

# 2020 Wildfire Season Impacts on the San Joaquin Valley

AAPCA Session

Wildfires: Air Quality and Policy Updates

Jon Klassen

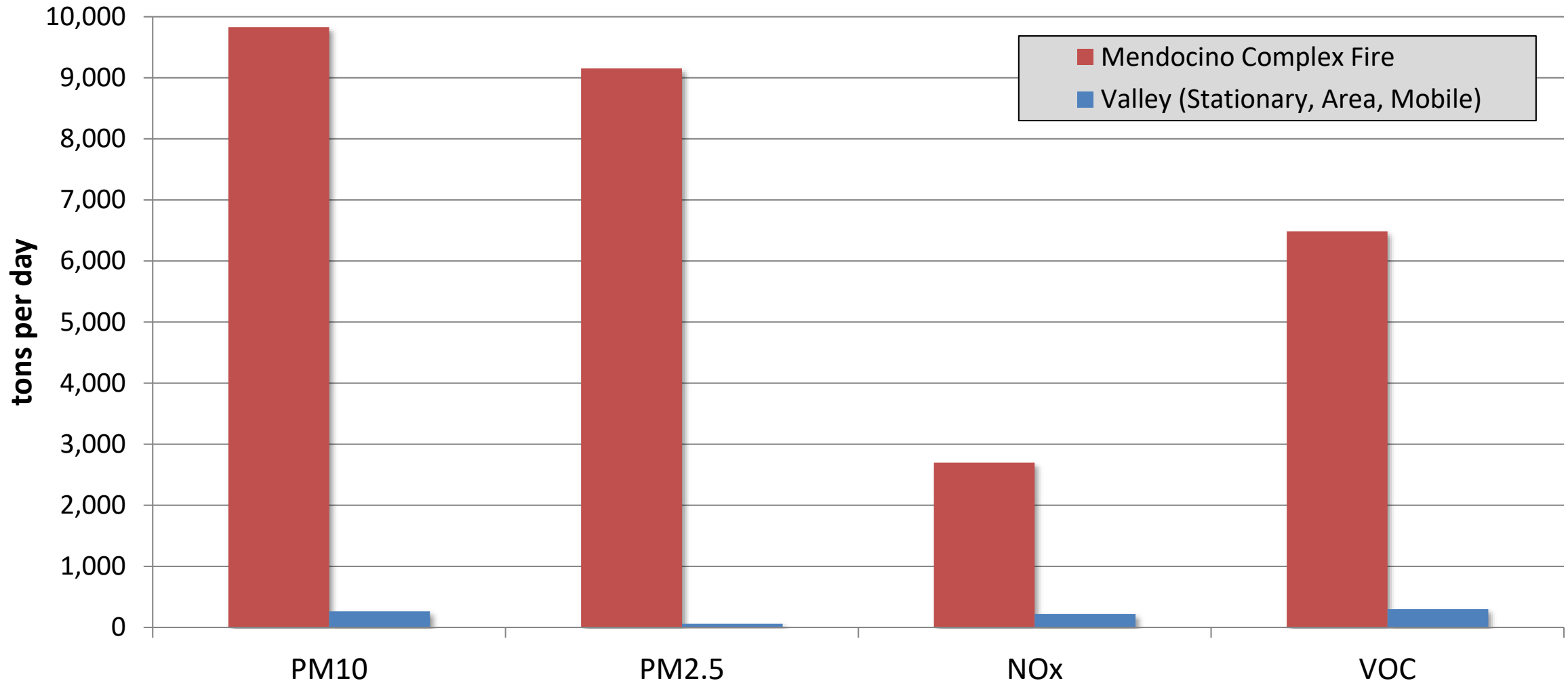
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San Joaquin Valley Air Pollution Control District

November 16, 2020

# Ongoing Wildfire Challenges

- Emissions from wildfires are enormous, can well exceed total mobile and industrial source emissions in the Valley
  - Wildfire emissions easily overwhelm all control measures
  - Leads to excessively high PM and ozone concentrations
- Decades-long fire suppression policies led to excessive build-up of fuel in state wildlands
  - Widespread drought-driven tree mortality, higher temperature trends, and lack of rainfall in recent years have led to extended and more intense wildfire seasons in Western U.S.
  - Conditions have led to record-breaking wildfire seasons in recent years

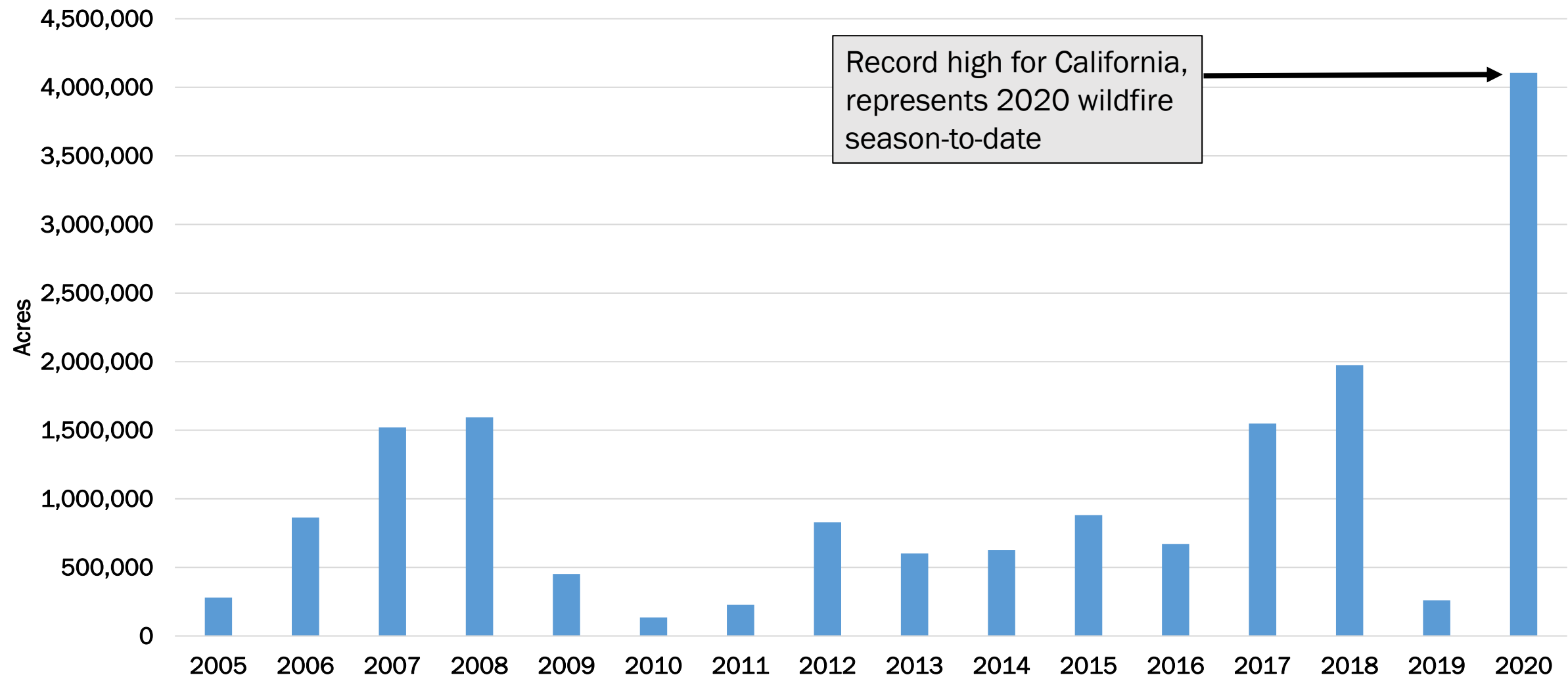
## Comparison of Emissions from Mendocino Complex Fire to Entire Valley Emissions Inventory (Single Day)



