Wildfire Mitigation Plan
for the
Sacramento Federal Nonattainment Area for $PM_{2.5}$

(Aerial view of the Tubbs and Pocket fires, 10/12/2017)

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Introduction

Wildfires are an annual occurrence in California and neighboring states. Smoke from wildfires may be transported into the Sacramento region and elevate the emissions concentrations, resulting in adverse air pollution impacts to the public. The air districts in the Sacramento region are responsible for monitoring the air quality conditions for the region and ensuring that necessary actions are taken to protect public health and minimize air pollution impacts. Since the air districts have no control over wildfires, the air districts must be ready to take the appropriate actions when smoke from wildfires impacts the Sacramento region.

The United States Environmental Protection Agency (EPA) recognizes the impacts of wildfires and has considered wildfire events as exceptional events. In 2007, EPA adopted Treatment of Data Influenced by Exceptional Events (Exception Events Rule) (72 FR 13560) that specified the requirements and procedures to exclude air quality monitoring data affected by an exceptional event from regulatory determinations. EPA revised the Exceptional Events Rule that became effective on September 30, 2016 (81 FR 68216) to address issues raised by states and increase administrative efficiency of the Exceptional Events Rule criteria and process. The revision to the rule included an additional requirement for certain areas that have regularly experienced wildfire and submitted documentation to have these confirmed as exceptional events. These areas are required to develop mitigation plans in order to minimize public exposure to particulate matter 2.5 microns or less in diameter ($PM_{2.5}$) generated during wildfire events. These mitigation plans must be submitted to EPA within two years after the effective date of the revised Exceptional Events Rule.

This plan will satisfy the requirement of the 2016 Exceptional Events Rule for the Sacramento Federal $PM_{2.5}$ Nonattainment Area (SFNA-$PM_{2.5}$) to prepare a mitigation plan to minimize public exposure to the impacts of $PM_{2.5}$ during wildfire events. The plan outlines the procedures the air districts in the SFNA--$PM_{2.5}$ will take to protect public health in cases where wildfires increase $PM_{2.5}$ concentrations in the region to a level where they exceed or are expected to exceed the 24-hour $PM_{2.5}$ ambient air quality standard.

Background

Particulate matter (PM) is the term for the mixture of solid and liquid particles in the ambient air. Particles originate from a variety of activities and processes, and the chemical and physical compositions vary. Components of PM include nitrates, sulfates, elemental carbon, organic carbon compounds, acid aerosols, trace metals, and geologic materials. PM can be directly emitted to the air or can be produced by secondary formation in the atmosphere when precursor gaseous pollutants, such as nitrogen oxides and sulfur dioxide, chemically react to form fine aerosol particles. Sources of PM are mainly due to human (anthropogenic) activities, such as residential fuel combustion smoke and soot, entrained road dust, and motor vehicle exhaust. PM can also be generated from natural sources such as wildfires.

EPA has established national ambient air quality standards (NAAQS) for $PM_{2.5}$ to protect the public from health effects caused by the exposure to fine particulate matter. In 1997, EPA established annual and 24-hour standards for $PM_{2.5}$ (62 FR 38652). EPA last revised the 24-hour standard in 2006 and the annual standard in 2013. The current 24-hour and annual $PM_{2.5}$ standards are 35 and 12 microgram per cubic meter ($\mu g/m^3$), respectively.

The SFNA-$PM_{2.5}$, which includes Sacramento County, portions of Placer, El Dorado, Yolo, and Solano Counties, is designated as nonattainment for the 2006 24-hour $PM_{2.5}$ standard and attainment for the 2013 annual $PM_{2.5}$ standard. The SFNA-$PM_{2.5}$ met the 2006 24-hour standard in 2015 (82 FR 21711) but the region has not yet requested to be redesignated as attainment. Figure 1 shows the boundaries of SFNA-$PM_{2.5}$ and the air districts that have responsibilities in the SFNA-$PM_{2.5}$.

