

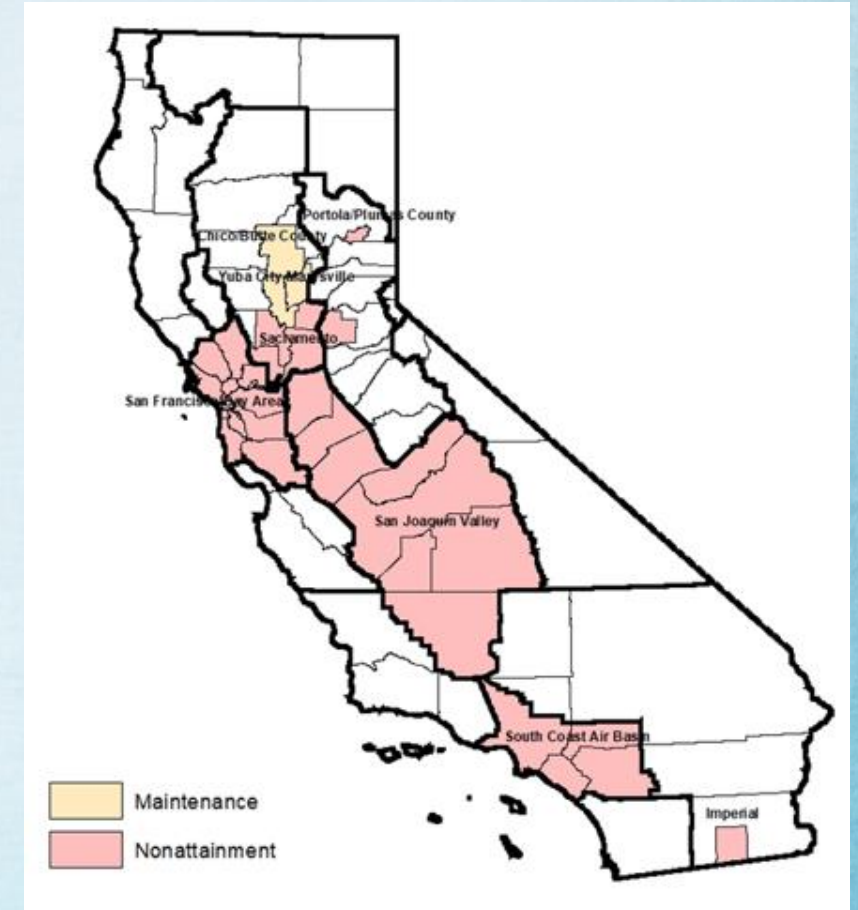


# **CARB's Role in Phasing Out Open Agricultural Burning**

September 12, 2023  
Lodi Wine Grape Commission

# California's Air Quality Challenges

- Federal CAA defines ambient air quality standards, nonattainment areas, and attainment deadlines
- CARB and local air districts monitor air quality and develop attainment plans
- California has most significant air quality challenges in the U.S.
- Reductions from all air pollution sources needed to meet standards on time



# Shared Regulatory Responsibilities

## FEDERAL



### US EPA

Sets & enforces national air quality standards.  
Regulates interstate transportation.



Trains



Planes



Ships

Approves State Implementation Plans.

## STATE



### CALIFORNIA AIR RESOURCES BOARD

Regulates mobile sources of air pollution,  
greenhouse gases & consumer products.



Cars



Trucks



Buses

Develops State SIP Strategy,  
and works with local air districts to  
develop & adopt SIPs  
for all nonattainment areas.

## LOCAL



### Local Air Districts

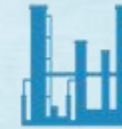
Regulates stationary & local  
sources of air pollution.



Fireplaces



Factories



Refineries



Power plants

Develops & adopts State Implementation  
Plans for nonattainment areas  
within their District.

# CARB's Role in Addressing Ag Burning

- Smoke Management Guidelines
- State Implementation Plan development
- Biomass management (primarily GHG)
- Legislative direction

# Agricultural Burning Background

- Agricultural practices generate large amounts of woody biomass
- Open burning has historically been a cost-effective disposal method
- In the San Joaquin Valley, the Valley Air District forecasts air quality and makes burn/no-burn calls
- District permits are required to burn
- Burning occurs on days when the weather allows for good dispersion

# Why are Open Agricultural Burning Restrictions in Place?

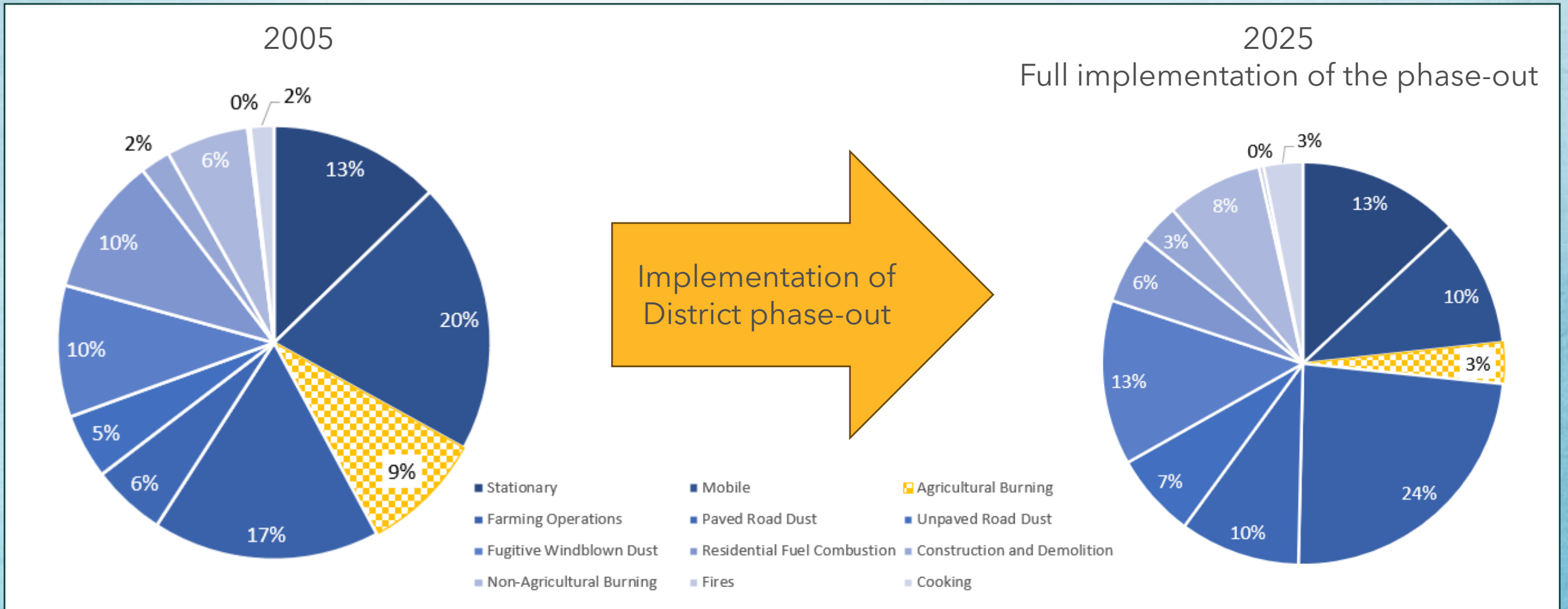
To protect public health by reducing exposure to harmful pollutants

To improve San Joaquin Valley air quality

To comply with a 2003 California law that required the San Joaquin Valley to phase out open agricultural burning