# Unprecedented Wildfire Season in 2020

- California and Western U.S. have experienced unprecedented wildfire season in 2020
  - Dry conditions and record-breaking temperatures have intensified fire activity
  - Currently in midst of wildfire season, expected to continue into the Fall
- August 2020 Lightning Siege
  - Dry lightning storm on August 15 included over 14,000 lightning strikes causing hundreds of fires across the state
- 2020 wildfires have caused extremely poor air quality and have directly affected health of Valley residents
- During these severe conditions, District strives to provide timely information to Valley residents to minimize exposure

# California Wildfire Acres Burned over Past 15 Years



Source: CalFire

# Top 20 Largest California Wildfires

- 6 of top 20 largest wildfires in California history have occurred during 2020 wildfire season
- August Complex Fire set new record for largest fire in state history (over 1 million acres)

Top 20 Largest California Wildfires

	FIRE NAME (CAUSE)	DATE	COUNTY	ACRES	STRUCTURES	DEATHS
1	<b>AUGUST COMPLEX</b> ( <i>Under Investigation</i> )*	August 2020	Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake, & Colusa	1,032,649	935	1
2	<b>MENDOCINO COMPLEX</b> ( <i>Under Investigation</i> )	July 2018	Colusa, Lake, Mendocino & Glenn	459,123	280	1
3	<b>SCU LIGHTNING COMPLEX</b> ( <i>Under Investigation</i> )*	August 2020	Stanislaus, Santa Clara, Alameda, Contra Costa, & San Joaquin	396,624	222	0
4	<b>CREEK FIRE</b> ( <i>Under Investigation</i> )*	September 2020	Fresno & Madera	377,693	853	0
5	<b>LNU LIGHTNING COMPLEX</b> ( <i>Under Investigation</i> )*	August 2020	Sonoma, Lake, Napa, Yolo & Solano	363,220	1,491	6
6	<b>NORTH COMPLEX</b> ( <i>Under Investigation</i> )*	August 2020	Butte, Plumas & Yuba	318,930	2,352	15
7	<b>THOMAS</b> ( <i>Powerlines</i> )	December 2017	Ventura & Santa Barbara	281,893	1,063	2
8	<b>CEDAR</b> ( <i>Human Related</i> )	October 2003	San Diego	273,246	2,820	15
9	<b>RUSH</b> ( <i>Lightning</i> )	August 2012	Lassen	271,911 CA / 43,666 NV	0	0
10	<b>RIM</b> ( <i>Human Related</i> )	August 2013	Tuolumne	257,314	112	0
11	<b>ZACA</b> ( <i>Human Related</i> )	July 2007	Santa Barbara	240,207	1	0
12	<b>CARR</b> ( <i>Human Related</i> )	July 2018	Shasta County & Trinity	229,651	1,614	8
13	<b>MATILJA</b> ( <i>Undetermined</i> )	September 1932	Ventura	220,000	0	0
14	<b>WITCH</b> ( <i>Powerlines</i> )	October 2007	San Diego	197,990	1,650	2
15	<b>KLAMATH THEATER COMPLEX</b> ( <i>Lightning</i> )	June 2008	Siskiyou	192,038	0	2
16	<b>MARBLE CONE</b> ( <i>Lightning</i> )	July 1977	Monterey	177,866	0	0
17	<b>LAGUNA</b> ( <i>Powerlines</i> )	September 1970	San Diego	175,425	382	5
18	<b>SQF COMPLEX</b> ( <i>Lightning</i> )	August 2020	Tulare	170,384	228	0
19	<b>BASIN COMPLEX</b> ( <i>Lightning</i> )	June 2008	Monterey	162,818	58	0
20	<b>DAY FIRE</b> ( <i>Human Related</i> )	September 2006	Ventura	162,702	11	0

There is no doubt that there were fires with significant acreage burned in years prior to 1932, but those records are less reliable, and this list is meant to give an overview of the large fires in more recent times.

This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, or local responsibility.

\*Numbers not final.



