Bay Area Air District

STAFF REPORT

PROPOSED AMENDMENTS TO WOODSMOKE RULES REGULATION 6, RULE 3: WOOD-BURNING DEVICES AND REGULATION 5: OPEN BURNING

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ACKNOWLEDGEMENTS

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I. EXECUTIVE SUMMARY

The Bay Area Air Quality Management District ("Air District") staff is proposing amendments to one Air District rule: *Regulation 6, Rule 3: Wood-Burning Devices* ("Rule 6-3") and one regulation: *Regulation 5: Open Burning* ("Regulation 5"). These amendments aim to reduce public exposure to harmful woodsmoke emissions by reducing woodsmoke-related air pollution and support wildfire risk reduction through improved use of prescribed burning.

Woodsmoke is a major source of fine particulate matter ($PM_{2.5}$) in the Bay Area, particularly during colder months. Exposure to $PM_{2.5}$ is associated with serious health effects, including heart attacks, strokes, asthma attacks, and reduced lung function. Vulnerable populations such as children, older adults, and people with preexisting health conditions are particularly at risk. There is no known safe level of exposure to $PM_{2.5}$,[1] and research shows that even small reductions can provide meaningful health benefits. Communities with older housing stock and higher rates of wood-burning activity often experience disproportionate exposure.

Several Bay Area communities have identified wood burning as a local air quality concern through the Air District's Assembly Bill 617 Community Health Protection Program. The West Oakland Community Action Plan recommended exploring restrictions on recreational fires,[2] and the Richmond, North Richmond, and San Pablo "Path to Clean Air" Community Emissions Reduction Plan[3] identified measures to reduce woodsmoke exposure through incentive programs and regulatory approaches. While ambient levels of $PM_{2.5}$ can vary seasonally, the region has seen little improvement in the trends of annual average $PM_{2.5}$ concentrations over the past decade despite ongoing emissions mitigation efforts.

Additionally, wildfire activity across California has increased dramatically in frequency and severity, further complicating efforts to reduce $PM_{2.5}$ exposure. From 2020 to 2024, 27 of the 30 highest daily $PM_{2.5}$ concentrations in the Bay Area were driven by wildfire smoke. The growing threat of catastrophic wildfire, including the Los Angeles fires of January 2025, highlight the importance of proactive fire management, including prescribed burning as a key mitigation tool.

A. Summary of Proposed Amendments

1. Rule 6-3

Rule 6-3 regulates wood-burning devices used for residential and recreational purposes within the Air District's jurisdiction. It prohibits visible emissions, establishes requirements for devices sold or installed in the region, and prohibits the use of wood-burning devices when a Mandatory Burn Ban is issued during periods of elevated $PM_{2.5}$. Based on Air District estimates, residential wood burning contributes approximately 14 percent of the region's total direct $PM_{2.5}$ emissions

[1] https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution
[2] West Oakland Community Action Plan. https://www.baaqmd.gov/community-health/community-health-protection-program/west-oakland-community-action-plan
[3] The Path to Clean Air: Richmond, North Richmond& San Pablo Community Emissions Reduction Plan. https://www.baaqmd.gov/~/media/files/ab617-community-health/richmond/2024/03252024-draft-final-plan-files/draft-final-ptca-plan-pdf.pdf?rev=290927ece4d64392be5331154929d111&sc_lang=en

from human-related sources and can average nearly 11 tons per day in the winter season, making it a significant source accounting for approximately one third of total $PM_{2.5}$ emissions in the region in colder months.

Wood-burning curtailment is issued when the Air District forecasts that 24-hour average $PM_{2.5}$ concentrations will exceed a designated threshold, currently set at 35 micrograms per cubic meter ($\mu g/m^3$). The proposed amendments would lower this 24-hour forecasted $PM_{2.5}$ threshold to 25 $\mu g/m^3$, allowing the Air District to issue Mandatory Burn Bans when it forecasts conditions will meet this lower threshold. This change is intended to reduce short and long-term peaks in fine particulate matter exposure from wood-burning.

Multiple scientific and regulatory bodies have cited evidence supporting the need for more health-protective measures to curb particulate matter emissions. The Clean Air Scientific Advisory Committee (CASAC), which advises the U.S. Environmental Protection Agency (EPA), acknowledged evidence of adverse health effects at short-term $PM_{2.5}$ levels even below 25 $\mu g/m^3$ over a 24-hour period.[4] A majority of CASAC members recommended tightening the 24-hour $PM_{2.5}$ standard to 25–30 $\mu g/m^3$. Similarly, the California Air Resources Board (CARB), the Office of Environmental Health Hazard Assessment (OEHHA), and Cal/OSHA have each identified health risks associated with $PM_{2.5}$ exposure at these levels.

Staff estimates that this change could increase the number of curtailment days from a current average of 15 to between 19 and 41 days per year, with the range reflecting uncertainty in air quality forecasts and variability in meteorological conditions that influence wood-burning curtailment day determinations. Most of the additional curtailment days are expected to occur during winter stagnation events or wildfire smoke episodes. Non-wildfire high $PM_{2.5}$ days typically occur during the winter, when atmospheric conditions trap pollution near the ground and the relative contribution of residential wood burning to overall $PM_{2.5}$ levels is highest. This estimated increase in additional days represents a 1.3 to 2.8 times increase in the number of curtailment days. If all wood burning were curtailed on these additional days, the potential maximum reduction in $PM_{2.5}$ emissions could range from 43 to 155 tons per year, or 0.36 to 1.19 tons per winter day. These figures represent theoretical maximum reductions and do not account for compliance rates.

2. Regulation 5

Regulation 5 regulates open burning activities within the Air District's jurisdiction, including agricultural operations, forest management, fire training, and other hazard reduction burns. The regulation establishes requirements for advance notification, smoke management plans, and associated fees to minimize smoke impacts on public health. Prescribed burning conducted under Regulation 5 is a critical land management tool used to reduce hazardous vegetation, restore ecosystem function, and lower the risk of catastrophic wildfire.

The proposed amendments to Regulation 5 waive operation fees for all persons conducting prescribed burns, expanding the current exemption that applies only to public agencies. This

[4] CASAC Review of the EPA's Policy Assessment for the Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (External Review Draft – October 2021). Accessed at: https://www.4cleanair.org/wp-content/uploads/PM-NAAQS-CASAC-Responses-to-EPA-PM-Draft-PA-031822.pdf

change is intended to reduce administrative barriers and improve operational flexibility for nonprofit organizations and private landowners who may be positioned to carry out prescribed burns in areas where public agency capacity is limited. The proposed expansion of the exemption supports statewide efforts to expand beneficial fire practices for wildfire prevention and land stewardship.

The removal of the operation fee is not expected to change the amount of prescribed burning or result directly in increased $PM_{2.5}$ emissions. Based on discussions with Bay Area stakeholders involved in prescribed burning, the Air District expects the volume of prescribed burns to rise regardless of the proposed fee exemption. Instead, the proposed exemption is intended to reduce financial and logistical barriers that can limit participation in smaller or more adaptive projects.

B. Public Process and Stakeholder Engagement

In developing these amendments, staff reviewed similar rules from other air districts, conducted technical analyses, and engaged with stakeholders. In November 2024, the Air District released the *Woodsmoke White Paper* identifying regulatory gaps and outlining policy options for reducing woodsmoke emissions. The White Paper was open for public comment for 75 days through January 20, 2025. Staff also presented updates to the Stationary Source Committee in May 2024 and February 2025. In June 2025, the Air District held two public workshops to gather input on the draft amendments. Feedback from these efforts has been incorporated where appropriate. Additionally, staff is working with Regulation 5 stakeholders to improve internal procedures for prescribed burn review, separate from regulatory amendments.

C. Economic Impacts and CEQA Requirements

A socioeconomic analysis conducted by Eastern Research Group, Inc. found that the proposed amendments to Rule 6-3 may result in minor sales impacts for a small number of firewood suppliers, but are not expected to significantly affect households, other businesses, or the overall Bay Area economy. Most residential wood burning in the Bay Area is for aesthetic or recreational purposes, and cost-effective alternatives to wood heat exist for households eligible for the sole source of heat exemption. The Regulation 5 proposed fee amendment is not expected to have a socioeconomic impact, as the entities gaining the fee exemption currently represent a small share of collected program revenue—roughly 4% of the Air District's open burn program costs.

Staff has also reviewed the amendments and determined they are exempt from environmental review under the California Environmental Quality Act (CEQA). Staff intend to file a Notice of Exemption if the proposed amendments to Rule 6-3 and Regulation 5 are adopted.

D. Recommendation

Air District staff recommends adopting the proposed amendments to Rule 6-3 and Regulation 5. The Staff Report and proposed amendments have been released for public review and comment. A Public Hearing will be held before the Board of Directors, where the Board will consider the amendments and accept additional public input before taking action.

II. BACKGROUND

A. Health Hazards of Fine Particulate Matter ($PM_{2.5}$)

Similar to cigarette smoke, woodsmoke contains hundreds of air pollutants that can cause cancer and other serious health problems. The pollutant of greatest concern is fine particulate matter ($PM_{2.5}$). These particles consist of tiny solid and liquid fragments resulting from the incomplete combustion of wood. When woodsmoke is present in the air, these fine particles can be inhaled deep into the lungs. $PM_{2.5}$ is small enough to bypass the body's natural defenses in the nose and upper airways, allowing it to reach the lungs and potentially enter the bloodstream.[5] These particles often carry toxic substances that can persist in the lungs for extended periods, contributing to structural damage and the development of disease.[6]

Research has shown that fine particulate matter from woodsmoke is harmful to health even at low concentrations and is linked to a range of respiratory and cardiovascular effects.[7] Although anyone can be affected by $PM_{2.5}$ exposure, certain populations are especially vulnerable. These include infants and children, older adults, and individuals with existing heart or lung conditions.[8,9,10] Healthy individuals may also experience short-term symptoms such as coughing, wheezing, or difficulty breathing, and long-term exposure can increase the risk of more serious health issues. One study examining winter air pollution in Santa Clara County between 1986 and 1992 found a correlation between increased levels of PM_{10} (particulate matter with a diameter of 10 microns or less, which includes $PM_{2.5}$) and higher rates of emergency room visits for asthma. Residential wood burning was identified as a major source of PM_{10} during that period.[11]

In 2020, the Air District's Advisory Council released a *Particulate Matter Reduction Strategy Report* that concluded particulate matter is a primary contributor to health risks associated with air quality in the Bay Area.[12] The Advisory Council also emphasized that there is no known safe

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[5] Environmental Protection Agency, n.d. Particulate Matter (PM) Basics. Accessed December 5, 2023: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics

[6] How Wood Smoke Harms Your Health. Publication #91-br-023 (revised July 2012). https://apps.ecology.wa.gov/publications/publications/91br023.pdf

[7] Naeher, Luke P., et al. "Woodsmoke health effects: a review." *Inhalation toxicology* 19.1 (2007): 67-106.

[8] Honicky, R. E., Osborne, J. S., 3rd, and Akpom, C. A. (1985). Symptoms of respiratory illness in young children and the use of wood-burning stoves for indoor heating. *Pediatrics* 75, 587–593.

[9] Johnson, K. G., Gideon, R. A., and Loftsgaarden, D. O. (1990). Montana air pollution study: Children's health effects. *J. Official Stat*. 5, 391–408.

[10] Larson, T. V., and Koenig, J. Q. (1994). Wood smoke: emissions and noncancer respiratory effects. *Annu. Rev. Public Health* 15, 133–156.

[11] Lipsett, Michael, Susan Hurley, and Bart Ostro. "Air pollution and emergency room visits for asthma in Santa Clara County, California." *Environmental Health Perspectives* 105.2 (1997): 216-222. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1469790/pdf/envhper00315-0066.pdf

[12] BAAQMD, 2020. Particulate Matter: Spotlight on Health Protection. *Advisory Council Particulate Matter Reduction Strategy Report*. Available at: https://www.baaqmd.gov/%7E/media/files/board-of-directors/advisory-council/2020/ac_particulate_matter_reduction_strategy_report.pdf?la=en&rev=570867c8b25e4ca0b2f93f80c4c1ef02

threshold for exposure to $PM_{2.5}$ and recommended further efforts to reduce ambient PM levels to protect public health.

Multiple scientific and regulatory bodies have issued similar guidance supporting more health-protective $PM_{2.5}$ standards:[13]

- The Clean Air Scientific Advisory Committee (CASAC), which advises the U.S. Environmental Protection Agency (EPA), found that revisions to the annual $PM_{2.5}$ standard alone may not be sufficient to protect against short-term exposures. A majority of CASAC members recommended tightening the 24-hour standard from the current level of 35 micrograms per cubic meter ($\mu g/m^3$) to 25–30 $\mu g/m^3$.[14]
- In a joint comment letter, the California Air Resources Board (CARB), the Office of Environmental Health Hazard Assessment (OEHHA), and Cal/OSHA also supported a more protective 24-hour standard of 25 or 30 $\mu g/m^3$.[15]
- The South Coast Air Quality Management District (SCAQMD) is expected to revise its burn curtailment threshold to meet Most Stringent Measure (MSM) compliance, using a $PM_{2.5}$ concentration of 25 $\mu g/m^3$ as the curtailment threshold.[16]

The Air District has pursued a range of PM-reduction initiatives to address community-level exposure and advance health-protective standards. These include rule development efforts such as amendments to *Regulation 6, Rule 5: Particulate Emissions from Refinery Fluidized Catalytic Cracking Units*, *Regulation 9, Rule 4: Nitrogen Oxides from Natural Gas-Fired Furnaces* and *Regulation 9, Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters*, *Regulation 11, Rule 18: Risk Reduction from Air Toxic Emissions at Existing Facilities*, and fugitive dust control amendments to *Regulation 6, Rule 1: General Requirements* and *Regulation 6, Rule 6: Prohibition of Trackout*. Additional efforts include PM strategies in Assembly Bill (AB) 617 community emissions reduction plans,[17] the *Proposed Methodology for Determining Local Health Risks from Fine Particulate Matter*, and targeted grant and incentive programs that reduce $PM_{2.5}$ beyond regulatory requirements. While ambient $PM_{2.5}$ levels can vary seasonally, trends in annual average concentrations have shown little improvement over the past decade despite these mitigation efforts.

The proposed amendments to *Regulation 6, Rule 3: Wood-Burning Devices* (Rule 6-3) are intended to target reductions in woodsmoke emission and align with public health-protective guidance from multiple scientific and regulatory bodies. The Air District will continue to evaluate whether additional stationary source controls, including further woodsmoke mitigation measures, will be necessary to meet current and future air quality planning obligations.

