
REPORT to the COMMUNITY

2018-19



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



A message from the **AIR POLLUTION CONTROL OFFICER**

On behalf of the Valley Air District's Governing Board, it is my pleasure to present to all Valley residents this year's Report to the Community. We hope that this report will once again provide Valley residents with an easy to follow and concise account of our progress, the challenges that remain and upcoming efforts to achieve cleaner air in the San Joaquin Valley.

Building on past efforts to improve public health for residents throughout the Valley, the Valley Air District worked hard over the past year to prepare a new plan for improving air quality and meeting the newest federal air quality standards for fine particles. As a significant milestone for the Valley, this new PM 2.5 Plan was recently passed by both the Valley Air District's Governing Board and the California Air Resources Board and has been supported by dozens of public meetings and workshops involving residents, businesses, public agencies, and others that have taken the time to participate, provide valuable input, and make suggestions. The draft plan contains a range of new regulations, clean air grants, and other innovative measures across every sector that push the deployment of new technologies and will reduce air pollution significantly in the years to come. While the Valley Air District will continue to seek additional reductions from local stationary sources under our authority, it is clear that bold measures and investment to reduce mobile source emissions now comprising 85% of our remaining air pollution must be pursued. In addition to new local measures, the California Air Resources Board has committed to reduce air pollution from mobile sources under their authority through a number of new measures. These new measures include new regulations for cleaner vehicles and ongoing inspection and maintenance of heavy duty trucks, as well as new innovative incentive-based grant measures to help replace aging heavy duty trucks and agricultural equipment with new clean technologies.

With the recent enactment of the Assembly Bill 617 Community Air Protection Program, the District has been actively engaging Valley residents and businesses to ensure they are afforded ample opportunity to provide input and ensure that AB 617 is implemented in a manner that maximizes opportunities to benefit our Valley's communities. Given the extensive resources needed to support our work in the Valley's disadvantaged communities, the Valley Air District has been advocating at the state level for necessary funding resources, including funding to reduce emissions from mobile sources that are beyond the District's regulatory authority. Additionally, the Valley Air District has been active in leveraging our technical expertise and resources to ensure that communities are empowered with the best available information and sound science. Working closely with the two Valley communities selected by the California Air Resources Board as first year communities under AB 617 (South Central Fresno and Shafter), the Valley Air District has swiftly convened robust Steering Committees with a broad spectrum of members who are fully engaged in the AB 617 process.

Once again, the Valley experienced another year of record ozone improvements and continues to make progress on PM2.5. Looking at our accomplishments this past year, I want to thank Valley businesses and residents for their continued investment and sacrifice, and the Valley Air District Governing Board members for their foresight and leadership. Moving forward with the tasks ahead of us will be a major endeavor that can only be accomplished through a collaborative approach and significant investment at the local, state and federal level. The Valley has seen success in advocating for our needs in Sacramento and bringing hundreds of millions in new dollars to Valley communities for clean air investments. We will need to build on this success to secure the needed funding in the coming years, and continue to achieve cleaner air for all Valley residents.

SAMIR SHEIKH
Executive Director / Air Pollution Control Officer

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ABOUT THE DISTRICT

The San Joaquin Valley Air Pollution Control District is a regional public health agency responsible for air quality management in the eight counties of the San Joaquin Valley air basin: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and the Valley air basin portion of Kern.

The District works with local, state and federal government agencies, the business community and the residents of the Valley to reduce emissions that create harmful air quality conditions.

THE DISTRICT'S MISSION

The San Joaquin Valley Air Pollution Control District is a public health agency whose mission is to improve the health and quality of life for all Valley residents through efficient, effective and entrepreneurial air quality management strategies. Our Core Values have been designed to ensure that our mission is accomplished through commonsense, feasible measures that are based on sound science.

THE DISTRICT'S VISION

The District's vision is healthful air that meets or exceeds air quality standards for all Valley residents. The District is a leader in air pollution control. Valley residents take pride in our collective efforts to continuously improve air quality.

CORE VALUES

PROTECTION OF PUBLIC HEALTH

The District shall continue to strive to protect the health of Valley residents through efforts to meet health-based state and federal ambient air-quality standards, based on science and prioritized where possible using health-risk reduction strategies.

ACTIVE AND EFFECTIVE AIR POLLUTION CONTROL EFFORTS WHILE SEEKING TO IMPROVE THE VALLEY'S ECONOMIC PROSPERITY AND GROW OPPORTUNITIES FOR ALL VALLEY RESIDENTS

District staff shall work diligently to adopt and fully implement cost-effective air pollution-control measures, provide meaningful incentives for reducing emissions, and develop creative alternatives for achieving emissions reductions.

OUTSTANDING CUSTOMER SERVICE

District staff shall work to provide excellent customer service for stakeholders in activities including: rule and plan development; permitting and emissions inventory functions; compliance activities; financial and grant-funding transactions; and responses to public complaints and inquiries.

INGENUITY AND INNOVATION

The District values innovation and ingenuity in meeting the challenges we face. Examples of this spirit of innovation include developing programs that provide new incentives for emissions reductions, and providing alternate compliance strategies that supplement traditional regulatory efforts and generate more emissions reductions than could otherwise be reasonably obtained.

ACCOUNTABILITY TO THE PUBLIC

The District serves, and is ultimately accountable to, the people of the Valley for the wise and appropriate use of public resources, and for accomplishing the District's mission with integrity and honesty.

OPEN AND TRANSPARENT PUBLIC PROCESSES

The District shall continue to provide meaningful opportunities for public input and be responsive to all public inquiries.

RECOGNITION OF THE UNIQUENESS OF THE SAN JOAQUIN VALLEY

The Valley's meteorology, topography and economy differ significantly from those in other jurisdictions. Although it is valuable to review and evaluate efforts of other agencies, we must consistently look for solutions that fully consider the Valley's unique needs.

CONTINUOUS IMPROVEMENT

The District works to continually improve its internal operations and processes, and strives to streamline District operations through optimally utilizing information technology and human resources.

EFFECTIVE AND EFFICIENT USE OF PUBLIC FUNDS

The District shall continually strive to efficiently use all resources and to minimize costs associated with District functions.

RESPECT FOR THE OPINIONS AND INTERESTS OF ALL VALLEY RESIDENTS

The District shall respect the interests and opinions of all Valley residents and fully consider these opinions, seeking collaboration with federal, state, and local agencies, agriculture, businesses, community groups and residents in carrying out the District's mission.

ROBUST PUBLIC OUTREACH AND EDUCATION ON VALLEY AIR QUALITY PROGRESS AND CONTINUING AIR QUALITY EFFORTS

As we move forward in achieving our mission, the District shall continue its ongoing efforts to educate the public about air quality, and the significant clean air investments and air quality progress that have been made in the Valley.

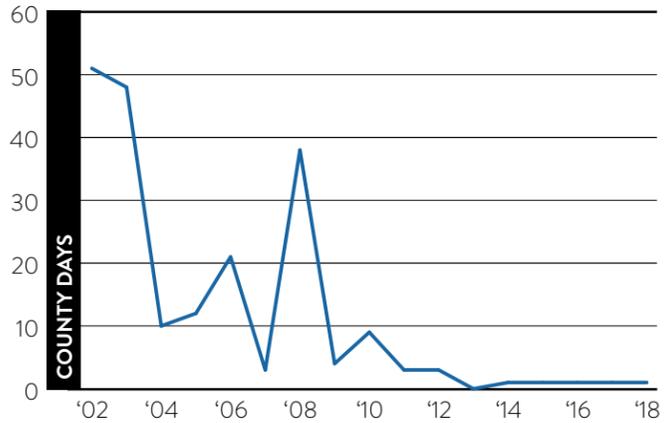


OZONE TRENDS



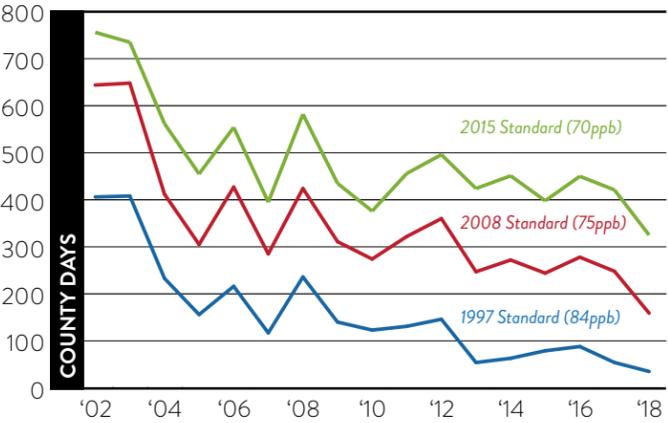
PM2.5 TRENDS

COUNTY DAYS OVER FEDERAL 1-HOUR OZONE STANDARD



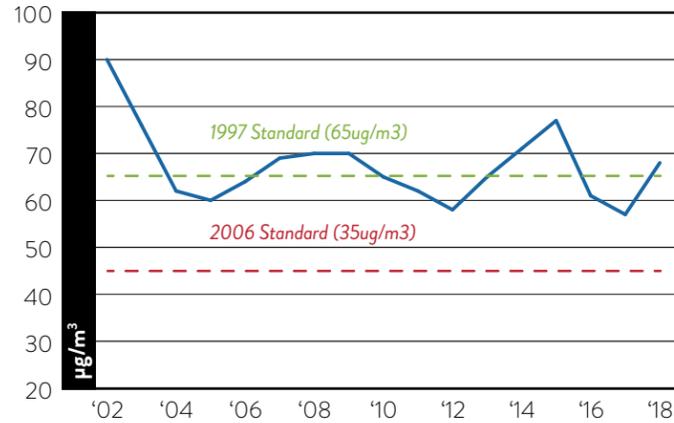
The Valley has demonstrated attainment of the federal 1-hour ozone standard and continues to observe no violation of the standard.

COUNTY DAYS OVER FEDERAL 8-HOUR OZONE STANDARD



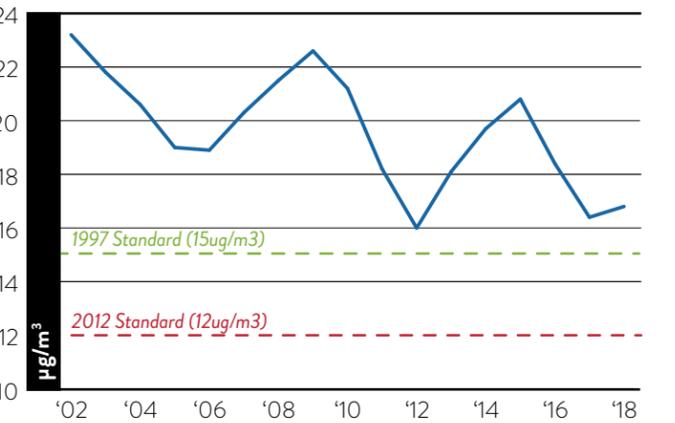
Days over the federal 8-hour ozone standards have declined significantly compared to previous years.

24-HOUR PM2.5 DESIGN VALUE TREND



The design value (using a 3-year avg.) increased due to severe wildfire smoke impacts. Without these impacts, the Valley would continue to be below the 1997 PM2.5 standard.

ANNUAL PM2.5 DESIGN VALUE TREND



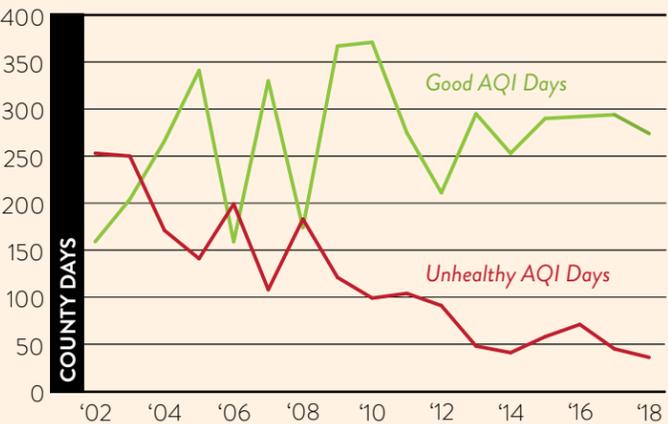
The design value (using a 3-year avg.) increased slightly due to severe wildfire smoke impacts. Without these impacts, the Valley's trend would continue to decrease.

DECREASE IN 8-HOUR OZONE EXCEEDANCES



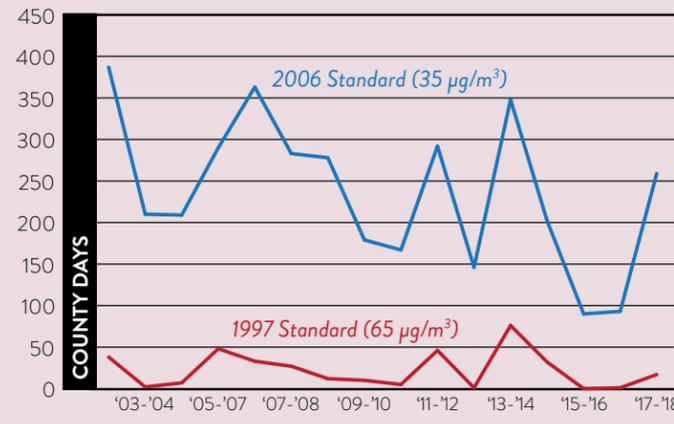
Since 1992, 52% decrease in days over the 2008 8-hour ozone standard and 80% decrease in days over the 1997 standard.

OZONE SEASON GOOD AND UNHEALTHY AQI (MAY-SEP)



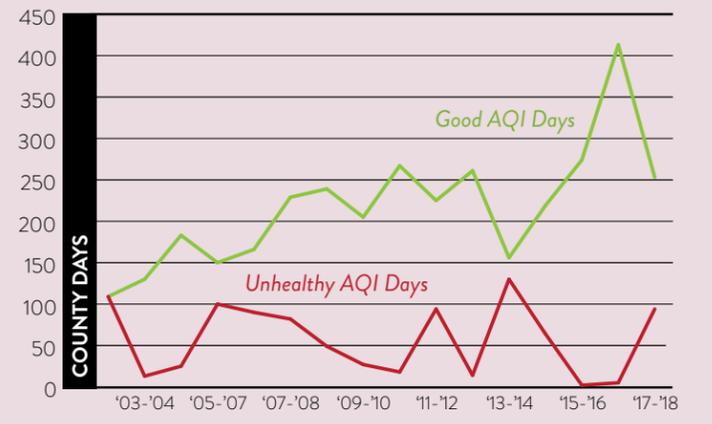
Number of Good AQI days remained high compared to previous years and number of Unhealthy AQI days has continued to decrease during the May-September ozone season.

COUNTY DAYS OVER 24-HOUR PM2.5 STANDARDS (NOV-FEB)



Abnormally long periods of stagnation and severe wildfires increased exceedances of both 24-hour standards. Exceedances of the 1997 standard of 65 µg/m³ remained relatively low.

PM2.5 SEASON GOOD AND UNHEALTHY AQI (NOV-FEB)



A decrease in the number of Good AQI days and an increase in Unhealthy AQI days was the direct result of wintertime stagnation and severe wildfire smoke impacts.

District adopts NEW CLEAN AIR PLAN FOR THE VALLEY

The San Joaquin Valley's challenges in meeting national ambient air quality standards are unmatched in the nation due to the region's unique geography, meteorology and topography. Building on decades of progress in air quality improvements, the District, in consultation with the California Air Resources Board and the Environmental Protection Agency, adopted the 2018 PM2.5 Plan to address the latest federal standards. Development of this new clean air plan was supported by an extensive three-year public engagement process that included a Public Advisory Workgroup consisting of representatives from regulated entities (industry, farms, dairy families and municipalities), community advocates, and advisors from EPA and ARB, as well as numerous public meetings to solicit input from Valley residents.

