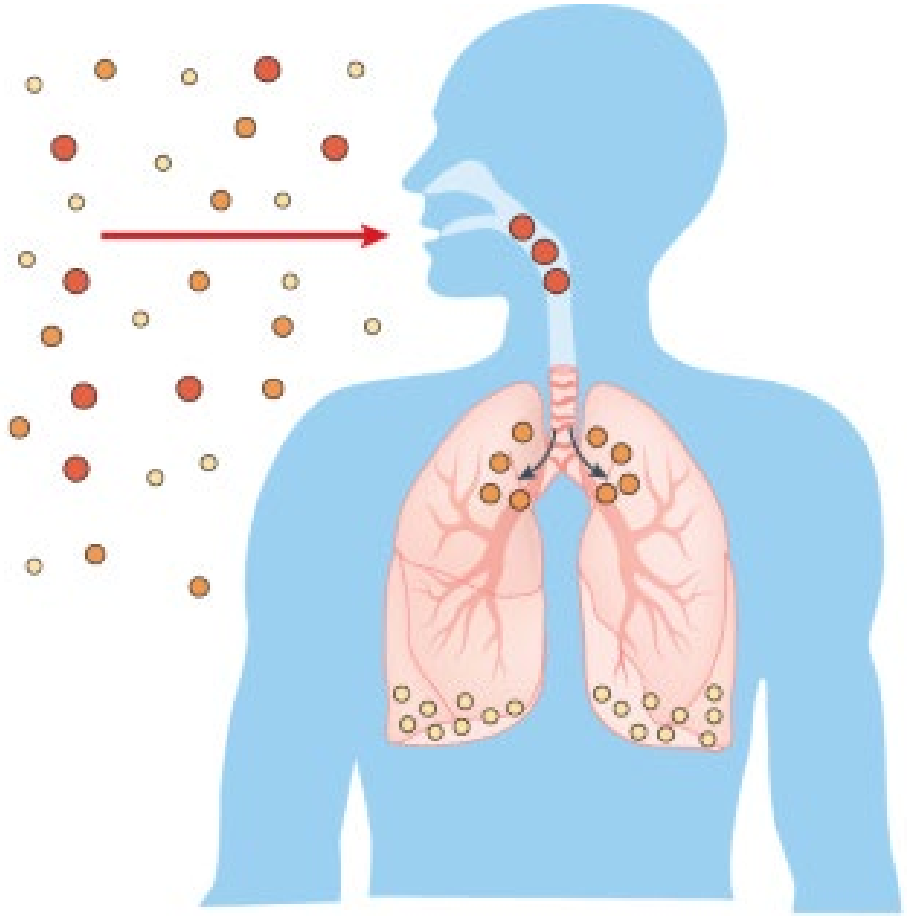
Report on 2023-2024 Winter Residential Woodsmoke Reduction Strategy

San Joaquin Valley Air Pollution Control District
Environmental Justice Advisory Group

June 27, 2024

Public Health Impacts of Wood Burning

- Scientific research links prolonged inhalation of woodsmoke to a variety of health effects
  - Lung disease and decrease in lung function for children
  - Hypertension and heart disease, cancer or heart failure, neurological effects
- Residential wood-burning emissions are among the largest sources of direct PM2.5 emissions during winter months
  - Evening inversions magnify concentrations and exposure to residents in neighborhoods



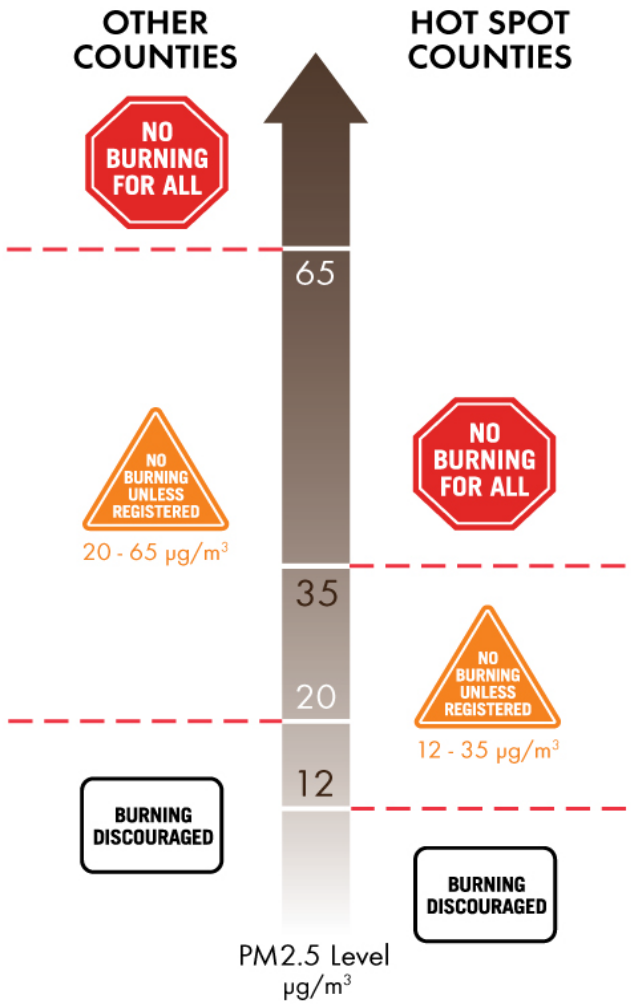
Significant Air Quality Improvements due to District's Residential Woodsmoke Reduction Strategy

- Residential wood burning curtailment program highly cost-effective public health measure
  - Large PM2.5 reductions with low implementation cost
  - Improves public health by reducing emissions when and where most needed
- Significant reductions in direct PM and its precursors have contributed to reaching key air quality milestones
  - Attainment of 150 $\mu g/m^3$ PM10 standard
  - Attainment of 65 $\mu g/m^3$ 24-hr PM2.5 standard
  - Significant progress toward 15 $\mu g/m^3$ annual PM2.5 standard (entire Valley below standard in 2023)
  - Significant progress toward 35 $\mu g/m^3$ 24-hr and 12 $\mu g/m^3$ annual standards

2023-2024 Winter Season Air Quality Overview

- Valley maintained significant progress in improving air quality due to District's PM2.5 control strategy, including comprehensive residential woodsmoke reduction program
  - Set record low average PM2.5 concentration across the counties of the Valley
  - Zero days exceeding 65 µg/m^3 PM2.5 standard for fifth consecutive year
  - Record low Valley exceedances of 24-hour PM2.5 standard of 35 µg/m^3
  - First time with zero exceedances of 24-hour PM2.5 standard for months of January and February (95% of days across counties met 24-hour PM2.5 health standard during 2023-24 winter season)
  - Maintained continued progress in increasing number of "Good" and "Moderate" AQI days across all counties in the District
  - Winter season PM2.5 speciation analysis shows key components of PM2.5 have decreased