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[13] The EPA has established primary National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ for public health protection. There are two federal primary standards for $PM_{2.5}$ – an annual average standard and a 24-hour average standard. On February 7, 2024, the EPA revised the NAAQS for particulate matter by lowering the primary annual $PM_{2.5}$ standard from 12.0 to 9.0 $\mu g/m^3$. This action reflects the growing body of evidence indicating health effects at lower concentrations and underscores the importance of more health-protective particulate matter standards.

[14] https://www.epa.gov/system/files/documents/2024-02/2024-pm-naaqs-final-overview-presentation.pdf

[15] https://www.regulations.gov/comment/EPA-HQ-OAR-2015-0072-0975

[16] SCAQMD PAR 445 Wood-Burning Devices Working Group Meeting #2 Slide Presentation. https://www.aqmd.gov/docs/default-source/rule-book/proposed-rules/445/par-445---wgm-2.pdf?sfvrsn=8f0f9f61_3

[17] https://www.baaqmd.gov/community-health/community-health-protection-program

B. Residential Wood Burning in the Bay Area

Wood burning is a widespread practice in the San Francisco Bay Area and includes the use of various devices like fireplaces, firepits, wood stoves, manufactured pellet stoves, and recreational fires such as campfires and bonfires. Staff estimated that in 2020 there were approximately one million indoor wood-burning devices in homes across the region. Based on statistical modeling of Spare the Air winter survey data, just over one-third of these (37 percent) were in active use. Among those in use, the majority – about 76 percent – were wood-burning fireplaces.

While the emission of particulate matter is the primary concern associated with wood combustion, woodsmoke also contains toxic air contaminants (TACs) such as benzene, formaldehyde, acrolein, and polycyclic aromatic hydrocarbons (PAHs). Exposure to fine particulate matter and TACs from woodsmoke, even at low levels, is harmful to human health and is associated with a variety of adverse health effects, including respiratory and cardiovascular diseases.[18] Most wood heaters (a wood-burning device intended as a primary source of heat) release far more air pollution, indoors and out, than heaters using other fuels.[19]

Woodsmoke is estimated to contribute about 14 percent of the Bay Area's total direct fine particulate matter emissions on an annual basis.[20] During colder months of December and January, this proportion increases, with woodsmoke responsible for approximately one-third (34 percent) of direct $PM_{2.5}$ emissions on average—although this can vary from place to place and day to day.[21] On cold, calm days, woodsmoke tends to get trapped near the ground due to a weather phenomenon called an inversion layer. A layer of warmer air acts like a lid over a colder layer, preventing the dispersion of pollutants and leading to a buildup of pollutants. However, elevated woodsmoke exposure can occur even in the absence of an inversion layer. Individuals may be exposed to higher concentrations if they are downwind of an active wood fire, in a valley where topography limits air movement, or inside a structure near a burning source.

C. Wildfire Risk Considerations

Wildfire smoke, like other wood-burning smoke, is a complex mixture of harmful pollutants with serious public health implications. Wildfire smoke contains many of the same pollutants as woodsmoke but often in higher concentrations and greater complexity. Unlike smoke from wood-burning devices, wildfire smoke can include emissions from burning plastics, treated wood, and other synthetic materials found in buildings and infrastructure if the fire is located in the urban-wildland interface, potentially resulting in a more toxic and chemically diverse mixture.[22] Wildfire

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[18] https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution
[19] https://ww2.arb.ca.gov/resources/documents/woodburning-handbook
[20] Wildfire emissions are excluded from this calculation.
[21] Please see *Woodsmoke White Paper* for model-based estimates of: month-to-month variation in regional emissions (Figure B1.5); 1 km scale variation in winter emissions (Figure B1.7); city-scale variation in annual average emissions per capita (Figure B1.8); and 1 km scale variation in annual average emissions (Figure B1.9).
[22] Prunicki, M.; Kelsey, R.; Lee, J.; Zhou, X.; Smith, E.; Haddad, F.; Wu, J.; Nadeau, K. The impact of prescribed fire versus wildfire on the immune and cardiovascular systems of children. *Allergy* 2019, *74* (10), 1989–1991. https://doi.org/10.1111/all.13825

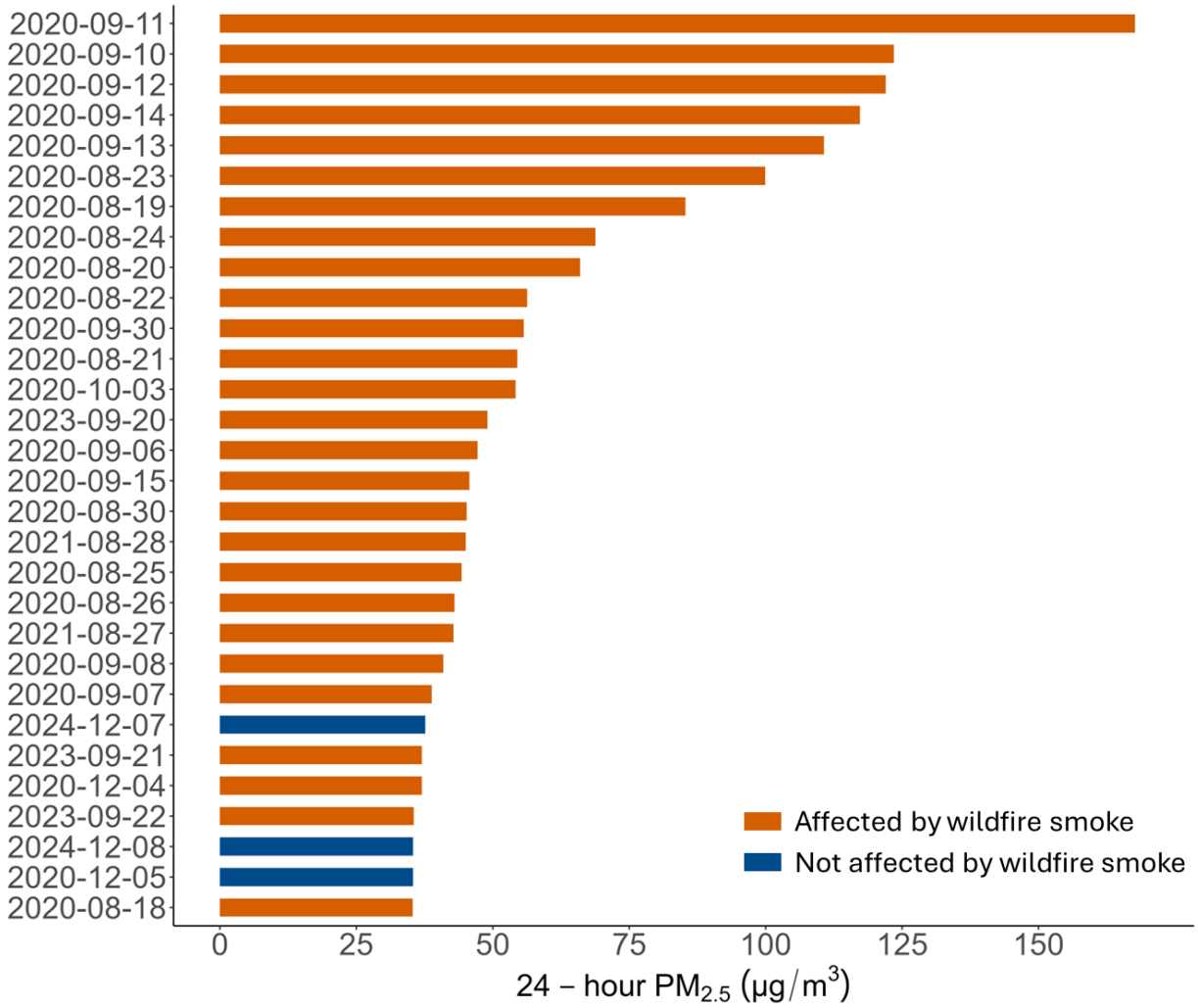
smoke also contains precursor gases that contribute to the formation of ozone and secondary aerosols, further degrading air quality. Additionally, the extreme heat of wildfires can produce smaller particles that penetrate deeper into the respiratory system compared to those from typical residential wood burning. In North America, fires have become a much bigger factor in overall air quality over recent decades. A systematic review and meta-analysis of health effects of wildfire smoke exposure found that wildfire smoke was directly linked to more deaths overall and a rise in hospitalizations and emergency room visits for breathing problems.[23]

Wildfire season has become longer and more severe in recent decades, placing additional stress on regulatory efforts focused on reducing anthropogenic sources of woodsmoke pollution. Of the top 30 highest daily (24-hour) $PM_{2.5}$ values measured at Air District monitoring sites between 2020 and 2024, 27 of those days were affected by wildfire smoke (Figure 1). The causes and outlook of this increased severity have been described as follows: "The duration of the wildfire season has increased by as much as 80 days in some parts of the Western United States as a result of increased temperature, earlier snowmelt, and altered precipitation patterns. Higher temperatures, lower summer precipitation, and increased frequency and intensity of droughts are expected to create longer periods during which surface fuels are sufficiently dry to burn. By the mid-21st century, the annual area burned in the US could increase two to three times from the present, depending on the geographic area, ecosystem, and local climate."[24]

[23] Gould CF, Heft-Neal S, Johnson M, Aguilera J, Burke M, Nadeau K. Health Effects of Wildfire Smoke Exposure. Annu Rev Med. 2024 Jan 29;75:277-292. doi: 10.1146/annurev-med-052422-020909. Epub 2023 Sep 22. PMID: 37738508.

[24] Jaffe, D. A.; O'Neill, S. M.; Larkin, N. K.; Holder, A. L.; Peterson, D. L.; Halofsky, J. E.; Rappold, A. G. Wildfire and Prescribed Burning Impacts on Air Quality in the United States. *J. Air Waste Manage. Assoc.* 2020, *70* (6), 583–615. https://doi.org/10.1080/10962247.2020.1749731.

Figure 1. Top 30 highest daily (24-hour) $PM_{2.5}$ values measured at Air District monitoring sites between 2020 and 2024.



***Detailed Description**: The values in Figure 1 represent the highest daily (24-hour) $PM_{2.5}$ concentration in $\mu g/m^3$ that was measured at Air District monitoring sites throughout the network on a particular day. Each day was either categorized as "affected by wildfire smoke" or "not affected by wildfire smoke" based on whether the Air District called a Spare the Air Alert or issued an Air Quality Advisory for wildfire smoke and corresponding air monitoring data indicated an increase in pollutant concentrations or pollutant ratios that are commonly associated with wildfire smoke.*

While there has been a sharp rise in wildfire severity throughout the Western US and California in particular—most recently highlighted by the catastrophic Los Angeles fires of January 2025—wildfire emissions in smaller geographic areas are often episodic. For example, in recent years, wildfire activity in the Air District has been highly variable in both frequency and intensity from year to year. Data from the California Department of Forestry and Fire Protection (CAL FIRE) incident records demonstrate the unpredictable but growing burden of wildfires in Air District

counties, shown in Figure 2 and summarized in Table 1.[25] The unpredictability of the health and safety impacts in a given year underscores the importance of proactive preparedness in fire management strategies.

Figure 2. Acres burned and number of incidents from CAL FIRE database of wildfire incidents in the 9 Bay Area counties (Alameda, Contra Costa, Marin, Napa, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma County).

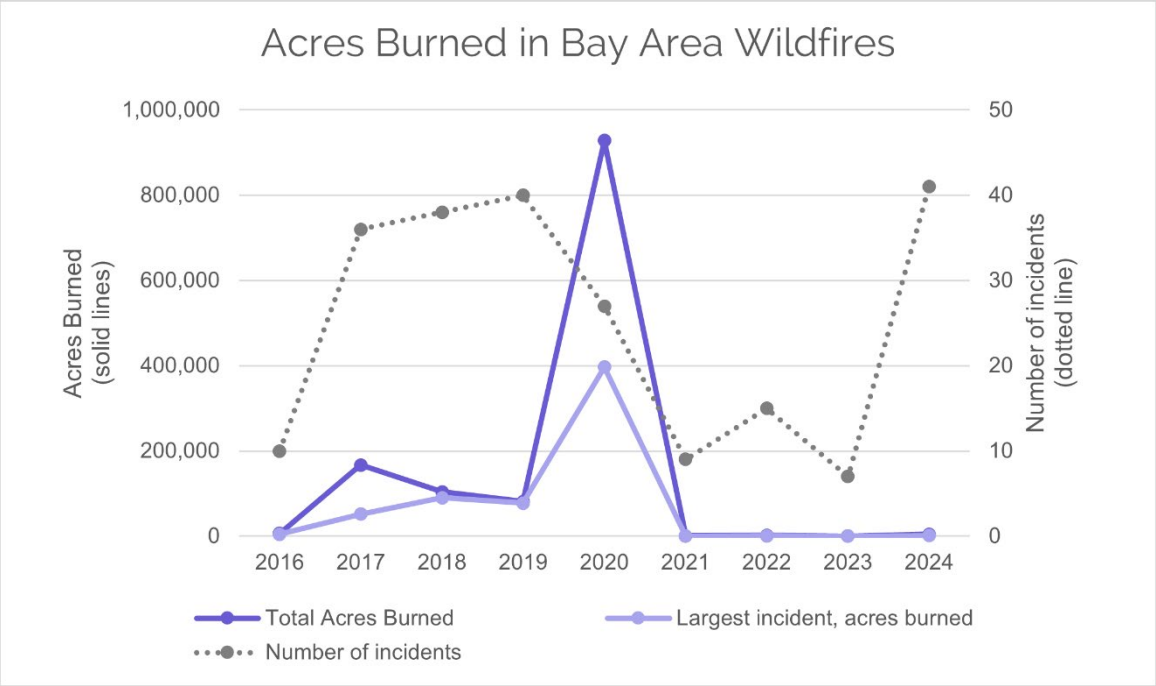


Table 1. CAL FIRE data on incidents in Bay Area Air District counties.

All CAL FIRE Incidents in Bay Area Air District Counties				**Largest** CAL FIRE Incidents		
Year	Number	Total Acres Burned	Average Acres Burned	Acres Burned	Incident Name	Counties
2016	10	6,658	666	4,474	Loma Fire	Santa Clara
2017	36	166,803	4,633	51,624	Atlas Fire (Southern LNU Complex)	Napa, Solano
				44,573	Nuns / Adobe / Norrbom / Pressley / Patrick Fires /	Napa, Sonoma

[25] https://www.fire.ca.gov/incidents. Accessed 2025 April 15.

