air pollution control district
SANTA BARBARA COUNTY

MEMORANDUM

DATE: October 10, 2019

TO: Community Advisory Council (CAC) Members

FROM: Jim Fredrickson

SUBJECT: October 23 CAC Meeting to Discuss the Draft of the 2019 Ozone Plan

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Every three years, the District is required to update our plan to attain and maintain the state 1-hour and 8-hour ozone standards. The 2019 Ozone Plan (2019 Plan) is the ninth triennial update to the initial state Air Quality Attainment Plan adopted by the Santa Barbara County Air Pollution Control District (District) Board of Directors in 1991. The 2019 Plan is composed of seven chapters that address air quality trends, the emission inventory, stationary source control measures, transportation control measures, voluntary incentive programs, and a maintenance strategy.

At the previous August 28, 2019 CAC meeting, the District discussed the first four chapters of the 2019 Plan. The meeting was informational only (i.e., no formal CAC recommendation sought), as we provided background on the history of our planning efforts and discussed the process for developing and updating the plan.

At the October 23, 2019 CAC meeting, the District will review the comments received from the CAC, the revisions that were made in response to comments, and other updates and corrections that were made. We will present the draft of the plan, and request that the CAC consider recommending that the District Board adopt the plan. After CAC consideration, we will bring the 2019 Ozone Plan to the District Board for a proposed adoption.

To review the contents of the previously adopted 2016 Ozone Plan, please visit www.ourair.org/planning-clean-air. If there are questions or concerns that you would like to discuss beforehand, please contact me at (805) 961-8892 / e-mail: FredricksonJ@sbcapcd.org.

Attachments:

1) Draft of the 2019 Ozone Plan
2) Summary of CAC Comments and Responses

ATTACHMENT # 1

Draft of the 2019 Ozone Plan

October 23, 2019

Santa Barbara County Air Pollution Control District
Community Advisory Council

260 San Antonio Road, Suite A
Santa Barbara, California 93110

ATTACHMENT # 2

Summary of CAC Comments and Responses

October 23, 2019

Santa Barbara County Air Pollution Control District
Community Advisory Council

260 San Antonio Road, Suite A
Santa Barbara, California 93110

air pollution control district
SANTA BARBARA COUNTY

2019 Ozone Plan

October 2019 – Draft

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CHAPTER 1 – INTRODUCTION

Updating our Plan for Clean Air in Santa Barbara County

The 2019 Ozone Plan (2019 Plan) is the ninth triennial update to the initial state Air Quality Attainment Plan adopted by the Santa Barbara County Air Pollution Control District (District) Board of Directors in 1991 (other updates were done in 1994, 1998, 2001, 2004, 2007, 2010, 2013, and 2016). Each of the plan updates have implemented an "every feasible measure" strategy to ensure continued progress toward attainment of the state ozone standards.[1] Since 1992, Santa Barbara County has adopted or amended more than 25 control measures aimed at reducing emissions from stationary sources of air pollution. These measures have substantially reduced ozone precursor pollutants, which includes nitrogen oxides (NOx) and reactive organic compounds (ROCs).

Along with the implementation of statewide measures, the District's control measure strategy has successfully improved the County's air quality, as we've witnessed a downward trend in ozone exceedances. For the last four years, Santa Barbara County had three or fewer exceedances of the state 8-hour ozone standard, and the County was designated as nonattainment-transitional in April 2017. This designation means that the District is getting close to attaining the standard and must determine whether additional control measures are necessary to accomplish expeditious attainment of the state standard. The nonattainment-transitional designation and its effect on the District's clean air planning efforts is discussed in more detail in Chapter 2. In order to be designated attainment, air quality measurements must show that both the 1-hour and the 8-hour state ozone standards are not violated.

In the past, the District has prepared air quality attainment plans that have addressed the federal ozone standard, the state ozone standards, or both. This 2019 Plan addresses the state ozone standards only. This is because the District is designated "attainment" for the federal 8-hour ozone standard of 0.070 ppm, which was promulgated by the U.S. Environmental Protection Agency (EPA) in December 2015. The federal attainment designation for Santa Barbara County was finalized in April 2018. Table 1-1 provides a summary of the state and federal ambient air quality standards for ozone, and their effective dates.

[1] Pursuant to California Health and Safety Code section 40914(b), the District employs an alternative emission reduction strategy that employs "*every feasible measure*" and follows an "*expeditious adoption schedule.*"

TABLE 1-1: STATE AND FEDERAL OZONE STANDARDS

Ambient Air Quality Standard	Year Adopted	Statutory Standard	Attainment Status
State 1-Hour	1988	0.09 ppm	Nonattainment-Transitional
State 8-Hour	2005	0.070 ppm	
Federal 8-Hour	1997	0.08 ppm	Attainment
	2008	0.075 ppm	Attainment
	2015	0.070 ppm	Attainment

The California Clean Air Act requires that we report our progress in meeting state mandates and revise our 1991 Air Quality Attainment Plan to reflect changing conditions on a triennial basis. The triennial plan progress report and revision requirements (as codified in California Health and Safety Code section 40910 et seq.) must assess the overall effectiveness of our air quality program and the extent of air quality improvement resulting from the plan. The revision must also incorporate new data and emission inventory projections. Table 1-2 provides a more complete list of the triennial plan report and revision requirements and where they are addressed in the 2019 Plan. When fully compiled, this 2019 Plan will satisfy all state triennial planning requirements.

TABLE 1-2: TRIENNIAL PLAN REPORT AND REVISION REQUIREMENTS

Requirement	CH&SC Section	Ozone Plan Section
Air Quality Trends	§40913(a), §40924(b)(1)	Chapter 2
Population Exposure	§40924(b)(1)	Chapter 2
Population, Vehicular Activity, and Emission Trends	§40913(a)(4), §40925(a)	Chapter 2, Chapter 3, Chapter 5
Emission Inventory	§40913(a)(5), §40918(a)(5)	Chapter 3, Appendix B
Stationary Source Control Measures	§40913(a)(6), §40918(a)(2), §40924(b)(2)	Chapter 4
Transportation Control Measures	§40913(a)(6), §40918(a)(3)	Chapter 5
Voluntary Incentive Strategies	§40913(a)(7)	Chapter 6
Contingency Measures	§40915, §40925.5(c)	Chapter 4, Chapter 5
Control Strategy Cost-Effectiveness	§40913(b), §40922	Chapter 4
Every Feasible Measure and Expeditious Adoption	§40914(b), §40925.5(b)	Chapter 4, Chapter 5
Maintenance Strategy	§40913(a)	Chapter 7

Plan Highlights

The most recent monitoring data for 2018 shows that the ozone standards have not been violated in Santa Barbara County for the last three years. This is great news as it means that the District can soon be designated attainment with the state ozone standards, a goal over 30 years in the making. However, there are several steps to California Air Resources Board (CARB)'s designation process under the California Clean Air Act, described more fully in Chapter 2. Until these actions are final, the District continues to be designated as nonattainment-transitional.

The California Health and Safety Code requires that the plan include cost-effective strategies to both attain and maintain of the ozone standards.[2] Each plan update includes an evaluation of feasible reduction measures for stationary sources and considers numerous factors such as technology advancements, efficiency measures, cost-effectiveness, and the successful implementation of measures at other California air districts. All of the control measures that were found to be feasible in prior plan updates have been implemented, and any additional measures that could be proposed yield relatively smaller emission reductions with higher associated costs. Chapter 4 will include a discussion of the stationary source control measures. In this 2019 Plan, we plan to carry forward the contingency measures and some of the "further study" measures from the 2016 Plan. We will also discuss how the Assembly Bill 617 Rule Development Schedule interacts with the 2019 Plan.

CARB continues to pursue substantial reductions of ozone precursor emissions in the mobile source sector. CARB has developed a comprehensive mobile source strategy that implements and/or expands research and pilot projects, incentive programs, and regulations related to on-road light-, medium-, and heavy-duty vehicles, as well as off-road vehicles. California's Advanced Clean Car Program aims to reduce emissions through tighter vehicle exhaust standards, clean fuels requirements, and vehicle efficiency standards. California's Zero Emission Vehicle (ZEV) regulation requires manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles in the 2018-2025 model years. Although California's "Truck and Bus" regulation[3] is principally aimed at reducing particulate matter from the heavy-duty fleet, it also achieves substantial reductions in NOx emissions and other criteria pollutants over time. Furthermore, recent legislation allocates a significant amount of state funding to local districts, allowing the districts to achieve ozone and toxic reductions from mobile sources through incentive programs.

Because ozone precursor emissions from marine shipping account for a large percentage of our inventory, we continue to focus our efforts on achieving reductions in this sector. While existing federal and international regulations in the marine shipping sector are expected to achieve

[2] California Health and Safety Code Section 40913 (b) states that, "*Each district plan shall be based upon a determination by the district board that the plan is a cost-effective strategy to achieve attainment of the state standards by the earliest practicable date*."

[3] Title 13, California Code of Regulations, Section 2025, Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles.

emission reductions over time, significant reductions of NOx will not be achieved until the shipping fleet "turns over," which may take decades. For this reason, we continue to pursue voluntary incentive programs that will achieve near-term NOx reductions in the marine shipping category.

CHAPTER 2 – LOCAL AIR QUALITY

Breathing ground-level ozone can result in a number of health effects that are observed in broad segments of the population. Ozone can damage the respiratory system, causing inflammation, irritation, and symptoms such as coughing and wheezing, and worsening of asthma symptoms. High levels of ozone are especially harmful for children, people who exercise outdoors, the elderly, and people with asthma or other respiratory problems. Ground-level ozone also impacts the economy by increasing hospital visits and medical expenses, loss of work time due to illness, and by damaging agricultural crops.

Ozone is not emitted directly into the atmosphere. It is formed through a series of complex chemical reactions involving the precursor pollutants ROC and NOx in the presence of sunlight. It is considered a "regional" pollutant because the locations where ozone levels are highest are not necessarily the locations where the precursor pollutants are emitted. Ozone levels tend to increase throughout the day as the amount of solar radiation increases. Meteorological conditions such as temperature inversions and stagnant air can lead to a buildup of pollutants and high ozone levels. Topography can also play a role in trapping air masses.

The California Clean Air Act requires CARB to evaluate and identify air quality-related indicators for the District to use in assessing its progress toward attainment of the state ozone standards.[4] The District is required to assess its progress triennially and report to CARB as part of the triennial plan revision. The assessment must address:

(1) the peak concentrations in the peak "hot spot" subarea,
(2) the population-weighted average of the total exposure, and
(3) the area-weighted average of the total exposure.

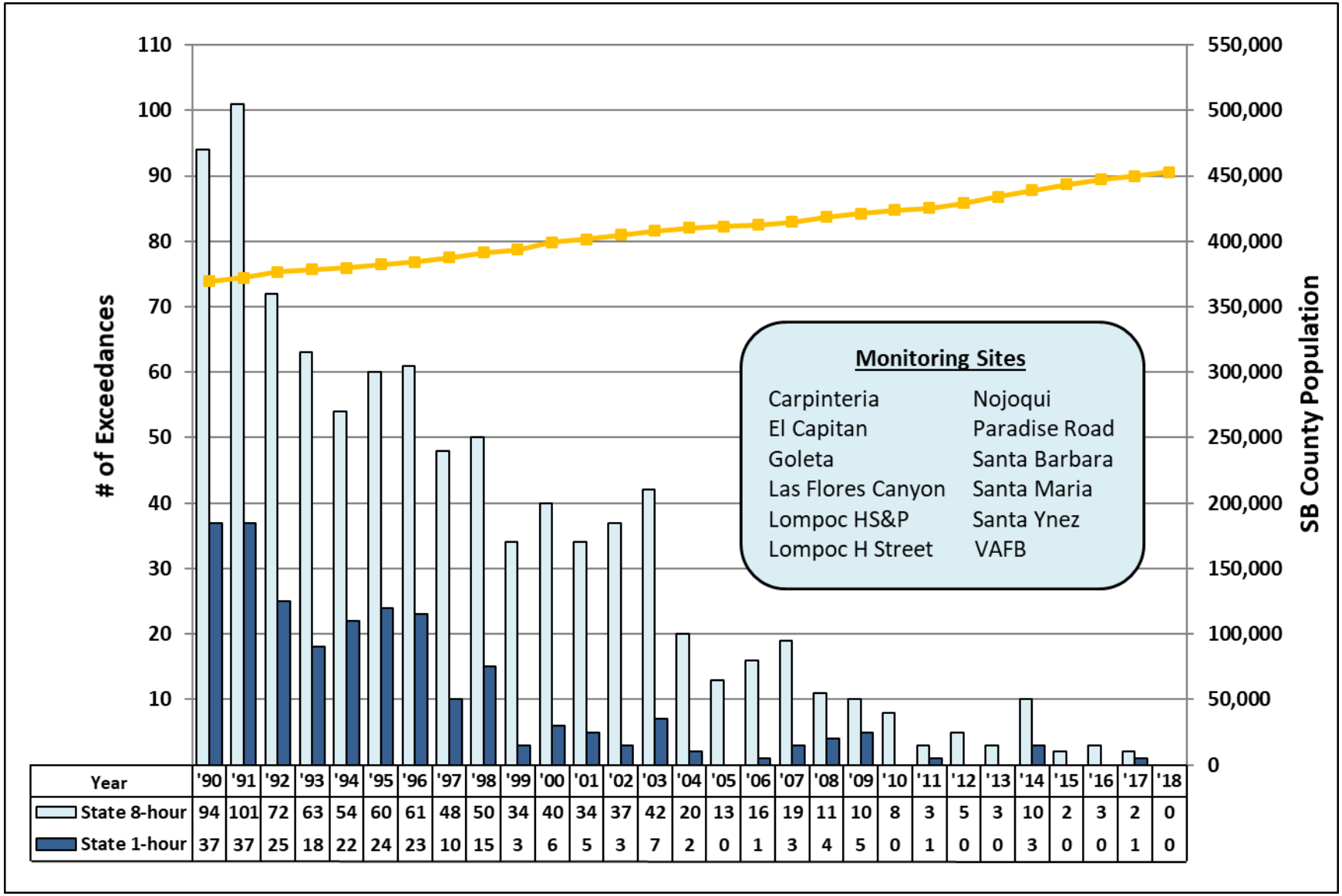
This chapter will demonstrate the progress the District has made over the last few decades in improving the air quality throughout the County. Over time, both voluntary and regulatory measures, as well as technology improvements and better community planning, have led to tremendous improvements in Santa Barbara County's air quality. As a result of these efforts, the overall exposure of residents to ozone continues to decrease.

[4] California Health and Safety Code, section 39607 (f) and (g).

Exceedance Trends

The County's air quality has improved dramatically over the years as evidenced by the declining number of state 1-hour and 8-hour ozone exceedances. An *exceedance* is a measured concentration at a monitoring station that surpasses the standard. As displayed in Figure 2-1, 1-hour ozone exceedances have decreased from a high of 37 days in 1990 to zero days in six out of the last nine years. The number of 8-hour ozone exceedance days range from a high of 101 days in 1991 to zero days in 2018. This represents a significant milestone as 2018 is the first year in which the County did not exceed the 8-hour ozone standard. These improvements in air quality have occurred despite a 20 percent increase in countywide population since 1990. For a listing of the most recent 8-hour exceedances by monitoring station, see Table 2-1 below.

FIGURE 2-1: 8-HOUR AND 1-HOUR OZONE EXCEEDANCE TRENDS VS POPULATION SANTA BARBARA COUNTY, 1990-2018 [5]



Year	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
State 8-hour	94	101	72	63	54	60	61	48	50	34	40	34	37	42	20	13	16	19	11	10	8	3	5	3	10	2	3	2	0
State 1-hour	37	37	25	18	22	24	23	10	15	3	6	5	3	7	2	0	1	3	4	5	0	1	0	0	3	0	0	1	0

[5] Population data in Figure 2-1 is from the State of California Department of Finance.

TABLE 2-1: SANTA BARBARA COUNTY EXCEEDANCE DAYS, 2016-2018

Monitor Location	Number of Days > State 8-Hour Standard		
	2016	2017	2018
Carpinteria	0	0	0
El Capitan	2	0	0
Goleta	1	0	0
Las Flores Canyon	1	1	0
Lompoc HS&P	0	0	0
Lompoc H St.	0	0	0
Nojoqui	0	0	0
Paradise Road	1	0	0
Santa Barbara	1	0	0
Santa Maria	0	0	0
Santa Ynez	0	0	0
Vandenberg AFB	0	1	0
Total Exceedance Days *	**3**	**2**	**0**

** Total Exceedance Days indicates the number of days within a year where an exceedance was measured at one or more monitoring locations in Santa Barbara County.*

Air Quality Indicators – Peak Concentrations

One of the indicators that is used to assess where air quality "hot spots" are located in the county is the Expected Peak Day Concentration (EPDC). The EPDC is provided to the District by CARB for each monitoring site in Santa Barbara County and represents the maximum ozone concentration expected to occur once per year. The EPDC for each site is based on a statistical calculation using the daily maximum 1-hour and 8-hour ozone concentrations for a rolling three calendar years. For example, the 2018 EPDC for a monitoring site uses data from 2016, 2017, and 2018. The EPDC is useful for tracking air quality progress at individual monitoring stations since it is relatively stable, thereby providing a trend indicator that is not heavily influenced by year-to-year changes in meteorological conditions.

Figures 2-2 and 2-3 show the 1-hour and 8-hour EPDC trends for the years 1990 through 2018 for the six selected monitoring sites in the County that typically record the highest ozone concentrations. These figures show that both the 1-hour and 8-hour peak day concentrations have significantly decreased over time, and for every monitoring station except the Las Flores Canyon monitoring station, the EPDC value is below the state standard for both 1-hour and 8-hour ozone concentrations. A listing of the EPDC values for these six monitoring sites can be found in Appendix A.

Figure 2-2: State 1-Hour Ozone Expected Peak Day Concentration
Top 6 Santa Barbara County Monitoring Sites, 1990-2018

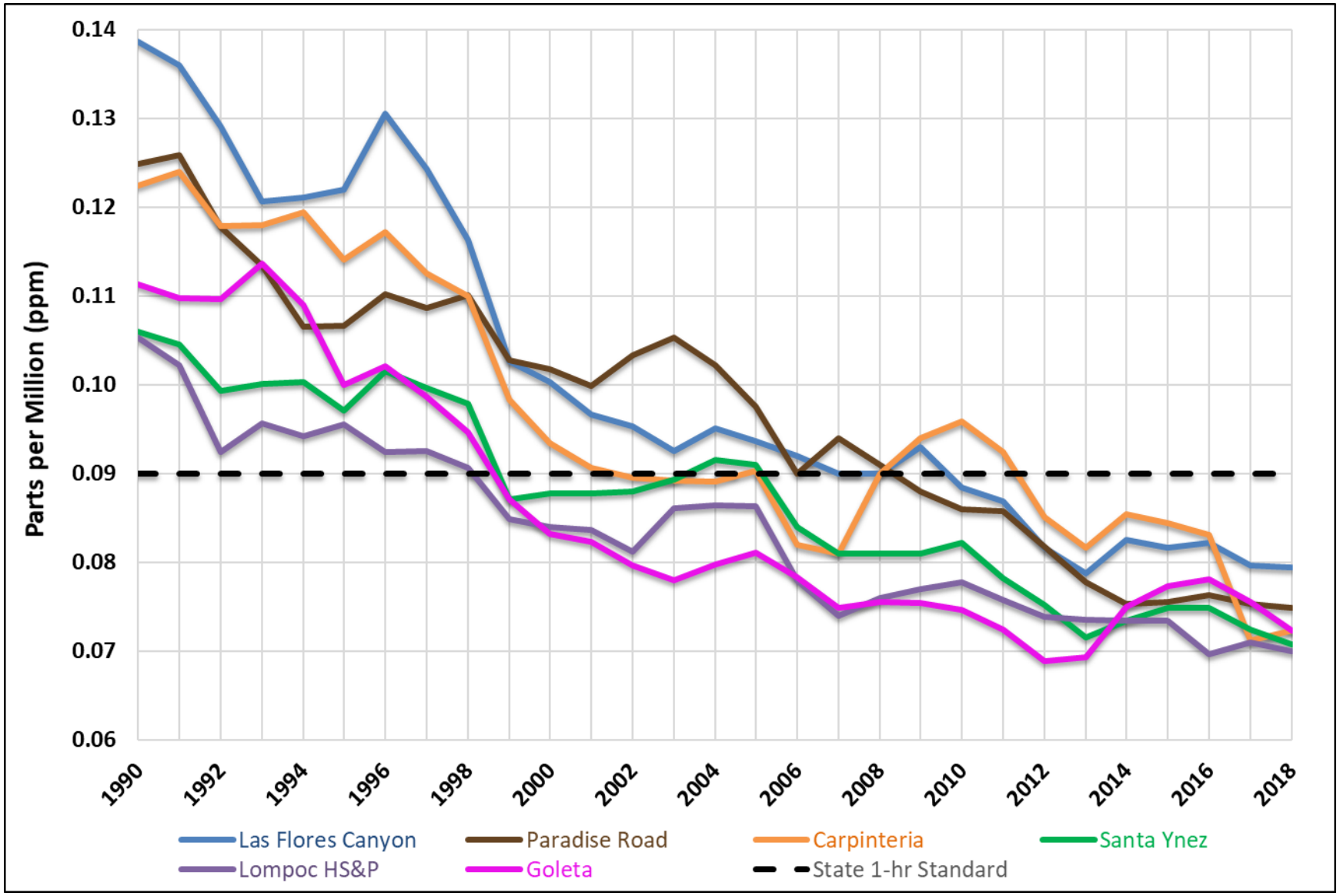
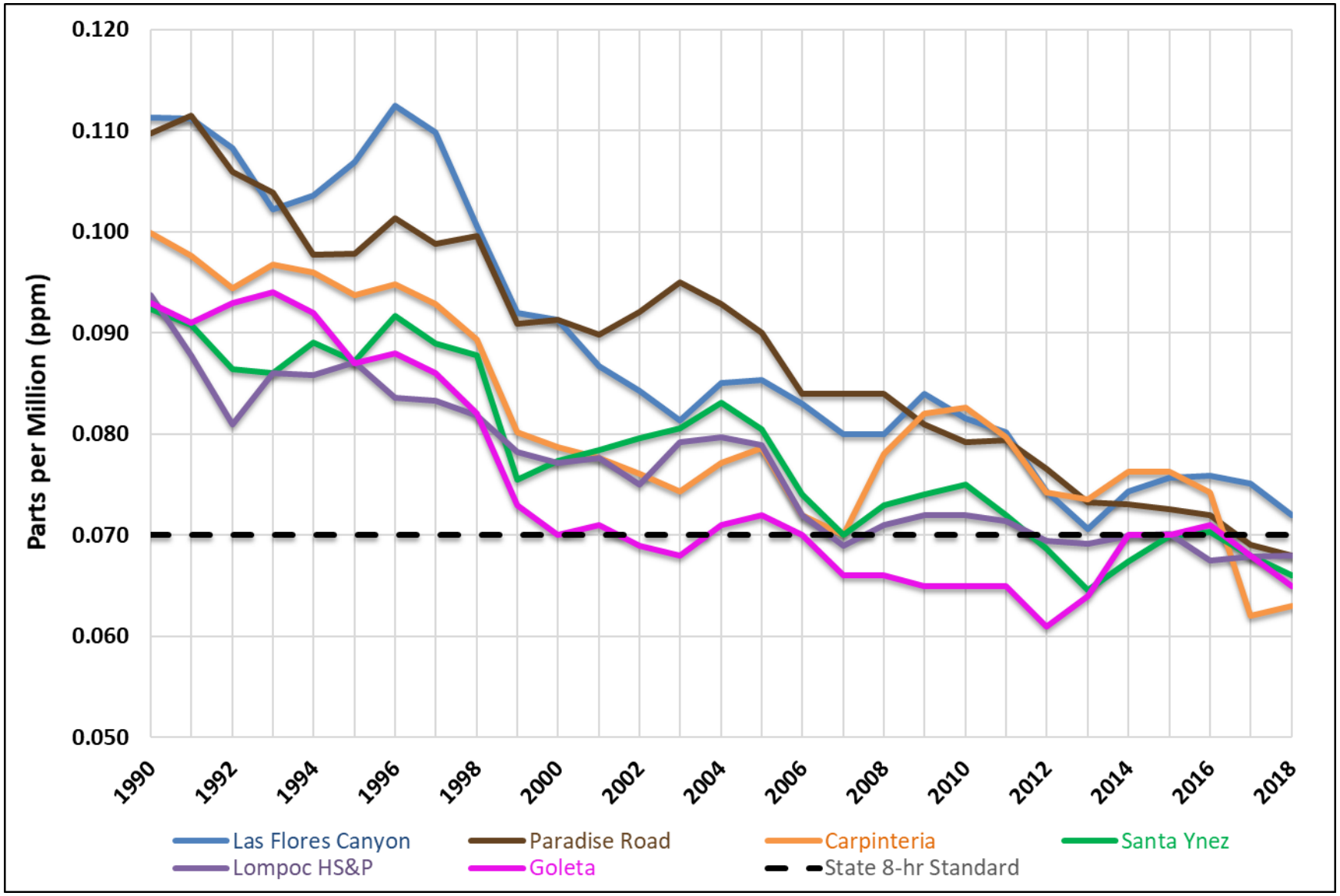


