



Sierra Forest Legacy

Protecting Sierra Nevada Forests and Communities



May 27, 2015

California Environmental Protection Agency
California Air Resources Board
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Sacramento, CA 95812

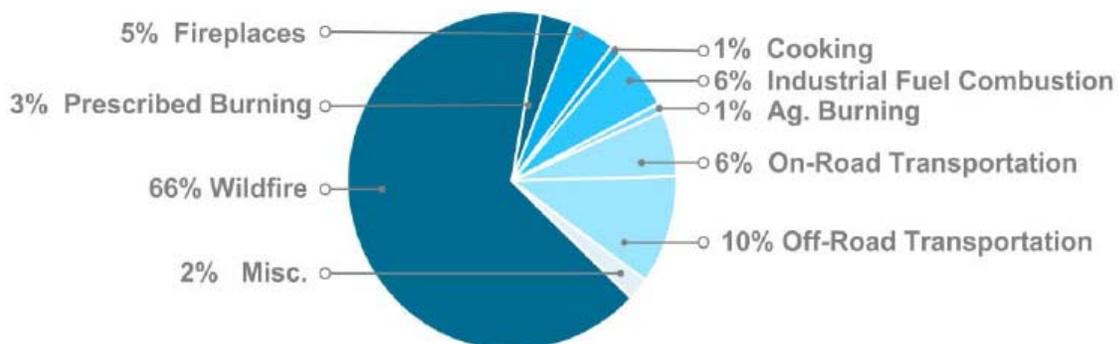
RE: Comment Letter on Shorted-Lived Climate Pollutant Reduction Strategy

Sierra Forest Legacy is a coalition of over 80 conservation organizations started in 1996 with a focus on science-based management of national forests lands in the Sierra Nevada.

First, we sincerely appreciate all the work that has gone into AB32 implementation, the Forest Carbon Action Plan, Greenhouse Gas Reduction Fund and this new Short-Lived Climate Pollutant Reduction Strategy (including all the emissions reduction actions listed on p. 12 of the SLCP Concept Paper).

One concern that we share with our coalition partners and with the Forest Service and academic research community is the impact of a specific section of the short-term emission reduction goals on the ability of land managers to utilize positive ecological disturbance processes (natural ignitions and prescribed fire) for multiple natural resource benefits. These benefits include **increased forest resilience in a changing climate, forest carbon stability, and public health benefits related to lower wildfire emissions. Specifically page 23, Figure 3 of the SLCP**

Figure 3: California 2013 Black Carbon Emission Sources



Forest resilience (the ability of forests to “accept” natural disturbances and remain relatively unchanged and recognizable as a particular forest type, over time), carbon stability (the equilibrium reached during longer-term restoration efforts in the ongoing cycle (fire cycle) of carbon sequestration and emissions in a fire-adapted ecosystem such as the Sierra Nevada, and finally public health benefits of using prescribed fire to be able to “choose” dispersion patterns, and emission output level rather than letting uncharacteristic wildfire “choose” the timing of these mega-fire events for us.

While the SLCP mentions, **“Non-anthropogenic black carbon emissions (wildfire) accounts for more than half of the State’s total black carbon emissions. While this source is difficult to control, it is critical to address as part of integrated climate and forest planning.”**

Part of forest planning and implementation of restoration efforts on public land is the use of prescribed fire (and natural ignitions) along with mechanical treatments to limit uncharacteristic wildfires. Smoke Management Plans are part of how CARB, local air districts and federal land managers conduct their restoration work on an ongoing basis.

Title 17-Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning
Article I, General Provisions §80100 Purpose states:

“The Guidelines are intended to provide for the continuation of agricultural burning, including prescribed burning, as a resource management tool, and provide increased opportunities for prescribed burning and agricultural burning, **while minimizing smoke impacts on the public.**”

“Minimizing” is slowly beginning to feel like elimination for land managers engaged in the fire and fuels reduction effort and for those seeking broader natural resources benefits from ecological burning.