11/3/2020

# Creek Fire in Fresno/Madera Counties



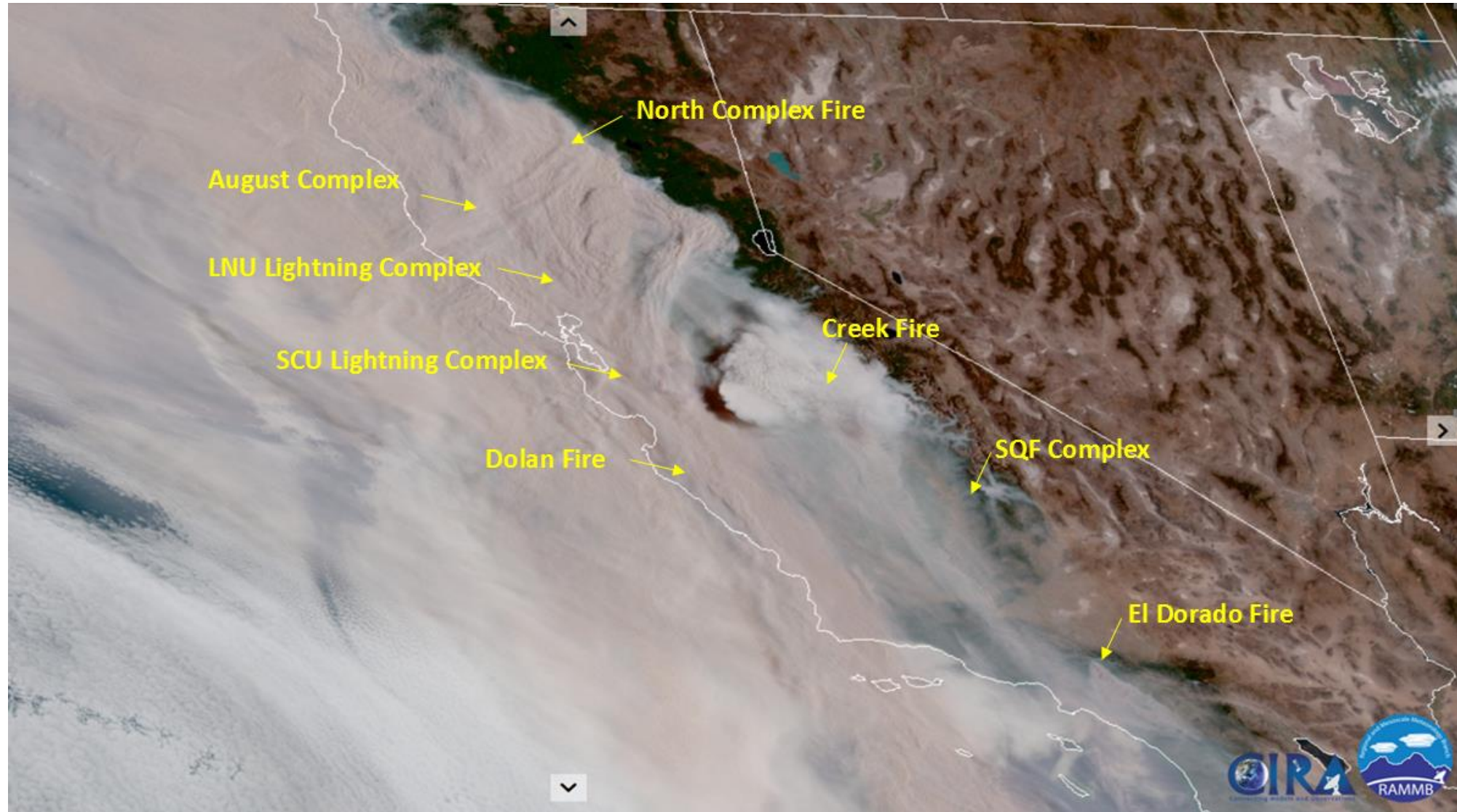


# Creek Fire Pyrocumulonimbus Cloud (September 5th)

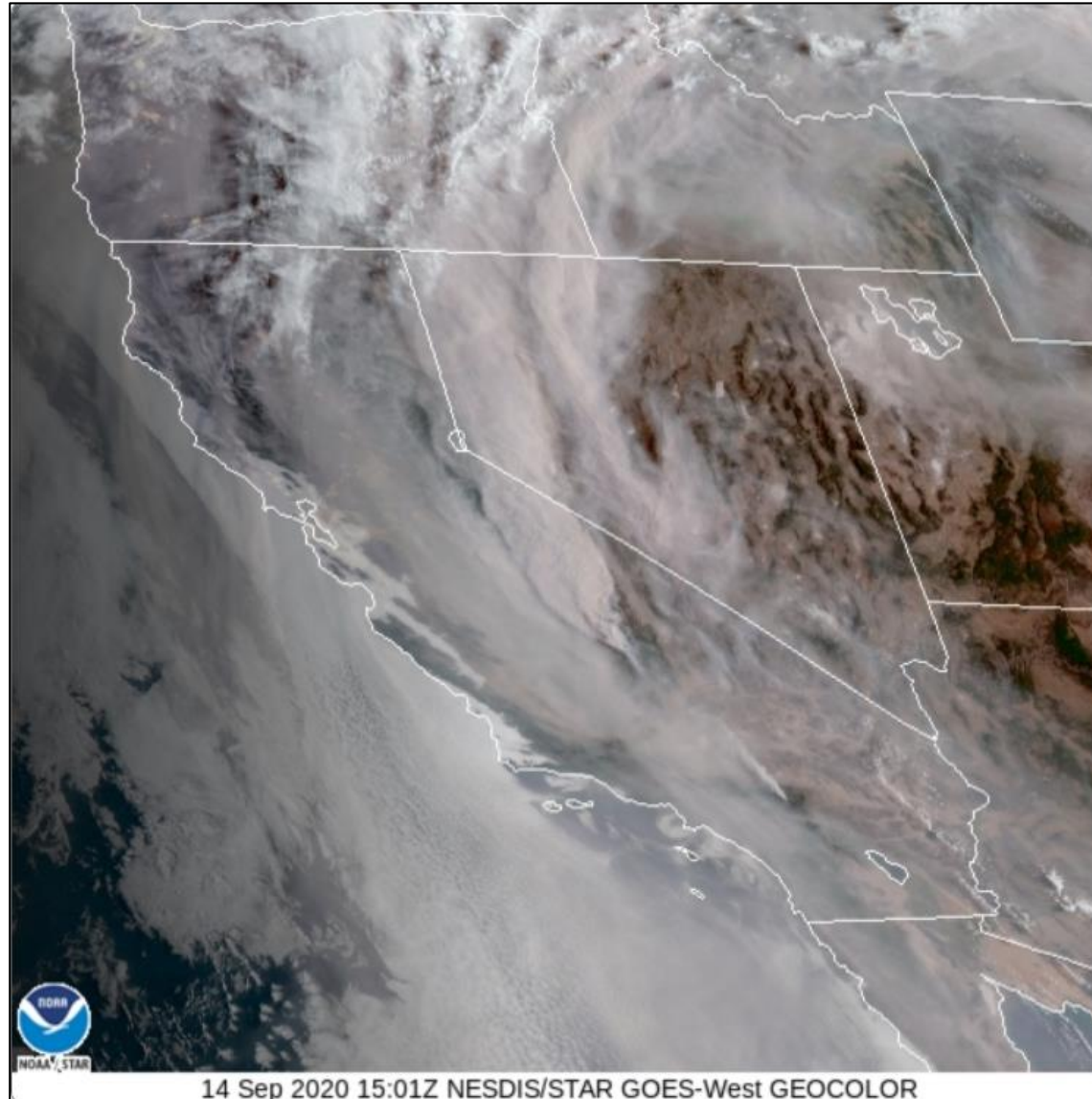




# Satellite Image of California (September 9th)



# Satellite Image of Western U.S. (September 14th)



# Smoke Impacts in Fresno



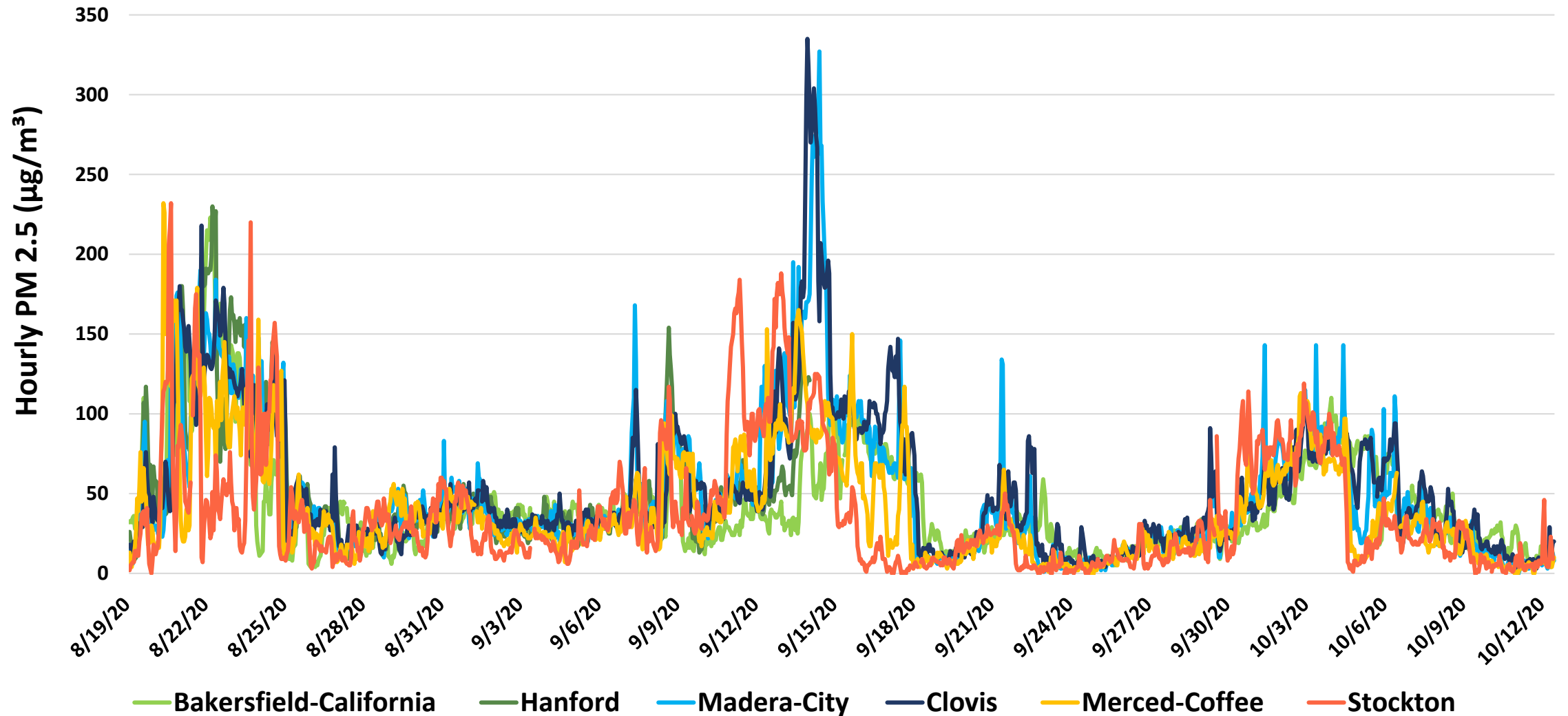


# Significant Valley Air Quality Impacts

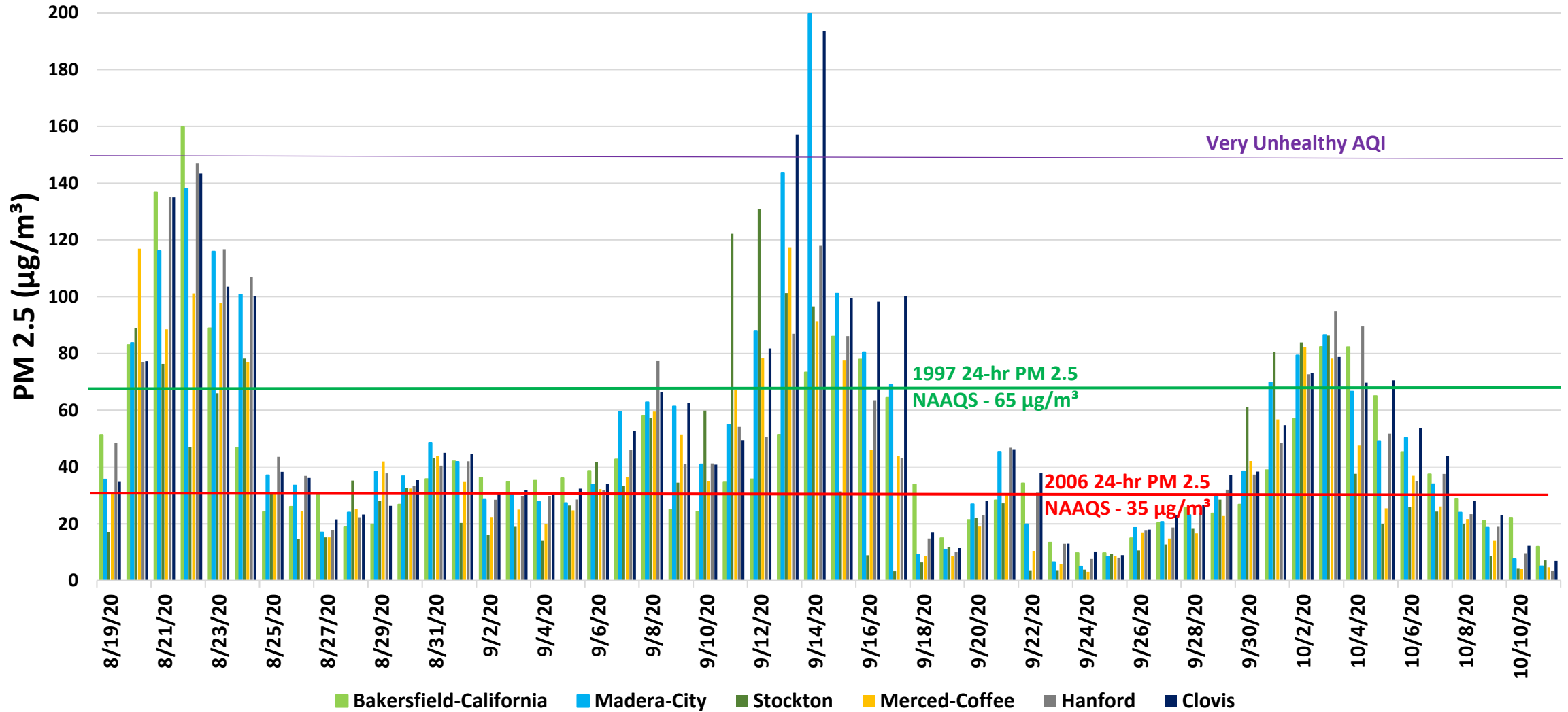
- Wildfires can generate a number of pollutants, including PM, NO<sub>x</sub>, and VOC
  - Excessively high PM concentrations across the Valley during this period
  - Increased NO<sub>x</sub> and VOC emissions can contribute to elevated ozone concentrations on the Valley floor