FIGURE 2-3: STATE 8-HOUR OZONE EXPECTED PEAK DAY CONCENTRATIONS
TOP 6 SANTA BARBARA COUNTY MONITORING SITES, 1990-2018



Violations and Designation Values

For an area to attain the state ozone standards, air quality measurements must show that both the 1-hour and the 8-hour standards were not violated during the previous three calendar years. An ozone *violation* is like an *exceedance*, in that the measured concentration surpasses the ozone standard. However, the determination of whether a violation occurred also considers and excludes any measurements that qualify as *extreme events*. According to the state designation process, measured concentrations that are higher than the site's EPDC are identified as being affected by an extreme concentration event (e.g., weather conditions conducive to high concentrations of ozone).

The *designation value* for a monitoring site indicates whether or not a violation has occurred within the last three years. The designation value is the highest representative reading at that monitoring site over the last three years. Since extreme events are not considered representative, the designation value for each site is the highest concentration observed that is less than or equal to the EPDC at that site.

For example, the top five measured values for the Las Flores Canyon station during the last three years are shown below in Table 2-2. The two exceedances on April 18, 2016 and September 2, 2017 occurred on hot, sunny days where local pollution may have mixed with transport pollution to create high ozone conditions. These two exceedances are considered extreme events since the Las Flores Canyon station EPDC is equal to 0.072 ppm. Hence, the 2018 designation value for the Las Flores Canyon station is 0.069 ppm because it is the highest measured value that is less than or equal to the EPDC.

TABLE 2-2: TOP 5 MEASURED VALUES AT LAS FLORES CANYON, 2016-2018

Date	Measured value 8-hr ozone (ppm)	Exceeds standard?	Violation of standard?	Rationale
9/2/2017	0.076	Yes	No	2018 EPDC = 0.072 ppm
4/18/2016	0.075	Yes	No	2018 EPDC = 0.072 ppm
9/27/2016	0.069	No	No	less than 0.070 ppm
11/25/2017	0.069	No	No	less than 0.070 ppm
10/26/2018	0.069	No	No	less than 0.070 ppm

If all the designation values within the District are below the state standard, then no violations have occurred and the District can be designated an attainment area by CARB. Table 2-3 presents the 8-hour ozone designation values for all of the Santa Barbara County monitoring stations for the last three years.

TABLE 2-3: SANTA BARBARA COUNTY 8-HOUR EPDCS AND DESIGNATION VALUES, 2016-2018

Monitor Location	8-Hour State EPDCs (ppm)			8-Hour State Designation Value (ppm) *		
	2016	2017	2018	2016	2017	2018
Carpinteria	0.074	0.062	0.063	**0.073**	0.062	0.063
El Capitan	0.069	0.067	0.066	0.069	0.065	0.064
Goleta	0.071	0.068	0.065	**0.071**	0.068	0.065
Las Flores Canyon	0.076	0.075	0.072	**0.075**	**0.075**	0.069
Lompoc HS&P	0.068	0.067	0.068	0.067	0.065	0.067
Lompoc H St.	0.063	0.058	0.056	0.063	0.056	0.056
Nojoqui	0.068	0.065	0.061	0.067	0.065	0.060
Paradise Road	0.072	0.069	0.068	0.068	0.069	0.067
Santa Barbara	0.071	0.069	0.067	0.067	0.068	0.067
Santa Maria	0.060	**	**	0.060	0.063	0.063
Santa Ynez	0.070	0.068	0.066	0.068	0.068	0.065
Vandenberg AFB	0.065	0.067	0.067	0.065	0.067	0.067

** Designation values greater than the state ozone standard are in bold.*
*** Insufficient data available to determine the value.*

In 2018, the designation values for all monitoring stations dropped below the state 8-hour standard. Furthermore, Figure 2-2 shows that the District has not violated the state 1-hour ozone standard for the last several years since all monitoring sites have 1-hour EPDCs below the standard. In conclusion, no violations have occurred in the last three years and the District attains both the 1-hour and the 8-hour ozone standards.

The Path Toward Attainment

When the state 1-hour ozone standard was first adopted in 1988, Santa Barbara County was designated as nonattainment due to having multiple violations of the ozone standard. However, the 1-hour standard alone was not sufficiently protective of human health, as people experienced respiratory symptoms, asthma exacerbation, and airway inflammation when being exposed to ozone for longer than an hour. Hence, in 2005, CARB adopted the 8-hour ozone standard based on the recommendation from the Office of Environmental Health Hazard Health Assessment (OEHHA). State law requires the ambient air quality standards to be reviewed and modified whenever substantial pertinent new information becomes available. The OEHHA studies surrounding the health effects of ozone showed that the 8-hour standard was needed.

To help the County meet the health-based standards, the District adopted multiple control measures and strategies over the course of the last three decades to reduce ozone precursor emissions in our jurisdiction. These control strategies have been effective as we've seen the declining number of exceedances countywide, as evidenced in Figure 2-1 above.

In April 2017, Santa Barbara County's designation for ozone under the California Clean Air Act changed from nonattainment to nonattainment-transitional. This change in designation occurred because Santa Barbara County continues to have three or fewer exceedances of the ozone standard per calendar year. As a result, the District was required to examine whether additional control measures were necessary to accomplish expeditious attainment or to maintain the state standard. Consistent with CAC recommendations, the District Board of Directors modified the 2016 Ozone Plan control measure schedule at its August 2017 hearing to focus on the remaining NOx control measures and shift the ROC measures to contingency, as it was demonstrated that the NOx control measures would assist the District in achieving and maintaining the state ozone standards.

While the 2018 monitoring data shows that the District can be designated as attainment, there are several steps to the California Air Resources Board (CARB)'s designation process[6] under the California Clean Air Act:

1. CARB staff reviews and verifies the accuracy of the reported ozone monitoring data for calendar year 2018. Based on 2016-2018 data, CARB staff has indicated that they will propose Santa Barbara County to be designated attainment for the state ozone standards.
2. CARB staff held a webinar on August 27, 2019 in which they reviewed their proposed changes to area designations for state ambient air quality standards; more information is available at ww3.arb.ca.gov/desig/2019statedesig.htm.
3. CARB staff has indicated that they will bring the proposed area designation changes to the CARB Board for approval on December 12, 2019.
4. Once approved by the CARB Board, the designation changes will be forwarded to the California Office of Administrative Law, which issues a formal approval of the changes.

This process could take up to a year to be completed. Until these actions are final, the District continues to be designated as nonattainment-transitional and is required to update the 2019 Ozone Plan and assess what is necessary for the region to reach and maintain the state ozone standards. If new exceedances are observed at the District's monitoring stations, they could cause the District to shift back to being nonattainment. Whether this happens will depend on the concentration levels and the locations where they are measured.

[6] As codified in California Health and Safety Code, section 39608.

Air Quality Indicators – Population and Area Exposure

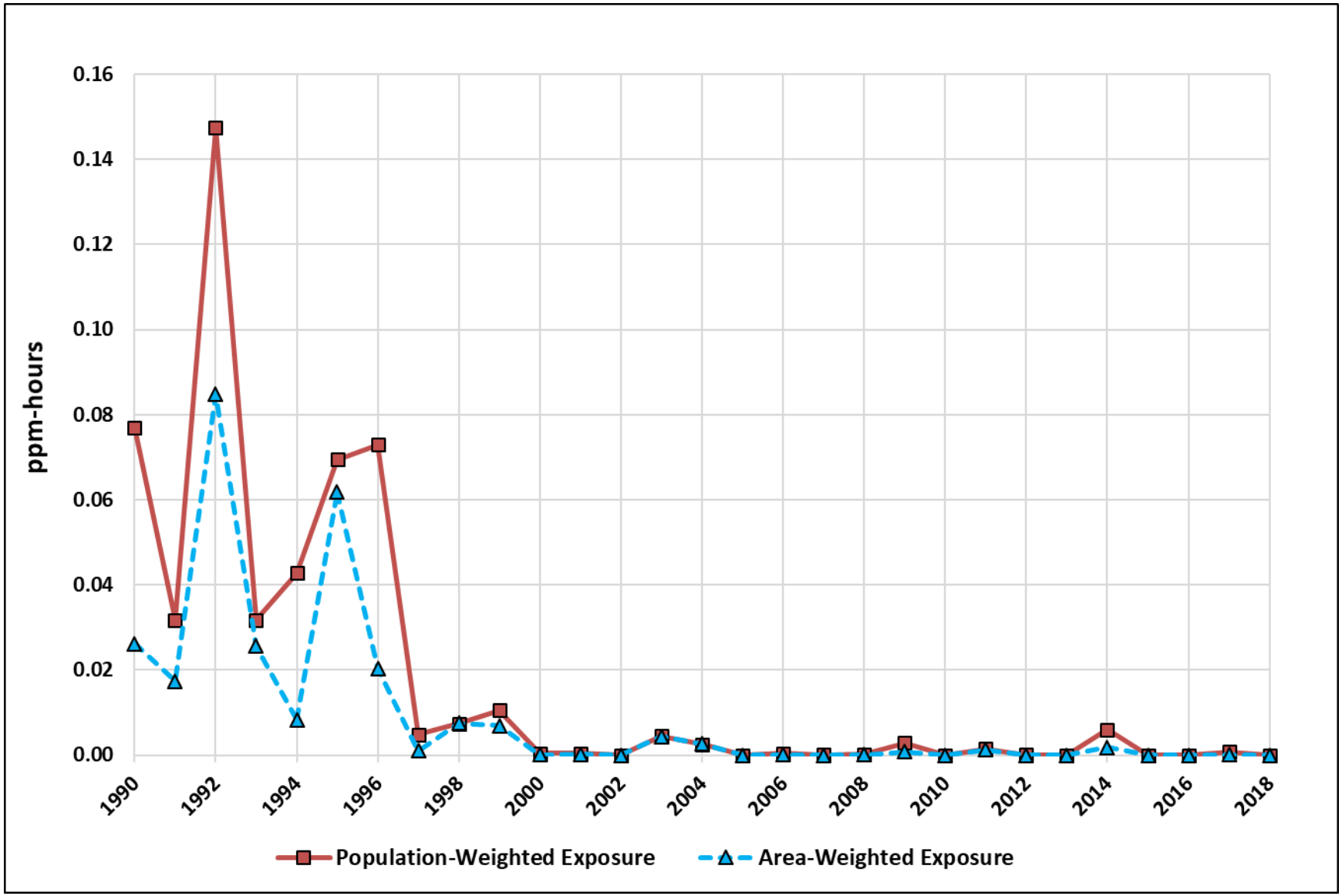
CARB has developed a methodology to assess exposure to air pollutants within the County. The "exposure indicators" are the population-weighted exposure (PWE) indicator and the area-weighted exposure (AWE) indicator. These metrics provide an indication of the potential for chronic adverse health impacts. Unlike the EPDC, which tracks progress at individual locations, the population-weighted and area-weighted exposure indicators consolidate hourly ozone measurements from all sites within the District into a single average exposure value.

The calculation methodology assumes that an "exposure" occurs when a 1-hour ozone measurement is higher than 0.09 ppm, the level of the state 1-hour ozone standard. The PWE and AWE consider both the magnitude and the duration of hourly ozone concentrations above the state standard. The difference is that PWE will be higher if the exposure is recorded near population centers, while AWE will be higher if the exposure covers more land area, based on the monitoring station network. The resulting annual exposure indicator is the sum of all the hourly exposures during the year and presents the results as an average per exposed person (PWE indicator) or average per exposed unit of land area (AWE indicator).

Population- and area-weighted exposure data are obtained from CARB, and it is presented in Figure 2-4. This figure shows that since 1990 both exposure indicators have decreased over time and that these air quality indicators have been very low during the last several years due to dramatic improvements in local air quality. The values are near zero since ozone levels in the County rarely exceed 0.09 ppm for an hour period.

Over time, Santa Barbara County's exposure to levels above the one-hour standard has become less frequent, and is currently close to zero.

FIGURE 2-4: POPULATION- AND AREA-WEIGHTED EXPOSURE SANTA BARBARA COUNTY, 1990-2018



CHAPTER 3 – EMISSION INVENTORY

This chapter presents the reactive organic compound (ROC) and nitrogen oxide (NOx) emission inventory used in the development of this 2019 Plan. The District's emission inventory accounts for pollutants emitted from all emission sources, including fuel combustion at industrial facilities, consumer product usage, and motor vehicles. Every type of emission in the County will fall under one of the following source categories:

- **Stationary Sources** – typically larger facilities that are subject to District permitting requirements.
- **Area-Wide Sources** – typically small, geographically dispersed processes that are not subject to District permitting requirements.
- **Mobile Sources** – this source type is subdivided into two categories:
  - **On-Road Motor Vehicles** – passenger cars, motorcycles, trucks, and buses.
  - **Other Mobile Sources** – ships, planes, trains, and off-road equipment.

The inventory includes emissions from two geographical regions: Santa Barbara County and the Outer Continental Shelf (OCS). The County region encompasses all onshore sources of air pollution within Santa Barbara County and the State Tidelands (all waters within three nautical miles of the shoreline). The OCS extends from the State Tideland boundary out to 100 nautical miles from the shoreline.

The inventories presented in this chapter are "planning emissions inventories," commonly referred to as "summer seasonal" inventories. A planning inventory accounts for seasonal variation because most exceedances of the ozone standards occur during the April to October ozone season. A planning inventory does not include the emissions from natural sources such as biogenics, oil and gas seeps, and wildfires since they are not regulated or controlled through implementation of emission control measures. However, in order to provide additional perspective on the overall emission inventory of Santa Barbara County, information on natural sources can be found in Appendix B.

Baseline Inventory

For every inventory, a baseline year has to be chosen. This 2019 Plan uses 2017 as the base year because the 2017 inventory is the most complete and accurate inventory available for all of the source categories. In deciding to use the 2017 inventory for the base year, District staff considered whether there were any over-arching changes in the economy, technology, or regulations that would make 2017 an inappropriate choice as a base year; none were identified. Furthermore, CARB will be using a 2017 base year for inclusion in their 2019 State Implementation Plan (SIP) submittal to the EPA, so the data has been thoroughly reviewed.

The emission inventory is divided into four major categories: stationary, area, on-road motor vehicle, and other mobile sources. Emissions from each category are calculated with approved methodologies that use the most current data available for the category. For example, the 2017 base year stationary source emissions are calculated with annual data that facilities reported to the District. The area source emissions are estimated jointly by the CARB and the District. On-road motor vehicle emissions are calculated by applying CARB's EMission FACtor (EMFAC) model output to the transportation activity data provided by the Santa Barbara County Association of Governments (SBCAG).[7] Finally, CARB provides emission estimates for other mobile sources such as ocean-going vessels, locomotives, agricultural equipment, and aircraft.

Figure 3-1 shows the emissions and relative contribution of ROC and NOx during 2017 for each major source category. Due to the large amount of marine shipping emissions in the District's emission inventory, the District has broken out ocean-going vessels from the other mobile sources category so that the relative impact can be more easily identified.

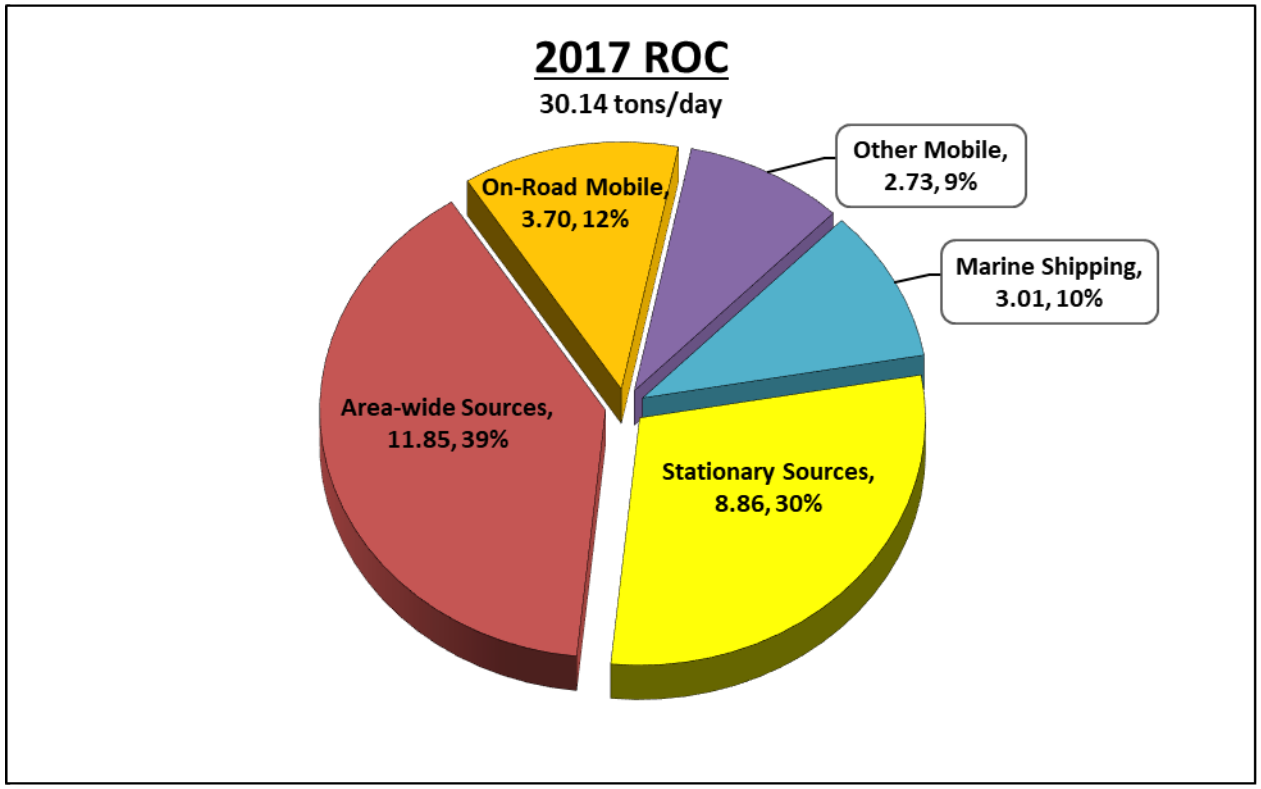
As presented in the figure, stationary and area-wide sources account for about 69 percent of the baseline ROC inventory. The majority of these emissions are from coating and solvent operations, oil & gas operations, and pesticide and fertilizer usage. On-road motor vehicles account for 12 percent of the ROC emissions, with the remaining 19 percent coming from sources in the other mobile and ocean-going vessels category.