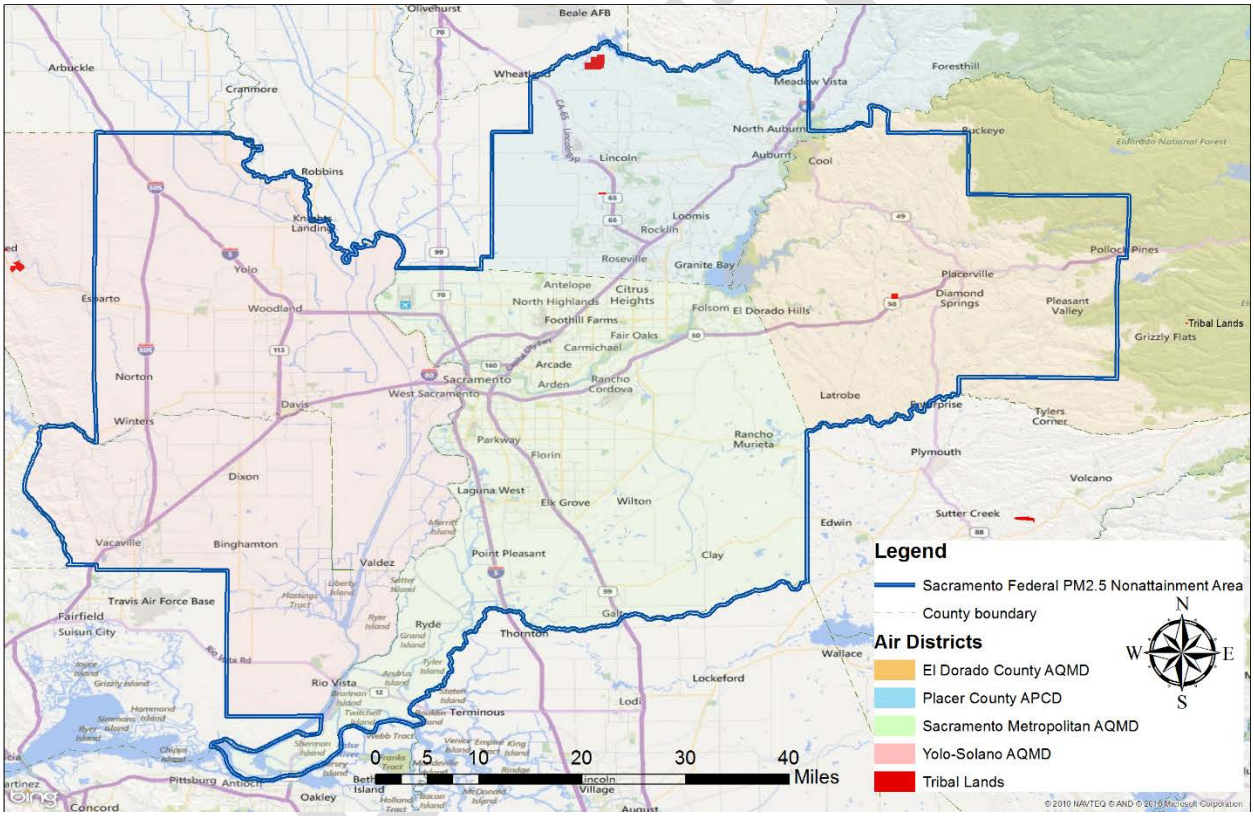

Figure 1 Map of SFNA-$PM_{2.5}$

$PM_{2.5}$ concentrations are typically higher in the winter months (November to February) for the SFNA-$PM_{2.5}$ due to increased activities of residential wood burning and stagnant air flows that trap air pollutants. However, the region may experience higher $PM_{2.5}$ concentrations in the summer and fall because of wildfire emissions. Wildfires normally occur outside of the region, and smoke from these wildfires is transported into the SFNA-$PM_{2.5}$. Wildfires are not typically predictable, preventable, or immediately controllable. Smoke from wildfires contains PM, volatile organic compounds (VOC), nitrogen oxides (NO_X) and carbon monoxide (CO). It may also

contain air toxics produced by the burning of non-organic materials such as building structures, furniture, or plastic products.