Fifth Winter Season Implementing New Residential Woodsmoke Reduction Strategy

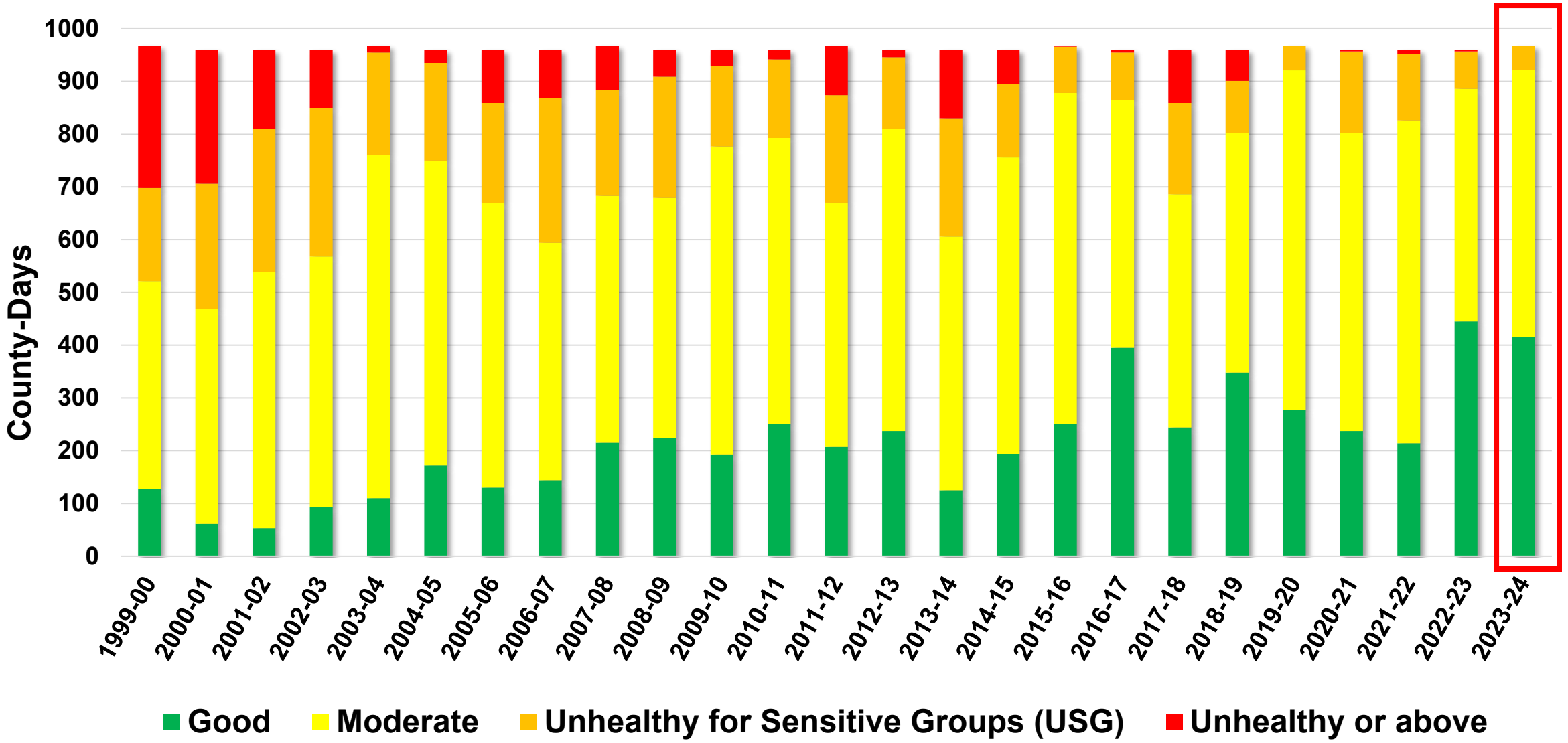


- 2019 Rule 4901 amendments lowered curtailment threshold for Hot Spot Counties of Madera, Fresno, and Kern
- Public education and incentives program enhancements
- New requirements for fireplace remodels, enhanced compliance during real property transfers, and enhanced visible emissions limits

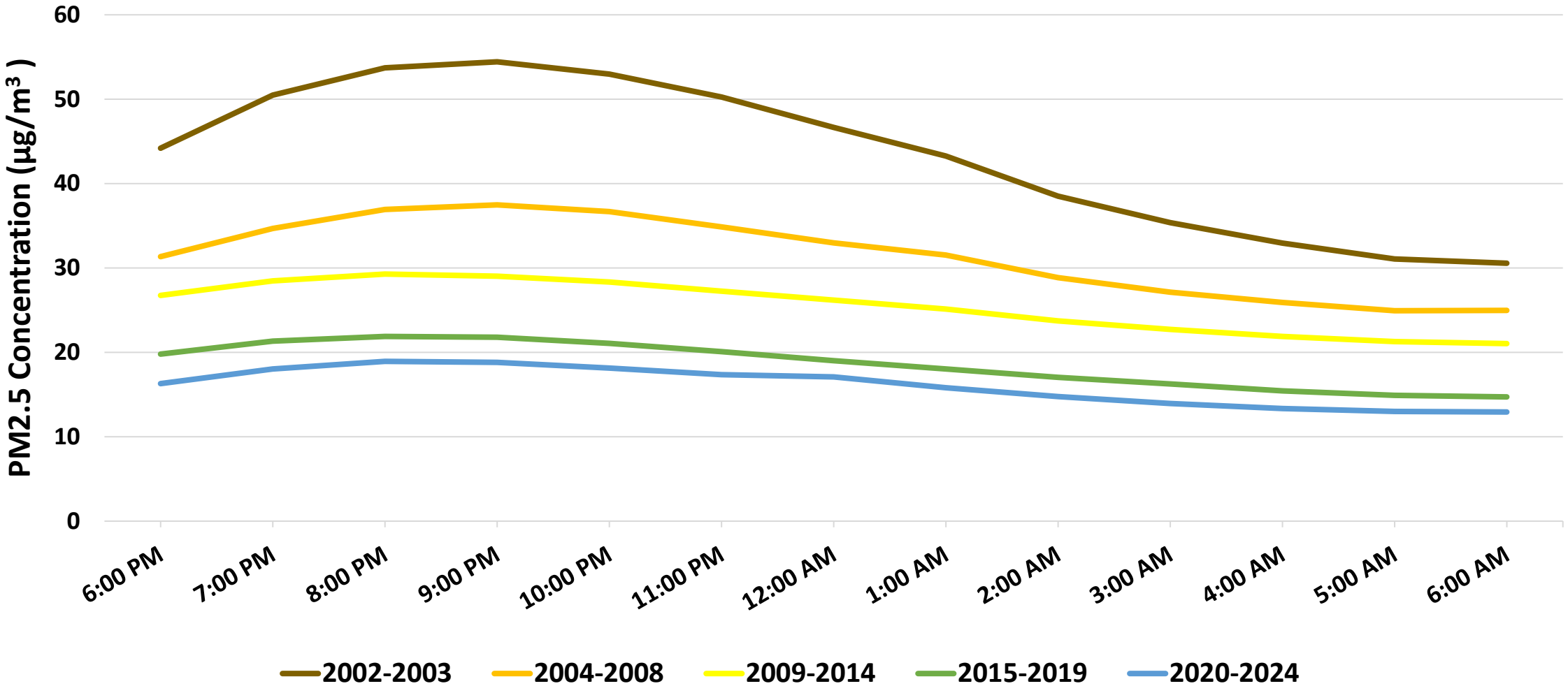
Decrease in No Burn Declarations across Counties during 2023-2024 Winter Season

