



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

AIR
ALERT!

SUMMARY REPORT

Inaugural launch of the Air Alert Episodes
and the Valley's Ozone experience

October 2011

I. Air Alert Initiative

In the summer of 2011, the District launched the Air Alert Initiative to promote air-friendly actions by Valley residents and the public aimed at bringing the Valley into attainment of the federal 1-hour ozone standard.

Air Alert episodes are declared when meteorological conditions and emission trends indicate the likelihood of a violation if no adjustments are made. There are steps that Valley residents and businesses can take to avert an exceedance during an Air Alert. All of this is voluntary but highly encouraged.

Residents can:

- Refrain from idling when dropping off/picking up students
- Carpool, vanpool or use alternate transportation
- Refrain from using drive-through services

Businesses and municipalities can:

- Shift operations to early morning or late evening (lawn care)
- Offer flexible work schedules for employees
- Promote carpools and vanpools for employees
- Implement telecommuting

The Air District's valuable, Valley-wide media partners were integral in the extraordinary public reception and response to the inaugural Air Alert program.

Beginning with three well-attended news conferences, one in each region, announcing the first forecasted Air Alert, the Outreach and Communications department issued media advisories, press releases and daily Air Alert updates, which were disseminated through traditional and social media vehicles, including email, listserv, fax, Facebook and Twitter. These updates were carried by virtually all daily media in the eight-county air basin, and included technical information such as peak ozone levels of the previous day and monitor locations.

Media partners that, because of DMA (designated market area) overlap, previously did not have a high level of involvement in Air District messaging (such as those in the Sacramento/Stockton/Modesto market) enthusiastically embraced the Air Alert message, and successfully conveyed its urgency, importance and strategy to their audiences. Some of these critical partners were Fox40, ABC News 10 and KCRA Channel 3. Spanish-language media in the northern region – including Entravision Radio's KCVR, KTSE, KRCX and KMIX -- also emerged as critical partners.

In the central region, all media affiliates and organizations, including Peak Broadcasting, Clear Channel, Lotus, Univision Radio and Buckley radio, came on board. And in the southern region, Buckley, American General Media and the major print and TV properties of the Bakersfield Californian, KGET 17, Fox 58 and KBAK 29 provided their audiences with up-to-date information.

II. Real-time Air Advisory Network (RAAN)

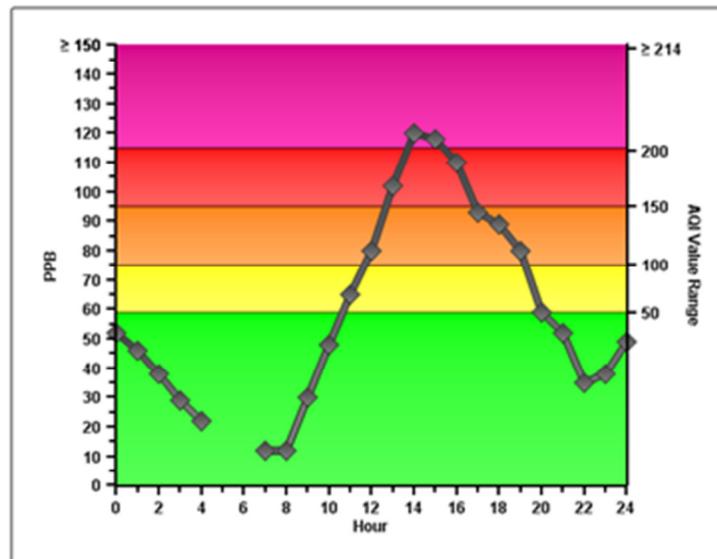
In order to protect public health, especially for sensitive individuals, the Valley Air District's Real-time Air Advisory Network (RAAN) and corresponding Outdoor Activity Guidelines (OAG) provide schools and the public at large with Valley-wide access to real-time air quality information. When local ozone or PM 2.5 levels reach health-threatening levels, RAAN sends users in that area an email or text notification, along with a link to view hourly concentrations for the current day, as well as access to hourly data for previous days.

RAAN's focus on real-time, hourly air quality is especially important during an Air Alert. Like the EPA's Air Quality Index (AQI), RAAN uses green, yellow, orange, red or purple air quality colors that correspond to ranges of ozone or PM 2.5 concentrations. However, unlike the AQI, RAAN color-coded categories are based on 1-hour averages instead of the AQI's 8-hour average for ozone and 24-hour average for PM 2.5. The AQI's longer time periods are the basis for the Valley Air District's daily air quality forecast and the companion Air Quality Flag Program.

In other words, the AQI forecast is designed to answer the question: "What do we think tomorrow's air quality will be?" RAAN is designed to answer the question: "What is air quality at this moment?" RAAN's real-time, hourly basis for limiting outdoor exposure risk therefore results in a higher level of health protection compared to the longer averaging periods employed by the EPA's daily AQI forecast, and in situations where changing weather results in an inaccurate forecast.

In order to put RAAN into practice, the RAAN Outdoor Activity Guidelines (OAG) provides schools with specific suggestions on when and how to protect students from excess exposure to hourly ozone and PM 2.5. At several points during the September Air Alerts, hourly ozone concentration levels in the central San Joaquin Valley rose to the Purple threat level (above 115 ppb). At this point, the OAG recommends no outdoor activities. As a result of these timely RAAN notifications, several athletic events in Clovis Unified School District were cancelled or moved to another time due to poor air quality. This included the cancellation of athletic events involving every one of the 32 CUSD elementary schools on Sept. 23. In a continuing effort to ensure that all Valley schools make use of RAAN, the District is funding the American Lung Association in California to conduct outreach to Valley public schools.

