalence of these large and dangerous fires which are most likely to result in harmful emissions that impact human health.<sup>175</sup>

### *C. Modifying the Exceptional Events Rule Will Not Lead to Fire Suppression*

Opponents might argue that including uncontrolled wildfire air emissions in Clean Air Act compliance would lead to a policy of fire suppression, or an overall reluctance to use prescribed burns or managed wildfires for fuel management. In an attempt to prevent large, damaging fires, air districts like the San Joaquin Valley District would insist on suppressing even the smallest fires, and would be reluctant to permit prescribed fires, worried about the threat that small fires could grow out of control. Especially when hot, dry, and windy conditions increase fire risk, even a small, controlled fire could quickly spread and destroy a fuel-loaded forest. Air quality districts have no method to adequately measure the risk of allowing small fires to burn, and so airing on the side of caution, a district would elect to forbid even the smallest of prescribed burns.

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174. Kirsten H. Engel, *Perverse Incentives: The Case of Wildfire Smoke Regulation*, 40 *ECOLOGY L.Q.* 623, 664 (2013).

175. Classifying a prescribed burn as an exceptional event but an uncontrolled wildfire as not an exceptional event would likely be permissible based on *Chevron* deference. See *Nat. Res. Def. Council v. EPA*, 896 F.3d 459, 462 (D.C. Cir. 2018).

These concerns are unfounded because local air agencies likely understand the long-term consequences of fire suppression. The scientific literature indicates that suppression leads to large-scale fires which exceed PM<sub>2.5</sub> standards, while smaller and prescribed fires are unlikely to exceed those same standards.<sup>176</sup> As a result, most air quality agencies would at least accept a policy of allowing more prescribed burns in order to prevent poor air emissions during uncontrolled wildfires.

Additionally, there is an institutional gap between the local air regulators like the District and agencies engaging in prescribed burns and fire suppression, resulting in the District not having the final say over whether a burn occurs. Even if the District has a small incentive to suppress fires, it is not a land management agency with the personnel, equipment, or authority to fight or manage fires. Its discretion is limited to approving or denying prescribed burn plans under state and federal law. The ultimate authority to engage in the decision to suppress a fire lies with a land management agency.

Finally, this Note's policy proposal could be modified to reduce any incentives to suppress fires. For example, EPA could exempt wildfires under the exceptional events rule for the primary twenty-four-hour NAAQS for PM<sub>2.5</sub>, but not for the annualized NAAQS for PM<sub>2.5</sub>.<sup>177</sup> Thus, under the annual NAAQS, air regulators would have a long-term incentive to take proactive action to reduce the chances of uncontrolled wildfires, because each wildfire would count towards an annual average PM<sub>2.5</sub> target. However, in the short term, districts would not feel pressured to suppress every small fire immediately, because even if the smaller fires expanded, those fires would not lead to immediate noncompliance with twenty-four-hour PM<sub>2.5</sub> NAAQS. Instead, air regulators could apply for exemptions under the twenty-four-hour NAAQS through the exceptional events rule, and would only have an incentive to maintain an average PM<sub>2.5</sub> concentration by the end of the year.

An additional policy fix to reduce incentives to suppress fires is to shape the exceptional events rule to only cover a few types of fires. Ideally, the policy would cover severe, climate-influenced fires in order to incentivize air regulators to reduce severe air pollution from these particular events. It would be difficult to separate these fires from more general wildfires, but EPA could attempt to design a metric based on size, location, or intensity in order to segment different types of fires. Such a segmentation approach might help distinguish wildfires which are truly "exceptional" from those which are merely routine, allowing regulators to take exceptional event waivers for routine fires, but not severe fires.

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176. Schweizer, *supra* note 23, at 353; Cisneros et al., *supra* note 33, at 589.

177. PM<sub>2.5</sub> NAAQS are (1) 12.0 µg/m<sup>3</sup> averaged over 1 year, and (2) 35 µg/m<sup>3</sup> averaged over 24 hours. See NAAQS Table, EPA (Dec. 20, 2016), <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

## CONCLUSION

Increasingly severe wildfires pose a threat to air quality in the American West. Decades of fire suppression have loaded forests with fuel, and a warming climate makes these forests even more prone to ignition. Fire science shows that prescribed and managed fires will help restore the West's natural, fire-adapted ecosystem and reduce long-term impacts of wildfire air pollution. But prescribed fires often conflict with existing air quality laws. Thus, policy makers should consider reforming air quality law to incentivize more prescribed and managed burns, and prevent large wildfire events which harm human health. One way to accomplish this goal is by revising the guidelines of the exceptional events rule to exclude uncontrolled wildfires, as well as removing the discretion of air regulators to block prescribed fire projects. The approach is not without valid criticism, but the policy change could provide a much-needed incentive for local air managers to fight large-scale wildfires which pose significant risks to air quality in the West in the twenty-first century.

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