

**SACRAMENTO METROPOLITAN  
AIR QUALITY MANAGEMENT DISTRICT**

**2017 ANNUAL PROGRESS REPORT**

**This Report summarizes the 2017 progress in meeting, adopting, and implementing control measures contained in the Sacramento Metropolitan Air Quality Management District's Triennial Report and Air Quality Plan Revision.**

**PREPARED IN COMPLIANCE WITH  
THE CALIFORNIA CLEAN AIR ACT**

**OCTOBER 25, 2018**

## 1. Introduction

In 1959, California enacted legislation requiring the state Department of Public Health to establish state air quality standards, which are often more stringent than the federal standards. These state ambient air quality standards were designed to prevent or mitigate adverse health impacts from air pollution, such as aggravated asthma, decreased lung function, heart disease, cancer, and pre-mature death (CARB, 2009). To ensure nonattainment areas achieve and maintain state ambient air quality standards, California Health and Safety Code (CHSC) Section 40911 requires the air districts for areas that have been designated as nonattainment for ozone (O<sub>3</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), or nitrogen dioxide (NO<sub>2</sub>) to develop air quality plans that show how the area will attain the standards by the earliest practicable date. Furthermore, CHSC Section 40924(a) requires air districts to prepare and submit an annual progress report to the California Air Resources Board (CARB) “summarizing its progress in meeting the schedules for developing, adopting, and implementing the air pollution control measures contained in the district’s plan.” The annual report must contain, at a minimum, the proposed and actual dates for the adoption and implementation of each control measure.

Sacramento County is in attainment for the state CO, SO<sub>2</sub>, and NO<sub>2</sub> standards but is designated nonattainment for the 1-hour and 8-hour state O<sub>3</sub> standards. Therefore, the Sacramento Metropolitan Air Quality Management District (Sac Metro Air District or District), which has jurisdiction over Sacramento County, is required to have an air quality plan to attain the 1-hour and 8-hour state O<sub>3</sub> standards and report annually on the progress in attaining these standards. The District developed its first air quality plan for O<sub>3</sub> in 1991 and has revised the plan six times. The last revision was in 2015, when the District revised the air quality plan with the Triennial Report and Air Quality Plan Revision (Sac Metro Air District, 2015).

This 2017 Annual Progress Report documents Sacramento’s progress towards attaining the state ozone standards and provides an update on the District’s emission reduction programs that were adopted in or implemented since 2017. These emission reduction programs were commitments in the 2015 Triennial Report to reduce ambient pollution concentrations. Since ozone is formed as a result of photochemical reactions involving two precursor pollutants: reactive organic gases (ROG) and nitrogen oxides (NO<sub>x</sub>), this report focuses on the emissions reductions of these two precursors to reduce ambient ozone concentrations.

## 2. District Emission Reduction Programs

CHSC Section 40001 authorizes local air districts to adopt and enforce rules and regulations that will achieve and maintain the state and federal ambient air quality standards. The District’s ozone attainment strategy requires emission reductions of both ROG and NO<sub>x</sub> from emission sources. The District’s strategies consist of:

- stationary source control programs;
- mobile source control programs;
- land use and transportation programs; and
- community education program.

## 2.1 Stationary Source Control Programs

Stationary sources include identifiable point sources (e.g., chemical plants, gasoline bulk terminals, etc.) and area-wide sources that are small and widespread (e.g., house paints, residential fuels, etc.). The stationary source control program implements measures that will reduce emissions from stationary source operations.

### Rule Adoption/Amendment

The District committed to seven stationary source control measures in the last plan revision (Sac Metro Air District, 2015; Table 6.2). One control measure has been implemented since 2015 (amend Rule 442 – Architectural Coating) but the remaining six control measures, shown below, have not yet been implemented.