The plan is a multifaceted strategy that includes a suite of innovative regulatory and incentive-based measures, supported by robust public education and outreach efforts to reduce emissions of PM2.5 and nitrogen oxides (NOx) from mobile and stationary sources. Through this plan, the Valley will experience significant air quality improvements in the coming years as the region expeditiously attains multiple air quality standards and addresses Clean Air Act requirements for the 1997 PM2.5 Standard (annual 15 $\mu\text{g}/\text{m}^3$); the 2006 PM2.5 Standard (24-hour 35 $\mu\text{g}/\text{m}^3$); and the 2012 PM2.5 Standard (annual 12 $\mu\text{g}/\text{m}^3$).

With this adopted plan, the District has committed to pursue the following clean air strategies:

- Even further restrictions on the use of residential wood-burning devices and fireplaces, increased public education on the health impacts of wood smoke, and increased grants for transitioning to clean devices
- A suite of clean air grants for Valley residents, including grants for electric and other clean air vehicles, replacing gas mower with electric mowers, grants for vanpools, and other grant opportunities
- New rules to further reduce air pollution from industrial sources such as boilers, steam generators, internal combustion engines, glass manufacturing facilities, agricultural conservation management practices, and other sources
- Incentive programs for Valley businesses including the replacement of heavy duty trucks, agricultural equipment, off-road equipment, electric dairy feed mixers, locomotives, almond harvesting equipment, commercial zero-emission lawn and garden equipment, and other grant opportunities
- Innovative strategy for reducing air pollution from commercial restaurants using underfired charbroilers

To achieve the significant emission reductions necessary for expeditious attainment, the plan also includes incentive-based measures to accelerate the deployment of new clean vehicles, equipment and technologies across a wide variety of sectors that will require \$5 billion in new incentive funding investment by the 2024 and 2025 clean air timelines in the plan. In the new plan, CARB has committed to secure and provide the necessary incentive funding and to achieve additional emission reductions from mobile sources through requirements for zero-emission technologies and low-emission diesel fuel standards, and incentivized turnover of heavy-duty trucks/buses, agricultural tractors and off-road equipment to cleaner technologies.

Through the combination of these District and CARB control measures, the plan's attainment strategy is projected to bring the region into timely attainment of the federal PM2.5 standards.

WORKING WITH THE PUBLIC to Develop New Strategies

Given the need to achieve significant new reductions to meet federal clean air standards, the District's new PM2.5 Plan includes a number of new regulatory and incentive-based measures. Two new measures aimed at reducing community-level emissions of PM2.5 include enhanced strategies to further reduce air pollution from residential wood burning and commercial charbroiling activities. These innovative measures will build on existing efforts to establish additional requirements and incentive grant funding support in the "hot-spot" areas of the Valley facing the most difficulty in meeting the federal standards, which include the counties of Madera, Fresno and Kern. The District has initiated public engagement processes to ensure robust and meaningful participation by residents and businesses in developing these new strategies.

RESIDENTIAL WOOD BURNING

The District's residential wood burning emissions control strategy reduces harmful species of PM2.5 where and when those reductions are most needed - in urban areas where residents live and work and during winter days when weather conditions trap PM2.5 at the ground level. This multifaceted strategy relies on regulations to curtail wood burning, incentives to upgrade to cleaner devices, and public education to encourage changes in behavior. To further focus emissions reductions in the hot-spot counties of Madera, Fresno and Kern, the District will consider through a public process potential changes including lowering the No Burn threshold for non-registered units from 20 to 12 $\mu\text{g}/\text{m}^3$ and lowering the No Burn threshold for all devices from 65 to 35 $\mu\text{g}/\text{m}^3$. As an additional potential enhancement, the levels of incentives for the Burn Cleaner incentive program would be enhanced in hot-spot areas to fund the full replacement of wood burning devices to natural gas devices. To support the new strategy, the District will also continue to increase public education regarding the health impacts associated with wood burning and clean air grant options available to Valley residents.

COMMERCIAL UNDERFIRED CHARBROILERS

The District commercial charbroiling rule (Rule 4692) is among the most stringent rules in the nation for controlling emissions from commercial restaurant chain-driven charbroilers, including those used in many typical fast-food restaurants. While there are ongoing improvements in the emissions control technologies available for commercial underfired charbroilers, the costs of installing controls for commercial underfired charbroilers remain high. The District's new PM2.5 plan commits to use technology advancement efforts, grant funding, and new survey and registration information to pursue reductions through an incentive-based approach to fund the installation of controls for commercial underfired charbroilers within urban boundaries in hot-spot areas of Madera, Fresno and Kern counties. In addition, the District will undergo a public process to consider adopting a new regulatory requirement for commercial restaurants with underfired charbroilers to encourage early participation from Valley businesses in the District's incentive program and achieve the needed emissions reductions.

Mobile Source Challenges & COMMITMENT BY THE STATE

The Valley's air quality challenges are unmatched by any other region in the nation due to its topography, climate, and geography, and are exacerbated by the presence of two major transportation corridors connecting northern and southern California. Mobile source emissions now contribute more than 85% of the remaining oxides of nitrogen (NOx) emissions in the Valley (primary pollutant for the formation of both ozone and PM2.5), and fall under the jurisdiction of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA).

Given the significance of mobile source emissions, the District's new PM2.5 Plan includes commitments by CARB to achieve substantial emissions reductions needed from mobile sources through regulatory and incentive-based measures. Included in the plan is CARB's new Mobile Source Strategy, in which they committed to reducing emissions from mobile sources through the following regulatory measures, which will result in 12 tons per day of NOx emissions reductions in the Valley by 2025:

- Advanced Clean Cars 2
- Reduced ZEV Brake and Tire Wear
- Lower In-Use Emission Performance Level
- Lower Opacity Limits for Heavy-Duty Vehicles
- Amended Warranty Requirements for On-Road Heavy-Duty Vehicles
- Heavy-Duty Vehicle Inspection and Maintenance Program
- Low-NOx Engine Standard
- Innovative Clean Transit
- Advanced Clean Local Trucks (Last Mile Delivery)
- Zero-Emission Airport Shuttle Buses
- More Stringent National Locomotive Emission Standards
- Zero-Emission Off-Road Regulation Phase 1
- Zero-Emission Airport Ground Support Equipment
- Small Off-Road Engines
- Transport Refrigeration Units Used for Cold Storage
- Low-Emission Diesel Fuel Requirement

Additionally, CARB has also committed to achieving significant additional incentive-based emissions reductions totaling 20 tons per day of NOx emissions by 2025 through Valley measures for cleaner in-use agricultural equipment and the accelerated turnover of trucks and buses, agricultural equipment, and off-road equipment. These measures will require \$5 billion in new incentive funding that will only be achieved with sustained and increased funding from the state throughout the implementation of the new clean air plan.

Valley experiences another GREAT OZONE SEASON

In 2018, the Valley experienced a record breaking ozone season, resulting in one of the cleanest summer ozone air quality seasons in the region's history. The Valley's 2018 8-hour ozone design value, which is the official EPA metric used to determine whether an area is in attainment of a federal standard, was recorded as 90 ppb, which is a new record low for the Valley. This 90 ppb value is now only 6 ppb away from the Valley attaining the 1997 8-hour ozone standard of 84 ppb. The Valley also set new records in 2018 for the lowest number of days the region exceeded

the various federal 8-hour ozone standards of 84 ppb, 75 ppb, and 70 ppb, and continued to reduce the Valley's population exposure to high concentrations of ozone.

Remarkably, these ozone improvements in 2018 were achieved despite an enormous level of ozone precursor emissions from record breaking wildfires in California influencing the Valley's air quality during the summer season. As the region aims to attain the various federal ozone standards in the coming years, continued reductions in pollution will be needed to reach the Valley's goals.



Responding to Unprecedented WILDFIRE AIR QUALITY IMPACTS

For the last several years, vast tree mortality due to lack of water, drought-related bark beetle infestation, and the buildup of combustible materials through decades of forest mismanagement, have made the state's forests vulnerable to wildfire activity. The District's Governing Board has long supported efforts to reduce the intensity and frequency of wildfires through prescribed burning, mechanical treatment, and other measures to reduce fuel buildup in the forests. Pollutant emissions from wildfires are enormous and greatly exceed all mobile and stationary source emissions in the Valley, easily overwhelming all control measures.

As a consequence of historic drought conditions and forest mismanagement, California and the Western United States have seen an increase in the frequency of large wildfires during the past 10 years. In 2018, more than 7,000 wildfires were recorded in California, 34 of which impacted the Valley's air quality and the health of Valley residents from July through November. The Mendocino Complex Fire in July 2018 became the largest wildfire in the state's history, burning close to 460,000 acres. In addition, smoke drifted into the Valley from wildfires in Northern and Southern California, the Bay Area and areas of the Sierra Nevada. As a result of the wildfires impacting the Valley, PM2.5 concentrations that are typically low during the summer increased dramatically across the Valley.

The most significant smoke impacts occurred in late October and early November 2018, when the Alder and Mountaineer wildfires in the Tulare County mountains and the Camp Fire in Butte County in

Northern California occurred. The Camp Fire resulted in the highest PM2.5 readings ever recorded for the Valley and much of California.

Emissions from wildfires also include high concentrations of ozone precursors, and they can often increase Valley floor ozone concentrations beyond what is normally experienced. During the 2018 summer ozone season, the historic wildfires across California directly impacted the Valley's ozone concentrations. The highest ozone concentrations for the Valley occurred just three days after the region recorded its highest PM2.5 measurements of the wildfire season due to the Carr and Mendocino Complex fires.

When wildfire smoke impacts Valley air quality, the District's top priority is to provide accurate and timely health-protective air quality information to the public. Significant District resources are dedicated to public notification of air quality conditions and steps the public can take to protect their health. The District works collaboratively with the public, media, land managers, schools and school districts, county public health officers, and other stakeholders to alert the public of poor air quality and increase the understanding of the devastating public health impacts of wildfires as well as the need for improved management of the public forests. Additionally, the District continues to pursue enhanced forest management efforts at the state and federal level to address the unprecedented build-up of fuels in our surrounding forests and minimize wildfire impacts in the future.

DISTRICT LAUNCHES AB 617 Community Engagement and Protection Program

In September 2017, the California Legislature enacted Assembly Bill (AB) 617, which requires the California Air Resources Board (CARB) and air districts to develop and implement additional emissions reporting, monitoring, and emission reduction plans and measures in an effort to reduce air pollution exposure in impacted communities. The air quality challenges that the communities in the San Joaquin Valley face are unmatched by any other region in the nation. In fact, the Valley is home to 20 of the top 30 most disadvantaged communities in California. AB 617 has the potential to bring additional clean air resources and strategies to Valley communities that are burdened by socioeconomic disadvantages and air pollution even beyond the significant clean air efforts and investments that have already been made throughout the Valley.

Under state law, CARB in consultation with air districts was required to select communities for action under AB 617 by October 1, 2018. The District facilitated a robust public process and held workshops where Valley residents and businesses had the opportunity to provide their perspectives on which communities should be selected, and what should be considered when selecting a community. Additionally, the District provided mini-grants to local non-profit community organizations to facilitate a series of community meetings to help enhance community dialogue, input and feedback on which communities should be prioritized and ultimately selected. Community advocates and stakeholders supported the District's approach that priority should be given to communities that have the largest air quality challenges. After extensive public

engagement, the District recommended that CARB select three San Joaquin Valley communities for first-year action under AB 617: 1) North Bakersfield, 2) South Central Fresno, and 3) City of Shafter. After further community input, CARB ultimately selected the City of Shafter and South Central Fresno as two of the ten communities selected statewide for action in the first year of AB 617 implementation.

As an essential component of community engagement under AB 617, the District immediately convened community steering committees in South Central Fresno and the City of Shafter to assist the District in moving forward with a number of key objectives, including assisting the development of community air monitoring and emission reduction programs. The District received strong willingness and commitment from these communities to participate in the new steering committees, with representation from residents, local businesses, community and environmental advocates and government officials.

These steering committees have been using their critical advisory role to assist the District in determining air pollution sources of concern and identifying locations for community air monitoring. To date, the committees

have established charters and initiated an in-depth review of pollution sources affecting their communities. The District continues to actively engage the communities through the steering committee process by providing community-specific emissions information and analysis, following-up on concerns and opportunities identified by committee members, and facilitating conversations with various agencies responsible for addressing the wide variety of identified concerns. Taking into consideration the recommendations from the community and committees, the District will establish air monitoring plans for each community and adopt Community Emission Reduction Programs (CERPs) in 2019 that contain specific measures to reduce the impacts of air pollution in both Shafter and South Central Fresno.

In addition to working with the first-year communities identified by CARB, the District will continue to work with Valley communities to assist CARB in the identification process for additional communities in the second year of this program, anticipated for selection by CARB by December of 2019. For more information about the District's AB 617 implementation efforts in Valley communities, visit community.valleyair.org.



SHAFTER

The rural community of Shafter in Kern County has a current estimated population of over 19,000, and is influenced by rural sources of emissions, agricultural equipment, oil production, and mobile sources from major roadways including Highway 43 and the Lerdo Highway. Locomotive emissions also influence the community as railroad tracks run parallel to Highway 43. Local area-wide sources such as gas stations, commercial cooking, and consumer products also contribute to the community's emissions levels.

SOUTH CENTRAL FRESNO

South Central Fresno is a densely populated community within the City of Fresno, and is downwind of emissions from the northern portion of Fresno. This defined community in Fresno includes the disadvantaged areas of southwest Fresno, Calwa and Malaga. A number of heavily trafficked freeways—including highways 99, 41, 180, and 168—contribute significant mobile source emissions in the community. It is also home to industrial development and area-wide sources of pollution such as gas stations, commercial cooking, and consumer products that also contribute to the community's emissions levels.

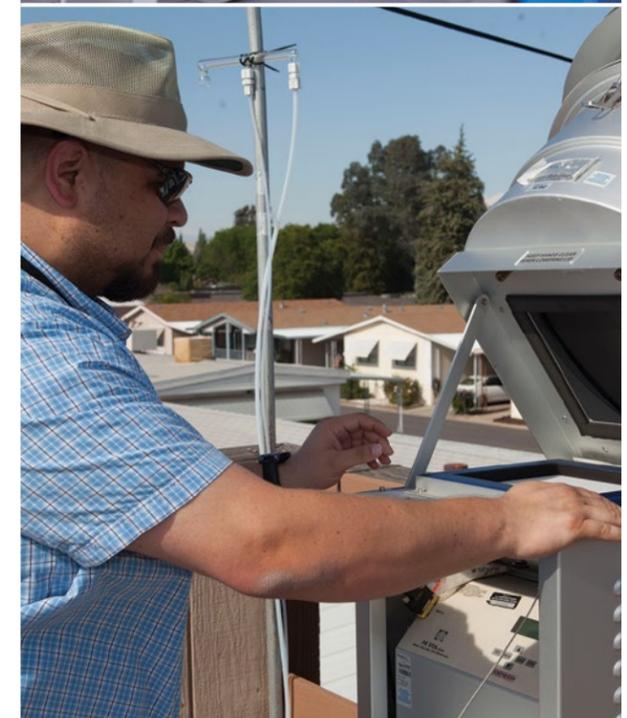


RESEARCH SUPPORTS Bakersfield Air Quality Monitoring Efforts

In 2018, building on the District's long history of conducting Valley-specific air quality research, the District conducted a study evaluating potential causes for an abnormally high PM_{2.5} reading at the Bakersfield-Planz air monitoring station on May 5, 2013. The measured PM_{2.5} concentration of 167.3 µg/m³ far exceeded other measurements at surrounding air monitoring stations. On this day, high wind conditions were experienced in the Bakersfield area and blowing dust was observed throughout the region. Typically, high wind dust events cause elevated PM₁₀ concentrations, but they generally do not cause significant increases in PM_{2.5}. However, the May 5, 2013, Bakersfield-Planz PM_{2.5} concentration was nearly seven times higher than other PM_{2.5} concentrations measured in the Bakersfield area on this same day.