Season	San Joaquin	Stanislaus	Merced	Madera	Fresno	Kings	Tulare (Valley Portion)	Kern (Valley Portion)	Basin-Days	County-Days
2014-2015	59	70	62	71	80	75	73	81	**84**	**571**
2015-2016	36	50	23	39	65	59	44	48	**69**	**364**
2016-2017	22	30	23	33	43	39	44	45	**50**	**279**
2017-2018	45	51	49	52	57	67	61	64	**68**	**446**
2018-2019	50	47	41	40	59	63	57	50	**74**	**407**
	2019 Rule 4901 Amendment									
2019-2020	47	49	27	83	99	68	57	98	**103**	**528**
2020-2021	66	62	53	87	106	73	77	103	**107**	**627**
2021-2022	71	78	67	95	104	80	86	105	**106**	**686**
2022-2023	50	50	46	72	97	60	54	99	**100**	**528**
2023-2024	47	47	36	79	100	55	49	100	**102**	**513**

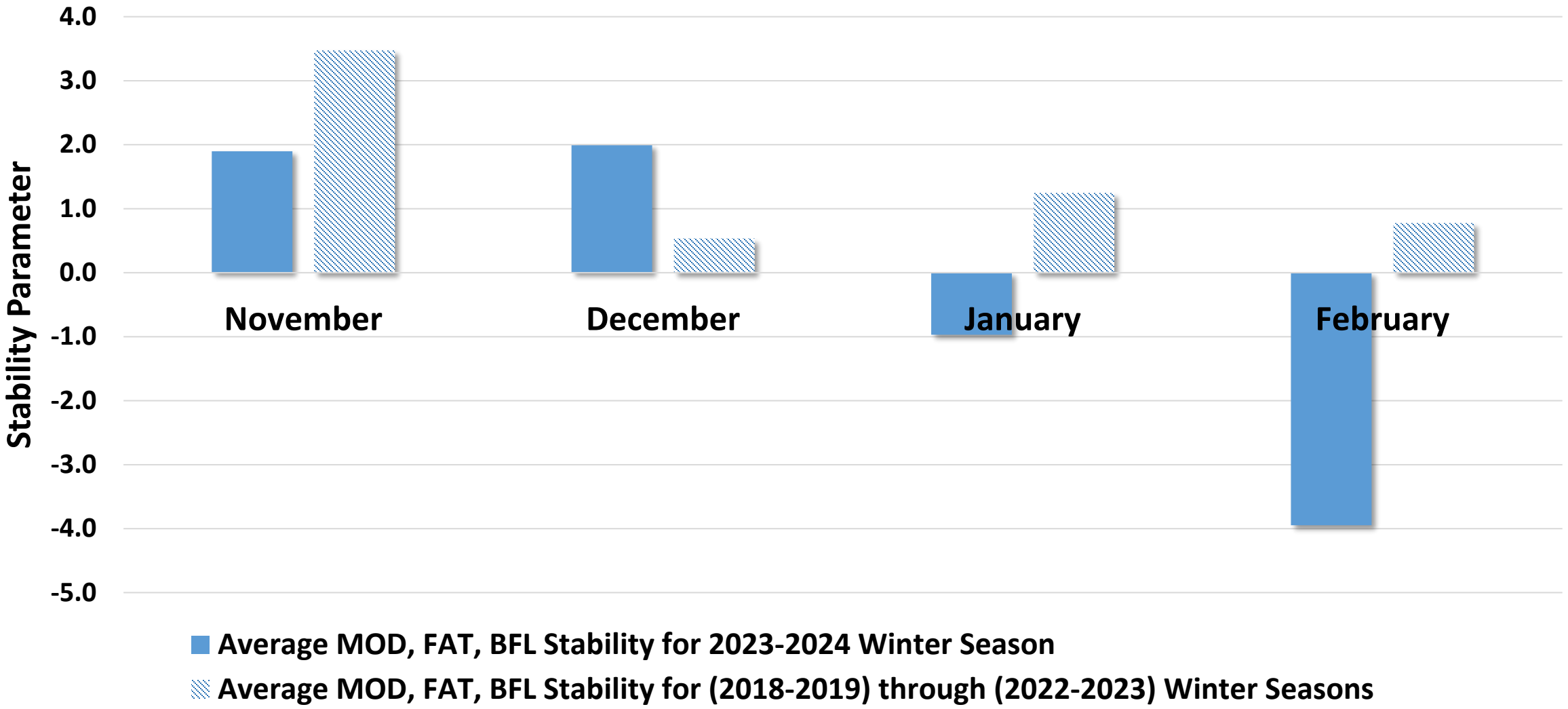
Winter Season Air Quality Trends



Decrease in Evening PM2.5 Concentrations

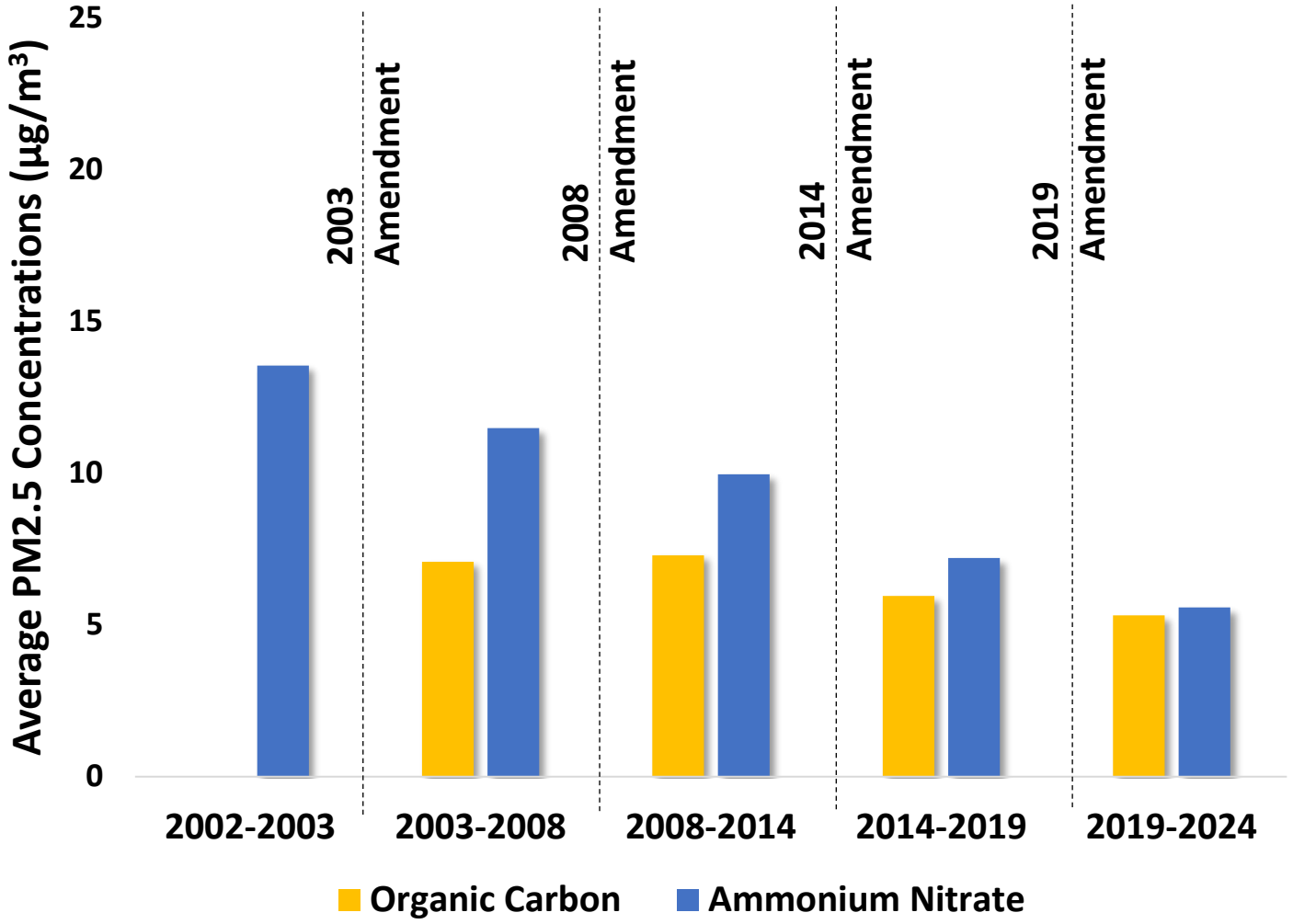


2023-2024 Winter Season Atmospheric Stability



Decrease in Key PM2.5 Components (Modesto)

- Overall trend shows reduction in key PM2.5 species of ammonium nitrate and organic carbon
- 2023-24 season recorded significantly lower concentrations of key species than last two seasons
- Other Valley speciation sites show similar trends



Fireplace and Woodstove Change-out Incentive Program Funding Participation

- Incentive program critical part of District's wood burning emissions reduction strategy
  - During calendar year 2023, 3,058 vouchers issued, $11.2 million awarded
  - During 2023-24 winter season, 1,400 vouchers issued, $5.5 million awarded
  - Since 2009, over 30,000 vouchers issued, $64.3 million awarded

Fireplace & Woodstove
CHANGE-OUT
valleyair.org/change-out

Comprehensive District Outreach

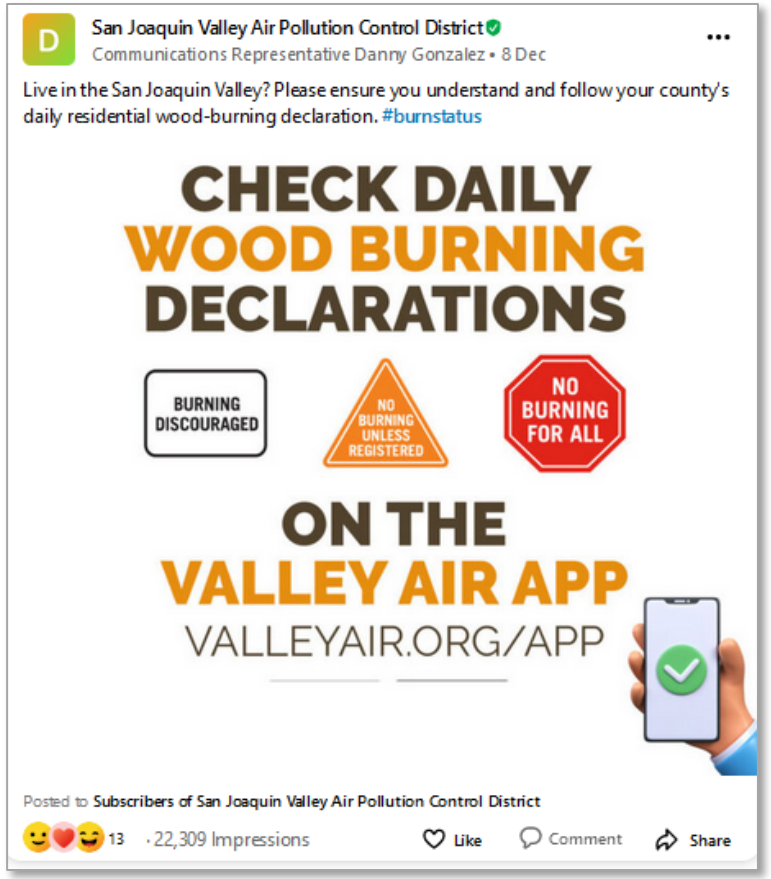
- Continued public education and outreach for Residential Wood Smoke Reduction program to protect air quality through following strategies:
  - Increasing emphasis on health impacts of woodsmoke through program messaging
  - Warn residents when air pollution is expected to deteriorate and provide steps they can take to protect their health
  - Educate residents on actions they can take to reduce emissions and the associated health impacts of wood smoke
  - Encourage residents to upgrade to natural gas or electric heat pump through the District's Fireplace and Woodstove Change-Out program
  - Strategic coordination of paid, earned (posts or conversations about the District, reviews, etc.) and owned media (the District's assets like social media accounts, website)

Extensive Outreach to Engage the Public in Multiple Ways

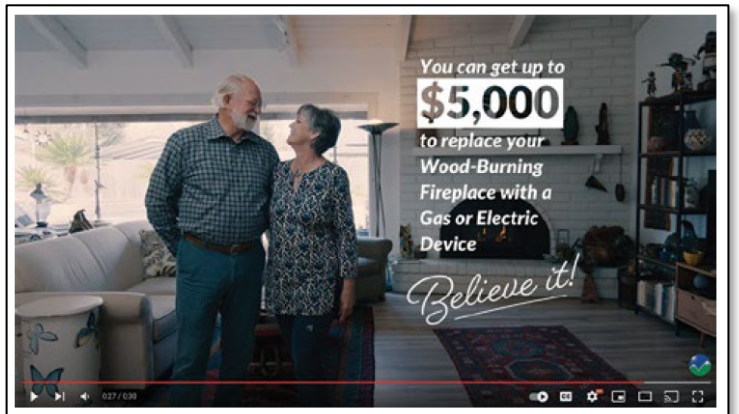
- Tradition bilingual advertising including network TV, cable TV, outdoor Billboards in targeted neighborhoods
- Social media outreach via Facebook, Twitter, Instagram, Nextdoor to generate healthy dialogue
- Digital advertising, including on demand streaming services (such as Hulu) and Search Engine Marketing to target individuals searching for wood burning related content
- District's smart-phone application
- Public relations through multiple bilingual Press Releases and coordination with Valley meteorologists and weather reporters

Outreach Statistics for 2023-2024 Season

- More than 34,000 public inquiries made with 1-800-SMOG-INFO, Spanish & English
- Over 260,000 visits to District's Residential Wood Smoke Reduction program webpage
- Received 292 public complaints for suspected wood burning activity
- Made 53,609,539 total impressions

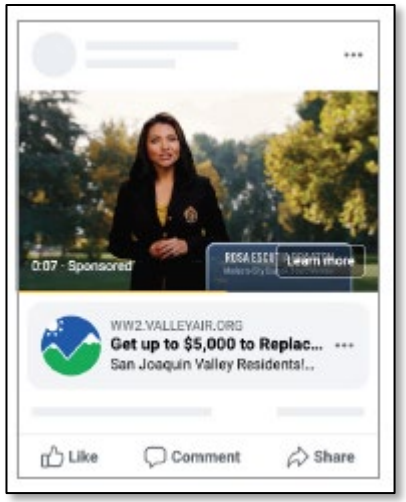


Examples of Outreach



"The program from start to finish, finding a fireplace insert to getting it installed, was quite easy. It just pays to do it."







