

2019 Air Quality Report for the Austin-Round Rock-Georgetown Metropolitan Statistical Area

Prepared by the Capital Area Council of Governments

July 31, 2020



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Executive Summary

This is the annual air quality report for the Austin-Round Rock-Georgetown Metropolitan Statistical Area (MSA) prepared by the Capital Area Council of Governments (CAPCOG) for the members of the Central Texas Clean Air Coalition (CAC), the Texas Commission on Environmental Quality (TCEQ), and the U.S. Environmental Protection Agency (EPA). This report serves as the region's annual "check-in" with EPA as part of the CAC's participation in the Ozone (O₃) Advance Program (OAP). The report covers January 1, 2019, through December 31, 2019. Under the most recent MSA definitions promulgated by the Office of Management and Budget (OMB) in March 2020, the Austin-Round Rock-Georgetown MSA consists of Bastrop, Caldwell, Hays, Travis, and Williamson Counties, which are the same five counties that have been participating in regional air quality planning efforts since 2002. This is the first annual report covering the region's 2019-2023 Regional Air Quality Plan that was adopted in December 2018.

The report is intended to do the following:

- Provide an update to EPA, TCEQ, and local stakeholders on the status of air quality in the Austin-Round Rock-Georgetown MSA through the end of 2019 (Section 1);
- Provide an update on the latest understanding of the contribution of the region's emissions to high O₃ levels when they occur (Section 2);
- Summarize the status of emission reduction measures implemented in the region in 2019 (Section 3);
- Detail ongoing planning activities in the region (Section 4); and
- Identify new issues affecting air quality planning efforts in 2019 and beyond (Section 5).

Some of the highlights of the report are listed below:

- The region's 2019 air pollution levels continued to meet all federal air quality standards, although O₃ levels were high enough to put the region at risk of violating the O₃ standard for 2019-2020 if O₃ levels are higher in 2020;
- There were a total of 3 days when monitored air pollution levels were considered "unhealthy for sensitive groups" and another 132 days when air pollution levels were considered "moderate," according to EPA's Air Quality Index (AQI);
- PM_{2.5} levels measured within the region were high enough on one day to be considered "unhealthy for sensitive groups;"
- While overall emissions of nitrogen oxides (NO_x) continued to trend downward, emissions from regional power plants during the 2019 O₃ season were higher than they were in 2018;
- Emission reduction measures implemented by the state and local partners in 2019 continued to help significantly control regional O₃ levels; and
- CAPCOG is working with the CAC and CACAC to consider EPA's recommendation that the region consider participating in EPA's Advance Program.

This report includes information from 31 different CAC member organizations. Another eight CAC member organizations did not provide reports this year. CAPCOG will provide an addendum to this report to CAC members, TCEQ, and EPA, if these organizations provide reports or we receive any updates from any other organization after this report has been submitted. A supplemental spreadsheet provides details of each organization's reported activities.

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List of Acronyms

AACOG: Alamo Area Council of Governments	MDA8: Maximum Daily 8-Hour Average
AFFP: Alternative Fueling Facilities Program	µg/m ³ : Micrograms per cubic meter
AQI: Air Quality Index	MOVES: Motor Vehicle Emissions Simulator
CAC: Clean Air Coalition	MSA: Metropolitan Statistical Area
CACAC: Clean Air Coalition Advisory Committee	NAAQS: National Ambient Air Quality Standards
CAMPO: Capital Area Metropolitan Planning Organization	NO _x : Nitrogen oxides
CAPCOG: Capital Area Council of Governments	NO ₂ : Nitrogen dioxide
CapMetro: Capital Metropolitan Transit Authority	NTIG: New Technology Implementation Grant
CAMS: Continuous Air Monitoring Station	O ₃ : Ozone
CAPP: Clean Air Partners Program	OAD: Ozone Action Day
CO: Carbon Monoxide	OAP: Ozone Advance Program
CSB: Clean School Bus	PACE: Property-Assessed Clean Energy
CTRMA: Central Texas Regional Mobility Authority	Pb: Lead
CTT: Clean Transportation Triangle	PM _{2.5} : Particulate matter with a diameter of 2.5 microns or less
DACM: Drive a Clean Machine	PM ₁₀ : Particulate matter with a diameter of 10 microns or less
DERI: Diesel Emission Reduction Incentive	PPB: Parts per billion
DFW: Dallas-Fort Worth	PPM: Parts per million
DTIP: Drayage Truck Incentive Program	SIP: State Implementation Plan
EAC: Early Action Compact	SO ₂ : Sulfur dioxide
EE/RE: Energy efficiency and renewable energy	TCEQ: Texas Commission on Environmental Quality
EPA: U.S. Environmental Protection Agency	TDM: Travel Demand Management
ERIG: Emission Reduction Incentive Grant Program	TERP: Texas Emission Reduction Plan
I/M: Inspection and maintenance	TCFP: Texas Clean Fleet Program
ILA: Inter-Local Agreement	TNGVGP: Texas Natural Gas Vehicle Grant Program
LCRA: Lower Colorado River Authority	TxDOT: Texas Department of Transportation
LSCFA: Lone Star Clean Fuels Alliance	TexN: Texas NONROAD Model
LIP: Local Initiative Project	VMT: Vehicle Miles Traveled
LIRAP: Low-Income Vehicle Repair, Retrofit, and Accelerated Vehicle Retirement Program	VOC: Volatile Organic Compound

1 Air Quality Status

The following bullet points summarize the status of the Austin-Round Rock-Georgetown MSA's air quality status as of the end of 2019:

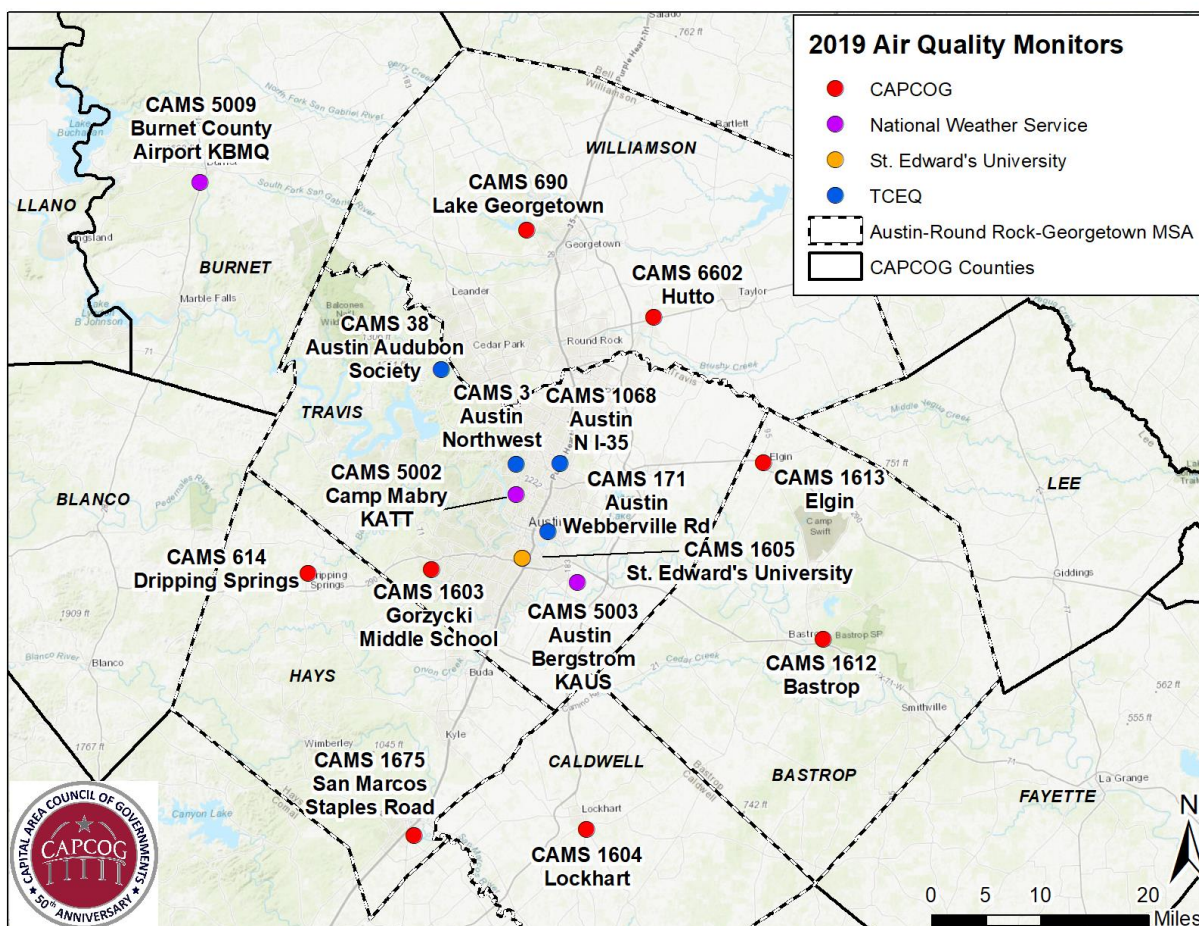
- Air pollution levels throughout the metro area remained in compliance with all National Ambient Air Quality Standards (NAAQS), although the region's 2017-2019 O₃ levels were just 1% below the 2015 O₃ NAAQS.
- Through the end of 2019, City of Austin is the 2nd-largest in the U.S. with air pollution levels in compliance with all NAAQS, and is the largest city in the U.S. designated "attainment/unclassifiable" for all NAAQS (San Jose, which is the next-largest city, also attains all NAAQS, but Santa Clara County where it is located, is part of the San Francisco Bay O₃ nonattainment area).
- All five of the counties in the Austin-Round Rock-Georgetown MSA remain designated as "attainment/unclassifiable" for the 2015 O₃ NAAQS and all other NAAQS.
- The region recorded two days when O₃ levels were considered "unhealthy for sensitive groups," as well as an additional 132 days when either O₃ or PM_{2.5} levels were considered "moderate," based on EPA's AQI.
- The region's cumulative seasonal O₃ levels were 55% below the levels that EPA considers harmful to vegetation.
- TCEQ has not completed a new review of air toxics data collected at CAMS 171 since 2017, which reflected 2016 data. That review, however, found that all air toxics levels measured were below the levels that would be expected to cause adverse health or environmental impacts.
- One out of five TCEQ Ozone Action Day (OAD) forecasts correctly predicted O₃ levels > 70 ppb.
- Overall, TCEQ's daily AQI forecasts correctly predicted "moderate" or worse air quality 56% of the time, but they only were able to predict 45% of all days when the AQI levels were "moderate" or worse within the region.
- There were a total of 870 odor complaints reported to the TCEQ from within the Austin-Round Rock-Georgetown MSA in 2019, up significantly from the 476 reported in 2018, and higher on a per-capita basis (3.91) than the number of complaints per capita statewide (3.15).