For NOx, 77 percent of the inventory is attributed to ocean-going vessels in the OCS (see "Impacts from Marine Shipping" at the end of this chapter for further discussion). An estimated 10 percent of the NOx emissions in the baseline inventory are from on-road motor vehicles. Area-wide sources, stationary sources, and the remaining other mobile sources contribute the remaining 13 percent of the baseline NOx emissions.

The combined amount of ozone precursors (ROC + NOx) is shown in Figure 3-2. The stationary source emissions are approximately 12 percent of the total inventory, which is a positive reflection of the District's stationary source control program. It is estimated that the stationary source emission inventory would be four times greater if no emission control rules were adopted by the District.

[7] More information regarding the process and assumptions for the on-road mobile source emission estimates and projections can be found in Chapter 5.

FIGURE 3-1: BASELINE ROC AND NOX EMISSIONS (TONS PER DAY) AND DISTRIBUTION (%)



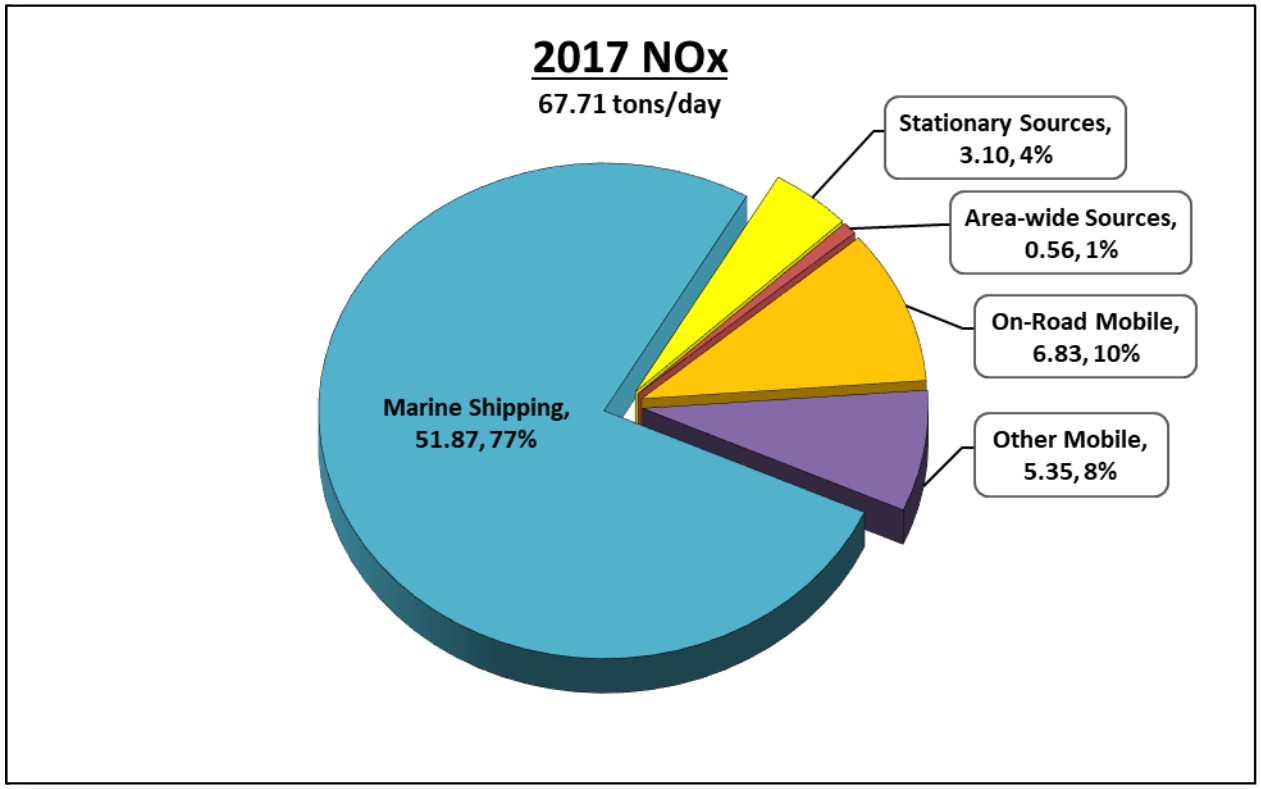
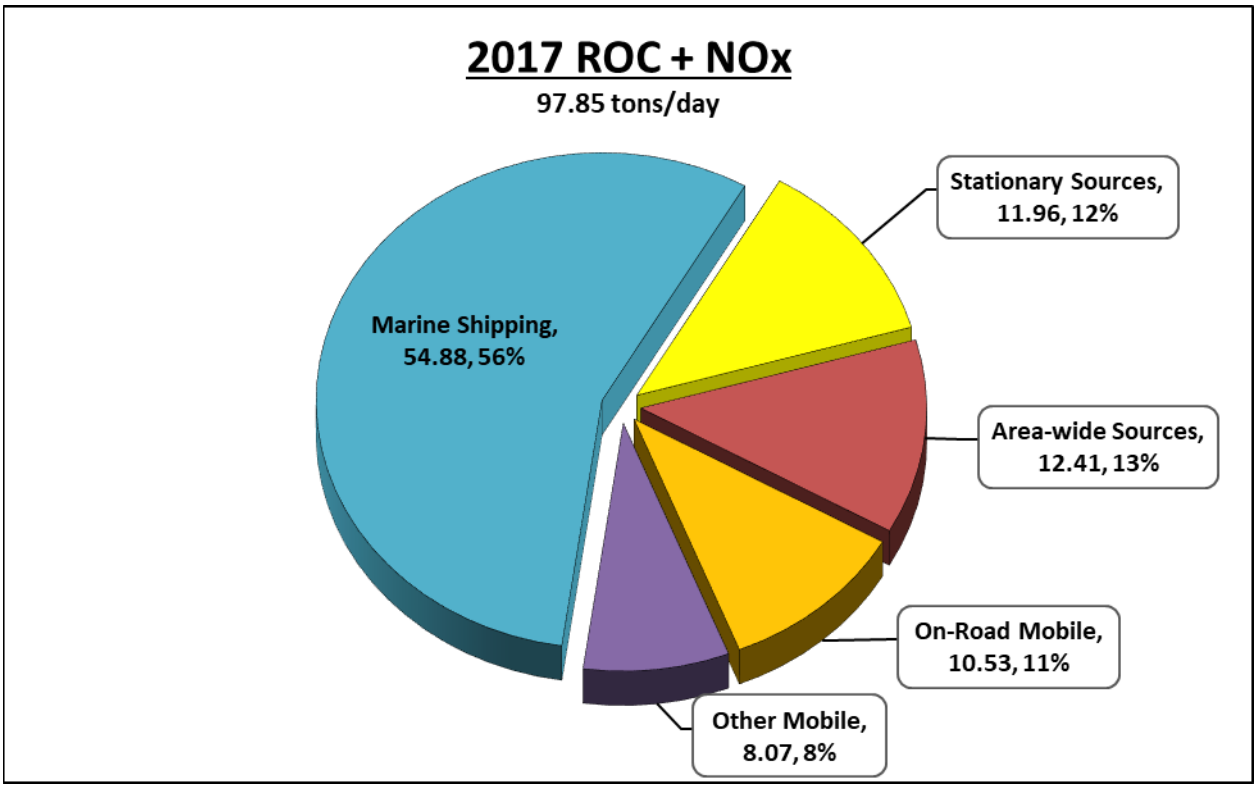


FIGURE 3-2: BASELINE ROC AND NOX EMISSIONS (TONS PER DAY) AND DISTRIBUTION (%)



Growth Profiles

To understand how the emission inventory will change over time, the 2017 inventory is projected into the future using activity-specific growth profiles. Growth profiles contain the estimated changes in the values of pollution-producing activities, known as "activity indicators." Examples of activity indicators include population, housing, and economic output, and the ratio of these activity indicators (relative to the base year) create the growth factor for a specific year. CARB has developed dozens of growth profiles by collecting information from reputable sources such as the California Energy Commission and the Department of Finance. These growth profiles are then applied to the affected source categories to build the forecasted inventory. If the District has more accurate information or estimates based on local data, the District can work with CARB to refine the growth profiles. In this plan, the growth profiles are established to demonstrate the projected emission inventory could look like in the years 2025 and 2035. Growth profile data is shown below in Table 3-1.

TABLE 3-1: SANTA BARBARA COUNTY GROWTH PROFILES

Activity Indicator	Units	Value			Growth Factor		Data Source
		2017	2025	2035	2025	2035	
Population	Residents	451,700	477,700	505,300	1.06	1.12	1
Housing	Households	146,800	155,300	164,300	1.06	1.12	1
Natural Gas Combustion: Residential	Million therms	53.99	55.07	53.43	1.02	0.99	2
Natural Gas Combustion: Commercial	Million therms	22.09	24.74	26.66	1.12	1.21	2
Natural Gas Combustion: Industrial	Million therms	9.87	10.39	11.02	1.05	1.12	2
Ocean Going Vessel: Auto Vehicles	Port of LA/LB ktons	6,223	7,714	9,821	1.24	1.58	3
Ocean Going Vessel: Container Commodities	Port of LA/LB ktons	49,799	71,910	108,216	1.44	2.17	3
Ocean Going Vessel: Tanker Products	Port of LA/LB ktons	58,849	61,639	63,672	1.05	1.08	3
Petroleum Wells	No Units	1	1	1	1	1	4
Petroleum Production: Onshore	No Units	1	1	1	1	1	4
Petroleum Production: OCS	No Units	1	1	1	1	1	5

Data Source References:

1) Department of Finance, which is similar to the SBCAG Regional Growth Forecast 2050 [January 2019]
2) REMI (Regional Economic Models, Inc.) output using California Energy Commission data
3) Freight Analysis Framework model, compiled by the Bureau of Transportation Statistics and the Federal Highway Administration
4) Community Advisory Council recommendation, 2013 Clean Air Plan
5) Community Advisory Council recommendation, 2001 Clean Air Plan

Discussion on Oil & Gas Growth Profiles

The California Air Resources Board estimates that statewide, oil production in California will decrease by approximately 2.9% each year.[8] However, since the 2013 Plan, the District has set the growth factors for oil & gas-related activities to "1" due to uncertainty in the sector for Santa Barbara County over the long term. This is based on four considerations:

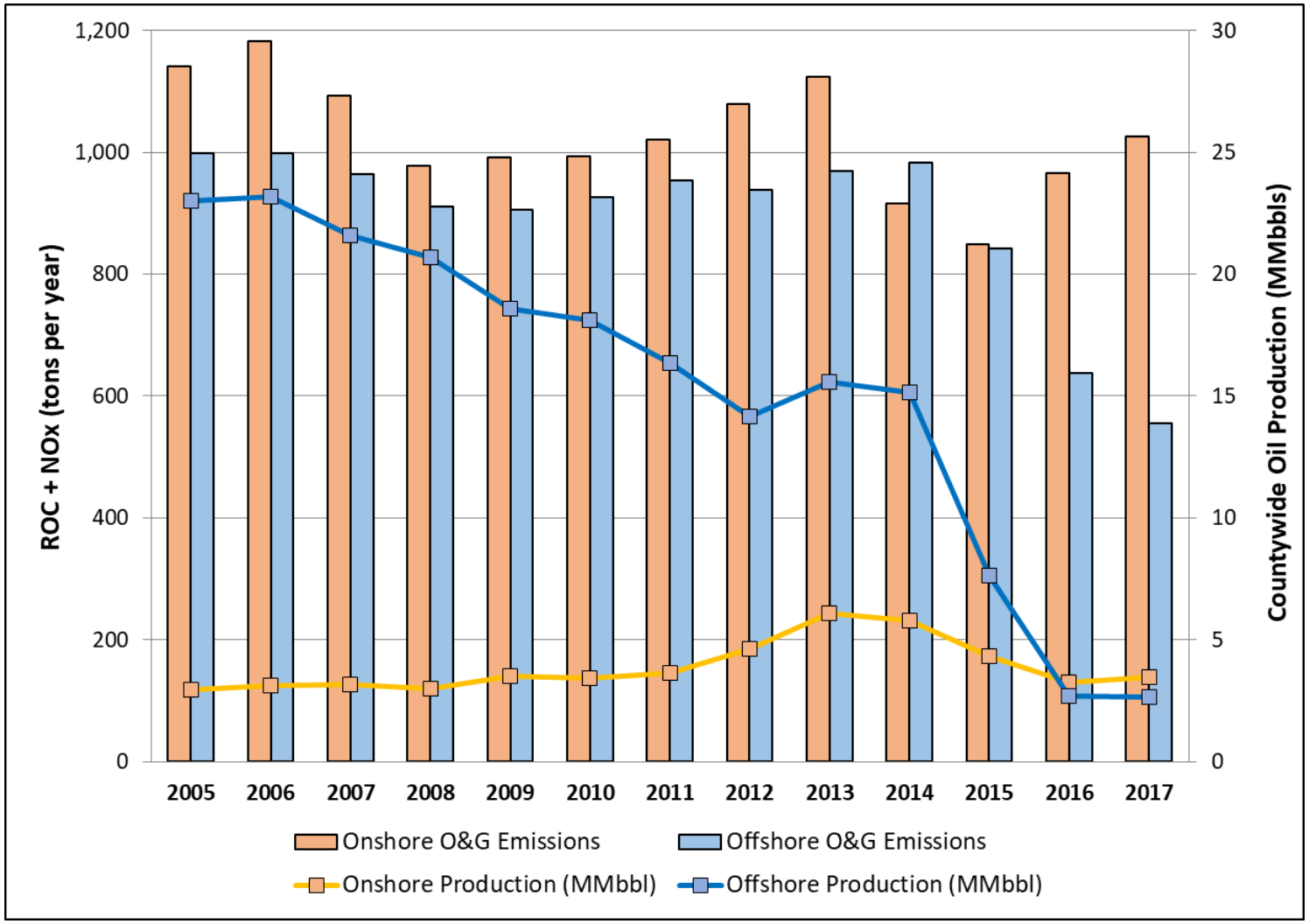
1) The growth projections cover a long time, and petroleum production has gone both up and down in the past. Projecting growth in the petroleum industry out to 2035 would be speculative. Each triennial plan update presents an opportunity to revise this assumption if there is new data that would support a different growth factor.
2) From Figure 3-3, it can be seen that increases in oil production may cause an increase in emissions (as shown in 2006 and 2013), but the convention does not hold true for the remaining years. The figure shows that ozone precursor emissions do not trend at a 1:1 ratio with oil production in the County.
3) While some major oil & gas projects are on the horizon, Best Available Control Technology (BACT) will typically be required during the permit process at these large sources, driving down the overall project emissions. This is because BACT improves over time. For example, NOx emission control requirements for steam generators decreased from 30 parts per million in the 1990s to BACT levels as low as 5 parts per million today.
4) Large oil & gas developments would also be required to offset their emissions that exceed the District's New Source Review offset threshold. These projects could use emission reduction credits (ERCs), which are already accounted for as forecasted growth, or new ERCs must be generated by decreasing the actual emissions either at the source or elsewhere.

Locally, we have seen emission decreases in the oil & gas sector over the last few years. Some of the reductions can be attributed to the rupture of the Plains All American Pipeline, which occurred in May 2015. The shutdown of the pipeline has prevented multiple offshore facilities from producing oil, reducing their economic viability and forcing two operators to begin the decommissioning of their offshore platforms. Once the platforms are fully decommissioned, the stationary source emissions will be reduced even further. However, there are proposed projects on the horizon that, if approved, may increase oil & gas sector emissions, such as the replacement of the Plains Pipeline and the drilling of new wells in Northern Santa Barbara County. The County of Santa Barbara has discretionary authority over these land use proposals, and is the lead agency under the California Environmental Quality Act (CEQA). These projects are currently in various stages of environmental review. If the projects are approved, there may be a partial resurgence of the offshore emissions and an increase in onshore emissions.

After evaluating all of the potential increases and decreases in the oil & gas sector relative to the 2017 Base Year, District staff recommends that the growth factor of "1" is still appropriate.

[8] Based on the annual production reports from the CA Department of Conservation, Division of Oil Gas, and Geothermal Resources (DOGGR), data trend from 2000 – 2016.

FIGURE 3-3: SANTA BARBARA COUNTY OIL PRODUCTION VS. OIL & GAS SECTOR EMISSIONS



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Onshore Emissions (tpy)	1,141	1,182	1,093	978	991	994	1,021	1,078	1,124	916	849	967	1,026
Offshore Emissions (tpy)	999	999	964	911	905	926	954	938	969	983	842	637	555
Total Emissions (tpy)	2,139	2,181	2,057	1,889	1,896	1,920	1,975	2,016	2,092	1,899	1.691	1,604	1,581
Calculated Growth Factor (relative to 2005)	1.00	1.02	0.96	0.88	0.89	0.90	0.92	0.94	0.98	0.89	0.79	0.75	0.74

Inventory Forecast

After applying the growth profiles to the District's 2017 Base Year Inventory, the District-wide ozone precursor emissions are forecasted for 2025 and 2035. This is accomplished through CARB's California Emission Projection Analysis Model (CEPAM). CEPAM incorporates county-specific economic and demographic growth profiles and emission control profiles that are derived from adopted District rules and statewide regulations. Table 3-2 displays a summary of the results. A detailed summary of emissions by source sub-category is provide at the end of this chapter in Table 3-3. Figures 3-5 and 3-6 provide graphical displays of the projected emissions from the baseline year of 2017 out to forecast years 2025 and 2035.

TABLE 3-2: ROC AND NOX EMISSION FORECASTS (TONS PER DAY)

Source Category	2017		2025		2035	
	ROC	NOx	ROC	NOx	ROC	NOx
Stationary Sources	8.86	3.10	9.04	3.07	9.38	3.07
Area-wide Sources	11.85	0.56	12.03	0.47	12.20	0.44
On-Road Vehicles [9]	3.70	6.83	1.81	2.65	1.61	2.11
Other Mobile [10]	2.73	5.35	2.28	3.75	2.04	3.02
Marine Shipping	3.01	51.87	4.25	66.72	6.33	78.84
ERCs	-	-	0.31	0.76	0.31	0.76
Total	**30.14**	**67.71**	**29.71**	**77.42**	**31.87**	**88.23**

As shown in the table, NOx emissions are projected to increase substantially over the next several years primarily due to the marine shipping sector. Emissions of NOx are projected to increase from 67.71 tons per day in 2017 to 88.23 tons per day by 2035. This trend is slightly counteracted by reductions in emissions from on-road vehicles.

Whereas, the ROC emissions trend remains relatively stable over the period with about a 1.7 tons per day increase from 2017 to 2035. On-road emissions account for most of the ROC reductions over the period, while marine shipping operations are responsible for the increase.

The emission inventory forecasts have been adjusted upward based on the ERCs that were in the District Source Register as of June 2019. These ERCs represent previous voluntary emission reductions that can be used as an emission credit in the future, to compensate for emission increases from a new or modified stationary source. If the ERCs are used for future projects, offset trading ratios may also be applied, further reducing the amount of potential emission increases related to the use of ERCs.

[9] Draft data, may be changed based on updated information from SBCAG.
[10] Marine Shipping emissions have been broken-out of the Other Mobile category in this table.

Impacts from Marine Shipping

Large ships traveling along the coast of Santa Barbara County produce significant air emissions. In the base year (2017), over 1,400 different vessels made around 6,500 total transits through the Santa Barbara Channel Region.[11] Due to the massive engines on these ships, these transits are responsible for more than 75 percent of the NOx inventory - making marine shipping the single largest source of NOx emissions in the County.

The District has studied the local meteorological conditions that have led to high ozone readings and exceedances of the state and federal ozone standards. Exceedances typically occur between April and October (the ozone "season"), and the conditions that are most conducive to exceedances include stagnant air, temperature inversions, and the presence of ozone precursor pollutants. The Santa Barbara area frequently experiences a pressure gradient that moves air from offshore to onshore. This means that air pollution produced by ships transiting off the coast can contribute to the ozone levels that are measured onshore.

Marine Shipping Emission Methodology

Marine shipping emissions are estimated by CARB using its "Ocean Going Vessel" (OGV) model, which makes assumptions about vessel types, speeds, and the routes taken based on available information. The model also incorporates estimates of growth in marine shipping activities, as well as and control profiles.[12] NOx emissions from this sector are forecast to increase approximately 50 percent over the next 20 years. This projected growth is primarily due to anticipated increases in container ship traffic to transport commodities, such as furniture, electronics, and other manufactured goods, to the Ports of Los Angeles and Long Beach.

In regards to control measures, there are new regulations under the International Maritime Organization (IMO) and United States Environmental Protection Agency (EPA) that require lower NOx standards for newly built vessel engines. New engines have to meet the Tier 3 standard, which emit approximately 80% less NOx as compared to the Tier 1 engines that are being used on most ships today. However, it will take approximately 10-20 years to phase out the older, dirty engines, and in the meantime, the marine shipping sector continues to be the largest source of NOx within the County.