All CAL FIRE Incidents in Bay Area Air District Counties				**Largest** CAL FIRE Incidents		
Year	Number	Total Acres Burned	Average Acres Burned	Acres Burned	Incident Name	Counties
					Oakmont (Central LNU Complex)	
				36,807	Tubbs Fire (Central LNU Complex)	Napa, Sonoma
2018	38	103,781	2,731	90,000	County Fire	Napa, Yolo
2019	40	81,277	2,032	77,758	Kincade Fire	Sonoma
2020	27	928,542	34,390	396,624	SCU Lightning Complex	Santa Clara, San Joaquin, Contra Costa, Alameda, Stanislaus
				363,220	LNU Lightning Complex	Napa, Solano, Lake, Sonoma, Yolo
2021	9	564	63	132	Newell Fire	Napa
2022	15	2,242	149	570	Old Fire	Napa
2023	7	447	64	103	Snell Fire	Napa
2024	41	4,538	111	1,207	Point Fire	Sonoma

Techniques available to reduce wildfire risk, such as forest thinning, mechanical removal of surface fuels, and prescribed burning, have been used for decades to reduce hazardous fuels in dry forest landscapes. Prescribed burns are planned, controlled application of fire to vegetation to achieve specific natural resource management objectives, including wildfire prevention and ensuring fire safety. However, concerns about the health effects of smoke from prescribed burning on residents must be considered in the application of these preventative measures.

While prescribed burns generate emissions, in general they are for shorter time periods, emit significantly less PM per acre due to lower heat and scale,[26] and utilize smoke management plans and $PM_{2.5}$ forecasting to ensure burns are timed for meteorological conditions that lessen population exposure to $PM_{2.5}$ than during large, uncontrolled wildfires. The periodic pulses of emissions produced by prescribed burning therefore tend to result in lower ambient concentrations of particulates and other pollutants for a shorter duration than in a large, uncontrolled wildfire.

For example, a previous Air District analysis estimated that in 2017, open burning activities in the Air District resulted in approximately 175 tons of emissions, with only 6.45 tons attributed to

[26] Berger C, Fitzgerald SA, Leavell D, Peterson J. 2018. *Fire FAQs – Air quality impacts from prescribed fire and wildfire: How do they compare?* Oregon State University Extension Service, EM 9203, 2p. https://extension.oregonstate.edu/catalog/pub/em-9203-fire-faqs-air-quality-impacts-prescribed-fire-wildfire-how-do-they-compare

prescribed burns. In contrast, the three largest wildfires in that year collectively produced approximately 49,000 tons of emissions, an amount approximately 7,500 times larger than the amount attributed to prescribed burns.[27] These local data provide insight that prescribed burning is a controlled method to reduce hazardous fuels which plays a key role in limiting the scale and intensity of future wildfires and their emissions impacts on air quality.

A growing body of scientific literature supports the conclusion that strategically applied prescribed fires not only reduce short-term wildfire risk (across a 2-5 year timeframe) but also help improve overall air quality resilience by avoiding more catastrophic events.[28,29,30] Together, these trends and findings highlight the need to modernize and align woodsmoke and open burning regulations with evolving wildfire risk, public health priorities, and the latest best practices in wildfire mitigation.

D. Air District Woodsmoke and Open Burning Programs

1. *Regulation 6, Rule 3: Wood-Burning Devices*

Rule 6-3 governs emissions from wood-burning devices in the San Francisco Bay Area, including those used for primary heating, supplemental heating, or ambiance. This Rule prohibits the use of wood-burning devices such as fireplaces, wood stoves, and pellet stoves on days when a Mandatory Burn Ban is in effect (with exemptions, as discussed below). These bans are issued when the Air District forecasts that $PM_{2.5}$ concentrations will exceed the federal 24-hour standard of 35 µg/m³, triggering a Spare the Air Alert.

The Spare the Air Program, launched by the Air District in 1991, was designed to notify the public when air quality is expected to be unhealthy and to provide information on reducing air pollution. Since 2008, the program has also notified residents when the use of wood-burning devices is prohibited due to poor air quality conditions.

In addition to issuing burn bans, Rule 6-3 includes the following key provisions:

- Limits visible smoke emissions during permissible burn periods.
- Prohibits the burning of materials such as garbage, plastics, and other toxic substances.
- Establishes requirements for manufacturers and retailers regarding the sale and installation of wood-burning devices.
- Requires labeling on firewood and other solid fuels sold in the Bay Area.

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[27] Bay Area Air Quality Management District. Final Staff Report – Proposed Amendments to Regulation 5 and Regulation 6, Rule 3 (with Appendices); 2019. https://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-6-rule-3/documents/20191120_fsr_0500_0603-pdf.pdf?rev=38aff7bc1b3642678f870b256d577b74&sc_lang=en

[28] Kiely, L. T.; Elser, H. J.; Pye, H. O. T.; Hennigan, C. J. California Case Study of Wildfires and Prescribed Burns: PM2.5 Emissions, Concentrations, and Implications for Human Health. *Environ. Sci. Technol.* **2024**, *58*, 3092–3102. https://doi.org/10.1021/acs.est.3c06421.

[29] Fernandes, P. M.; Botelho, H. S. A Review of Prescribed Burning Effectiveness in Fire Hazard Reduction. *Int. J. Wildland Fire* **2003**, *12*, 117–128. https://doi.org/10.1071/WF02042.

[30] Schweizer, D.; Cisneros, R. 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 PM2.5 Impacts and Fire Policy. *J. Environ. Manage.* **2014**, *144*, 265–276. https://doi.org/10.1016/j.jenvman.2014.05.010.

Rule 6-3 provides specific exemptions from the Air District's Mandatory Burn Ban. For example, individuals who rely solely on an EPA-certified wood-burning device and lack access to permanently installed natural gas, propane, or electric heating systems may qualify for the "sole source of heat" exemption. Registration with the Air District is required for this exemption. Additional exemptions may apply during heater malfunctions or power outages, provided no other heating options are available. All exemptions are subject to verification by the Air District.

The Rule prohibits the installation of any wood-burning devices—including EPA-certified units and pellet-fueled stoves—in newly constructed buildings throughout the Bay Area. For fireplace or chimney remodels exceeding $15,000 in cost and requiring a local building permit, the Rule mandates installation of a gas-fueled, electric, or EPA-certified wood-burning device. As of November 1, 2018, rental properties with access to natural gas must provide a permanently installed heat source that does not rely on burning wood or pellets.

In 2019, Rule 6-3 was amended alongside Regulation 5 to extend the applicability of wood-burning bans beyond the winter season. As of 2020, Mandatory Burn Bans may be implemented year-round on any day when a Spare the Air Alert is issued due to elevated $PM_{2.5}$ levels, including during air pollution events such as wildfires or fireworks.

2. *Regulation 5: Open Burning*

Regulation 5 addresses emissions from open burning activities and is designed to reduce air pollution from such sources while allowing certain necessary exemptions. These exemptions apply to activities like agricultural operations, fire training exercises, hazardous material disposal, and land management objectives such as forest, range, and wildlife habitat maintenance. The regulation identifies 17 types of fires that may be conditionally allowed on designated permissive burn days, which are days with weather conditions favorable for smoke dispersion. Most of these fires are agricultural in nature, but several fall under other categories. The 17 allowable fire types include:

- Disease and Pest
- Crop Replacement
- Orchard Pruning and Attrition
- Double Cropping Stubble
- Stubble
- Hazardous Material
- Fire Training
- Flood Debris
- Irrigation Ditches
- Flood Control
- Range Management
- Forest Management
- Marsh Management
- Contraband
- Wildland Vegetation Management (Prescribed Burning)
- Filmmaking
- Public Exhibition

One type of open burning regulated under this Rule is "prescribed burning." These burns are designed to be conducted under controlled conditions to minimize smoke and reduce the potential

for adverse health impacts. Compared to wildfires—which are unplanned, more intense, and often more destructive—prescribed burns typically produce lower ambient pollutant concentrations and have fewer health and environmental consequences.[31]

Prescribed burning also supports long-term forest health by reducing excess vegetation that has accumulated due to decades of fire suppression. This buildup of fuel has made many forests across California highly vulnerable to large, high-intensity wildfires. Unlike wildfires, which can burn so hot that they destroy soil structure and sterilize ecosystems, prescribed burns help maintain ecological balance and resilience.[32]

Under Regulation 5, prescribed burning is permitted and is defined under several categories, including "Wildland Vegetation Management" fires (Regulation 5, Section 401.15) and some types of "Crop Replacement" (Section 5-401.2), "Hazardous Material" (Section 5-401.6), "Range Management" (Section 5-401.11), and "Forest Management" (Section 5-401.12) fires. This designation applies to fire types such as Crop Replacement, Range Management, Forest Management, and certain Hazardous Material burns larger than 10 acres.

Anyone conducting a prescribed burn must first submit a Smoke Management Plan for each burn to the Air District at least 30 days in advance of the proposed burn. The Plan must include a smoke management prescription, which outlines conditions under which the burn may proceed. This includes measures to minimize smoke impacts, and may also address factors such as public safety, economic impacts, environmental protection, legal and administrative constraints, and community health. In advance of the requested prescribed burn, the Air District reviews the Smoke Management Plan to determine if it complies with Air District requirements.

The Air District provides year-round forecasting support to assist with the planning and implementation of prescribed burns. Meteorological forecasts are available up to 96 hours in advance to help identify suitable burn windows. Burn managers may submit ignition authorization requests several days prior but no later than 9:00 AM the day before ignition. Acreage allocations for approved burns under Smoke Management Plans are only issued on days when Air District meteorologists determine that conditions meet permissive burn day criteria, based on air quality and smoke dispersion conditions. On the morning of the burn, meteorologists evaluate current weather conditions and, if appropriate, issue a burn allowance confirming the approved acreage. Prescribed burns may proceed only if conditions remain consistent with the approved prescription. Regulation 5 allows prescribed burning throughout the year.

A 2019 amendment to Regulation 5 exempted public agencies from open burning operation fees for prescribed burns.

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[31] Berger C, Fitzgerald SA, Leavell D, Peterson J. 2018. *Fire FAQs – Air quality impacts from prescribed fire and wildfire: How do they compare?* Oregon State University Extension Service, EM 9203, 2p. https://extension.oregonstate.edu/catalog/pub/em-9203-fire-faqs-air-quality-impacts-prescribed-fire-wildfire-how-do-they-compare

[32] Fernandes and Botelho, 2003. https://www.publish.csiro.au/wf/wf02042

E. Regulatory Landscape

1. Rule 6-3

Emissions from wood-burning devices are regulated at the federal level by the EPA and many state and local jurisdictions have their own regulations often building upon or reinforcing the EPA standards. California air districts have adopted stringent rules to address $PM_{2.5}$ pollution from wood-burning devices, with variations in curtailment thresholds, enforcement mechanisms, and exemptions.

At the federal level, the EPA regulates new residential wood heaters through the New Source Performance Standards (NSPS) in 40 CFR Part 60, Subpart AAA. These standards limit emissions of PM and other pollutants and apply to new wood stoves, pellet stoves, and similar devices. Rule 6-3 references these federal standards and requires compliance with EPA certification requirements in several provisions, including those for manufacturers, retailers, property transfers, and exemptions for sole source heating.

Several other California air districts also regulate wood-burning emissions through dedicated rules. Common features include prohibiting burning on days with poor air quality, requiring certified devices for retrofit installations, or prohibiting installation in new construction. These air districts also utilize compliance strategies similar to those used by the Air District. The Air District conducts woodsmoke patrols during periods of more active residential burning—typically during the beginning and end of staff shifts—with patrols focused on maximizing surveillance coverage in areas with recent woodsmoke complaints, in AB 617 communities, or where elevated impacts are known. Key burn curtailment details from a selection of regional air district rules are summarized Table 2 below.

Table 2. Summary of a Selection of California Air District Burn Curtailment Measures

Agency / Rule	Applicability	Curtailment Threshold
South Coast AQMD / Rule 445	All counties and wood-burning device types	29 µg/m^3 (proposed: 25 µg/m^3)
San Joaquin Valley APCD / Rule 4901	Counties of Madera, Fresno and Kern (hot-spot counties) Level 1 for all wood-burning devices except registered devices Level 2 for all wood-burning devices	 Level 1: 12 µg/m^3 Level 2: 35 µg/m^3
	Counties of San Joaquin, Stanislaus, Merced, Kings, and Tulare Level 1 for all wood-burning devices except registered devices	 Level 1: 20 µg/m^3 Level 2: 65 µg/m^3

	Level 2 for all wood-burning devices	
Sacramento Metro AQMD / Rule 421	Stage 1 for all wood-burning devices except EPA-certified devices Stage 2 for all wood-burning devices	Voluntary Curtailment: 25 µg/m^3 Stage 1: 31 µg/m^3 Stage 2: 35 µg/m^3

Local jurisdictions may also adopt ordinances to address community-level woodsmoke exposure. For example, the cities of Berkeley[33] and Oakland[34] have enacted rules reinforcing or expanding upon Air District regulations. In 2012, the Air District developed a Model Wood Smoke Ordinance to guide Bay Area cities and counties in adopting localized protections tailored to community needs.[35]

2. Regulation 5

Emissions from open burning are not regulated at the federal level by the EPA. Open burning is regulated by air districts across California to minimize smoke impacts and reduce emissions of fine particulate matter, volatile organic compounds, and other pollutants. These rules govern when and how open burns—such as agricultural burns, land management burns, and prescribed fires—can occur and are designed to protect air quality while accommodating essential fire use for land stewardship and wildfire prevention.

Title 17 of the California Code of Regulations outlines the state's requirements for prescribed and agricultural burning, including smoke management practices and air district responsibilities.[36] These regulations, implemented by CARB, form the backbone of California's statewide approach to managing open burning and minimizing smoke impacts on air quality. Local air district rules are developed and implemented in alignment with Title 17 requirements and may include more stringent provisions to address regional air quality needs.

Several other California air districts maintain open burning rules with similar structures to the Air District's Regulation 5 but differ in allowable burn types, seasonal restrictions, and planning requirements. Key features from a selection of regional air district open burning rules are summarized Table 3 below.