In an effort to ensure that all air monitoring data collected in the Valley are truly representative of air quality conditions, the District worked with the California Air Resources Board (CARB) Monitoring and Laboratory Division staff and the California Department of Public Health (CDPH) to conduct an extensive laboratory analysis of the May 5, 2013, Bakersfield-Planz filter sample, along with other Bakersfield PM_{2.5} samples over the same time period. In its report, the CDPH concluded that the May 5, 2013, Bakersfield-Planz filter sample was directly influenced by a high, wind-blown dust event, causing the analyzer to operate improperly, and ultimately resulted in an erroneous and significant number of particles larger than PM_{2.5} being deposited onto the filter sample. As a result of this failure, this filter sample was not representative of PM_{2.5}, but rather reflected the concentration of particulate matter with a larger diameter. Based on these findings by the CDPH lab, and to ensure that the San Joaquin Valley's official data record with the Environmental Protection Agency (EPA) is accurate and representative of true conditions, the District requested that CARB invalidate the May 5, 2013, Bakersfield-Planz PM_{2.5} sample.

The CDPH laboratory also completed a separate analysis on wintertime filter samples from the Bakersfield-Planz site for the District to develop a better understanding of the PM_{2.5} particle sizing and chemical speciation from this key location. The results of this analysis assisted the District in improving its understanding of emissions sources that contribute to the peak PM_{2.5} concentrations at the Bakersfield-Planz air monitoring site during the wintertime PM_{2.5} season. The chemical speciation results from this portion of the study affirmed that the District's current PM_{2.5} strategy to control NO_x emissions will be effective at reducing the formation of ammonium nitrate that is measured at the Bakersfield-Planz air monitoring site. This is especially important because ammonium nitrate is a key contributor to peak wintertime PM_{2.5} concentrations in the Valley.



ENHANCING AIR QUALITY MONITORING in the Valley

In response to new state AB 617 mandates, the District must plan, deploy and maintain new air monitoring networks in the communities of South Central Fresno and Shafter, which were selected by the California Air Resources Board (CARB) for the first year of this new program. The community networks will take advantage of the District's existing air monitoring network to incorporate a combination of air monitoring platforms, such as air monitoring trailers, mobile air monitoring vans, compact air monitoring systems and single pollutant instruments. The assets and equipment will need continual maintenance and oversight by District staff to ensure they operate successfully and provide accurate data at all times.

In addition, the District will closely review the collected data to ensure accuracy and validity. With the information from the community network coming from a variety of platforms and equipment types, significant effort will be made to keep the data formatted and organized for the District's review and public consumption.

Similarly to the management of the current air monitoring network, the community-focused air monitoring network will require extensive field time for staff to maintain, repair, and calibrate equipment. Much of the repair and calibration work will be conducted at the District's in-house laboratory facility, which will allow staff to troubleshoot and resolve more complex equipment issues, as well as to calibrate equipment against more accurate equipment standards in a controlled environment.

Furthermore, as usage of low-cost air monitoring sensors becomes more prevalent, the District will continue its testing and evaluation of a variety of sensors in the San Joaquin Valley. This will include extensive field testing through collocating sensors with regulatory equipment to determine their accuracy. This new program area will provide valuable information for residents, community groups, and businesses look to the District for guidance on which sensors would be best for local air monitoring projects within the Valley.



Healthy Air Living Schools Program SERVES AS MODEL FOR THE STATE

More than a year after bringing the Healthy Air Living Schools Program in house, the District has gained more insight and built lasting connections as it continues to engage with schools and school districts throughout the San Joaquin Valley.

With a mission of empowering schools to promote healthy outdoor activities while protecting students during air quality episodes, the District encourages schools to enroll in the Healthy Air Living Schools Program. Through this program, schools commit to using the Real-time Air Advisory Network (RAAN) to adjust outdoor activities when air quality reaches certain levels. Other tools provided to participating schools include RAAN widgets for school websites, the "Valley Air" app for smart devices, "no-idling" signage to be posted near pick-up areas, air quality presentations to students and parent groups, Healthy Air Heroes activity kits for students in kindergarten through sixth grade, and kids' calendars.

Through frequent and ongoing communication, the program keeps track of and responds quickly to participating school needs. During episodes of extremely poor outdoor air quality, phone calls, text messages and emails are sent to all Valley school contacts, encouraging them to take recommended actions to protect students.

In early 2018, the District successfully launched a pilot program to display RAAN levels on specialized monitors called Real-time Electronic Air Quality Displays (READ) at 20 schools throughout the eight counties. With an overwhelmingly positive response from participating schools, the Governing Board voted in the fall to expand the pilot program to more schools.

The following statistics provide a snapshot of the progress made by the District in engaging and assisting schools to increase participation in the Healthy Air Living Schools Program:

- District staff has made contact with school personnel representing 97% of the 1,483 public and private schools in the San Joaquin Valley (as reported by the California Department of Education)
- 737 schools actively use RAAN in the San Joaquin Valley (50% of the total schools in the San Joaquin Valley)
- District staff have collected current contact information for 1,076 individual school personnel at schools and school districts across the Valley
- 178 schools or school districts have online RAAN information displayed in the form of a widget on their public web pages

Real-time Electronic Air-Quality Display (READ)

The District continued to provide enhanced tools for schools to understand and respond to current air quality conditions. In early 2018, the District piloted the new Real-time Electronic Air-Quality Display (READ) technology for schools, which provides a real-time and highly visible alternative to the retired Air Quality Flag Program. During the initial phase, the pilot program deployed specialized 24 or 32-inch LED monitors to 20 schools throughout the eight counties. The indoor monitors are connected to the Internet through hardwire or Wi-Fi and linked to the Real-time Air Advisory Network (RAAN) to display the air quality levels for each school. The monitors automatically update to show the latest air quality levels. The monitors are faced outward from school windows and can be seen from high-traffic areas by students, parents, and visitors.

In addition, many of the pilot schools and several additional schools received site-specific READ air quality data in a customized online link, which allows them to display the information at any monitor or computer on campus. The District is now able to provide any school in the Valley with customized data if they are able to provide their own display monitor.

Shortly after deploying READ monitors, an online assessment survey was sent to participating schools. The response from schools was tremendously positive, with one even advocating, "Every site and every school needs a READ - they are great!"

Other suggestions that came out of the survey included requests for larger monitor screens, outdoor capabilities and additional information about the air quality levels. With the feedback in mind, the District designed and began offering piloting schools easy-to-read signs that could be placed near READ monitors to explain the different RAAN levels.

Hearing about the encouraging responses from participating schools, the Governing Board voted in the fall of 2018 to expand the pilot program to include additional schools.

COMMENT HIGHLIGHTS FROM SCHOOL SURVEY

The following is a sampling of responses from schools:

- We use READ to help us decide the level of outdoor activity and exposure.
- It helps us to determine the level of outdoor activity for students, as well as the length of time students have access to outdoor activity.
- Depending on the READ number, we make decisions on when we allow our students out for activities. So far we have had one incident where we discouraged football practice.
- Checked READ before extended outdoor activities
- At least three days each week, the principal included information regarding air quality in morning announcements (what color are we on? which level?). Fortunately, air quality stayed on level 1 and 2 since it has been installed, so we had regular activity at school.
- We use the READ to help determine air quality for athletics and PE.
- The system made it faster to see changes in the air quality.
- Staff was appreciative that they could see what the air quality was. I had a few teachers go out of their way to stop by to see the level.
- It is a nice, visual display for parents, staff and community members to be aware of current air quality conditions.
- [The READ] makes it easy to check the air quality at various times during the day.
- I think it has worked out great for us. Thanks for allowing us to participate in your pilot program!



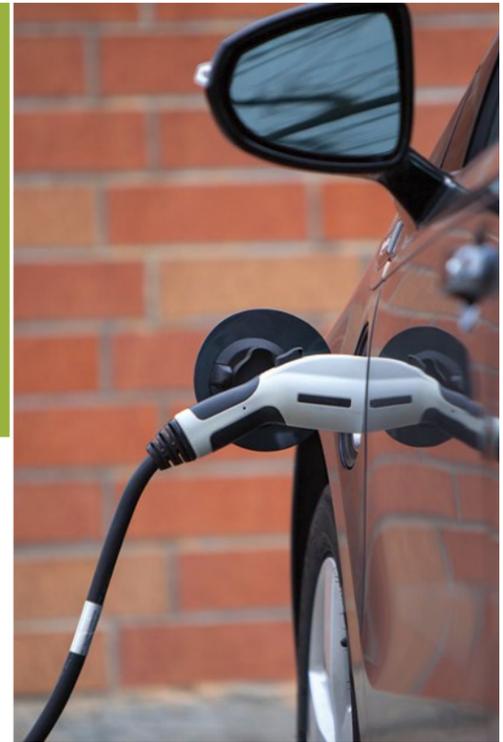


District Selected to Operate New Statewide Grant Program FOR ELECTRIC BUSES

Given the District's reputation for operating highly efficient and effective grant programs, the District was selected by the state to serve as the lead administrator of a new statewide incentive program for electric buses funded by the Volkswagen Environmental Mitigation Trust. The District will administer \$130 million in funds to replace older, high-polluting diesel transit, school, and shuttle buses with new battery-electric or fuel-cell buses. Replacing an older diesel bus with a zero-emission bus eliminates diesel particulate matter and other pollutants that impact children and residents riding the buses, as well as residents throughout Valley communities. During the project's 10-year period, approximately 425 vehicles will be replaced with an incentive amount of up to \$400,000 per vehicle.



284 old Ag UTVs were replaced with **FULLY ELECTRIC UTVs** with over **\$3 MILLION**



PUBLIC & PRIVATE INVESTMENT in Incentive-Based Emission-Reduction Projects Exceeds \$2 Billion

In the past 10 years, funding for voluntary incentive grants has steadily increased. This reflects the ongoing commitment of the District, businesses, farmers, and Valley residents in making clean air investments that improve the quality of life for all.

Grant recipients are typically required to provide significant matching funds. For 2018, more than **\$314 MILLION** in District and private funding was invested in clean air projects that reduced more than **9,500 TONS** of emissions in the Valley air basin.

1840 CLEAN AIR VEHICLES were funded with nearly **\$5 MILLION**

District Succeeds in Bringing Significant FUNDING AND RESOURCES TO THE VALLEY

Working with Valley stakeholders, the District's Governing Board has successfully advocated in recent years to secure a significant portion of the state's Cap and Trade funds for the San Joaquin Valley. These funds are critical to achieving the reductions in air pollution necessary to address the Valley's unique air quality challenges, particularly given that the Valley is home to 20 out of the top 30 most disadvantaged communities in the state. As a result of this advocacy effort, the Valley was successful in securing unprecedented incentive funding support from the state, including \$80 million in new funding to support community emission reduction incentive programs, and \$108 million in new funding for the deployment of clean agricultural equipment and vehicles throughout the Valley.

Additionally, given the need for clean air transformative measures and technologies, the District worked closely with local partners to successfully compete for the following technology advancement grant projects throughout the Valley:

- **Flexible Solutions for Freight Facilities - San Joaquin Valley Zero and Near-Zero Emission Enabling Freight Project:** This project is a BNSF Railway-led initiative to demonstrate zero- and near-zero emission technologies in and around its intermodal yards in Stockton and San Bernardino. Equipment that will be demonstrated include a hybrid-electric, rubber-tire gantry crane; a full-electric side loader; zero-emission electric Class 8 drayage trucks; and a single-commission Battery Electric Locomotive that will be deployed in a diesel consist, which has multiple locomotives that pull a train, and will run from Stockton to San Bernardino in commercial operations. The District is collaborating with BNSF Railway on this project and was awarded over \$22.6 million for this project.
- **Frito-Lay Zero and Near-Zero Emission Project:** This project aims to completely replace the use of all diesel-powered freight equipment within one of Frito-Lay's largest food production, warehouse and regional distribution facilities

in Modesto. To accomplish this, zero-emission technology will be utilized in all applications as feasible, and near-zero emission technology and renewable fuels will be employed everywhere else. In this project, the following technologies will be deployed: battery-electric, heavy-duty tractors, trucks, yard trucks and forklifts, as well as trucks fueled with ultra-low, carbon-renewable natural gas. The District is partnering with Frito-Lay and was awarded over \$15.3 million to implement this project.

- **San Joaquin Valley Zero-Emission Cargo Handling Demonstration Project:** This project will help accelerate the commercial availability of state-of-the-art, battery-electric forklifts with high-lift-capacity by DD Dannar, LLC. The District has partnered with Dannar, the Port of Stockton, ChargePoint and Bosch to demonstrate two Dannar forklifts and necessary charging infrastructure at the Port of Stockton. The District was awarded \$772,555 to implement this demonstration project.

864 TRACTORS were replaced for a total of over **\$62 MILLION**



2,250 CLEANER GAS and WOOD STOVES & INSERTS were funded with over **\$3 MILLION**



544 old polluting vehicles were replaced with **NEWER CLEANER VEHICLES** with nearly **\$5 MILLION**

CLEAN AIR GRANTS

ALTERNATIVES TO THE OPEN BURNING OF AGRICULTURAL MATERIALS

In November 2018, the District's Governing Board approved and allocated \$1 million for the Alternatives to Open Agricultural Burning Incentive Pilot Program. This program provides financial incentives to growers of orchard crops to dispose of their agricultural materials with alternative measures, such as using chipped material as mulch or soil incorporation. The incentive amounts range from \$300 to \$600 per acre of agricultural material removed, up to a maximum of \$60,000 per recipient per year. The funding amount is dependent on the alternative practice selected by the grower. The growers chip or shred their orchard material, then either incorporate the material back into their soil or spread the mulch over the top. Since the program launched in December 2018, the District received strong response and the District has allocated project funds to a wide range of crop types, including nectarines, olives, almonds, plums, citrus, walnuts and peaches, totaling more than 1,300 acres of agricultural material.

LOW-DUST NUT HARVESTER

Consistent with the Governing Board's long-standing track record of pursuing effective emission reduction strategies in partnership with the Valley agricultural community, the District developed and implemented a pilot incentive program to deploy and further evaluate low-dust harvesting technology on a broad scale in the San Joaquin Valley. The new program, which was approved by the Governing Board in November 2018, funds the deployment of low-dust harvesting equipment in a variety of applications throughout the Valley. The results of this pilot program will be used to further inform research in this area, and to determine whether this model can be used to cost-effectively reduce localized PM emissions in and around Valley communities.

NEW INCENTIVES FOR AGRICULTURAL EQUIPMENT

As a direct result of the District's advocacy efforts, and by working closely with Valley stakeholders, the District was able to secure significant new funding for the Valley that will greatly assist in achieving the emissions reductions necessary for the 2018 PM 2.5 Plan, which was approved by the California Air Resources Board in January of 2019. Assembly Bills 134 and 109



(AB 134 and AB 109) appropriated \$135 million statewide to reduce emissions from the agricultural sector. As the top agriculture-producing region in the state, the San Joaquin Valley received 80% of the total funding as part of the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program.

The FARMER Program will allow the District to expand the already highly successful agricultural tractor replacement program and the ability to offer new incentive options for the agricultural community. The Ag Utility Terrain Vehicle (UTV) Replacement Program provides incentives for the replacement of existing diesel- or gasoline-powered UTVs with new, zero-emission ones. In addition, the Ag Truck Replacement Program provides incentives for the replacement of heavy-duty trucks that operate at agricultural operations. Lastly, as the first of its kind program in the nation, the Agricultural Tractor Trade-Up Program allows large farming operations to trade-up their Tier 3 tractor for a new Tier 4 Final tractor and provide their Tier 3 tractor to smaller farming operations, who in turn surrender their Tier 0 tractor for crushing to ensure permanent emissions reductions.