While the region was able to narrowly remain in compliance with the NAAQS through the end of 2019, there were a total of two days when air pollution levels within the region was considered "unhealthy for sensitive groups" for ground-level O₃.

The following map shows the locations of all of the Continuous Air Monitoring Stations (CAMS) that collect air pollution and meteorological data around the Austin-Round Rock-Georgetown MSA, including the monitors operated by TCEQ, CAPCOG, St. Edward's University, and the National Weather Service.

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Figure 1-1. 2019 Air Quality Monitors in the Austin-Round Rock-Georgetown MSA and CAPCOG Counties Cited in the Report



1.1 Compliance with the NAAQS

The Austin-Round Rock-Georgetown MSA's 2019 design values for carbon monoxide (CO), nitrogen dioxide (NO₂), O₃, particulate matter with diameters of 2.5 micrometers or less (PM_{2.5}), particulate matter with diameters of 10 micrometers or less (PM₁₀), and sulfur dioxide (SO₂) were all in compliance with the applicable NAAQS. Lead (Pb) is not monitored within the region. Table 1-1 shows all of the NAAQS currently in effect.

Table 1-1. NAAQS Currently in Effect

Pollutant	Standard Type	Averaging Time	Level	Form	Impacts of Violating the NAAQS
CO	Primary	8 hours	9 parts per million (ppm)	Not to be exceeded more than once per year	Neurological and cardiovascular impacts, particularly for individuals who are exercising or under stress
	Primary	1 hour	35 ppm	Not to be exceeded more than once per year	
Pb	Primary and Secondary	Rolling 3-month average	0.15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)	Not to be exceeded	Primarily neurological problems for children and cardiovascular problems for adults, but numerous other health impacts as well; ecological damage from deposition
NO₂	Primary	1 hour	100 parts per billion (ppb)	98 th percentile of 1-hour daily maximum concentrations, averaged over 3 years	Respiratory impacts to people with lung disease such as asthma, children and teens, older adults, and people who are active outdoors; contributes to acid rain, visibility impairment, and nutrient pollution in coastal waters
	Primary and Secondary	1 year	53 ppb	Annual mean	
O₃	Primary and Secondary	8 hours	0.070	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	Respiratory impacts to people with lung disease such as asthma, children and teens, older adults, and people who are active outdoors; impacts on plant growth
PM_{2.5}	Primary	1 year	12.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years	Respiratory and cardiovascular impacts on people with lung or heart disease (respectively), older adults, children, and teenagers; visibility impairment
	Secondary	1 year	15.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years	
PM₁₀	Primary and Secondary	24 hours	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years	
SO₂	Primary	1 hour	75 ppb	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years	Respiratory impacts to people with lung disease such as asthma, children and teens, older adults, and people who are active outdoors; impacts plant growth and contributes to acid rain
	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year	

There are four “regulatory” monitoring stations in the Austin-Round Rock-Georgetown MSA, all located in Travis County, that reported data to EPA and were used for comparisons to the NAAQS. Table 1-2 summarizes the Federal Reference Method (FRM)/Federal Equivalent Method (FEM) monitors in the region and the years for which data are available from 2017-2019. CAMS 1068 is the region’s designated “near-road” monitor.

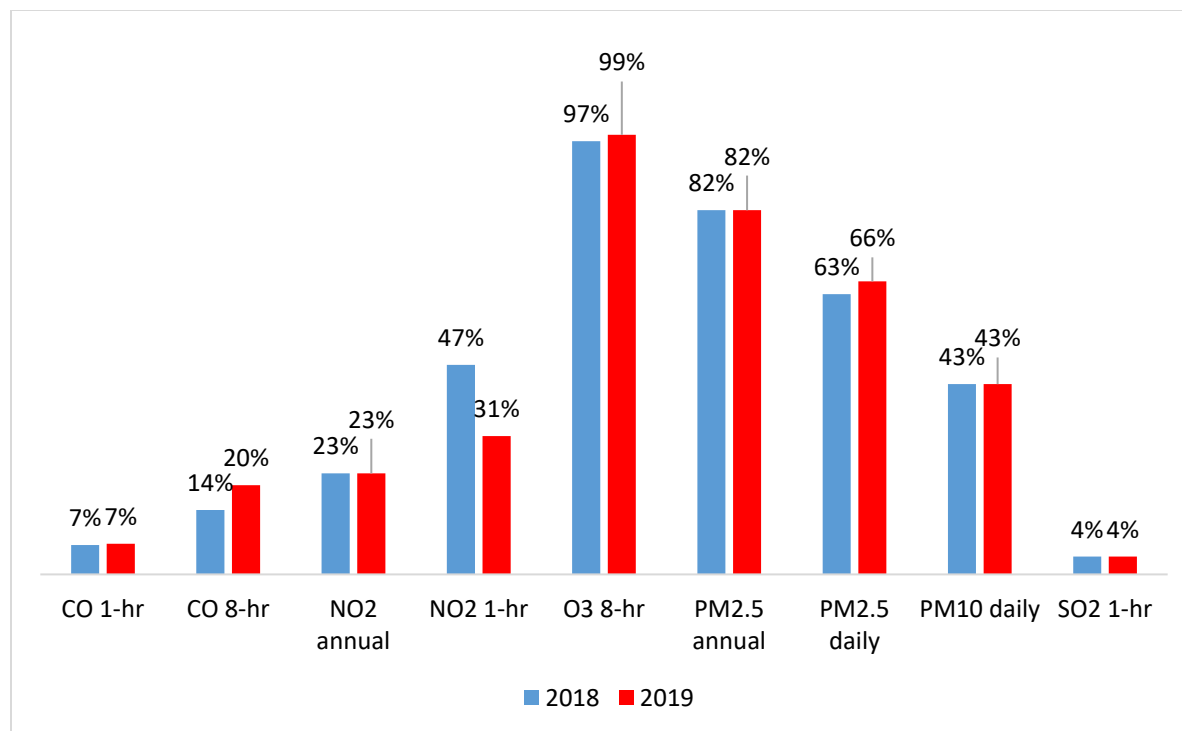
Table 1-2. Summary of Criteria Pollutant Measurement Periods at Federal Reference Method (FRM) Monitors in the Austin-Round Rock-Georgetown MSA, 1/1/2017 – 12/31/2019

Pollutant	Sampler Type	CAMS 3 (AQS Site Number 484530014)	CAMS 38 (AQS Site Number 484530020)	CAMS 171 (AQS Site Number 484530021)	CAMS 1068 (AQS Site Number 484531068)
CO	Continuous, regulatory	n/a	n/a	n/a	1/1/2017 – 12/31/2019
NO ₂	Continuous, regulatory	1/1/2017 – 12/31/2019	n/a	n/a	1/1/2017 – 12/31/2019
O ₃	Continuous, regulatory	1/1/2017 – 12/31/2019	1/1/2017 – 12/31/2019	n/a	n/a
PM _{2.5}	Continuous, non-regulatory	1/1/2017 – 12/31/2019	n/a	n/a	n/a
PM _{2.5}	Continuous, regulatory	n/a	n/a	4/27/2017 – 12/31/2019	10/25/2018 – 12/31/2019
PM _{2.5}	Non-continuous, regulatory	n/a	1/1/2017 – 2/6/2017	1/1/2017 – 12/31/2019	1/7/2017 – 11/22/2018
PM ₁₀	Non-continuous, regulatory	n/a	1/1/2017 – 12/31/2019	1/1/2017 – 12/31/2019	n/a
SO ₂	Continuous, regulatory	1/1/2017 – 12/31/2019	n/a	n/a	n/a

Figure 1-2 shows the metro area’s 2018 and 2019 design values compared to each primary NAAQS. The 2019 design value for 8-hour O₃ was higher than 2018, also the design values for PM_{2.5} saw an increase in 2019 compared to 2018.¹

¹ Data for all pollutants other than PM₁₀ obtained from EPA design value reports posted at: <https://www.epa.gov/air-trends/air-quality-design-values>. PM₁₀ figure calculated as 4th-highest recorded 24-hour PM10 concentration over a 3-year period from data from TCEQ’s website.