Senate Bill (SB) 705,  
Health and Safety Code  
section 41855.5

# PM2.5 Emissions from Agricultural Burning in the Valley



# Senate Bill 705 (2003, Florez)

- Calls for phasing out agricultural burning
- Applies only to the San Joaquin Valley
- District responsible for implementing the phase-out
  - District has progressively phased out burning for many categories
- CARB responsible for reviewing any District requests for postponement of the phase-out, concurring where appropriate
  - CARB concurrence in effect for certain crop categories
- California law allows for agricultural burning to address disease issues
- SB 705 has additional requirements in the Valley for diseased crops



# Legislature Appropriates Funding for Alternatives to Agricultural Burning

June 2021

CA Legislature  
appropriates  
\$180 million for SJV

September 1, 2021

District launches  
enhanced incentive  
program

August 2021

CARB grants funds  
to SJVAPCD

# CARB Contact

Michael Benjamin, D. Env, Division Chief  
Air Quality Planning and Science Division  
California Air Resources Board

[michael.benjamin@arb.ca.gov](mailto:michael.benjamin@arb.ca.gov)

(916) 201-8968

# Update on Agricultural Open Burning Phase-Out and Ag Burn Alternatives Grant Program

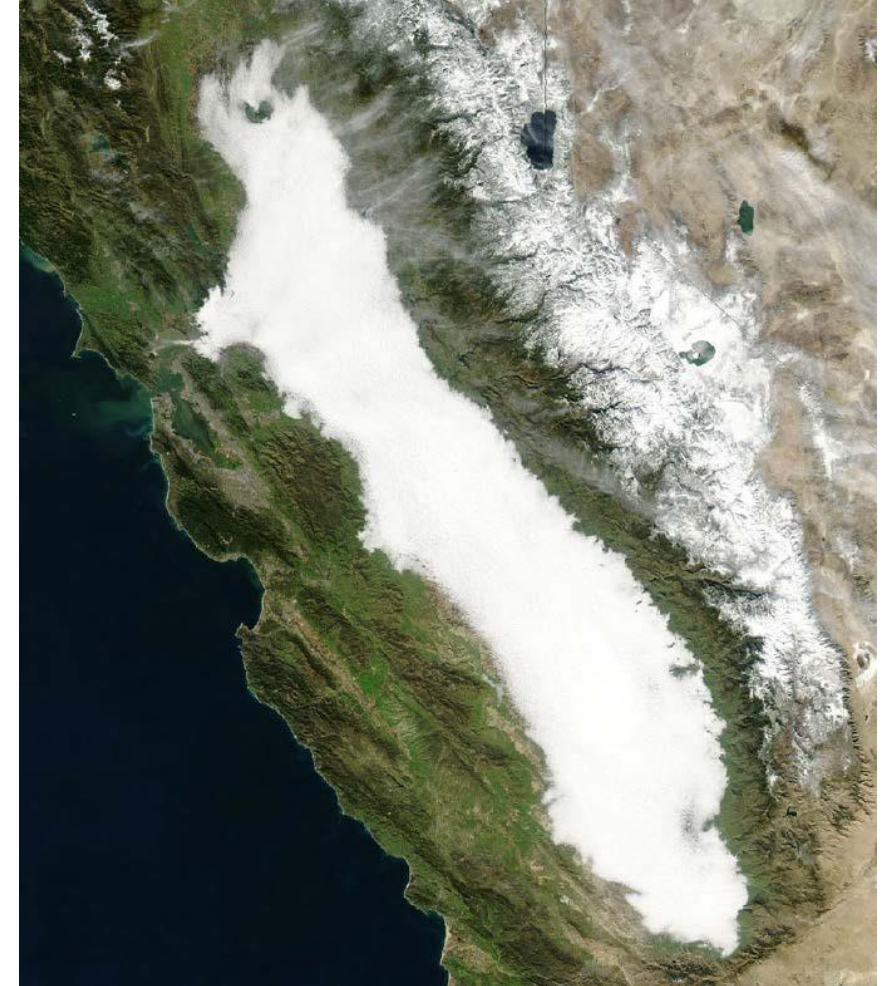
Lodi Winegrape Commission Meeting

September 12, 2023

# Valley's Air Quality Challenges

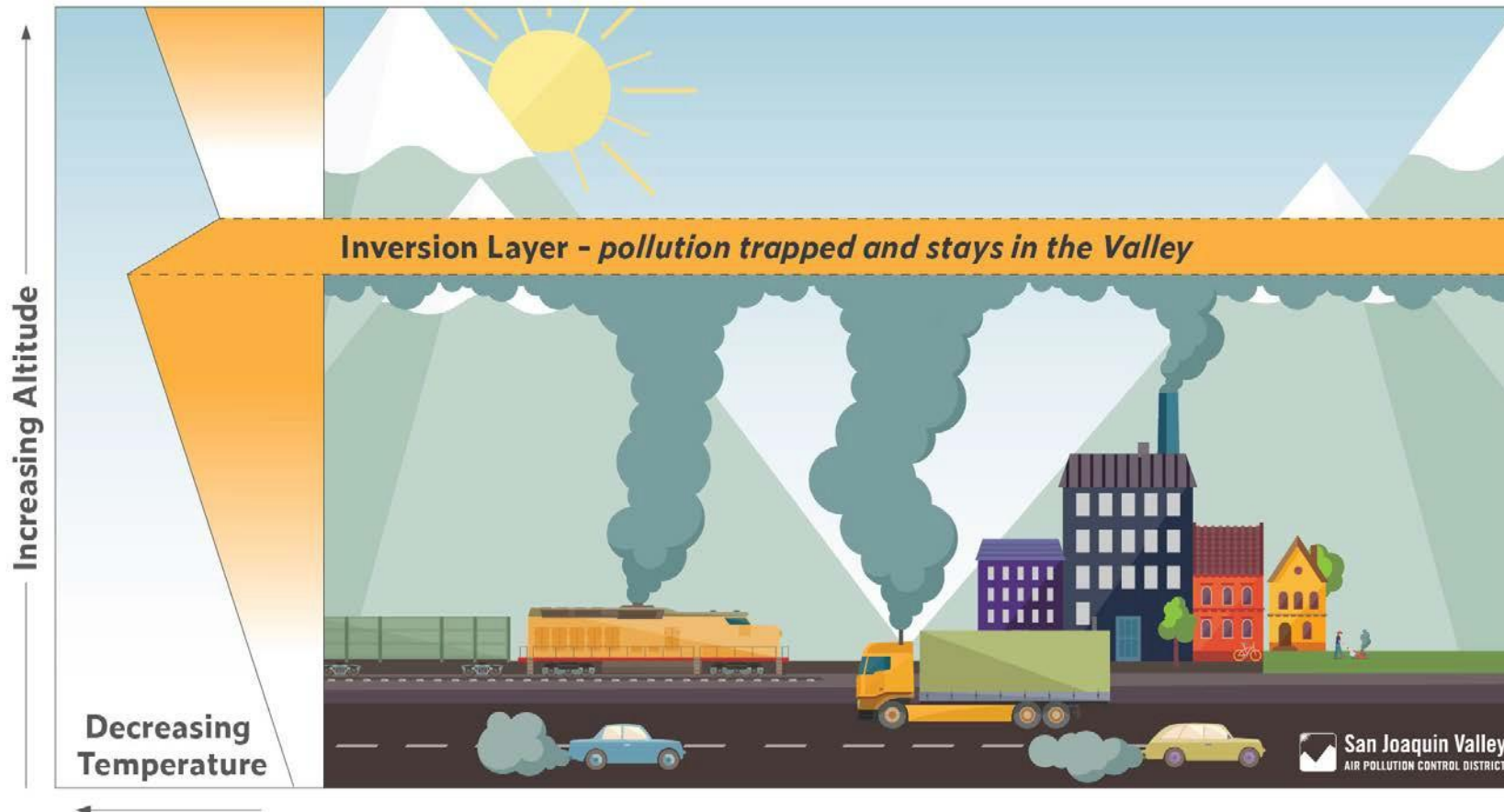
# Valley's Air Quality Challenges

- Valley's challenges in meeting federal air quality standards unmatched due to unique combination of topography and meteorology
- Valley faced with variety of challenges including role as major goods movement corridor, high population growth, pollution transport from other areas, wildfires
- 7 of 10 most disadvantaged California communities located within the San Joaquin Valley