Health Impacts of $PM_{2.5}$

Studies have linked exposure to PM to a variety of significant health problems. While all particle pollution has the ability to create health impacts, $PM_{2.5}$ is especially serious because the particles are so small that they can penetrate deep into the lungs. Consequently, exposure to $PM_{2.5}$ can cause serious health problems and aggravate existing problems. People with heart or lung diseases, children, and older adults are the most likely to be affected by fine particle pollution. However, even if a person is healthy, they may experience temporary symptoms from exposure to elevated levels of particle pollution. (CARB, 2003)

Adverse health effects linked to $PM_{2.5}$ include:

- Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing;
- Decreased lung function;
- Aggravated asthma;
- Development of chronic bronchitis;
- Irregular heartbeat;
- Nonfatal heart attacks; and
- Premature death in people with heart or lung disease.

Smoke caused by wildfires exacerbates the health impacts due to the elevated concentrations of $PM_{2.5}$ and poses a major public health concern. Certain groups of the population may experience more severe symptoms from wildfire smoke exposure. Sensitive groups include children, pregnant women, the elderly, and individuals with asthma or other respiratory diseases. These groups are more vulnerable to wildfire smoke exposure (Naeher et al, 2007). One component of this mitigation plan is to minimize public exposure to high concentrations of $PM_{2.5}$ during wildfire events.

Legal Requirements

Air Quality Data Influenced by Exceptional Event

The Federal Clean Air Act (CAA) Section 319(a) establishes requirements for air quality monitoring throughout the United States. It sets uniform air quality monitoring criteria and methodology, and requires that local monitoring networks cover major urban areas and supplement the air monitoring networks of the states. It also requires daily analysis of air quality data, data recordkeeping, and the reporting of air quality data to the public.

The SFNA-$PM_{2.5}$ has an established air monitoring network to monitor for various air pollution concentrations in the region, including $PM_{2.5}$. The air monitoring network complies with federal air monitoring regulation requirements as specified in 40 CFR Part 58 for methodology and data

quality assurance. It is designed to meet three basic monitoring objectives: 1) provide air pollution data to the general public in a timely manner; 2) support compliance with ambient quality standards and emission strategy development; and 3) support air pollution research studies. Figure 2 shows the locations of all $PM_{2.5}$ air monitors in the SFNA-$PM_{2.5}$.