[33] City of Berkeley Woodsmoke Rules. https://berkeleyca.gov/cityservices/livable-neighborhoods/wood-smoke-rules

[34] City of Oakland Code of Ordinances Chapter 8.19 – Wood-Burning Appliances. https://library.municode.com/ca/oakland/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.19WORNAP

[35] 2012 Air District Model Woodsmoke Ordinance. https://www.baaqmd.gov/~/media/files/communications-and-outreach/wood-smoke/model-ordinance-updated-final-3-16-2012.pdf

[36] Cal. Code Regs. tit. 17, § 80100. Available at: https://ww2.arb.ca.gov/sites/default/files/2021-06/Title17.pdf

Table 3. Summary of a Selection of California Air District Open Burning Rules

Agency / Rule	Applicability	Key Features
South Coast AQMD / Rule 444: Open Burning	Applies to open burning for agriculture, range improvement, forest management, prescribed burning, fire training, hazard reduction/prevention, disposal, beach burning, and residential burning.	Prior notification required. Smoke Management Plans required for prescribed burning. Permissive burn days based on meteorological forecasts.
San Joaquin Valley APCD / Rule 4106: Prescribed Burning and Hazard Reduction Burning	Applies to prescribed burning and fire hazard reduction projects. Open burning (such as agricultural burning) is covered by a different rule (Rule 4103).	Requires Smoke Management Plans. Monitoring requirements for large projects.
Sacramento Metro AQMD / Rule 501: Agricultural Burning	Applies to agricultural and prescribed burning.	Requires burn permits. Smoke Managements Plans required for larger projects. Limits burning to permissive burn days determined by CARB or District.

III. TECHNICAL REVIEW

This section summarizes current information on wood-burning activity, emissions, exposures, and associated health impacts across the Bay Area, based on existing Rule 6-3 and Regulation 5 program data. These analyses provide contextual background and a baseline for evaluating the proposed amendments. Impacts of the proposed changes are not discussed here.

A. Rule 6-3

This subsection presents an overview of available data on the population of wood-burning devices in the region, associated $PM_{2.5}$ emissions, modeled air quality and health impacts, and findings from air monitoring and Spare the Air Alerts. Additional technical details and methodologies on the information provided in this section can be found in the *Woodsmoke White Paper* that the Air District published in November 2024.

1. Wood-Burning Device Population and Emissions Inventory

The Air District estimates there are approximately one million indoor wood-burning devices installed in Bay Area homes as of 2020. Based on the results from the winter Spare the Air survey,

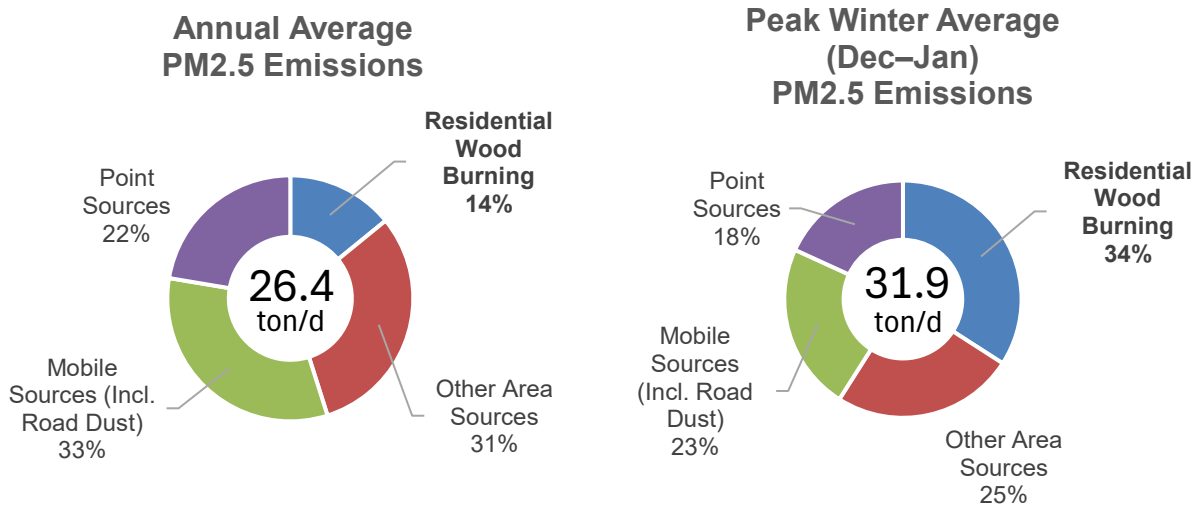
staff estimated roughly 37 percent of these devices are in active use. Among active devices, about 76 percent are traditional wood-burning fireplaces.

The Spare the Air survey distinguishes among three general device types:

- Wood-burning fireplaces,
- Pellet stoves,
- Wood stoves and inserts.

Using this device population data, staff estimates that residential indoor wood burning contributes approximately 1,360 tons of $PM_{2.5}$ emissions annually (or 3.7 tons per day on average). This represents about 14 percent of the region's total direct $PM_{2.5}$ emissions from human-related sources. During peak winter months—December and January—emissions from wood burning can average nearly 11 tons per day, accounting for approximately one third of total anthropogenic $PM_{2.5}$ emissions in the region during that time (Figure 3).

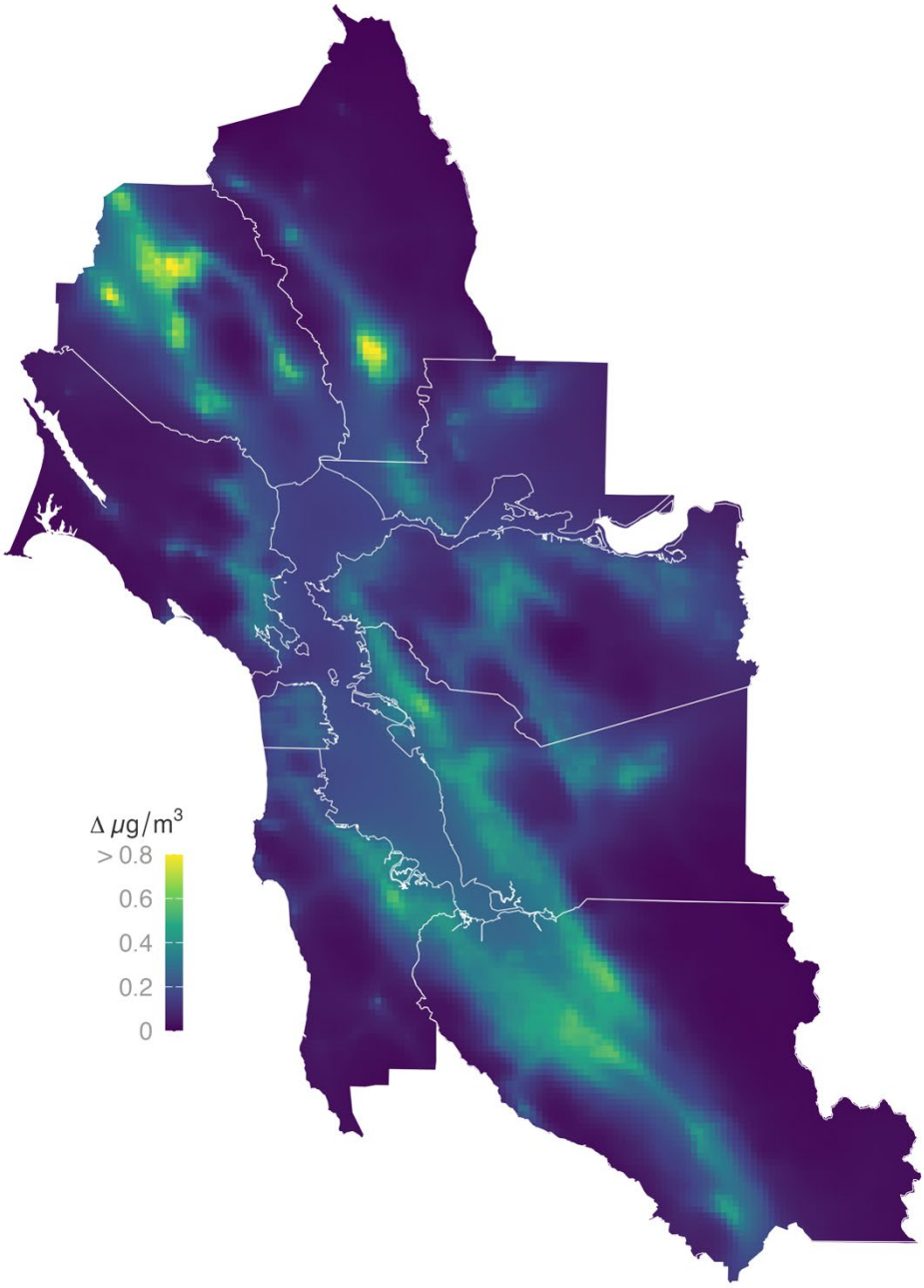
Figure 3. Bay Area $PM_{2.5}$ Modeled Emissions for 2020. Left panel: Modeled $PM_{2.5}$ emissions by source sector for an entire year. Right panel: Modeled $PM_{2.5}$ emissions during peak wood-burning months (December and January).



In terms of geographic variability of emissions, there is wide variability in wood-burning activity across the Bay Area, and even within the same county. Urban areas such as San Francisco show the lowest emissions per capita, while higher emissions per capita are found in rural areas, particularly north of the Carquinez Strait, in counties such as Sonoma and Napa.

Modeled annual average $PM_{2.5}$ contributions from residential wood burning varied from near zero to 0.85 $\mu g/m^3$. The highest contributions (between 0.6 $\mu g/m^3$ and 0.8 $\mu g/m^3$) occur in Sonoma and Napa counties, especially around the cities of Santa Rosa, Sebastopol, Rohnert Park, and Napa. Areas with contributions between 0.5 and 0.6 $\mu g/m^3$ include parts of Oakland, San Jose, and Redwood City (Figure 4).

Figure 4. Modeled contributions from residential wood burning to annual average $PM_{2.5}$ concentrations across the Bay Area.



2. Estimating Health Impacts

To assess the broader health and exposure impacts of wood burning, Air District staff also conducted air quality modeling under two scenarios:

- A baseline scenario including current wood-burning emissions, and

- A control scenario with all indoor wood-burning emissions removed. [37]

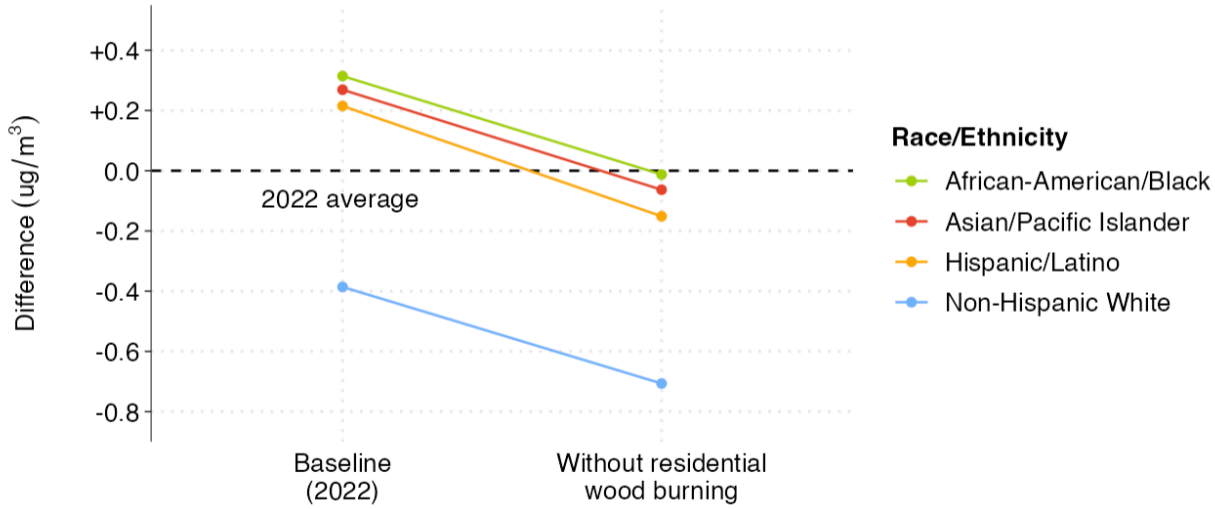
These simulations were run using one square kilometer resolution population data from 2020 and evaluated exposure across four racial/ethnic groups: Hispanic/Latino, non-Hispanic White, African-American/Black, and Asian/Pacific Islander.

In the baseline scenario, people of color were exposed to 0.6 to 0.7 µg/m³ more $PM_{2.5}$ on average than non-Hispanic White residents (Figure 5, left side). This baseline exposure disparity results from the combination of all sources of $PM_{2.5}$ in the world as it exists today. This disparity remained essentially unchanged in the control scenario without wood burning, indicating that residential woodsmoke reductions alone would not significantly alter current exposure disparities (Figure 5, right side).

On average, removing wood-burning emissions would reduce annual $PM_{2.5}$ exposure by 0.34 µg/m³ across the population, with similar benefits across all racial and ethnic groups. The disparity between the most-exposed group (African-American/Black) and the least-exposed (non-Hispanic White) would not change (0.7 µg/m^3).

Using the U.S. EPA's BenMAP model, staff estimated that 94 to 210 premature deaths per year are attributable to $PM_{2.5}$ from residential wood burning in the Bay Area. Additional information on health impact modeling can be found in the *Woodsmoke White Paper*.

Figure 5. Differences in modeled annual average $PM_{2.5}$ exposures (annual average ambient concentrations, weighted by residential population).

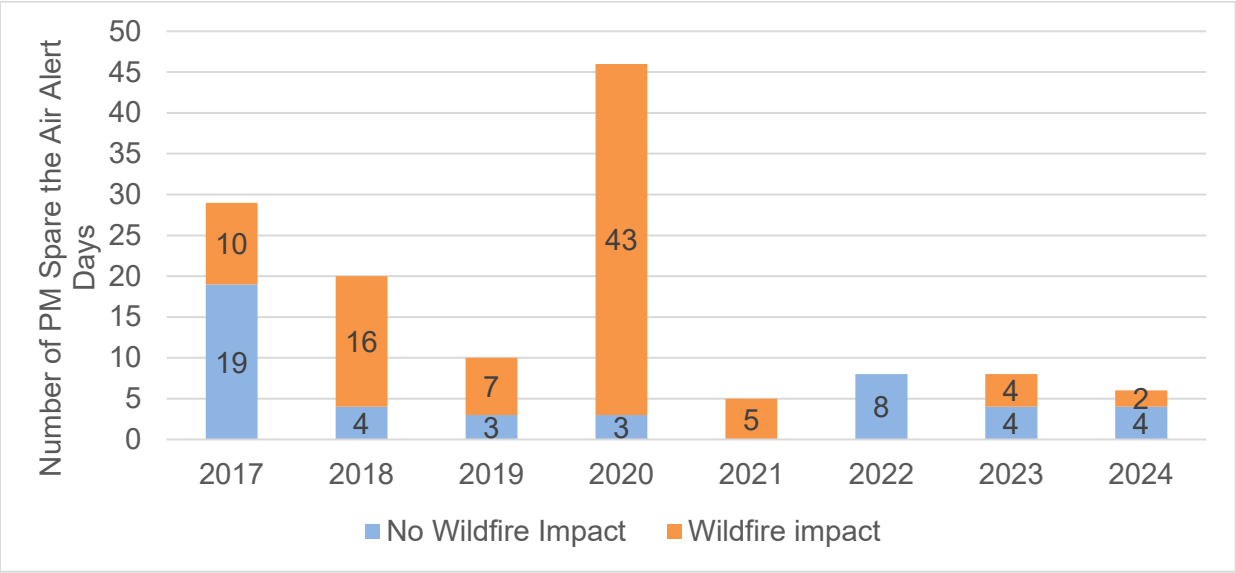


3. Air Quality Monitoring and Spare the Air Alert Data

Currently, Spare the Air Alerts for $PM_{2.5}$ are issued when the Air District forecasts that 24-hour average $PM_{2.5}$ concentrations will exceed 35 µg/m^3. However, in recent years, measured 24-hour average $PM_{2.5}$ concentrations have only exceeded 35 µg/m^3 on about two days per year outside of wildfire smoke periods (Figure 6). Some Spare the Air Alerts are called on days that do not ultimately exceed the threshold, due to forecast uncertainty.