Figure 1-2. Austin-Round Rock-Georgetown MSA Design Values as a percentage of Primary NAAQS

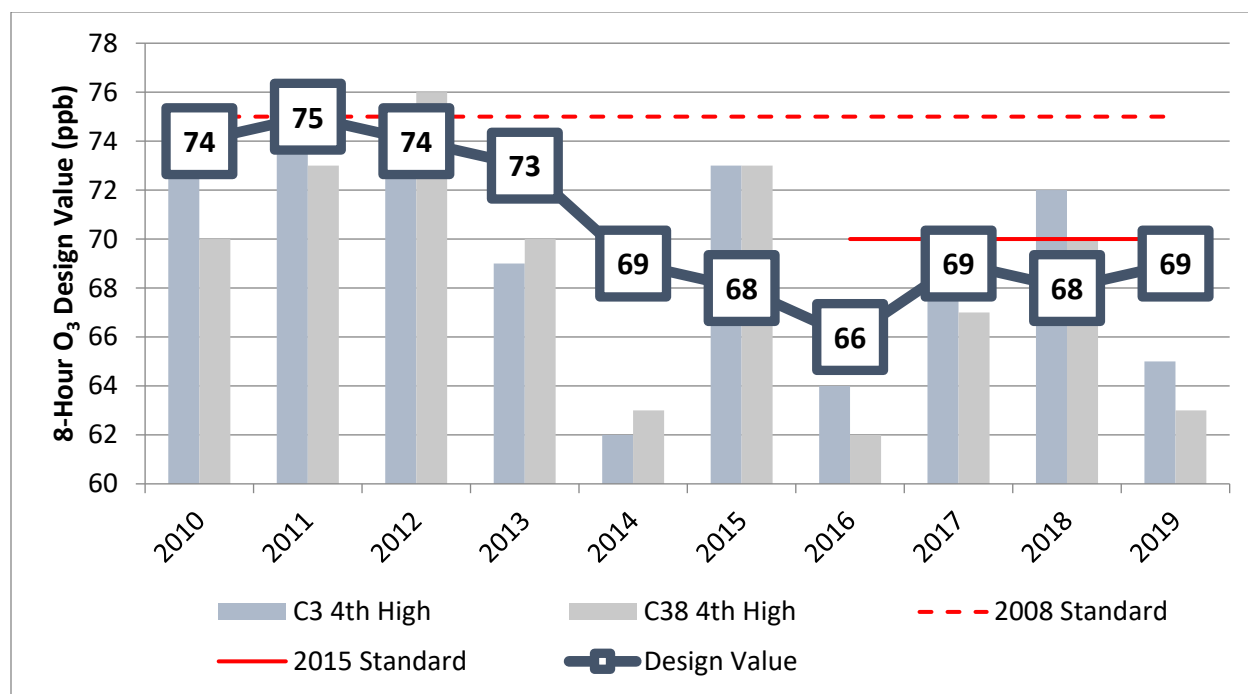


As part of its 2019-2023 Regional Air Quality Plan, the CAC defined “near-nonattainment” as having a design value of at least 85% of any NAAQS. Based on this criteria, O₃ remains the only pollutant for which the Austin area is classified as “near-nonattainment”; although, the annual PM_{2.5} levels are close to being within that range.

1.2 O₃ Design Value Trend

Figure 1-3 below shows the trend in the Austin-Round Rock-Georgetown MSA’s 8-hour O₃ design values from 2010-2019 compared to the 2008 and 2015 8-hour O₃ NAAQS, along with the 4th-highest Maximum Daily 8-Hour Average (MDA8) O₃ at each regulatory O₃ station. MDA8 is the daily maximum 8-hour concentration for a given calendar day that is the highest of the 24 possible 8-hour average concentrations computed for that day.

Figure 1-3. Austin-Round Rock-Georgetown MSA 8-Hour O₃ Design Value and 4th-Highest MDA O₃ Trend 2010-2019



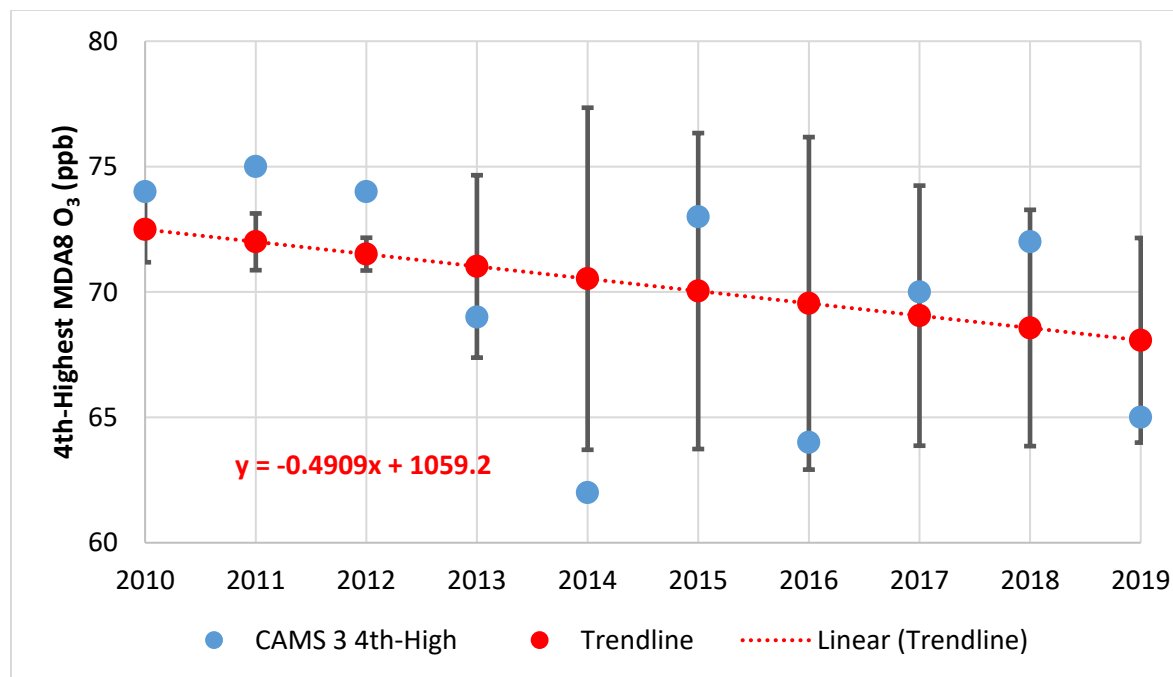
After a 3 ppb increase in the design value from 2016 to 2017, the region experienced a 1 ppb decrease from 2017 to 2018. While the 4th-highest MDA8 O₃ at CAMS 3 (65 ppb) was much lower in 2019 than it was in 2018, due to three-year averaging for the design value and the fact that the 4th-highest MDA8 O₃ in 2019 was higher than it was in 2016 (64 ppb), the 2017-2019 design value was actually 1 ppb higher than the 2016-2018 design value.²

Figure 1-4 below shows the 4th highest MDA8 O₃ values at CAMS 3 since 2010 and compares these values to the trendline and the 95% confidence range³. In 2019, the 4th-highest value was within the 95% confidence range. This indicates that the region experienced a 4th-highest MDA8 O₃ value at CAMS 3 that was within expectations.

² Note that CAMS 3's official 4th highest MDA8 in 2019 was 65 ppb due to EPA's data-handling conventions that allows 6-hour and 7-hour averages to be used if a full 8-hour average is not available, when resulted in the region's official design value being 69 ppb. However, TCEQ's LEADS system appears to only include full 8-hour averages, and the 4th-highest full MDA8 O₃ at CAMS 3 was 63 ppb, which would have led to a 68 ppb design value as suggested on TCEQ's website. CAPCOG became aware of this discrepancy after EPA's 2019 design value reports were posted, and is therefore displaying the official data for 2019, but the 4th-highest data for 2010-2018 for now.

³ 95% confidence interval range is based on the standard deviation for the 3-year design value period associated with that year. So, the standard deviation applicable to the 2019 data reflected 2017-2019 data.

Figure 1-4. CAMS 3 4th-Highest MDA8 O₃ Values, Trendline, and 95% Confidence Intervals, 2010-2019



1.3 Maximum Daily 8-Hour O₃ Averages in the Region

While compliance with the O₃ NAAQS is based on readings recorded at “regulatory” Federal Reference Method (FRM) or Federal Equivalent Method (FEM) O₃ samplers, there are also a number of non-regulatory O₃ monitoring stations in the region that can be used to understand regional O₃ levels. In addition to the two regulatory O₃ monitors that TCEQ operates, CAPCOG collected O₃ data at eight monitoring stations and St. Edward’s University collected data at one additional O₃ monitoring station between 2017 and 2019. These monitoring stations use EPA-approved O₃ sampling methods and data collected during this period followed a Quality Assurance Project Plan (QAPP) approved by TCEQ. However, these were not operated as FRM or FEM monitors, and they are not reported to EPA.

Table 1-3 summarizes the fourth-highest MDA8 O₃ measurements collected at each monitoring station in the CAPCOG region in 2017, 2018, and 2019, as well as the three-year average for each station. CAMS 3 and 38 are the “regulatory” monitoring stations operated by TCEQ, while CAMS 614, 690, 1603, 1604, 1612, 1613, 1675, and 6602 are research monitoring stations operated by CAPCOG. CAMS 1612 and 1613 are new sites for CAPCOG in 2019. CAMS 1605 is owned and operated by St. Edward’s University. Reports documenting the quality-checks performed at CAPCOG’s sites can be found on CAPCOG’s website at <http://www.capcog.org/divisions/regional-services/aq-reports>.

Table 1-3. Fourth-highest MDA8 Measurements at All O₃ Monitoring Stations in the CAPCOG Region, 2017-2019 (ppb)

CAMS	AQS Site Number	County	2017	2018	2019	2017-2019 Average	2017-2019 St. Dev.
3	484530014	Travis	70	72	65	69	3.6
38	484530020	Travis	67	70	63	66	3.5
614	482090614	Hays	67	69	64	66	2.5

CAMS	AQS Site Number	County	2017	2018	2019	2017-2019 Average	2017-2019 St. Dev.
690	484910690	Williamson	70	69	67	68	1.5
1603	484531603	Travis	59	73	64	65	7.1
1604	480551604	Caldwell	67	66	61	64	3.2
1605	484531605	Travis	51	66	58	58	7.5
1612	480211612	Bastrop	n/a	n/a	59	59	n/a
1613	480211613	Bastrop	n/a	n/a	60	60	n/a
1675	482091675	Hays	63	74	63	66	6.4
6602	484916602	Williamson	65	68	60	64	4.0

These data generally show that the 2017-2019 three-year average of the fourth highest MDA8 values in the region ranged from 58 ppb – 69 ppb, with CAMS 3 and CAMS 690 recording the highest of that range.