- In 2020 to date, peak Valley PM and ozone concentrations have occurred during this wildfire season
  - 1-hour ozone (142 ppb) on August 22, 8-hour ozone (114 ppb) on August 21
  - 24-hour PM<sub>2.5</sub> (229 µg/m<sup>3</sup>) and 24-hour PM<sub>10</sub> (510 µg/m<sup>3</sup>) on September 8
- District works closely with CARB/EPA to demonstrate that wildfire and windblown dust events affecting air quality data were “Exceptional Events”
  - Process will ensure that affected data will not count towards demonstrating attainment of federal standards



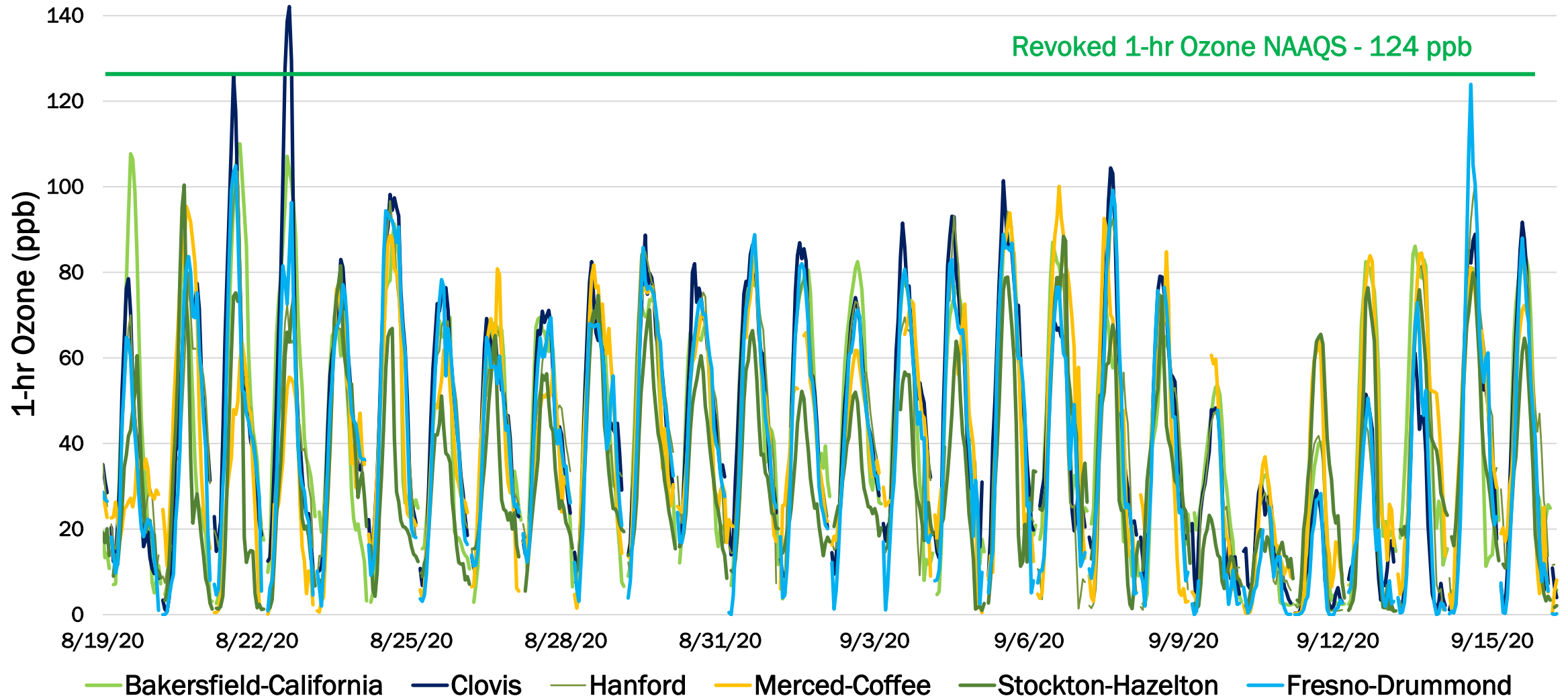
# Wildfire Impacted Hourly PM2.5 Concentrations