[37] Wood-burning emissions from outdoor devices (which could not be adequately quantified), and wood-burning emissions originating outside the Air District's jurisdiction, were not removed.

Figure 6. Total number of particulate matter Spare the Air Alerts by year, categorized by days that were impacted by wildfire smoke (orange) and days that were not impacted by wildfire smoke (blue).



Days with $PM_{2.5}$ concentrations above the proposed lower threshold of 25 µg/m^3 were also relatively uncommon, with an average of about ten days per year. The San Jose – Jackson, San Jose – Knox, Vallejo, Oakland – West, Oakland – Laney, and San Pablo monitoring sites recorded more days with relatively higher levels of $PM_{2.5}$ (24-hour averages above 25 µg/m^3 or above 35 µg/m^3) as compared to other monitoring sites (Table 4).

Table 44. Average annual number of days with 24-hour $PM_{2.5}$ levels above different thresholds over five years (2018-2022) by monitoring site and across all sites. The values shown for 'All sites' are greater than for any individual monitoring site because different monitoring sites may record $PM_{2.5}$ levels above a given threshold on different days.

Monitoring Site	Average annual number of non-fire days with 24-hr $PM_{2.5}$ > 25 µg/m^3 (2018-2022)	Average annual number of non-fire days with 24-hr $PM_{2.5}$ > 35 µg/m^3 (2018-2022)
Sebastopol	0.6	0
Napa	0.4	0
San Rafael	1.4	0.2
Vallejo	3.4	0.2
San Pablo	2.6	0.4
Concord	1.6	0.4
San Francisco	1.8	0.2
Berkeley	1	0
Oakland – West	3.2	0.2
Oakland – Laney	3.2	0.6
Oakland – East	1.2	0
Pleasanton	0.8	0
Livermore	1.2	0.2
Redwood City	0.7	0
San Jose – Jackson	5.4	0.8
San Jose – Knox	4.8	0.6
Gilroy	0	0
All Sites	9.8	1.8

***Detailed Description**: The values in the table above were calculated after removing days that may have been affected by wildfire and represent days when measured $PM_{2.5}$ concentrations were estimated to be largely anthropogenic. Days above 35 µg/m^3 now occur infrequently outside wildfire smoke periods (largely due to overall reductions in woodsmoke and other emissions that contribute to $PM_{2.5}$ since the time the Rule was first implemented), with an average of only about two days per year across all monitors. Days with $PM_{2.5}$ concentrations above a lower threshold of 25 µg/m^3 were also relatively uncommon, with an average of about 10 days per year.*

These data suggest that days triggering Spare the Air Alerts have become infrequent due to reductions in $PM_{2.5}$ from wood burning and other sources since the Rule was first adopted. However, relying on the current threshold limits the Rule's ability to address short-term spikes in woodsmoke.

Woodsmoke emissions are episodic and can result in sharp increases in $PM_{2.5}$ concentrations over short time periods. While these daily peaks contribute to annual average concentrations, their localized and variable nature can make their health impacts less apparent in broader regional trends. Curtailment strategies targeting lower $PM_{2.5}$ levels offer an opportunity to reduce exposure to these short-term peaks and contribute to reductions in long-term, cumulative exposure as well.

Recent updates to the federal annual $PM_{2.5}$ NAAQS and the Air Quality Index (AQI) moderate category emphasize the health importance of reducing daily $PM_{2.5}$ concentrations within the 9 to

35 µg/m³ range. These concentrations are commonly observed across all Bay Area monitoring sites and continue to present a public health concern.

Lowering the curtailment threshold would help reduce emissions on days with both moderate and elevated $PM_{2.5}$ levels, providing health benefits associated with reductions in both short-term and long-term exposures.

B. Regulation 5

Any person seeking to conduct a prescribed burn must submit a smoke management plan and pay the applicable operation fee prior to burn ignition. These fees are established in Regulation 5, Section 411 (Open Burning Operation Fees), which refers to *Regulation 3: Fees*, Schedule V for specific amounts. For prescribed burns conducted under Section 401.15 (Prescribed Burning), the fee is determined based on the proposed acreage of the burn project:

- $796 for projects of 50 acres or less
- $1,079 for projects greater than 50 acres and up to 150 acres
- $1,404 for projects greater than 150 acres

The prescribed burning operation fee is valid for the duration of the project approval period, as determined by the Air District.

Between 2022 and 2024, the Air District received 107 Smoke Management Plans for prescribed burns. Public agencies submitted the majority—approximately 75 percent—while private landowners and nonprofit organizations submitted a combined 18 percent (14 and 12 plans, respectively).

In 2018, the Governor directed state agencies to increase fuel reduction efforts—including prescribed burns, fuels treatment, and forest thinning—and encouraged regulatory agencies to support this statewide priority.[38] This directive was reinforced in 2022 when the California Wildfire and Forest Resilience Task Force released its *Strategic Plan for Expanding the Use of Beneficial Fire*, which aims to broaden the use of prescribed and cultural burning to improve forest and community resilience across the state.[39] On March 1, 2025, under Executive Order N-25-25, Governor Newsom proclaimed a State of Emergency in California because of the increased risk of wildfires statewide, specifically citing that the most-costly wildfires have occurred in the Wildland Urban Interface including recently the January 2025 firestorms in Los Angeles County.[40] The State of Emergency Proclamation was issued in order to expedite fuels reduction projects that protect communities and reduce severe risks of catastrophic wildfire.

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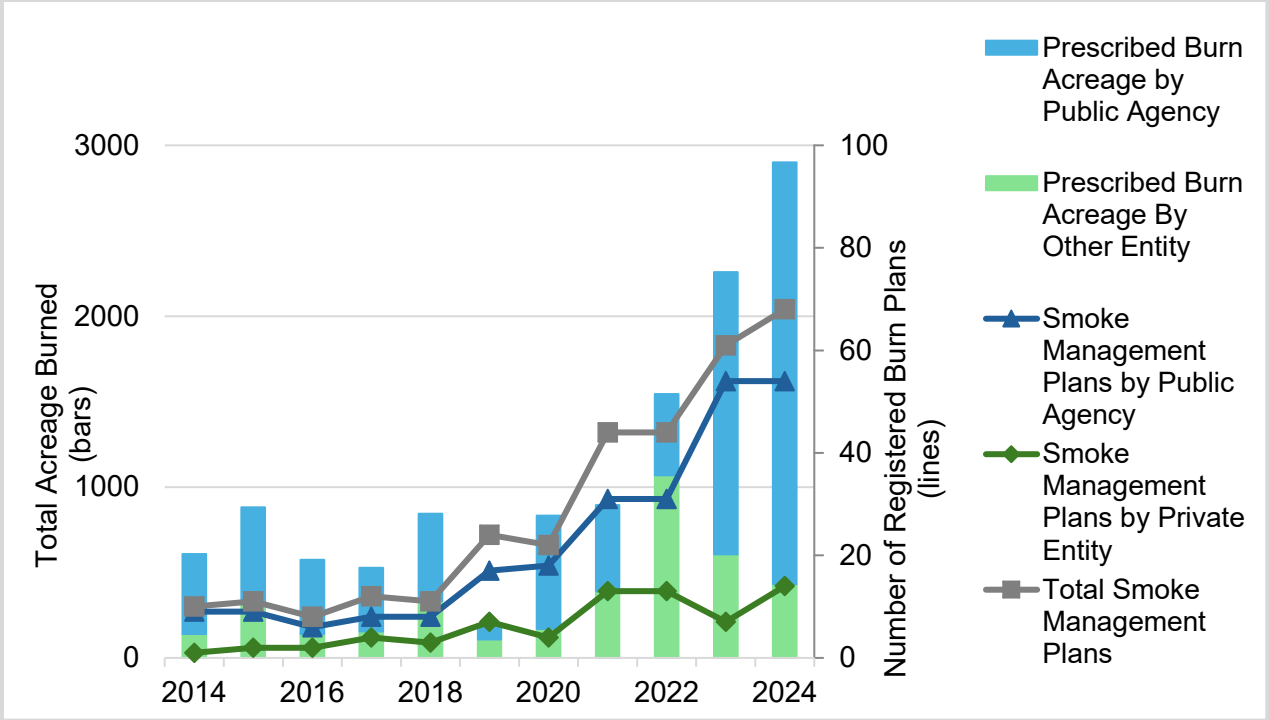
[38] Governor Brown issued Executive Order B-52-18 in May 2018 to improve forest and community resilience to wildfire and other climate impacts. Available at: https://archive.gov.ca.gov/archive/gov39/wp-content/uploads/2018/05/5.10.18-Forest-EO.pdf

[39] California's Strategic Plan for Expanding the Use of Beneficial Fire. March 2022. Available at: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/natural-resource-management/prescribed-fire/california-strategic-plan-for-prescribed-fires.pdf?rev=e39597dc24ac4d6ba5fd3e4fa371cf3a

[40] Executive Department of the State of California. 2025. Executive Order N-25-25, Wildfire Prevention Projects. March 1. Available at: https://www.caloes.ca.gov/wp-content/uploads/Legal-Affairs/Documents/Proclamations/3.1.2025-fast-track-critical-wildfire-prevention-projects-statewide.pdf.

In recent years, the Air District has observed a steady increase in both the number of Smoke Management Plans submitted and the total acreage burned through prescribed burning within the region (Figure 7). Strong collaboration with prescribed burners has supported a notable rise in activity throughout the Bay Area.

Figure 7. Acreage Burned and Smoke Management Plans for Prescribed Burns between 2014 and 2024.



Nonprofit organizations have long advocated for a prescribed burn fee exemption, including during the 2019 amendment to Regulation 5, when the current exemption for public agencies was established. At that time, the Air District committed to evaluating the potential impacts of extending the exemption to nonprofits in the future. These organizations play a key role in supporting wildfire mitigation by conducting prescribed burns in areas where public agency capacity may be limited. The current operational fee can pose a barrier to the flexibility needed to organize prescribed burn projects, particularly smaller-scale burns, where resource constraints and higher costs per acre can limit participation. Removing this fee is intended to reduce these barriers and enhance the ability of nonprofit and private partners to contribute to statewide fire management goals.

The proposed fee exemption for all prescribed burning is not expected to affect ignition authorizations or daily acreage allocations. These allocations are determined by forecasted atmospheric conditions, particularly wind patterns and vertical mixing. On days with favorable dispersion conditions, such as strong vertical mixing, full acreage allocations may be granted, while allocations may be reduced when conditions are only acceptable or marginal. From 2014 to 2024, approximately 67 percent of days were classified as permissive burn days. With continued coordination and careful planning, prescribed burning is expected to remain a viable and effective tool for wildfire mitigation in the Bay Area.

IV. PROPOSED RULE AMENDMENTS

Air District staff is presenting proposed amendments to Rule 6-3 and Regulation 5 in this Staff Report to achieve two distinct goals: (1) reducing woodsmoke exposure to support public health and (2) supporting wildfire risk mitigation efforts to reduce the threat of catastrophic wildfires and associated unhealthy exposure to woodsmoke. These proposed amendments include, for Rule 6-3, lowering the Mandatory Burn Ban threshold from 35 to 25 µg/m^3 and for Regulation 5, waiving fees for all persons conducting prescribed burns, expanding the existing exemption for public agencies. Additionally, staff proposes minor clarifications to Regulation 5 to improve implementation and the process for notification of burns for fire training. The details of these amendments are discussed below.

A. Proposed Amendments to Rule 6-3

Proposed amendments to Rule 6-3 are included in this report as Appendix A. The key changes are summarized below.

1. Mandatory Burn Ban (Rule 6-3, Section 211 and Section 301)

Currently, Rule 6-3 defines "Mandatory Burn Ban" as any period during which the Air District forecasts that air quality in the Bay Area will be unhealthy due to ambient levels of fine particulate matter exceeding 35 µg/m^3 averaged over a 24-hour period and burning wood or any solid fuels is illegal in the Bay Area. The definition also specifies that a Mandatory Burn Ban is announced through a Spare the Air Alert.

Air District staff proposes to amend Rule 6-3 by: 1) moving the Mandatory Burn Ban $PM_{2.5}$ concentration threshold from Section 6-3-211 to Section 6-3-301; 2) removing the term "unhealthy" from the definition of Mandatory Burn Ban in Section 6-3-211; and 3) lowering the Mandatory Burn Ban threshold in Section 6-3-301 from 35 µg/m^3 to 25 µg/m^3.

6-3-211 **Mandatory Burn Ban:** Any period so declared to the public by the APCO during which ~~the air quality is forecast by the District to be unhealthy due to ambient levels of particulate matter exceeding 35 µg/m^3 and~~ burning wood or any solid fuels is illegal within District boundaries ~~in the Bay Area~~. A Mandatory Burn Ban is announced through a Spare the Air Alert.

6-3-301 **Burning Prohibited During Mandatory Burn Ban:** No person shall operate or combust wood or solid-fuel products in any wood-burning device during a Mandatory Burn Ban. A Mandatory Burn Ban is so declared by the APCO when forecasted ambient 24-hour average $PM_{2.5}$ concentration is expected to exceed 25 µg/m^3 for any area within District boundaries.