1.4 Daily Pollution Levels Compared to EPA's AQI

While regulatory compliance is an important indicator of a region's air quality, it is possible for an area to experience numerous NAAQS exceedances multiple times in a given year and still have a compliant design value. A design value also does not directly indicate how frequently a region experienced high pollution levels. Another indicator that can be used to characterize a region's air quality is the number of days a region experiences air pollution levels that fall within each of the AQI categories established by EPA. Table 1-4 shows the concentrations of NO₂, O₃, and PM_{2.5} that correspond to each AQI level.

Table 1-4. Summary of AQI for NO₂, O₃, PM_{2.5}, and PM₁₀

AQI Level	AQI Number	NO ₂ (1-Hr., ppb)	O ₃ (8-Hr., ppb)	PM _{2.5} (24 hr., µg/m ³)	PM ₁₀ (24 hr., µg/m ³)
Good	0-50	0-53	0-54	0.0-12.0	0-54
Moderate	51-100	54-100	55-70	12.1-35.4	55-154
Unhealthy for Sensitive Groups	101-150	101-360	71-85	35.5-55.4	155-254
Unhealthy	151-200	361-649	86-105	55.5-150.4	255-354
Very Unhealthy	201-300	650-1249	106-200	150.5-250.4	355-424
Hazardous	301-500	1250-2049	201-600	250.5-500	425-604

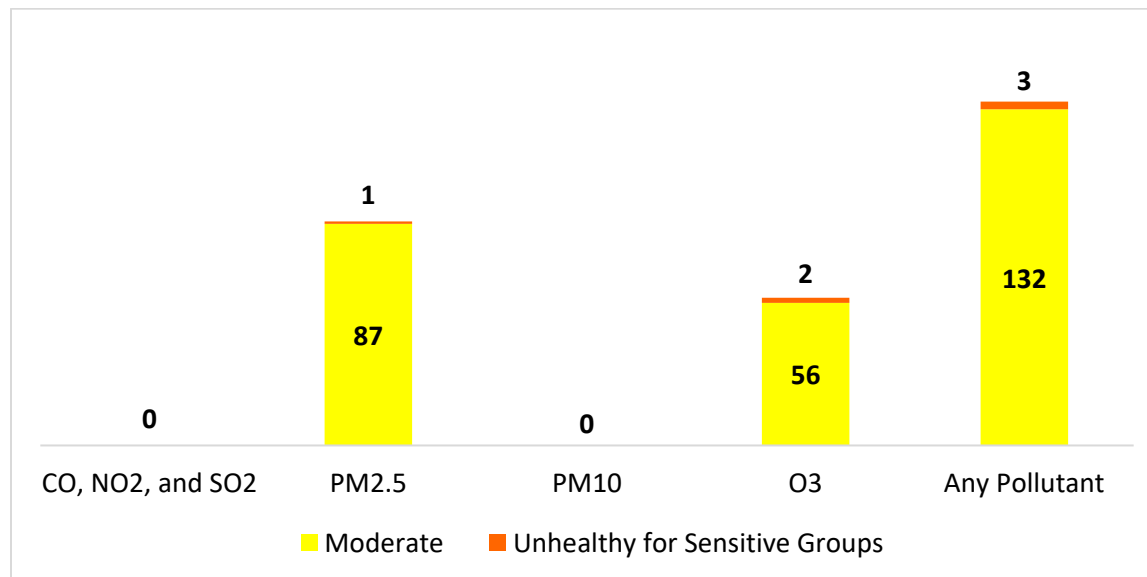
This report includes data from all of the air pollution monitoring stations in the region, not just the TCEQ regulatory monitors that are used for formal AQI reporting to TCEQ. Therefore, the number of days in the “moderate” and “unhealthy for sensitive groups” categories described below are higher than if only the TCEQ regulatory monitors were used.

1.4.1 High AQI Days by Pollutant

The following figures show the number of days in 2019 when PM_{2.5}, PM₁₀, or O₃ concentrations measured in the CAPCOG region were high enough to be considered “moderate” or “unhealthy for sensitive groups.” Monitored pollution levels for CO, NO₂, SO₂, and PM₁₀ all remained in the “good” range throughout the year. In total, the region experienced moderate or worse air quality on 37% of

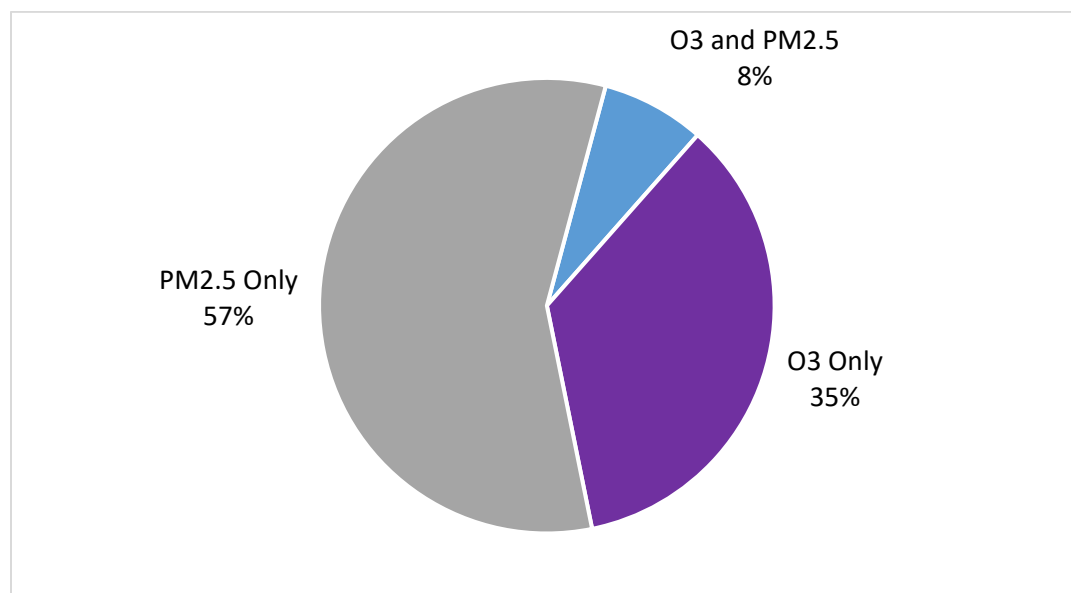
days in 2019, with 3 of those days reaching “unhealthy for sensitive groups” levels. Note that for PM₁₀, sampling only occurs once every six days. Therefore, while there were zero recorded “moderate” PM₁₀ days in 2019, there could have been some days that were not “good.”

Figure 1-5. Number of “Moderate” or “Unhealthy for Sensitive Groups” Air Pollution Days in the CAPCOG Region in 2019 by Pollutant



High levels of O₃ were responsible for the majority of the days when the region experienced air pollution levels considered “unhealthy for sensitive groups”. However, high levels of PM_{2.5} were responsible for a majority of the days when air pollution levels were considered “moderate.” Figure 1-6 shows the distribution of days when air pollution was considered at least “moderate” by pollutant.

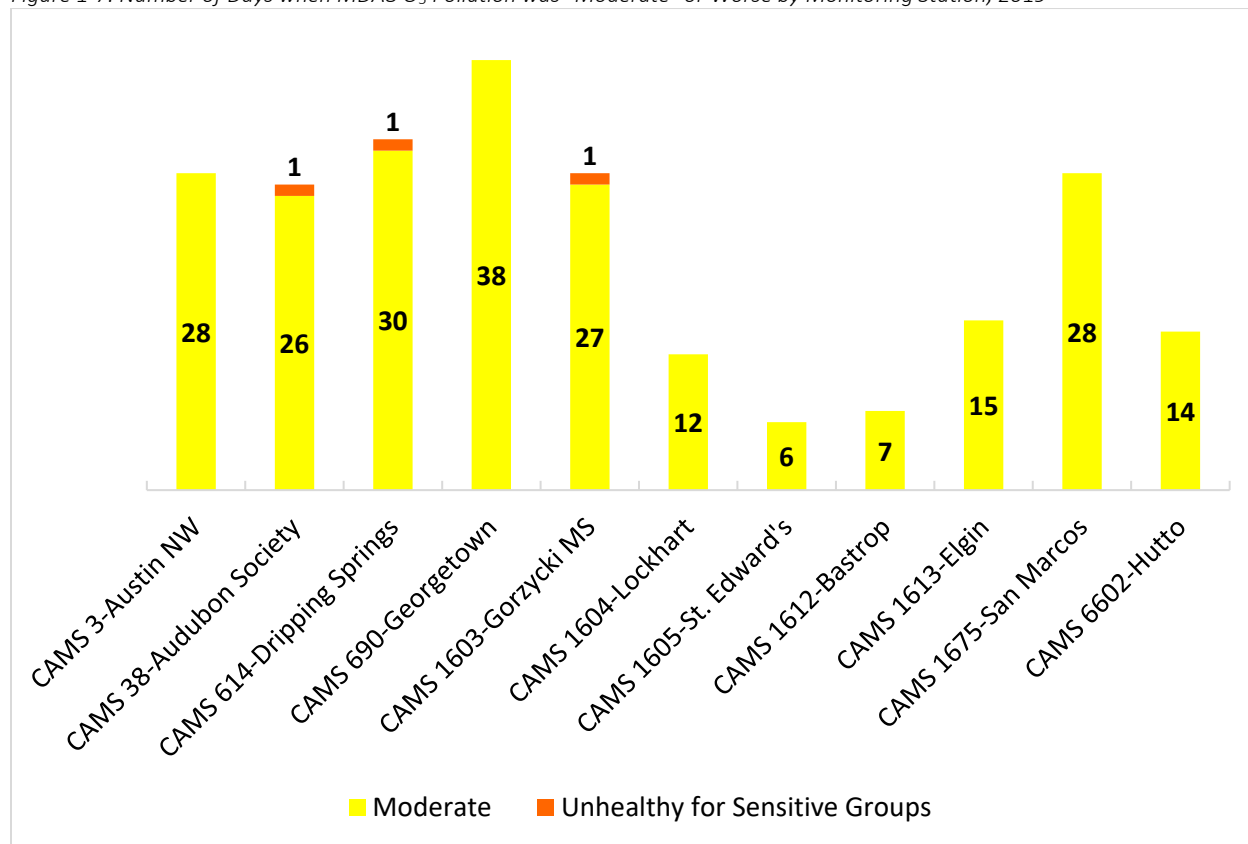
Figure 1-6. Days in 2019 When AQI Levels in the MSA Were “Moderate” or Worse



1.4.2 High O₃ AQI Days by Monitoring Station

The following figures show the number of days when O₃ levels were considered “moderate” or “unhealthy for sensitive groups” at each O₃ monitoring station in the region in 2019. CAMS 38, CAMS 614, and CAMS 1603 recorded ozone levels that were “unhealthy for sensitive groups” on two days in 2019.