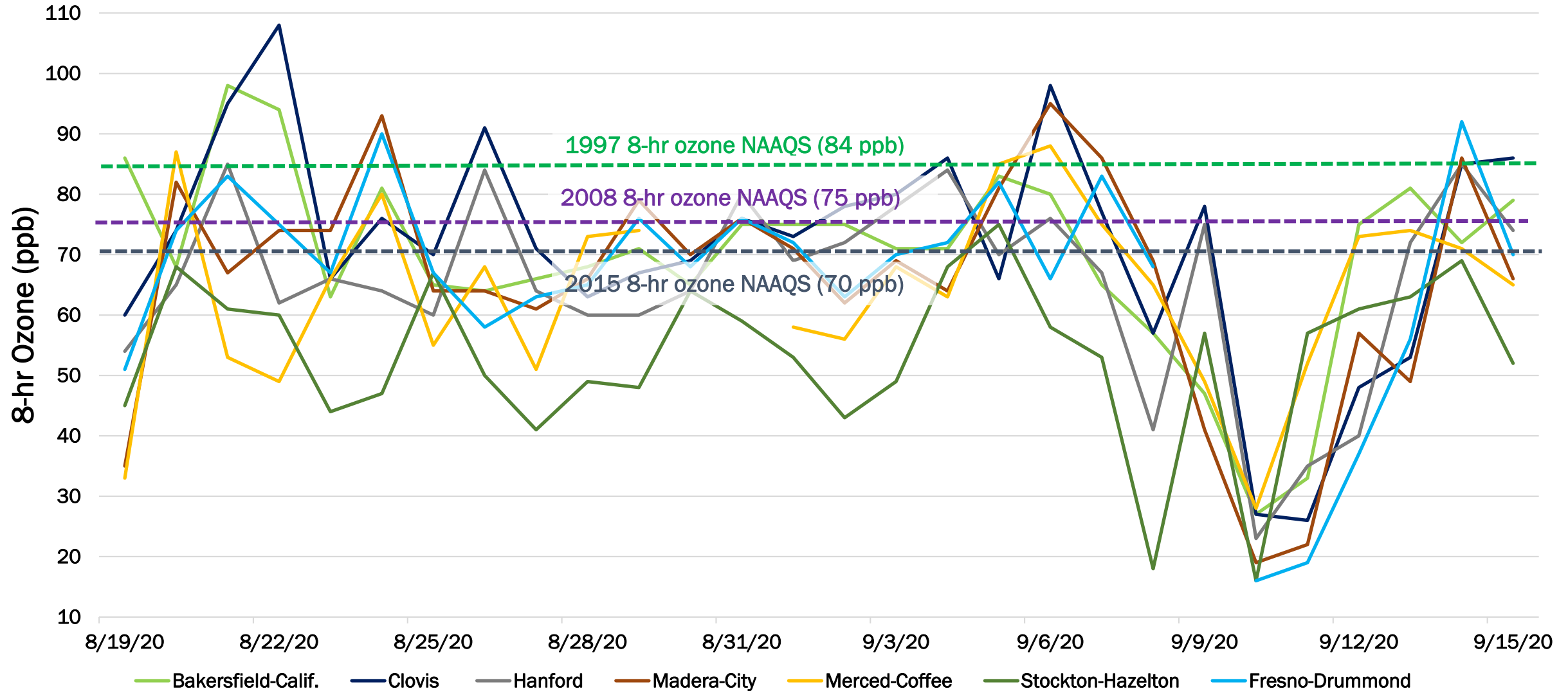
# Wildfire Impacted Daily PM2.5 Concentrations