- Amend Rule 412 – Stationary Internal Combustion (IC) Engines
- Adopt new Rule 419 – NO<sub>x</sub> from Miscellaneous Combustion Sources<sup>1</sup>
- Amend Rule 460 – Adhesives and Sealants
- Adopt new Rule 467 – Metalworking Fluids and Direct Contact Lubricants
- Adopt new Rule 489 – Composting Operations
- Adopt new Rule 490 – Liquid Petroleum Gas Transfer and Dispensing

Due to District's limited staff resources and requirements to prepare the Reasonably Available Control Technology State Implementation Plan (RACT SIP)<sup>2</sup> and to adopt new Rule 468 (Surface Coating of Plastic Parts and Products)<sup>3</sup>, these control measures were postponed and tentatively rescheduled for 2019 for adoption, except for Rule 412 – Stationary Internal Combustion (IC) Engines. Further analysis of the control measure to amend Rule 412 showed that the potential NO<sub>x</sub> emission reductions are less than 0.01 tons per day and not significant compared to the emission reductions needed to help expedite the attainment of the ozone standards.

## 2.2 Mobile Source Control Program

The mobile source control program includes incentive programs that replace high NO<sub>x</sub> emitting equipment (i.e. vehicles and engines) with cleaner equipment. The District, through agreements and memorandums of understanding, administers the mobile source control programs for air districts in the Sacramento region, CARB, and Sacramento Area Council of Governments (SACOG). The number of vehicles/engines retrofitted or replaced and emissions reductions

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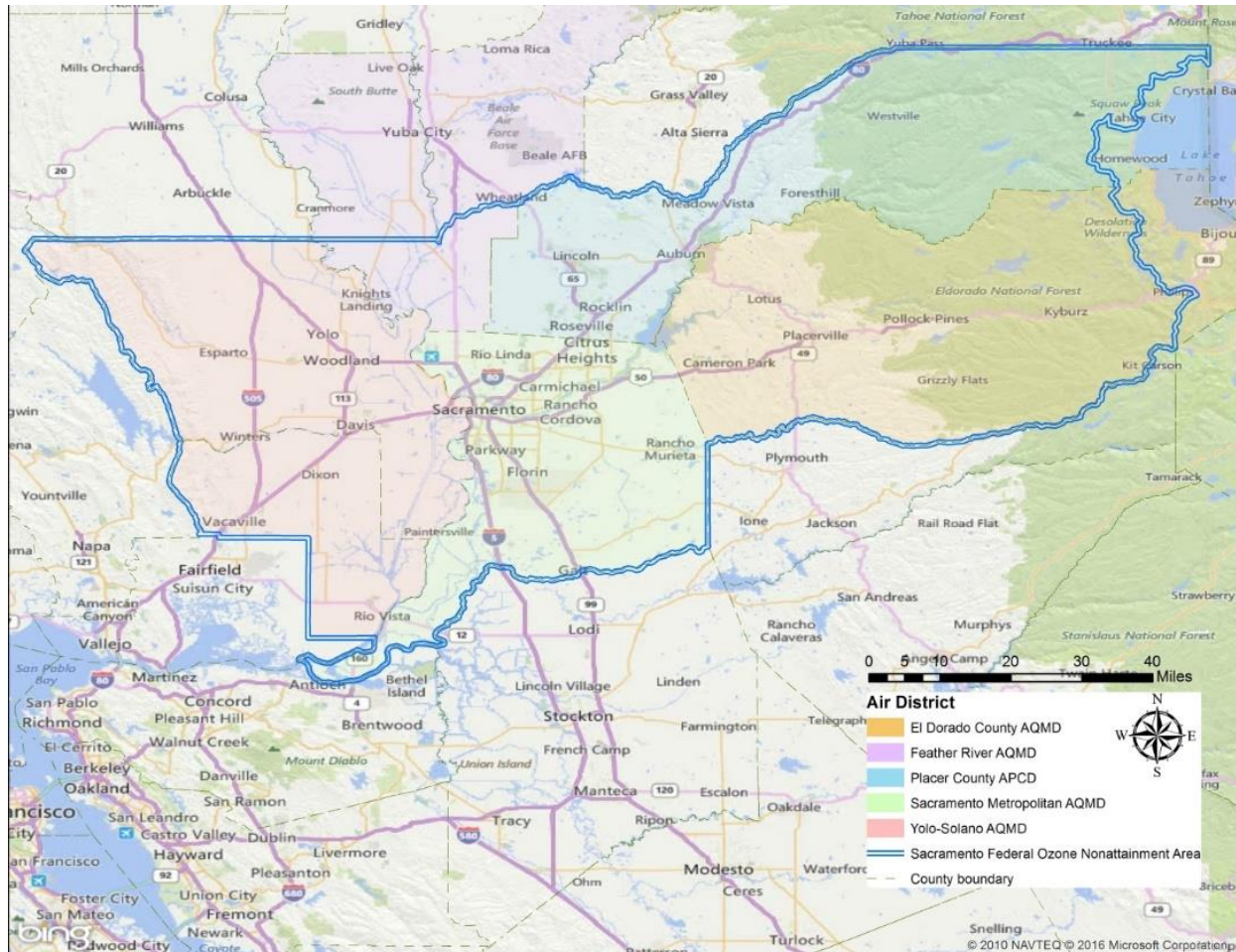
<sup>1</sup> The District adopted Rule 419 in July, 2018 and is going to amend the rule in October, 2018. After the adoption of the amendment, Rule 419 will satisfy the Triennial Report and Air Quality Plan Revision commitment.