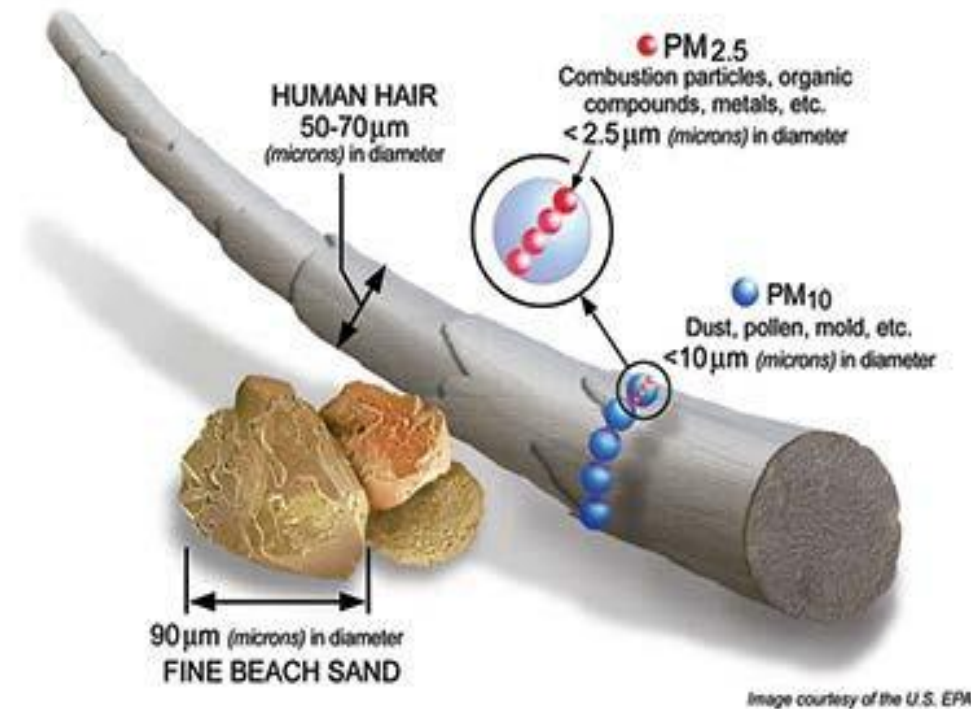
# Valley's Air Quality Challenges (cont'd)

- Unique combination of topography and meteorological trap pollution within the Valley



# Air Quality and Health Effects: PM2.5

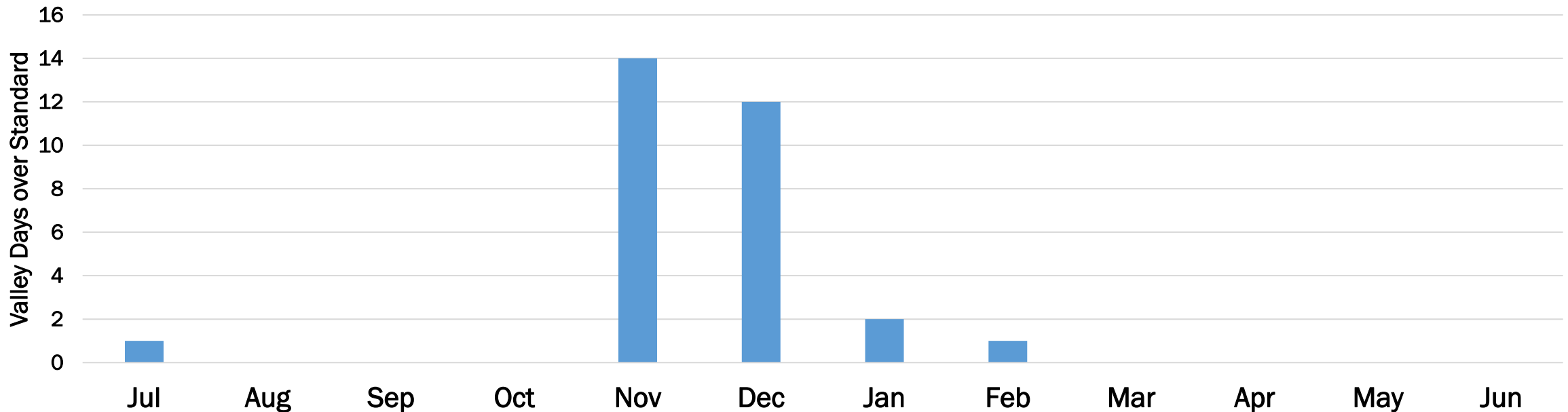
- Particles with a diameter of 2.5 microns and smaller
- A mixture of solid particles and liquid droplets in the air
- Emitted directly or formed indirectly through chemical reactions between gases
- Exposure associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days



# Peak PM2.5 in Winter Season

- Concentrations of PM2.5 reach peak levels during winter season
  - Strong winter temperature inversions, long periods of atmospheric stagnation
  - Atmospheric chemistry conditions during winter can trigger secondary chemical formation of PM2.5 (e.g. ammonium nitrate)
  - Winter months of November through February most likely to experience days over standard