Proteja la salud pública.
¡Por Favor No Queme!

La quema de leña emite partículas peligrosas en el aire del Valle. Esta forma de contaminación puede causar infecciones respiratorias, enfermedad pulmonar, ataques cardíacos y hasta derrame cerebral.

Cada invierno, el Distrito le informa si la quema de leña residencial es permitida en su condado cada día, basado en la calidad del aire y el tipo de aparato de leña que tiene en tu residencia.

Residencias sin ninguna otra fuente de calor en el hogar o sin acceso a gas natural (incluso si utiliza gas propano) están exentos de estas restricciones. Sin embargo, fogatas y aparatos para quemar leña al aire libre en todas las residencias aún están sujetos a las restricciones diarias, independientemente del estado de excepción.

Si tiene una estufa o inserto de gas que NO quema leña o combustible granulado, la puede usar cualquier día.

Hay tres niveles de declaraciones:

NO QUEMAR PARA TODOS — Nadie puede quemar.

NO QUEMAR A MENOS QUE ESTE REGISTRADO — Si tiene un aparato que quema limpiamente y está registrado, usted puede quemar en su residencia.

QUEMAR ES DESALENTADO — Si tiene que quemar, asegúrese de que su leña esté limpia, curada y seca. La leña sin curar arde lentamente, crea emisiones adicionales y puede resultar en una multa.

Active Compliance Support Activities

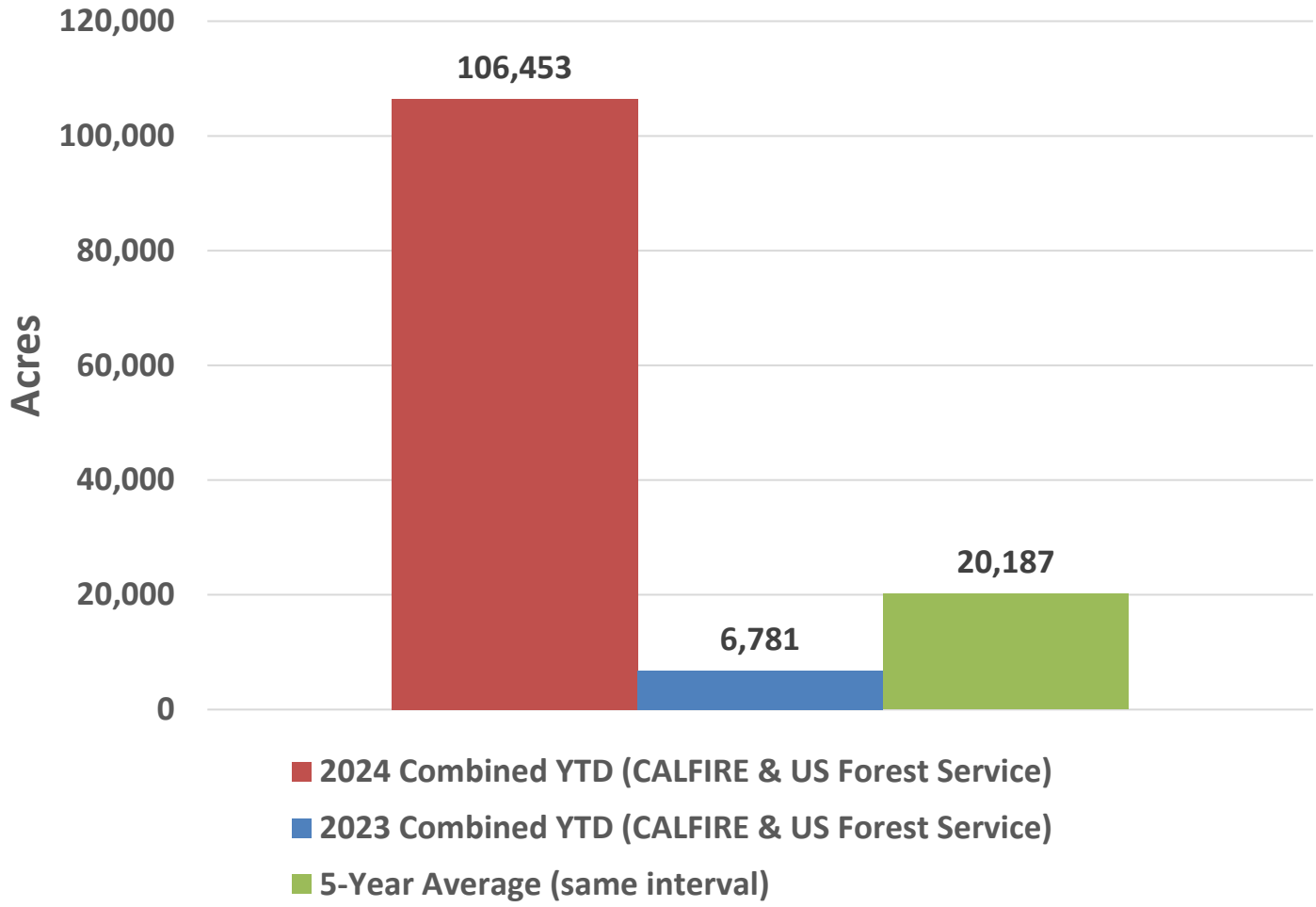
- In addition to extensive education and incentive efforts, enforcement activities also conducted in support of residential woodsmoke reduction strategy, including nights and weekends
  - 3,487 staff hours spent on proactive monitoring and complaint response
  - 470 Notices of Violation for 2023-24 season
  - $100 penalty ($50 discount for attending District smoke school)
  - Higher penalties for repeat offenders
- Utilized low-light imaging technology designed to work with a single lens reflex camera to detect smoke in low- to no-light conditions
- Increased public awareness, support, and compliance

Looking Ahead

- Development of new public opinion survey/feedback process
- Work closely with community organizations to provide education regarding residential woodsmoke reduction strategy
- Continue to enhance outreach to promote heat pumps and other zero-emission technologies, particularly in light of new federal funding opportunities and challenges (equity issues, electricity costs, home capacity limitations)
- Explore new research regarding source apportionment and woodburning contribution to PM2.5 levels in Valley
- Enhancements to District Rule 4901 as part of development of attainment plan for 2012 PM2.5 standard