<sup>2</sup> A RACT SIP is a federal Clean Air Act requirement that requires the District to demonstrate that reasonably available control technology (RACT) has been implemented for all emission source categories that the United States Environmental Protection Agency (EPA) has published a Control Techniques Guidelines (CTG) document and for all major stationary sources of volatile organic compounds (VOC) and NO<sub>x</sub>.

<sup>3</sup> Rule 468 applies to a source category covered by a CTG and was adopted to satisfy a federal RACT requirement.

reported in this document are not limited to Sacramento County. This program is applied throughout the Sacramento region, which is generally defined by the boundary of the Sacramento Federal Ozone Nonattainment Area (Figure 1).

**Figure 1 Sacramento Federal Nonattainment Area (SFNA) for Ozone and Air District Boundaries**



### Vehicle and Engine Technology Program

The Vehicle and Engine Technology Program is the regional mobile source incentive program. In 2017, this program provided \$8.34 million in funding to public agencies and private companies. The funding was used to replace and retrofit on-road vehicles and off-road equipment. Table 1 lists the type of projects funded and emission reductions achieved during 2017 for the SFNA. Projects and emission reductions are based on those that began operation in 2017.

**Table 1 Projects Funded and Emission Reductions Achieved in 2017**

2017 Projects	# Vehicles/ Engines	NO <sub>x</sub> Reductions (tpd)	ROG Reductions (tpd)	Funding spent (in millions)
On-Road Heavy-Duty Vehicles	123	0.06	0.01	\$4.26
Off-Road Self-Propelled Vehicles and Agricultural Water Pumping Engines	43	0.06	0.01	\$4.08
Total	166	0.12	0.02	\$8.34

Table 2 shows the sources of actual funding received and spent (liquidated) in 2017 for the Vehicle and Engine Technology Program. Funding not spent in 2017 was carried forward to 2018.

**Table 2 Funding Received and Spent in 2017**

Source of funds for the Vehicle and Engine Technology Program	Funding received (in millions)	Funding spent (in millions)
Carl Moyer Program <sup>a</sup>	\$4.20	\$3.16
Sacramento Emergency Clean Air Transportation System (SECAT) Grant Program <sup>b</sup>	\$2.88	\$2.88
Department of Motor Vehicle (DMV) Fund	\$2.16	\$0.91
Environmental Protection Agency (EPA) Grant <sup>c</sup>	\$0.18	\$0
Goods Movement Emission Reduction Program (GMERP) <sup>d</sup>	\$0.10	\$1.39
Total	\$9.52	\$8.34

Note: Funding received in 2017 does not necessarily translate to existing/remaining funds to be spent in the same calendar year.

- <sup>a</sup> The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) provides grant funding for cleaner-than-required engines and equipment. Local air districts administer these grants and select which projects to fund.
- <sup>b</sup> The SECAT Program provides grant funds to replace on-road heavy-duty diesel vehicles that have 2006 and older model year engines with diesel particulate filter (DPF) retrofits or other limited exempt vehicles with cleaner emission vehicles.
- <sup>c</sup> EPA grant awarded to the District to fund the conversion of diesel agricultural pumps to electric.
- <sup>d</sup> GMERP is a partnership between CARB and local agencies to quickly reduce air pollution emissions and health risks from freight movement along California's trade corridors.