Example: Clovis Ozone: Sept. 23, 2010



RAAN Outdoor Activity Recommendations for San Joaquin Valley Schools					
Real-Time Air Advisory Network for Hourly Ozone and PM2.5					
ACTIVITY	0-50 GOOD	51-100 MODERATE	101-150 UNHEALTHY FOR SENSITIVE GROUPS	151-200 UNHEALTHY	201-300 VERY UNHEALTHY
Recess (15 min)	No restrictions.	No restrictions.	Make indoor space available for students with asthma or other heart/lung conditions.	Indoor recess is advised. Restrict outdoor activities to light exercise. Sensitive students should remain indoors.	No outdoor activity. All activities should be moved indoors.
P.E. (1 hr)	No restrictions.	Exceptionally sensitive individuals should limit intense activities.	Any student who has asthma or other heart/lung conditions should exercise indoors or limit the intensity of outdoor exercise.	Indoor P.E. is advised. Restrict outdoor activities to 15 minutes of high exertion. Sensitive students should remain indoors.	No outdoor activity. All activities should be moved indoors.
Athletic Practice and Training (2-4 hrs)	No restrictions.	Exceptionally sensitive individuals should limit intense activities.	Increase rest periods and substitutions for all students. Insure that asthmatics or others with heart/lung conditions are medically managing their condition.	Reschedule time of day or move indoors if possible. Reduce conditioning activities to less than 1 hr of high exertion. Increase rest breaks and substitutions (see CIF guidelines for prevention of heat-related illness). Sensitive students should remain indoors.	No outdoor activity. All activities should be moved indoors.
Scheduled Sporting Events	No restrictions.	Exceptionally sensitive individuals should limit intense activities.	Increase rest periods and substitutions. Insure asthmatics or others with heart/lung conditions are medically managing their condition.	Reschedule or relocate when possible. Increase rest breaks and substitutions per CIF guidelines.	Event must be rescheduled or relocated.



III. Air Alert Episodes in 2011

In 2011, the District declared four Air Alert Episodes as follows:

Aug. 23-29: The first Air Alert Episode coincided with the first week of peak back-to-school traffic throughout the Valley. The episode was initially declared to expire Aug. 28 and was later extended by one day. In recent years, ozone violations have occurred at the start of the school season, with increased traffic combined with high

temperatures and stagnant conditions. In fact, until this year, the Valley had not been able to avoid exceeding the 1-hour ozone standard in any August in history.

The results were encouraging for the first Air Alert Episode. Although temperatures were five degrees warmer than during the same period last year and almond harvesting had begun three weeks prior to the first Air Alert being declared, ozone levels in August 2011 hovered below the threshold. The air basin had gone from 18 exceedances in August 1996 to two last year, and to none this year.

The first Air Alert Episode was completed successfully without any exceedances or violations of the 1-hour ozone standard.

Sept. 5-9: This episode was initially declared to expire Sept. 8 but was later extended by one day. Ozone levels approached critical levels on Wed., Sept. 7, lingering precariously near the 1-hour ozone exceedance threshold. The highest reading on Sept. 7 was in Fresno at 124 ppb (the 1-hour ozone standard is exceeded at 125 ppb). The District, through print and broadcast media, urged Valley residents and businesses to continue emission-minimizing practices.

This Air Alert Episode was completed successfully with no exceedance of the 1-hour standard.

Sept. 20-23: This episode was first declared to expire on Sept. 22 and was later extended by one day. On Thursday afternoon, Sept. 22, the Valley experienced a perfect storm of pollution build-up and meteorological conditions that led to a violation of the federal 1-hour ozone standard. Compounding the effects of high pressure over the Valley, an upper-level low-pressure system off southern California shut down the normal northwesterly wind flow over eastern Fresno County, resulting in unusually high ozone spikes. A single 1-hour exceedance in Clovis put the entire Valley in violation of the 1-hour ozone standard. The District extended the Air Alert episode through Sept. 23 because of the increasing ozone levels, and stressed the importance of continued public participation in minimizing emissions. Although a violation had occurred, the public was urged to continue to respond to Air Alerts, as an additional exceedance will count against the Valley in showing attainment with the federal standard in future years.

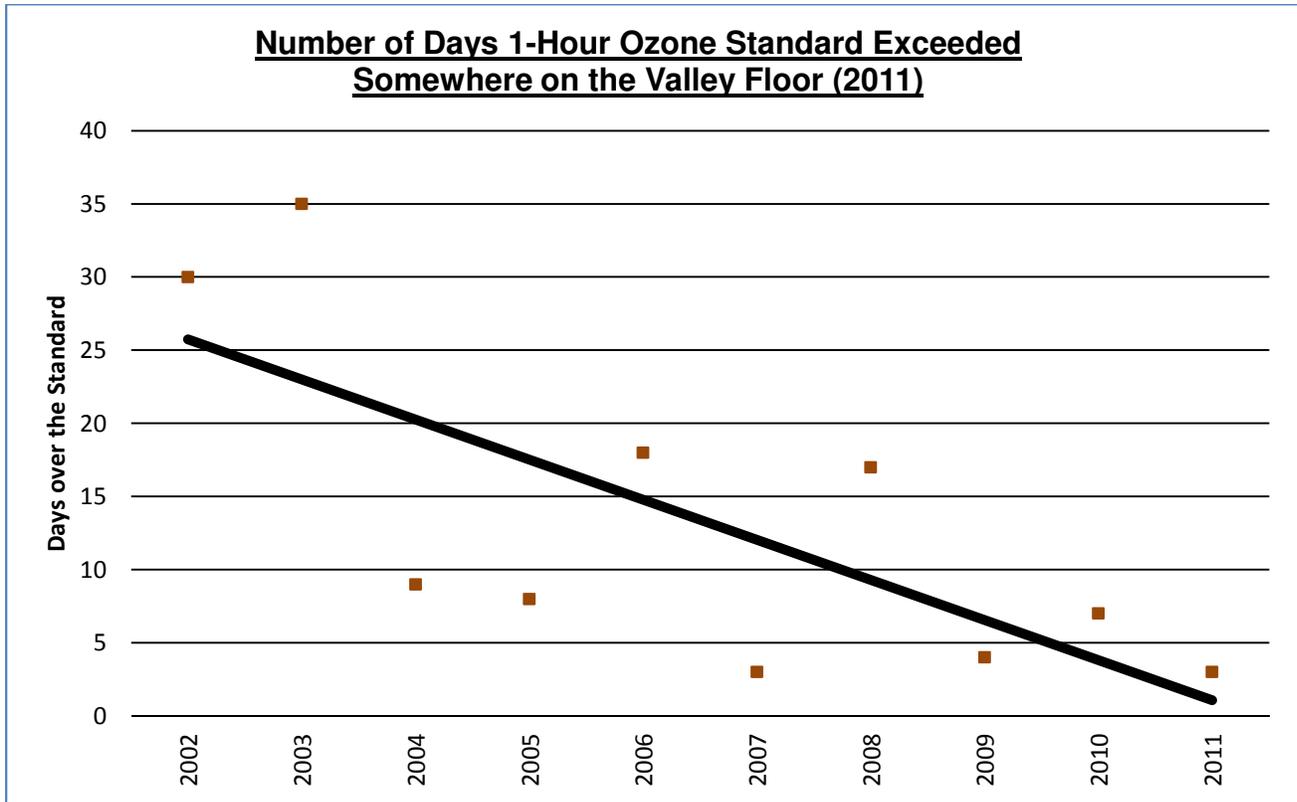
Sept. 29-Sept. 30: This was the last Air Alert episode for 2011. Unfortunately, there were exceedances at the Clovis-Villa and the Fresno-Drummond air monitoring stations on Sept. 29. This brought the total number of exceedances for the District to two at the Clovis-Villa and three at the Fresno-Drummond air monitoring stations. There were no exceedances at any other District site. A 1-hour ozone violation occurs when any one air monitoring station records four or more exceedances in any three-year period.