# Peak 1-hr Ozone Values during 2020 Wildfire Season



# Peak 8-hr Ozone Values during 2020 Wildfire Season



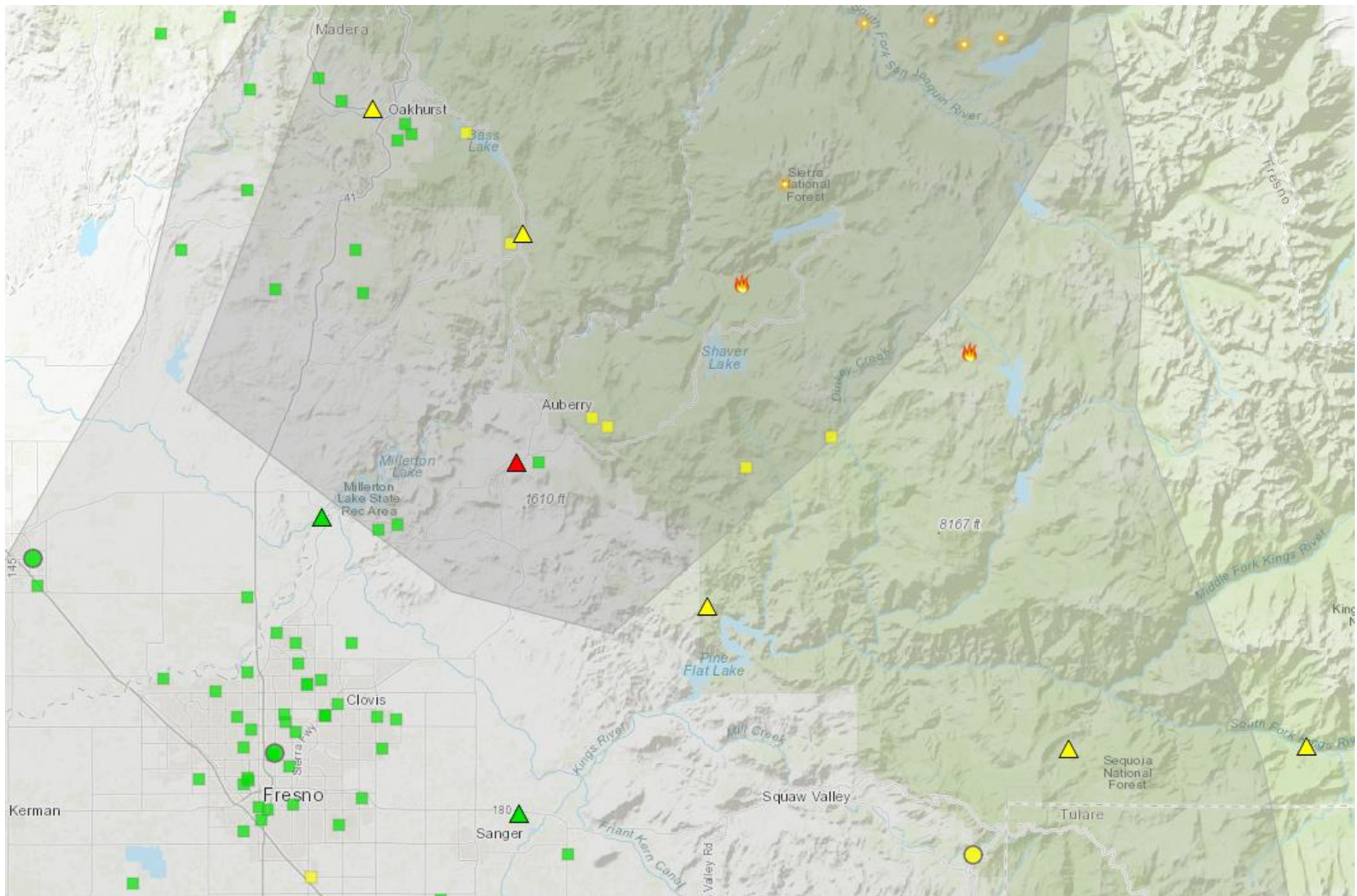


# Providing Timely and Accurate Air Quality Information to Residents and Responders

- District operates and maintains extensive air monitoring network that provides real-time air quality information to residents, public agencies, schools, businesses, and others relying on information to make daily decisions
- Provide daily air quality forecasts and assessments
- Recently deployed temporary air monitoring in foothill/mountain communities to assist residents and response teams
- Daily interaction with land managers/responders to provide air quality support in responding to wildfires







# Public Outreach Key During Wildfire Episodes

- District strives to provide timely and health-protective information to residents to minimize exposure via:
  - Multiple Air Quality Advisories/Health Caution Statements since Aug. 17<sup>th</sup>
  - Traditional media including interviews and press briefings with outlets in all three media markets (in both English and Spanish)
  - Wildfire web page updated daily with current wildfire and hourly air quality data, health protective tips and a link to temporary mountain and foothill air monitors
  - Significant social media via all platforms (FB, Twitter, Instagram and Nextdoor)
  - Multiple direct emails to all Healthy Air Living Schools, Valley Public Health Officers, all AB 617 Community Steering Committee Members, various list-servs
  - Promotion of Valley Air mobile app and [www.myraan.com](http://www.myraan.com)
  - Responding to hundreds of public calls and emails
  - Recommendations for how residents can protect themselves including staying at home when feasible, properly using masks, changing out air filters, and more



# Multiple Bilingual Media Advisories



## Comunicado de Prensa

www.valleyair.org

Número de Comunicación 24hr (559) 309-3336

Para publicación inmediata 08-21-20

Para: Noticias Locales, Clima, Salud y Editores de Asignación

Contacto:  
Heather Heinks (559) 230-5898  
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### Continuos Incendios Forestales de California Causan Calidad del Aire muy Insalubre

*El Distrito advierte a los residentes del Valle de los impactos en la salud*

Los múltiples incendios forestales en California y los alrededores del Valle continúan causando impactos de humo en todos los condados de la cuenca de aire del Valle. Durante esta semana, las concentraciones de PM<sub>2.5</sub> han seguido aumentando, lo que ha provocado una calidad del aire muy insalubre en toda la región. Como resultado, el Distrito está volviendo a emitir una advertencia de salud, que permanecerá vigente hasta que se apaguen los incendios. El Distrito anticipa que la mala calidad del aire afectará al Valle durante el fin de semana y advierte a los residentes que se queden adentro.

El incendio de SCU Lightning Complex Fire, ubicado en varios condados del norte, incluidos los condados de Stanislaus y San Joaquín; el incendio de Hills Fire, ubicado en el condado de Fresno al oeste de Avenal cerca de la autopista 33; el incendio de CZU August Lightning Complex, ubicado en varios lugares en los condados de San Mateo y Santa Cruz; y el incendio de Lake Fire ubicado en el condado de Los Angeles al sureste de Lebec están produciendo humo que se está infiltrando en el valle de San Joaquín, que incluye los condados de San Joaquín, Stanislaus, Merced, Madera, Fresno, Kings, Tulare y la parte del valle del condado de Kern. Los funcionarios de contaminación del aire advierten a los residentes del Valle que reduzcan la exposición a las emisiones de material particulado (PM) permaneciendo adentro en las áreas afectadas.

La contaminación de partículas puede causar ataques de asma, agravar el bronquitis crónico y aumentar el riesgo de ataque cardíaco y ataque cerebral. Las personas con enfermedades cardíacas o pulmonares deben seguir los consejos de sus médicos para lidiar con episodios de exposición a PM. Aquellos con condiciones respiratorias existentes, incluyendo el COVID-19, los niños pequeños y personas de tercera edad, son especialmente susceptibles a los efectos de salud de esta forma de contaminación. Cualquier persona que experimente una mala calidad del aire debido al humo de los incendios forestales debe trasladarse al interior, a un ambiente con aire acondicionado y filtrado con las ventanas cerradas. Es posible que las máscaras comunes de tela y papel que usan las personas debido a preocupaciones de COVID-19 no las protejan del humo de los incendios forestales.

Los residentes pueden utilizar el Sistema de Notificación de la Calidad del Aire Actual (RAAN, por sus siglas en inglés) del Distrito para revisar la calidad del aire en cualquier ubicación del Valle visitando [myRAAN.com](http://myRAAN.com). Las estaciones de monitoreo del aire del Distrito están diseñadas para detectar partículas microscópicas de PM 2.5 que existen en el humo. Sin embargo, es posible que no se detecten partículas



## NEWSRelease

www.valleyair.org



24hr Media Cell Phone (559) 309-3336

For immediate release 08-21-2020

Attn: Local news, weather, health and assignment editors

Media Contact:  
Heather Heinks (559) 230-5898  
Spanish-language  
Maricela Velasquez (559) 230-5849

### Ongoing California Wildfires Causing Very Unhealthy Air Quality

*District cautions Valley residents of increasing health impacts*

Ongoing multiple wildfires across California and surrounding the Valley are continuing to cause smoke impacts to all counties of the Valley air basin. Through this week, PM<sub>2.5</sub> concentrations have continued to increase, resulting in very unhealthy air quality across the region. As a result, the District is reissuing a health caution, which will remain in place until the fires are extinguished. The District anticipates unhealthy air quality to affect the Valley through the weekend and warns residents to stay indoors.

The SCU Lightning Complex Fire, located in multiple northern counties, including Stanislaus and San Joaquin Counties; the Hills Fire, located in Fresno County west of Avenal near Highway 33; the CZU August Lightning Complex Fire, located in various locations across San Mateo and Santa Cruz Counties; and the Lake Fire located in Los Angeles County southeast of Lebec are producing smoke that is infiltrating into the San Joaquin Valley which includes San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare Counties, and the valley portion of Kern county. Air pollution officials caution Valley residents to reduce exposure to the particulate matter (PM) emissions by remaining indoors in affected areas.

PM pollution can trigger asthma attacks, aggravate chronic bronchitis, and increase the risk of heart attack and stroke. Individuals with heart or lung disease should follow their doctors' advice for dealing with episodes of PM exposure. Those with existing respiratory conditions, including COVID-19, young children and the elderly, are especially susceptible to the health effects from this form of pollution. Anyone experiencing poor air quality due to wildfire smoke should move indoors, to a filtered, air-conditioned environment with windows closed. The common cloth and paper masks individuals are wearing due to COVID-19 concerns may not protect them from wildfire smoke.