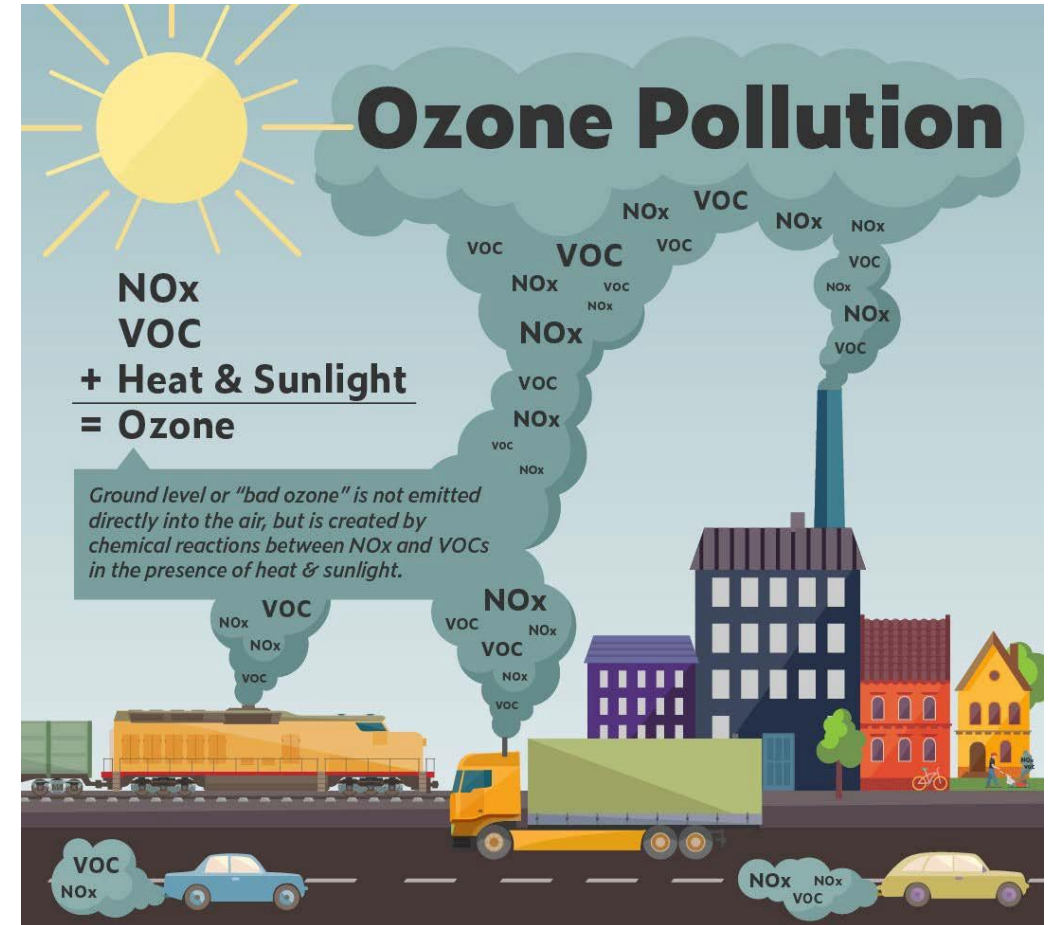
Valley Days Exceeding 35  $\mu\text{g}/\text{m}^3$  PM2.5 Standard (2022-2023)





# Air Quality and Health Effects: Ozone

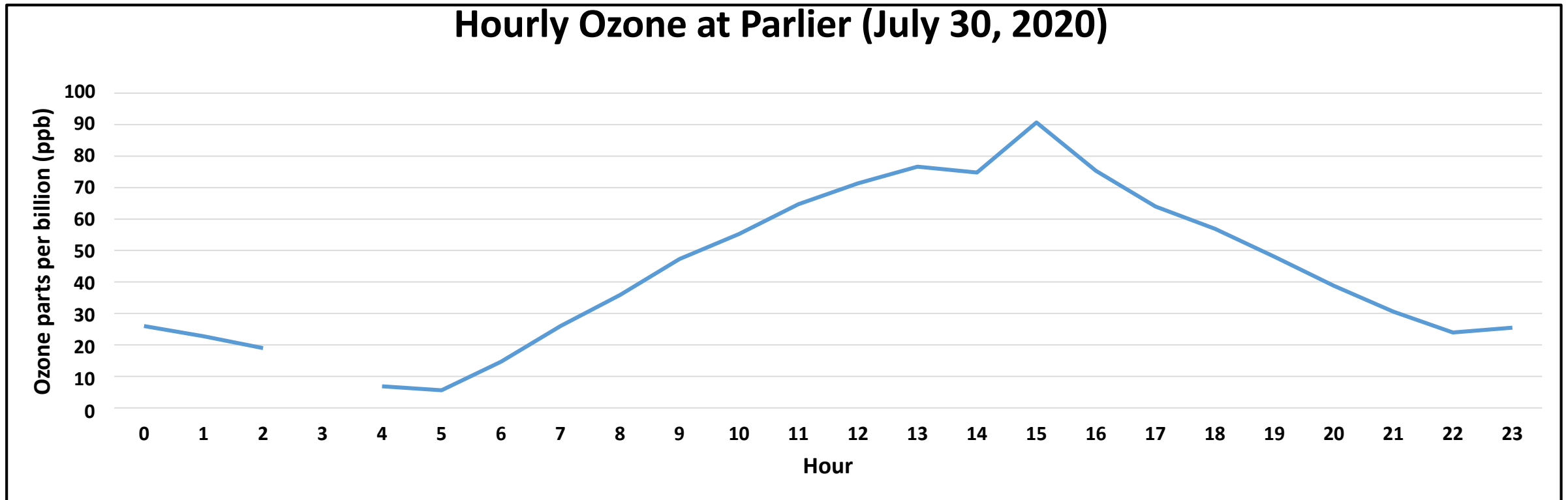
- Ozone formed through reaction of NO<sub>x</sub>, and VOCs in presence of heat/sunlight
- We experience high ozone in the summer, with peaks in the middle of the day
- Ozone most significantly impacts people with asthma, children, older adults, and outdoor workers
- Exposure to ozone causes coughing, throat irritation, pain, burning, or discomfort in the chest, chest tightness or shortness of breath



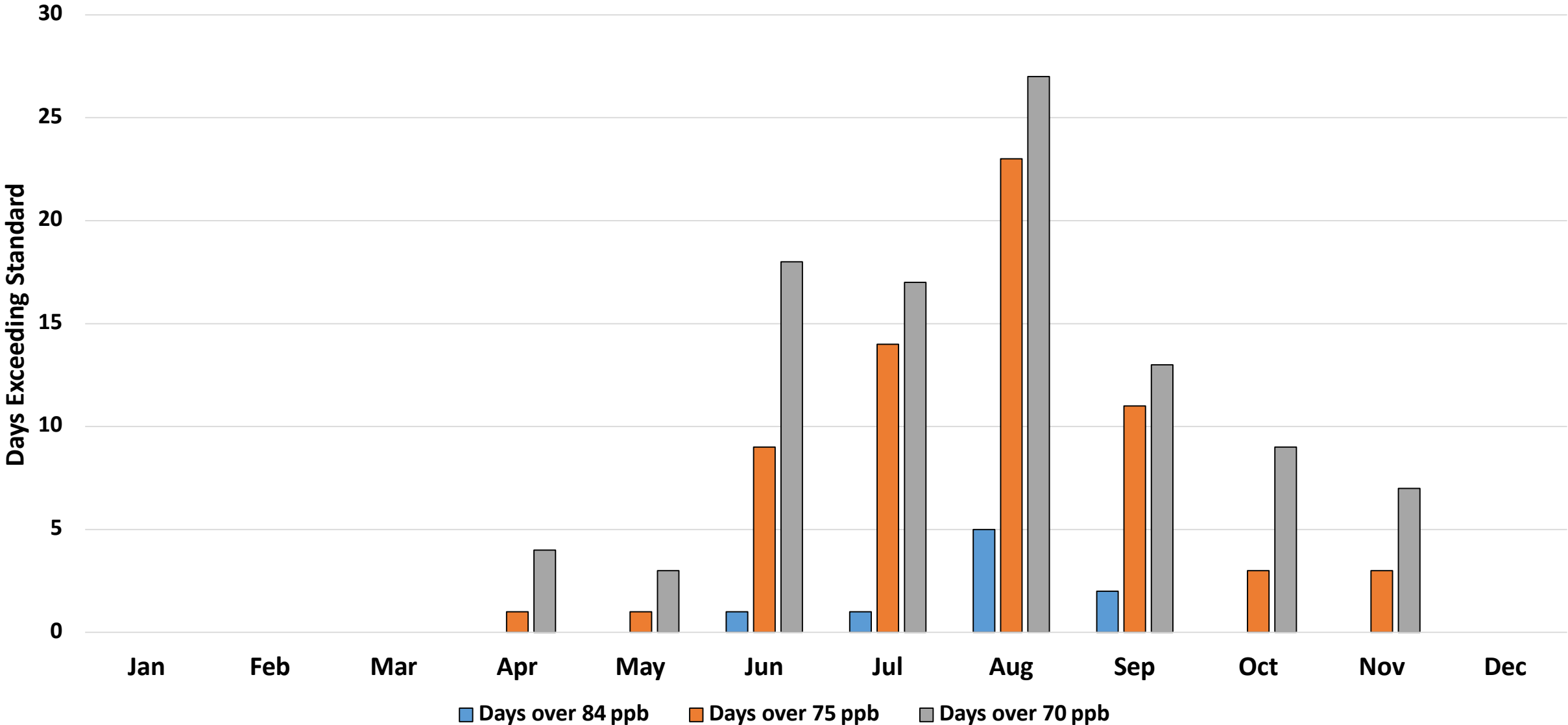
Industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors and chemical solvents are major sources of oxides of nitrogen (NO<sub>x</sub>) and volatile organic compounds (VOC).