Don Cameron, a Valley farmer had this to say about working with the District to replace ag equipment:

"The San Joaquin Valley Air Pollution Control District's programs have provided key economic incentives that have helped farmers convert thousands of older tractors, UTV's, diesel pumps and other farm equipment to either clean burning diesel engines or to electric pumps and farm vehicles. These incentives have been critically important to help farmers make the choice to invest in new, clean air technology on their equipment. Farmers are now an important part of the solution to making our air quality better and our Valley a healthier place for us and our families to live, work and breathe clean air."

CLEAN AIR GRANTS

EMERGENCY VEHICLES

To build on the District's existing group of incentive programs aimed at cleaning up diesel engines, particularly those operating within the Valley's disadvantaged communities, the District approved a new incentive program to fund the replacement of diesel-powered emergency vehicles with the latest generation of clean vehicles. These emergency vehicles include pumper trucks, ladder trucks, water tenders and other diesel-powered emergency vehicles. Eligible replacement vehicles include new or used vehicles that meet the program guidelines for warranty and mileage and required emission certification.

The District will help operators of existing emergency vehicles upgrade their equipment to significantly cleaner options. Eligible entities include cities, counties, fire protection districts and other public entities. Applications will be funded on a first-come, first-served basis.

New emergency vehicles range in cost from \$150,000 to more than \$1,000,000, depending on configuration and intended service. Incentive amounts vary based on the specific vehicle miles traveled, fuel usage and age of vehicle with a maximum funding amount of 90% of eligible project costs, not to exceed a cost-effectiveness threshold of \$30,000 per ton of emissions reduced.

LOCOMOTIVES

The District executed two locomotive projects that will have significant emission reduction benefits for the San Joaquin Valley. The first project is providing up to \$4 million to replace two old, high-polluting switcher locomotives with new, Tier 4 locomotives. The second project is providing up to \$2 million to replace one old, high-polluting switcher locomotive with a new, Tier 4 locomotive. Each of these projects are helping to reduce air pollution and improve air quality within disadvantaged communities in the vicinity of Goshen and Hanford, CA. In addition, the District has allocated funding for the replacement of four locomotives operating in Valley AB 617 disadvantaged communities through \$10 million in new Cap and Trade community incentive funds.



HEAVY DUTY TRUCKS

In 2018, the District transitioned its various truck replacement incentive programs into a single program and application process to make it easier for applicants to take advantage of available funding. In addition, the Governing Board approved new funding options to encourage Valley fleets to adopt zero- and near-zero emission truck technology. Recent advances in engine technology and emission controls have resulted in several engines being certified to the optional low nitrogen oxides (NOx) emission standard, which is 90% cleaner than the 2010-compliant emission standard. In some applications, battery-powered zero-emission vehicles are commercially available, which will provide additional options for Valley fleets looking to utilize the latest technology.

The District's Truck Replacement Program currently offers three different options for interested truck operators. The Standard Replacement option provides incentive funding to purchase a new 2010-compliant truck, and the old truck is destroyed. A second option provides incentive funds for a Trade-Up option where a 2010-compliant truck is replaced with an alternative fuel or advanced technology truck and, in lieu of destroying the compliant truck, it is given to a third party with a 2009 or older truck, which is then destroyed. Lastly, a New Purchase option is available in which incentive funds are provided for a new alternative fuel or advanced technology truck to expand a fleet and do not require the destruction of an existing truck.

Incentive funding levels for the three program options vary by the truck class and the engine technology of the replacement truck. In recognition of the increased cost of the latest technology, enhanced funding levels are provided for alternative fuel and advanced technology trucks. Zero-emission trucks can receive up to \$200,000, near-zero emission battery-electric hybrid trucks can receive up to \$150,000, and optional low-NOx trucks can receive up to \$100,000 per truck. There are limited funding opportunities available for the purchase of diesel-powered trucks, which can receive up to \$50,000 through the Truck Replacement Program.

CLEAN AIR GRANTS

CHARGE UP!

With the growing number of clean plug-in electric vehicles (PEVs) and plug-in hybrid electric vehicles (PHEVs) in the San Joaquin Valley, the District launched its Charge Up! Program on June 1, 2015, to fund the purchase and installation of publicly accessible electric vehicle chargers. The program offers Valley businesses and public agencies up to \$6,000 for a Level 2 charger and up to \$25,000 for a Level 3/DC Fast Charger. The goal of this program is to further strengthen the Valley's electric vehicle charging network to ensure the technology's sustainability in the region and ease "range anxiety" that concerns many existing and potential electric vehicle owners.

In 2018, the District awarded more than \$1.3 million in incentives for the installation of 250 Level 2 and Level 3 electric vehicle chargers. Recently approved enhancements to the Charge Up! Program, which included allowing workplace charging as an eligible funding category and implementing a voucher-based system for efficiency, increased the award amount by more than 50% from \$660,000 in 2017 to \$1.3 million in 2018. These enhancements are expected to help Valley entities take advantage of current and future funding opportunities provided by the California Energy Commission, the California Air Resources Board and utility companies and to minimize out-of-pocket costs.

BURN CLEANER

Since 2009, the District has offered incentives through its Burn Cleaner Program for the change-out of old, high-polluting, open-hearth fireplaces or uncertified devices, primarily with new clean gas stoves and inserts. The program has provided the resources necessary for thousands of Valley residents to make positive changes in their residential wood-burning practices. The program also is a significant part of the District's overall strategy to reduce harmful wood-smoke emissions that directly and adversely impact the health of Valley residents. Given the potential high cost to replace older units, the program has a specific focus on low-income residents by providing them with higher incentives and expanding eligibility criteria so that the purchase of a new, cleaner unit is more economically feasible. In 2018, the District awarded almost 2,300 vouchers for approximately \$3.9 million.



LAWN AND GARDEN PROGRAMS

Gas-fueled lawn mowers generate significant emissions throughout the Valley, exposing residents and end users to these harmful emissions. The District has provided incentives to Valley residents to replace their old gas-fuel lawn mowers with new electric units through its Clean Green Yard Machines Program (CGYM). Since 2010, the CGYM has replaced over 5,000 old gas-fueled lawn mowers with new electric ones, totaling over \$1,100,000.

In addition to the District's efforts to replace equipment utilized by Valley residents, in November 2018 the District's Governing Board approved a new incentive program to encourage the transition from existing high-polluting combustion equipment used by commercial landscape maintenance service providers to new zero-emission equipment in the San Joaquin Valley. The commercial electric equipment on the market today includes a full range of mowers from push, self-propelled, stand-on and ride-on mowers to blowers, trimmers, hedge trimmers, edgers and chain saws. Advances in battery technology have now made it possible to get up to a full day of normal operation for some commercial mowers.

The new Commercial Lawn and Garden Program will provide vouchers on a first-come, first-served basis to landscape professionals that are located in and conduct 100% of their lawn care services within District boundaries. To ensure reductions are permanently achieved, participants are not only required to replace their existing in-use, gas- or diesel-powered equipment with an electric option but also must surrender their old equipment for destruction. Eligible participants include private businesses, public agencies, nonprofits and school districts.

The table below summarizes the funding amounts by equipment type:

ELECTRIC LANDSCAPE MAINTENANCE EQUIPMENT	MAX FUNDING AMOUNT PER NEW PIECE OF ELECTRIC EQUIPMENT
Edgers, Trimmers, Chainsaws and Polesaws	70% of purchase price, up to \$200
Blowers and Vacuums	70% of purchase price, up to \$250
Walk-behind Mowers	70% of purchase price, up to \$750
Ride-on or Standing-ride Mowers	70% of purchase price, up to \$15,000
Additional Batteries and Chargers	100% of purchase price, up to 2 batteries and 1 charger per piece of equipment purchased

Funding will be limited to \$25,000 annually per applicant

DRIVE CLEAN in the San Joaquin

Under the umbrella of the Drive Clean in the San Joaquin Program, the District offers a suite of incentives to help Valley residents drive cleaner passenger vehicles. The program has options to help residents repair vehicles with emission-related issues; replace older high-polluting vehicles with newer and cleaner alternatives; and receive rebates to reduce the cost of purchasing or leasing new zero- and near-zero emission vehicles. Through this program, Valley residents have the opportunity to select an option that works for their particular situation.

REPAIR PROGRAM

The vehicle repair program is operated through Tune In Tune Up weekend events in partnership with Valley Clean Air Now, which has a long history of successfully implementing this program and excels at reaching residents in disadvantaged communities who otherwise may not be able to afford costly vehicle repairs. Reaching this key demographic is essential as the emission reductions are most needed in low-income communities, which are historically home to the greatest percentage of high-emitting vehicles.

At a Tune In Tune Up event, participating vehicles are tested to determine the likelihood of failing the required biennial smog test. Owners of vehicles that fail this initial screening are provided with a voucher that is redeemable at participating smog shops for up to \$650 in emissions-related repairs plus the cost of smog checks and diagnostic time. Once the vehicle is repaired, a confirmatory smog test is conducted, which can then be used for vehicle re-registration purposes. In 2018, over 3,400 vehicles were repaired through the Tune In Tune Up program.

REPLACE PROGRAM

Through the vehicle replacement program, older high-emitting vehicles are replaced with new or newer, cleaner and more fuel-efficient models. Depending on income levels and residential status in a disadvantaged community, incentives for these programs range from \$2,500 to \$9,500, depending on the type of vehicle purchased. The higher incentives available through this program are provided for participants who purchase plug-in hybrid or battery-electric vehicles. In 2018, over 500 high-polluting vehicles were replaced with newer, cleaner and more fuel-efficient models.

When the replacement program was initially launched, participation was exclusively available by attending a weekend Tune In Tune Up event. New in 2018, Valley residents are



now able to apply directly to the District through an online application process, which allows participants to easily submit required documents and track their progress throughout the program. In combination with the weekend events, the direct application method has resulted in a significant increase in the number of vehicles replaced in the District.

New mom and Drive Clean in the San Joaquin participant Alectra Daysouza had this to say about the REPLACE program after retiring her 1992 Honda Civic and replacing it with a 2013 Nissan Leaf:

“My new car is the perfect size for my young family. I have been able to take my twins on family trips, like the local zoo, which was near impossible before in my old car. I am so excited to be driving in an electric car! Not only is it efficient, but also good for the environment. Thank you Valley Air District for making this possible.”

REBATE PROGRAM

In May 2014, the District adopted a comprehensive action plan promoting the use of clean passenger-vehicle technology. A central focus of this plan was to increase the adoption of electric and other advanced vehicle technology in the Valley by identifying the area’s level of readiness for such technology and addressing the barriers to widespread adoption. Through the development of the San Joaquin Valley Plug-in Electric Vehicle Readiness Plan, the District recognized a one-size-fits-all approach would not work in the Valley because of the region’s unique geography and its disproportionately higher population of disadvantaged communities in comparison to the rest of the state. By providing significant incentives for Valley residents to purchase or lease clean vehicles, the District was eliminating one of the key barriers toward greater acceptance and adoption of this technology: the up-front cost. The District’s Drive Clean in the San Joaquin rebate program provides Valley residents up to \$3,000 toward the cost of purchasing or leasing plug-in electric vehicles, plug-in hybrid vehicles and other alternative fuel vehicles. The District’s rebates, coupled with various other state, federal and utility rebates and tax incentives, provide Valley residents with the most beneficial suite of incentives for clean passenger vehicles in the entire state. With more than 1,800 rebates issued in the Valley in 2018, this program continues to be well received by the public.



CLEAN AIR TECHNOLOGY ADVANCEMENTS

Supporting the advancement of clean technology is a necessary strategy to improve the air quality in the San Joaquin Valley. For years, the District has provided funding through its incentive programs to help Valley residents and businesses make long-term investments in cleaner technology. In addition to these efforts, the District has developed partnerships with regional stakeholders and technology manufacturers to actively compete for state and federal funds to support the further deployment of and demonstrate the viability of clean, zero- and near-zero emission technology in a variety of applications throughout the Valley. The District is currently implementing several projects and anticipates they will help the Valley move toward advanced clean technology.

ZERO-EMISSION PROJECTS

San Joaquin Transit Electrification Project: This project will help accelerate the commercial deployment of state-of-the-art, battery-electric transit buses in strategic hubs located in disadvantaged communities throughout the San Joaquin Valley. In collaboration with Proterra, Inc., the City of Visalia, Fresno County Rural Transit Agency, San Joaquin Regional Transit District, and the City of Modesto, the District was awarded almost \$13.4 million for this project to deploy 15 battery-electric transit buses by Proterra and add the necessary charging infrastructure.

Green On-Road Linen Delivery Project: This project will deploy and demonstrate the viability of zero-emission, walk-in delivery vehicles used by AmeriPride Linen & Uniform Services, which has locations and service centers nationwide. The delivery vehicles will be used at facilities located in Stockton, Fresno, Bakersfield and Merced, where they will allow AmeriPride Services to demonstrate the technology in disadvantaged communities. This project also will help the company evaluate the technology for use in other locations throughout North America. In partnership with Motiv Power Systems and AmeriPride Services, the District was awarded over \$7.1 million to deploy 21 delivery vehicles and add the necessary charging infrastructure.

USPS Zero-Emission Delivery Truck Pilot Commercial Deployment: In this project, the United States Postal Service (USPS) will demonstrate electric mail delivery trucks in the Cities of Stockton and Fresno. These two connected USPS hubs will form the basis of a USPS Advanced Vehicle Cluster, from which USPS can continue to explore the electrification

of its massive fleet of vehicles in California and nationwide. The District is partnering with USPS, Cummins Inc., and Motiv Power Systems, and was awarded over \$4.5 million to deploy 15 zero-emission, electric "step vans" and add the necessary charging infrastructure.

Ecosystem of Shared Mobility Services in the San Joaquin Valley: This project will support a suite of shared mobility services in five disadvantaged, rural communities in the San Joaquin Valley where the provision of transit is very costly and services are extremely limited. The District has partnered with the Institute of Transportation Studies at University of California, Davis, Sigla, Inc., Self-Help Enterprises, MOVE Stanislaus and the San Joaquin Valley Rural Development Center at California State University, Fresno for this project. The District was awarded \$2.25 million to develop a technology platform to aggregate lower-cost transportation services to be utilized in communities in San Joaquin and Stanislaus counties and to implement car-sharing and ride-sourcing services in affordable housing communities in Kern and Tulare counties.

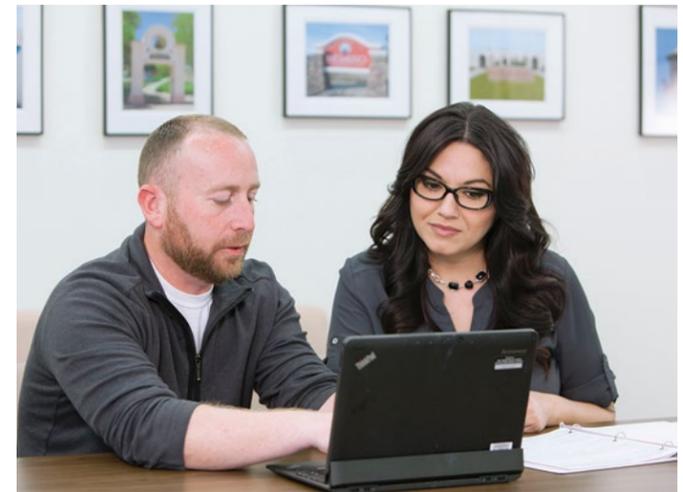
Valley Air ZEV Mobility Pilot Project: This pilot project will provide electric vehicle vanpools, car sharing and electric bicycles in Merced, Bakersfield and west Fresno County. Offering a creative mix of mobility options for daily commuting as well as casual trips, the project is expected to serve more than 1,000 participants residing in targeted communities currently underserved by public transit services. The District, which is partnering with Green Commuter and Swiftmile, was awarded \$749,800 to implement the project.