2. Administrative Emissions Rating Updates (Rule 6-3, Section 302 and Section 404.1)

Section 6-3-302 establishes requirements for wood heater manufacturers and retailers selling, supplying, or installing wood-burning devices within Air District boundaries. Sections 6-3-302.1 through 6-3-302.3 specify the applicable emissions rating requirements that have previously been updated to reflect U.S. EPA's adoption of more stringent standards. To streamline future implementation, staff proposes revising Section 6-3-302 to reference the most current emissions

standards in Title 40, Code of Federal Regulations, Part 60, Subpart AAA and remove references to specific emissions ratings. This change would eliminate the need for future rule amendments each time the EPA updates its emissions standards.

6-3-302 **Requirements for Wood Heater Manufacturers and Retailers:** No manufacturer or retailer shall advertise, sell, offer for sale or resale, supply, install or transfer a new or used wood-burning device intended for use within District boundaries unless the device meets or exceeds the applicable requirements ~~of~~ in Title 40 Code of Federal Regulations, Part 60, Subpart AAA.~~, which are as follows:~~

~~**302.1** Effective May 15, 2015, any wood heater that is manufactured must be certified to meet the 4.5 g/hr emissions rating specified in 40 C.F.R. § 60.532(a).~~

~~**302.2** Effective December 31, 2015, any wood heater that is sold at retail must be certified to meet the emissions rating of 4.5 g/hr as specified in 40 C.F.R. § 60.532(a).~~

~~**302.3** Effective May 15, 2020, any wood heater that is manufactured or sold at retail must meet an emissions rating of 2.5 g/hr if crib tested, or 2.0 g/hr if cordwood tested, as specified in 40 C.F.R. § 60.532(b) and (c).~~

Section 6-3-404 sets eligibility for registration of EPA-Certified wood heaters seeking to claim the sole source of heat exemption in Section 6-3-110. Staff proposes updating the performance emission standard of 7.5 g/hr in Section 6-3-404.1 to meet the performance and emission standards set forth in Title 40 Code of Federal Regulations, Part 60, Subpart AAA in effect at the time of registration of the EPA-Certified wood heater.

6-3-404 **Registration of EPA Certified Wood Heaters:** Effective November 1, 2016, any person seeking to claim the exemption provided in Section 6-3-110 must have previously registered their EPA certified wood heater in the District's registration program and must maintain documentation that the device is operated according to manufacturer's specifications. The following wood heaters are eligible to be registered:

404.1 Wood heaters that are EPA Certified to meet performance and emission standards set forth in Title 40 Code of Federal Regulations (CFR), Part 60, Subpart AAA in effect at the time of registration ~~of 7.5 g/hr or less~~.

404.2 A pellet-fueled wood heater exempt from EPA certification requirements pursuant to the requirements in Title 40 Code of Federal Regulations (CFR), Part 60, Subpart AAA at time of purchase or installation.

3. Removal of Obsolete Effective Dates (Rule 6-3, Sections 110, 111, 303, 304, 305, 306, 307, 308, and 404)

Several provisions in Rule 6-3 include effective dates that were established as part of the 2015 amendments. These dates applied to updates such as revisions to the Sole Source of Heat exemption and requirements related to the sale, resale, transfer, or installation of wood-burning devices. Additional provisions adopted in 2015 included exemptions for non-functional heaters, disclosure requirements for real property transactions, heating standards for rental properties, and requirements for new building construction and fireplace or chimney remodeling. As all relevant effective dates have now passed, the proposed amendments would remove these obsolete references to improve clarity and streamline rule language.

6-3-110 **Limited Exemption, Sole Source of Heat:** ~~Until October 31, 2016, the requirements of Section 6-3-301 shall not apply to any person whose sole source of heat is a wood-burning device.~~

~~**110.1** Effective November 1, 2016, t~~The requirements of Section 6-3-301 shall not apply to any person whose sole source of heat is an EPA certified wood-burning device that is

registered with the District per the requirements of Sections 6-3-404 and 405 and who does not have available to them a permanently-installed natural gas, propane or electric heating device. Qualification for exemption is subject to verification.

110.21 ~~Effective November 1, 2018, r~~Rental properties subject to Section 6-3-305 located in areas with natural gas service do not ~~longer~~ qualify for exemption in Section 6-3-110.1.

6-3-111 **Limited Exemption, Non-functional, Permanently Installed Heater**: ~~Effective November 1, 2015, t~~The requirement of Section 6-3-301 shall not apply to any person whose only non-wood-burning, permanently-installed source of heat is non-functional and requires repair to resume operation. A dwelling may qualify for a 30-day exemption if there is no alternate form of heat and the non-functional heater is repaired to resume function within 30 days. Qualification for this exemption is subject to verification and must be supported by documentation of repair, which must be submitted to the District within 10 days of a receipt of a request for such records.

6-3-303 **Sale, Resale, Transfer or Installation of Wood-Burning Devices**: ~~Effective December 1, 2015, n~~No person shall advertise, sell, offer for sale or resale, supply, install or transfer a new or used wood-burning device intended for use within District boundaries unless the device meets or exceeds the applicable requirements ~~of~~ in Title 40 Code of Federal Regulations, Part 60, Subpart AAA. This requirement does not apply if a wood-burning device is an installed fixture included in the sale or transfer of any real property.

6-3-304 **Disclosure Requirements for Real Property:** ~~Effective June 1, 2016, a~~Any person selling, renting or leasing real property shall provide sale or rental disclosure documents that describe the health hazards of $PM_{2.5}$ from burning wood or any solid fuel as a source of heat. Disclosure documents must disclose $PM_{2.5}$ health hazards in accordance with guidance made available on the District's website.

6-3-305 **Requirements for Rental Properties:** ~~Effective November 1, 2018, a~~All real property offered for lease or rent in areas with natural gas service shall have a permanently-installed form of heat that does not burn solid fuel.

6-3-306 **Requirements for New Building Construction:** ~~Effective November 1, 2016, n~~No person or builder shall install a wood-burning device in a new building construction.

6-3-307 **Requirements for Remodeling a Fireplace or Chimney:** ~~Effective November 1, 2016, n~~No person shall remodel a fireplace or chimney unless a gas-fueled, electric, or EPA certified device is installed that meets applicable requirements in Title 40 Code of Federal Regulations, Part 60, Subpart AAA. This requirement is triggered by a fireplace or chimney remodel where a total cost exceeds $15,000 and requires a local building permit. The total cost excludes the cost of a building permit.

6-3-308 **Visible Emissions Limitation:** ~~Effective November 1, 2015, n~~No person shall cause or allow a visible emission from any wood-burning device in any building or structure that exceeds No. 1 on the Ringelmann Chart or 20 percent opacity for a period or periods aggregating more than 3 minutes in any hour. Visible emissions from the startup of a new fire shall not be subject to this provision for a period not to exceed twenty consecutive minutes, and not more than once in any ~~consecutive~~ four-hour period ~~are not subject to this provision~~.

6-3-404 **Registration of EPA Certified Wood Heaters:** ~~Effective November 1, 2016, a~~Any person seeking to claim the exemption provided in Section 6-3-110 must have previously registered their EPA certified wood heater in the District's registration program and must maintain documentation that the device is operated according to manufacturer's specifications. The following wood heaters are eligible to be registered:

4. Applicability (Rule 6-3, Section 102)

Section 6-3-102 is proposed to clarify the applicability of Rule 6-3. This section specifies that the rule applies to:

- Any person who owns or operates a wood-burning device within the Air District, as defined in Section 6-3-229;
- Wood heater manufacturers and retailers;
- Any person who advertises, sells, offers for sale or resale, supplies, installs, or transfers a new or used wood-burning device;
- Any person selling, renting, or leasing real property;
- Any person or builder constructing new buildings; and
- Any person who sells, offers for sale, or supplies any wood intended for use in a wood-burning device.

This addition is intended to improve clarity regarding the scope of the rule and whom it regulates.

6-3-102 Applicability: This Rule applies to:

- **102.1** Any person who owns or operates any wood-burning device for use within the District as defined in Section 6-3-229,
- **102.2** Wood heater manufacturers and retailers,
- **102.3** Any person who advertises, sells, offers for sale or resale, supplies, installs or transfers a new or used wood-burning device,
- **102.4** Any person selling, renting or leasing real property,
- **102.5** Any person or builder building new construction, or
- **102.6** Any person who sells, offers for sale, or supplies any wood intended for use in a wood-burning device.

5. Clean-up of Definitions (Rule 6-3, Section 200)

Staff proposes revisions to streamline and improve consistency in the definitions section of Rule 6-3. Two unused definitions—"Uncertified Wood Heater" and "Visible Emissions"—are proposed for removal. Several existing definitions have been revised to align with terms defined in *Regulation 6: Particulate Matter – Common Definitions and Test Methods*. These include "Particulate Matter (PM)", "$PM_{2.5}$", and "Ringelmann Chart", which have been edited for consistency and now reference their definitions in Regulation 6. As a result of these changes, subsequent definitions in Section 200 have been renumbered accordingly.

6-3-216 Particulate Matter (PM): As defined in Regulation 6, Section 206 – Any material that is emitted as liquid or solid particles, or as gaseous material that becomes liquid or solid particles at the testing temperatures specified in the source test method~~,~~; excluding uncombined water vapor, water mist or steam.

6-3-217 $PM_{2.5}$: ~~$PM_{2.5}$ has an aerodynamic diameter equal to or less than 2.5 microns.~~ As defined in Regulation 6, Section 206.3 – Particulate matter with an aerodynamic diameter equal to 2.5 microns or less, including both filterable solid or liquid particles with a diameter of 2.5 microns or less, and gaseous emissions that condense to form such particles at ambient temperatures. These liquid and/or solid particles are identified using EPA Test Method 201A and 202. If necessary, alternate approved test methods may be used as described in Regulation 2-1-603.

6-3-221 Ringelmann Chart: ~~A numerical ranking system whereby graduated shades of gray varying by five equal steps between white and black are visually compared to the density of smoke.~~

~~The chart, as distributed by the United States Bureau of Mines, provides the graduated shades 1, 2, 3, 4 and 5, which are known as Ringelmann No. 1, 2, 3, 4 and 5, respectively. The system is used in determining whether emissions of smoke are within limits or standards of opacity.~~ As defined in Regulation 6, Section 207 – The chart used to measure opacity published by the United States Bureau of Mines.

~~**6-3-226 Uncertified Wood Heater:** A wood heater that is not certified by the U.S. EPA to meet requirements in Title 40 Code of Federal Regulations, Part 60, Subpart AAA.~~

~~**6-3-227 Visible Emissions:** Emissions which are visually perceived by an observer. Restrictions on visible emissions in District regulations are expressed as numbers on the Ringelmann Chart, as published by the United States Bureau of Mines.~~

6-3-228~~6~~ **Wood Heater:** An enclosed wood-burning device capable of and intended for space heating such as a~~.~~ wood stove, pellet-fueled wood heater, or wood-burning fireplace insert. [Formerly Section 6-3-228]

6-3-229~~7~~ **Wood-burning Device:** Any wood heater, fireplace, or any indoor permanently installed device used to burn any solid fuel for space-heating or aesthetic purposes. [Formerly Section 6-3-229]

6. Visible Emissions Limitation (Rule 6-3, Section 308)

Staff proposes revisions to the visible emissions limitation standard to improve clarity. Section 6-3-308 includes an exception for visible emissions that occur during the startup of a new fire. The proposed amendments clarify the language to better reflect the intent of this provision and ensure consistent interpretation.

6-3-308 **Visible Emissions Limitation:** ~~Effective November 1, 2015, n~~No person shall cause or allow a visible emission from any wood-burning device in any building or structure that exceeds No. 1 on the Ringelmann Chart or 20 percent opacity for a period or periods aggregating more than 3 minutes in any hour. Visible emissions from the startup of a new fire shall not be subject to this provision for a period not to exceed twenty consecutive minutes, and not more than once in any ~~consecutive~~ four-hour period ~~are not subject to this provision~~.

B. Proposed Amendments to Regulation 5

Proposed amendments to Regulation 5 are included in this report as Appendix B. The key changes are summarized below.

1. Prescribed Burning Limited Exemption (Reg 5, Section 113 and Section 401.15)

Currently, Regulation 5 includes a limited exemption in Section 5-113 that waives operational fees for prescribed burns conducted by public agencies for the purpose of wildfire prevention, subject to Air District approval. The proposed amendment would expand this exemption to apply to all prescribed burns, regardless of the person performing the burn. To improve clarity, the exemption would be renamed from “Wildfire Prevention” to “Prescribed Burning” and would reference the definition of “Prescribed Burning” provided in Section 5-219. Additionally, the requirement about requesting the exemption would be removed, as it does not reflect current implementation practices of submittal of smoke management plans. For consistency with the expanded

exemption, a reference to prescribed burning by a public agency in Section 5-401.15 would also be removed.

5-113 **Limited Exemption, ~~Public Agency Wildfire Prevention~~ Prescribed Burning:** Any ~~public agency~~ person conducting a prescribed burn as defined in Section 5-219 ~~for the purpose of wildfire prevention~~, pursuant to a smoke management plan approved by the APCO, is exempt from the operation fees requirement of Section 5-411. ~~A public agency seeking to rely on this exemption shall request that it be applicable upon submittal of the smoke management plan required by Section 5-401.15.~~

5-401 **Allowable Fires:** The following fires may be allowed on permissive burn days:

401.15 Wildland Vegetation Management (Prescribed Burning): The planned, controlled application of fire to vegetation to achieve a specific natural resource management objective(s) on land areas selected in advance of that application. ~~Prescribed burning by a public agency, or through a cooperative agreement or contract involving a public agency.~~ Any prescribed burning shall comply with the requirements of Section 5-408 and receive written approval of the smoke management plan by the APCO prior to any burn and comply with the smoke management plan during the burn. Prescribed burns are permissible year-round. Fires may only be conducted on a permissive burn day.

2. Fire Training (Reg 5, Section 401.7)

To reduce barriers to the instruction of firefighting methods, Air District staff proposes reducing advance notice requirements for fire training burns. For burns conducted on non-permissive burn days, the required notice would be shortened from two weeks to three working days. Similarly, for burns conducted outside of designated burn hours, notice would be reduced from seven calendar days to three working days.

5-401 **Allowable Fires:** The following fires may be allowed on permissive burn days:

401.7 Fire Training: Fires set for the exclusive purpose of instruction of either public or industrial employees in fire fighting methods. The fire must be set or allowed by the public fire official having jurisdiction, in the performance of official duty, and must be, in the opinion of the public fire official~~his opinion~~, necessary. Notwithstanding contrary provisions of Section 5-111, a fire fighting agency may set one fire per quarter calendar year for the purpose of training volunteer or seasonal fire fighters. This may be done on a day other than a permissive burn day if the APCO is notified in writing ~~or facsimile~~ at least three working days~~two weeks~~ in advance. Fires may be conducted outside of the burn hour limits in subsections 5-111.1 and 111.2 if the APCO is notified in writing ~~or facsimile~~ at least three~~seven~~ working~~calendar~~ days in advance. Prior reporting pursuant to Section 5-406 must also be made to the APCO for other fire training by the person setting the fire.