# Peak Ozone in Summer Season

- Concentrations of ozone reach peak levels during summer season
  - Valley summer's produce abundance of heat and solar radiation
  - Long periods of high pressure systems, placing a lid on the bowl of the Valley
  - Afternoon hours commonly have highest ozone, along with months late in the summer

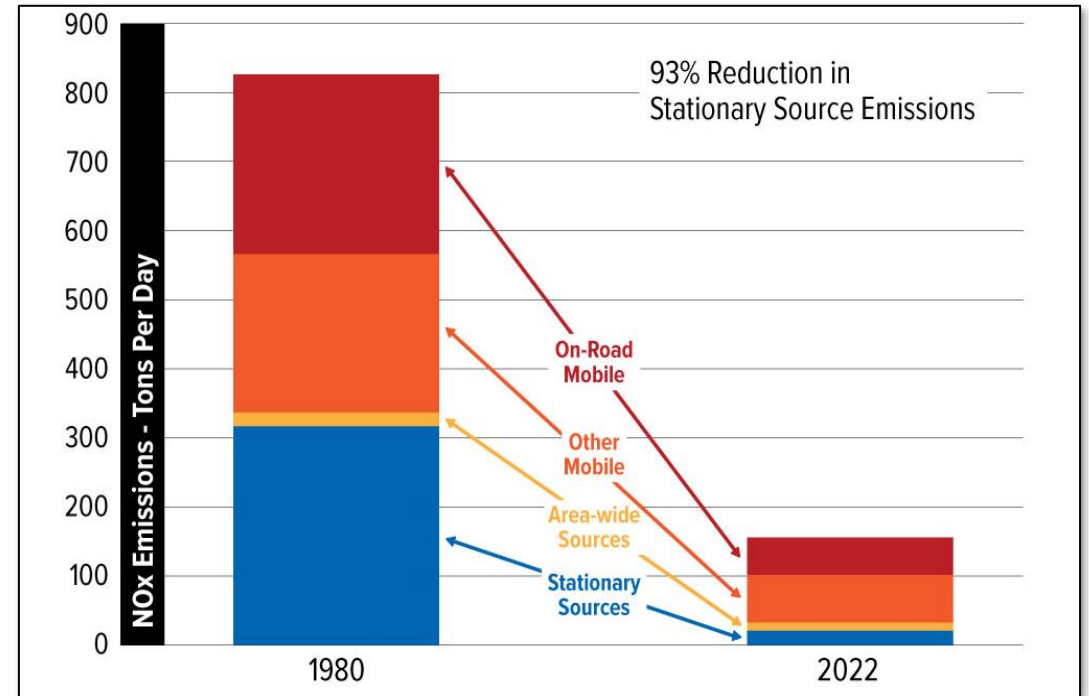


# Monthly Exceedances of 8-hour Ozone Standards (2019)



# Adopted Controls Are Improving Air Quality

- District has adopted numerous attainment plans and air quality control strategies to address federal standards
  - Stationary source ozone and PM-forming NO<sub>x</sub> emissions reduced by over 90% through hundreds of regulatory actions
- California Air Resources Board (CARB) has adopted numerous mobile source emissions controls
- District/CARB combined efforts represent nation's toughest emissions control program
- Strong incentive programs (\$5.7 billion in public/private investment)
- Through significant clean air investments, Valley continues to make major improvements with respect to air quality
- While significant improvements have been made, more reductions needed



# Regulatory Background

# Valley Efforts to Reduce Agricultural Open Burning

- Valley has toughest restrictions on agricultural burning in state (SB 705 only applies to San Joaquin Valley)
- District operates comprehensive Smoke Management System
  - Tightly regulated and enforced
  - Only authorized when projects will not impact air quality standards, smoke-sensitive areas, cause public nuisance
- Since 2005, District has prohibited burning from a majority of field crops, prunings, orchard removals, weed abatement, and other materials
- District Governing Board has prioritized continued efforts to identify and demonstrate new alternatives to reduce open burning, including establishing final phase-out strategy



# Valley's Strategy for Phasing-Out Agricultural Burning

- In June 2021, Governing Board adopted and CARB approved final phase-out requirements for agricultural open burning:
  - Near-complete phase-out of agricultural open burning by January 1, 2025
  - Phase-out schedules that maximize reduction of tonnage of material burned as early as possible, taking into account feasibility of alternatives for different crop types
  - Smallest ag operations given most flexibility and longest time to adjust to phase-outs
  - Significant incentives required to assist growers with transition in the coming years due to limited availability and high cost of alternatives
- Currently in process of implementing and enforcing phase-out strategy
- Extensive outreach to Valley growers regarding phase-out requirements and available resources for alternative practices