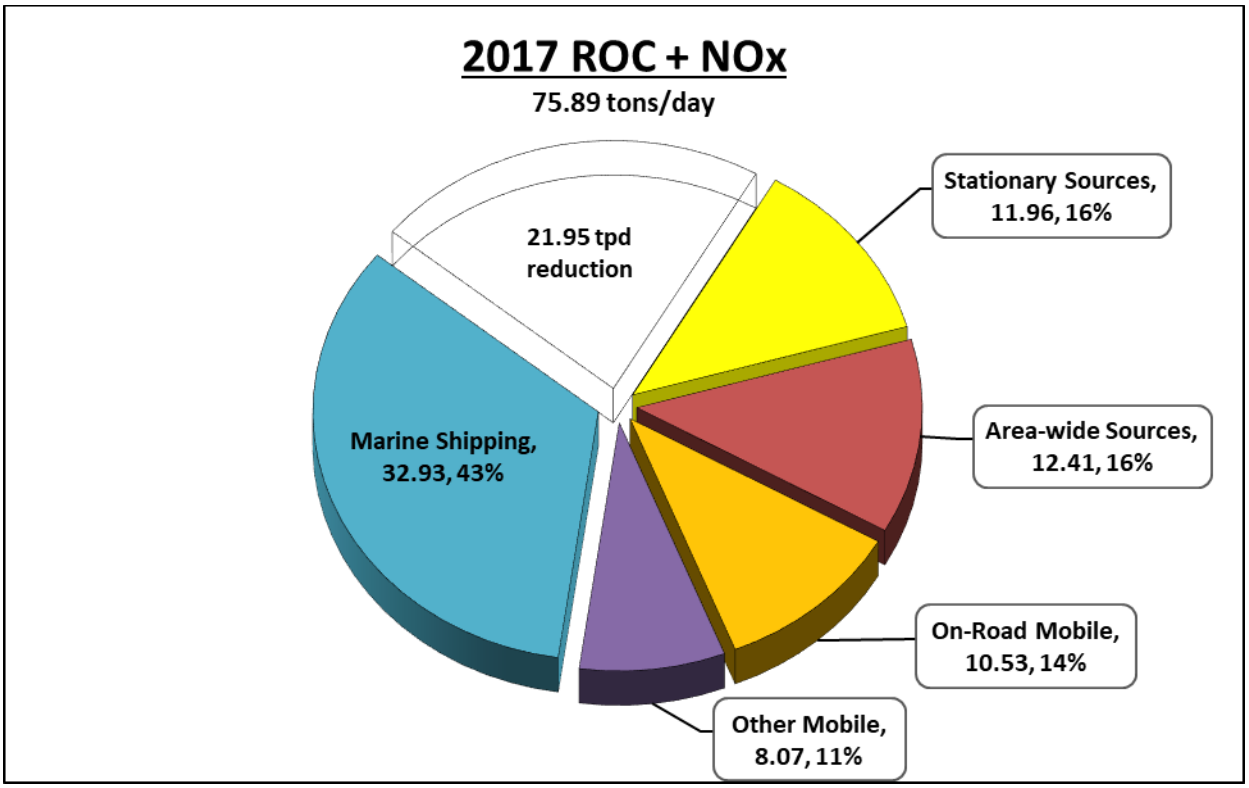
The emissions are associated with all shipping activity from the shoreline out to 100 nautical miles. Projections include both shipping growth and the phase-in of new engine standards.

[11] Based on compiled AIS (Automatic Identification System) data, which records the location, speed, and direction of the ocean-going vessels.

[12] "Control profiles" reflect the assumed amount of emission controls that will reduce emissions in this source category each year, due to regulatory requirements.

While CARB strives to provide accurate estimates of current and future marine shipping emissions in Santa Barbara County, it is important to note that there is an inherent uncertainty about emissions in the marine shipping source category. The current OGV model assumes that container ships in the Santa Barbara Channel Region travel at a speed of 21-22 knots. However, the District has reviewed vessel speed data in detail and notes that during the last few years, many vessels operate at a slower rate of speed. District staff estimate that the average speed off the coast is now approximately 14-15 knots based on review of vessel-specific Automatic Identification System (AIS) data. These reductions in vessel speed in the Santa Barbara Channel Region are estimated to reduce the NOx inventory from the source category by 40%, or around 21 tons per day of NOx. Figure 3-4 shows what the total ozone precursor emission inventory might look like if CARB revised the calculation methodology for marine shipping to reflect the lower speeds, and thus lower engine loads, that the District has observed.

FIGURE 3-4: REDUCED MARINE SHIPPING METHODOLOGY - BASELINE ROC AND NOX EMISSIONS (TONS PER DAY) AND DISTRIBUTION (%)



The District has discussed this concern with CARB staff so that it can be addressed the next time the OGV model is updated. Furthermore, the District will continue to track the wide range of factors that influence the emission inventory, including the types of vessels in use, variations in international trade activities and routes, as well as changing vessel speed and traffic patterns.

TABLE 3-3: EMISSIONS BY SOURCE CATEGORY (TONS PER DAY)

	2017		2025		2035	
STATIONARY SOURCES	**ROC**	**NOx**	**ROC**	**NOx**	**ROC**	**NOx**
ELECTRIC UTILITIES	0.02	0.04	0.02	0.05	0.02	0.04
COGENERATION	-	-	-	-	-	-
OIL AND GAS PRODUCTION (COMBUSTION)	0.07	1.07	0.07	1.07	0.07	1.07
PETROLEUM REFINING (COMBUSTION)	-	-	-	-	-	-
MANUFACTURING AND INDUSTRIAL	0.02	0.53	0.02	0.56	0.02	0.59
FOOD AND AGRICULTURAL PROCESSING	0.02	0.35	0.02	0.27	0.01	0.22
SERVICE AND COMMERCIAL	0.08	0.93	0.08	0.94	0.09	0.95
OTHER (FUEL COMBUSTION)	0.01	0.06	0.01	0.06	0.01	0.06
SEWAGE TREATMENT	-	-	-	-	-	-
LANDFILLS	0.07	0.01	0.07	0.01	0.08	0.01
INCINERATORS	0.01	0.01	0.01	0.01	0.01	0.01
SOIL REMEDIATION	-	-	-	-	-	-
OTHER (WASTE DISPOSAL)	0.68	-	0.72	-	0.76	-
LAUNDERING	0.01	-	0.01	-	0.01	-
DEGREASING	1.35	-	1.31	-	1.23	-
COATINGS AND RELATED PROCESS SOLVENTS	1.04	-	1.17	-	1.36	-
PRINTING	0.49	-	0.58	-	0.71	-
ADHESIVES AND SEALANTS	0.94	-	0.97	-	1.01	-
OTHER (CLEANING AND SURFACE COATINGS)	0.14	-	0.15	-	0.18	-
OIL AND GAS PRODUCTION	3.01	0.06	3.01	0.06	3.01	0.06
PETROLEUM REFINING	0.05	-	0.05	-	0.05	-
PETROLEUM MARKETING	0.59	-	0.49	-	0.44	-
OTHER (PETROLEUM PRODUCTION)	-	-	-	-	-	-
CHEMICAL	0.01	-	0.01	-	0.01	-
FOOD AND AGRICULTURE	0.25	-	0.27	-	0.30	-
MINERAL PROCESSES	-	0.04	0.01	0.05	0.01	0.05
OTHER (INDUSTRIAL PROCESSES)	-	-	-	-	-	-
STATIONARY SOURCE TOTAL	**8.86**	**3.10**	**9.04**	**3.07**	**9.38**	**3.07**

TABLE 3-3: EMISSIONS BY SOURCE CATEGORY (TONS PER DAY)

	2017		2025		2035	
AREA SOURCES	**ROC**	**NOx**	**ROC**	**NOx**	**ROC**	**NOx**
CONSUMER PRODUCTS	2.35	-	2.47	-	2.60	-
ARCHITECTURAL COATINGS AND SOLVENTS	1.21	-	1.27	-	1.35	-
PESTICIDES/FERTILIZERS	6.36	-	6.50	-	6.56	-
ASPHALT PAVING / ROOFING	0.13	-	0.13	-	0.13	-
RESIDENTIAL FUEL COMBUSTION	1.00	0.44	1.00	0.35	1.00	0.32
FARMING OPERATIONS	0.59	-	0.44	-	0.35	-
CONSTRUCTION AND DEMOLITION	-	-	-	-	-	-
PAVED ROAD DUST	-	-	-	-	-	-
UNPAVED ROAD DUST	-	-	-	-	-	-
FUGITIVE WINDBLOWN DUST	-	-	-	-	-	-
FIRES	-	-	-	-	0.01	-
MANAGED BURNING AND DISPOSAL	0.17	0.12	0.17	0.12	0.17	0.12
COOKING	0.03	-	0.03	-	0.04	-
OTHER (MISCELLANEOUS PROCESSES)	-	-	-	-	-	-
AREA SOURCE TOTAL	**11.85**	**0.56**	**12.03**	**0.47**	**12.20**	**0.44**

ON-ROAD MOTOR VEHICLES	**ROC**	**NOx**	**ROC**	**NOx**	**ROC**	**NOx**
LIGHT DUTY PASSENGER (LDA)	1.23	0.90	0.49	0.31	0.27	0.14
LIGHT DUTY TRUCKS - 1 (LDT1)	0.19	0.12	0.06	0.03	0.03	0.01
LIGHT DUTY TRUCKS - 2 (LDT2)	0.83	0.83	0.44	0.28	0.26	0.12
MEDIUM DUTY TRUCKS (MDV)	0.52	0.67	0.33	0.25	0.33	0.17
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	0.23	0.27	0.13	0.12	0.30	0.35
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.02	0.04	0.01	0.01	0.01	0.01
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.05	0.08	0.01	0.02	0.01	0.02
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.01	0.02	-	0.01	-	0.02
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.03	0.60	0.02	0.24	0.03	0.16
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.01	0.16	0.01	0.04	0.01	0.01
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.07	0.86	0.01	0.32	0.01	0.34
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	0.09	1.44	0.02	0.61	0.02	0.43

TABLE 3-3: EMISSIONS BY SOURCE CATEGORY (TONS PER DAY)

	2017		2025		2035	
ON-ROAD MOTOR VEHICLES (Continued)	**ROC**	**NOx**	**ROC**	**NOx**	**ROC**	**NOx**
MOTORCYCLES (MCY)	0.34	0.10	0.27	0.08	0.32	0.10
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.02	0.41	0.01	0.15	-	0.10
HEAVY DUTY GAS URBAN BUSES (UB)	0.02	0.02	-	0.01	-	0.01
SCHOOL BUSES - GAS (SBG)	0.01	0.01	-	0.01	-	-
SCHOOL BUSES - DIESEL (SBD)	0.01	0.14	-	0.10	-	0.04
OTHER BUSES - GAS (OBG)	0.01	0.02	-	0.01	-	-
OTHER BUSES - MOTOR COACH - DIESEL (OBC)	-	0.04	-	0.02	-	0.03
ALL OTHER BUSES - DIESEL (OBD)	-	0.07	-	0.03	-	0.02
MOTOR HOMES (MH)	0.01	0.04	-	0.01	0.00	0.03
ON-ROAD MOTOR VEHICLE TOTAL	**3.70**	**6.83**	**1.80**	**2.65**	**1.61**	**2.11**

OTHER MOBILE SOURCES	**ROC**	**NOx**	**ROC**	**NOx**	**ROC**	**NOx**
AIRCRAFT	0.23	0.12	0.24	0.13	0.26	0.15
TRAINS	-	0.68	-	0.28	-	0.24
OCEAN GOING VESSELS	3.01	51.87	4.25	66.72	6.33	78.84
COMMERCIAL HARBOR CRAFT	0.17	1.81	0.17	1.52	0.15	1.29
RECREATIONAL BOATS	0.42	0.08	0.28	0.07	0.18	0.06
OFF-ROAD RECREATIONAL VEHICLES	0.25	0.01	0.23	0.01	0.24	0.01
OFF-ROAD EQUIPMENT	1.15	1.31	1.00	0.85	0.97	0.73
FARM EQUIPMENT	0.27	1.34	0.19	0.89	0.14	0.54
FUEL STORAGE AND HANDLING	0.23	-	0.17	-	0.10	-
OTHER MOBILE SOURCE TOTAL	**5.73**	**57.22**	**6.53**	**70.47**	**8.37**	**81.86**

TOTAL – ALL SOURCE CATEGORIES	**30.14**	**67.71**	**29.40**	**76.66**	**31.56**	**87.47**
EMISSION REDUCTION CREDITS	-	-	0.31	0.76	0.31	0.76
GRAND TOTAL FOR SANTA BARBARA COUNTY	**30.14**	**67.71**	**29.71**	**77.42**	**31.87**	**88.23**

* Cells with a "-" denote that the source category contributes less than 0.005 tons/day of ROC or NOx.

FIGURE 3-5: ROC EMISSION TRENDS BY SOURCE CATEGORY

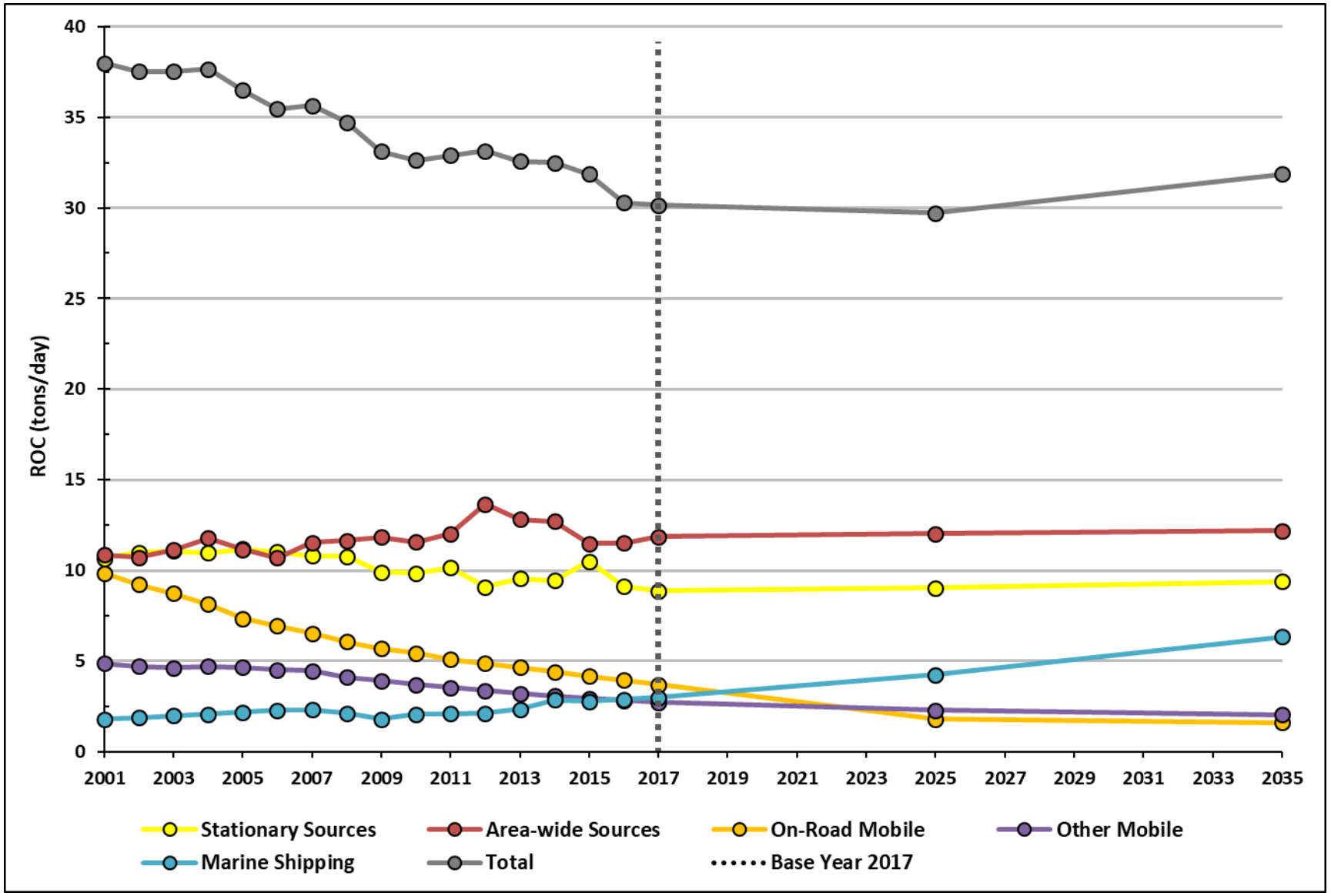
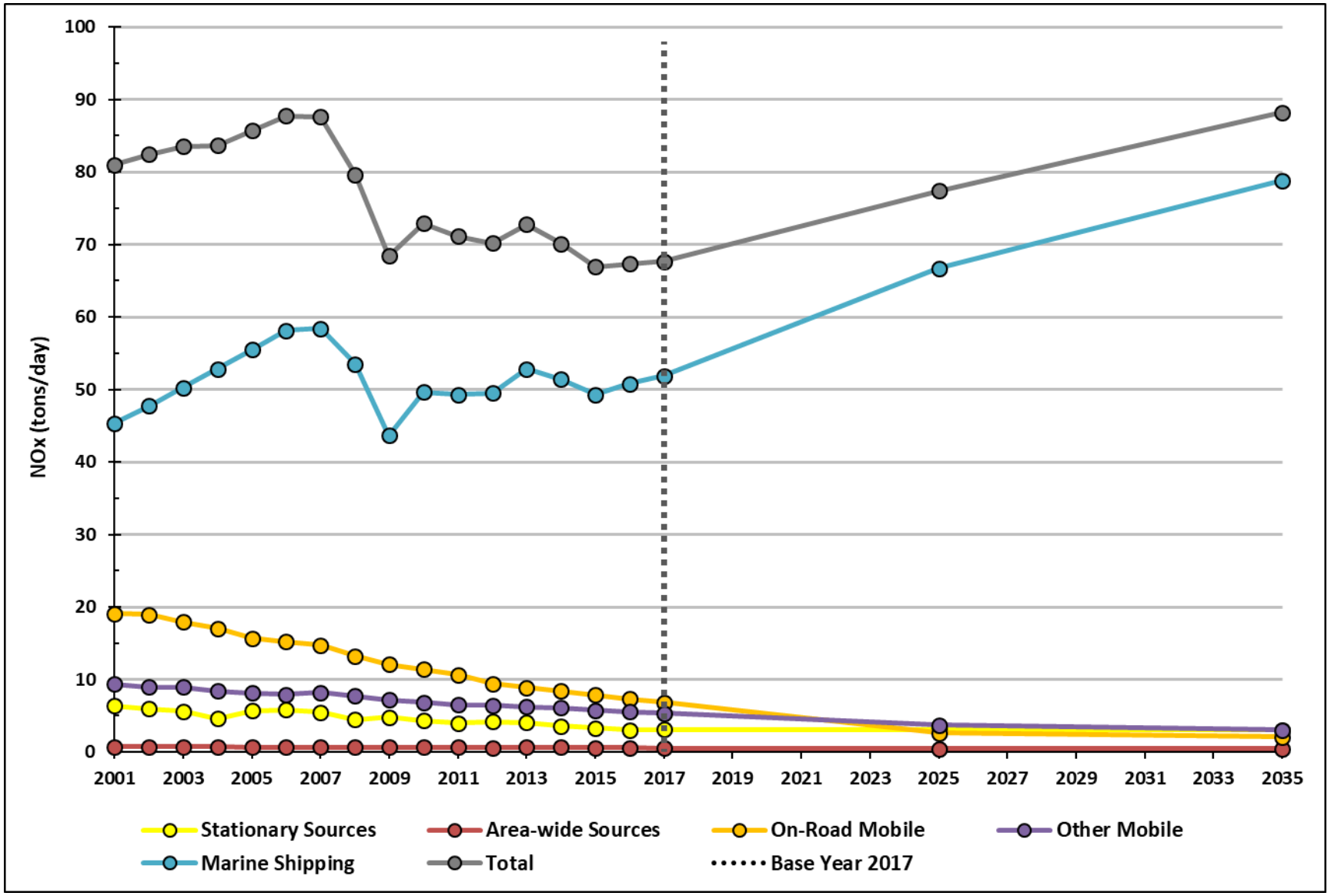


FIGURE 3-6: NOX EMISSION TRENDS BY SOURCE CATEGORY



CHAPTER 4 – STATIONARY SOURCE EMISSION CONTROL MEASURES

This chapter summarizes the emission control measures that have been adopted or are proposed to be adopted by the District to reduce reactive organic compound (ROC) and nitrogen oxide (NO_x) emissions from stationary sources of air pollution. Control measures are evaluated and classified as *adopted*, *proposed*, *contingency*, or *further study.* The control measures are classified according to an analysis of their applicability to Santa Barbara County, their potential emission reductions, their cost-effectiveness, their feasibility to implement, and whether similar measures have already been adopted in other areas of California. The following describes the four control measure classes:

- ***Adopted*** control measures are those that the District has formally adopted as District rules.
- ***Proposed*** control measures are those that the District plans to adopt for the purposes of:
    1) maintaining the state 1-hour ozone standard, and
    2) attaining the state 8-hour ozone standard by the earliest practicable date.
- ***Contingency*** control measures are those that may be adopted if CARB determines that the District isn't making adequate progress towards attaining the standard.
- ***Further study*** control measures are those that the District plans to investigate further before making a commitment to adopt them.

This chapter also addresses the state triennial plan assessment and update requirements specified in Health and Safety Code sections 40924 and 40925. This entails incorporating any new data or emission reduction estimates pertaining to the control measures.

Adopted Control Measures Prior to 2016

Since the original 1991 Air Quality Attainment Plan for the state ozone standard, the District has adopted more than 25 control measures that reduced ROC and NOx emissions from stationary sources of air pollution. These control measures cover a wide-range of source categories, which includes oil & gas facilities, automotive coating operations, and internal combustion engines. The various control measures and their adoption dates can be found in Table 4-1, below.