Residents can use the District's Real-time Air Advisory Network (RAAN) to track air quality at any Valley location by visiting [myRAAN.com](http://myRAAN.com). District air monitoring stations are designed to detect microscopic PM 2.5 particles that exist in smoke. However, larger particles, such as ash, may not be detected. If you smell smoke or see falling ash in your immediate vicinity, consider air quality "unhealthy" (RAAN Level 4 or higher) even if RAAN displays lower level of pollution.

# Traditional Media Coverage



## 'Stay home!' air officials warn in response to 'unprecedented' fire season, dangerous smoke

BY STEVEN MAYER smayer@bakersfield.com 17 hrs ago 4



The oil fields over the Panorama Bluffs were hard to see during an afternoon in mid-August.  
Alex Horvath / The Californian



The message coming from the San Joaquin Valley Air Pollution Control District on Monday was deadly serious.


They spoke as if your life might depend on it.


"We have fires to the north of us, to the south of us, the east and the west, so the challenge we've had is it doesn't really matter which way the wind is blowing. The smoke continues to come into the San Joaquin Valley," said Jon Klassen, director of air quality science and planning for the air district.

And because the valley's topography is shaped like a bowl, smoke is often trapped here once it arrives.





# Wildfire Webpage


RAANWAAQsAQI



## Wildfire Information

SIGN UP AND RECEIVE HOURLY AIR QUALITY INFORMATION THROUGH RAAN

 Wildfire smoke impacting Valley air quality, use caution. [More details here.](#)



### Wildfires that may be impacting air quality in the San Joaquin Valley:

**SCU Lightning Complex**  
Multiple locations throughout north Coastal Range


**CZU August Lightning Complex**  
Santa Cruz and San Mateo Counties

**LNU Lighning Complex**  
Napa, Sonoma, Lake, Yolo, and Solano Counties

**SQF Complex**  
Eastern Tulare County

**August Complex**  
Mendocino County, Mendocino National Forest

**Creek Fire**  
Near Shaver Lake, Fresno County



### Cal/OSHA has an emergency regulation in place to protect workers from wildfire smoke

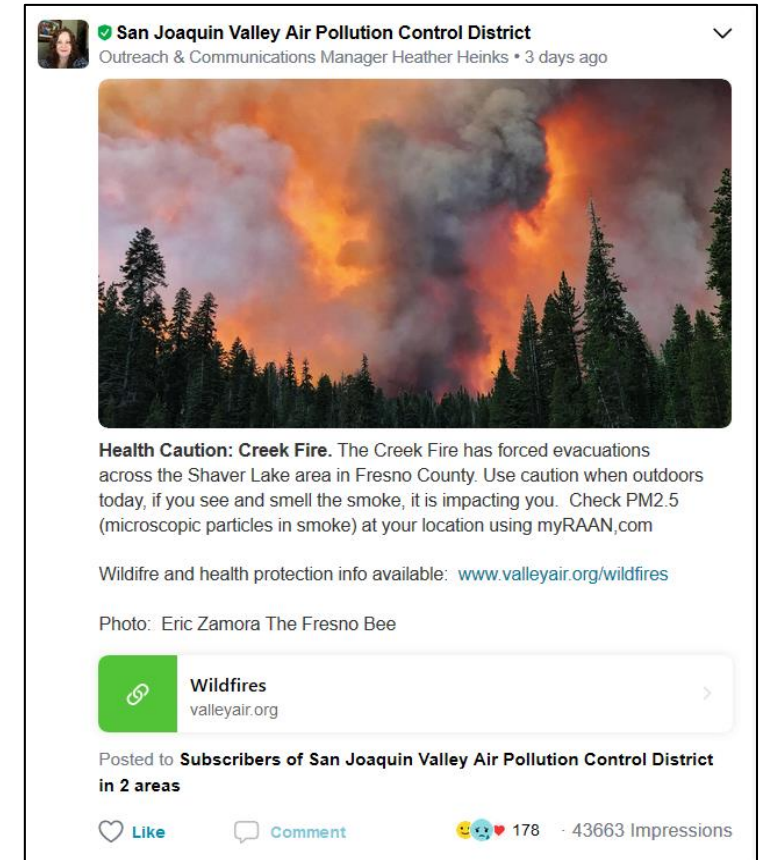
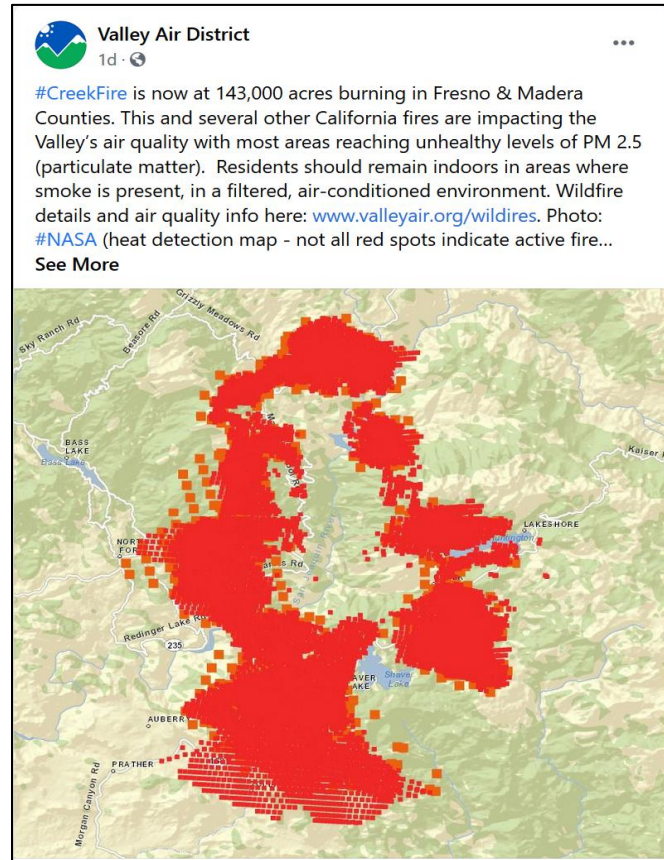
LEARN MORE ABOUT THIS REGULATION

Outdoor workers who have questions regarding smoke impacts due to wildfires should first contact their employer. Employers and/or employees who have additional questions or need assistance with programs to protect workers exposed to smoke from wildfires can call [Cal/OSHA's Consultation Services Branch](#) at **800-963-9424**. Complaints about workplace safety and health hazards can be filed confidentially with a [Cal/OSHA district office](#).