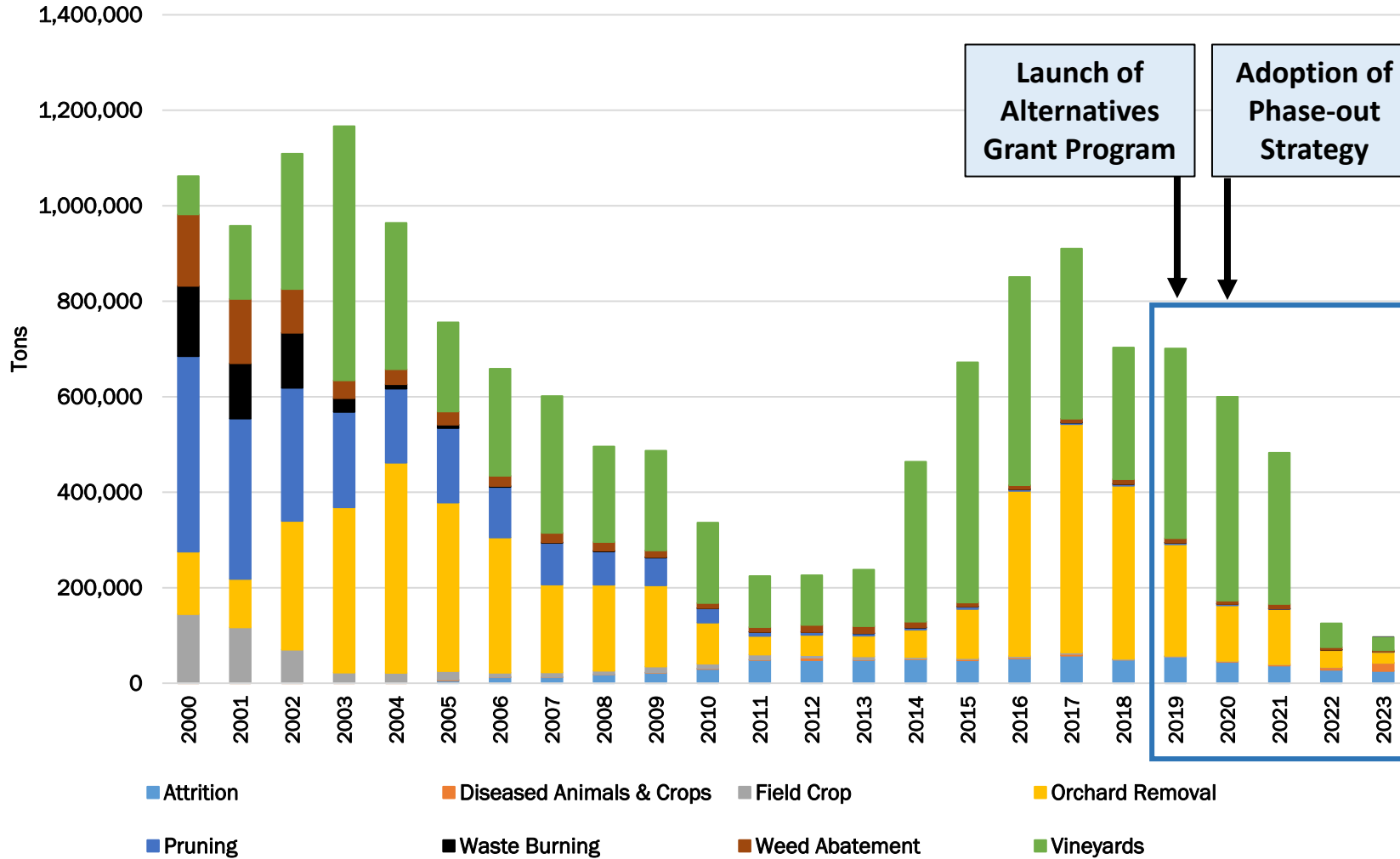
# Significant Reductions in Agricultural Open Burning

- Through combination of phase-out strategy and Ag Burn Alternatives Grant Program, agricultural open burning has decreased significantly in recent years
  - Over 1,000,000 tons of material open burned annually in past
  - 2021: Approximately 480,000 tons of material open burned
  - 2022: Approximately 125,000 tons of material open burned (new record low for Valley)
  - 2023: Approximately 101,250 tons of material open burned to date
- Expected to continue to decrease in 2024 as the final phase-out continues to be implemented