TABLE 4-1: EMISSION CONTROL MEASURES ADOPTED PRIOR TO 2016

ROC Control Measures			
Rule	**Control Measure Name**	**Adoption Date**	**Main Change**
329	Cutback & Emulsified Asphalt Paving Materials	Feb-1992	Lower ROC limits
346	Loading of Organic Liquid Cargo Carriers	Oct-1992	New Rule
349	Polyester Resin Operations	Apr-1993	New Rule
351	Surface Coating of Wood Products	Aug-1993	New Rule
343	Petroleum Storage Tank Degassing	Dec-1993	New Rule
326	Storage of Reactive Organic Compound Liquids	Dec-1993	Expanded applicability
325	Crude Oil Production and Separation	Jan-1994	Expanded applicability
354	Graphic Arts	Jun-1994	New Rule
344	Petroleum Sumps, Pits and Well Cellars	Nov-1994	New Rule
341	Municipal Solid Waste Landfills	Sep-1997	New Rule
353	Adhesives & Sealants	Aug-1999	New Rule
323	Architectural Coatings	Nov-2001	Lower ROC limits
339	Motor Vehicle and Mobile Equipment Coating	Jun-2008	Lower ROC limits
321	Solvent Cleaning Operations	Sep-2010	Lower ROC limits
330	Surface Coating of Metal Parts & Products	Jun-2012	Lower ROC limits
337	Surface Coating of Aerospace Vehicles	Jun-2012	Lower ROC limits
349	Polyester Resin Operations	Jun-2012	Lower ROC limits
353	Adhesives & Sealants	Jun-2012	Lower ROC limits
323.1	Architectural Coatings	Jun-2014	Lower ROC limits

NOx Control Measures			
Rule	**Control Measure Name**	**Adoption Date**	**Main Change**
342	Boilers, Steam Generators, and Process Heaters (5 MMBtu/hr & greater)	Mar-1992	New Rule
359	Flares and Thermal Oxidizers	Jun-1994	New Rule
352	Natural Gas-Fired Furnaces and Small Water Heaters	Sep-1999	New Rule
360	Boilers, Water Heaters, and Process Heaters (0.075 - 2 MMBtu/hr)	Oct-2002	New Rule
361	Boilers, Steam Generators, and Process Heaters (Between 2 - 5 MMBtu/hr)	Jan-2008	New Rule
333	Reciprocating Internal Combustion Engines	Jun-2008	Lower NOx limits
352	Natural Gas-Fired Furnaces and Small Water Heaters	Oct-2011	Lower NOx limits

Adopted Control Measures During the 2016-2019 Period

During the 2016 to 2019 period, the District implemented three NOx control measures by amending Rules 360, 361, and 342. These rule amendments lowered the NOx limits for newly installed and modified natural gas-fired boilers, steam generators and process heaters. The 2016 Plan estimated a reduction of 36.6 tons per year of NOx emissions from these three rules combined. For adopted rules, the California Health and Safety Code requires the District to indicate whether emission reduction estimates from the previous Plan have been revised. Based on the published data in their respective staff reports for rule adoption, the District affirms that the emission reduction estimate in the 2016 Plan is still accurate. Emission projections for equipment subject to these rules, that account for both the growth profiles and the control profiles, are included in Appendix C.

In April 2017, Santa Barbara County's designation for ozone under the California Clean Air Act changed from nonattainment to nonattainment-transitional. This change occurred because Santa Barbara County continues to have three or fewer exceedances of the 8-hour ozone standard per calendar year, as shown in the monitoring data in Chapter 2.[13] As a result, the District was required to examine the stationary source control measures that were proposed for adoption in the 2016 Ozone Plan and determine whether changes in the control measure implementation schedule were necessary to accomplish expeditious attainment or to maintain the state standard.[14] In order to comply with this requirement, the Board adopted a resolution that:

1) Delayed implementation of the NOx control measures until 2018; and
2) Shifted the ROC control measures to contingency measures;

Table 4-2 shows the rule development schedule for emission control measures as it was revised due to the 2017 nonattainment-transitional changes. Shifting the ROC control measures to contingency was based on analysis and evidence that showed that there is some benefit to concentrating on NOx reductions instead of ROC reductions. This NOx reduction strategy was an interim strategy, but according to Health and Safety Code section 40925.5(g), it needs to be reviewed during the 2019 triennial plan update. The review of the District's 2019 strategy is discussed in the next section, Proposed Control Measures.

[13] Area Designation Criteria for the state ozone standard are laid out in California Code of Regulations Title 17, Sections 70300 through 70306, and Appendices 1 through 3. Appendix 3 indicates the "data for record" that are required to make a designation of attainment.
[14] Health and Safety Code section 40925.5(a)

TABLE 4-2: EMISSION CONTROL MEASURES IN THE 2017 NONATTAINMENT-TRANSITIONAL SCHEDULE

Rule	Description	2017 NA-T Schedule for the 2016 Plan	Rule Adoption Date	2016 Plan Cost-Effectiveness ($/Ton)	2016 Plan Emission Reductions, Tons/Year (Tons/Day)	
					ROC	NO_X
360	**Boilers, Water Heaters and Process Heaters (0.075-2 MMBtu/hr)** Revisions to reduce the NOx limits to 20 ppmv at 3% oxygen for newly installed natural gas fired units.	2018	March 2018	$2,800 to $11,300	-	19.8 (0.05)
361	**Boilers, Steam Generators, and Process Heaters (2 - 5 MMBtu/hr)** Revisions to reduce the NOx limits to 9 or 12 ppmv at 3% oxygen for newly installed natural gas fired units. Higher limits for other fuels.	2018	June 2019	$13,100 to $17,300	-	10.4 (0.03)
342	**Boilers, Steam Generators, and Process Heaters (5+ MMBtu/hr)** Revisions to reduce the NOx limits to 7 or 9 ppmv at 3% oxygen for newly installed natural gas fired units. Higher limits for other fuels.	2018	June 2019	$8,700 to $21,000	-	6.4 (0.02)
321	**Solvent Cleaning Machines and Solvent Cleaning** Revisions to lower the general cleaning ROC limit from 50 grams per liter to 25 g/L.	Contingency	Contingency	$0 to $1,000	6.4 (0.02)	-
351	**Surface Coating of Wood Products** Revisions to include solvent cleaning provisions at 25 g/L.	Contingency	Contingency	$1,000 to $2,000	0.4 (0.001)	-
354	**Graphic Arts** Revisions to include solvent cleaning provisions at 25 – 100 g/L and additional requirements for Rotogravure, Flexographic, Lithographic, Letterpress, and Screen Printing operations. Consider permitting existing facilities to enforce the rule.	Contingency	Contingency	$1,000 to $3,100	98.2 (0.27)	-
				Totals:	**105.0 (0.29)**	**36.6 (0.10)**

Proposed Control Measures

Under the California Clean Air Act, each air district that is nonattainment for the state ozone standard must demonstrate a five percent reduction in emissions per year or adopt every feasible measure available to that district.[15] Since previous Ozone Plans have shown that the District cannot achieve a five percent per year emission reduction, the District has historically taken the approach of evaluating and adopting every feasible measure. This approach has been approved by the California Air Resources Board. To ensure that the District has adopted or has proposed to adopt every feasible measure, staff performed the following:

1) Compared the District's rules to rules currently adopted by other California air districts;
2) Reviewed new staff reports and guidance documents on any recent or upcoming revisions to other air district, CARB, and EPA rules; and
3) Considered the magnitude of the emissions reductions as well as the cost-effectiveness (C/E) of the measures.

In reviewing the literature, no new feasible control measures were identified. The District has already adopted over 25 measures to regulate the various stationary source categories in the County. We've followed an expeditious schedule, and by doing so, there are very few source categories remaining that are viable to regulate. Because the District is currently designated nonattainment-transitional and is close to being designated attainment of the standard, staff's assessment is that no additional stationary source control measures are necessary in order to attain and maintain the standard.

Even though no new stationary source measures are being proposed for the 2019 Plan, the District is still required to evaluate and adopt feasible, cost-effective rules in accordance with the Assembly Bill 617 (AB 617) Best Available Retrofit Control Technology (BARCT) Rule Development Schedule that was adopted by the District Board in 2018.[16] Under the AB 617 mandate, three NOx rules are anticipated to be adopted in 2021, and these rule amendments would only apply to the AB 617 industrial sources.[17] The District expects to achieve additional NOx reductions from these three rules, and the reductions will help the District maintain compliance with the state ozone standard. A listing of the remaining rules on the BARCT Rule Development Schedule is shown below in Table 4-3.

[15] Health and Safety Code section 40914(b)
[16] The AB 617 Rule Development Schedule can be found here: https://www.ourair.org/community-air/
[17] "AB 617 industrial sources" are large sources in the District that subject to the CARB Cap and Trade Program, because of their greenhouse gas emissions levels.

TABLE 4-3: AB 617 BARCT RULE DEVELOPMENT SCHEDULE

Rule	Description	AB 617 BARCT Rule Schedule	Potential Emission Reductions
363	**Particulate Matter (PM) Control Devices** Require best management practices for all baghouses. PM emission limits and a bag leak detector system (BLDS) may be required for larger baghouses.	2020	N/A ozone (PM reductions only)
333	**Reciprocating Internal Combustion Engines** Require applicable units to meet the BARCT NOx standards. Remove the rule exemption for units that have been derated to less than 50 horsepower.	2021	70 tpy NOx
358	**Stationary Gas Turbines** Require applicable units to meet the BARCT NOx standards.	2021	1 to 3 tpy NOx
362	**Nitrogen Oxides (NOx) from Miscellaneous Combustion Sources** Require applicable units to meet the BARCT NOx standards.	2021	4 tpy NOx

Contingency Measures

Contingency measures are potential control measures that may be adopted if CARB determines that the District isn't making adequate progress towards attaining the standard. After the District was designated as nonattainment-transitional in 2017, the District shifted the three proposed ROC measures to contingency measures. This was done so that the District could focus on NOx control measures in order to make progress towards attaining and maintaining the ozone standard. If the District falls back into nonattainment for the ozone standard, contingency measures may be required to demonstrate progress towards meeting the District's clean air goals. The contingency measures are shown in Table 4-4 below. No changes are being made to the list of contingency measures.

TABLE 4-4: CONTINGENCY MEASURES FOR THE 2019 PLAN

Rule	Description	2019 Plan Adoption Schedule	Potential Emission Reductions
321	**Solvent Cleaning Machines and Solvent Cleaning** Revisions to lower the general cleaning ROC limit from 50 grams per liter to 25 g/L.	Contingency	6.4 tpy ROC
351	**Surface Coating of Wood Products** Revisions to include solvent cleaning provisions at 25 g/L.	Contingency	0.4 tpy ROC
354	**Graphic Arts** Revisions to include solvent cleaning provisions at 25 – 100 g/L and additional requirements for Rotogravure, Flexographic, Lithographic, Letterpress, and Screen Printing operations. Consider permitting existing facilities to enforce the rule.	Contingency	49 tpy ROC

Further Study Control Measures

Further Study measures are potential control measures that the District plans to investigate further before making a commitment to adopt them. The further study measures are shown below in Table 4-5.

TABLE 4-5: FURTHER STUDY CONTROL MEASURES FOR THE 2019 PLAN

Rule	Description	2019 Plan Adoption Schedule	Potential Emission Reductions
—	**Organic Material Composting Operations** Require management practices for small composting facilities and control devices for larger facilities.	Further Study	28 tpy ROC

In the 2016 Plan, the District had three Further Study measures listed. Two of these measures have since been removed from the list:

1. The control measure to add solvent cleaning provisions for oil & gas processing facilities (Rules 325, 326, 343, and 344), and
2. The control measure to regulate agricultural gasoline tanks (Rule 316).

These control measures would only affect a small amount of ROC emissions while imposing a significant recordkeeping and reporting burden on many operators. Whereas a composting control measure would affect a large amount of ROC emissions at only a few facilities, making it more feasible to implement. Hence, the composting control measure is proposed to be retained and prioritized on the Further Study list.

Composting is a relatively new source category that is under the regulatory umbrella of CalRecycle, with regulations being enforced by the Local Enforcement Agency (currently Santa Barbara County Public Health – Environmental Health Services). Emission control strategies for this source category are currently being evaluated at a statewide level, and it may be feasible to control a substantial amount of ROC emissions from the source category. District staff will continue to track new information on this item and assess whether an official rule development proceeding is warranted. Such information may show that this rule is necessary to achieve cost-effective emission reductions.

CHAPTER 5 – ON-ROAD TRANSPORTATION CONTROL MEASURES

In June 1993, the boards of the Santa Barbara County Association of Governments (SBCAG) and the Santa Barbara County Air Pollution Control District (District) jointly approved a Memorandum of Understanding (MOU), which effectively placed the responsibility for developing the transportation elements of the air quality plans with SBCAG. This MOU allows SBCAG to assist the District in a cooperative effort toward meeting the District's responsibilities for developing the transportation elements of its state and federal air quality plans. Under the MOU, SBCAG is responsible for the development and analysis of the 2019 Plan's on-road mobile source emission estimates and transportation control measures (TCMs).

This chapter includes a discussion of vehicle activity trends and a summary of transportation control measures. The on-road mobile source inventory is incorporated into the emission inventory information in Chapter 3.

Vehicle Activity Trends

On-road mobile source emissions make up a large portion of the District's inventory as tens of thousands of cars and trucks are driven on the roadways every day. As each vehicle travels a different distance, the main trend to look at is the total amount of daily vehicle miles travelled (VMT) within the District. The total amount of daily VMT between 1990 and 2017 is shown in Figure 5-1. This data was compared against the population within the County. Although the relative amounts have varied over the period, the daily VMT growth for the entire period is less than the population growth (i.e., 22% growth in population, 16% growth in VMT).

Table 5-1 shows a breakdown of the average annual growth rates for population and VMT over the last three decades (1990-2017). This table allows us to identify any changes in driving behavior that effect the total VMT in the County. State law requires areas designated as nonattainment for the state ozone standard to substantially reduce the rate of increase in passenger vehicle trips and VMT.[18]

The growth rate ratios over the last two decades indicate that the VMT growth rate has decreased relative to the population growth rate.

[18] California Health & Safety Code §40918(a)(3). VMT is considered a surrogate for vehicle trips for state performance standard monitoring.

FIGURE 5-1: POPULATION AND DAILY VMT TRENDS SANTA BARBARA COUNTY, 1990-2017 [19]

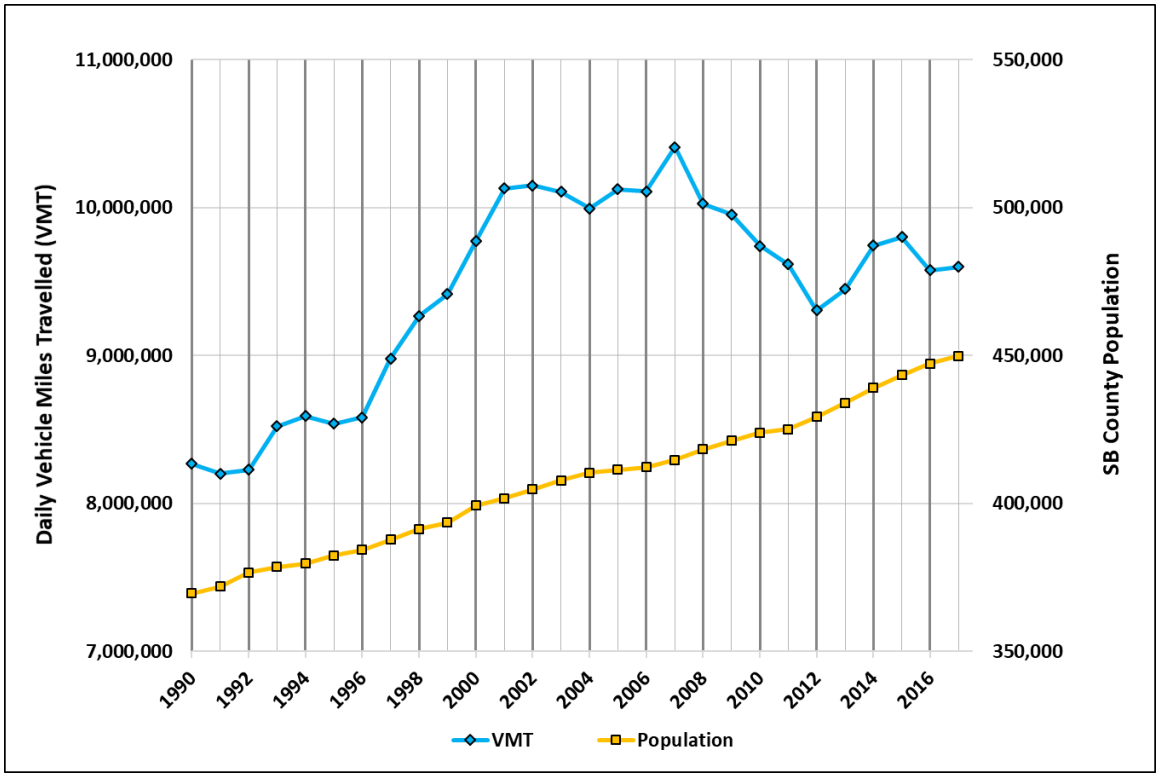


TABLE 5-1: POPULATION AND VMT ANNUAL GROWTH RATES

Time Period	Population Average Annual Growth Rate	VMT Average Annual Growth Rate	Ratio (Population : VMT)
1990-2000	0.80%	1.82%	1 : 2.26
2000-2010	0.61%	-0.03%	1 : -0.05
2010-2017	0.87%	-0.21%	1 : -0.23

As shown in the table, VMT growth significantly outpaced population growth during the 1990s. However, over the last two decades, the trend has reversed as VMT growth has been held to near zero levels. Many factors can influence the region's VMT, such as the unemployment rate and the price of fuel. The main way for SBCAG and the District to help reduce the amount of VMT is through the implementation of locally adopted Transportation Control Measures.

[19] VMT data in Figure 5-1 is from CalTrans.

Transportation Control Measures

SBCAG and the District have relied on the federal and state Clean Air Acts when determining the TCM strategy in ozone plans. The California Health & Safety Code defines "transportation control measures" as:

> *…any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions. (CA HSC §40717.g.)*

Under the federal Clean Air Act, a transportation control measure is any measure:

> *…listed in CAA section 108, or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the first sentence of this definition, vehicle technology-based, fuel-based, and maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs for the purposes of this subpart. (40 CFR 93.101)*

Generally, TCMs are programs or activities that states and localities can implement to encourage the traveling public to rely less on the automobile or to use the automobile more efficiently. TCMs reduce emissions from on-road motor vehicles and trucks by: improving the existing transportation system to allow motor vehicles to operate more efficiently; inducing people to change their travel behavior to less polluting modes; or, ensuring emission control technology improvements in the motor vehicle fleet are fully and expeditiously realized. TCMs address the need for the traveling public to carefully consider: 1) the implications of continued reliance on the single-occupant vehicle as the major choice of commute trips; 2) the need to provide and promote alternatives to single-occupant vehicle travel; and, 3) limiting those factors that promote single-occupant vehicle travel. While most on-road mobile source emission reductions are attributable to motor vehicle emission controls established by federal and state laws and the natural attrition of older, more polluting vehicles (i.e., fleet turnover), TCMs are an integral part of air quality plans and help meet multiple objectives (e.g., multimodal access, fuel efficiency, etc.).

SBCAG's 2040 Regional Transportation Plan – Sustainable Communities Strategy (RTP-SCS) established goals and objectives to guide and inform its development.[20] The goals and objectives outlined in the RTP-SCS are consistent with the implementation of TCMs as outlined in the federal and state Clean Air Acts. Chapter 2 of the RTP-SCS identifies plan goals, organized into five key areas. One of the goals is labeled *Environment*, and it aims to: "Foster patterns of growth, development and transportation that protect natural resources and lead to a healthy

[20] Santa Barbara County Fast Forward 2040 Regional Transportation Plan-Sustainable Community Strategy, Chapter 2, SBCAG, August 2017.

environment." Some of the objectives under the Environment goal include: reduce criteria pollutant emissions, reduce vehicle miles traveled, reduce greenhouse gas emissions, promote transit use and alternative transportation, and encourage affordable and workforce housing and mixed-use development within urban boundaries.[21] Additional information on how the RTP-SCS dovetails with the transportation control measures in this 2019 Plan is provided below, under "*Implementation Activities for TCMs.*"

SBCAG and the District have used the guidance provided by the U.S. Department of Transportation under Section 108(f)(1)(a) of the Clean Air Act when determining the appropriateness and criteria pollutant emission reduction potential of TCMs. Examples of potential TCMs listed in the Clean Air Act include:

1) Improved public transit programs,
2) Adding new pedestrian paths and bicycle lanes,
3) Restriction of roads to high-occupancy vehicles,
4) Programs for shared-ride services,
5) Adding park-and-ride facilities,
6) Traffic flow improvement projects,
7) Programs to control extended vehicle idling,
8) Transportation demand management programs, and
9) Programs that facilitate the voluntary removal of older light-duty autos and trucks.

Adopted TCMs

TCMs are originally developed by SBCAG prior to being incorporated into the District's Ozone Plan. Once adopted by SBCAG, the TCMs are thoroughly reviewed by District staff and incorporated into the next Ozone Plan to be approved by the District Board. All of the adopted TCMs are listed below in Table 5-2. Table 5-2 also summarizes the implementation characteristics of the adopted TCMs, as they form the basis for the 2019 Plan on-road mobile source control strategy.

[21] See 2040 RTP-SCS, Table 27.