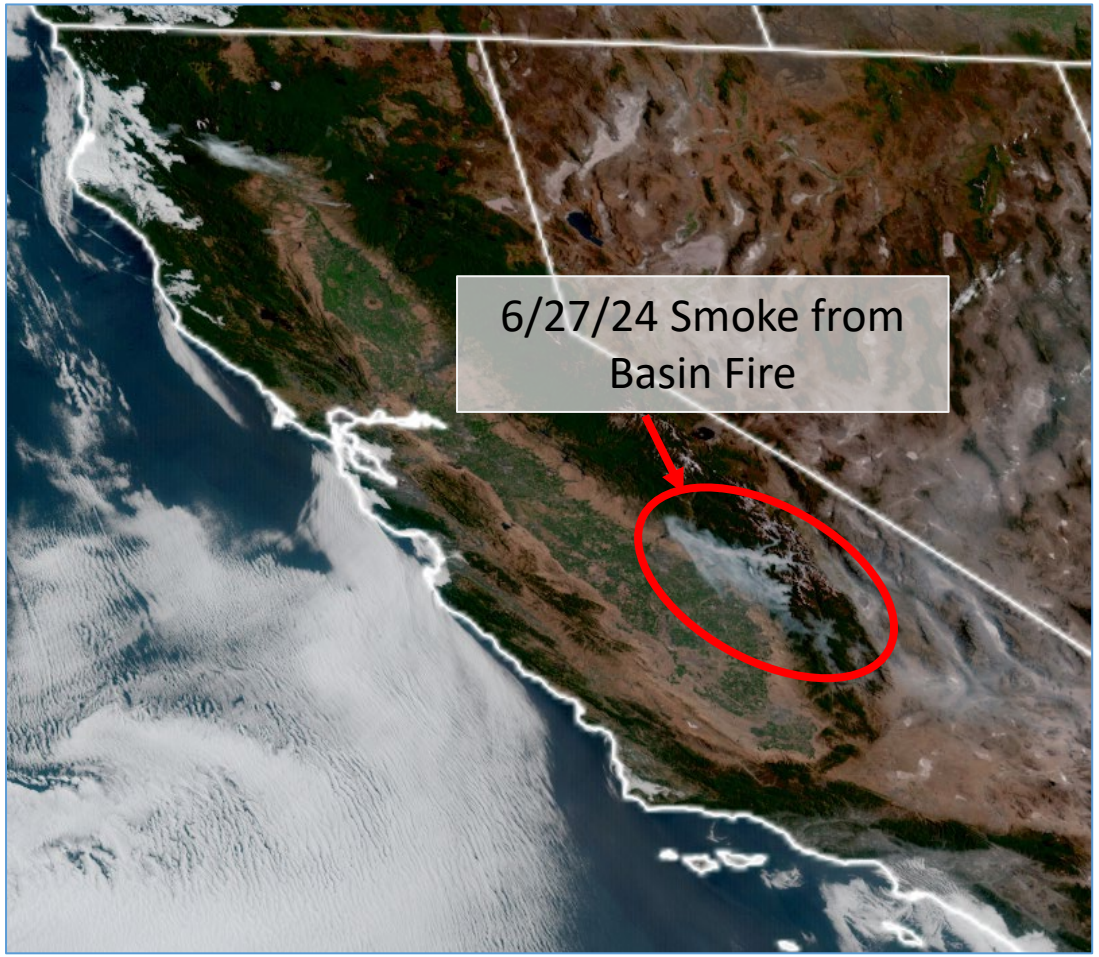
Early Start to 2024 Wildfire Season

- 2024 has seen more acres of wildfires across California compared to previous years (to-date)
- Valley fires have primarily been grass fires including the nearly 14,200 acre Corral Fire in San Joaquin County - started on 6/1/2024
- Multiple new fire starts between 6/24 and 6/26, including Fresno June Lightning Complex and Basin Fire in Fresno County



Data source: Cal Fire (Combined Cal Fire and Forest Service Acres)

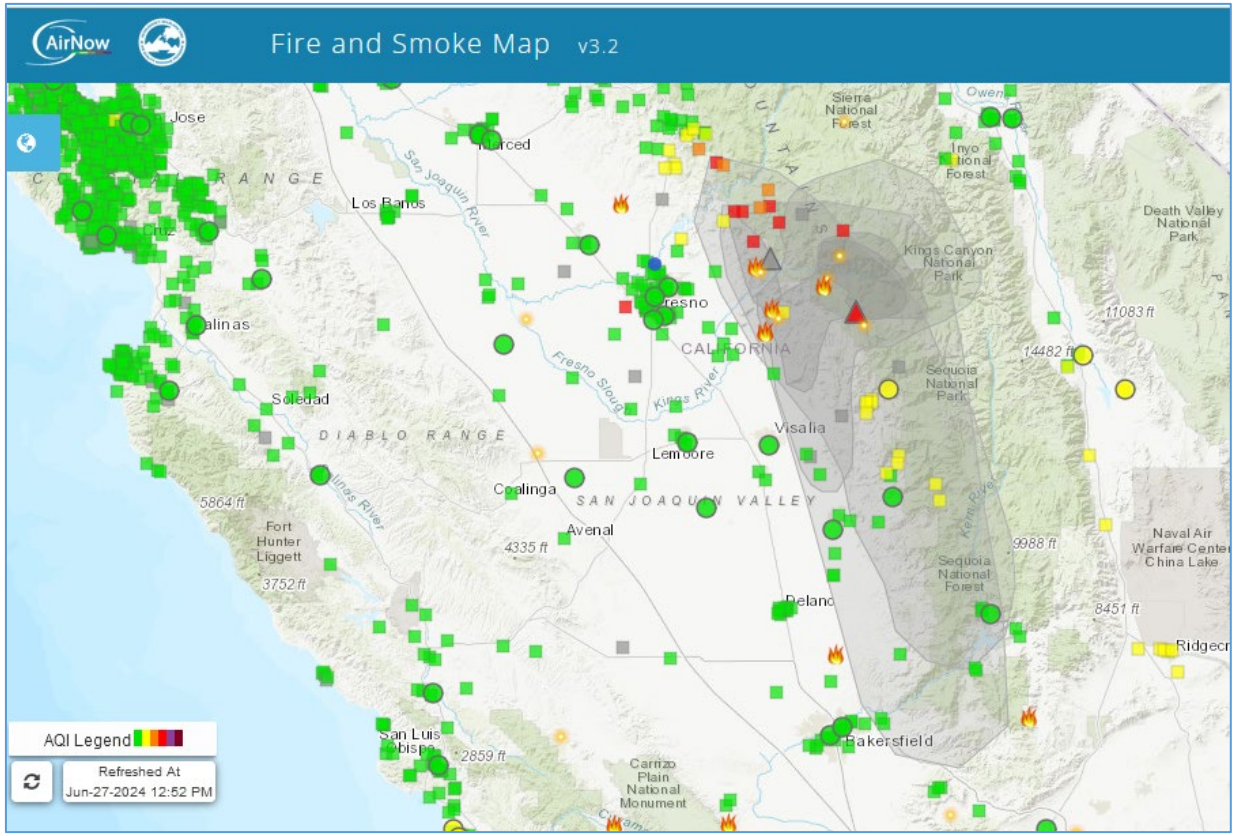
Smoke from the Basin Fire in Fresno County