To summarize, the District can still attain this standard during the 2011-2013 time period.

IV. Valley's 1-Hour Ozone Experience

Number of Days 1-hour Ozone Standard Exceeded Somewhere in the County (2011)

San Joaquin	Stanislaus	Merced	Madera	Fresno	Kings	Tulare	Kern
0	0	0	0	3	0	0	0



V. Ozone Standards

EPA's current standards are stringent and pose significant challenges, yet standards continue to be reviewed and revised in the midst of implementing existing attainment strategies. EPA's ongoing standard reviews result in overlapping standards and planning requirements, which confound local planning and regulatory processes. The tables below summarize federal ozone standards and the District's corresponding planning efforts.

1-hour Ozone Standard	
Definition	Establishes the maximum 1-hour concentration of ozone that may be safe to breathe for sensitive individuals.
Standard	125 parts per billion (ppb)
What Constitutes a Violation?	For the Valley to meet the standard, no air monitoring station can have more than three exceedances during any three consecutive year period.
Attainment Deadline	2010
District Actions	The District adopted a series of plans under this standard, the most recent being the <i>2004 Extreme Ozone Attainment Demonstration Plan</i> adopted in October 2004. The District adopted about 30 rules and rule amendments between 2004 and 2007 under the 2004 plan, achieving about 28 tons per day (tpd) of volatile organic compound (VOC) reductions and about 16 tpd of oxides of nitrogen (NOx) reductions.
Current Status	EPA revoked the 1-hour ozone standard in 2005. The District has implemented the 2004 plan's control measures and emissions-reductions strategies. Several environmental groups have sued EPA asking for new plans and regulations to meet the 1-hour standard. Since the Valley did not attain by the 2010 deadline, it is subject to \$29 million per year nonattainment penalties under Section 185 of the federal Clean Air Act.