New Technologies BETTER SERVE PUBLIC

During the past year, the District has made great strides in providing more ways for Valley residents to access District information, grant funding and air quality tools online. Among these assets, the District provided a new online application portal for its Drive Clean in the San Joaquin program where Valley residents can submit online applications to trade out old polluting vehicles for newer, cleaner options or apply to get a rebate for the purchase of an electric vehicle.

Through these online portals, residents can submit supporting documents and check the status of their applications. Online portals for other incentive programs, such as the Clean Green Yard Machines and Burn Cleaner, are also in the works.

The District also developed a user-friendly online tool to allow designated facility personnel and consultants to conveniently view and submit data for their permitted facilities. This past



year the District added the ability for facilities to view their outstanding invoices, submit payments via e-checks, debit or credit card and receive payment confirmations instantly. These web-based improvements are part of the District's continuous effort to improve overall customer service, increase efficiency and reduce paper use.

CAC and EJAG Efforts in Valley Communities

CITIZENS ADVISORY COMMITTEE

The CAC consists of 24 primary and 24 alternate members. There is one unpaid representative each for the Industry/Ag, Environmental, and City interest groups in Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare counties.

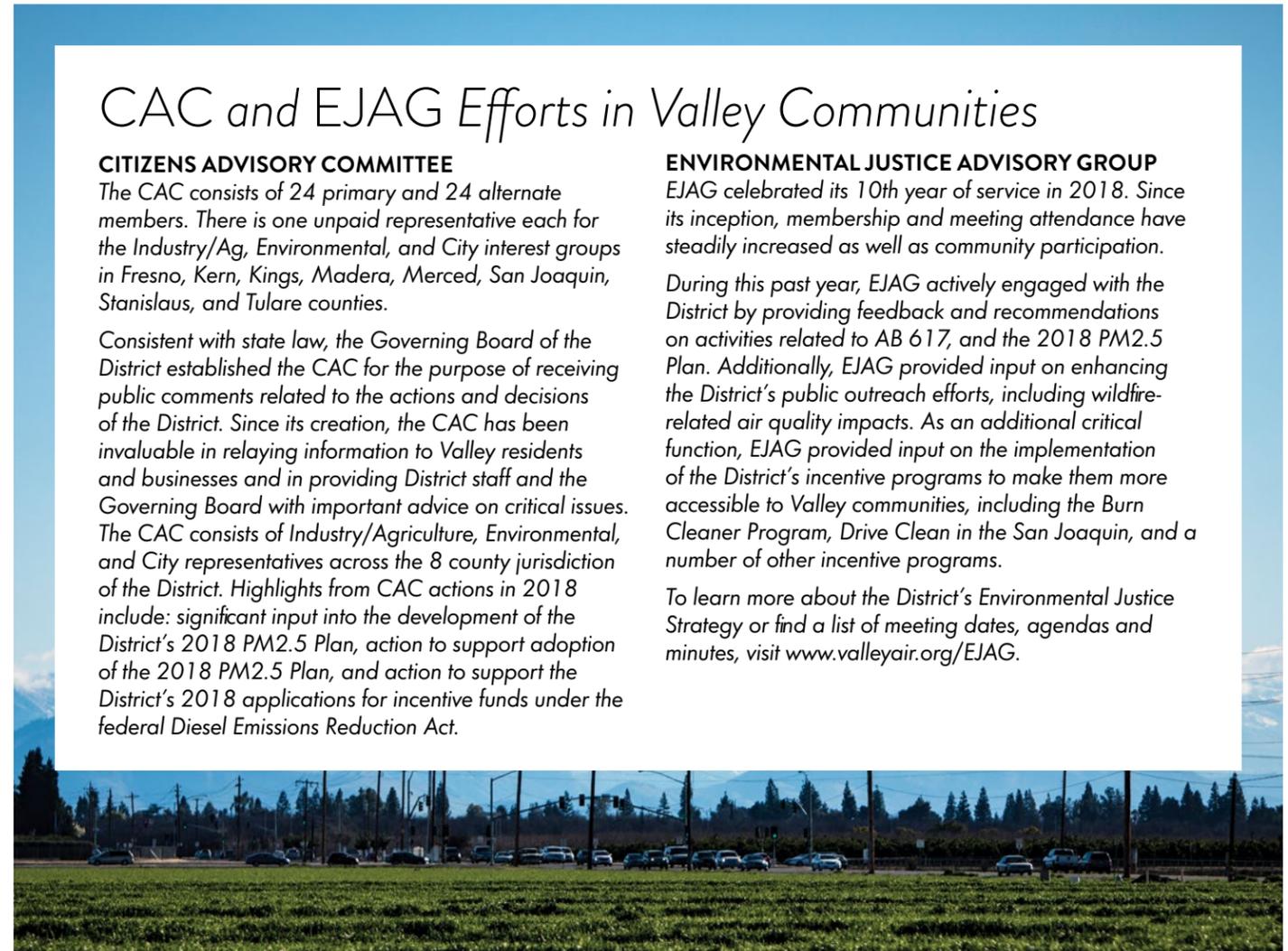
Consistent with state law, the Governing Board of the District established the CAC for the purpose of receiving public comments related to the actions and decisions of the District. Since its creation, the CAC has been invaluable in relaying information to Valley residents and businesses and in providing District staff and the Governing Board with important advice on critical issues. The CAC consists of Industry/Agriculture, Environmental, and City representatives across the 8 county jurisdiction of the District. Highlights from CAC actions in 2018 include: significant input into the development of the District's 2018 PM2.5 Plan, action to support adoption of the 2018 PM2.5 Plan, and action to support the District's 2018 applications for incentive funds under the federal Diesel Emissions Reduction Act.

ENVIRONMENTAL JUSTICE ADVISORY GROUP

EJAG celebrated its 10th year of service in 2018. Since its inception, membership and meeting attendance have steadily increased as well as community participation.

During this past year, EJAG actively engaged with the District by providing feedback and recommendations on activities related to AB 617, and the 2018 PM2.5 Plan. Additionally, EJAG provided input on enhancing the District's public outreach efforts, including wildfire-related air quality impacts. As an additional critical function, EJAG provided input on the implementation of the District's incentive programs to make them more accessible to Valley communities, including the Burn Cleaner Program, Drive Clean in the San Joaquin, and a number of other incentive programs.

To learn more about the District's Environmental Justice Strategy or find a list of meeting dates, agendas and minutes, visit www.valleyair.org/EJAG.



SHARING THE STAR CULTURE

Service, Teamwork, Attitude and Respect

SHARING THE DISTRICT'S EXPERIENCE

The District's STAR work culture has enabled the District to excel in the fields of customer service, continuous improvement and employee satisfaction. At the request of Valley elected officials and other stakeholders, the District has developed materials that are being shared with other agencies and organizations that wish to implement a similar work culture.

BRINGING THE BEST PRIVATE SECTOR BUSINESS PRACTICES INTO GOVERNMENT

There are government agencies that implement effective business practices seen primarily in the private sector that lead to efficiency, productivity, innovation, and exceptional customer service on an ongoing basis. The San Joaquin Valley Air Pollution Control District has long been committed to establishing and maintaining a work culture that values and rewards efficiency, productivity, competition, innovation, and exceptional customer service as the bottom line.

EXCELLENCE *in Government*

- Outstanding customer service
- Great productivity and efficiency
- Doing more with less - Reducing cost and eliminating waste
- Innovation and creativity
- Entrepreneurial with competitive spirit - Be the first and the best
- Motivated and engaged employees

Excellence in government is accomplished through a management philosophy that places a greater focus and emphasis on attitude and positive behavior while setting high expectations and striving for excellence in quality of work and productivity. Achieving and maintaining a work culture like this requires day-to-day attention and ongoing commitment and effort from all levels within the organization.

Successful implementation requires that the following beliefs, convictions and commitments be ingrained in the organization's DNA:

- Unshakable belief at all levels of leadership that employee welfare and well-being is essential to an agency's achievement of excellence
- Embrace change and have the entrepreneurial and risk-taking spirit to seek change
- Make delivery of great customer service to internal and external customers the top priority for the organization
- Always strive to be the best and the first in everything in which the agency endeavors
- Place a higher value on positive attitude and initiative over technical expertise in hiring and promotional decisions
- Once the organization has transformed to a point of complete acceptance of the above beliefs, convictions and commitments; success demands daily follow-through with a myriad of actions to build, strengthen and maintain the culture and monitor results
- Work constantly through actions and words to demonstrate to employees that you value their welfare and well-being
- Communicate expectations clearly and routinely
- Use employee recognition to reward good behavior and to communicate expectations
- Build an environment where employees take pride in working for the agency
- Create a safe environment for employees to offer suggestions for change/improvement
- Follow through with addressing the employee suggestions in a timely manner
- Train employees and provide the necessary tools to meet and exceed expectations
- Hold employees accountable
- Infuse constant energy to keep it fresh
- Make it an intrinsic part of each employee's job
- Create an environment where employees are not put in silos and see themselves working for the agency as a whole - not for an individual department or division
- Provide freedom and encouragement to constructively critique the work of others
- Serve as a role model

If interested in learning about the District's STAR work culture the District now has literature and a video that can be obtained upon request.



OVERVIEW of the DISTRICT'S OPERATIONS

Codified in the District's Core Values, accountability is one of the most important aspects of all of the District's operations, goals and strategies. The District is accountable to the public for every dollar spent and every regulation adopted. It is accountable for demonstrating quantifiable progress toward clean air, and it is accountable for conducting day-to-day business in the most effective, efficient and innovative ways possible.

The District's track record demonstrates these values. It is given the highest marks by auditors and other agencies. It consistently sets a high bar for air quality improvements that other air management agencies emulate. It also sets the gold standard for customer service.

In that spirit, the District offers you the following operational information about how it is cleaning the air, saving money and implementing continuous improvement in all of its undertakings, continuing the tradition of excellence that the Valley's stakeholders have come to expect.

VALLEY ADVOCACY at the State and Federal Level

The District's 2018 legislative activities were extremely productive. At both the state and federal level, the District has been able to continue to build on recent efforts to bring resources to the Valley that will greatly assist in achieving the enormous emissions reductions necessary for our upcoming State Implementation Plans aimed at attaining the federal health-based standards. At the state level, the District was successful in securing new funding for the implementation of new state AB 617 mandates, new incentive funding to achieve early emission reductions in disadvantaged communities, and the majority of new state FARMER program funding. The following provisions in the adopted budget legislation are particularly beneficial to the Valley:

- \$245 million Statewide for Community Air Protection (District anticipated to receive significant portion)
- \$132 million Statewide for Agricultural Diesel engine Replacement and Upgrade (District anticipated to receive 80% of funds)
- \$99 million for Methane Reduction (Dairy Digesters mostly in the San Joaquin Valley)
- \$100 million for Enhanced Fleet Modernization Program (EFMP) and EFMP Plus-Up, school bus replacement, and low-income Clean Vehicle Rebate Program. The Valley contains 20 of the 30 most disadvantaged communities. This funding is targeted at those communities.

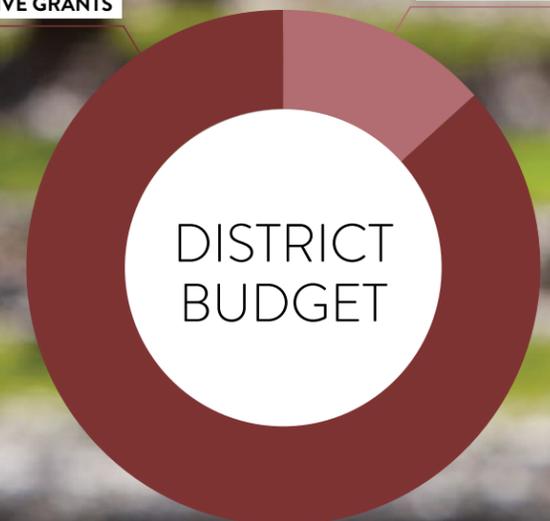
- \$180 million for the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP). This is a statewide program that the Valley traditionally takes advantage of.
- \$50 million for air districts to implement AB 617

At the federal level, the District built upon our past success in protecting and securing funding through the Diesel Emission Reduction Act (DERA) program, the Targeted Air Shed program, and Environmental Quality Incentives Program (EQIP) funding for farm equipment replacement in the Farm Bill.

This past year, the District also strengthened relationships with key policymakers at federal agencies to pursue administrative solutions and policies to assist in addressing the Valley's air quality challenges. The District worked closely with EPA to develop administrative solutions related to Clean Air Act implementation as well as the U.S. Forest Service to help move forward new initiatives with respect to enhanced forest management.

\$349,822,500
INCENTIVE GRANTS

\$54,498,195
OPERATIONS





STREAMLINING AND EFFICIENCY

Effective and efficient use of public funds are core values of the District's work culture and as such, the District continually looks for opportunities to increase productivity and minimize costs. The District implemented the following enhancements and streamlining measures during the recent fiscal years:

NEW GRANTS MANAGEMENT PROGRAM

The District completed phase one of the design and implementation of a new and improved Grants Management software for managing and processing all District grants and incentives. This innovative program was launched in July 2018 and the improved features of this new program will streamline the District's incentives application and claim processing. The new program will provide more timely and accurate information and reports.

CHARGE UP! STREAMLINING

In 2018, the District made enhancements to its Charge Up! Electric Vehicle (EV) Charger Incentive Program by shifting to a voucher-based system and including workplace charging as an eligible funding category. Updating the program to a voucher-based approval process has helped increase participation, efficiency and flexibility by streamlining the upfront program analysis of projects. This also has provided applicants the ability to coordinate District funding with other local, state, federal and utility programs to maximize funds for applicants and reduce their out-of-pocket costs. Addressing workplace charging has been a necessity for the viability of EVs in the Valley as many owners may have charging issues, such as residing in multi-unit dwellings with limited access to charging at their buildings, living in older homes that have costly upgrades to install charging infrastructure and having long commutes for work.