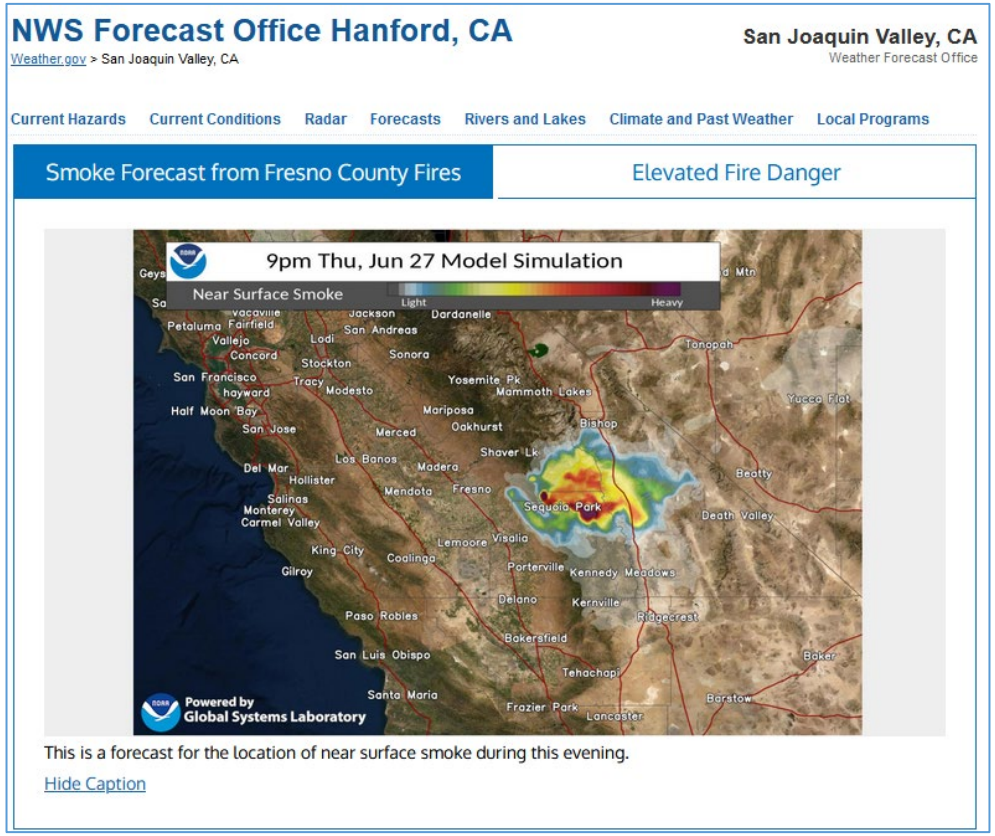
- Basin Fire started on Wednesday, 6/26
- Smoke impacting residents, communities, and visitors to the Sierras in Madera, Fresno, Tulare, and Kern Counties
- On 6/27, Basin Fire is more than 2,600 acres