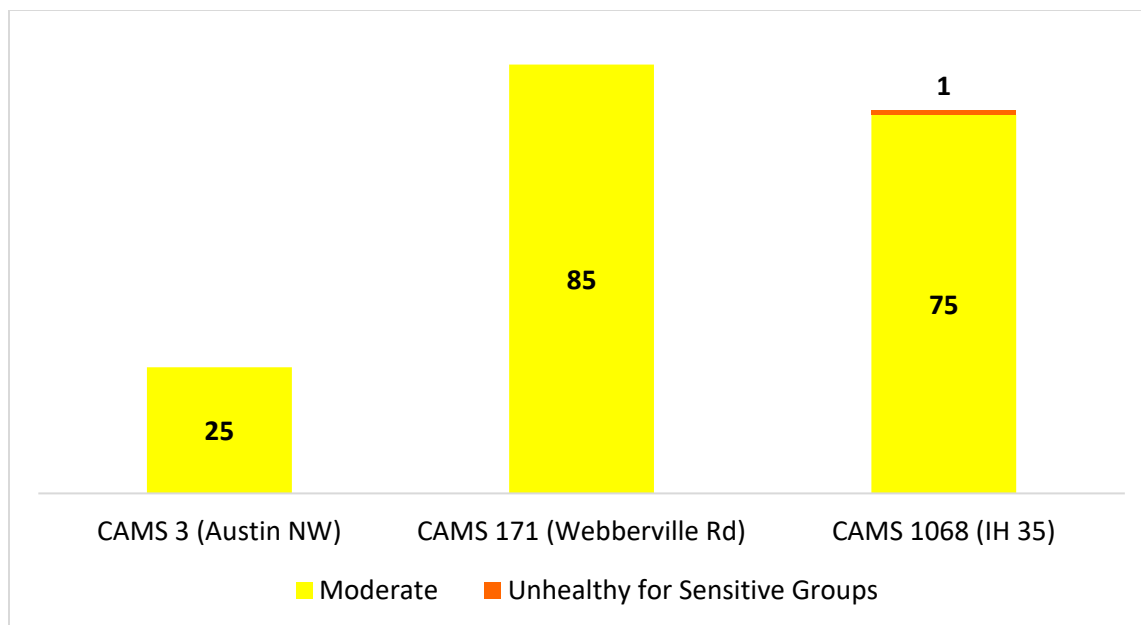
Figure 1-7. Number of Days when MDA8 O₃ Pollution was “Moderate” or Worse by Monitoring Station, 2019



1.4.3 High PM AQI Days by Monitoring Station

Figure 1-8 shows the number of days when PM_{2.5} levels were considered “moderate” or “unhealthy for sensitive groups” at each PM_{2.5} monitoring station in the region in 2019. These data are based on daily average PM_{2.5} levels collected from continuous samplers at CAMS 3, CAMS 171, and CAMS 1068, which are all located within the City of Austin.

Figure 1-8. Number of Days when PM_{2.5} Pollution was "Moderate" or Worse by Monitoring Station, 2019

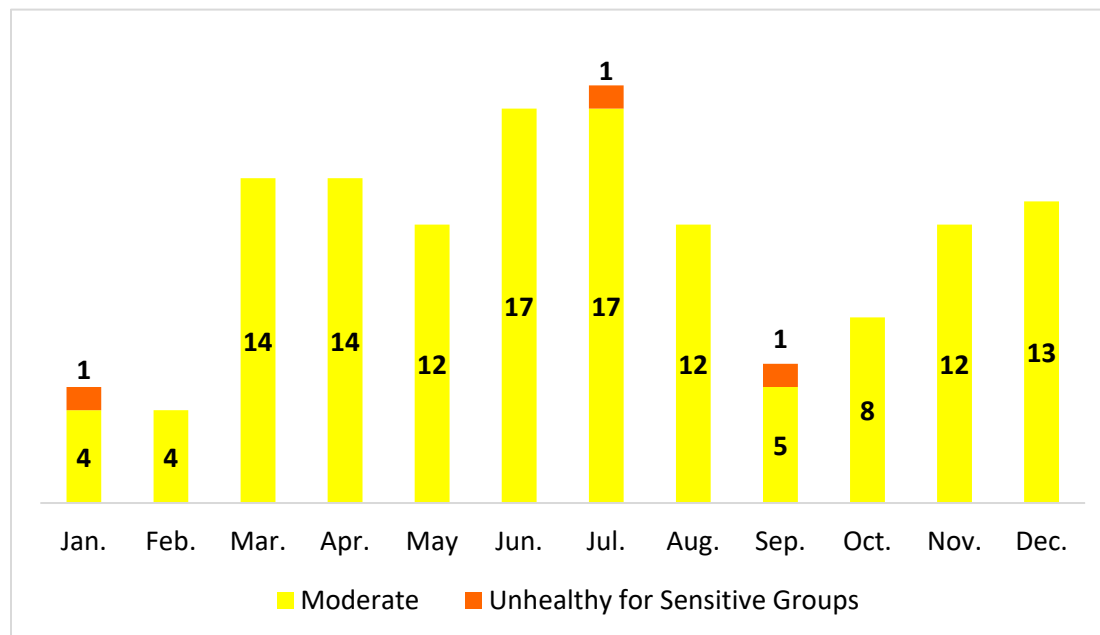


CAMS 171 recorded the highest number of “moderate” days for PM_{2.5} pollution. Whereas, CAMS 1068 recorded 10 less “moderate” days than CAMS 171, but CAMS 1068 recorded the only day in 2019 when PM_{2.5} levels reached “unhealthy for sensitive groups.” January 1, 2019, was the day at CAMS 1068 that recorded PM_{2.5} levels that were “unhealthy for sensitive groups,” and this was most likely due to New Year’s Eve fireworks.

1.4.4 Distribution of “Moderate” or Worse AQI Days by Month

Air pollution levels vary significantly by month in the CAPCOG region. Figure 1-9 shows the number of days when air pollution levels were “moderate” or “unhealthy for sensitive groups” within the region by month.

Figure 1-9. Number of Days when Air Pollution was "Moderate" or Worse in the Austin-Round Rock-Georgetown MSA by Month, 2019



For "unhealthy for sensitive groups," the one day in January was due to PM_{2.5}, whereas O₃ caused the other two days in the year.