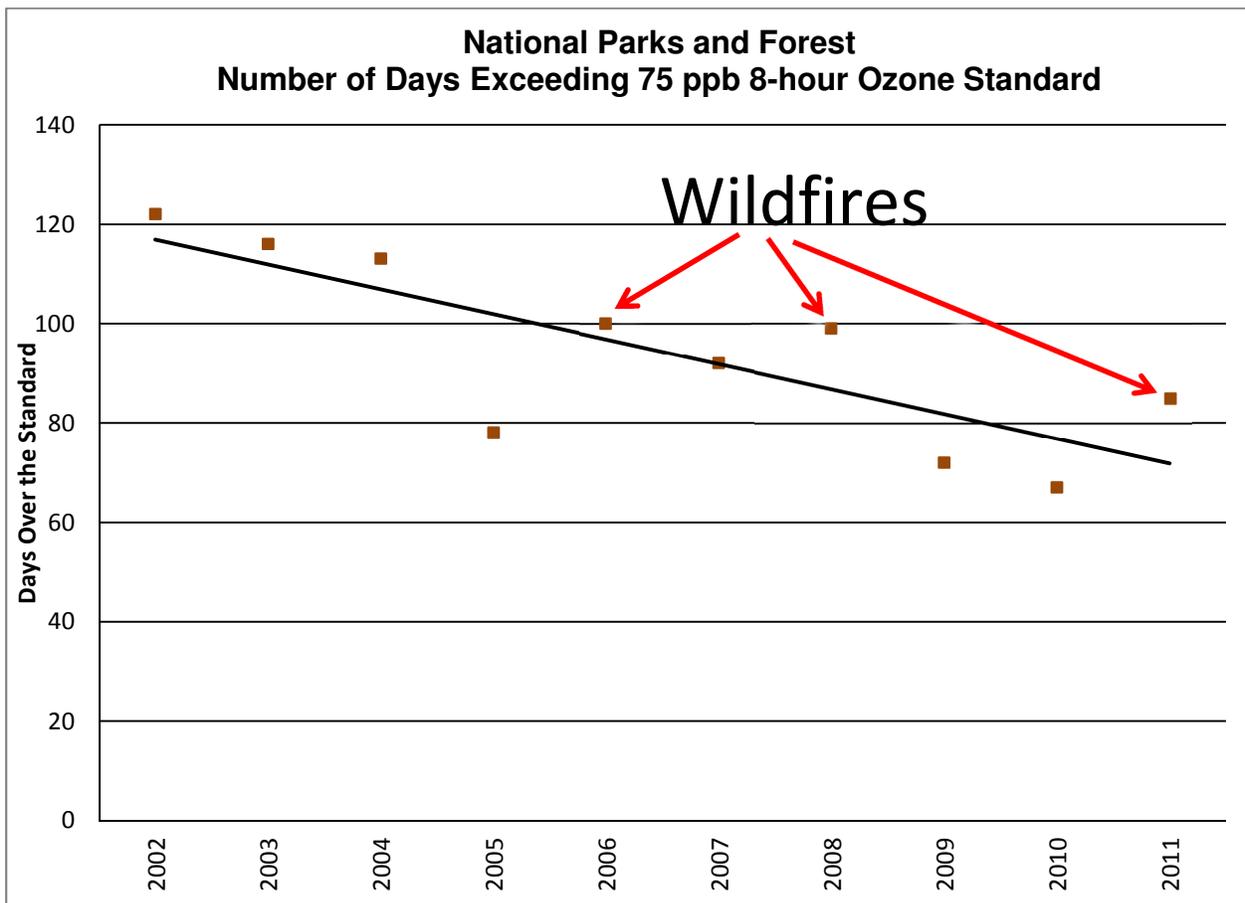
1997 8-hour Ozone Standard	
Definition	Establishes the average concentration of ozone that may be safe to breathe for sensitive individuals over any eight consecutive hours.
Standard	84 parts per billion (ppb) – <i>This is not a single-hour limit; rather, it is the average concentration over an 8-hour period.</i>
What Constitutes a Violation?	For the Valley to meet the standard, the average of the yearly fourth-highest values for a three consecutive year period (design value) must be at or below the standard.
Attainment Deadline	2024
Valley Classification	The Valley has been classified as “ extreme ” nonattainment for this standard. The extreme designation denotes that adequate air pollution control technologies do not exist yet to achieve all the reductions that are necessary to meet the standard.
District Actions	The District adopted the <i>2007 Ozone Plan</i> in April 2007 to address this standard. This plan showed that bringing the entire Valley into attainment will require a 75 percent reduction in NOx emissions. To implement this plan, the District has since adopted 19 rules and rule amendments. At full implementation, these rules are expected to achieve about 46 tpd of volatile organic compound (VOC) reductions and about 8 tpd of oxides of nitrogen (NOx) reductions. ARB has also adopted several regulations achieving significant reductions. The District has also been supplementing regulatory reductions through a variety of incentive programs, Fast Track measures and other strategies.
Current Status	EPA proposed approval of the <i>2007 Ozone Plan</i> in September 2011. The District continues to look for opportunities to achieve additional emissions reductions. The Valley’s full attainment of the standard depends on yet-to-identified control measures, so the plan included an 82 tpd “Black Box,” permitted by CAA Section 182(e)(5) to allow extreme nonattainment areas to anticipate the development of new or improved emissions control technologies. By the end of 2019, the District will identify the specific control measures needed to achieve the Black Box emissions reductions.

2008 8-hour Ozone Standard	
Definition	Establishes the average concentration of ozone that may be safe to breathe for sensitive individuals over any eight consecutive hours.
Standard	75 parts per billion (ppb) – <i>This is not a single-hour limit, rather it is the average concentration over an 8-hour period.</i>
What Constitutes a Violation?	For the Valley to meet the standard, the average of the yearly fourth-highest values for a three consecutive year period (design value) must be at or below the standard.
Attainment Deadline	Expected to be 2032, though this is dependent upon EPA finalizing designations of nonattainment areas.
Valley Classification	The Valley is likely to be classified as “ extreme ” nonattainment for this standard. The extreme designation denotes that adequate air pollution control technologies do not exist yet to achieve all the reductions that are necessary to meet the standard.
District Actions	Attainment of the 1997 standard required a 75 percent reduction of NOx emissions. Initial analysis suggests that the Valley will need an additional NOx reduction of at least 30 percent to reach the 2008 standard. A more full analysis will be included in the attainment plan that is expected to be due to EPA in 2015.
Current Status	In 2010, EPA announced that it was putting implementation of the 2008 standard on hold for additional review and revision. However, on September 2, 2011, EPA announced that it would not be revising the 2008 standard after all. EPA is now expected to finalize area designations and adopt a new ozone implementation rule in 2012. The attainment plan for this standard would likely be due in mid-2015, two years later than when plans were expected to be due under the revised and expedited 2010 replacement standard. As a parallel effort, EPA is preparing to propose a revised 8-hour ozone standard in 2013, with the standard to be finalized in 2014. EPA is expected to finalize these designations in 2012.