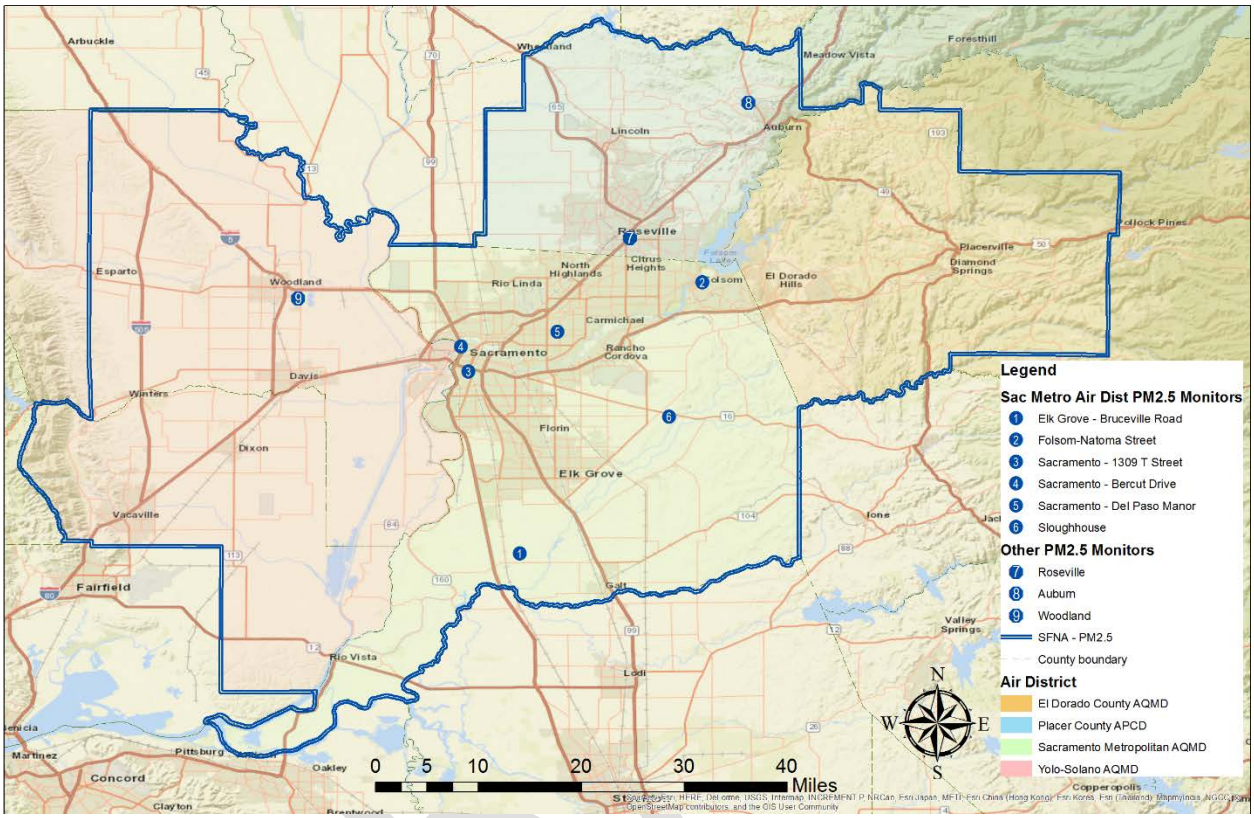

Figure 2. SFNA-$PM_{2.5}$ monitor locations

The CAA Section 319(b) recognizes that using air monitoring data influenced by an exceptional event, like wildfires, may not be appropriate when making certain regulatory decisions. For air monitoring data influenced by an exceptional event that causes one or more exceedances of the NAAQS, CAA Section 319(b) establishes a mechanism to exclude this air monitoring data from regulatory determinations. The CAA Section 319(b) defines an exception event as the following:

1. It affects air quality;
2. It is not reasonably controllable or preventable;
3. It is an event caused by human activity that is unlikely to recur at a particular location or a natural event;
4. It is determined by EPA through the process established in the regulations to be an exceptional event; and
5. It does not include stagnation of air masses, meteorological inversion, a meteorological event involving high temperature or lack of precipitation, or air pollution relating to source noncompliance.

Exceptional Event Rule

CAA Section 319(b) also establishes general principles and requirements for petitioning for an exceptional event and requires EPA to adopt a regulation specifying the review and handling of air monitoring data influenced by exceptional events. EPA published a final rule on the Treatment of Data Influenced by Exceptional Events on March 22, 2007 (72 FR 13560) and revised the rule on October 3, 2016 (81 FR 68216). The revised rule (40 CFR 50.1, 50.14, and 51.930) requires air agencies take appropriate and reasonable actions. These actions must include the following:

1. Prompt public notification whenever the area exceed or is expected to exceed an applicable NAAQS;
2. Public education concerning actions that public may take to reduce exposure; and
3. The implementation of appropriate control measures to protect public health.

To ensure these actions are taken, EPA requires areas with historically documented or known seasonal events to prepare a mitigation plan for these exceptional events. The purpose of the mitigation plan is to outline the procedures to protect public health when air quality concentrations in the region exceed or are expected to exceed the NAAQS. For the SFNA-$PM_{2.5}$, the mitigation plan addresses the impacts of $PM_{2.5}$ emissions from wildfires when the concentrations exceed or are expected to exceed the 24-hour NAAQS for $PM_{2.5}$.

Exceptional Event Mitigation Plan

The Exceptional Events Rule, outlined in 40 CFR 51.930(b)(2), specifies the main components of the mitigation plan, which are the following:

1. Public notification to and education programs for affected or potentially affected communities.
2. Steps to identify, study, and implement mitigation measures, including approaches to address each of the following:
    a. Measures to abate or minimize contributing controllable sources of identified pollutants.
    b. Methods to minimize public exposure to high concentrations of identified pollutants.
    c. Process to collect and maintain data pertinent to the event.
    d. Mechanism to consult other air quality managers in the affected area regarding the appropriate responses to abate and minimize impacts.
3. Provisions for periodic reviews and evaluation.