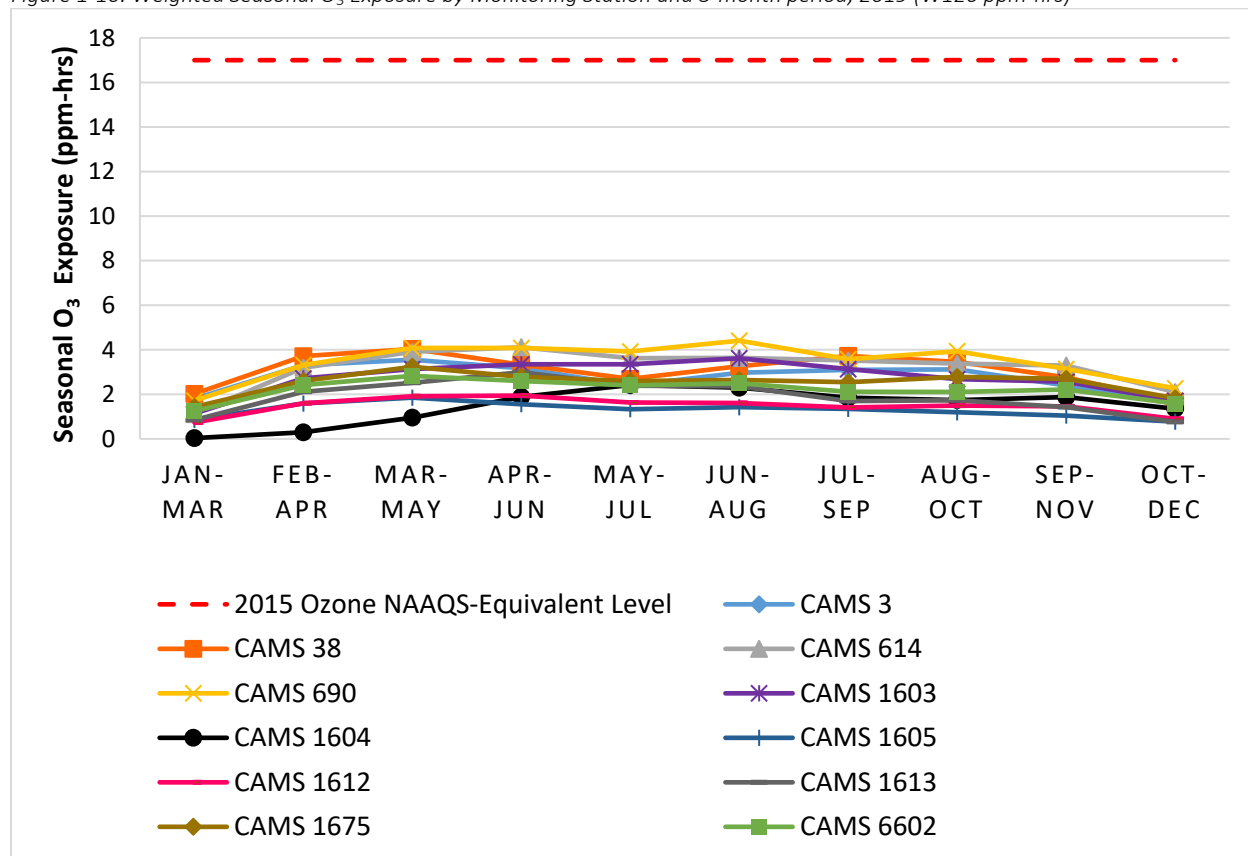
1.4.5 Seasonal O₃ Exposure

While EPA set the 2015 secondary O₃ standard identical to the 2015 primary O₃ standard, the preamble to the rulemaking states that, "the requisite protection will be provided by a standard that generally limits cumulative seasonal exposure to 17 ppm-hours (ppm-hrs) or lower, in terms of a 3-year W126 index."⁴ EPA did not set a separate secondary standard set to protect public welfare, as opposed to public health, because, "such control of cumulative seasonal exposure will be achieved with a standard set at a level of 0.070 ppm, and the same indicator, averaging time, and form as the current standard."⁵ The region's peak seasonal O₃ exposure levels were 55-70% below the 17 ppm-hr levels EPA referenced in the final 2015 O₃ NAAQS rulemaking. Figure 1-10 shows the 3-month seasonal exposure levels at each monitoring station.

⁴ 80 FR 65294

⁵ Ibid.

Figure 1-10. Weighted Seasonal O₃ Exposure by Monitoring Station and 3-month period, 2019 (W126 ppm-hrs)



1.5 Air Quality Forecasting

One of the factors that influences the risks associated with air pollution is the extent to which air pollution can be accurately and successfully predicted. For the Austin area, there are two types of forecasting tools that can be used to help reduce the exposure of sensitive populations to high air pollution levels – OADs and daily Air Quality Forecasts.

1.5.1 O₃ Action Days

TCEQ issues OADs the afternoon before a day when it believes that O₃ levels may exceed the level of the NAAQS.

There are two ways CAPCOG measures the performance of OAD forecasting for the region over the past several years – accuracy in correctly predicting an OAD, and success in predicting when actual monitored O₃ levels were high enough to be considered “unhealthy for sensitive groups.”

Using the AQI for O₃, CAPCOG calculates these metrics as follows:

$$OAD \text{ Accuracy Rate} = \frac{\text{Days OAD Declared When Actual MDA8} > 70 \text{ ppb}}{\text{Days OAD Declared}}$$

$$OAD \text{ Success Rate} = \frac{\text{Days OAD Declared When Actual MDA8} > 70 \text{ ppb}}{\text{Days When Actual MDA8} > 70 \text{ ppb}}$$

Using these metrics indicates that TCEQ's OAD forecasting efforts for the region in 2019 were accurate 20% of the time. However, OAD forecasting missed 50% of the days (one out of two) when MDA8 O₃ levels actually exceeded 70 ppb. These metrics are only accounting for days when either a forecast was for a day >70 ppb or actual O₃ was >70 ppb, and it does not account for the other days when TCEQ correctly did not issue an OAD and O₃ did not exceed 70 ppb.

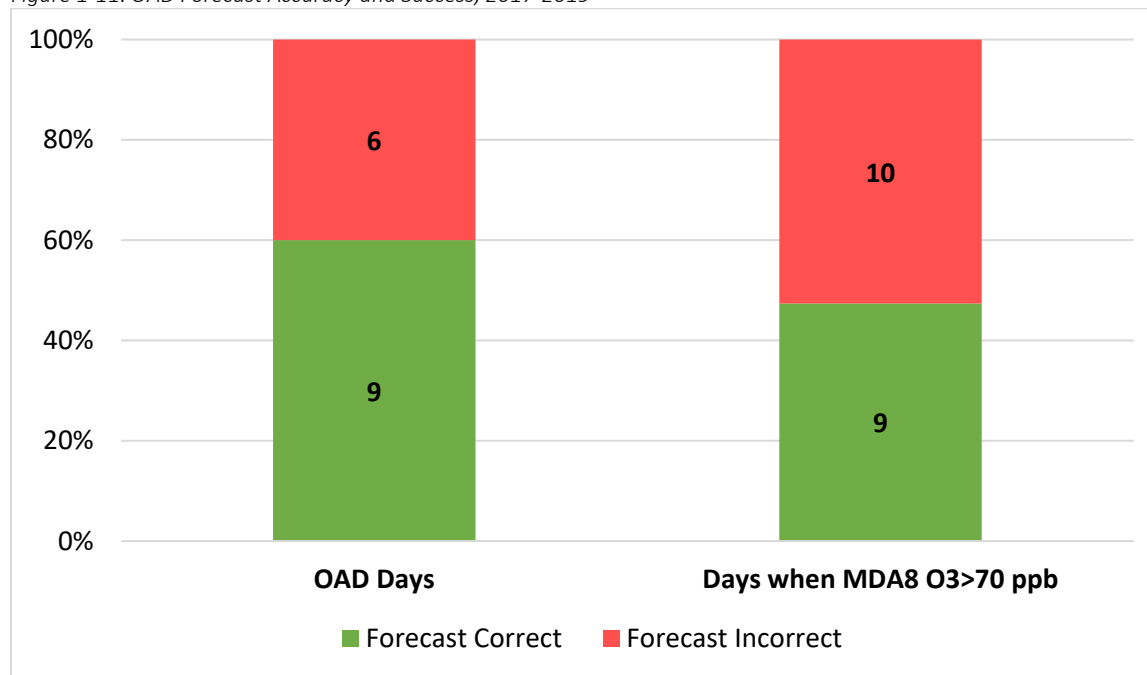
From 2017-2019, TCEQ issued a total of 15 OAD alerts for the Austin-Round Rock-Georgetown area – two in 2017, eight in 2018, and five in 2019. During this time frame, there were a total of 19 days when O₃ levels exceeded the level of the relevant O₃ NAAQS: seven in 2017, ten in 2018, and two in 2019. Table 1-5 lists each of these dates.

Table 1-5. OAD Dates and Dates when O₃ Exceeded Level of NAAQS, 2017-2019

Date	OAD Issued for this Date?	O ₃ NAAQS Level in Effect	Highest O ₃ MDA8 Value Recorded in MSA	Station where Highest O ₃ MDA8 Value Recorded
6/5/2017	No	70 ppb	73 ppb	CAMS 690
6/7/2017	No	70 ppb	74 ppb	CAMS 1604
6/8/2017	No	70 ppb	75 ppb	CAMS 690
5/5/2017	Yes	70 ppb	61 ppb	CAMS 1604
8/1/2017	No	70 ppb	72 ppb	CAMS 614
9/1/2017	No	70 ppb	71 ppb	CAMS 3
9/12/2017	Yes	70 ppb	74 ppb	CAMS 1604
9/13/2017	No	70 ppb	73 ppb	CAMS 690
4/28/2018	Yes	70 ppb	73 ppb	CAMS 690
5/7/2018	Yes	70 ppb	77 ppb	CAMS 690
5/28/2018	Yes	70 ppb	59 ppb	CAMS 1675
7/23/2018	No	70 ppb	72 ppb	CAMS 1675
7/25/2018	No	70 ppb	74 ppb	CAMS 3 & 1603
7/26/2018	Yes	70 ppb	74 ppb	CAMS 1675
7/27/2018	Yes	70 ppb	71 ppb	CAMS 3
7/31/2018	No	70 ppb	80 ppb	CAMS 1603
8/1/2018	Yes	70 ppb	84 ppb	CAMS 1675
8/2/2018	Yes	70 ppb	82 ppb	CAMS 1675
8/3/2018	Yes	70 ppb	75 ppb	CAMS 601
4/9/2019	Yes	70 ppb	67 ppb	CAMS 614 & 690
6/8/2019	Yes	70 ppb	63 ppb	CAMS 1613
7/25/2019	Yes	70 ppb	67 ppb	CAMS 614
7/26/2019	Yes	70 ppb	74 ppb	CAMS 614
7/27/2019	Yes	70 ppb	57 ppb	CAMS 1675
9/6/2019	No	70 ppb	74 ppb	CAMS 38

Over the three-year period, nine of the fifteen OAD forecasts correctly predicted O₃ levels over the applicable NAAQS – an 60% accuracy rate. Conversely, there was a 47% “success rate” in predicting actual MDA8 O₃ levels over the applicable NAAQS from 2017-2019.

Figure 1-11. OAD Forecast Accuracy and Success, 2017-2019



1.5.2 Daily Air Quality Forecasts

Unlike OADs, which only are issued for days when TCEQ believes O₃ will reach levels considered “unhealthy for sensitive groups,” daily air quality index forecasts include forecasts for “good” and “moderate” air pollution levels, as well. Also, the forecast includes pollutants other than O₃. The performance of these forecasts can be measured using the same type of metrics used above for OADs – accuracy and success. In this case, CAPCOG evaluated the accuracy and success rate in terms of the number of days when air quality was forecast to be “moderate” or worse. The equations below explain these terms in terms of the daily AQI forecast.