3. Definitions (Reg 5, Section 200)

To improve clarity and readability, Air District staff proposes to reorganize the definitions in Section 5-200 into alphabetical order. In addition, the following definitions were added for clarity:

- **Calendar Day**: “Consecutive days that include every day on the calendar, including weekends and holidays.”
- **Liquified Petroleum Gas (LPG):** “A compressed fuel gas composed of one or more of the following flammable hydrocarbons: propane, n-butane, isobutane, propylene, and butylenes.”

- **Open Burning**: "The ignition and combustion of any material in an outdoor environment where the products of combustion are emitted directly into the atmosphere."
- **Person:** "As defined in Regulation 1, Section 221 – Any natural person, corporation, government agency, public officer, association, joint venture, partnership or any combination of such or such entities as are included in Section 39047, California Health and Safety Code."
- **Working Day: "**Any day the Air District is open for business. The Air District operates Monday through Friday, excluding weekends and holidays."

Any definitions in Regulation 5 that are also defined in *Regulation 1: General Provisions & Definitions* have been clarified by referencing Regulation 1 at the beginning of the definition.

Due to the length of the revised Definitions section and the extent of reordering and formatting updates, the full proposed amendments are not reproduced here. Please refer to Appendix B for the complete rule language.

The definition of "Mandatory Burn Ban" in Regulation 5 has been revised to align with the corresponding definition in Rule 6-3. Additionally, a reference to the Rule 6-3 definition has been added to the Mandatory Burn Ban for Recreational Fires provision in Section 5-302.

5-223 ~~**Mandatory Burn Ban:** Any period so declared to the public by the APCO when negative impact upon public health is anticipated from burning, as defined in Regulation 6, Rule 3: Wood-Burning Devices, Section 6-3-211.~~

5-214 **Mandatory Burn Ban:** Any period so declared to the public by the APCO during which burning wood or any solid fuels is illegal within District boundaries, as defined in Regulation 6, Rule 3: Wood-Burning Devices, Section 6-3-211. [Formerly Section 5-223]

5-302 **Mandatory Burn Ban for Recreational Fires:** No person shall ignite, cause to be ignited, permit to be ignited, or suffer, allow, or maintain any recreational fires during M~~m~~andatory B~~b~~urn B~~b~~an periods, as defined in Regulation 6, Rule 3: Wood-Burning Devices, Section 6-3-301.

4. Prior Open Burn Notification (Reg 5, Section 406)

Currently, Section 5-406, titled "Prior District Notification," outlines the notification requirements for certain allowable fire types that must use the Open Burn Notification Form available on the Air District's website. Other allowable fire types may satisfy notification requirements through the submittal of a Smoke Management Plan or other forms of notification, such as burn petitions. To improve clarity and align with terminology commonly used in implementation, the proposed amendments would rename Section 5-406 to "Prior Open Burn Notification." This change is intended to reduce confusion and make clear that these fire types are subject to the prior notification requirements through the Open Burn Notification Form on the Air District's website.

5-406 **Prior ~~District~~ Open Burn Notification; Disease and Pest, Crop Replacement, Orchard Pruning and Attrition, Double Cropping Stubble, Forest Management, Flood Debris, Fire Training, Flood Control, Irrigation Ditches, Range Management, Hazardous Material, and Contraband:** The person setting the fire shall provide electronic, typewritten, legibly handwritten, or computer printed notification to the District prior to the burn on a District-approved form ~~or facsimile thereof~~…

5-411 **Open Burning Operation Fees:** The Open Burning Operation Fees contained in Regulation 3, Schedule V shall be paid prior to burning by any person subject to the requirements of (1) Section 5-406 Prior ~~District~~ Open Burn Notification; (2) Section 5-401.13 Marsh Management; (3) Section 5-401.15 Wildland Vegetation Management (Prescribed Burning); (4) Section 5-401.16 Filmmaking or Section 5-401.17 Public Exhibition; or (5) the acreage burning allocation pursuant to Section 5-401.5 Stubble.

5. Wildland Vegetation Management (Prescribed Burning) Burn Requirements (Reg 5, Section 401.1)

Section 5-408.1i currently requires that a submitted smoke management plan include certification by a qualified resource ecologist, biologist, or forester confirming that the proposed burning is necessary to meet specific management objectives. The proposed amendment removes the reference to those specific professions to broaden eligibility and better reflect the range of qualified professionals who conduct prescribed burns. This change ensures that the rule remains inclusive of current practices.

5-408 **Wildland Vegetation Management (Prescribed Burning) Burn Requirements:** Any person who seeks to conduct or conducts prescribed burning subject to subsection 5-401.15 shall comply with the following requirements:

408.1 Submit a smoke management plan to the APCO for review at least 30 calendar days prior to the proposed burning that is consistent with the most current USEPA guidance on wildland and prescribed fires (*Interim Air Quality Policy on Wildland and Prescribed Fires*, USEPA 1998, or any subsequent document that supersedes this document), and provides the following information:

a. location and specific objectives of each proposed burn;
b. acreage, tonnage, type, and arrangement of vegetation to be burned;
c. directions and distances to nearby sensitive receptor areas;
d. fuel condition, combustion and meteorological prescription elements for the project;
e. projected burn schedule and expected duration of project ignition, combustion, and burn down (hours or days);
f. specifications for monitoring and of verifying critical parameters including meteorological conditions and smoke behavior before and during the burn;
g. specifications for disseminating project information to public;
h. contingency actions that will be taken during the burn to reduce exposure if smoke intrusions impact any sensitive receptor area;
i. certification by a qualified professional ~~resource ecologist, biologist, or forester~~ that the proposed burning is necessary to achieve the specific management objective(s) of the plan;

6. Applicability (Reg 5, Section 102)

Section 5-102 is proposed to clarify the applicability of Regulation 5. This section states that the regulation applies to any person who ignites, causes to be ignited, permits to be ignited, or otherwise allows or maintains any open burning within the District. This addition is intended to improve clarity regarding the individuals and activities subject to the regulation.

5-102 **Applicability:** This Regulation applies to any person igniting, causing to be ignited, permitting to be ignited, or suffering, allowing, or maintaining any open burning fires within the District.

V. EMISSIONS REDUCTIONS

This section discusses the estimated changes in emissions due to the proposed amendments.

A. Rule 6-3

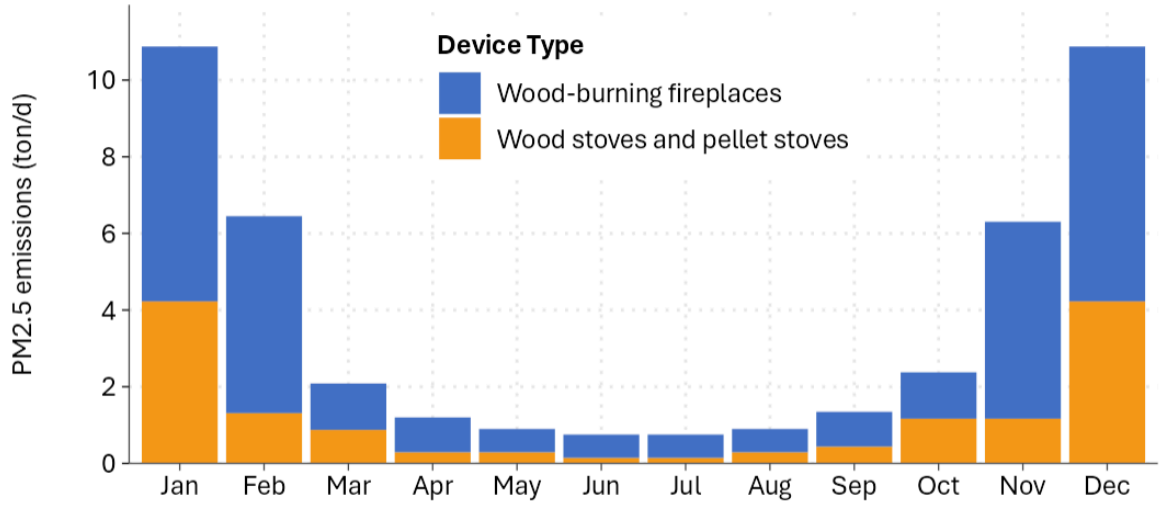
The following section describes the emissions and expected emission reductions associated with the proposed amendments to Rule 6-3.

1. Emissions Context

As detailed in the Technical Review section above, staff estimates that residential wood-burning devices in the Bay Area directly emit approximately 1,360 tons of $PM_{2.5}$ annually, or an average of 3.7 tons per day. These emissions account for 14 percent of the Bay Area's total direct $PM_{2.5}$ emissions from anthropogenic (human-caused) sources (Figure 3).

Emissions from residential wood burning vary significantly by season. In colder months, particularly December and January, average daily emissions may reach up to 11 tons of $PM_{2.5}$ per day (Figure 8). During these peak colder months, wood-burning emissions may account for nearly one-third of total fine particulate matter emissions in the region.

Figure 8. Modeled monthly distribution of wood-burning emissions in the Bay Area.



2. Emissions Reductions

Estimated emissions reductions associated with the proposed amendments to Rule 6-3 are based on the following methodology:

1. Estimate the annual additional number of burn curtailment days resulting from the proposed reduction in the curtailment threshold to 25 µg/m³ using historical data.
2. Allocate the estimated annual increase in curtailment days across months.

3. Calculate potential monthly $PM_{2.5}$ emissions reductions by multiplying the number of additional curtailment days per month by the corresponding monthly average daily emission rate.
4. Derive annual average emissions reductions from the total monthly reductions and calculate average winter daily reductions using November through February data.

Table 5 presents the estimated increase in wood-burning curtailment days under the proposed curtailment threshold of 25 µg/m³. The estimates are based on historical data, calculated by identifying the number of days in past years when any air monitoring site recorded $PM_{2.5}$ concentrations above the proposed threshold and comparing that total to the number of Spare the Air Alerts issued under the current threshold. To account for uncertainty in air quality forecasts and the variability of meteorological conditions that influence curtailment decisions, staff estimated a range of potential curtailment days based on modeled forecast scenarios that could trigger a burn ban.

Table 55. The first two columns show the number of particulate matter Spare the Air Alerts per year in the last five years at current and proposed curtailment thresholds. The proposed threshold presents a range to account for air quality forecast uncertainty and conservative assumptions about when $PM_{2.5}$ concentrations may exceed the curtailment threshold. The last column shows the range in the number of estimated additional curtailment days for the proposed threshold.[41]

	Number of Spare the Air Alerts Using:		Estimated Additional Curtailment Days for the Proposed Threshold (25 µg/m³)
Year	Current Threshold (35 µg/m³)	Proposed Threshold (25 µg/m³)	
2020	46	46 – 69	0 – 23
2021	5	14 – 43	9 – 38
2022	8	18 – 45	10 – 37
2023	8	11 – 23	3 – 15
2024	6	7 – 23	1 – 17
Average*	**15**	**19 – 41**	**5 – 26**

**Rounded to the nearest day*

Based on $PM_{2.5}$ data from 2020 to 2024, lowering the curtailment threshold from 35 to 25 µg/m³ would lead to an estimated 5 to 26 additional curtailment days per year—an increase of approximately 1.3 to 2.8 times the current average—bringing the expected total to 19 to 41 curtailment days annually. The range reflects uncertainty in air quality forecasts and variability in

[41] The range of potential additional curtailment days and corresponding emissions reductions presented in this report is based on a lower-bound estimate using the proposed 24-hour average $PM_{2.5}$ threshold of 25 µg/m³ and an upper-bound estimate using a more conservative threshold of 20 µg/m³. This range reflects uncertainty in air quality forecasts and the variability of meteorological conditions that influence curtailment decisions.

meteorological conditions, not all of which are predictable at the time curtailment decisions are made. These estimates include 2020, a year with unusually high $PM_{2.5}$ levels due to widespread wildfire smoke, meaning the estimates may be biased from more common conditions. The estimates reflect all elevated $PM_{2.5}$ days throughout the year, including those influenced by wildfires and other sources outside the Air District's jurisdiction.

When using the less conservative lower-bound estimate, all additional curtailment days are projected to occur during the winter months. Under the more conservative upper-bound estimate, approximately 64 percent of additional curtailment days are expected to occur in winter. This highlights the influence of wildfire smoke and other PM sources during non-winter months, particularly at lower $PM_{2.5}$ levels. Nonetheless, across the entire estimated range, most additional curtailment days are concentrated in winter.

Non-wildfire high $PM_{2.5}$ days typically occur during the winter, when atmospheric conditions trap pollution near the ground and the relative contribution of residential wood burning to total $PM_{2.5}$ levels is highest. This trend is illustrated in Figure 1, where all non-wildfire days among the top 30 highest daily (24-hour) $PM_{2.5}$ concentrations at Air District monitoring sites between 2020 and 2024 occurred during winter months.

If residential wood burning were entirely curtailed on these additional days, staff estimates potential $PM_{2.5}$ emission reductions of 43 to 155 tons per year, and 0.36 to 1.19 tons per winter day. These figures represent maximum potential reductions and do not account for rule non-compliance. Survey data suggest that winter Spare the Air Alerts reach roughly 50 percent of wood-burning households, which may serve as an upper bound for actual rule effectiveness.

B. Regulation 5

In 2018, the Governor directed state agencies to expand the number of fuel reduction projects—such as prescribed burns, fuels treatment, and forest thinning—and encouraged regulatory agencies to support this statewide priority.[42] This directive was reinforced by the California Wildfire and Forest Resilience Task Force, a collaborative body of federal, state, and local agencies, tribes, tribal entities, and nongovernmental organizations. The Task Force issued a *Strategic Plan for Expanding the Use of Beneficial Fire,* which promotes the broader use of prescribed fire and cultural burning to strengthen forest and community resilience—efforts that are critical to effective forest management and wildfire risk reduction.[43]

On March 1, 2025, Governor Newsom issued Executive Order N-25-25, proclaiming a State of Emergency in response to the increasing risk of catastrophic wildfires across California. The proclamation specifically cited that the state's most damaging and costly wildfires have occurred

[42] Governor Brown issued Executive Order B-52-18 in May 2018 to improve forest and community resilience to wildfire and other climate impacts. Available at: https://archive.gov.ca.gov/archive/gov39/wp-content/uploads/2018/05/5.10.18-Forest-EO.pdf

[43] California's Strategic Plan for Expanding the Use of Beneficial Fire. March 2022. Available at: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/natural-resource-management/prescribed-fire/california-strategic-plan-for-prescribed-fires.pdf?rev=e39597dc24ac4d6ba5fd3e4fa371cf3a

in the wildland-urban interface, including the January 2025 firestorms in Los Angeles County.[44] The emergency declaration is intended to accelerate fuels reduction projects that protect communities and mitigate the growing threat of severe wildfires.