Each mitigation plan component is described in the following section, including the actions each air district in the SFNA-$PM_{2.5}$ will take to mitigate for public exposure. In addition, the Exceptional Events Rule requires that the mitigation plan be available for public comment for a minimum of 30 days. If public comments are received on the mitigation plan, those comments

must be addressed to determine whether or not changes are necessary in the mitigation plan. All comments received must be submitted with the plan to EPA.

Format of the Exceptional Event Mitigation Plan

The actions that will be taken by SFNA-$PM_{2.5}$ air districts during wildfire events to mitigate air quality impacts are shown in the table below. Some actions are regional in nature, while others are implemented by individual air districts. These actions fulfill the requirements of 40 CFR 51.930(b)(2). Each subsection of 40 CFR 51.930(b)(2) that is applicable to the SFNA-$PM_{2.5}$ air districts is shown in the table with the relevant air district actions listed below.

Mitigation Plan Elements

51.930(b)(2)(i): Public notification to and education programs for affected or potentially affected communities. Such notification and education programs shall apply whenever air quality concentrations exceed or are expected to exceed a NAAQS with an averaging time that is less than or equal to 24-hours.

The following applies to all SFNA-$PM_{2.5}$ air districts:

What are the procedures to notify the public?

- The air districts of the SFNA-$PM_{2.5}$ continuously monitor for potential smoke impacts from wildfires that may affect the public. If regulatory air monitors show that $PM_{2.5}$ concentrations from wildfire smoke may exceed the 24-hour NAAQS for $PM_{2.5}$, affected air districts initiate public notification processes. Air districts consider which actions are appropriate to take based on the severity and expected duration of the wildfire smoke impacts. Air districts that have no $PM_{2.5}$ monitors may also conduct public notification at the beginning of each wildfire season.

Who are the target audiences for this notification?

- The target audience is the general public, with emphasis on the areas affected by the wildfire event.

How do the air districts of the SFNA-$PM_{2.5}$ notify the public?

- Information is posted on individual air district websites notifying the public of impacts from wildfire events. District websites include links to the “Spare The Air” website.
- Air districts issue public health advisories in conjunction with county public health departments. These advisories and other related information are distributed to the public using the districts’ social media outlets.
- Public health information released by other health agencies is reviewed and republished where appropriate.
- Air quality notifications may be distributed through the “Air Alert” email service to subscribers.
- If needed, air districts contact local media outlets and/or issue press releases to reach a wider audience.
- All air districts respond to inquiries from the public throughout the duration of the wildfire event.
- Throughout the wildfire event, the air districts within the Sacramento region coordinate with each other to ensure that messaging remains consistent throughout the region.
- The air districts maintain the Sacramento region’s monitoring network to collect real-time air quality data to be used for estimating exposure during the wildfire episode.
- If needed, the air districts coordinate with the California Air Resources Board (CARB) Office of Emergency Response to deploy additional temporary monitors to assess air quality in highly-impacted areas.
- The “Spare The Air” website provides daily air quality forecasts plus current air quality

conditions at monitoring sites throughout the Sacramento region.

What are the current available resources the SFNA-$PM_{2.5}$ air districts can use for notification?

- Available resources include the region's "Spare The Air" website, individual air district websites, air district social media accounts and subscription email services. Additional resources provided by the county health agencies which the districts coordinate with are also available during wildfire episodes.

Do the air districts work with other local, state or federal agencies for this notification?

- All SFNA-$PM_{2.5}$ air districts work with their respective county public health officers and public information officers to develop air quality alerts and/or health advisories in response to the incident. Air districts may work with the CARB Office of Emergency Response to deploy additional monitoring resources.

Are any educational programs implemented outside of a wildfire event?

- On an ongoing basis, all air districts in the SFNA-$PM_{2.5}$ publish and distribute literature that provides information regarding the health impacts of poor air quality and actions that can be taken to limit exposure when the Air Quality Index approaches unhealthy levels.
- The regional "Spare The Air" website is available year-round to the public and provides tips to the public for reducing emissions and minimizing exposure during periods where the Air Quality Index approaches unhealthy levels.
- All districts in the SFNA-$PM_{2.5}$ publish and distribute information regarding current burning regulations applicable to each air district's jurisdiction. This may include tips for efficient burning in allowed appliances and associated activities.