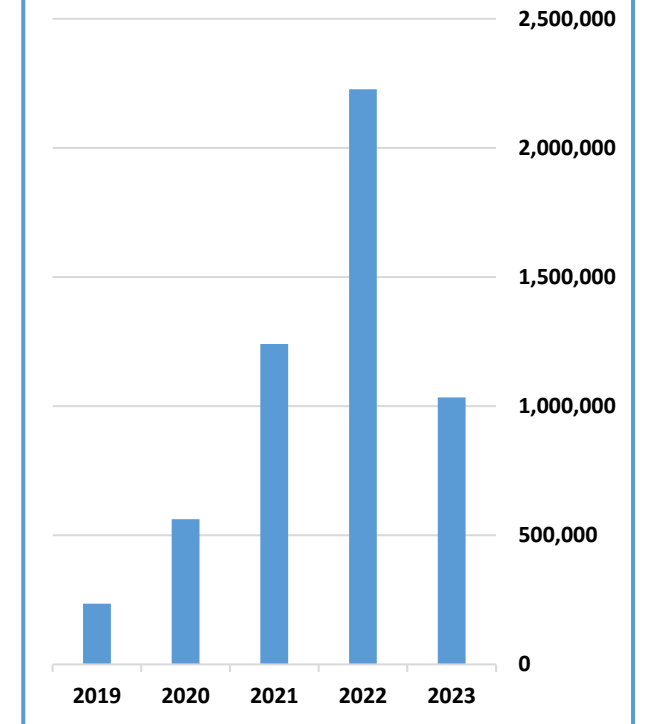


# Agricultural Burning and Grant Program Trends

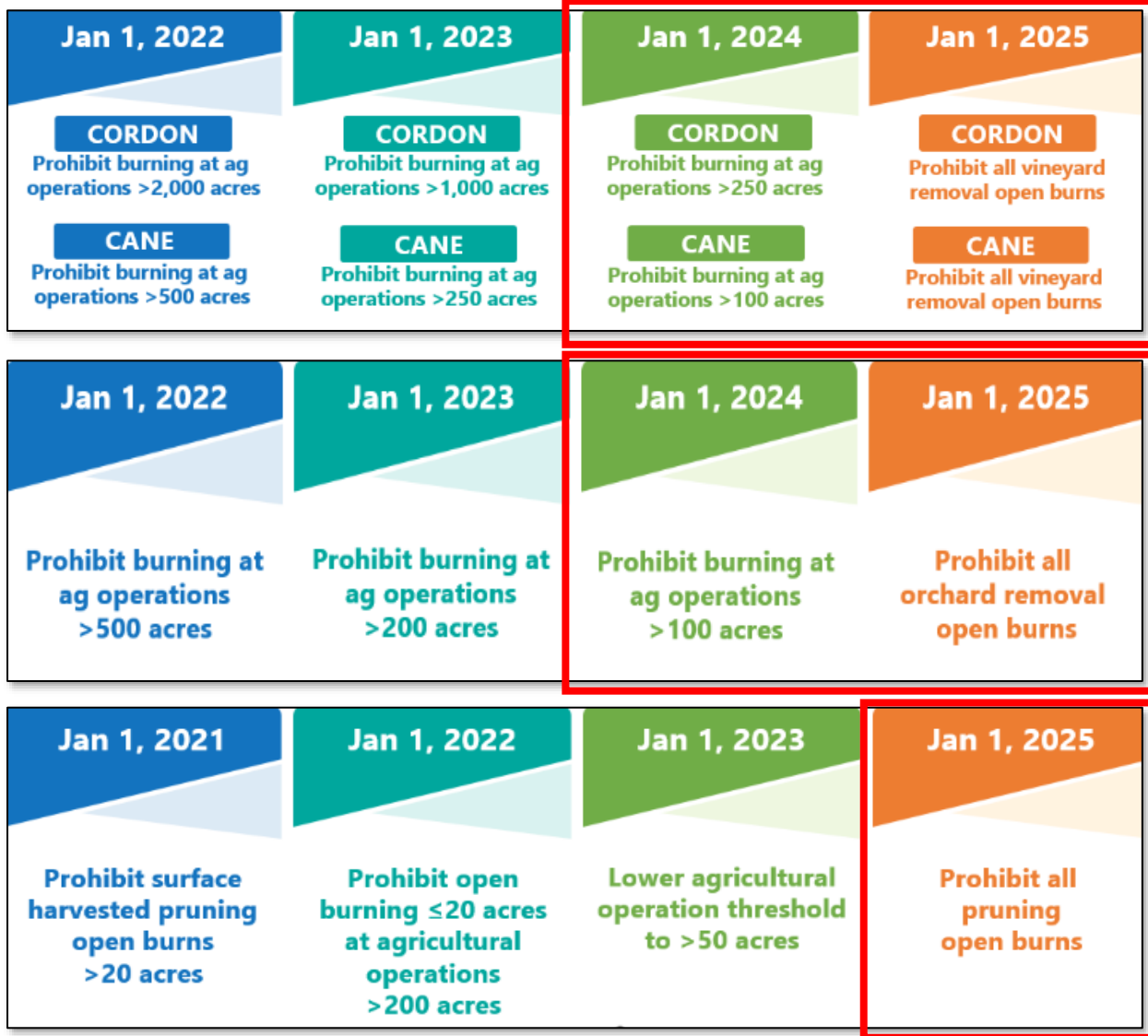
Tons of Ag Woody Waste Burned



Tons of Ag Woody Waste Processed Through Alternatives



# Ongoing Implementation of Phase-out Schedule



*Vineyard Removals*

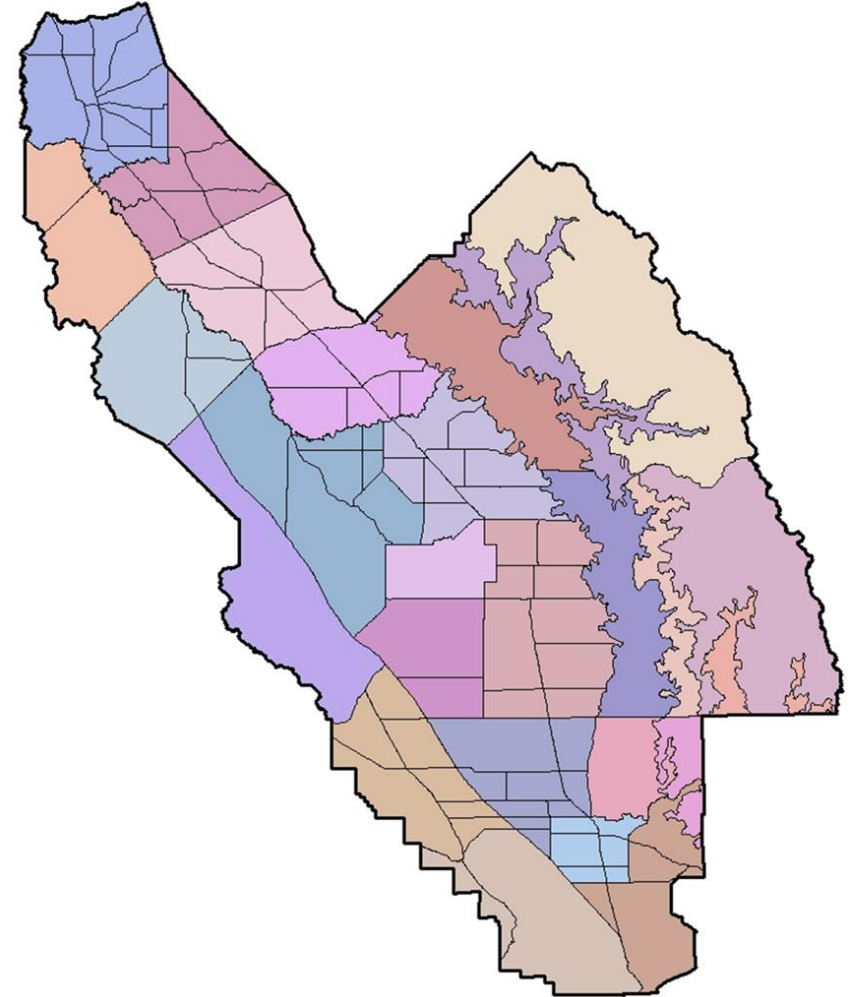
*Orchard Removals*

*Surface Harvested Prunings*

# Smoke Management System (SMS) and District Rule 4103 (Open Burning)

# History of Managing Agricultural Burning

- District began to issue ag burning declarations on a county basis in 2002
- In 2004 District refined the counties into smaller ag burn allocation zones for better localized smoke management
- Smaller burn allocation zones provided additional flexibility while being more health protective, based on:
  - Crop distribution throughout the Valley
  - Historical burning activities
  - Nearby sensitive receptors
  - Known geographic boundaries



# Smoke Management System Operations

- District sets daily emissions allocation for each burn zone based on projected meteorological and air quality conditions
  - Allocations set at levels assuring no violations of air quality standards
  - Permit holder submits a request to burn through the SMS
  - SMS calculates the emissions from the burn request and compares this against the set emissions allocation for that zone
- If emissions allocated for the burn zone are still available at time of request
  - Burn is immediately authorized; or
  - Requested acreage is reduced (based on available emissions)
  - Otherwise, burn request is placed on waiting list for when emissions are allocated for the applicable burn zone in the future

# Supportive Analysis for SMS Allocation

- District evaluates air quality and meteorological conditions daily to determine appropriate emissions allocation for over 100 burn allocation zones
  - Conducted 365 days per year (including holidays and weekends)
- Air quality assessment includes:
  - Analysis of potential air quality events, e.g. wind-blown dust, wildfire smoke, ongoing structure fires
  - Burning not allowed in impacted zones, with limited burning potentially allowed elsewhere
- Ag burning not allowed in a county when air quality is expected to exceed a national air quality standard (ozone, PM2.5, PM10)
- Ag burning not allowed in a county when residential wood-burning curtailment in effect during the winter season

# Burn Windows for Agricultural Burning

- District facing deadlines for multiple federal air quality standards for ozone and PM2.5, which still require significant emission reductions
  - EPA currently evaluating lowering ozone and PM2.5 standards, which will create additional challenges for the Valley
- Due to air quality challenges, Valley meteorology, topography, burn windows are becoming more infrequent and are closely managed
  - Ongoing wildfire issues also limiting burn windows during the summer and fall seasons
- Burn windows to continue to be closely managed even for crops allowed to be open burned after January 1, 2025 phase-out date (attrition, diseased crops, etc.)

# District Rule 4103 – Open Burning

- Generally speaking, open burning for disposal is strictly prohibited
- Limited exceptions include
  - Agricultural Burning (Permit required, and must wait for allocation)
  - Diseased Materials (Permit required, and must wait for allocation)
- Exemptions from Rule 4103 permit and allocation requirements include
  - Burning of agricultural waste or crops pursuant to a lawful abatement order issued by the local county agricultural commissioner as described in the CA Food & Agri Code § 5403 and 5404



# Diseased Material Burning

- Before diseased material can be added to burn permit, local County Agricultural Commissioner must determine following:
  - No economically feasible alternative for eliminating disease/pest other than burning
  - There is presence of a disease or pest that will cause a substantial, quantifiable reduction in yield or poses a threat to health of adjacent vines, trees, or plants in field proposed to be burned, during current or next growing season, or presence of a disease or pest that will cause a substantial, quantifiable reduction in production of animals or fowl
- If the above is satisfied, allocation must still be received through SMS
- An abatement order issued by ag commissioner per CDFA Sections 5403 and 5404 does not need to go through SMS
  - Reserved for more serious crop disease/pest issues needing immediate action

# Ag Burn Alternatives Grant Program

# Ag Burn Alternatives Grant Program

- Recognizing need to develop new alternatives, in 2018 District Board authorized development of new Ag Burn Alternatives Grant Program
- Provides financial incentives to growers to chip ag material for soil reincorporation, land application, and off-site beneficial reuse
  - Over \$25 million in local funding invested to support emerging alternatives
- In August 2021, through strong advocacy and program success, District received \$178,200,000 in additional state funding to expand fleet capacity and support deployment of new alternative practices in the Valley



Learn more about the ongoing phase out of agricultural open burning in the San Joaquin Valley. Current regulations require a near complete phase out by January 1, 2025. Significant incentive funding is available to assist farmers in making this transition.