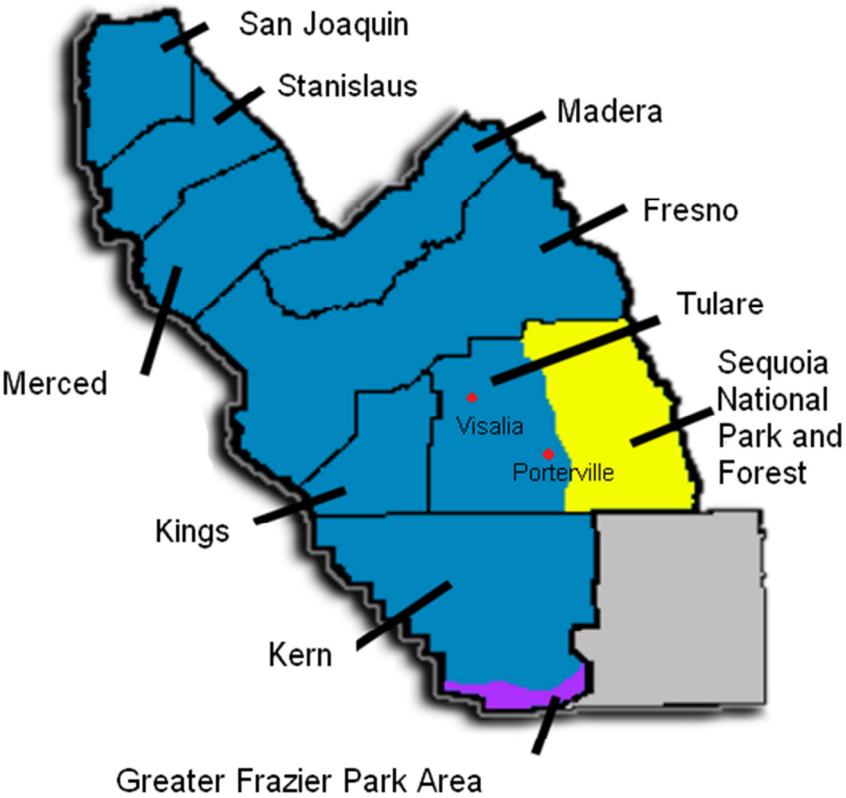
VI. Wildfires Impact on Ozone in 2011

A significant wildfire in Sequoia National Forest this past summer resulted in abnormally elevated 8-hour ozone readings at the Ash Mountain and Lower Kaweah monitoring stations in the Sequoia-Kings Canyon National Park. The Lion Fire in Sequoia National Forest scorched nearly 20,500 acres in close vicinity of the monitoring stations. As a result of this fire, there were 16 days in 2011 when the Ash Mountain and Lower Kaweah stations were the only places in the Valley that violated the standard. The District has submitted an official request to EPA to have these ozone exceedances waived under the federal laws for Natural and Exceptional events.

Ash Mountain and Lower Kaweah monitoring stations, located at the elevations of 1,800 feet and 6,400 feet, respectively, are secondary stations and should not be used for assessing air quality conditions on the Valley floor. Unlike other air monitoring stations in the Valley that were sited in strict adherence to federal laws to ensure collection of data that is representative of the quality of air breathed by Valley residents, these stations were sited and installed by the national park for the primary purpose of measuring pollution levels at the park, which are primarily impacted by wildfires.



In order to prevent confusion and to provide more precise information to the public, future air quality forecasts and reports will distinguish between air quality data from the Sequoia National Park and those for the Valley. Under the new system, air quality data for high elevations in the park will be based on readings from the Ash Mountain and Lower Kaweah monitoring stations, and the Valley monitors will be used to report air quality for population centers and rural areas on Valley floor.



VII. Air Quality Trends for the 1-hour Ozone Standard

The Valley has made significant progress toward meeting the 1-hour ozone standard. Undisputed evidence indicates that the Valley is nearly in attainment of the standard. This progress is remarkable given that just a few short years ago, EPA designated the Valley air basin as extreme non-attainment for the 1-hour ozone standard. Reaching the standard, however, will be challenging:

Progress:

- Only three days of exceedance in 2011; down from 56 days in 1996, and 30 days just ten years ago in 2002
- 2011, the only August in history without an exceedance
- 2011, the longest stretch without an exceedance (first exceedance occurred on Sept. 22)
- Lower 1-hour ozone peaks
- Two days only had one hour of exceedance each, and one day had only two hours of exceedance (in the past, exceedances would last for multiple hours)

Remaining Challenges:

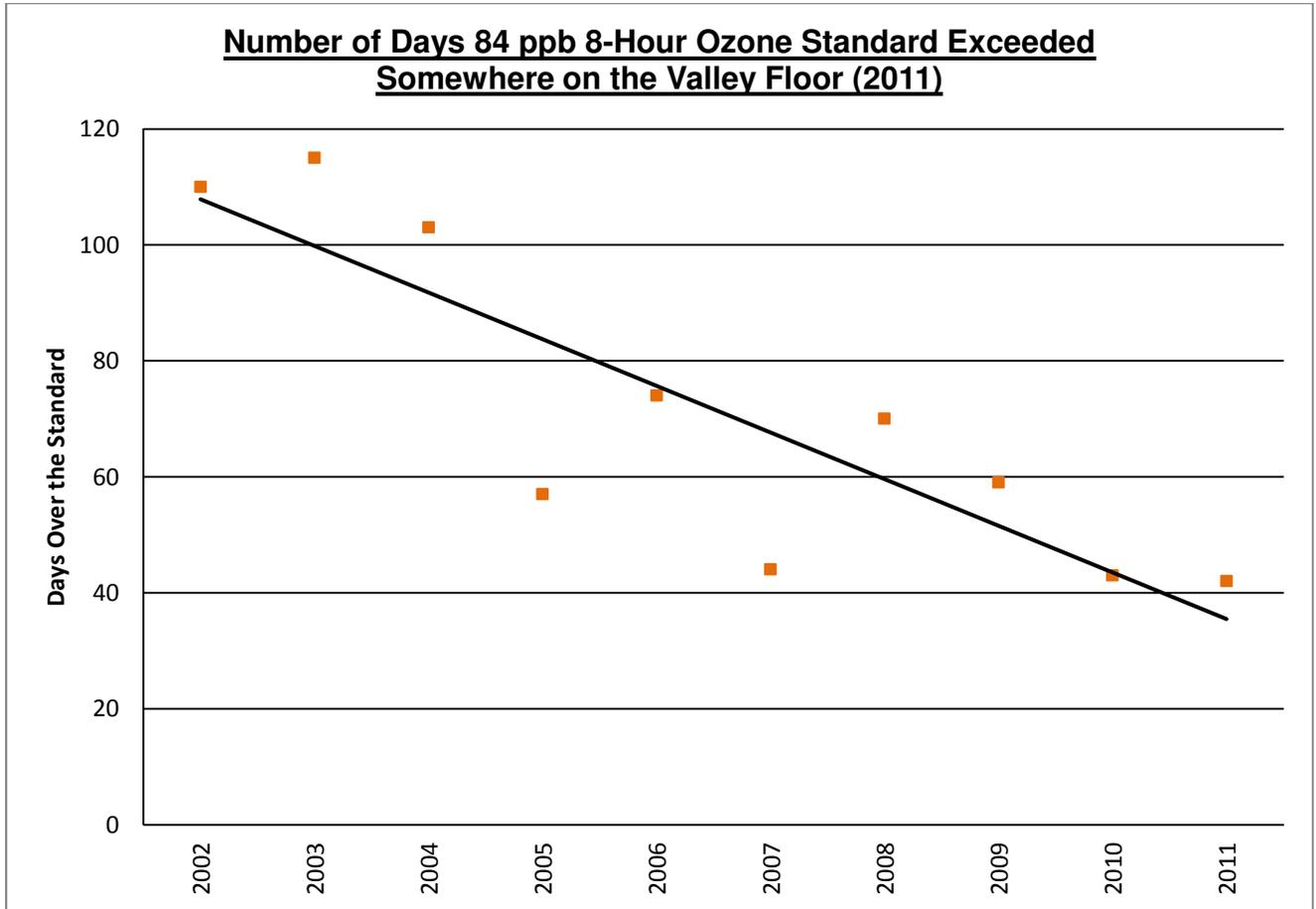
- With emissions at historically low levels, meteorology now is the predominant controlling factor in causing exceedances