AQI Forecast Accuracy Rate

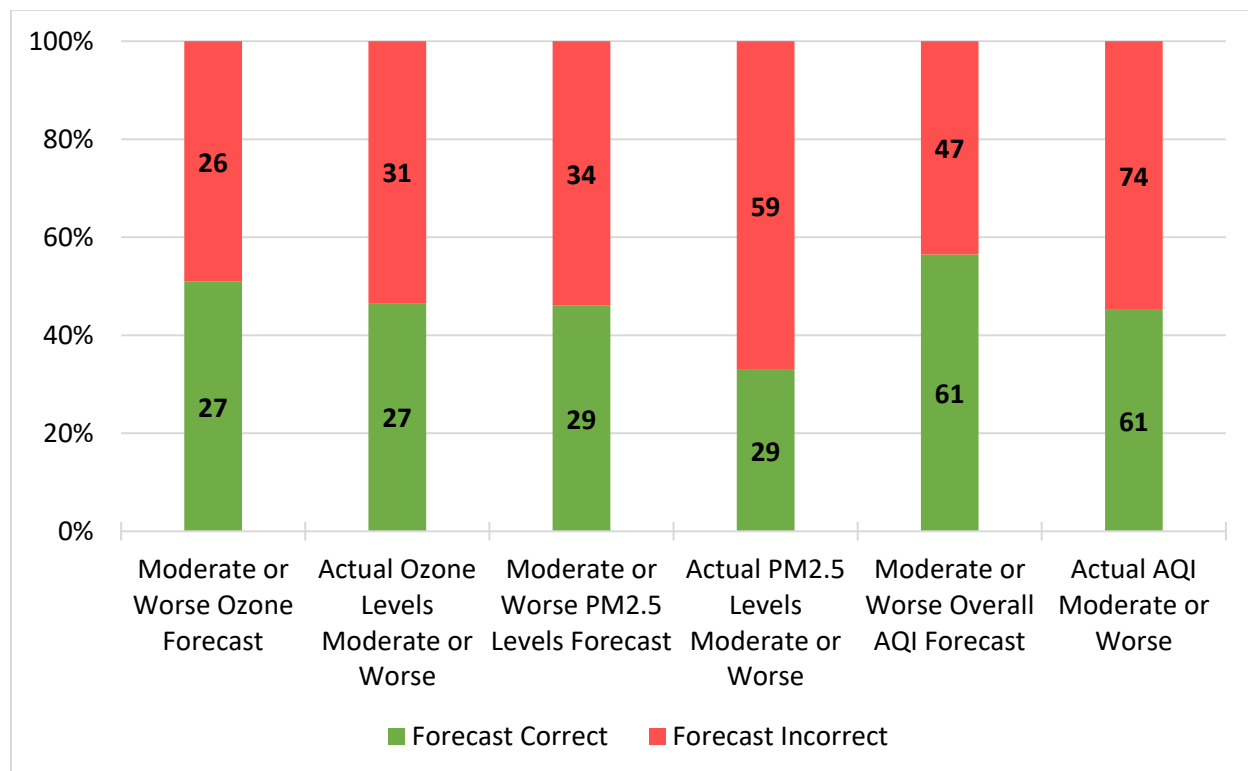
$$= \frac{\text{Days When AQI Forecast to be Moderate or Worse and was Actually Moderate or Worse}}{\text{Days Forecast to be Moderate or Worse}}$$

AQI Forecast Success Rate

$$= \frac{\text{Days When AQI Forecast to be Moderate or Worse and was Actually Moderate or Worse}}{\text{Days When Actual AQI Was Moderate or Worse}}$$

Since the daily AQI forecasts for the region included forecasts for both O₃ and PM_{2.5}, it is possible to analyze these accuracy and success rates by pollutant, as well as for the overall AQI. Figure 1-12 shows the results of this analysis for 2019.

Figure 1-12. Accuracy and Success of AQI Forecasts for 2019



Overall, TCEQ’s forecasts for “moderate” or higher O₃ levels were 51% accurate and 47% successful. Whereas, forecasts for “moderate” or higher PM_{2.5} levels were 46% accurate and 33% successful. Overall AQI forecasts were 56% accurate and 45% successful.

1.5.3 Odor Complaints

The 2019-2023 Regional Air Quality Plan is intended to be a comprehensive regional air quality plan, and along those lines, it included a section on nuisance odors, and data on the number of odor complaints reported to TCEQ. This section of the annual report summarizes the odor compliant data from the region in 2019 county-by-county and comparisons to prior years and to statewide trends for odor complaints.

The table below summarizes the number of odor complaints filed from each county in 2019, along with each county’s population, and the number of odor complaints per 1,000 residents.

Figure 1-13. 2019 Odor Complaints and # of Complaints Per 10,000 Residents by County

County	Odor Complaints ⁶	Population ⁷	Odor Complaints Per 10,000 Residents
Bastrop	67	88,723	7.55
Caldwell	22	43,664	5.04
Hays	144	230,191	6.26

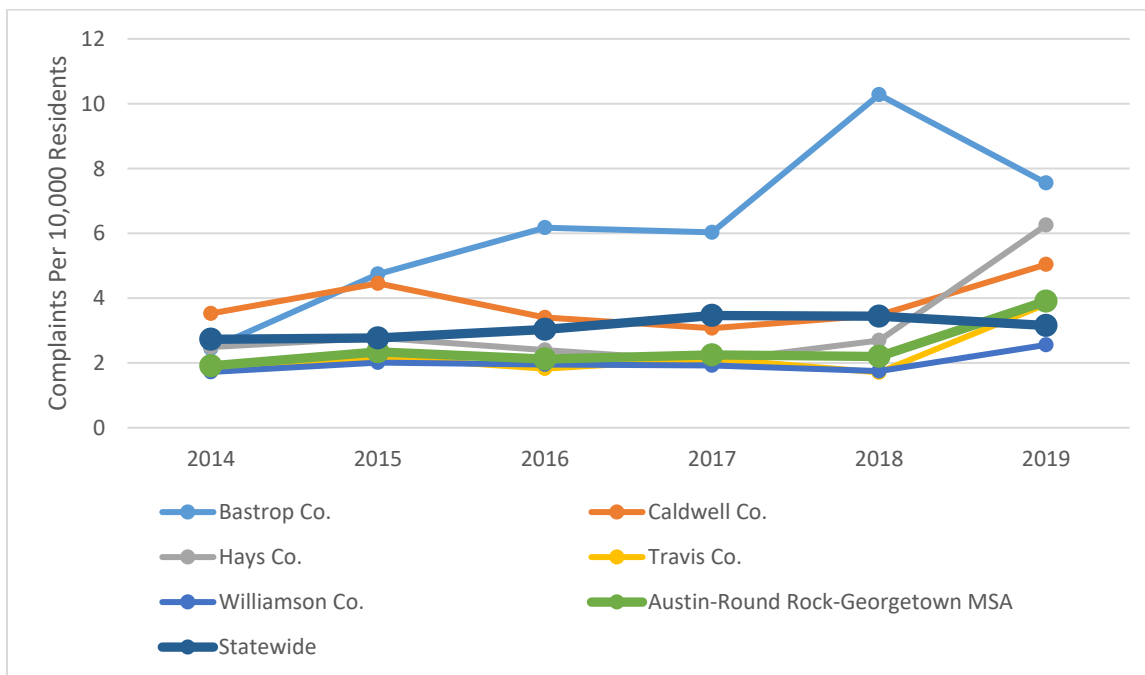
⁶ Obtained by querying TCEQ’s odor complaint tracking website at: <https://www2.tceq.texas.gov/oce/waci/index.cfm>

⁷ U.S. Census Bureau Current Population Estimate, Vintage 2019 County-Level Population Estimates.

County	Odor Complaints ⁶	Population ⁷	Odor Complaints Per 10,000 Residents
Travis	486	1,273,954	3.81
Williamson	151	590,551	2.56
TOTAL	870	2,227,083	3.91

The total number of complaints in 2019 was much higher than the prior five years, when they ranged from 371 – 476 per year. The number of complaints was sharply higher in Caldwell, Hays, Travis, and Williamson Counties, ranging from 46% higher in Caldwell County to 140% higher in Hays County. Bastrop County, on the other hand, had a 25% decrease in the number of odor complaints in 2019 compared to 2018, although it still has the highest number of complaints per capita – 93% higher than the regional average. Overall, the increase in the number of complaints in 2019 pushed the region’s number of complaints per 10,000 residents higher than the statewide average, as the figure below shows.