TABLE 5-2: SANTA BARBARA COUNTY TRANSPORTATION CONTROL MEASURES

TCM	TCM Name	TCM Type	Adopting Agency	Implementing Agency	Commitments	Monitoring Mechanism (Agency)
T-1 T-2	Trip Reduction Program Employer-Based TDM Program	Voluntary; TDM Program; State AQAP	County and Cities	County/ Cities SBCAG Traffic Solutions	Resolution of Commitments from Affected Jurisdictions; City and County TDM Programs	Transportation Demand Management (TDM) Program (SBCAG)
T-3	Work Schedule Changes	Voluntary	County and Cities	County and Cities; Private Sector	Adopted Policy, County, 1988	Not Applicable (TDM)
T-4	Area-wide Ridesharing Incentives	Voluntary	County and Cities	SBCAG	Interagency Agreement	TDM Program (SBCAG)
T-5	Improve Commuter Public Transit Service	Programmed	County and Cities	SBCAG, APCD, Other County Transit Operators	Federal Transportation Improvement Program (FTIP) and Regional Transportation Improvement Program (RTIP); Short Range Transit Plan (SRTP)	RTP List of Programmed Projects (SBCAG)
T-6	High Occupancy Vehicle Lanes	Programmed	Caltrans and SBCAG	Caltrans and SBCAG	FTIP and RTIP; Measure A Strategic Plan	RTP List of Programmed Projects (SBCAG)
T-7	Traffic Flow Improvements	Programmed	County and Cities	County and Cities; Caltrans; SBMTD; SBCAG	FTIP and RTIP	RTP List of Programmed Projects (SBCAG)
T-8	Parking Management	Parking Ordinance	City of Santa Barbara	City of Santa Barbara	Not Applicable	City of Santa Barbara Parking Task Force
T-9	Park-and-Ride Lots / Fringe Parking	Voluntary; Programmed	County and Cities	County and Cities; Caltrans	FTIP and RTIP; Park and Ride Plan	Caltrans, District 5; RTP List of Programmed Projects (SBCAG)
T-10	Bicycle and Pedestrian Programs	Programmed	County and Cities	County and Cities; Caltrans; SBCAG	FTIP and RTIP; General Bikeway Elements; Bikeway Master Plans	RTP List of Programmed Projects (SBCAG)
T-13	Accelerated Retirement of Vehicles	Voluntary	APCD	APCD	APCD Contract	APCD
T-14	Activity Centers	Voluntary	SBCAG	County, Cities, and SBMTD	Sustainable Community Strategy	SBCAG RTP/SCS (CARB)
T-17	Telecommunications	Voluntary	County and Cities	County and Cities; Private Sector	Not Applicable	Not Applicable (TDM)
T-18	Alternative Fuels	Voluntary	APCD	APCD; County and Cities	Interagency Agreements Unnecessary	APCD
T-19	Public Education	Committal; Voluntary	County and Cities APCD; SBCAG	County and Cities APCD; SBCAG	Interagency Agreements Unnecessary	Not Applicable

Implementation Activities for TCMs

Once TCMs are adopted, they can be implemented through a variety of programs and projects over varying time periods. Since the last triennial update to the Ozone Plan, many activities, programs, and construction projects have been completed, or are currently being completed, to implement the adopted TCMs. TCMs can be regional in nature, or they can be implemented via projects or programs in specific jurisdictions. TCM implementation is subject to local planning efforts, goals and priorities, as well as funding constraints. Although not a complete listing, Table 5-3 lists several ongoing projects related to the adopted TCMs that have been implemented during the 2016-2019 reporting period. Following is a more detailed description of some of these projects/programs.

TABLE 5-3: PROJECTS COMPLETED OR ONGOING UNDER PREVIOUSLY ADOPTED TCMS

TCM	TCM Name	Project Sponsor	Project Description
T-5	Improve Commuter Public Transit Service	LOSSAN, CalSTA, SBCAG, MTD	Pacific Surfliner re-timed to provide peak hour rail commuter service between Ventura County and Santa Barbara County. MTD buses serve as first-mile / last-mile connections between stations and employment centers.
		SBCAG, VCTC	Measure A South Coast Interregional Transit Program (on-going)
T-10	Bicycle and Pedestrian Programs	SBCAG, Cities, County	Measure A Bicycle, Pedestrian and Safe Routes to School Projects and Programs (various projects Countywide on-going)
		SBCAG Traffic Solutions	Open Streets Events (Countywide on-going)
		SBCAG, Caltrans, County, Cities	SBCAG Regional Active Transportation Plan (Countywide on-going)
T-13	Accelerated Retirement of Vehicles	APCD	The Old Car Buy Back Program pays Santa Barbara County vehicle owners $1,000 to voluntarily retire 1995 or older light or medium duty vehicles. The program has removed over 7,300 vehicles from the road since the program launched in 1993.
T-14	Activity Centers	SBCAG, County, Cities, and SBMTD	Sustainable Community Strategy implementation (on-going)
T-18	Alternative Fuels	APCD and other agencies	Plug-In Central Coast EV Readiness Plan
		APCD	Tri-Counties Hydrogen Readiness Plan
		County, APCD	Alternative Fuels Planning and Infrastructure

Santa Barbara County Sustainable Community Strategy

The SBCAG Sustainable Community Strategy was adopted as a TCM in the 2013 Plan under the Activity Centers (T-14) measure. In August 2017, SBCAG adopted the Fast Forward 2040 RTP-SCS, which shows how the region will achieve the required greenhouse gas (GHG) per capita emission targets as well as the co-benefits of reducing criteria pollutants. The Fast Forward 2040 RTP-SCS builds on the groundwork laid out in the first cycle RTP-SCS and is based on a preferred land use and transportation scenario, which lays out one possible pattern of future growth and transportation investment for the region. The RTP-SCS preferred scenario emphasizes a transit-oriented development and infill approach to land use and housing, supported by complementary transportation and transit investments. Population and job growth is allocated principally within existing urban areas near public transit. Allocation of future growth directly addresses jobs-housing balance issues by emphasizing job growth in the North County and housing growth in the South County.

The RTP-SCS consists of three core, inter-related components:

1. A land use plan, including residential densities and building intensities sufficient to accommodate projected population, household, and employment growth;
2. A multi-modal transportation network to serve the region's transportation needs; and
3. A "regional greenprint" cataloguing open space, habitat, and farmland as constraints to urban development.

Consistent with the region's SCS, TCM T-14 emphasizes transit-oriented development, infill growth, and complementary investments in a multi-modal transportation network, which will result in reductions of ozone precursor emissions. It should be noted that the RTP-SCS does not intend to and has no authority to prescribe local land uses or to limit the authority and autonomy of local jurisdictions planning for their own land use needs. SB 375 expressly preserves local governments' right to plan their own land use.[22] In May 2016, SBCAG staff prepared a summary report detailing countywide development trends and RTP-SCS implementation progress. The report indicated that:

> *"A larger proportion of both residential and non-residential development has occurred in the North County rather than the South Coast. However, compared to past trends, the rate of future residential development in the South Coast has increased, providing more opportunities for local workers."*

A progress report on RTP-SCS Implementation is provided as a staff report for item 6 of SBCAG's May 5, 2016 Joint Technical Advisory Committee (JTAC) meeting, at the following webpage: meetings.sbcag.org/adcmeetings.html. SBCAG will be working on an update to the RTP-SCS in 2020, with a goal of adopting by August 2021.

[22] See Government Code section 65080(b)(2)(K)

Alternative Fuels Planning and Infrastructure

The Plug-In Central Coast EV Readiness Plan, the District's EV Charging Station Infrastructure Program, the Central Coast Clean Cities Coalition, and the other alternative fuels and hydrogen infrastructure planning efforts the District is currently undertaking all complement and support the State of California's efforts in implementing zero emission vehicles (ZEVs) statewide. The California Air Resources Board's ZEV rule (established in 1990) and subsequent amendments seek to reduce pollution by implementing technology improvements directly with auto manufacturers. The program has been successful to date and has incentivized technology improvements in the auto sector and encouraged innovation and further development of fuel cell electric vehicles, battery electric vehicles, and other technologies. In addition, former Governor Brown's Executive Order B-16-2012 established several milestones, one of which was: "By 2025, over 1.5 million ZEVs will be on California roadways and their market share will be expanding."

The District has taken a lead role in working with the air districts in Ventura and San Luis Obispo counties and the Community Environmental Council in securing grants to lay the ground work for planning electric vehicle infrastructure in the Central Coast region. These work efforts culminated in the preparation of the Plug-In Central Coast's Electric Vehicle Readiness Plan (EV Communities Alliance, April 2014) that includes a vision for electric vehicle adoption and infrastructure in the Central Coast region. The Electric Vehicle Readiness Plan includes siting recommendations for electric vehicle charging sites throughout the Central Coast, taking into consideration that US 101 serves as an inter-regional connection between Southern and Northern California. Locating DC fast chargers every 30 or 40 miles along the US 101, from Ventura County through Santa Barbara County and on to San Luis Obispo County, will enable battery electric vehicles (BEVs) to take longer trips and recharge from near empty to 80 percent charge in approximately 30 minutes. The Electric Vehicle Readiness Plan also includes recommendations for locating charging stations near workplaces, regional commercial centers, and major destination centers, as well as single-family and multi-family residences, and identifies outreach strategies for marketing, training, and education for local government implementation and for members of the public.

Another key initiative in this work effort is the continued implementation of the District's EV Charging Station Infrastructure Program, which provides grants to public entities, tax-exempt non-profits, and private entities for electric vehicle charging stations. The grant program provides for up to $10,000 for a Level 2 charging station and up to $20,000 for a Level 3 charging station. In 2019, the District launched the Clean Air Grants Infrastructure Program, which follows the Carl Moyer Program Guidelines, and allows for increased funding levels for EV charging station projects. Under this new program, the District is able to offer grants of up to $150,000 or 80% of the eligible project costs, depending on the type of project. Projects that are publicly accessible and/or located in low-income communities are eligible for higher

funding levels. See Chapter 6 for more information on the District's Electric Vehicle Infrastructure incentive programs.

The District is a lead member of the Central Coast Clean Cities Coalition (C5), which is a group of local stakeholders whose mission is to expand the use of alternative fuel vehicles and fueling infrastructure throughout the central coast region. Each year, C5 develops a Project Management Plan, which serves as a work plan to guide the coalition's efforts for the year. In 2019, C5 conducted listening sessions at Santa Barbara Metropolitan Transit District and San Luis Coastal Unified School District to gain feedback on battery-electric transit buses and CNG school buses respectively. Additionally, C5 has been working on alternative fuel corridor planning, with the goal of expanding alternative fuel infrastructure along the main corridors in Santa Barbara and San Luis Obispo Counties. C5 hosts a variety of outreach events, which focus on education and demonstration of alternative fuel technology for the general public as well as for fleet managers. Examples of these outreach events include hosting a Green Car Show and Ride and Drive at the Santa Barbara Earth Day Festival and a renewable CNG workshop.

Starting in 2015, the District, with funding provided by a California Energy Commission grant, has been coordinating an effort to prepare the tri-counties region for hydrogen fuel cell electric vehicles. The plan development involves several agencies and organizations, with the District acting as the lead. Tasks will include preparing a hydrogen refueling infrastructure plan and a hydrogen station installation manual, meetings and workshops for civic leaders and other stakeholders, fire code and permitting training orientation, training for first responders, and assessing potential for early adoption of hydrogen fuel cell electric vehicles in municipal fleets.

TCMs Proposed for Adoption

No new TCMs are proposed for adoption at this time. However, as described above, the District and SBCAG remain committed to continue implementing the TCMs that were adopted in previous air quality attainment plans, thereby continuing to reduce mobile source emissions through a variety of transportation control strategies, programs, and projects.

TCMs Proposed for Further Study

There are no TCMs proposed for further study at this time.

TCM Project Proposed for Deletion

A review of the academic literature shows that implementation of ramp metering in congested, high-volume corridors (like the US 101) can lead to increased fuel efficiency and reduced vehicle emissions. In the 2016 Ozone Plan, a new TCM project was identified for further study that analyzed the potential for the implementation of ramp meters along the 101 corridor in the Goleta Valley. Working in consultation with Caltrans, the County, and the City of Goleta, SBCAG initiated a Goleta Ramp Metering Study with the assistance of a consultant in 2017. The study explored the feasibility of installing ramp meters along the on-ramps along US 101 and

State Route 217 to regulate the flow of vehicles entering the mainline freeway. The conclusory findings determined that installation of ramp meters may provide additional flow benefits to vehicles on the freeway, but additional delays to local traffic on the side streets. Each alternative reviewed in the study determined a higher amount of vehicles hours and delay in the study area with ramp meters than without ramp meters. While an emissions analysis was not specifically completed for the study, the vehicle hours and delay serves as an indicator of where the criteria pollutant emissions would trend. In this case, the installation of ramp meters would add additional vehicle hours and idling time to the study area, thereby increasing emissions. Therefore, as a result of this study, we would propose this TCM project for deletion in the 2019 Ozone Plan.

TABLE 5-4: TCM PROJECT PROPOSED FOR DELETION

TCM	TCM Name	Project Sponsor	Project Description	Process
T-7	Traffic Flow Improvements	SBCAG, Caltrans, County, City of Goleta	Goleta Ramp Metering	SBCAG Goleta Ramp Metering Study, May 2018, Kittelson & Associates

Contingency TCM

An enhanced inspection and maintenance (Smog Check II) is listed as a contingency measure in Table 5-5. The purpose of retaining a contingency measure in the 2019 Plan is to consider this measure for further implementation should the region ever be designated as nonattainment for the federal ozone standard.

TABLE 5-5: CONTINGENCY TCM

TCM	TCM Name	Project Sponsor	Project Description	Process
T-21	Inspection and Maintenance	Bureau of Automotive Repair	Enhanced I/M Program	Consider if designated nonattainment for federal ozone standard

CHAPTER 6 – VOLUNTARY INCENTIVE STRATEGIES

This chapter discusses the District's voluntary grant and incentive programs, which provide funding opportunities to reduce additional ROC, NOx, and Particulate Matter (PM) emissions within the County. These incentive programs achieve cost-effective emission reductions related to a variety of equipment types including transportation sources, marine vessels, agricultural irrigation pumps, off-road vehicles, and residences. These programs primarily retire older, higher-polluting equipment and replace them with newer, cleaner alternatives, thereby reducing ozone precursors and achieving community health benefits. For 32 years, the District has collaborated with local government agencies, commercial businesses, and other local operators to implement a variety of emission reduction projects throughout Santa Barbara County. During the past 20 years, the District has awarded over $22 million for projects that have eliminated nearly three thousand tons of smog-forming pollution and particulate matter, both of which harm human health. Over the past few years, there has increased support from the California State Legislature to allocate funds for voluntary emission reduction programs. A brief description of each grant and incentive program is provided below.

Carl Moyer

The California State Legislature created the Carl Moyer Program in 1998, named after the late Dr. Carl Moyer to recognize his work in the air quality field and his efforts to develop this important program that reduces emissions from heavy-duty diesel engines. The Carl Moyer Program provides grants to replace, repower, or retrofit heavy-duty diesel vehicles, vessels, and agricultural pumps with cleaner engines. The new engines substantially reduce emissions of NOx, ROC, and PM, which complements California's and the District's regulatory clean air programs.

The Carl Moyer Program is a cooperative effort of CARB and local air pollution agencies. Each year, CARB awards grants to various California air districts that apply for funds for the local implementation of the Carl Moyer Program. In turn, air districts follow guidelines adopted by CARB and provide grants to public and private entities for cleaner-than-required engines and equipment. To qualify for funding, projects must meet cost-effectiveness requirements.

The District has participated in CARB's Carl Moyer Program since its inception. To date, the District has leveraged $10.8 million of Carl Moyer grant funds along with $6.8 million of grantee funds into $17.6 million of total funds for 177 projects. These projects include agricultural diesel water pump repowers, marine vessel diesel engine repowers, on-road heavy-duty diesel engine repowers and retrofits, and off-road heavy-duty diesel engine repowers and replacements. The projects have reduced 1,740 tons of NOx, ROC, and particulate matter emissions over the past twenty years, an average of 87 tons per year.

Old Car Buy Back

Cars and trucks are a major source of smog pollution in Santa Barbara County, and older vehicles cause much more air pollution than newer ones. Since 1993, the Old Car Buy Back Program has accelerated the removal of older vehicles from the on-road fleet to reduce air pollution. Individuals receive a financial incentive to take their older vehicles off the road voluntarily. Under the program's current parameters, vehicle owners receive $1,000 to voluntarily retire their fully legal and operational 1995 or older, light or medium duty car, truck, van, or SUV. Participants with eligible vehicles work directly with licensed auto dismantlers who permanently destroy (i.e., crush) cars and trucks under this program.

Three dismantlers in Santa Barbara County implement this program on the District's behalf: Steelhead Recyclers in Goleta, Perry's Auto Wrecking and Salvage in Lompoc, and Black Road Auto and Tow in Santa Maria. The program involves these five critical steps:

1) Interface with the vehicle owner,
2) Verify vehicle eligibility (registration history, smog check status, and title),
3) Inspect functionality of the vehicle,
4) Issue payment to the vehicle owner, and
5) Submit required documentation to the District.

This program provides broad community benefits and is an effective partnership between staff and dismantlers. Over the past 26 years, the District has used $7.8 million of funds to implement the program. Funds were primarily obtained from $2 DMV surcharge fees, but it has also been supplemented with Carl Moyer Program funds, mutual settlement penalty fees, and local air quality mitigation fees. This program has cost-effectively retired or repaired over 7,386 vehicles and reduced an estimated 960 tons of NOx, ROC, and PM emissions throughout the County.

Lower Emission School Bus

Since 2001, the District has invested over $3.4 million of grant funds into local school district transportation bus fleets. This has included the replacement of 35 older high-polluting diesel powered school buses with new clean low or zero emission school buses, the retrofit of 33 school buses with diesel particulate control filters to capture toxic exhaust, the replacement of compressed natural gas (CNG) fuel tanks in four school buses, and the replacement of 17 CNG fueling hoses at a school district.

In FY 2018-19, the District awarded $125,000 in $2 DMV surcharge funds for the replacement of an old diesel-fueled school bus at the Orcutt Union School District with a new diesel-fueled school bus. The District has also leveraged funds and vouchers from other programs to replace an old diesel-fueled school bus at the Santa Maria Joint Union High School District with a new zero emission electric school bus.

The deployment of electric school buses throughout California is an emerging technology as mainstream school bus manufacturers have entered the market. Staff will continue working with bus vendors and school districts on the practicality and cost-effectiveness of funding electric-powered school bus projects in our county in FY 2019-20. In the District's current budget, staff has identified $300,000 that can be utilized for school bus projects, which may fund diesel bus replacements or electric-powered school buses.

Community Air Protection (AB 617)

Assembly Bill 617 was signed into law in September 2017. In response to this legislation, CARB created the Community Air Protection Program. The program's focus is to reduce exposure in communities most impacted by air pollution. CARB staff has been working with local air districts, community groups, community members, environmental organizations, and regulated industries to develop a new community-focused action framework for community air protection. The effort includes community air monitoring in prioritized areas, community emissions reduction programs, incentive funding to deploy cleaner technologies, and grants to support community participation in the AB 617 process.

The Community Air Protection Program requires the District to identify high priority communities within disadvantaged and low-income areas, and conduct targeted outreach to individuals and organizations within those communities to determine what types of projects would benefit those communities. Using tools and guidance provided by CARB and the California Environmental Protection Agency, such as CalEnviroScreen 3.0 and other tools and maps, District staff reviewed data for communities in Santa Barbara County and identified several regions that have low-income populations as well as a higher pollution burden. The target communities are generally Guadalupe, Santa Maria, Cuyama Valley, Lompoc, and the lower Eastside portion of Santa Barbara. For the FY 2018-19 program, the District awarded approximately $614,000 in CAP grant funds to these target communities. The project grant funds were used to help replace five separate agricultural tractors and a school bus in the Santa Maria region, an agricultural tractor in the Cuyama Valley, and a marine vessel engine in Santa Barbara, and will generate almost 54 tons of emission reductions. The project descriptions along with a map of the disadvantaged and low-income communities can be found at the District's website at www.ourair.org/2018-community-air-protection-projects.

The California legislature recently appropriated a second year of incentive funding under CARB's recently adopted Community Air Protection Incentive Funds 2019 Guidelines, of which $1.2 million was allocated to our region. The District continues to meet with individuals and organizations in our communities in order to inform how the incentive funding will be spent in Santa Barbara County. This program provides valuable economic incentives to businesses, health benefits to community members, and also helps fund the District's efforts to engage with the community and meet the legislative requirements of AB 617.

Funding Agricultural Replacement Measures for Emission Reductions (FARMER)

In September 2017, former Governor Brown signed into law Assembly Bill (AB) 109 and AB 134, which appropriated $135 million to CARB to reduce agricultural sector emission by providing grants and financial incentives. This program became known as FARMER, and it provides incentives to farmers to replace their older, off-road equipment (such as tractors).

The District participated in CARB's inaugural FARMER Program and received approximately $669,000 in grant funding. Prior to the solicitation of these funds, the District worked with the agricultural community to perform outreach and identify potential projects. The District provided a presentation at a Santa Barbara County Agricultural Advisory Committee monthly meeting to help spread the word. The incentive funds ultimately helped five separate applicants purchase a new agricultural tractor. These tractor replacements attained approximately 26 tons of emission reductions. A similar level of funding is available for the 2019-2020 fiscal year.