What’s working and what isn’t:

1) California is a strongly fire-associated and fire-adapted landscape. In the early 1800’s the fire resilient landscapes of California were burning 1.8 million ha (4.45 million acres) annually (Stephens et al. 2007). The level of natural fire is the natural force we are vainly trying to suppress. It is critical to understand the ecological role and importance of fire in these strongly fire adapted environments. The only way to limit the extent and intensity of uncharacteristic is to use fire more aggressively as a resource management tool. In the past, it was fire that limited fire extent and severity in the low and mid elevation forests of the Sierra Nevada. California’s diverse vegetation types have evolved with much more frequent fire regimes. Today, with increasing forest fuel build-up and aggressive fire suppression, fires are getting larger and impossible to control. **Pegging Black Carbon emissions goals to the 1960s related to wildfire and prescribed burning is an ecologically flawed idea.** This was an area of successful full-on fire suppression, not today’s world of overly dense, fire suppressed forest with climate driven extended fire seasons. Historic emissions levels for fire in California are closer to the 1800s level with the farmland and urban land conversion subtracted out of today’s fire-associated acres. The forest of the Sierra Nevada still resemble the forests of 1850 in extent and fire dependency. (In Addition See: Calkin et al. 2015; Hurteau et al. 2014).

2) We cannot simply log our way to resilience and carbon stability in the Sierra Nevada. In a recent research paper published in the Journal of Forestry (North et al. 2015) the author's report that approximately 10.7 million acres of national forest ownership in the Sierra Nevada in California contain roughly 58 percent productive forest land, with 25 percent of those acres available for mechanical treatment. In other words, if we can only restore 25 percent of the Sierra Nevada using mechanical treatments which then need fire as a follow-up treatment to maintain lower fuels benefits, the other 75 percent will either be "managed" by unplanned wildlife or the thoughtful, science-based use of natural ignitions and prescribed fire.

3) California Air Quality Scientists uniformly understand and support increased fire use to minimize impacts to forests and public health.

In recent atmospheric pollution research (Cisneros et al. 2014), academic and Forest Service scientists focused on source pollution generated in particulate matter less than 2.5 microns in the Sierra Nevada compared to the Central Valley, a major non-attainment area in California. The authors found for air quality regulatory purposes, air quality throughout the southern Sierra Nevada is assumed to be similar to the Central Valley. But locations used in their study (2002 to 2009) ranging from 91 meters in the Central Valley to 2598 meters in the Sierra Nevada, at elevations above 500 meters are actually in compliance with federal standards for **PM_{2.5}**. Fires during the time of the study were typical of the historical size and intensity of fires in this area of the Sierra Nevada. The authors determined that, while fires during the study period had an impact on air quality, "they did not appear to be a major driver in exceeding the United States Federal **PM_{2.5}** standard" in the southern Sierra Nevada.

In the section of the above paper discussing the policy implications of the effects of fire on **PM_{2.5}**, the author's state that based on monitoring information at locations in rural and undeveloped monitoring sites, these sites did not exceed "mean annual or 98th percentile federal standards." Another key finding of the study was that monitoring sites located near the largest burn areas, "did not have the largest concentrations of **PM_{2.5}**." This suggests that "natural ignition fires burning at historic intensities and areas do not significantly contribute to violation of the current federal standards in many instances."

Regarding background conditions for **PM_{2.5}** the authors note, "Considering the total area burned in California in 2008, the increase in **PM_{2.5}** could be assumed as the historic level of non-anthropogenic **PM_{2.5}** from fire during a normal year." EPA should fully examine the results and implications of this key research paper on current air regulatory policy.

In another fire management and air quality case study from the southern Sierra Nevada, (Schweizer and Cisneros 2014), the authors monitored the 8,370 ha (20,422 ac) Lion Fire in 2011 on the Sequoia National Forest for **PM_{2.5}** levels at monitoring sites used to access exposure, public health impacts, and to quantify annual air quality during a year with a fire that was within the normal fire size and intensity for this area of the Sierra Nevada. While the Lion Fire burned for 2 months, the Air Quality Index readings of moderate to good were recorded at the most impacted sites of Johnsondale, Kernville, and Camp Nelson. Smoke impacts to **PM_{2.5}** concentrations did not reach the Central Valley. The authors concluded, ". . . this type of fire can be implemented with minimal public health impacts thus allowing an opportunity for air and fire

managers to alter policy to allow additional burning in an area with severe anthropogenic air pollution and where frequent widespread fire is both beneficial and inevitable.”