Table 3 shows the achievements of the program and the incentive funds spent in the past 5 years. There was a 66% increase in the number of vehicles/engines retrofitted or replaced in 2017 compared to 2016. Most of the uncontrolled vehicles and engines in the region have been replaced or retrofitted since the Carl Moyer Program started in 1998. The District expects fewer traditional diesel-to-diesel vehicle replacements and engine retrofits under this program in the upcoming years because upcoming changes to federal and state funding requirements will shift the program toward replacing diesel vehicles with alternative fuel vehicles or zero emission vehicles.

**Table 3 Summary of Emission Reductions and Funding Spent**

Year	# Vehicles/ Engines	NO <sub>x</sub> Reductions (tpd)	ROG Reductions (tpd)	Funding Spent (in \$ millions)	Actual cost effectiveness (\$ million/ton NO <sub>x</sub> )
2013	231	0.42	0.05	13.77	32.79
2014	300	0.32	0.03	11.59	36.59
2015	142	0.26	0.03	10.66	41.31
2016	100	0.14	0.02	8.06	57.57
2017	166	0.12	0.02	8.34	67.80

Due to the implementation and success of Vehicle and Engine Technology Program, many diesel engines with older control technologies (e.g., Tier 0, 1 or 2 engines) have been replaced by engines with the cleanest diesel technology (e.g., Tier 4 engines). It left a limited number of uncontrolled engines that could be replaced by the cleanest diesel engines in the future. In addition, newly installed engines or new vehicles joining a fleet are already required to comply with the latest federal and state emissions standards. Because of technology improvements, more stringent emissions requirements for new engines and inflation, the NO<sub>x</sub> reduction decreased from 0.14 tpd in 2016 to 0.12 tpd in 2017 even while the funding spent increased from \$8.06 million in 2016 to \$8.34 million in 2017. As a result, the cost effectiveness of projects in this program increased from \$57.57 million per ton of NO<sub>x</sub> reduced in 2016 to \$67.80 million per ton of NO<sub>x</sub> reduced in 2017.

### 2.3 Land Use and Transportation Programs

Land use programs are mitigation strategies that reduce emissions during construction and operational phases of land development. Transportation programs include strategies that reduce vehicle trips, the distance people drive, and provide transportation alternatives.

#### **Land Use Mitigation Strategies**

##### Construction Emissions:

The District continues its efforts to reduce NO<sub>x</sub> emissions through the implementation of construction mitigation measures applicable to land use development projects under the California Environmental Quality Act (CEQA). This CEQA Construction Mitigation Program is an on-going District initiative, and reduced 0.198 tons per day (tpd) of NO<sub>x</sub> emissions in 2017. During 2017, the District received construction mitigation plans for 41 projects. Projects with construction mitigation plans must achieve a minimum of 20 percent NO<sub>x</sub> reduction from diesel-fueled construction equipment compared to a calculated statewide average emission for all construction equipment. The construction mitigation plans identify actual equipment used during construction and the total emission reductions associated with the equipment.

##### Operational Emissions:

CEQA mitigation measures are also applied to the operational phase of land use development projects. Project proponents prepare an operational mitigation plan by selecting from a menu of mitigation measures approved by the District. In most cases, operational mitigation plans must achieve a minimum 15 percent reduction each for ROG

and NO<sub>x</sub> emissions. Generally, the operational mitigation plan is adopted as part of a CEQA document (environmental impact report or mitigated negative declaration). The lead agency is responsible for monitoring and enforcing operational mitigation plans, and District staff often provide assistance and support in that effort. To help facilitate these efforts, the District prepared a *CEQA Guide to Air Quality Assessment* (Sac Metro Air District, 2018), which is designed to help local jurisdictions and project proponents comply with state environmental law.

The District verified two air quality mitigation plans written by local jurisdictions in 2017. These plans are for Industrial Annexation in Galt and Northborough in unincorporated Sacramento County. In 2017, continuing projects with operational air quality mitigation plans achieved emission benefits of 1.02 tpd of ROG and 1.29 tpd of NO<sub>x</sub>.