HUMAN RESOURCE MANAGEMENT SOFTWARE

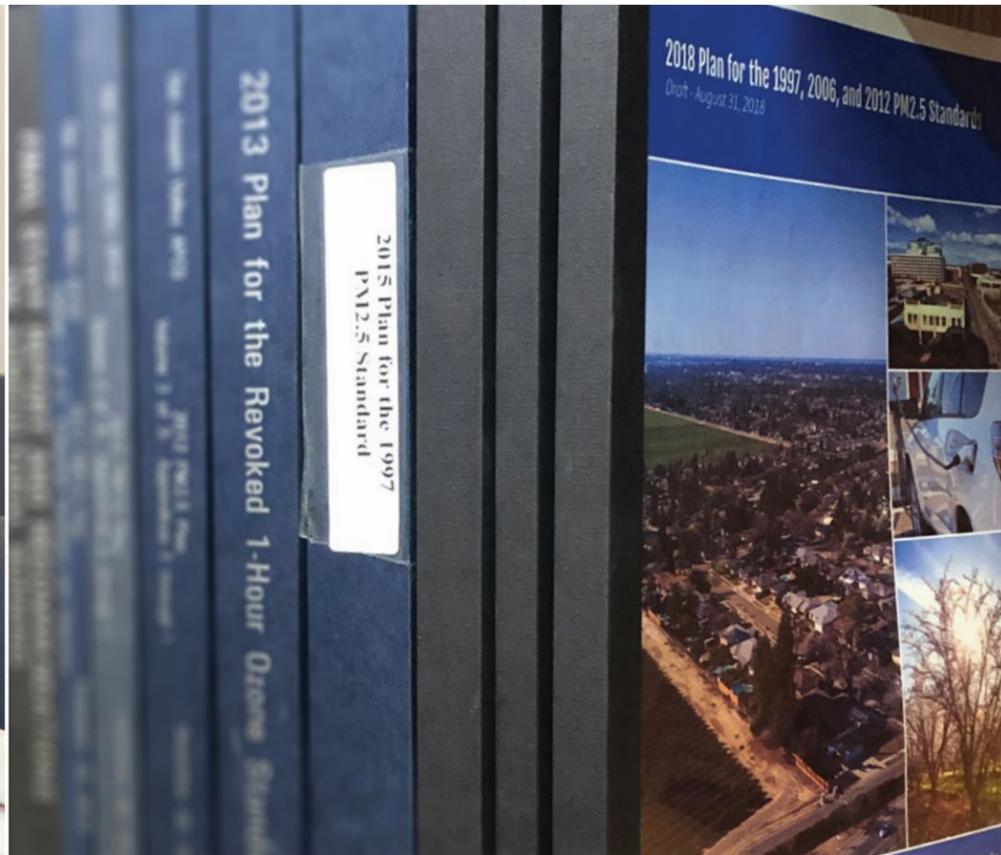
The Human Resource Management Program software, which was created in-house by the District, allows for maximum efficiency and effectiveness in managing personnel data in real time. This past year, the District made additions and changes to the software, which allowed for better tracking and reporting in the following areas: training certification, telecommute, annual physical, employee leave and insurance premium invoices. In addition, enhancements to the program helps with employee leave audits to accurately calculate the number of years of service. The program works in conjunction with the District-created software for labor management information and budget. Utilizing the three custom software programs together allows the District to maximize staff time and resources when trouble-shooting issues, developing the zero-based budget and reviewing historical records.

SECURITY SERVER UPGRADE

The upgrade of the District's security auditing server has brought significant improvements to the process of detecting changes throughout the District's server infrastructure, and added new levels of security notification on system changes that did not exist previously. Additionally, the upgrade provides new functionality to monitor sensitive file and folder locations for user access and changes.

MOBILE APP UPGRADE

More Valley residents are using the District mobile app to receive real-time air quality information on smart phones, tablets and other devices. The District enhanced the mobile app to give Valley residents the ability to receive air quality information for their current location as well as save up to a total of 10 locations. Additionally, through the app, residents can report any air-quality-related issues they see and check the current wood-burning status during the Check Before You Burn season.



PLANS & REGULATIONS

AIR QUALITY PLANS

The Environmental Protection Agency (EPA) periodically reviews and establishes health-based national air quality standards (also referred to as the National Ambient Air Quality Standards or NAAQS) for ozone, particulates, and other criteria air pollutants guided by the Clean Air Act. The District has adopted several air quality attainment plans over the years that identify measures needed in the Valley to attain EPA's increasingly stringent NAAQS. The implementation of these plans has included almost 650 rules that have resulted in significant emissions reductions.

The District's plans include emissions inventories that identify sources of air pollutants, evaluations of the feasibility of implementing potential opportunities to reduce emissions, sophisticated computer modeling to estimate future levels of pollution, and a strategy for how air pollution will be further reduced. The District plans also have innovative alternative strategies for accelerating attainment through non-regulatory measures, such as incentive programs, technology advancement programs, the District's legislative platform, and community outreach and education programs. Additional strategies like energy efficiency, eco-driving, green purchasing and contracting,

support of urban heat island mitigation efforts, and encouragement of cleaner methods of generating electrical energy and mechanical power are included in District plans.

More recently in November 2018, after an extensive three-year public process, the District adopted the 2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards, which includes a comprehensive suite of innovative regulatory and incentive-based measures that addresses the following federal PM2.5 standards:

- 1997 annual PM2.5 standard of 15 $\mu\text{g}/\text{m}^3$
- 2006 24-hour PM2.5 standard of 35 $\mu\text{g}/\text{m}^3$
- 2012 annual PM2.5 standard of 12 $\mu\text{g}/\text{m}^3$

RULES & REGULATIONS

The District has demonstrated leadership in developing and implementing groundbreaking regulatory strategies to reduce emissions. For more than 25 years, the District has implemented several generations of emissions control measures for stationary and area sources under its regulatory jurisdiction. These control measures represent the nation's toughest air pollution regulations and have greatly contributed to reducing ozone and particulate matter concentrations in the Valley.

Stringent and innovative rules, such as those for indirect source review, residential wood burning, glass manufacturing, and agricultural burning, have set benchmarks for California and the nation. Despite the significant progress under these regulations, which have been greatly aided by the efforts and financial investments of Valley businesses and residents, the District continues to adopt and modify rules to achieve ongoing emissions reductions and advance our progress toward clean air.

During this past year, the District has amended a number of rules and regulations applicable to various pollution sources across the Valley, including the Indirect Source Review rule; equipment subject to California's oil and gas regulation; natural gas-fired, fan-type central furnaces; commercial charbroiling; and portable equipment registration.

2018 EMISSION REDUCTIONS			
	PLAN COMMITMENTS	REDUCTIONS ACHIEVED	PERFORMANCE
NO_x	9.48 tons per day	18.60 tons per day	96% above target
VOC	40.46 tons per day	47.32 tons per day	17% above target
SO_x	0.83 tons per day	4.85 tons per day	484% above target
PM_{2.5}	7.60 tons per day	14.79 tons per day of PM equivalent	Exceeding reductions by 94.6% through PM precursors



PERMITTING

WORKING WITH BUSINESS

The District works cooperatively with Valley businesses and assists them in complying with the Valley’s air pollution regulations, which are some of the most stringent in the nation. To date, the District administers permits and registrations for more than 42,000 stationary sources of air contaminants at more than 14,000 facilities in the Valley.

AUTHORITIES TO CONSTRUCT & PERMITS TO OPERATE

Stationary sources of air pollution, from dry cleaners’ and auto body shops to power plants and oil refineries, must obtain air permits from the District before constructing or operating. The permitting process involves two major steps:

1. The applicant must first apply for an Authority to Construct (ATC) permit. The application review process is an important opportunity for all interested parties – the project proponent, the District and the interested public – to assess a project’s compliance with federal, state, and local air pollution regulations prior to beginning construction. To obtain an air permit in the Valley, the District requires the best available air pollution control equipment as well as mitigation of emission increases.
2. Once the applicant has properly installed the equipment authorized under the ATC permit and successfully completed an initial compliance inspection as well as any required emissions testing, when applicable, a Permit to Operate is issued.

FEDERALLY MANDATED OPERATING PERMITS (TITLE V)

As of 2018, the District has issued Title V permits to more than 240 facilities considered to be “major sources” of air pollution. Federal law requires major sources to obtain Title V permits, which are designed to expand public and Environmental Protection Agency participation in the permitting process for the largest emitters of air contaminants.

EMISSIONS INVENTORY

Each year, the District collects emissions and processes data from more than 5,000 facilities and other information sources, calculates each facility’s annual emissions, and reports the emissions to the California Air Resources Board. This emissions inventory then acts as a cornerstone of the District’s efforts to reduce air pollution through attainment plans and emission control strategies.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

CEQA is the state law that requires environmental impacts to be assessed on projects and disclosed to the public, and also requires significant impacts be mitigated to a less than significant level when feasible. District staff carefully review land developers’ project proposals, new stationary source permits, and attainment plans and rules for compliance with CEQA requirements. Consistent with its commitment to continuous improvement and exceptional customer service, the District has implemented enhancements to its public notification system to allow members of the public to automatically receive CEQA project-specific information upon request. The District also has developed streamlined, web-based tools to assist land use agencies and developers with implementing CEQA requirements.

SMALL BUSINESS ASSISTANCE (SBA)

Exceptional customer service is not only one of the District’s core values, it also is ingrained in our work culture. A great example of this is the District’s SBA program, whose mission is to provide dedicated assistance to Valley businesses that lack the resources or expertise needed to efficiently obtain air permits or otherwise comply with District requirements. Our SBA staff provide expert advice on technology options, application processes, cost-efficient methods to comply with District requirements, as well as many other air quality issues. Interested parties can contact the District SBA staff through hotline telephone numbers in the Northern, Central, and Southern regions of the Valley.

2018 STATISTICS

2,252	Authority to Construct permits issued
580	New Permits to Operate issued
35	New Title V permits issued to 2 facilities
2,367	Title V permit renewals issued to 53 facilities
538	Title V permit modifications
197	Emission Reduction Credit certificates issued or transferred
756	Toxic air contaminant risk-management reviews performed
5,892	Annual emissions inventory statements and surveys processed
2,835	California Environmental Quality Act (CEQA) review requests processed
738	CEQA comment letters sent
255	CEQA documents prepared
328	Indirect Source Review applications approved
319	Facilities subject to the Employer Trip Reduction Implementation Plans Rule



ENFORCEMENT

Compliance with federal, state, and local air quality rules and regulations is ensured by operating a robust inspection program along with a full range of educational and compliance assistance activities.

INSPECTIONS

The District routinely conducts detailed inspections and audits equipment at new and existing facilities to ensure compliance with applicable rules and regulations. Categories of sources include petroleum and chemical refining, oil production, gasoline dispensing, dry cleaning, power plants, manufacturing, and agriculture. Other emission-producing activities are also inspected, such as asbestos demolitions and renovations, construction, residential wood burning, agricultural burning, hazard-reduction burning, and idling diesel trucks.

AIR POLLUTION COMPLAINTS

The District responds to more than 3,000 air pollution complaints from the public each year. These complaints are often the initial indicator of air quality issues in a community. Therefore, the District places the highest priority on responding to complaints and operates an on-call program to ensure timely response to complaints, even during non-business hours.

COMPLIANCE ASSISTANCE AND EDUCATION

The District provides a full range of educational and compliance assistance activities to proactively aid facilities and individuals in complying with air quality rules and regulations. This assistance and education is provided through training classes, certification programs, bulletins, email blasts, workshops, and one-on-one meetings.

SOURCE TESTING AND MONITORING

The District monitors emissions from facilities using a variety of methods, including vans outfitted with specialized monitoring equipment, hand-held portable emissions analyzers and leak detectors, and staff certified to read visible emissions. When non-compliance is suspected, an immediate test can verify emissions activity and often leads to timely corrective action. In addition to compliance and enforcement work, the District also performs testing and monitoring in support of permitting, rule development, planning, emission inventory, and technology advancement efforts.

ENFORCEMENT ACTIONS

When violations of rules and regulations are discovered, the District delivers an appropriate level of enforcement action to ensure an expeditious return to compliance, and assesses monetary penalties to deter future violations. Disputed cases are generally handled in-house and settled through a mutual settlement process. On the rare occasion that a case cannot be settled, the case may be transferred to District Counsel for formal legal actions. In 2018, the District processed more than 2,305 notices, transferred 301 cases to District Counsel, and collected more than \$5.5 million in settlements.

CONSERVATION MANAGEMENT PRACTICES (CMP) PLANS

The District is responsible for regulating and updating more than 4,810 CMP plans designed to decrease air pollution emissions from agricultural operations.

HEARING BOARDS

The Hearing Boards are quasi-judicial panels that act independently of the District. They are authorized by state law to provide temporary relief from District rules and regulations if strict conditions prescribed under the California Health and Safety Code are met. Any excess emissions associated with the temporary relief granted by the Hearing Boards represent only a very small fraction of the Valley's total emission inventory and cannot, by law, be likely to interfere with the attainment and maintenance of health-based air quality standards or cause a public nuisance. In 2018, 86 variance petitions were heard at 52 hearings.

EMPLOYER-BASED TRIP REDUCTION (eTRIP)

This innovative regulation requires large businesses to develop strategies to promote and encourage carpooling and alternative transportation for their employees. To date, employers have submitted and implemented eTRIP plans at 321 worksites in the Valley.

As an employer subject to the eTRIP rule, the District has been a role model for other facilities subject to the eTRIP rule. In fact, the District has implemented considerably more measures than required by the rule, significantly reducing Vehicle Miles Traveled. This experience has been critical in giving District staff valuable insight on how to provide the best possible customer service to help other employers implement the rule requirements.

COMPLIANCE BY THE NUMBERS 2018

33,738	Units inspected
3,229	Public complaints investigated
2,210	Open burn sites inspected
4,123	Incentive funding units (i.e. trucks, engines) inspected
2,011	Asbestos projects reviewed and inspected
321	Employer worksites subjected to the Employer Trip Reduction Implementation Plans (eTRIP) Rule
256	Permit-Exempt Equipment Registrations issued
466	Conservation Management Practices plans issued
275	Employer Trip Reduction Implementation Plans (eTrip)



AIR MONITORING

The District operates an extensive network of air quality monitors to support its mission of improving air quality and protecting public health. Using air quality readings from its real-time monitors, the District generates a daily Air Quality Index (AQI) forecast for each Valley county and hourly Real-time Air Advisory Network (RAAN) notices for Valley schools and residents. The District also rigorously analyzes collected air quality data to help chart the future path to ozone and fine particulate matter (PM2.5) attainment.

Leveraging recent advancements in technology, the District will continue to expand the use of automated monitoring equipment and connection systems for remote diagnostics and monitoring equipment repairs. These advancements have and will further increase efficiency and reduce travel to distant monitoring stations as well as continue to streamline quality control processes tremendously over the next year.

Monitoring equipment used to measure volatile organic compounds (VOCs) during the summer ozone season was recently updated to allow remote control and connectivity to the equipment from the District's office. This has greatly reduced the required travel time to prepare the equipment needed for this special monitoring during the summer months. The District is also developing and testing a device to automatically change the filters used for gas instruments throughout its network, which is expected to significantly reduce travel time to remote sites.

In addition, during this past year the District continued to deploy new gaseous monitoring equipment to ensure more accurate measurements of ozone and nitrogen oxides (NOx) across the Valley. Using this new equipment will create additional stability within the District's air monitoring network by reducing operational issues that can arise with

older analyzers. Additionally, the District has been exploring the potential use of sonic anemometers to measure various meteorological parameters, which allows for a number of measurements to be made in a single compact unit, as opposed to traditional equipment that can take a significant amount of time to calibrate and repair. These changes are expected to bring more efficiency and improved operations to the District's air monitoring network.

The District also recently established its second near-roadway air monitoring station in the Bakersfield area. The District's first near-road air monitoring station has been in operation for a few years in Fresno. These near-road stations have been established in response to new federal mandates to measure nitrogen dioxide emissions near heavily trafficked roadways in the San Joaquin Valley.

AIRVISION DATA MANAGEMENT SYSTEM

In 2018, the District continued using the air quality data management system (DMS) called AirVision, which has brought numerous benefits to the in-depth process of validating and ensuring quality control of the data being collected in the air monitoring network. The DMS has continued to bring improvements to the District's processes in the following areas:

- Automation of quality assurance/quality control (QA/QC) data analysis using data validation protocols with suspect data warnings. Significant time was spent manually performing QA/QC data analysis as the existing DMS did not include the capability to automate portions of the process. AirVision has allowed the District to remove the manual strip chart recorders, which has eliminated maintenance and manual QA/QC data analysis needs.

- Increased control and automation of station tasks (QC checks, calibrations, etc.), which has provided the ability to monitor the health parameters of instruments throughout the network, allowing for staff to be more proactive in maintenance tasks before a serious failure occurs.
- Allows for a quicker acquisition of air monitoring data from the latest hour throughout the network, allowing the District to provide data to the public in a more efficient manner through RAAN.
- The AirVision data acquisition system (DAS) accepts a digital signal from the analyzers in the network, as opposed to only analog with the previous system, which has improved the accuracy of the data being reported to the public and the Environmental Protection Agency from the District's air monitoring network.

MODELING CENTER

In addition to the many attainment plans the District has already developed and implemented, the District is also mandated under the federal Clean Air Act to develop and adopt several new particulate matter plans over the next year for inclusion in the State Implementation Plan (SIP).