**SCAN QR CODE**



Scan with cell phone camera for complete details

**Incentive Funding is NOW AVAILABLE**

CROP TYPE	Chipping with soil incorporation	Chipping without soil incorporation on-site	Chipping with off-site beneficial reuse
Orchards	Up to \$600 per acre	Up to \$300 per acre	Up to \$600 per acre
Cane-pruned vineyard	Up to \$800 per acre	Up to \$500 per acre	Up to \$800 per acre
Cordon-pruned vineyard	Up to \$1,300 per acre	Up to \$1,000 per acre	Up to \$1,300 per acre

**ADDITIONAL \$400 PER ACRE FOR SMALL AG OPERATIONS LESS THAN 100 ACRES**

Annual Funding Cap: 500 acres of orchard/vineyard removal per applicant per calendar year

# Orchard/Vineyard Removal Alternative Measure Funding Options

- Soil Incorporation
  - Chipped material is ripped and/or disced back into orchard/vineyard removal site
- Land Application
  - Chipped material is applied and/or spread over the orchard/vineyard removal site
- Off-Site Beneficial Re-use
  - Chipped material for off-site use
  - Examples include mulch, composting, land application near roadways for dust suppression, or other District-approved use of the chipped material beyond soil incorporation or land application
  - (Note: projects with off-site disposition will require two post-inspections)
- Air Curtain Burner
  - Grant funding provided only for projects used to dispose of material with embedded wire, such as cordon (spur) pruned vineyard material

# Incentive Amounts (\$/Acre)

Project Type	Orchards	Cane-Pruned Vineyard	Cordon-Pruned Vineyard
<b>Chipping <u>with</u> Soil Incorporation</b> (whole orchard/vineyard recycling)	\$600	\$800	\$1,300
<b>Chipping <u>without</u> Soil Incorporation</b> (on-site land application)	\$300	\$500	\$1,000
<b>Off-site Beneficial Re-use</b> (mulching, composting, land application near roadways for dust suppression)	\$600	\$800	\$1,300
<b>Air Curtain Burner</b> (only for material with embedded wire such as cordon-pruned vineyard)	\$1,000	Ineligible	\$1,000

Additional incentive of \$400/acre is provided for each incentive category to agricultural operations with 100 total acres or less within the San Joaquin Valley

# Vineyard Participation in Grant Program

- Vouchers issued by county, alternative measure, and vineyard type

County	Soil Incorporation		Land Application		Off-Site Beneficial Re-Use		Air Curtain Burner
	Cane	Cordon	Cane	Cordon	Cane	Cordon	Cordon
San Joaquin	1	8		1			4
Stanislaus	3	1					1
Merced	1	6					
Madera	36	18					
Fresno	283	94	1		1	1	1
Kings	3	4				1	
Tulare	21	29					
Kern	30	88		5		2	
<b>Total by Vineyard Type</b>	<b>378</b>	<b>248</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>6</b>
<b>Total by Alt Measure</b>	<b>626</b>		<b>7</b>		<b>5</b>		<b>6</b>

# Vineyard Participation in Grant Program

- Acres funded for removal by county, alternative measure, and vineyard type

County	Soil Incorporation		Land Application		Off-Site Beneficial Re-Use		Air Curtain Burner
	Cane	Cordon	Cane	Cordon	Cane	Cordon	Cordon
San Joaquin	12	244		28			153
Stanislaus	334	57					210
Merced	75	663					
Madera	1,468	2,030					
Fresno	8,874	5,347	48		37	61	15
Kings	136	344				147	
Tulare	840	1,596					
Kern	1,691	5,631		136		253	
<b>Total by Vineyard Type</b>	<b>13,430</b>	<b>15,912</b>	<b>48</b>	<b>164</b>	<b>37</b>	<b>461</b>	<b>378</b>
<b>Total by Alt Measure</b>	<b>29,342</b>		<b>212</b>		<b>498</b>		<b>378</b>

# Disposal Options for Vineyards

- Vineyard removals that have been phased-out from agricultural open burning have a number of options:
  - Chipping and land incorporation or surface application
  - Contractor equipment available to remove wire and other metal material from woody waste if needed
  - Off-site beneficial re-use applications (dust control, animal bedding, composting, material stream for other products)
  - Landfills (not eligible for grant funding)
  - Air curtain burner
- Diseased vineyards may have more limited options due to concern of incorporating material into soil
  - Options available for landfills, air curtain burners, off-site beneficial re-use



# Overview Video of Ag Burn Alternatives Grant Program



# Agricultural Removal/Chipping Services

- District has online resources available, including a list of contractors that provide removal services in the Valley
  - The list is not exhaustive, there may be more service providers in your county
- Total of 40 listed contractors that offer various removal/chipping services throughout the District
  - Vineyard removal services are offered by eight contractors in Merced County, eight in San Joaquin County, and seven in Stanislaus County
  - Limited contractors for chipping cordon materials but able to handle large capacity
- Since 2021, over 250 cordon-pruned vineyard removal projects have been funded to chip and/or reincorporate into soil
  - Chipping: Over 16,500 acres
  - Reincorporation after chipping: Over 15,900 acres

# Air Curtain Burners

- Air curtain burners are an option to dispose of agricultural waste as an alternative to open burning
- Portable registration requirements
  - Must pass visible emissions test
  - Recordkeeping
  - Quarterly reporting
  - Limited to approximately 6 acres of vineyards per site/project per day (up to 100 tons/material per day)
- Funding is currently available for ag material with embedded wire (cordon-pruned vineyards), of up to \$1,000/acre
  - Additional incentive of \$400/acre is provided to agricultural operations with 100 total acres or less within the San Joaquin Valley



www.valleyair.org

- About the District
- Agriculture**
  - Ag Permits/Conservation Management Practices (CMA)
  - Ag Burning
  - Dairy Permitting
  - Smoke Management System
  - Weed Abatement Burning
- Air Monitoring
- Air Pollution Complaints
- Air Quality Forecasts & Data
- Air Quality Plans
- Business Assistance
- Business Opportunities
- Compliance Assistance
- Employment
- Environmental Justice
- For Schools and Kids
- Grants & Incentives

Search:



**Grant Funding Available**

The Alternatives to Agricultural Open Burning Incentive Program provides incentives to commercial agricultural operations located within Valley Air District boundaries to chip or shred agricultural material.

[Apply Today](#) [Program Flyer](#)

- Resources & Information**
- [Agricultural Burn Permits](#)
  - [Forms and Applications](#)
  - [Burn Authorization and Approval](#)
  - [Compliance Assistance](#)
  - [Noxious and Invasive Weeds and Pests](#)
  - [Alternatives to Burning](#)
  - [Rules and Regulations](#)
  - [County Agricultural Commissioners](#)
  - [Agencies and Programs](#)

**Current Open Burning Requirements**

In order to achieve the near-complete prohibition of open agricultural burning by 2025, District staff have worked in close consultation with the California Air Resources Board (CARB), other agencies, the interested public, and agricultural stakeholders to develop an updated phase-out schedule for agricultural burning in the San Joaquin Valley. The updated schedule was developed per CARB recommendations and concurrence action, through analysis of historical burn data, and research into the costs and feasibility of various alternatives.

More Information

# Incentive Program Contact

**Contact:** Crystal Yunker  
**Mail:** San Joaquin Valley APCD  
1990 E. Gettysburg Ave  
Fresno, CA 93726  
**Phone:** (559) 230-6000  
**Fax:** (559) 230-6064  
**Email:** [crystal.yunker@valleyair.org](mailto:crystal.yunker@valleyair.org)  
[grants@valleyair.org](mailto:grants@valleyair.org)