Electric Vehicle Charging Station Infrastructure

As on-road vehicles continue to be a large source of emissions within the County, the District has worked collectively with neighboring air districts and other groups for several years to advance publicly available electric vehicle (EV) charging infrastructure. The EV infrastructure program, which began in 2011, has been wholly funded through air quality mitigation fees. Under the current program parameters, grant funds may be issued for publicly owned charging stations as well as for private or nonprofit-owned multi-unit dwellings that serve 20 or more units.

Since its inception, the EV infrastructure program has committed funds to 51 different charging stations throughout the County. With every additional charging station, consumers are more likely to transition from driving conventional gasoline vehicles to electric alternatives. New stations also increase the uptime of existing electric vehicles as owners can easily and conveniently charge their vehicle at multiple locations. This meets the program's ultimate goal of improving local air quality and reducing greenhouse gas emissions.

For fiscal year 2019-20, the District has allocated $100,000 towards new EV charging infrastructure projects. Also, the District may utilize funds from the Carl Moyer and Community Air Protection programs to partially fund infrastructure projects that meet specific requirements.

Woodsmoke Reduction

Woodsmoke contains a variety of air contaminants, such as ozone precursors, particulate matter, and air toxic pollutants. Being subjected to woodsmoke can cause significant health and

respiratory issues that are detrimental to the quality of one's life. Reducing regional and near-source exposure to woodsmoke is critically important to protecting the health and safety of the community. Recently, CARB has committed $3 million in state funds for the FY 2019-20 program to distribute to air districts for implementation of a Woodsmoke Reduction Program.

The Woodsmoke Reduction Program helps property owners voluntarily replace an uncertified wood-burning stove, fireplace insert, or fireplace used as a primary source of heat with a cleaner-burning and more efficient device. The program, which began in 2017, is designed to maximize benefits to low-income households. Low-income households can qualify for a voucher amount of up to $5,000 towards replacement of their older wood-burning heating device. The program also includes a standard voucher amount of up to $1,000 for those that do not meet the low-income criteria. The FY 2018-19 program has a funding budget of $225,000 and has funded (or committed to fund) 54 replacement projects. Of these, 43 projects have been households qualifying for the low-income voucher.

Clean Air Fund

In the 2018/2019 fiscal year, the District established a Clean Air Fund Program to assist with projects that provide positive air quality impacts for communities throughout Santa Barbara County. The program allows the District to implement or support projects that do not meet traditional grant program guidelines, such as the Carl Moyer program guidelines. The program is funded with excess Notice of Violation (NOV) revenues. Currently, $100,000 is available in the Clean Air Fund, but each year, the District will review the received NOV revenue to allocate additional money transfers into the Clean Air Fund.

Clean Air Fund projects will be designed to provide air quality and human health benefits to the Santa Barbara County community, consistent with the District's mission. Potential projects may include, but are not limited to, the following:

- Voluntary incentive programs that reduce emissions, such as landscape equipment replacement programs.
- Air quality research projects or studies,
- Purchase of air monitoring equipment or tools, or
- Community outreach projects or programs.

In order to implement the Clean Air Fund, District staff will evaluate potential projects or programs and prepare specific proposals for Board approval. Each proposal will include program or project goals and parameters, such as the amount of incentive funding to be used, timelines, target audience, emission control technology to be used, or specific requirements for equipment, outreach, studies, monitoring methods, or reporting.

Vessel Speed Reduction

The District has worked for decades to raise awareness of the local impact of marine shipping emissions, identifying these emissions in Clean Air Plans since 1994, and calling for additional regulations to reduce emissions. Significant gains have been made as state, federal, and international measures are in place that will help reduce pollution from the marine sector over the long term, but this sector is still expected to grow. Achieving additional NOx reductions from shipping is key to ensuring continued progress towards attaining and maintaining the state ozone standard.

One strategy to significantly reduce NOx emissions and other criteria pollutants is to reduce vessel speeds, which increases the operational efficiency of the vessel by reducing fuel usage. Vessel Speed Reduction (VSR) can be implemented by most ship types, does not require any capital investments for control equipment, and reduces the impact of lethal ship strikes on endangered whales off the coast. The Santa Barbara Channel is a seasonal feeding ground and migration path for several whale species, including blues, fins, and humpbacks, which travel in and around the shipping lanes.

In recent years, the District and partners have implemented voluntary VSR incentive programs for immediate air quality and whale protection benefits. The program began as a VSR Trial in 2014, and due its success, the program continued to grow larger with every iteration. In 2016, the program expanded to include the region south of the Channel Islands, and in 2017, the speed-reduction zones in the San Francisco Bay Area were incorporated into the program.

The 2018 VSR program was similar to our previous VSR programs in that it was a collaborative effort involving the Santa Barbara, Ventura, and Bay Area air districts, as well as federal, state, and nonprofit organizations. The 2018 VSR program ran between July 1 and November 15, as these dates typically coincide with ozone season and the seasonal presence of whales off the coast of California. The program focused on companies with container ships and auto carriers since these vessel types represent the majority of transits in our region and typically travel at higher speeds. Twelve global shipping companies participated in the effort to adjust their vessel speeds to meet the program's objectives. The baseline (non-program) speeds for these ships averaged between 14 and 16 knots, and approximately 400 transits were able to slow down to the 10-knot target. This slow-steaming method increases the vessel transit time through the Channel Region by 3 to 4 hours, but it reduces the amount of fuel burned, resulting in fuel savings and NOx reductions.

The 2018 program represented a significant expansion of the program as it changed to a fleet-based approach. The fleet-based approach encourages companies to slow down more vessel transits overall in the region, and it was also paired with tiered recognition levels, offering higher monetary incentives and recognition to those companies with a higher fleet participation rate. A summary of the 2018 program as well as all the previous VSR programs is shown below in Table 6-1. Additional details about the VSR program, including the active 2019

program, are available on the District's website: www.ourair.org/air-pollution-marine-shipping/.

TABLE 6-1: COMPARISON OF PREVIOUS VSR PROGRAMS

	2014	2016	2017	2018
Area	Santa Barbara (SB) Channel	SB Channel Region (Channel & South of Channel Islands)	SB Channel Region & San Francisco (SF) Bay Area	SB Channel Region & SF Bay Area
# Companies	7	10	11	12
# Vessels	14	25	44	280
Slow-speed Distance	2,700 nautical miles (nm)	5,000 nm	12,630 nm	46,026 nm
Emission Reductions	12.4 tons NOx 535 MT GHG	25.6 tons NOx 1,005 MT GHG	83.5 tons NOx 2,630 MT GHG	266 tons NOx 8,668 MT GHG

The District will continue to work with partners to assess the effectiveness of different incentive strategies and support the analysis of emission impacts associated with the VSR Program. Through these partnerships and work products, the District hopes to identify a sustainable funding method to implement the VSR program for years to come. One possible solution is the Ocean Resiliency Act (SB 69), which was introduced in the California legislature in 2019. This 2-year bill includes a state-led program on voluntary vessel speed reduction in the Santa Barbara Channel, the San Francisco Bay Area, and potentially other coastal areas. If passed and signed into law, SB 69 could provide incentive funding for the 2021 VSR season and beyond.

CHAPTER 7 – MAINTENANCE STRATEGY

Since the District Board adopted the initial state Air Quality Attainment Plan in 1991, the District has prepared plan updates and has adopted control measures that provide the basis for the air quality programs and regulations in place today. While Santa Barbara County now meets the state ozone standard based on 2016-2018 monitoring data, it only takes one violation in the future to be redesignated as nonattainment.[23] Countywide, the Expected Peak Day Concentrations remain close to the 8-hour ozone standard; the District must be diligent to ensure that "backsliding" does not occur. The District will continue to implement its core programs, as described in this chapter, which are expected to result in additional emission reductions. This will provide a margin of safety, while assuring cleaner air for the residents and visitors of Santa Barbara County.

Stationary Sources

As discussed in Chapter 4 of this Plan and shown on Table 4-1, the District has already adopted more than 25 control measures to reduce ROC and NOx emissions. These control measures cover a wide-range of source categories, which includes oil & gas facilities, automotive coating operations, and internal combustion engines. All of the District's existing rules and regulations will remain in effect at the current level of compliance approved by the Board.

Regulation VIII, New Source Review (NSR), is a core component of the District's stationary source control program. Pursuant to the anti-backsliding requirements of California Senate Bill 288 – the Protect California Air Act of 2003 – the District's New Source Review requirements will remain in effect. The NSR requirements will continue to ensure that new, large projects are controlled through the use of Best Available Control Technology (BACT) and that they will provide offsets in the form of Emission Reduction Credits (ERCs) to mitigate any increases above the emission offset threshold. This program will prevent air quality degradation by both controlling and offsetting emissions generated by large new and modified stationary sources, thus ensuring that they do not interfere with the attainment or maintenance of any air quality standard.

Existing and new stationary sources with District permits will continue to be inspected and evaluated by the District's Compliance Division, and this will ensure that the sources continue to meet permit requirements and comply with the District's prohibitory rules. The District manages permits for approximately 1,200 permitted or registered stationary facilities. Field inspectors verify compliance by conducting and documenting facility inspections, reviewing records, and taking enforcement action if permit conditions or rule requirements are not met.

[23] For an explanation of what constitutes a violation of the state ozone standard, and additional discussion of CARB's process to designate Santa Barbara County as attainment for the state ozone standard, see Chapter 2 of this plan.

The inspection is also a valuable tool to educate the facility operators and to minimize pollution in accordance with their permit.

Emission Inventory Tracking

As discussed in Chapter 3 of this plan, the District compiles an annual emission inventory and submits the emissions data to CARB, who reviews the data in preparation of their National Emission Inventory submittal to the U.S. EPA. The emission inventory is compiled using activity level throughput data that permitted facilities are required to submit to the District each year through the District's annual reporting process. Annual reports also serve as a compliance tool to ensure that permitted facilities do not exceed their annual throughput or emission limits.

In the last few years, Assembly Bill 197 (adopted in September 2016) and Assembly Bill 617 (adopted in July 2017) have been passed by the state legislature, further enhancing and streamlining the emission reporting requirements for stationary sources of air pollution. AB 197 created a mandate for CARB to make publicly available emissions of greenhouse gases, criteria pollutants and toxic air contaminants. With this directive, CARB created the Pollution Mapping Tool, which displays emission inventory data from the District and allows the public to view emission trends over time. District staff have been working with CARB to ensure that the emissions information is accurate and presented in a clear, straightforward manner.

In response to AB 617, CARB adopted the Regulation for the Reporting of Criteria Air Pollutants and Toxic Air Contaminants. This regulation is intended to help the air districts, community members, scientists, industry, consultants, government agencies, and CARB to better identify regions that are most affected and in need of additional resources to resolve inequities related to air pollution exposure. The District is working with CARB on the implementation of this new regulation, which will require detailed emission information from the District's permitted facilities. The District has worked closely with local facilities for many decades and has detailed knowledge of these facilities' permitting and data quantification methodologies.

While we have seen a declining amount of NOx and ROC emissions produced locally over the last few decades, the forecasted NOx inventory predicts increases in offshore emissions due to anticipated growth in the marine shipping sector. These growth projections, as well as the methodology used to estimate emissions from marine shipping, will be monitored and refined as new data becomes available. The District will continue to work with CARB to present the best available information, with the goal of providing the most accurate and complete emission inventory for this sector. Accurate emission projections will help the District evaluate strategies and allocate resources to mitigate air pollution.

Land-use/CEQA Review

Whether it is a newly proposed residential community or a zoning decision for an industrial factory, land use decisions affect air quality. New commercial, industrial, and residential

developments contribute to short- and long-term air quality impacts through the use of fuels, consumer products, vehicles, and other equipment. As California continues to grow and the population increases, we expect there to be new developments that emit additional smog-forming pollution in our county. These impacts and projections have been incorporated into the forecasted emission inventory in Chapter 3. However, new development proposals must also be evaluated under the California Environmental Quality Act (CEQA) by the decision-making body (e.g., cities, the County, or other special districts or institutions). CEQA requires state and local agencies to identify and reduce the environmental impacts of land-use decisions. In the context of new development projects the District typically has either a responsible agency or a commenting agency role under CEQA, and reviews and comments on 100 or more projects a year. The District will continue to review development proposals and recommend measures to reduce project-related air quality impacts to ensure that new development does not impact our ozone attainment status. In addition, District staff provides tools and guidance on how to quantify and mitigate air quality impacts related to new developments.

Transportation Control Measures

Generally, TCMs are programs or activities that states and localities can implement to encourage the traveling public to rely less on the automobile or to use the automobile more efficiently. Chapter 5 of this Plan provides a more detailed discussion of the TCMs that have been adopted and continue to be implemented through the planning and funding of various transportation projects and programs in Santa Barbara County. The District participates in the Santa Barbara County Association of Government's (SBCAG) technical review committees, as well as SBCAG's process to develop and update their Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The District also participates in a variety of community programs and events aimed at using automobiles more efficiently or reducing their use, including Santa Barbara County's Sustainability Committee, the Central Coast Clean Cities Coalition, the Green Business Program of Santa Barbara County, Santa Barbara Car Free, and Open Streets events.

Voluntary Incentive Strategies

The District will continue to focus its efforts on initiatives such as effective regional planning strategies, voluntary incentives, and grant programs. The incentive programs that the District already implements continue to achieve cost-effective reductions in ozone precursor emissions. As explained in Chapter 6, new programs have been created and have also been greatly expanded in recent years due to the state allocation of funds to reduce emissions from unregulated sources, and an increased emphasis on addressing air quality impacts in disadvantaged and low-income communities. The District will continue to pursue additional state and federal funds that can be used locally to improve air quality through voluntary programs.

Public Awareness and Education

The District uses a variety of methods to share information about air quality and District programs. Those methods include the District website, news releases, air quality alerts, social media (Twitter, Instagram, and Nextdoor), educational programs, grants to teachers, school and civic group presentations, events and festivals, media interviews, and phone calls with the public. Efforts are made to provide information in both English and Spanish. All of these activities promote agency awareness and involvement in community programs, encouraging Santa Barbara County residents to consider ways in which they can help reduce air quality impacts.

APPENDIX A – 1-HOUR AND 8-HOUR EXPECTED PEAK DAY CONCENTRATIONS

TABLE A-1: STATE 1-HOUR OZONE EPDC – TOP 6 MONITORING SITES

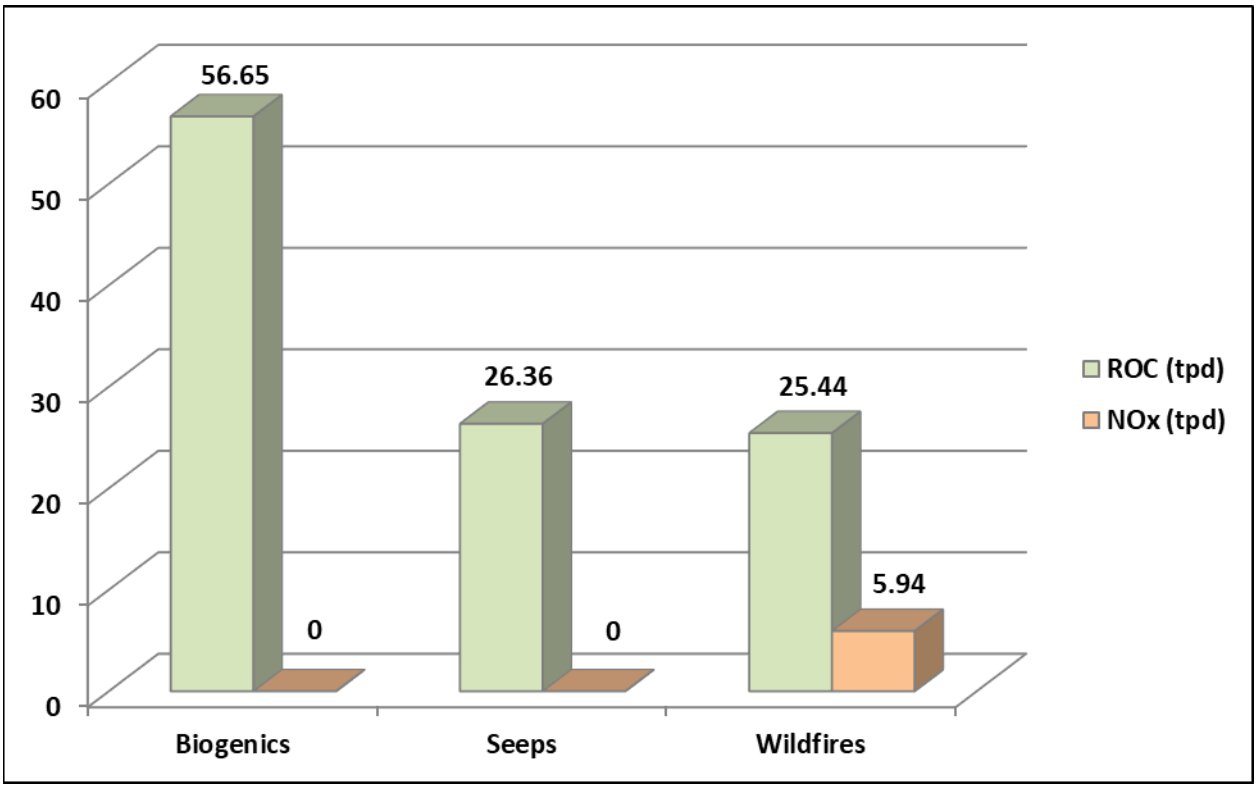
Year	Las Flores Canyon	Paradise Road	Carpinteria	Santa Ynez	Lompoc HS&P	Goleta	State 1-hr Standard
1990	0.139	0.125	0.122	0.106	0.105	0.111	**0.09**
1991	0.136	0.126	0.124	0.105	0.102	0.110	**0.09**
1992	0.129	0.118	0.118	0.099	0.092	0.110	**0.09**
1993	0.121	0.113	0.118	0.100	0.096	0.114	**0.09**
1994	0.121	0.107	0.119	0.100	0.094	0.109	**0.09**
1995	0.122	0.107	0.114	0.097	0.096	0.100	**0.09**
1996	0.131	0.110	0.117	0.102	0.092	0.102	**0.09**
1997	0.124	0.109	0.113	0.100	0.093	0.099	**0.09**
1998	0.116	0.110	0.110	0.098	0.091	0.095	**0.09**
1999	0.103	0.103	0.098	0.087	0.085	0.087	**0.09**
2000	0.100	0.102	0.093	0.088	0.084	0.083	**0.09**
2001	0.097	0.100	0.091	0.088	0.084	0.082	**0.09**
2002	0.095	0.103	0.090	0.088	0.081	0.080	**0.09**
2003	0.092	0.105	0.089	0.089	0.086	0.078	**0.09**
2004	0.095	0.102	0.089	0.092	0.086	0.080	**0.09**
2005	0.094	0.098	0.090	0.091	0.086	0.081	**0.09**
2006	0.092	0.090	0.082	0.084	0.078	0.078	**0.09**
2007	0.090	0.094	0.081	0.081	0.074	0.075	**0.09**
2008	0.090	0.091	0.090	0.081	0.076	0.076	**0.09**
2009	0.093	0.088	0.094	0.081	0.077	0.075	**0.09**
2010	0.088	0.086	0.096	0.082	0.078	0.075	**0.09**
2011	0.087	0.086	0.092	0.078	0.076	0.072	**0.09**
2012	0.082	0.082	0.085	0.075	0.074	0.069	**0.09**
2013	0.079	0.078	0.082	0.072	0.074	0.069	**0.09**
2014	0.083	0.075	0.085	0.073	0.073	0.075	**0.09**
2015	0.082	0.076	0.084	0.075	0.073	0.077	**0.09**
2016	0.082	0.076	0.083	0.075	0.070	0.078	**0.09**
2017	0.080	0.075	0.071	0.072	0.071	0.076	**0.09**
2018	0.079	0.075	0.072	0.071	0.070	0.072	**0.09**

TABLE A-2: STATE 8-HOUR OZONE EPDC – TOP 6 MONITORING SITES

Year	Las Flores Canyon	Paradise Road	Carpinteria	Santa Ynez	Lompoc HS&P	Goleta	State 8-hr Standard
1990	0.111	0.110	0.100	0.092	0.094	0.093	**0.070**
1991	0.111	0.111	0.098	0.091	0.088	0.091	**0.070**
1992	0.108	0.106	0.094	0.086	0.081	0.093	**0.070**
1993	0.102	0.104	0.097	0.086	0.086	0.094	**0.070**
1994	0.104	0.098	0.096	0.089	0.086	0.092	**0.070**
1995	0.107	0.098	0.094	0.087	0.087	0.087	**0.070**
1996	0.112	0.101	0.095	0.092	0.084	0.088	**0.070**
1997	0.110	0.099	0.093	0.089	0.083	0.086	**0.070**
1998	0.101	0.100	0.089	0.088	0.082	0.082	**0.070**
1999	0.092	0.091	0.080	0.075	0.078	0.073	**0.070**
2000	0.091	0.091	0.079	0.077	0.077	0.070	**0.070**
2001	0.087	0.090	0.078	0.078	0.078	0.071	**0.070**
2002	0.084	0.092	0.076	0.080	0.075	0.069	**0.070**
2003	0.081	0.095	0.074	0.081	0.079	0.068	**0.070**
2004	0.085	0.093	0.077	0.083	0.080	0.071	**0.070**
2005	0.085	0.090	0.079	0.081	0.079	0.072	**0.070**
2006	0.083	0.084	0.072	0.074	0.072	0.070	**0.070**
2007	0.080	0.084	0.070	0.070	0.069	0.066	**0.070**
2008	0.080	0.084	0.078	0.073	0.071	0.066	**0.070**
2009	0.084	0.081	0.082	0.074	0.072	0.065	**0.070**
2010	0.082	0.079	0.083	0.075	0.072	0.065	**0.070**
2011	0.080	0.079	0.080	0.072	0.071	0.065	**0.070**
2012	0.074	0.077	0.074	0.069	0.070	0.061	**0.070**
2013	0.071	0.073	0.074	0.065	0.069	0.064	**0.070**
2014	0.074	0.073	0.076	0.067	0.070	0.070	**0.070**
2015	0.076	0.073	0.076	0.070	0.070	0.070	**0.070**
2016	0.076	0.072	0.074	0.070	0.068	0.071	**0.070**
2017	0.075	0.069	0.062	0.068	0.068	0.068	**0.070**
2018	0.072	0.068	0.063	0.066	0.068	0.065	**0.070**

APPENDIX B – EMISSIONS FROM NATURAL SOURCES

FIGURE B-1: 2017 NATURAL SOURCE ROC AND NOX (TONS PER DAY)



Biogenics:

Biogenic emissions consist of isoprenes, terpenes, and other ROCs that are emitted from plants and trees. The California Air Resources Board estimates biogenic emissions using the MEGAN model (Model of Emissions of Gases and Aerosols from Nature).