### **Transportation Programs**

Transportation control measures reduce vehicle trips and vehicle miles traveled, and provide transportation alternatives. The District has committed to evaluating two further study measures in the transportation category for air quality benefits. These measures are: “Additional Transit: Light Rail and Bus Rapid Transit,” and “Promote Bicycle and Pedestrian Programs.”

#### **Additional Transit: Light Rail and Bus Rapid Transit**

##### **Downtown Natomas Airport (DNA) line**

The Sacramento Regional Transit (SacRT) Downtown Natomas Airport line would connect downtown Sacramento to the Sacramento International Airport. DNA staff has completed discussions with the City of Sacramento on the project alignment (Sarvian, 2018). Construction is anticipated to begin in 2022, pending funding availability (SacRT, 2018). The project is expected to reduce daily vehicle miles traveled (VMT) when it is completed.

##### **Multi-Modal Transportation Hub**

The City of Sacramento continues transforming the downtown historic train depot into an intermodal transportation hub as part of its efforts to develop the nearby 1,050-acre infill project known as the River District. Project objectives include improving multi-modal mobility and access in downtown Sacramento and the River District, and setting the stage for future transportation center expansion with potential for streetcars and high-speed rail. Project development is scheduled in three phases. The first phase, realigning rail tracks and platforms to accommodate future development, is complete. The second phase, renovating the historic depot, is underway (Rich, 2018). The third phase, developing a multi-modal regional transportation hub and mixed-use urban destination, will begin after the completion of the second phase. The City of Sacramento issued a request for proposals for the master planning consultant services in 2016, and held a series of public workshops and focus groups during 2017 as part of the master planning process. The project is expected to reduce daily vehicle miles traveled (VMT) when it is completed.

##### **Downtown/Riverfront Corridor Streetcar**

Several Sacramento area government agencies, including Sacramento RT, SACOG, the Cities of Sacramento and West Sacramento, Yolo County Transportation District, and the

California Department of Transportation, have partnered to undertake advanced planning, engineering, and environmental assessments for a streetcar project connecting West Sacramento and Sacramento Downtown. The project, known as the Downtown/Riverfront Corridor Streetcar, is a response to projected growth in the Sacramento region and associated transit increase demands. It is planned to be a more than 4 miles long route that would run 16 hours a day, connecting major destinations between West Sacramento and Sacramento’s downtown and midtown districts. Local area government agencies are seeking funding from different sources, including federal and state budgets and local tax revenue. Project planning will continue as the budget pieces are secured. The project is expected to reduce daily vehicle miles traveled (VMT) and provide an alternative transportation method for residents commuting between Sacramento and West Sacramento.

Promote Bicycle and Pedestrian Programs

Bicycle and pedestrian programs continue to be implemented throughout the District, primarily through the implementation of Bicycle Master Plans and Pedestrian Master Plans adopted by local jurisdictions. Table 4 lists the status of bicycle and pedestrian master plans in Sacramento County.

**Table 4 Status and Progress of Bicycle and Pedestrian Master Plans for Local Jurisdictions**

Jurisdiction	Bicycle Master Plan	Pedestrian Master Plan
County of Sacramento	Bikeway Master Plan April 2011, Jan 2012 amendment adopted	Pedestrian Master Plan November 2007
City of Sacramento	Bicycle Master Plan August 2016 (City of Sacramento, 2016)	Pedestrian Master Plan September 2006, “Grid 3.0” Plan August 2016 (City of Sacramento, 2016b)
City of Citrus Heights	Bikeway Master Plan December 2015 (City of Citrus Heights, 2015)	Pedestrian Master Plan August 2016 (City of Citrus Heights, 2016)
City of Folsom	Bikeway Master Plan November 2007	Pedestrian Master Plan June 2014 (City of Folsom, 2014) <sup>4</sup>
City of Rancho Cordova	Bicycle Master Plan March 2011	Pedestrian Master Plan March 2011 (City of Rancho Cordova, 2011) <sup>5</sup>
City of Elk Grove	Bicycle and Pedestrian Master Plan July 2014	
City of Galt	Bicycle Transportation Plan March 2011	-
SACOG	Bicycle, Pedestrian, and Trails Master Plan 2015 (Update still in progress)	

<sup>4</sup> This plan was not previously listed in SACOG Bicycle, Pedestrian, and Trails Master Plan of April 2015.