In contrast to large, high severity fire the authors conclude that, “the more extensive air quality impacts documented with large high intensity fire may be averted by embracing the use of fire to prevent unwanted high intensity burns. A widespread increase of the use of fire for ecological benefit may provide the resiliency needed in the Sierra Nevada forests **as well as be the most beneficial to public health through the reduction of single dose exposure to smoke and limiting impacts spatially.**” (Emphasis added.)

Also, it is interesting to note in Schweizer and Cisneros (2014) that the forest communities captured in a larger designation of federal non-attainment including Kernville, Springville and Pinehurst, show typical federal non-exceedance levels of PM_{2.5} when site-specific monitors record year-round concentrations adjacent to forest communities which do not coincide with higher unhealthy readings in the Central Valley. EPA should address these complications related to limited air quality monitoring and their impact on the use of ecological fire in the Sierra Nevada and elsewhere.

In contrast, the same authors joined with other health science and air quality experts in 2012 to analyze the effects of the 61,000 ha (150,000 ac) 2002 McNally Fire on air quality in the San Joaquin Valley and southern Sierra Nevada (Cisneros et al. 2012). The federal PM₁₀ standard was exceeded four times during the fire but violations of the California PM₁₀ standard “increased drastically during the fire.” The authors noted that the California PM₁₀ standard was violated six times before the McNally Fire and 164 times during the fire. Highest O₃ concentrations increased downwind of the fire and increased by a factor of two, in two locations. Some of the O₃ increase was attributed to ozone precursors NO_x, CO, and VOCs emitted from the fire.

In response to the potential increase in large, high intensity wildfires in combination with urban pollutants from the Central Valley impacting rural mountain communities the authors recommend “a network of densely distributed passive samplers aided by real-time portable O₃ monitors and portable PM monitors is essential for evaluating effects of wildland fire on ambient air quality.” They conclude with the recommendation that, “A return to historic fire size and intensity may be the best solution for reducing O₃ and PM exposure in the Sierra Nevada.”

We include this section of our letter citing recent air quality science (excerpted from our recent comment letter on the Federal EPA Proposed Ozone Rule the National Ambient Air Quality Standards for Ozone, Proposed Rule in the Federal Register Vol. 79: December 17, 2014) to demonstrate that increased prescribed burning is the pathway needed to mitigate “black carbon” increases from uncharacteristic wildfires, and to improve public health outcomes for at-risk members of the public.

4) EPA’s 2013 Guidelines for Exceptional Events is a big part of the problem.

One of the key issues in the lingering debate over smoke impacts and the need for fire in fire-adapted ecosystems is EPA’s determination that wildfire smoke is “natural” and therefore excludable under the Exceptional Events policy. This is not statutorily required. There is nothing

in the legislative history of the Clean Air Act, as amended, where Congress identified a regulatory exclusion of air quality pollution measurements influenced by wildlife. Nor did Congress specify a definition of “natural events” or identify wildfires as a “natural events.” (Engel, K. 2013 Ecological Law Quarterly). At the same time EPA is increasing the regulatory controls over the use of prescribed fire for natural resource benefit—the one critical tool that offers the possibility to provide landscape treatments that could mitigate uncharacteristic wildfire and its impacts on public health. It is time to abandon the false distinction between “natural” and “anthropogenic” fires and allow land managers to implement expanded prescribed burn programs (based upon natural fire return intervals and fire regimes) to “minimize” resource damage and harm to public health from uncharacteristic “mega-fires”.

5) Burning and Protecting Public Health—Increasing collaboration to reach those most impacted by ecological burning.