VIII. Air Quality Trends for the 8-hour Ozone Standard

Number of Days 84 ppb 8-hour Ozone Standard Exceeded Somewhere in the County (2011)

San Joaquin	Stanislaus	Merced	Madera	Fresno	Kings	Tulare*	Kern
2	6	1	1	33	6	19	25

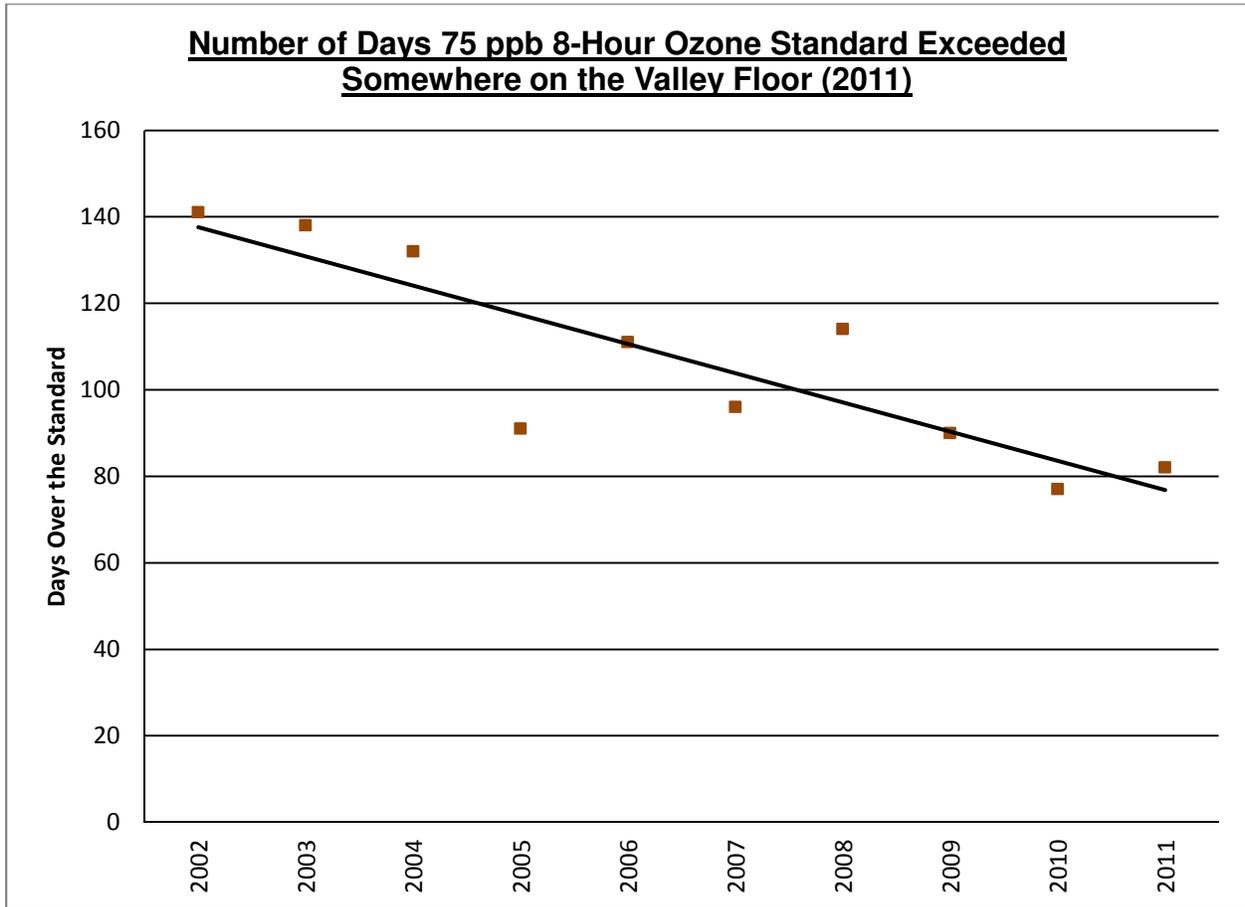
*County Floor



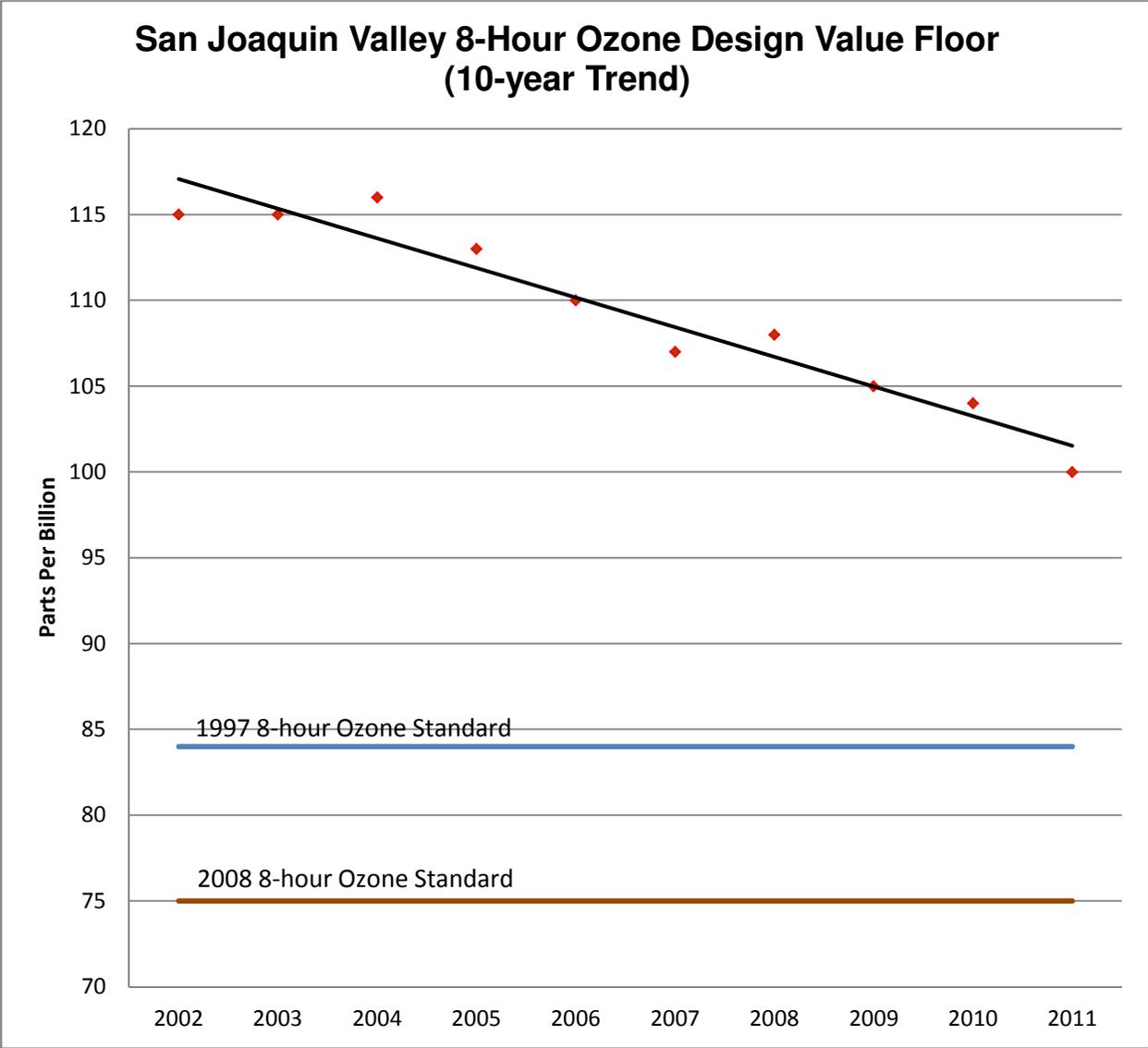
Number of days 75 ppb 8-hour Ozone Standard Exceeded Somewhere in the County (2011)

San Joaquin	Stanislaus	Merced	Madera	Fresno	Kings	Tulare*	Kern
8	21	12	16	62	28	65	62

*County Floor



Another gauge in assessing the region's progress and the magnitude of challenges that remain is the Valley's 8-hour ozone Design Value, which is defined in the federal law and is used in demonstrating attainment with the standard. Design Value is the average of the yearly fourth-highest 8-hour ozone concentrations for a three consecutive year period. To reach attainment, the Design Value for the Valley must be at or below the standard.



Despite significant progress in reducing emissions, the Design Value, and the number of exceedances, attaining the 8-hour standard is more challenging in the San Joaquin Valley than in any other region in the nation. The enormity of this challenge is primarily due to the Valley's meteorology and topography, which create ideal conditions for generating and trapping ozone.

Progress:

- Lowest 8-hour ozone Design Value in 2011
- Design Value has been reduced by 13 percent in the last 10 years
- 2009, 2010, and 2011 have the lowest total number of 8-hour ozone exceedances (despite new monitors having been added)
- 84 ppb 8-hour ozone exceedances reduced by 62 percent (last 10 years)
- 75 ppb 8-hour ozone exceedances reduced by 42 percent (last 10 years)
- San Joaquin County, Stanislaus County, Merced County, and Madera County are now very close to attaining the 84 ppb 8-hour ozone standard

Remaining Challenges:

- Second highest number of 8-hour ozone exceedances in the nation
- Design Value must be reduced by another 16 percent to attain 84 ppb 8-hour ozone standard, or another 25 percent to attain 75 ppb 8-hour ozone standard
- Technology does not currently exist to achieve all the emission reductions that are necessary to reach the standard
- Due to the Valley's meteorology and topography, lowering the remaining peaks in ozone concentrations will be more difficult