<sup>5</sup> This plan was not included in the 2015 report because staff accidentally used incorrect SACOG list to verify updates.



Noteworthy bicycle improvement projects by our partner jurisdictions in Sacramento County this year include the following.

- The City of Sacramento made upgrades to a busy intersection known for bicycle accidents, Carlson Drive and H Street near Sacramento State University. Improvements included signal upgrades to improve visibility, additional signing, new crosswalks, marked green bike lanes to clarify lane channelization, bike boxes for left turns, and innovative new two-stage left turns for bicyclists. The Sacramento Area Bicycle Advocates have noted that the project is a good start to improving a hazardous bicycle corridor (Sacramento Area Bicycle Advocates, 2018).
- The City of Folsom completed the Johnny Cash Trail, which connects Folsom Lake Trail to downtown Folsom, providing a bicycle connection between downtown Folsom and residential uses to the north (Johnny Cash Trail, 2018).

The District continues to support the implementation of the regional bike share program. The project is funded by federal Congestion Mitigation and Air Quality (CMAQ) funding with local matching funds from the District.

The efforts to establish a bike share program in the region resulted in a public-private partnership among Social Bicycles (SoBi), SACOG, and the cities of Davis, Sacramento, and West Sacramento. SoBi, an electric assist bike share company that provides the hardware and software behind bike share systems world-wide, is the owner and service provided of JUMP Bikes. SACOG and the cities of Davis, Sacramento, and West Sacramento provided the bike share program hub locations and public engagement efforts for the program.

These efforts continued through 2017, and on May 15, 2018, the JUMP bike share program was launched in Davis, Sacramento, and West Sacramento. The program started with 300 electric-assist bikes (e-bikes) and added 600 e-bikes during the summer of 2018. Because of this unique partnership, the Sacramento region has the largest electric-assist bike share system in North America.

## 2.4 Community Education Program

The Community Education Program focuses on educating the general public about air quality issues to increase awareness and encourage residents to take action to reduce emissions. This program includes the Spare The Air Program, which encourages less driving and taking alternative modes of transportation, including public transportation, especially on a predicted high ozone days.

### Spare The Air

The Spare The Air Program provides residents in the Sacramento region with information and resources to protect their health during the summer smog season (May – October). The region continues its commitment to the Spare The Air program and its voluntary driving curtailment component. In the most recent Triennial Report and Air Quality Plan Revision, the District estimated 0.04 tpd of ROG and 0.03 tpd of NO<sub>x</sub> emissions reductions on a declared Spare The Air day. These figures do not include emission reductions from residents who reduce driving

regularly during the smog season (known as “seasonal reducers”). In 2017, with the consideration of seasonal reducers, approximately half a million (494,540) drivers habitually drove less in the summer to help improve air quality. On average, they made 0.85 fewer trips per day, which resulted in an estimated 0.66 tons of ROG and 0.37 tons of NO<sub>x</sub> reduced per summer day in 2017 (Hanson, 2017, p.42).

For the Spare The Air Program emissions reduction calculation, only those interviewed and determined to be “purposeful reducers” can be counted in the calculation of emission reductions according to the calculation protocol approved by CARB and EPA. Purposeful reducers are limited to interviewees following a Spare The Air day who declared 1) they were aware it was a Spare The Air day, 2) they made fewer vehicle trips on a Spare The Air day, and 3) they did so purposefully to help reduce air pollution on a Spare The Air day. Based on the 2017 survey, no interviewee was classified as a “purposeful reducer” on Spare the Air Days in Sacramento County (Hanson, 2017, p.39)<sup>6</sup>. Although there were no purposeful reducers identified in 2017, the program resulted in more than 420,000 trips reduced by seasonal reducers in 2017, which is approximately 22% more than 2016. Table 5 shows the purposeful and seasonal reducer data for the past 5 years in Sacramento County.