Per the CalOSHA regulation, you may check AQI forecasts and current AQI for PM2.5 from the following sources:

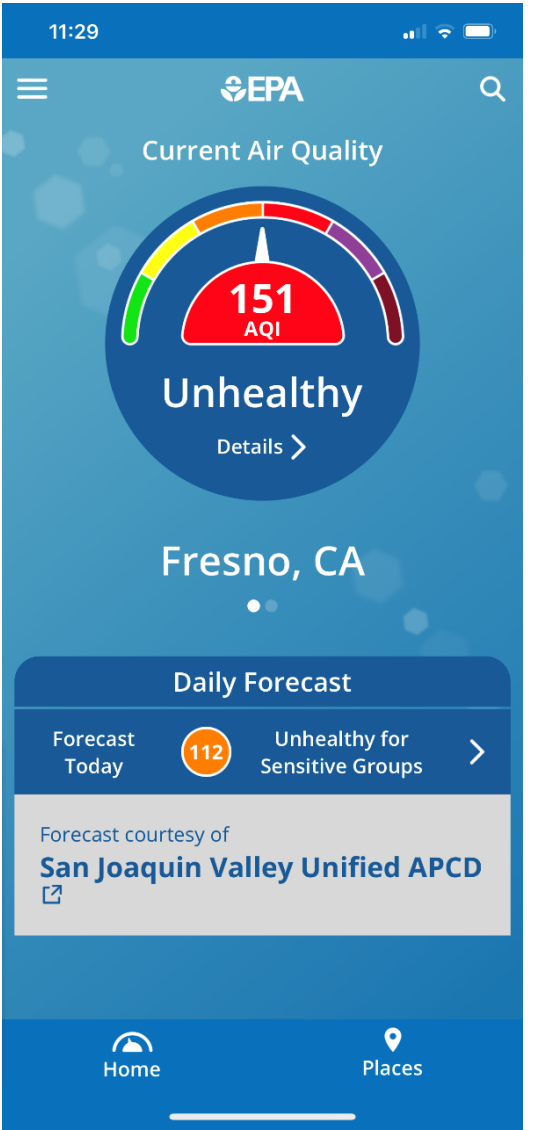
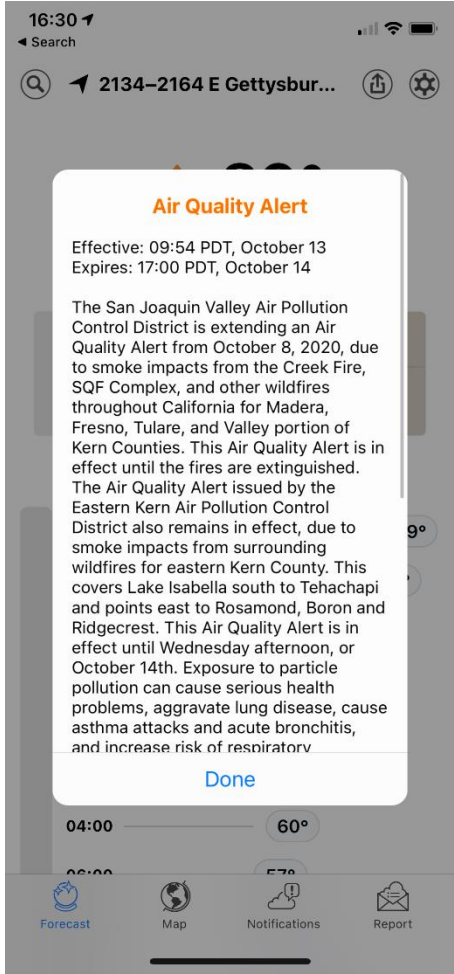
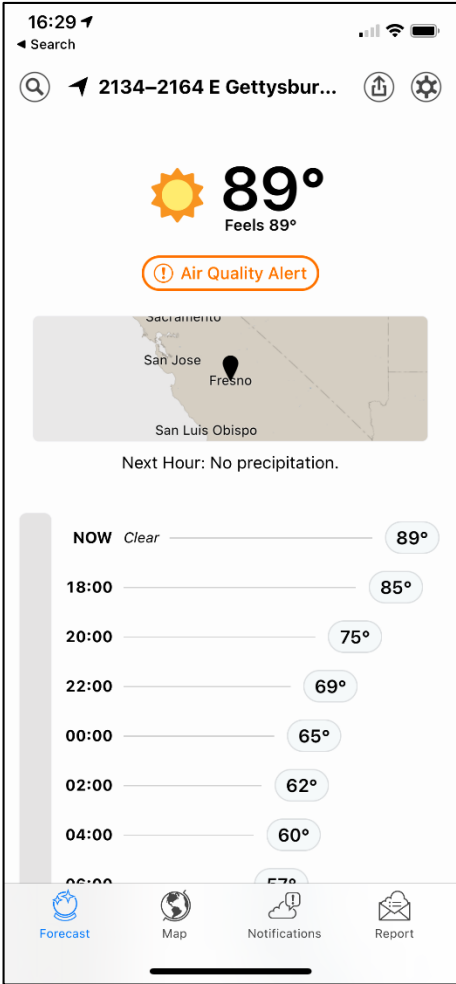
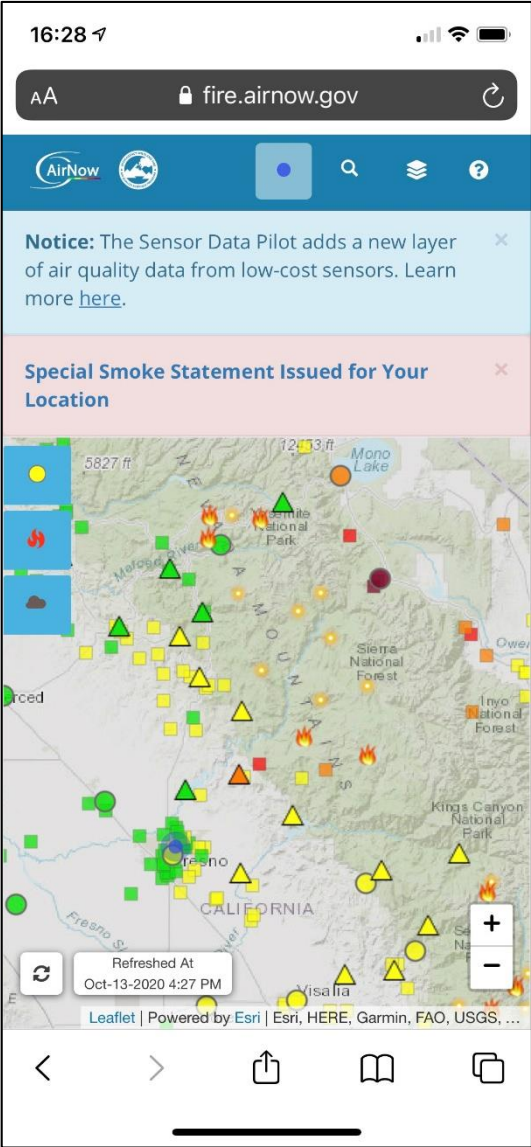
- U.S. EPA [AirNow](#) (current AQI and daily forecast)
- U.S. Forest Service [Wildland Air Quality Response Program](#)
- [California Air Resources Board](#)
- [Valley Air District Air Quality Forecast](#)

# Significant Social Media Outreach





# Additional Resources Assist Residents Stay Informed Regarding Air Quality



# District Support of Prescribed Burning and Other Fuel Reduction Efforts

- District has long been supportive of prescribed burning and other fuel reduction efforts such as mechanical thinning
- Prescribed burning has been used as a land management tool to mimic natural fires and bring better health to the forest ecosystem under planned and controlled conditions that lessen air quality impacts
- District has worked with land managers to enhance fuel reduction strategies aimed at minimizing wildfire impacts



# Enhanced Strategies in Support of Prescribed Burning

- Efforts that have led to more opportunities for land managers to complete fuel reduction projects
  - Flexible in decision-making for proposed prescribed burn projects
  - Allowed projects to occur even under marginal dispersion conditions, being careful to ensure projects were remote in location and nearby communities were not impacted
  - Authorized all requested prescribed burning without requiring segmentation of burn projects into multiple smaller burns resulting in quicker project completion, while also reducing personnel costs

# THANK YOU!

Questions/Comments?