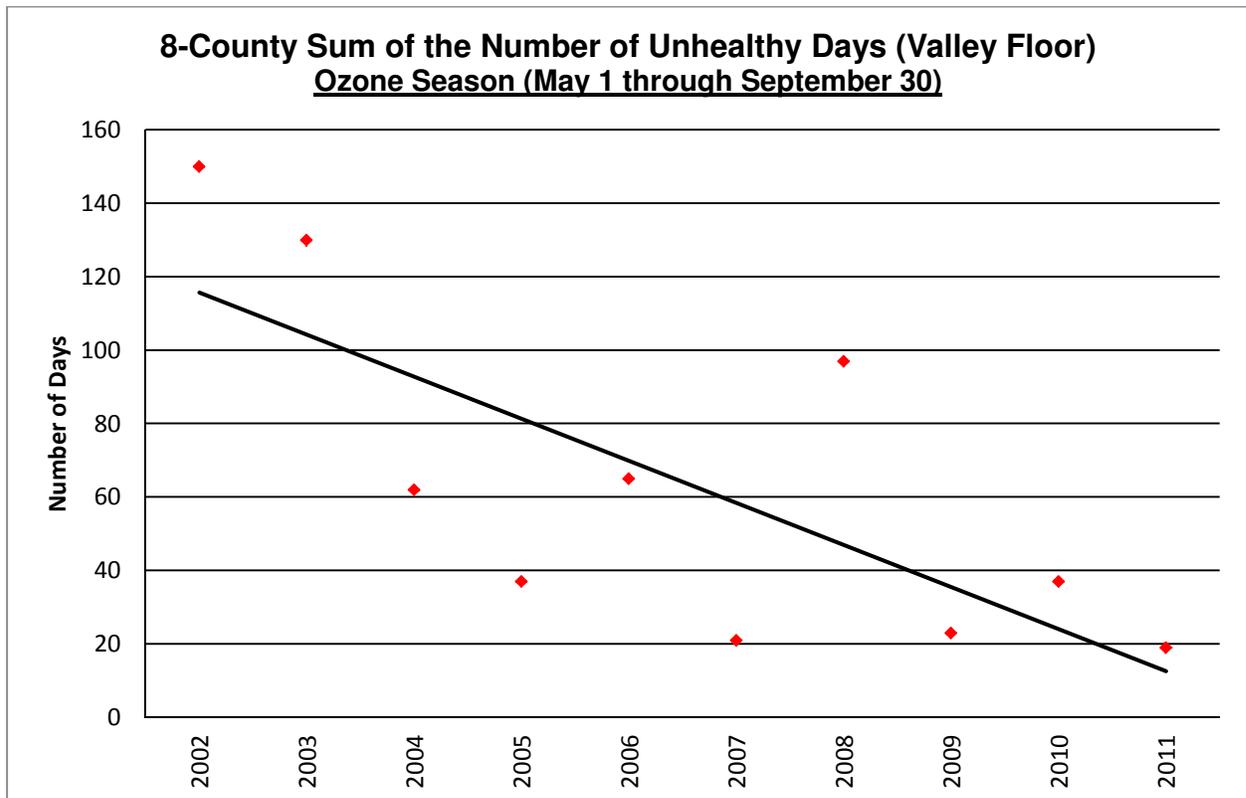
IX. Trends for Air Quality Index (AQI)

Air quality trend analysis using ozone concentrations, exceedances and Design Values can be confusing. Another gauge that may provide for a more effective method of communicating air quality conditions is the Air Quality Index (AQI). Valley residents are quite accustomed to receiving daily AQI forecasts and reports from the Air District through various forms of media and online distribution by the District. A historical look at the number of Unhealthy days experienced by Valley residents is helpful when examining air quality trends.

**Number of Unhealthy Days for each County
Ozone Season (May 1 through September 30, 2011)**

San Joaquin	Stanislaus	Merced	Madera	Fresno	Kings	Tulare*	Kern	TOTAL
0	0	0	0	11	1	0	7	19

*County Floor



This represents a reduction of 87 percent in the number of Unhealthy days experienced by Valley residents in the last 10 years.

X. Lessons Learned and Potential Next Steps

What we learned:

In addition to being an effective strategy to minimize ozone levels, the Air Alert program has also given the Air District a wealth of information and experience about how to effectively communicate complex messages to an exceptionally diverse audience.

The District's 2011 Air Alert outreach supplemented our public health message with a strong focus on "pocketbook" issues. Valley residents and businesses were urged to take action to reduce emissions in an effort to remove the \$29 million per year non-attainment penalty and through ways that may reduce costs. We found that the focus on "pocketbook" issues resulted in an unprecedented level of heightened attention by the public and the media, and consequently, brought public-health issues of ozone exceedances into the spotlight. Instead of becoming a polarized "either/or" subject (as in, either monetary issues OR public health concerns), the topic of 1-hour exceedances provided an opportunity to educate the public, and public-health advocates, about the Real-Time Air Advisory Network (RAAN).

Another positive outcome from the heightened and invigorated media support is the successful leveraging by the District of a \$20,000 investment in purchased media time into value-added exposure totaling \$500,000 – a growth of 2,500 percent and invaluable in terms of media reach and frequency.

The Air District also maximized a valuable opportunity to engage Sacramento-area media, which is very receptive to stories that carry a San Joaquin Valley news "peg." Therefore, the Air District will capitalize on this previously untapped market and incorporate northern region media into other District programs. An example of this is an upcoming news conference in Lathrop about the Air Quality Flag Program, which is being organized by the District.

There was also encouraging support from business and industry. The Air District was informed, for example, of manufacturing facilities rescheduling their operations during Air Alert episodes to off-peak times when the impacts on ozone levels were minimal. The agricultural community responded to requests to modify harvest practices during Air Alert episodes, no small accomplishment during the critical, time-sensitive harvest season. Prescribed burning was also ceased by federal land managers during Air Alert episodes.

Next steps:

The District sees opportunities to enhance Air Alert outreach through several strategies:

- A special public hearing has been scheduled by the Citizens Advisory Committee (CAC) on Nov. 1, 2011 to solicit ideas from CAC members and the general public for improving Air Alert outreach for the coming year. This meeting will start at 10a.m. and will be videoconferenced in Modesto, Fresno and Bakersfield.
- Completing the development of a smartphone Air Alert application.
- Continuing to work with CalTrans to utilize the Changeable Message Signs (CMS) on highways to display Air Alert information. This has been in process for several months.
- The District and other stakeholders will continue working with school districts to encourage air friendly behavior change by students, parents and faculty, including “no idling” policies at school sites.
- Exploring ways to promote air-friendly behavior changes through engagement of civic organizations such as chambers of commerce and environmental groups.
- Working to better educate Central Valley Air Quality Coalition about the District’s RAAN program and develop a partnership aimed at further advancing participation in the RAAN program by schools, other organizations, and the general public.
- Continuing education about air-friendly alternatives through Healthy Air Living.
- In order to continue to fine-tune Air Alert outreach, it is critical that the District is able to establish solid, causal links between messaging and public behavior change. Therefore, the District will investigate mechanisms to measure this causality (surveys, polls, etc.).