**Table 5 Spare The Air Program Reducer Statistics**

	2013	2014	2015	2016	2017
Number of trips reduced by purposeful reducers (trip per STA day)	5,672	22,869	97,860	31,661	0
NO <sub>x</sub> Reduction (tons per day)	0.01	0.03	0.12	0.03	0
ROG Reduction (tons per day)	0.01	0.04	0.16	0.06	0
Number of trips reduced by seasonal reducers (trip per STA day)	151,513	233,928	301,376	345,388	420,359
NO <sub>x</sub> Reduction (tons per day)	0.23	0.31	0.35	0.34	0.37
ROG Reduction (tons per day)	0.32	0.44	0.50	0.61	0.66

During the summer smog season of 2017, seventeen (17) Spare The Air days were called. These days were June 21 and 23, July 1, 6, 21-23, 27, August 1-3, 28-29, and September 1-4. The actual measurements of ambient ozone concentrations show that two (2) Unhealthy days and forty-six (46) Unhealthy for Sensitive Groups days were recorded. The total number of Spare The Air days in 2016 and 2017 for Unhealthy and Unhealthy for Sensitive Groups increased significantly compared to 2015 because in 2015, the air district lowered the threshold trigger level for declaring a Spare The Air day from 0.086 parts per million (ppm) to 0.078 ppm for ground level

<sup>6</sup> The *Evaluation of the 2017 Sacramento Region Spare The Air Campaign* report explained that as employment rate improves, more people are likely to drive and driving reduction may not have been an option. Also, the report further explains that the reduction of purposeful reducers may be in part due to media events in the summer of 2017 where “[p]olitical rhetoric was intensely covered by popular media outlets and may have detracted attention away from the Spare The Air message, deterred residents from the media sources which spread the message or influenced the willingness of residents to respond to the survey.”

ozone concentrations. This change was to account for the new 2015 federal ozone standard that lowered the standard from 0.075 ppm to 0.070 ppm. Table 6 summarizes the number of Spare The Air days and the numbers of days in different Air Quality Index (AQI) categories in the past five years.

**Table 6 AQI Category Count for the Sacramento Region (May 1<sup>st</sup> through October 31<sup>st</sup>)  
 (SpareTheAir.com, 2018)**

Year	Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Number of Spare the Air Days Called
2013	45	116	19	4	2
2014	75	78	31	0	4
2015	86	81	16	1	5
2016	65	70	34	15	17
2017	60	76	46	2	17

Note: The air district lowered the trigger level for Spare The Air day in 2016 from 0.086 ppm to 0.078 ppm for ground level ozone concentrations due to the new federal ozone standard of 0.070 ppm.

### 3. Summary and Conclusions

This annual progress report shows the District’s progress in attaining the ozone standards as required by CHSC Section 40924(a). Due to limited staff resources and the requirements to prepare the RACT SIP and adopt Rule 468, four remaining stationary sources control measures were rescheduled to 2019, and one control measure, amendments to Rule 412, was removed from the schedule because the potential emission reductions are minimal. Vehicle and Engine Technology programs provided \$8.34 million in incentives and replaced 166 vehicles and engines for the Sacramento Region. The CEQA Construction Mitigation Program and CEQA Land Use Operational Mitigation Program continues to reduce ozone precursor emissions through 2017. In 2017, there were 41 construction projects that committed to reduce NO<sub>x</sub> by at least 20 percent. The District verified two new operational mitigation plans written by local jurisdictions in 2017. Including the mitigation plans from previous years, the District continues to achieve a minimum of 15 percent emissions reductions for NO<sub>x</sub> and ROG from land use development projects. The Spare The Air Program continues to be effective in reducing vehicle trips from seasonal reducers, resulting in reductions of ozone precursors. In total, the District achieved a reduction of 1.61 tpd of NO<sub>x</sub> and 1.04 tpd of ROG in 2017 from the measures documented in this report. Sacramento continues to make progress towards meeting California’s ozone air quality standards.

**Table 7 Summary of Emission Reductions achieved in 2017**

	NO <sub>x</sub> (tpd)	ROG (tpd)
Vehicle and Engine Technology Program	0.12	0.02
Construction Emissions Mitigation Strategy	0.20	---
Operational Emissions Mitigation Strategy	1.29	1.02
Spare The Air Program	---	---
<b>Total</b>	<b>1.61</b>	<b>1.04</b>

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