Sierra Forest Legacy and the Forest Service in Region 5 (Sequoia National Forest-Hume Lake District) have recently partnered with the Fresno-Madera Medical Society and others to establish an Air Quality Alert Notification System to utilize timely and best available weather information to make direct contact with the air-quality challenged communities of the southern Sierra Nevada through their physicians, school nurses and the public health community. The purpose is to alert these individuals to a pending prescribed fire, the ecological need for such fire as a restoration tool and to give them advanced notification of the event so they can better protect themselves and their families from the impacts of short-duration smoke in their communities. There has been a very positive response from San Joaquin Air Board staff and the Fresno Area Lung Association in developing this notification system.

An early alert system was designed for the Boulder Prescribed Burn and the two notices used for the project can be downloaded at:

http://www.sierraforestlegacy.org/CF_ManagingFire/AirQualityPolicy.php

The Boulder project is located in an area with no mechanical treatment options. Managed fire is the appropriate tool for this landscape. These notification alert examples are the first run of what should be a much broader, collaborative effort between land managers, air regulatory, public health officials, air quality scientists and modelers, conservation groups and the general public. One aspect of collaborative work is exemplified by the use of integrated, linked models to assess a variety of fuel, emissions and weather conditions to predict smoke intensity, dispersion and duration on impacted landscapes. BlueSky is one such modeling framework:

BlueSky modularly links a variety of independent models of fire information, fuel loading, fire consumption, fire emissions, and smoke dispersion (<http://www.airfire.org/bluesky/>)

While BlueSky and other predictive tools are currently in use, SFL, Forest Service, public health organizations, air regulators, scientists and conservation organizations seek a significantly expanded outreach, education and communication systems to better notify and protect public health—especially those most at-risk from short-duration smoke impacts. There is plenty of opportunity for good work on this front. What we seek and ask EPA to consider in this rule-making is to recommend collaborative, working groups in fire-adapted landscapes whose task it is to continually refine and expand public education and outreach using the best available science (ecological, public health, air quality and emissions prediction), best collaborative practices, and

the best multi-media, multi-stakeholder effort that marries the need for fire in fire-adapted systems to the need and shared desire to protect and enhance public health. These issues should no longer be viewed as antagonistic (fire versus health) but instead as challenging but workable mutual goals that are supported by our best actions and intentions.

Recommendations for EPA to Consider:

- Intensified outreach to local and regional public health communities with a goal of expanding the timely notification system targeting at-risk respiratory patients and families via their physicians, public health workers, hospitals, school nurses and other caregivers.
- Intensify education efforts on why fire is a key aspect of ecosystem management and resilience through a multi-media outreach effort.
- Intensify multi-media tools to reach the general public and to rapidly alert those willing to sign-up for notification of fire events and expanded options for health protection.
- Expand collaborative work between air regulators and air quality experts, fire scientists, land managers and public health officials before, during and after burns. This should include collaborative media presentations, webinars, in-service education among professionals in these different fields.
- Expand Air Quality monitoring in remote areas to better identify, source, and assess smoke impacts in rural areas (See policy recommendations in Schweizer and Cisneros 2014; Cisneros et al. 2014; and Cisneros et al. 2012).
- Expand the understanding of cultural burning and its relevance to many aspects of Native American culture from food gathering and site preparation, maintaining basket weaving materials, ceremonial and religious practices, as a right of First Nations people among the public, air regulators, and land managers.
- Clarify commitment to reduction of smoke impacts and smoke management planning by asserting EPA's desire to see increased collaborative engagement in the effort to "minimize exposure to sensitive populations" and ensure that burners are educated in smoke BMPs as per the 2007 Exceptional Events Rule March 22, 2007 (FR 13567).

In Conclusion—the Short-Lived Climate Pollutant Reduction Strategy moves in a very positive direction in nearly all aspects of the effort displayed in the May 7th 2015 Concept Paper. One critical change need is the re-thinking of the ecological resilience, carbon stability and public health role of prescribed fire and the timeframes need to accomplish forest resilience. We request you remove prescribed fire from any negative conception in your SLCP and recognize expanded fire use and the critical additional tool to achieve actual overall lower C emissions.

Sincerely,

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