In addition, the Placer County Air Pollution Control District will take the following actions:

- Publish health advisories via the air district listserv.
- Distribute health advisories through the Placer County government emergency alert system.
- Maintain the Placer County "Wildfire Smoke" website which provides twice-per-day air quality measurements and air quality trend charts for air quality in Placer County.

In addition, the Sacramento Metropolitan Air Quality Management District will take the following action:

- Update air quality information utilizing an air quality information phone line. In the event of wildfire smoke impacting the Sacramento area, the message will include smoke messaging with recommendations for minimizing health impacts.

51.930(b)(2)(ii)(A): Measures to abate or minimize contributing controllable sources of identified pollutants.

The following applies to all SFNA-$PM_{2.5}$ air districts:

Are there any air district rules or policies that would minimize $PM_{2.5}$ emissions and associated impacts during a wildfire event?

- Authority is granted to air districts in the SFNA-$PM_{2.5}$ under the Sacramento Valley Smoke Management Plan to limit emissions of additional $PM_{2.5}$. The Sacramento Valley Smoke Management Plan was developed by the Sacramento Valley Basinwide Air Pollution Control Council (BCC) and its Technical Advisory Committee (TAC). The Plan provides procedures for agricultural burning in the Sacramento Valley. Air Districts and CARB can determine the burn size, hours, and locations of agricultural burning. In the event that a wildfire event is expected or ongoing, the air districts of the Sacramento region can declare a "no-burn" day. This would eliminate additional $PM_{2.5}$ emissions from agricultural burning.
- When a wildfire event is expected or ongoing, SFNA-$PM_{2.5}$ air districts can use their existing authority to limit prescribed burning. Rules that have been adopted by the air districts of the Sacramento Region that can be used to limit burning are the following:
    - El Dorado County Air Quality Management District: Rule 300 – Open Burning
    - Placer County Air Pollution Control District: Regulation III – Open Burning
    - Sacramento Metropolitan Air Quality Management District: Rule 407 – Open Burning, 421 – Mandatory Episodic Curtailment of Wood and Other Solid Fuel Burning, 501 – Agricultural Burning
    - Yolo Solano Air Quality Management District: Rule 2.8 – Open Burning General, Rule 2.9 – Open Burning Certain Materials, Rule 6.1 – Agricultural Burning

Do the local counties/cities, State or federal agencies have any plans or policies that would minimize $PM_{2.5}$ emissions and associated impacts during a wildfire event?

- Local fire districts have the authority to deny requests for burning related to the training of fire personnel.
- The State Board of Forestry and Fire Protection and the California Department of Forestry and Fire Protection have jointly developed the 2010 Strategic Fire Plan for California, revised in 2016 (State Board of Forestry and Fire Protection, et al, 2016). The revised plan lists major policy components on how to reduce and prevent the impacts of fire by emphasizing both suppression and prevention efforts.
- The United States Department of Agricultural and other federal agencies have developed the National Cohesive Wildland Fire Management Strategy (USDA et al, 2014). This strategy addresses priorities in managing vegetation, other fuels, and human-caused ignitions. This prioritizes resources for wildfire prevention and reducing fire intensity.

51.930(b)(2)(ii)(B): Methods to minimize public exposure to high concentrations of identified pollutants.

The following applies to all SFNA-$PM_{2.5}$ air districts:

What information will the air districts provide to the public?

- Affected air districts provide health advisories to the public that emphasize precautions the public should take during the wildfires episode. Special instructions are provided for sensitive populations such as the elderly, children, and individuals with health or respiratory diseases. Instructions emphasize curtailing outdoor activities and remaining

indoors.

- Using the existing air monitoring network, the Air Quality Index is provided to the general public, which reflects current and forecasted air quality conditions and potential health impacts due to $PM_{2.5}$ exposure.
- If needed, the air districts coordinate with CARB Office of Emergency Response to deploy additional temporary monitors to assess air quality in highly-impacted areas and relay this information to the public.

How is the information presented to the public?