In the context of the District's air quality plans and strategy development, modeling is necessary to provide estimates for the quantities of emission reductions necessary to attain the federal air quality standards. These models also are highly valuable for estimating the contribution of ozone and PM precursor emissions from outside the District. To support this important work, the District has designed, installed and instituted the state-of-the-art San Joaquin Valley Air Quality Modeling Center. Through investment

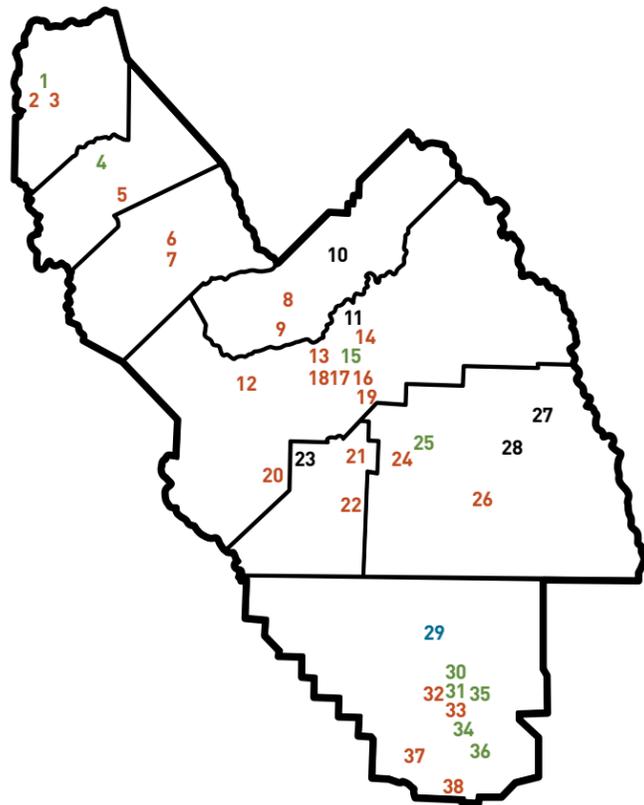
in extensive processing power, data storage capacity and dedicated staff resources, the District's modeling center is one of the most advanced and powerful atmospheric photochemical pollutant modeling systems in the nation.

Air quality modeling uses highly complex computer programs, sophisticated computer hardware and large databases to predict ambient pollution concentrations given future emission inventory and meteorological scenarios. These models bring together the science of emissions generation, meteorological transport and atmospheric photochemistry in a "computerized laboratory" that can simulate air quality concentrations in the San Joaquin Valley. Many of the inputs and algorithms in these models are derived from the cutting-edge research performed through the San Joaquin Valleywide Air Pollution Study Agency.

In addition, the District will be utilizing the modeling center to continue to develop and launch an updated version of RAAN that provides Valley residents real-time air quality information on a neighborhood by neighborhood level. The District has made available and continues to update the Web-based Archived Air Quality (WAAQ) System, which provides the public access to historical air quality information on a neighborhood by neighborhood level.



AIR MONITORING



SAN JOAQUIN COUNTY

- 1 Stockton-Hazelton: G,M,P,F,T
- 2 Tracy-Airport: G,M,P,F
- 3 Manteca: P,F,M

STANISLAUS COUNTY

- 4 Modesto-14th St: G,M,P,F
- 5 Turlock: G,M,P,F

MERCED COUNTY

- 6 Merced-M St: P,F
- 7 Merced-Coffee: G,F,M

MADERA COUNTY

- 8 Madera City: G,P,F,M
- 9 Madera-Pump Yard: G,M

Other¹: Chukchansi Indians

- 10 Picayune Rancheria: G,F,P,M

FRESNO COUNTY

Other¹: Monache Tribe/Foothill Yokut Indians

- 11 Table Mountain AMS²: G,F,P,M
- 12 Tranquillity: G,F,M
- 13 Fresno-Sky Park: G,M
- 14 Clovis: G,M,P,F
- 15 Fresno-Garland: G,M,P,F,T,N,L
- 16 Fresno-Pacific: F
- 17 Fresno-Drummond: G,P,M
- 18 Fresno-Foundry Park Ave: G,M
- 19 Parlier: G, M
- 20 Huron: F, M

MONITORING OPERATION

- Sites operated by the District
- Sites operated by the District & CARB
- Sites operated by CARB
- Sites operated by other agencies:
 - 1-Tribal, 2-National Park Service
 - + Air Monitoring Station (AMS)

KINGS COUNTY

- 21 Hanford: G, F,M,P
- 22 Corcoran: F,M,P

Other¹: Tachi Yokut Tribe

- 23 Santa Rosa Rancheria: G,M,P

TULARE COUNTY

- 24 Visalia Airport: M
- 25 Visalia-Church St: G,F,M,P
- 26 Porterville: G,F,M

Other²

- 27 Lower Kaweah: A,G,M
- 28 Ash Mountain: A,G,M,F

KERN COUNTY

- 29 Shafter: G,M
- 30 Oildale: G,M,P
- 31 Bakersf-Golden/M St: F,P
- 32 Bakersf-Calif Ave: A,G,M,P,F,T
- 33 Bakersf-Muni: G,M
- 34 Bakersfield-Airport (Planz): F
- 35 Edison: G,M
- 36 Arvin-Di-Giorgio: G,M
- 37 Maricopa: G,M
- 38 Lebec: F,M

MONITORING DESIGNATIONS

- A Acid Deposition
- F Fine Particulate (PM2.5)
- G Gaseous
- M Meteorological
- P Particulate (PM10)
- N National Core
- T Toxins
- L Lead

ADMINISTRATION

The Administrative Services Division is responsible for all fiscal, grants administration and a variety of general services-related functions of the District. The fiscal functions include preparation and control of the District's budget; responsibility for accounting and auditing of all District revenues and expenditures; preparation of financial statements and incentive reports as well as other grant financial management, including state and federal grant reporting. The grants and incentive team is responsible for the development, implementation and ongoing administration of various incentive grant programs. The general services functions of the Administrative Services Department include responsibility for facilities management, fleet maintenance, purchasing and risk management.

Independent Authority Commends District for Fiscal Transparency

The District was proud to once again be awarded the Government Finance Officers' Association of the United States and Canada (GFOA) Certificate of Achievement for Excellence in Financial Reporting for its Comprehensive Annual Financial Report (CAFR).

GFOA is an internationally recognized organization that offers guidance and support to local and state government budget and finance professionals throughout the United States and Canada. In July 2018, GFOA presented the "Certificate of Achievement for Excellence in Financial Reporting," the GFOA's highest form of recognition in governmental accounting and financial reporting, to the District for its fiscal year 2016-17 CAFR.

Receiving this award represents a significant recognition by an expert independent authority of the Board's commitment to meeting the highest principles of governmental reporting and transparency to the public, and excellence in exercising fiduciary responsibilities.



INFORMATION TECHNOLOGY SERVICES

The District's Information Technology office continued its diligent work in providing the latest technology to assist the public in doing business with the District and help improve the quality of life for Valley residents. Among the projects accomplished in 2018 were upgraded phones and laptops for District field staff, an enhanced smartphone app and improvements to various internal systems to ensure District technologies continue to be current and can provide the best level of customer service to Valley residents.

MOBILE COMPUTING TECHNOLOGIES UPGRADES

The District upgraded phone and laptop technologies for inspectors and air monitoring staff to provide better service to Valley residents. After careful research and evaluation of several different mobile phones and laptops, the District selected a cost-effective and suitable mobile phone option similar to what is used by law enforcement and other agencies. The phones have rugged options, extra batteries and three-year warranties. In addition, the District acquired new laptops with the Windows 10 operating system and custom applications to provide all the necessary tools to serve the public efficiently.

AIR MONITORING STATIONS UPGRADE

The District is in the process of upgrading all the monitoring sites' data loggers in-house. New, less-expensive custom-prototype computers were purchased, saving the District more than 80 percent of the cost of buying new replacement units. Additionally, the District created a virtual server as backup.

ADDITIONAL TECHNOLOGY UPGRADES

The District upgraded many other internal information systems to ensure they are running efficiently and available at all times to serve the public.

- **Request to Speak System**

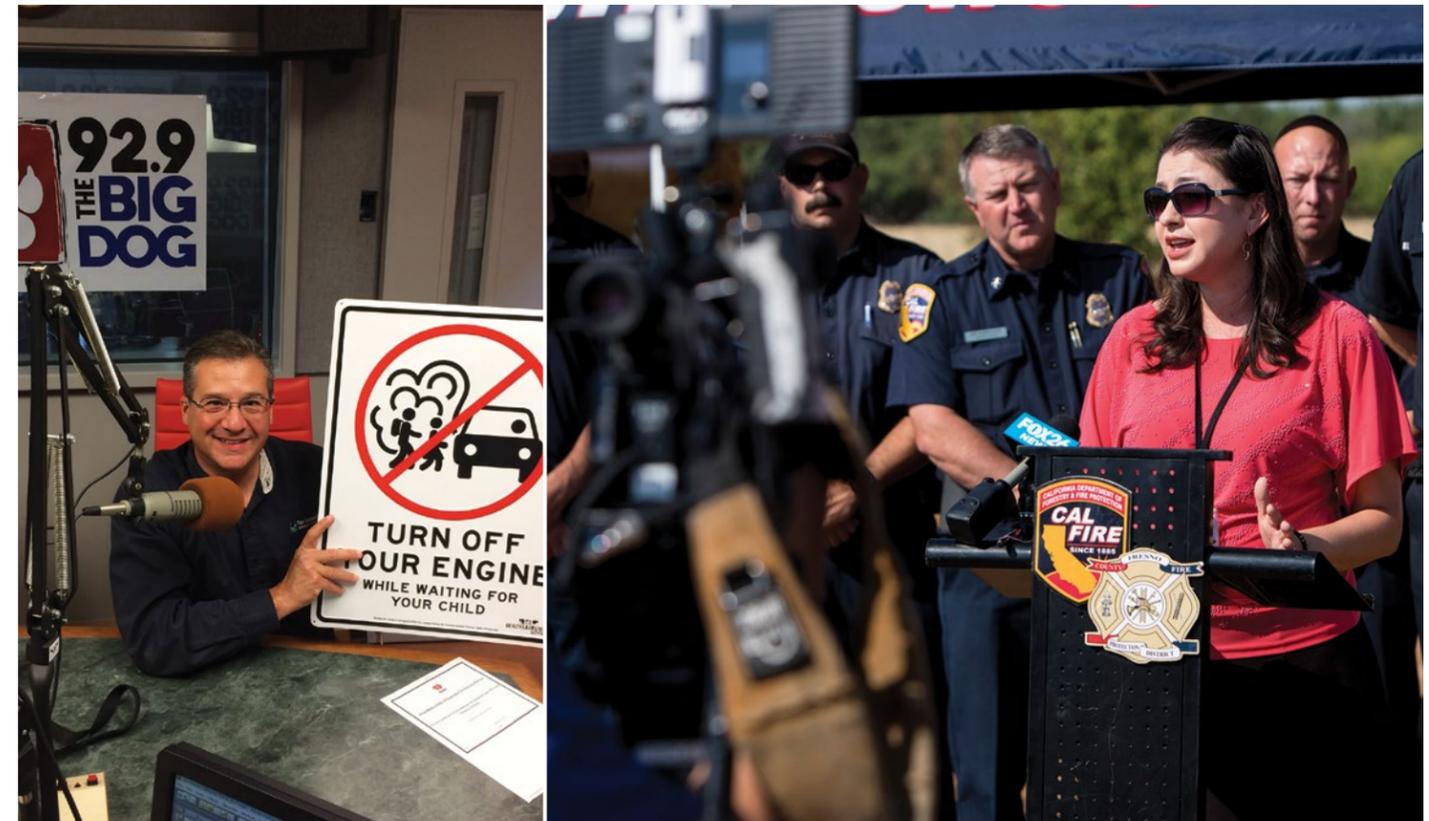
The Request to Speak system, which is utilized during Governing Board meetings, received an upgrade that provides additional stability and support.

- **Portal**

The District created several new online portals to allow residents to submit grant applications, upload supporting documents, and check the status of their incentive project.

- **Mobile App**

The District enhanced the mobile app to give Valley residents the ability to receive air quality information for their current location as well as save up to a total of 10 locations. Additionally, residents can report any air quality related issues they see and check their county's daily wood-burning status during the winter.



OUTREACH & COMMUNICATIONS

The District's Outreach and Communications (OC) Department is comprised of a talented group of professionals with expertise in public relations, media, graphics, web design, audio-video production and event organization. Innovative, creative and effective, the OC team strives to provide clear communications to educate the public, local businesses and media about the District's mission, message and outreach campaigns.

The Outreach team invests a good deal of time providing vital air quality information to a variety of entities through presentations, event collaboration, school outreach, oral and written communication, health fairs, clubs and public events. These appearances are vital outreach tools for the District to build lasting relationships with Valley communities.

PRESS RELEASES, INTERVIEWS AND MEDIA APPEARANCES

Effectively and accurately representing the District's position on virtually any subject or policy, with polish and professionalism, the OC team skillfully delivers public information through radio, television and webcast appearances. In both English and Spanish, the staff contributes commentary for press releases and other materials frequently featured in the Valley's largest, most-read publications and websites.

During the past year, the District coordinated multiple regional press events to showcase successful clean air projects, including the crushing of old high-polluting tractors and other agricultural equipment. This event highlighted the \$108 million awarded to the District from the California Air Resources Board as part of the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program to reduce agricultural industry emissions.

In addition, the District promoted the Drive Clean in the San Joaquin's Replace and Repair options at Tune In & Tune Up events in Fresno and Stockton during the fall. The program helps to reduce Valley residents' exposure to harmful vehicle emissions.

OC BY THE NUMBERS

242	Media Calls
1525	Public Calls
24	News Releases
93	Presentations/ Outreach Events



WILDFIRE OUTREACH

Wildfires during the 2018 year were some of the worst in the state and severely impacted the Valley's air quality. Among the wildfires, smoke from the devastating Camp Fire in Butte County, the Ranch and River fires in the Mendocino National Forest area, and the Alder and Mountaineer fires in Tulare County affected Valley counties.

During these episodes of poor air quality, the District issued health caution notifications and worked to advise residents and schools that in addition to paying attention to alerts from the Real-time Air Advisory Network (RAAN) through emails, text and Valley Air app, they also should treat air quality as unhealthy and stay indoors if they see ash or smell smoke.

Valley residents were able to use the District's updated wildfire notification webpage, valleyair.org/wildfires, which warned the public of potential smoke impacts from active wildfires, highlighted health caution notices and air alerts, and provided links to multiple land management agencies that share wildfire updates.

YOUTH AND SCHOOL OUTREACH

In 2018, the Healthy Air Living Schools program refocused efforts to connect or reconnect with schools and school districts across the Valley and help them move toward the more health-protective RAAN system. The program continued to encourage school personnel to use RAAN with the Real-Time Outdoor Activity Risk (ROAR) guidelines when deciding outdoor activities for students. School administrators, athletic directors and coaches also have been encouraged to download the latest "Valley Air" app on their smart phones, tablets and other devices to see the current air quality levels at their location and at any saved addresses.

During the year, the District actively engaged schools and school districts to be part of the Real-time Electronic Air-quality Display (READ) pilot program, which uses specialized LED monitors to show current air quality levels.

A total of 20 schools throughout the eight counties agreed to participate in the initial pilot phase. The program is currently being expanded to other schools.

In addition, free No Idling signs are available in English and Spanish and are helpful in reminding parents that idling while waiting to pick up their students exposes them to harmful pollution. To read more about the Healthy Air Living Schools program, see page 13.