The Air District has observed an increase in the number of submitted Smoke Management Plans and the total acreage burned in the region in recent years (see Figure 7 in the Technical Review section). This trend is expected to continue as fuel reduction efforts expand across California. While the proposed amendment to extend the prescribed burning operation fee exemption to all entities conducting prescribed burns may improve access and streamline implementation, it is not expected to increase the number of prescribed burns or directly affect $PM_{2.5}$ emissions. Based on discussions with Bay Area stakeholders involved in prescribed burning, the Air District expects the volume of prescribed burns to rise regardless of the proposed fee exemption.

Prescribed burning is one of the 17 allowable fire types, and accounts for only a small fraction of the total $PM_{2.5}$ emissions from open burning. While controlled burns do emit $PM_{2.5}$, they are conducted under carefully managed conditions and can reduce the long-term risk of severe wildfire smoke events by lowering available fuel loads. However, emissions reductions from avoided wildfires are difficult to quantify due to the unpredictable nature of wildfires and the lack of a clear emissions baseline for comparison.

VI. ECONOMIC IMPACTS

This section discusses the estimated costs and economic impacts associated with the proposed amendments.

A. Cost Effectiveness and Incremental Cost Effectiveness

Cost-effectiveness refers to an evaluation of the relative cost of compliance compared to the expected benefits of a proposed regulatory change, such as emissions reductions. For the proposed amendments to Rule 6-3, the anticipated increase in burn curtailment days is expected to result in minimal cost impacts to affected households. Cost-effective alternatives to wood burning—such as natural gas or electric heating—are widely available and more effective for heating, and existing exemptions for households that rely on wood-burning devices as their sole source of heat would remain unchanged. No additional cost impacts are anticipated for the general public, as most residential wood burning is conducted for recreational or aesthetic purposes and not for heating needs.

A cost-effectiveness analysis was not conducted for the proposed Regulation 5 amendment, as the amendment would remove an existing fee rather than impose new compliance requirements.

Section 40920.6 of the California Health and Safety Code requires an air district to perform an incremental cost analysis for a proposed rule, if the purpose of the rule is to meet the requirement for best available retrofit control technology or for a feasible measure. The proposed amendments

[44] Executive Department of the State of California. 2025. Executive Order N-25-25, Wildfire Prevention Projects. March 1. Available at: https://www.caloes.ca.gov/wp-content/uploads/Legal-Affairs/Documents/Proclamations/3.1.2025-fast-track-critical-wildfire-prevention-projects-statewide.pdf.

are not best available retrofit control technology requirements, nor are they a feasible measure required under the California Clean Air Act; therefore, an incremental cost analysis is not required.

B. Socioeconomic Impacts

Section 40728.5 of the California Health and Safety Code requires an air district to assess the socioeconomic impacts of the adoption, amendment, or repeal of a rule if the rule is one that "will significantly affect air quality or emissions limitations." Eastern Research Group, Inc. has conducted a separate socioeconomic analysis of the proposed amendments to Rule 6-3 and Reg 5.

The proposed amendments to Rule 6-3 would increase the number of burn curtailment days and could have economic implications for certain households and businesses. The socioeconomic analysis conducted by Eastern Research Group, Inc. concluded that the amendments are not expected to result in significant impacts to the Bay Area economy overall. Potential compliance costs to households are not significant—estimated at less than 0.1 percent of household income, even when assuming income levels in the lowest regional quintile.

Among businesses, only firewood suppliers have the potential to experience notable impacts. While many retailers sell firewood or manufactured logs as a small portion of their business, ERG identified dedicated firewood suppliers—typically small businesses—as the most affected. These businesses could see a reduction in annual revenue of approximately 2 to 7 percent. However, actual impacts may vary depending on the nature of the business. Part-time or seasonal operations, or those associated with other services (e.g., tree care), may be less affected than businesses relying on firewood sales as a primary source of income. The full analysis report is included as Appendix C.

The proposed amendments to Regulation 5 remove an operation fee. The socioeconomic analysis of Reg 5 concluded that there is no significant impact on affected entities, small businesses, or the regional economy from the proposed amendments. The full analysis report is included as Appendix D.

C. Air District Impacts

This section outlines the anticipated impacts to Air District operations and resources resulting from the proposed amendments to Rule 6-3 and Regulation 5.

1. Rule 6-3

The proposed amendments to Rule 6-3 are expected to require expanded public outreach to effectively communicate changes to the Rule and to the Spare the Air program. An increase in the number of Spare the Air Alerts will increase operational and staffing costs. The Air District anticipates the need for increased budget allocations to support additional public notifications, including contract amendments and expanded media efforts. Estimated costs for public notification contracts range from $25,000 to $50,000. Additional budget considerations include overtime pay for after-hours and weekend staffing to support increased outreach activities.

Air District forecasting staff will update air quality forecasting methods to reflect the revised $PM_{2.5}$ threshold for Mandatory Burn Bans. While existing tools allow for immediate implementation upon

adoption of the proposed amendments, staff anticipate allocating approximately two months of full-time equivalent (FTE) effort to enhance forecasting models and operational protocols for long-term use. More frequent burn bans will also require additional staff resources to support forecast interpretation and interdepartmental coordination.

An increase in Spare the Air Alerts will lead to more frequent deployment of enforcement staff for woodsmoke patrols. While these additional deployments will require operational flexibility, no significant enforcement challenges are anticipated. Existing program staff has the capacity to prioritize their efforts to implement the proposed changes, and the Air District does not expect to hire additional personnel to support Rule 6-3 amendments.

2. Regulation 5

The proposed expanded fee exemption for prescribed burn projects is not expected to significantly affect program revenue, as fees collected from currently non-exempt entities account for only about 20 percent of total potential revenue and cover approximately 4 percent of the Air District's program implementation costs. This amendment aligns with state priorities to promote beneficial fire practices for wildfire prevention and land management by reducing financial and administrative barriers.

Implementation of the proposed amendments to Regulation 5 will be managed by existing staff. No additional hiring is anticipated.

VII. REGULATORY IMPACTS

Section 40727.2 of the California Health and Safety Code requires an air district, in adopting, amending, or repealing an air district regulation, to identify existing federal and district air pollution control requirements for the equipment or source type affected by the proposed change in district rules. The district must then note any differences between these existing requirements and the requirements imposed by the proposed change. Adoption of these rule amendments do not conflict with any existing federal or Air District requirements.

VIII. CEQA REQUIREMENTS

CEQA (Public Resources Code section 21000 et seq., and the CEQA Guidelines, 14 CCR 15000 et seq.) requires a government agency that undertakes or approves a discretionary project to consider the potential impacts of that project on all environmental media. However, certain agency actions are exempt from CEQA requirements.

The proposed amendments to Rule 6-3 and Regulation 5 are exempt from environmental review under CEQA. The amendments to Rule 6-3 are exempt pursuant to CEQA Guidelines sections 15307 (protection of natural resources), 15308 (protection the environment), and 15061(b)(3) (common sense exemption). These amendments will lower the threshold for issuing bans on wood-burning from 35 to 25 µg/m^3 and an increase in the number of Mandatory Burns Bans, which will reduce ambient woodsmoke pollution from residential wood burning. It can be seen with certainty that these amendments will not have a significant effect on the environment.

The proposed amendments to Regulation 5 are exempt under CEQA Guidelines sections 15307 and 15308 because it removes administrative and cost barriers to allow nonprofit organizations

and private landowners who may be positioned to carry out prescribed burns in areas where public agency capacity is limited. Prescribed burns are carefully planned and managed activities that strategically remove excess vegetation thereby lowering the risk of large uncontrolled wildfires and making such wildfires easier to contain and less destructive to the environment and human health.

These amendments are also exempt under Public Resources Code section 21080(b)(4) and CEQA Guidelines section 15269(c) (prevention or mitigation of an emergency). The March 1, 2025 State of Emergency Proclamation (Executive Order N-25-25) provides that the emergency exemptions from CEQA contained in Public Resources Code sections 21080, subdivision (b)(3), 21080, subdivision (b)(4) and 21172, and in California Code of Regulations, title 14, section 15269, subdivision (c) shall apply to all actions or efforts consistent with the Proclamation that are taken to mitigate or respond to wildfire risks, including fuels reduction projects that remove of vegetation using prescribed fire treatments. Implementation of the proposed amendments to Regulation 5 is consistent with state policy to expand the use of beneficial fire.

Further, there is no substantial evidence indicating that any of the exceptions to the categorical exemptions applies to the under CEQA Guidelines section 15300.2.

If the proposed amendments are adopted, a Notice of Exemption (NOE) will be electronically filed with the State Clearinghouse, which is accessible at the following website: https://ceqanet.lci.ca.gov/Search/Recent. The NOE will also be posted on the Air District's website.

IX. RULE DEVELOPMENT / PUBLIC PARTICIPATION PROCESS

The proposed amendments to Rule 6-3 and Regulation 5 have been developed through an extensive public engagement process that incorporated community priorities, technical analysis, and multiple opportunities for public input. Air District staff initiated this process by engaging with community-based strategies identified through the AB 617 programs in West Oakland and Richmond/North Richmond/San Pablo, where concerns related to woodsmoke have been identified as priorities.

To provide early transparency and solicit feedback, staff presented an overview of potential rulemaking concepts to the Stationary Source Committee in May 2024. In November 2024, the Air District released a *Woodsmoke White Paper* outlining key technical findings and policy considerations, initiating a 75-day public comment period that informed the development of draft rule amendment concepts. The white paper public comments were announced via Air District E-blasts, social media posts, November 6, 2024, Board of Directors Meeting, AB 617 Community Steering Committees, Community Advisory Council, project website, and direct communication with interested stakeholders. Of the 37 public comments received, 32 (86 percent) expressed support for increased limitations on burning and five opposed. General public comment themes included:

- Health and nuisance impacts of woodsmoke
- Ban wood burning in dense/populated areas
- Very few need to burn wood for heat
- Support for further restrictions, a ban on recreational/aesthetic burning, or a full ban of all wood burning
- Consider the needs of households habitually burning

- Fuel cost considerations
- Wood as a renewable fuel

A second presentation to the Stationary Source Committee was held in February 2025 to provide an update on the initiative and initiate rule development through discussion of rule amendment concepts. Public workshops were subsequently held in June 2025 to share the draft amendments and gather additional feedback from stakeholders, including community members and public agencies. There were sixteen external attendees at the Regulation 5 amendments public workshop, primarily fire professionals, who expressed strong support for the amendments and asked specific questions around implementation. Thirteen community members attended the Rule 6-3 amendments public workshop and raised detailed concerns about the health impacts of residential wood burning, neighborhood-level air quality, and enforcement gaps. Several expressed a desire for increased use of real-time monitoring data, stricter regulations, and procedures for addressing neighborhood-level woodsmoke nuisance concerns.

Air District staff has now released this Staff Report and proposed amendments to Rule 6-3 and Regulation 5 for public review and comment. Staff will accept and respond to all written comments received and will present a final proposal to the Air District Board of Directors at a Public Hearing. At that hearing, the Board will consider the proposed amendments and any additional public input before taking final action.

X. CONCLUSION / RECOMMENDATIONS

Pursuant to the California Health and Safety Code Section 40727, before adopting, amending, or repealing a rule the Board of Directors must make findings of necessity, authority, clarity, consistency, non-duplication, and reference. This section addresses each of these findings.

A. Necessity

As stated in California Health and Safety Code Section 40727(b)(1), "'Necessity' means that a need exists for the regulation, or for its amendment or repeal, as demonstrated by the record of the rulemaking authority."

The Air District has determined that the proposed rule amendments are necessary to protect public health by reducing particulate matter emissions to mitigate public health emergencies and assist in achieving state and federal ambient air quality standards for particulate matter and to remove potential cost barriers to prescribed burning for wildfire prevention in accordance with Executive Order N-05-19 and the March 22, 2019 Proclamation of a State of Emergency for California.

B. Authority

The California Health and Safety Code Section 40727(b)(2) states that "'Authority' means that a provision of law or of a state or federal regulation permits or requires the regional agency to adopt, amend, or repeal the regulation."

The Air District has the authority to adopt these rule amendments under Sections 40000, 40702, and 40725 through 40728.5 of the California Health and Safety Code.

C. Clarity

The California Health and Safety Code Section 40727(b)(3) states that "'Clarity' means that the regulation is written or displayed so that its meaning can be easily understood by the persons directly affected by it."

The proposed amendments to Rule 6-3 and Regulation 5 are written so that their meaning can be easily understood by the persons directly affected by them. Further details in the Staff Report clarify the proposals, delineate the affected industry, compliance options, and administrative requirements for the industries and persons subject to these rules.

D. Consistency

The California Health and Safety Code Section 40727(b)(4) states that "'Consistency' means that the regulation is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations."

The proposed amendments to Rule 6-3 and Regulation 5 are consistent with other Air District rules and not in conflict with state or federal law.

E. Non-Duplication

The California Health and Safety Code Section 40727(b)(5) states that "'Nonduplication' means that a regulation does not impose the same requirements as an existing state or federal regulation unless a district finds that the requirements are necessary or proper to execute the powers and duties granted to, and imposed upon, a district."

The proposed amendments to Rule 6-3 and Regulation 5 are non-duplicative of other statutes, rules, or regulations.

F. Reference

The California Health and Safety Code Section 40727(b)(6) states that "'Reference' means the statute, court decision, or other provision of law that the district implements, interprets, or makes specific by adopting, amending, or repealing a regulation."

By adopting the proposed amendments to Rule 6-3 and Regulation 5, the Air District Board of Directors will be implementing, interpreting or making specific the provisions of California Health and Safety Code Sections 40000, 40702, and 40727.

The proposed amendments to Rule 6-3 and Regulation 5 have met all legal noticing requirements, have been discussed with the regulated community and other interested parties, and reflect consideration of the input and comments of many affected and interested stakeholders.

G. Recommendations

Air District staff recommends adopting the proposed amendments for Regulation 6, Rule 3: Wood-Burning Devices and Regulation 5: Open Burning.