- The "Spare The Air" website provides daily air quality forecasts plus current air quality conditions at monitoring sites throughout the Sacramento region.
- Information is posted on individual air district websites notifying the public of impacts from wildfire events. District websites include links to the "Spare The Air" website.
- Air districts issue public health advisories in conjunction with county public health departments. These advisories and other related information are distributed to the public using the districts' social media accounts.
- Public health information released by other health agencies is reviewed and republished where appropriate.
- If needed, air districts contact local media outlets and/or issue press releases to reach a wider audience.
- All air districts respond to inquiries from the public throughout the duration of the wildfire event.
- Throughout the wildfire event, the air districts within the SFNA-$PM_{2.5}$ coordinate with each other to ensure that messaging remains consistent throughout the region.

What additional actions do the air districts want to commit to either send the message or collect the information?

- As mentioned above, the air districts of the SFNA-$PM_{2.5}$ may ask for additional monitoring support from the CARB to deploy portable monitors to the most impacted areas.

51.930(b)(2)(ii)(C): Processes to collect and maintain data pertinent to the event.

The following applies to all SFNA-$PM_{2.5}$ air districts that operate registered $PM_{2.5}$ air monitoring sites that collect data for record:

What are the air districts' processes to collect data? What is the process to flag monitoring data?

- When a wildfire occurs that may result in an exceedance of the federal $PM_{2.5}$ NAAQS and affect the residents of an air district, the air districts collect data pertinent to the event.
- The Placer County Air Pollution Control District, Sacramento Metropolitan Air Quality Management District and Yolo-Solano Air Quality Management District operate monitoring sites that provide $PM_{2.5}$ data for record. Each district flags data that they determine may have been affected by an exceptional event.

- The air districts may ask for temporary monitors from CARB to deploy to impacted areas. Data collected from these monitors can be made available to the public and can be used to document the impacts of the wildfire event.

When does an air district start collecting data?

- Data collection begins when a wildfire event is determined to cause or contribute to elevated $PM_{2.5}$ concentrations that may result in an exceedance of the $PM_{2.5}$ NAAQS or adversely affect residents of the district.

What type of information do the air districts collect during an exceptional event?

- Information collected by the air districts may include, but are not limited to:
  - News coverages that describe the wildfire event.
  - Screenshots of the websites of public agencies containing announcements related to the wildfire event.
  - Copies of public notices and health advisories for the wildfire event from public agencies.
  - Weather forecasts or weather descriptions for the impacted area(s) during the period of the wildfire.
  - Meteorological data from air monitoring sites or other weather stations.
  - Results from the United States Forest Service BlueSky model which provides fire information, fuel loading, fire consumption, fire emissions, and smoke dispersion.
  - Satellite images from the National Oceanic and Atmospheric Administrations "GOES" West Satellite website and National Aeronautics and Space Administration Earth Observatory website.

In addition, the Placer County Air Pollution Control District will take the following actions:

- Collect daily weather forecasts from the National Weather Service Reno Regional Office to determine how smoke is being transported and identify which areas are likely to be impacted.

51.930(b)(2)(ii)(D): Mechanisms to consult with other air quality managers in the affected area regarding the appropriate responses to abate and minimize impacts.

The following applies to all SFNA-$PM_{2.5}$ air districts:

What would the process be to communicate with other air quality managers or public health officers in the event of wildfires?

- During a wildfire event, air districts in the SFNA-$PM_{2.5}$ coordinate with each other via telephone and/or email.
- All air districts maintain contact lists with contact information for County Public Health Departments and Public Health Officers. When a wildfire event is expected or ongoing, air districts coordinate with public health officials to issue health advisories to the public.

51.930(b)(2)(iii): Provisions for periodic review and evaluation of the mitigation plan and its implementation and effectiveness by the State and interested stakeholders.

The following applies to all SFNA-$PM_{2.5}$ air districts:

How frequently should the nonattainment area review this mitigation plan?

- The SFNA-$PM_{2.5}$ air districts will review this plan on a five-year schedule. The mitigation plan will be updated as needed. If updated, the air districts in the SFNA-$PM_{2.5}$ will solicit comments from the general public on the proposed mitigation plan. The public comment period will be open for 30 days. If comments are received, the air districts in the SFNA-$PM_{2.5}$ will address each comment, and the mitigation plan will be revised as appropriate. After the public comment period, the updated mitigation plan will be submitted to EPA. The submittal will include all comments received during the public comment period.

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