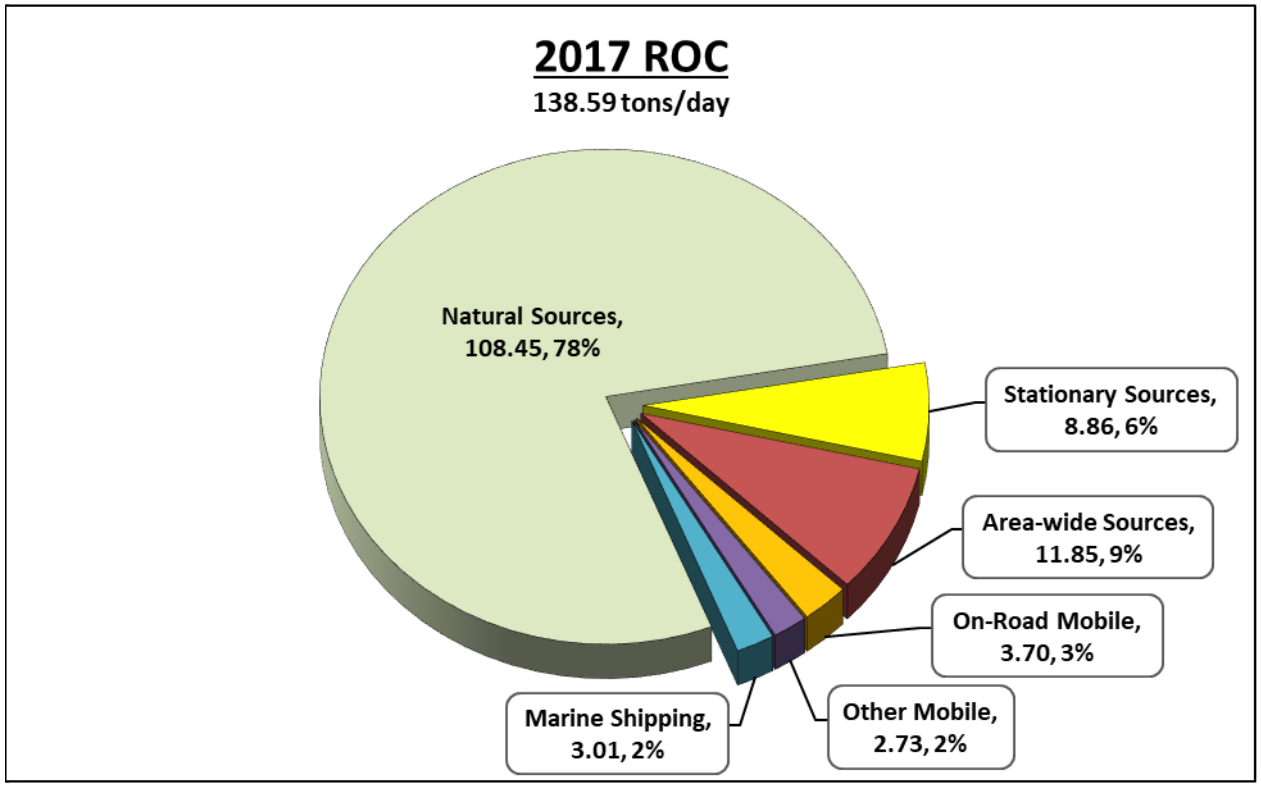
Seeps (or Geogenic Emissions):

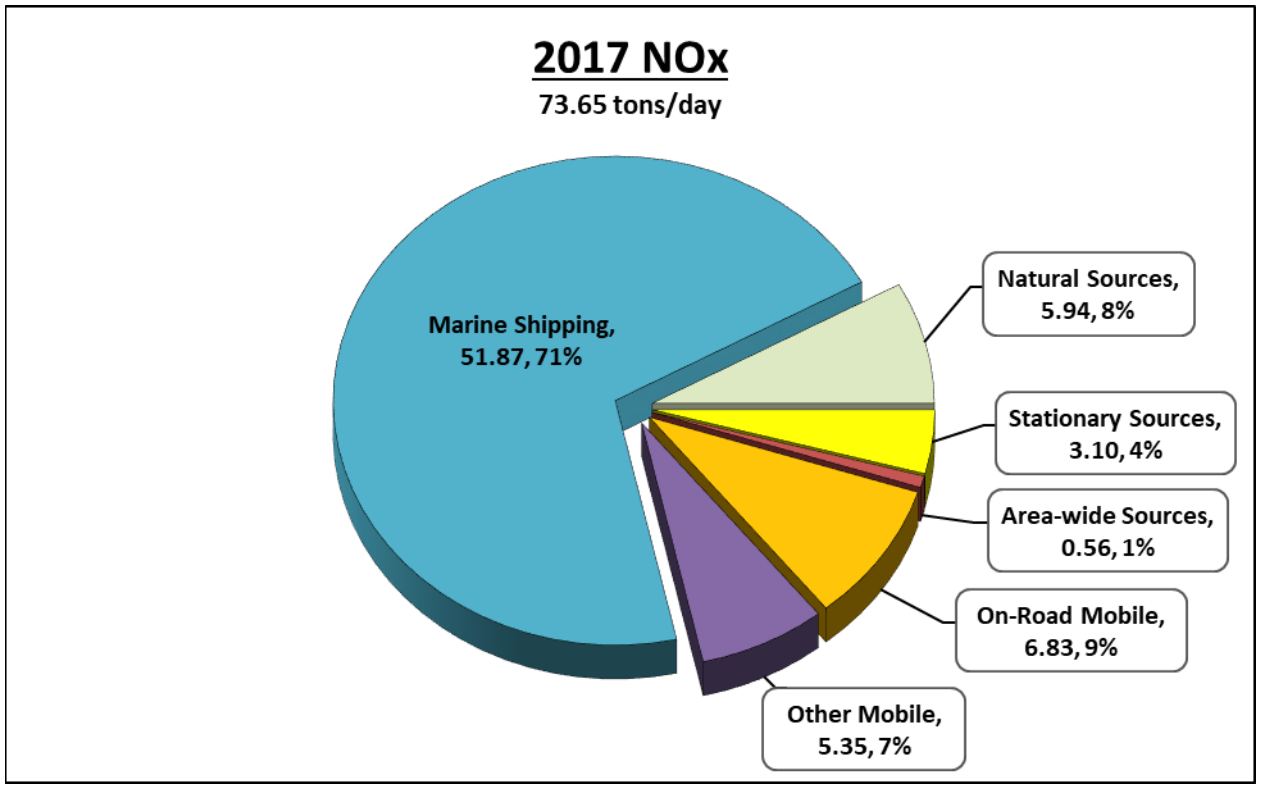
Oil and gas seeps have occurred naturally off the coast of California for thousands of years. They are associated with cracks in the Earth's crustal layers in which oil floats to the surface of the water and gas bubbles out and escapes into the air. The emissions are estimated by the District using a combination of various studies surrounding Coal Oil Point, which is located in the Santa Barbara Channel.

Wildfires:

A wildfire is an unplanned, natural event that burns a variety of vegetation types. The California Air Resources Board estimates wildfire emissions using the FOFEM model (First Order Fire Effects Model). This model uses Geographic Information Systems (GIS) data on the fire perimeters, vegetation composition, fuel density (tons/acre), and fuel moisture to estimate the emissions. Wildfires do not include prescribed burns, as prescribed burns are planned events to ignite the fire for resource or safety benefits.

FIGURE B-2: 2017 ROC AND NOX EMISSIONS – ALL SOURCES (TONS PER DAY)





APPENDIX C – PROJECTED EMISSION IMPACTS FOR CONTROL MEASURES

The following tables show the projected emission impacts for the recently adopted control measures as they relate to the Plan's base year (2017) and two planning years (2025 and 2035). The impacts are assessed by comparing:

a) The emissions of the source category *before the control measure* is adopted;
b) The anticipated *reductions achieved* by the control measure; and
c) The emissions of the source category *after the control measure* is adopted.

Rule 360 – Boilers (0.075 – 2 MMBTU/hr)			**Adopted: March 2018**			
NOx Inventory	**2017**		**2025**		**2035**	
	Tons/Day	**Tons/Year**	**Tons/Day**	**Tons/Year**	**Tons/Day**	**Tons/Year**
Before Control Measure	0.12	42.30	0.13	47.38	0.14	51.06
Reductions Achieved	---	---	0.02	7.76	0.06	20.31
After Control Measure	---	---	0.11	39.62	0.08	30.74

Rule 361 – Boilers (2 – 5 MMBTU/hr)			**Adopted: June 2019**			
NOx Inventory [24]	**2017**		**2025**		**2035**	
	Tons/Day	**Tons/Year**	**Tons/Day**	**Tons/Year**	**Tons/Day**	**Tons/Year**
Before Control Measure	0.11	40.91	0.05	19.25	0.06	20.75
Reductions Achieved	---	---	0.01	3.89	0.03	12.58
After Control Measure	---	---	0.04	15.36	0.02	8.17

Rules 342 – Boilers (5+ MMBTU/hr)			**Adopted: June 2019**			
NOx Inventory	**2017**		**2025**		**2035**	
	Tons/Day	**Tons/Year**	**Tons/Day**	**Tons/Year**	**Tons/Day**	**Tons/Year**
Before Control Measure	0.04	14.40	0.04	15.16	0.04	16.00
Reductions Achieved	---	---	0.01	2.23	0.02	7.07
After Control Measure	---	---	0.04	12.93	0.02	8.94

[24] The Rule 361 "Before Control Measure" inventory includes the 2008-adopted compliance schedule for existing units, which required units to meet 30 ppm NOx no later than January 1, 2020.

Summary of CAC Comments and Responses

Items discussed at the August 28, 2019 Community Advisory Council (CAC) meeting

Following is a summary of items that were identified by CAC members at the August 28 CAC meeting, and revisions that were made to the document as a result of the discussion.

Comment #1: What happens to the plan if the District is designated attainment? Is the plan still in effect?

Response/revisions: Yes, the plan is still in effect if the District is designated attainment. The District will continue to implement clean air programs as outlined in the approved plan. As long as the District remains in attainment of the ozone standard, there will be no requirement for a triennial update in 2022.

Comment #2: Do you keep track of how many extreme events happen on a year-to-year basis? Do you expect more extreme events in the future?

Response/revisions: We had two extreme events at the Las Flores Canyon monitoring station in the last 3 year period. If we get more extreme events in the future, that in turn will raise the Expected Peak Day Concentration (EPDC), then any exceedances of the standard may no longer be classified as extreme events. Instead, those exceedances may be considered violations of the standard, which could lead to a redesignation of the District to nonattainment. These concepts are further explained in Chapter 2 of the plan, under "Violations and Designation Values".

Comment #3: Does the California Air Resources Board (CARB) approve the monitoring station locations? The District's monitoring network isn't robust in North County, where there are onshore oil & gas operations.

Response/revisions: Yes, both CARB and US EPA set monitoring station requirements and approve station locations. The monitoring network is designed to cover the diverse range of topography, meteorology, emissions and air quality in Santa Barbara County, while adequately representing the population in the County. Furthermore, the County has one of the most robust ozone monitoring networks in California. Our air monitoring network plan is reviewed once per year and is available on our website.

Comment #4: Request to include the Goleta EPDC values on Figures 2-2 and 2-3.

Response/revisions: The Goleta EPDC values have been added to the figures and are also listed in Appendix A.

Comment #5: Has the District evaluated why Las Flores Canyon had the exceedances when the oil & gas operations in that area were shutdown after the pipeline rupture?

Response/revisions: Ozone is a regional pollutant. The Las Flores Canyon monitoring station typically records high ozone values when there are elevated temperatures, stagnant air conditions, and ozone precursors produced locally and transported in from other areas. Additional information regarding the exceedances will be presented at the October CAC meeting.

Comment #6: Wildfires produce a lot of pollutants, but we weren't showing any ozone exceedances last year when there were a lot of wildfires. Why?

Response/revisions: The wildfires created a lot of pollution, but the meteorological conditions during the wildfires were not conducive to creating ozone exceedances. We had multiple particulate matter exceedances due to the Northern California wildfires, but this plan is focused on ozone exceedances, not particulate matter.

Comment #7: Will the District continue to assess an Air Quality Attainment Plan (AQAP) fee once the District is in attainment for the ozone standard?

Response/revisions: Yes, the fee will still be assessed. District staff continues to maintain the emission inventory and plan for clean air. Also, NOx and ROC are precursor pollutants to particulate matter (PM) pollution, and the District is currently nonattainment for the state PM_{10} standard. Chapter 7 of the draft plan includes a discussion of the District's strategy to maintain the state ozone standards, including improvements to the emission inventory and reporting, as well as continued implementation of voluntary and regulatory programs.

Comment #8: The oil & gas growth factor in Chapter 3 should be compared to 2017, not 2005.

Response/revisions: The District reviewed the 2017 emission inventory data and projected it into the future based on certain assumptions, such as offshore platforms being decommissioned and new onshore projects being constructed. The District reaffirms that a growth factor of 1.0 is a conservative estimate. Additional information on the oil & gas growth factor has been added to Chapter 3 and it will also be brought to the October CAC meeting for CAC discussion.

Comment #9: Do we include emissions from cannabis activities, including vapor phase odor control systems, in our inventory?

Response/revisions: ROC emissions associated with the growing and harvesting of cannabis are considered a biogenic source, which is not a part of our ***planning*** emission inventory. The California Air Resources Board is responsible for updating the emission estimates for

biogenic sources. The current models and methodologies are focused on the Base Year of 2017, before the cannabis sector expanded.

The use of odor control systems during the cannabis growing process is outside of the District's regulatory authority. Additional information on this topic can be found in the APCD's Advisory on Air Quality and Cannabis Operations, available here: www.ourair.org/wp-content/uploads/APCD-Cannabis-Advisory-v2.pdf. Vapor phase solutions that are used to control odors during the cannabis growing process typically consist of water, surfactants, and oils. Based on our current understanding of these odor control systems, they are not a large source of ROCs. However, the cannabis industry in Santa Barbara County is evolving, and the District will continue to monitor the situation and evaluate how these products are included in the ROC emissions inventory.

Cannabis manufacturing operations that are subject to District permit requirements will be included as point sources in our inventory. More information on District permit requirements for the manufacturing, distribution and storage of cannabis products is available on the District's website at www.ourair.org/cannabis.

The ozone monitor in Gobernador Canyon in Carpinteria measures ozone levels in the area, and will serve as a good indicator of changes in ozone concentrations over time due to process changes at greenhouses in the area. Figures 2-2 and 2-3 of the draft plan include Expected Peak Day Concentration values at this location from 1990 to 2018.

Comment #10: Do we include ROC emissions from pesticides and fertilizers in our inventory?

Response/revisions: Yes, pesticides and fertilizers are included in our ROC inventory under the Area Source category. CARB receives the usage information from the Department of Pesticide Regulations (DPR), who in turn gets the information from the county agricultural commissioners. Under California Health and Safety Code §39650(g), DPR and the county agricultural commissioners have the statutory authority to protect the public from harm by regulating the use of all pesticides.

Comment #11: If NOx emissions increase exponentially, could it affect our attainment status?

Response/revisions: Yes. An increase in NOx emissions could create higher levels of ozone in the County, which in turn could cause the District to be redesignated as nonattainment for the state ozone standard.

Comment #12: Why was there a delay in the fleet turnover of Tier 3 engines for marine shipping?

Response/revisions: The original estimates for the marine shipping category assumed that all newly built ships in 2016 and beyond would use Tier 3 engines, in accordance with the

IMO (International Maritime Organization) regulation. However, many ship builders laid an abundance of ship keels right before the change in regulations, so it effectively created a 6 to 10 year backlog of ships that can be built with the less expensive and higher emitting Tier 2 engines that will be in use for many years in the future.

Comment #13: The revised Marine Shipping methodology….is that a result of your VSR program?

Response/revisions: Our Vessel Speed Reduction program has helped reduce the marine shipping emissions in the region, but it is not the only factor contributing to the revised methodology. Vessel operators can see a drastic reduction in fuel costs if they lower their ship speeds. And as more and more companies recognize the benefits of slow steaming, the methodology needs to be updated to reflect the industry's change in behavior. Hence, we're working with CARB to have them update their methodology.

Comment #14: Can you add a cannabis emission control measure to Further Study?

Response/revisions: Biogenic emissions from cannabis growing operations are natural sources of pollution that cannot be regulated by an Air District, which is why they're not included in the ***planning*** emission inventory. The District will still provide guidance and recommendations on abatement strategies to help avoid odor nuisances while limiting ROC emissions. Additionally, the manufacturing and processing operations will be permitted in accordance with District rules.

The District will continue to monitor and evaluate information related to ROC emissions from cannabis cultivation. More information regarding the air quality requirements surrounding cannabis operations can be found at our website: https://www.ourair.org/cannabis/

Comment #15: Why are you removing the two further study measures? [Reference Rule 316 – Agricultural Gas Tank provisions and Rules 325, 326, 343, 344 – Oil & Gas Solvent provisions]

Response/revisions: The two further study measures that were included in the 2016 Ozone Plan were anticipated to achieve approximately 6 tons per year of ROC reductions. These measures would require multiple smaller facilities to obtain permits or registrations to enforce the provisions, which results in a lot of resources to achieve minimal reductions. Whereas the composting measure is anticipated to achieve approximately 28 tpy at one facility, requiring far less resources to achieve these reductions. Furthermore, composting is the more significant source category due to the new state efforts to divert waste from the landfills, and the District wanted to update the Further Study list to reflect its higher priority.

Written comments received

In addition to discussion at the CAC, two CAC members submitted written comments and clarifying questions.

Comment #1: Are PCEC's NOX emissions really 171 tons per year? If so, why so high?

Response/revisions: Yes. Based on the annual emission inventory reports submitted to the District, PCEC – Orcutt Hill had 171 tons of NOx emission in 2017. The NOx emissions are almost entirely attributed to the internal combustion engines at the source. Many of these engines were derated to be below 50 brake horsepower in the early 1990s, which made them exempt from the emission standards in District Rule 333. This derated engine exemption in Rule 333 will be reevaluated in 2021 due to the District Board-approved AB 617 BARCT rule development schedule. We're anticipating at least 70 tpy NOx reductions at the source once the new Rule 333 amendments are implemented, as the engines would most likely be equipped with a 3-way catalyst or replaced with an electric motor. For more information, please refer to BARCT staff report at our website: https://www.ourair.org/community-air/

Comment #2: In regards to the oil & gas growth factor, "not expected to increase beyond their recorded level in 2005" is an unacceptable baseline and cause for concern, as in 2005 we weren't meeting 8-hour ozone standards anywhere in the county. Per Figure 3-3, that would represent a 35% increase or 558 tons increase in sector emissions. Adding up Exxon's facility emissions, plus the estimated emissions from the AERA, ERG and PetroRock (which represent a tripling of onshore oil production), that is a real risk if all those projects were to be approved and move forward. The potential is even greater than that. For instance, ERG was just purchased and the sellers advertised 1,500 undeveloped locations and 47,000 bopd by 2027, significantly larger than their current proposed project. We should revisit the ozone plan if oil expansion is approved.

Response/revisions: See response to Comment #8 above. As part of the District's maintenance strategy, we will continue to track all inventory and monitoring data, whether or not the oil expansion is approved. Per conversations with CARB staff, there is no requirement to provide triennial updates to the Ozone Plan as long as the District remains in attainment with the ozone standard. However, if the region experiences more ozone exceedances in the future and becomes nonattainment for the state ozone standard, the District will once again be required to provide a triennial update to the Ozone Plan.

Corrections/Revisions made to Chapters 1 through 3

In response to the comments, corrections and revisions were made to the text and figures in the draft Plan. Minor corrections are not specifically identified.

- Updated Table 1-1 column title from "Concentration" to "Statutory Standard."
- Updated Table 1-2 to include references to Chapter 6 – Voluntary Incentive Strategies and Chapter 7 – Maintenance Strategy.
- Additional text was added to Chapter 2:
  - To explain the health effects of ground-level ozone pollution, how ozone is created, and to describe the metrological conditions that can cause high ozone levels.
  - To clarify the definitions of *exceedances*, *violations*, *extreme events*, and *designation values*.
- Figures 2-2, 2-3, and Appendix A were revised to include the EPDC values for the Goleta monitoring station.
- Additional text was added to Chapter 3 to identify additional assumptions regarding the oil & gas growth factor.
- Figure 3-4 was revised to depict the total emission reductions that would be removed from the inventory if the revised marine shipping methodology was used. This graphic was shown during the August CAC presentation.
- Figures 3-5 and 3-6 were updated to include data for additional years prior to 2017, as updated data was recently made available CARB.