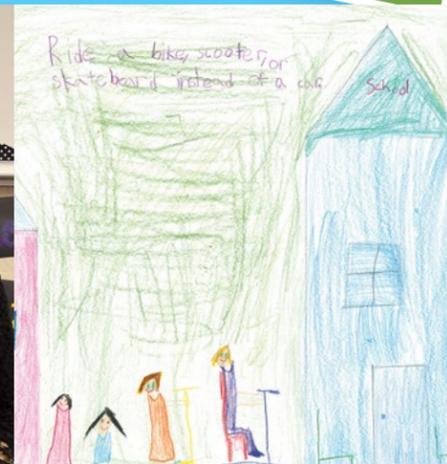
The free Healthy Air Living Kids' Calendar got an update in 2018. Instead of a flip calendar, the new calendars are poster-size with tear-away monthly pages. The poster is a collage of elements from each of the winning pieces created by school children in the Valley. Winning artwork entries were highlighted on the District's social media platforms.

Healthy Air Heroes activity kits remain popular with teachers and parents. The free, educational booklets are available in English and Spanish and include coloring pages, stickers, word scrambles and other kid-friendly activities for students in grades kindergarten through sixth.

WINTER OUTREACH

The Check Before You Burn program remains successful at curbing the build-up of harmful fine particle pollution in the Valley during the winter months. The annual program, which runs from November 1 through the end of February, lets residents know daily whether or not they can light their wood-burning devices.

Valley residents willing to replace dirty residential wood-burning devices with certified, cleaner ones or gas devices can take advantage of the District's Burn Cleaner incentive program. In 2018, a total of 359 days were declared No Burning Unless Registered for the eight counties. Residents with certified wood-burning devices were able to use their units on these days.



Become a Healthy Air Hero!

The District offers a FREE activity book for students Kinder through 6th grade.

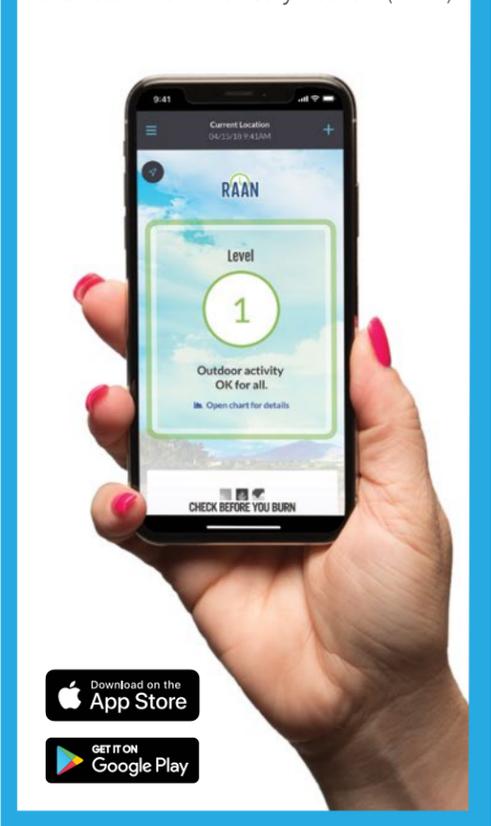
Request yours today by emailing public.education@valleyair.org

Know the Air Quality. Right Here, Right Now.

Download the Valley Air App!

Keep track of current air quality in your favorite neighborhoods via the official app of the Valley Air District.

Receive hourly air quality data provided by the Real-Time Air Advisory Network (RAAN).



SOURCES OF POLLUTION

Each year, the District collects emissions and process data from more than 5,000 facilities and other information sources, calculates each facility's annual emissions, and reports the emissions to the California Air Resources Board. This emissions inventory is used to calculate total Valley emissions and acts as a cornerstone of the District's efforts to reduce air pollution through attainment plans and emission control strategies.

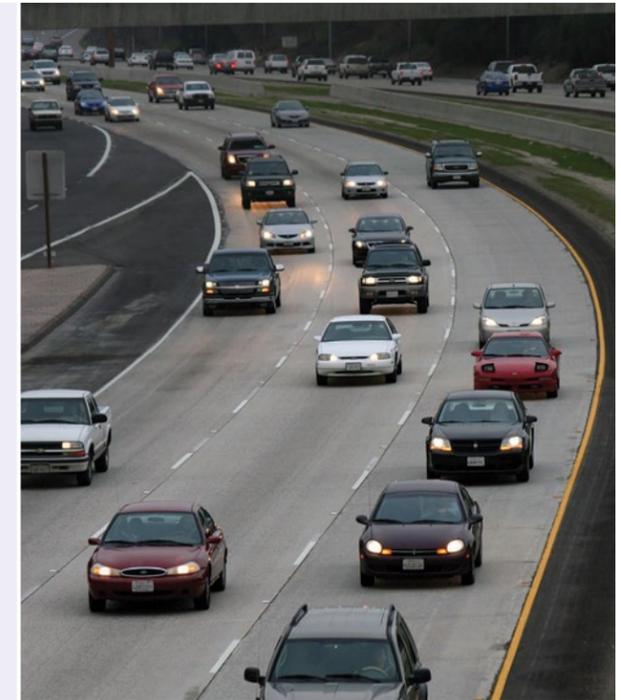
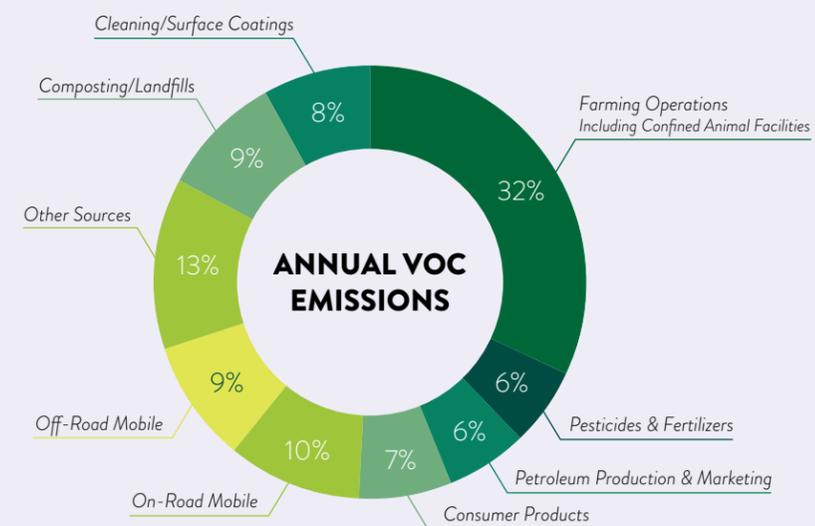
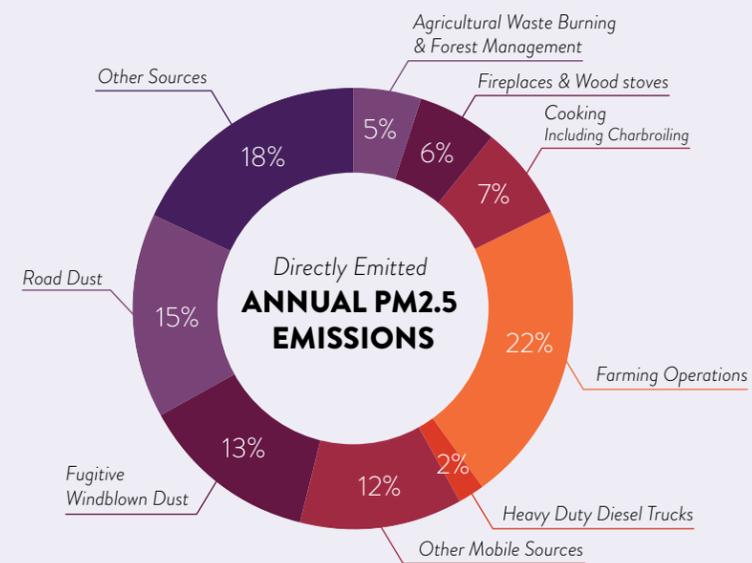
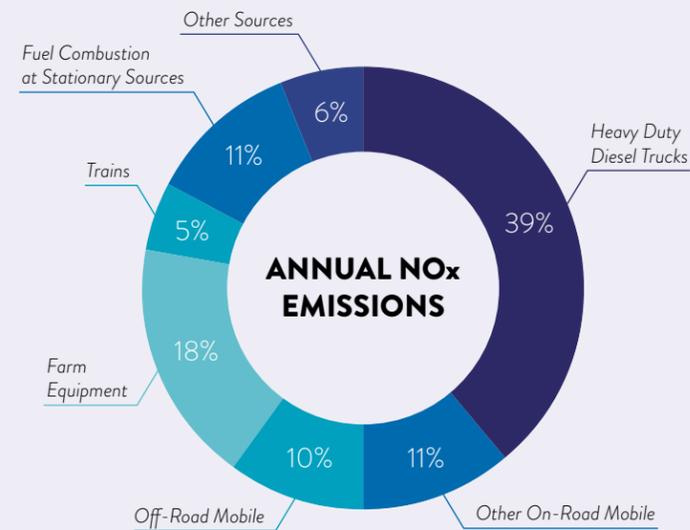
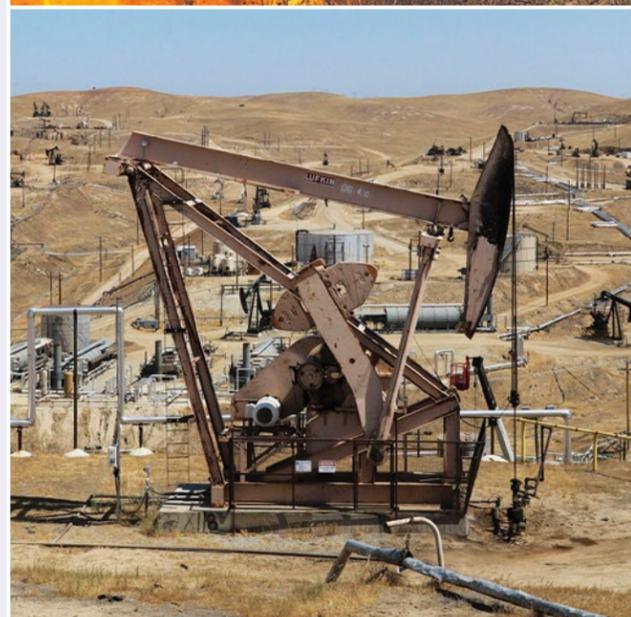
Despite major improvements in air quality, the Valley still faces significant challenges in meeting the federal, health-based, 8-hour ozone and PM2.5 standards. These challenges are the result of the Valley's unique geography, topography and climate, which create ideal conditions for forming and trapping air pollution.

Ozone is the major component of the Valley's summertime "smog," and it affects human health and vegetation.

Ozone is not emitted directly into the air, but is created by photochemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight.

Particulate matter (PM) consists of tiny particles of solids or liquids (except pure water) that are suspended in the atmosphere. Particulate matter includes PM2.5 (particles less than 2.5 micrometers in diameter) and PM10 (particles less than 10 micrometers in diameter). PM can be emitted directly (primary PM, such as dust or soot), and can form in the atmosphere through photochemical reactions or gaseous precursors (secondary PM). Much of the Valley's ambient PM10 and PM2.5 is secondary PM, formed in atmospheric reactions of NOx.

More detailed information on emissions is provided in the District's air quality plans, available at www.valleyair.org.





GIVING BACK

District Gives to the Community

In 2018, District employees across the regions used their time off to provide assistance to multiple Valley organizations during District-sanctioned projects. This effort is now a highly anticipated annual tradition for employees and a great opportunity to provide direct support to the communities the District serves.

Throughout the District this year, staff enjoyed volunteering at a number of great community projects, which included:

- Creating 550 meal bags and sorting through several thousand fruit juice pouches for the Central California Food Bank's Meal Box Volunteer Program
- Collecting more than 100 items, including 96 coats, for those in need at the Poverello House and listening to a guest speaker who spoke about the good work the organization does in the Fresno area
- Participating in four bike repair events with Off the Front, a nonprofit organization that helps children in disadvantaged communities learn to set goals and achieve them
- Collecting clothing and household items for the Assistance League of Bakersfield's thrift store
- Hosting a fundraising luncheon to raise \$153.17 for adaptive equipment for a participant with the New Advances for People with Disabilities in Kern County
- Collecting nonperishable food items during September and October to feed 30 families and distribute with the St. Vincent De Paul Society Food Bank
- Joining with volunteers from other organizations to prepare, including writing notes of encouragement, 1,000 age-appropriate Comfort Kits for children who have to be removed from imminent dangerous situations into emergency foster care.



ON THE RADAR

As we look to the future, the pollution from Valley industries, businesses, farms and vehicles are at historic low levels and air quality in the Valley is the best we have experienced in recorded history. While we can take pride in and appreciate the sacrifices, investment, and energy made by Valley residents to make this possible, we are still far from meeting all of the tough federal mandates that we face and realizing our clean air goals in the Valley. Key areas of focus for the coming year are summarized below:

PM2.5 ATTAINMENT PLAN IMPLEMENTATION

While the tough job of preparing our most recent PM2.5 Plan was accomplished this last year, the substantial work of implementing the new clean air measures in the plan has just begun. District staff has already begun a public engagement process to amend our successful residential wood-burning rule to place even further restrictions on the use of residential wood-burning devices and fireplaces, while increasing public education on the health impacts of wood smoke, and increasing grants for transitioning to clean devices. Additionally, an innovative new strategy for reducing air pollution from commercial restaurants that use underfired charbroilers is being developed and the District is reaching out to restaurants Valley-wide to solicit feedback and suggestions. As a part of the plan, District staff is looking to further reduce air pollution from industrial sources such as boilers, steam generators, internal combustion engines, glass manufacturing facilities, agricultural conservation management practices, and other sources through rule amendments. The District will engage in extensive public outreach to ensure that any new rules or amendments are fully vetted and based on sound science. While the District will continue to seek additional emissions reductions from local stationary sources under our jurisdiction, it is clear that bold measures and investment to reduce mobile source emissions now comprising 85% of our remaining air pollution must also be pursued. In addition to the Air District's new local measures and a significant suite of clean air grants for both businesses and residents, the California Air Resources Board is committing to reduce air pollution from mobile sources under their authority through a number of new measures. To implement all the new clean air measures in the new plan, \$1 billion per year in new funding will be required from the state over the next five years. Furthermore, moving forward with the strategies in this plan will be a major endeavor that can only be accomplished through a collaborative approach and significant investment at the local, state, and federal level.

ASSEMBLY BILL 617

With the Valley home to 20 of the top 30 most disadvantaged communities in California, AB 617 is bringing additional clean air resources and strategies to Valley communities that are burdened by socioeconomic disadvantages and air pollution even beyond the significant clean air efforts and investments that have already been made throughout the Valley. In the coming year, the District will continue to work with the two first-year Valley AB 617 communities to establish air monitoring plans for each community and adopt Community Emissions Reduction Programs that contain specific measures to reduce the impacts of air pollution in both Shafter and South Central Fresno. In addition to working with the first-year communities identified by CARB, the District will continue to work with communities throughout the Valley to address air quality concerns, and assist CARB in the identification process for additional communities in the second year of this program.

CONTINUED COMMITMENT TO SERVING THE VALLEY AND EXCELLENCE

Many exciting challenges are ahead in the coming year, and the District is committed to continuing to provide the residents of the Valley with the exceptional service, efficiency and excellence they have come to expect. With new opportunities to enhance the District's programs and services through innovations in technology and our continued commitment to working hands-on with our regulated sources, grant applicants, residents, community-based organizations, and sister agencies, the District aims to continue setting the gold standard and serving as an example for other public agencies. With our Governing Board leading with its expertise and deep understanding of the Valley's unique air-quality issues, our staff's commitment to public service and innovation, and strong support from Valley residents, we are well positioned to move forward our clean air mission in the years to come.



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