Smoke from the Basin Fire in Fresno County

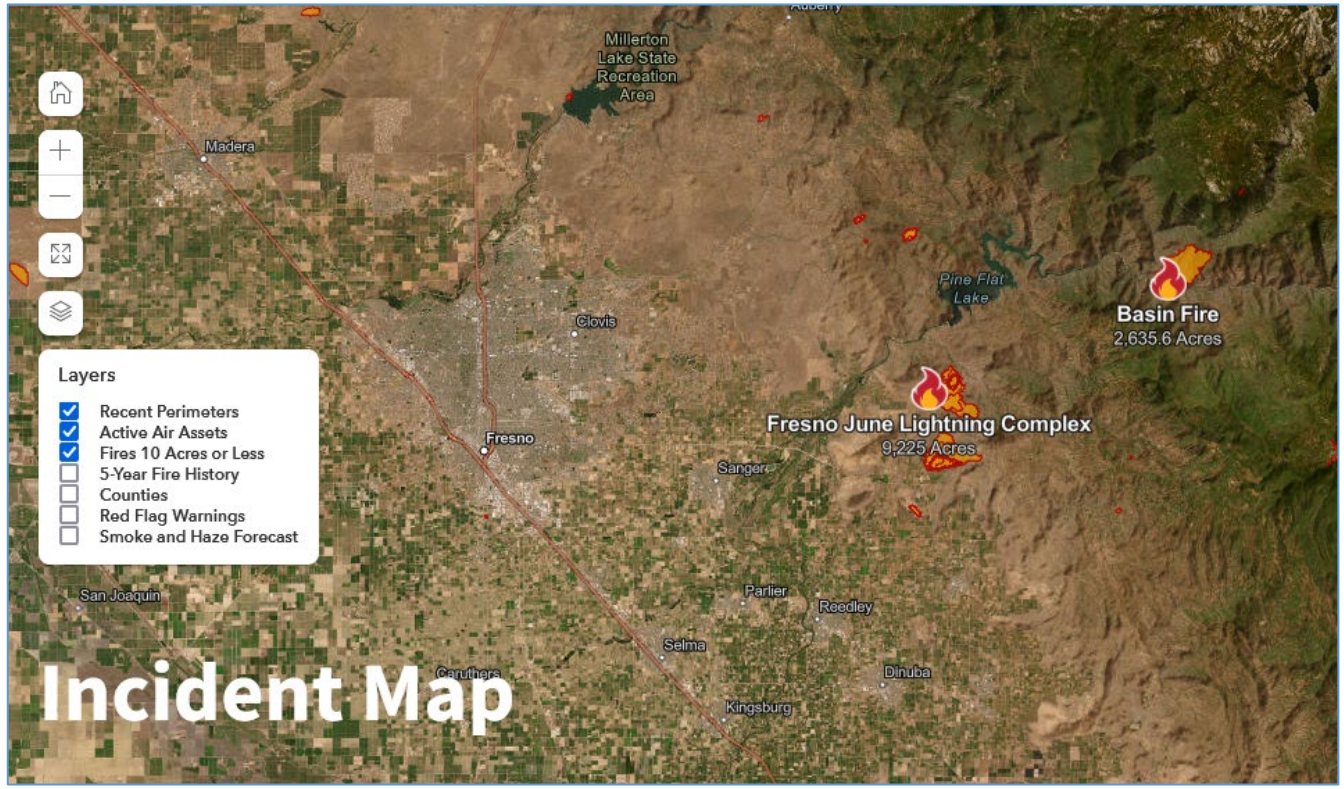
AirNow Fire and Smoke Map



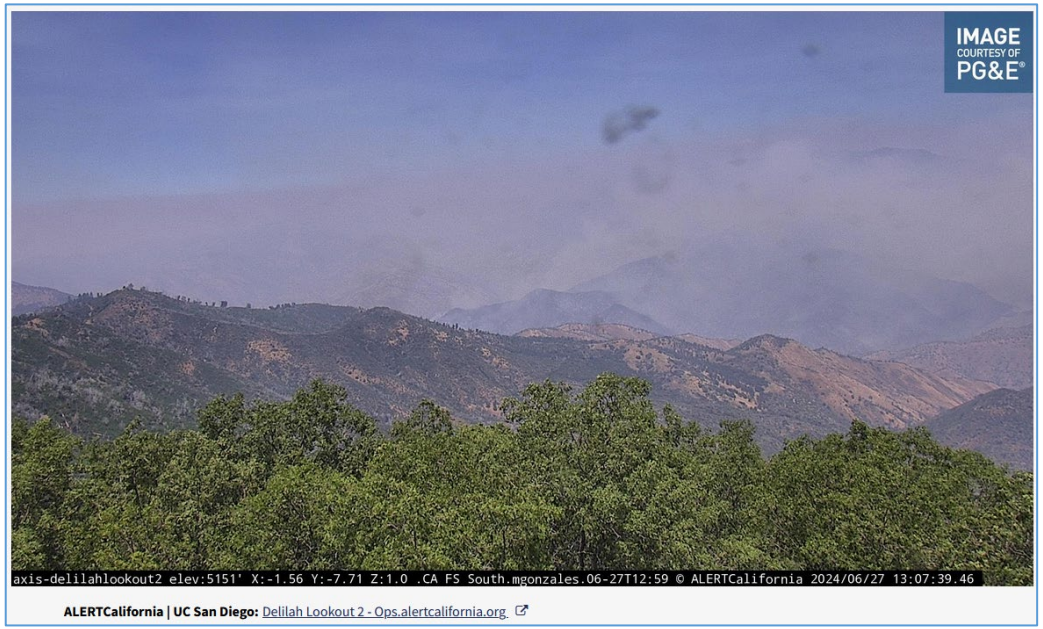
National Weather Service Smoke Forecast



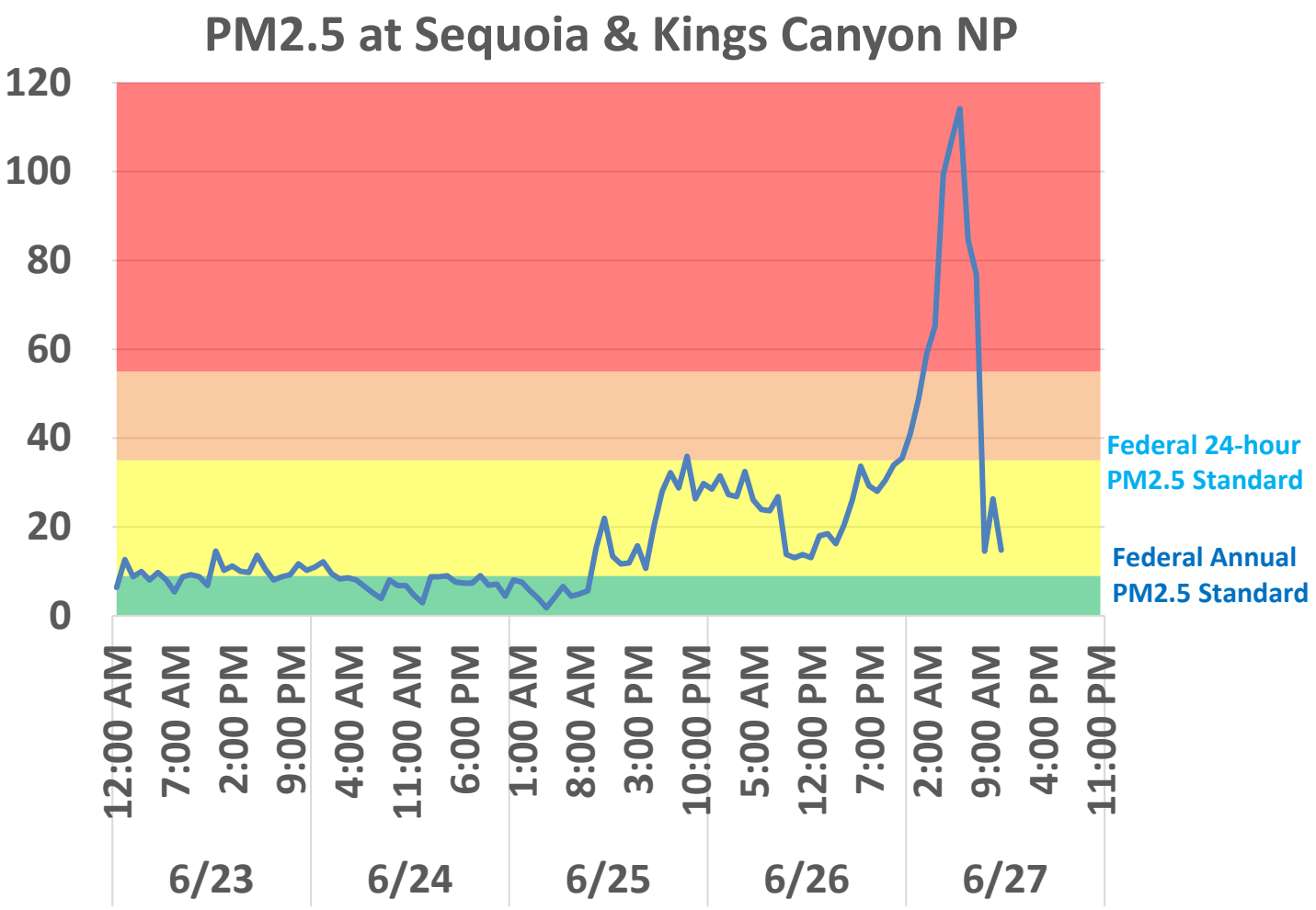
Multiple Fires in Fresno County



- Fresno June Lightning Complex also in Fresno County
- June Complex - 9,225 acres



Hourly PM2.5 Impacts from Smoke



- Hourly PM2.5 readings at the Ash Mountain air monitoring site show impacts from smoke
- Impacts expected to occur as long as the fire is producing smoke
- Increases in PM2.5 can occur again overnight and with changes in weather pattern

District Issued Press Release on 6/27/24



NEWS Release

HEALTHY AIR LIVING

www.valleyair.org

24hr Media Cell Phone (559) 309-3336

For immediate release
06/27/2024

Media Contact:
Heather Heinks (559) 994-7591

Attn:
Local news, weather, health and assignment editors

Spanish-language Contact:
Maricela Velásquez (559) 708-7087

Fresno County Wildfires Impact Valley Air Quality

District has issued an Air Quality Alert with the National Weather Service

Ongoing wildfires in the Eastern Fresno County are generating smoke that is now affecting the San Joaquin Valley. Weather patterns through this weekend have the potential to continue to draw wildfire smoke into the Valley counties of Madera, Fresno, Tulare and Kern. As a result, the District has issued an Air Quality Alert with the National Weather Service. Residents impacted by the smoke are advised to stay indoors to minimize exposure to particulate matter (PM) emissions. This Air Quality Alert is in effect until the fires are extinguished.

The District strongly urges the public to take health-protective actions to stay safe when smoke from wildfires affects the Valley, including following air-quality recommendations when making decisions about outdoor activities. Additional health protective actions include:

- Staying indoors
- Using portable air cleaners or high-efficiency filters to remove fine particles from the air
- Planning ahead and creating a clean air room
- Visiting a Clean Air Center. Similar to the Valley's cooling centers, the District's Clean Air Centers provide relief when wildfires & smoke events occur

Wildfire smoke contains particulate matter (PM), which can trigger asthma attacks, aggravate chronic bronchitis, and increase the risk of heart attack and stroke. Those with existing respiratory conditions are especially susceptible to the adverse health effects of 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 and contact their primary care

- Informing the public of the present smoke impacts and health risks
- Providing resources for protecting from health impacts
- Air Quality Alert issued with NWS
- Social media posts