Figure 1-14. Statewide and Austin-Round Rock-Georgetown MSA Odor Complaints per 10,000 Residents 2014 – 2019

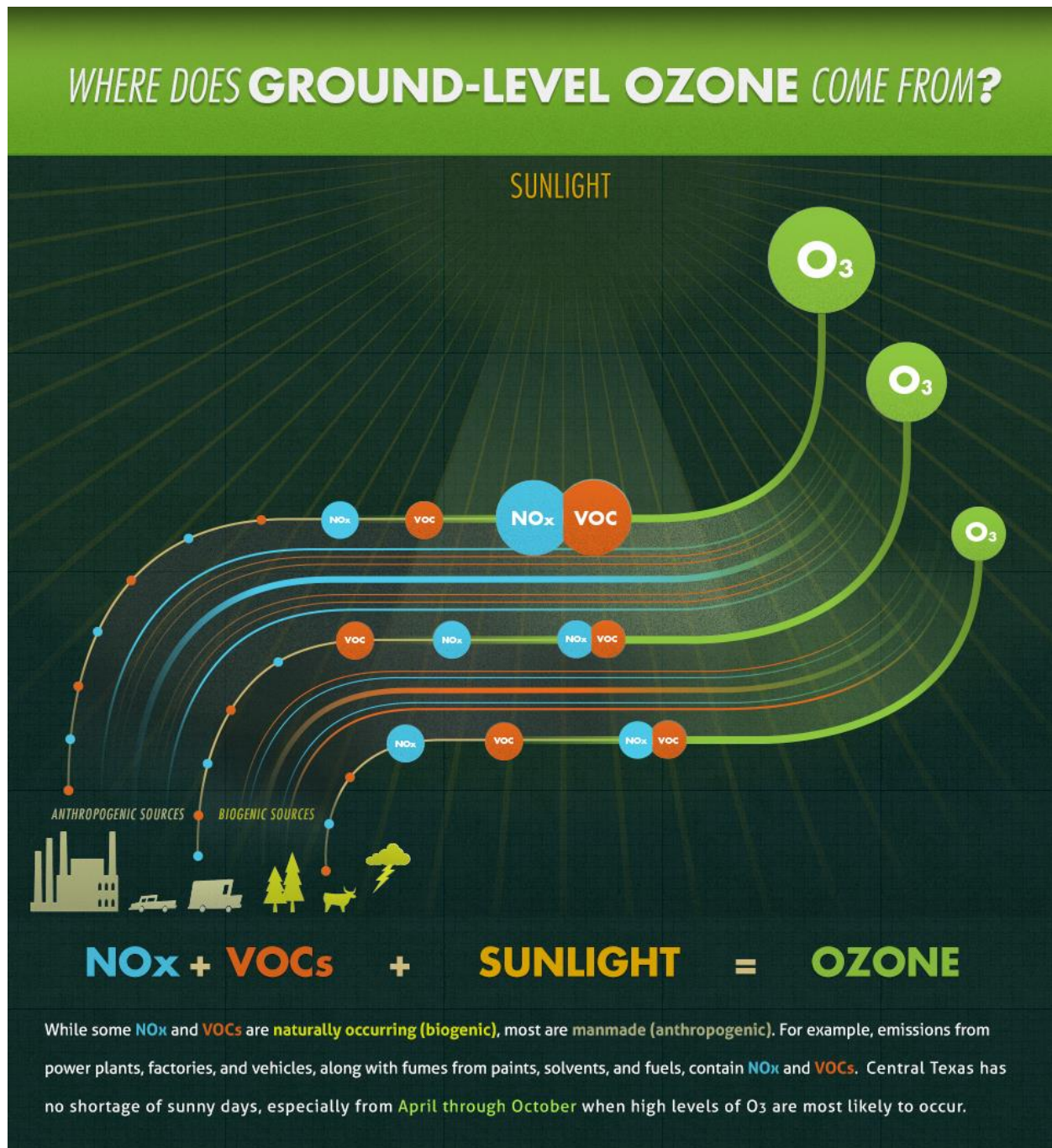


CAPCOG will discuss these trends with the CAC at its August 2020 meeting and seek direction on whether they wish CAPCOG staff to spend any additional time further analyzing or investigating this issue beyond summarizing these data in the annual report.

2 2019 Regional O₃ Season Weekday NO_x Emissions Profile

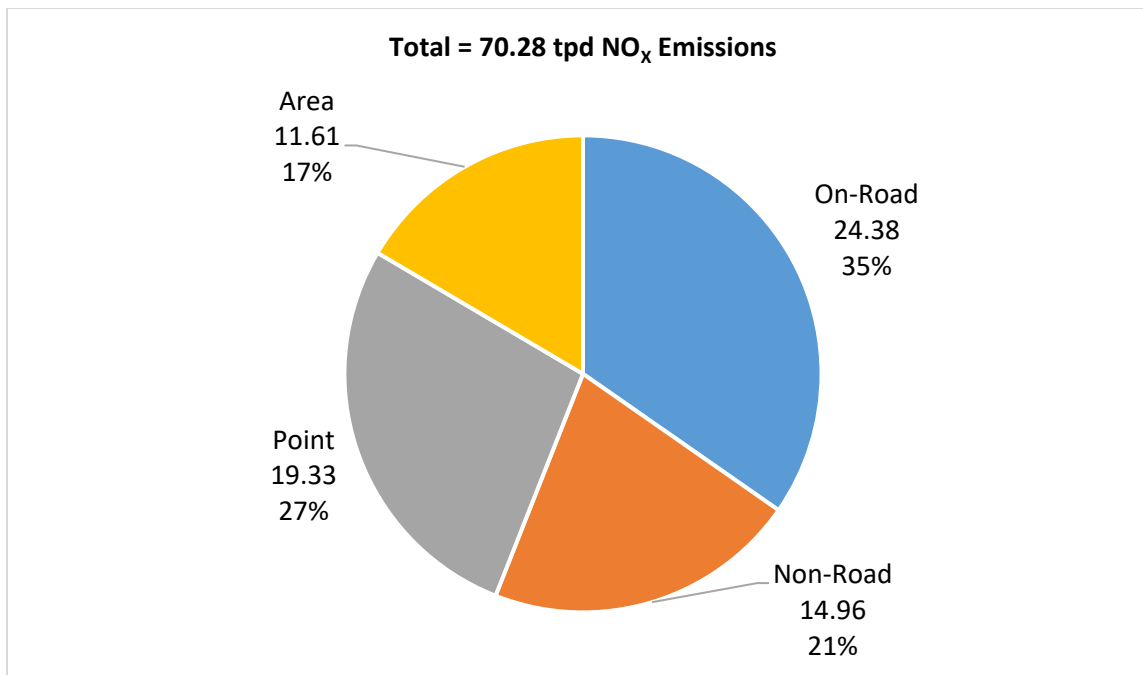
NO_x emissions react with volatile organic compounds (VOC) in the presence of sunlight to form ground-level O₃. Depending on local conditions, an area’s O₃ problems can be influenced more by NO_x emissions or VOC emissions. In the Austin metro area, NO_x emissions account for about 99% of all locally-generated O₃. Therefore, understanding the contribution of different sources of NO_x emissions to the region’s typical daily NO_x emissions during ozone season helps understand the relative importance of these sources to O₃ formation.

Figure 2-1. Ozone Formation



The following pie chart shows the estimated average 2019 O₃ season weekday anthropogenic NO_x emissions in the region by major source type – on-road mobile, non-road mobile, point source, and area source emissions.

Figure 2-2. 2019 O₃ Season Weekday NO_x Emissions for the Austin-Round Rock-Georgetown MSA (tpd)



2.1 NO_x Emissions by Source Type by County

Table 2-1 shows the break-down of the region's ozone season day (OSD) weekday NO_x emissions by county and source type.

Table 2-1. 2019 OSD Weekday NO_x Emissions by Source Type and County (tons per day)

County	On-Road	Non-Road	Point	Area	Total
Bastrop	1.52	1.31	5.38	0.46	8.67
Caldwell	0.86	1.04	0.94	1.89	4.73
Hays	3.36	1.2	7.00	0.8	12.36
Travis	13.14	7.69	5.84	6.47	33.14
Williamson	5.5	3.74	0.17	1.99	11.40
TOTAL	24.38	14.96	19.33	11.61	70.28

2.2 On-Road Sources

The on-road sector includes mobile sources that are registered to operate on public roads. On-road vehicles remain the largest source of NO_x emissions within the region, accounting for 24.38 tons per day (tpd) of NO_x emissions on a typical 2019 OSD weekday, based on TCEQ's most recent "trends" emissions inventories.⁸ Table 2-2 shows the typical 2019 O₃ season weekday NO_x emissions for the region by source use type.

⁸ Produced by TTI in August 2015. Available online at:
http://amdaftp.tceq.texas.gov/pub/EI/onroad/mvs14_trends/.

Table 2-2. 2019 Austin-Round Rock-Georgetown OSD Weekday NO_x Emissions by Source Use Type (tpd)

Source Use Type	NO _x
Motorcycle	0.03
Passenger Car	7.11
Passenger Truck	4.99
Light Commercial Truck	1.46
Intercity Bus	0.14
Transit Bus	0.20
School Bus	0.39
Refuse Truck	0.31
Single-Unit Short-Haul Truck	1.54
Single-Unit Long-Haul Truck	0.17
Motor Home	0.16
Combination Short-Haul Truck	2.98
Combination Long-Haul Truck	4.90
TOTAL	24.38

Passenger cars and passenger trucks combined to account for 12.10 tpd of NO_x emissions, while heavy-duty commercial trucking accounted for 9.91 tpd NO_x emissions. The remaining sources accounted for 2.38 tpd NO_x emissions, most of which come from light commercial trucks.

2.3 Non-Road Sources

The non-road sector consists of any mobile source that is not registered to be operated on a public road, including sources such as agricultural equipment, construction and mining equipment, locomotives, aircraft, and drill rigs. Non-road sources made up the 3rd-largest source of NO_x emissions within the region in 2019, accounting for 14.96 tpd of NO_x emissions on a typical O₃ season weekday. There are four different types of non-road data sets: equipment modeled in the MOVES2014b and TexNv2 models, locomotives/rail equipment, aircraft (including ground support equipment), and drill rigs.

Table 2-3. 2019 O₃ Season Weekday Non-Road OSD Weekday NO_x Emissions by County (tpd)

County	MOVES2014b	Rail	Aircraft	Drill Rigs	Total
Bastrop	0.87	0.43	0.00	0.00	1.31
Caldwell	0.54	0.46	0.02	0.02	1.04
Hays	0.78	0.42	0.00	0.00	1.20
Travis	4.88	0.43	2.38	0.00	7.69
Williamson	3.19	0.52	0.02	0.00	3.74
TOTAL	10.25	2.27	2.42	0.02	14.96

- For MOVES2014b sources, CAPCOG used the 2017 OSD estimates prepared by TCEQ for the AERR,⁹ then adjusted the totals for each SCC and county based on the ratios between the 2019 “Trends” inventory and the 2017 “Trends” inventory.¹⁰

⁹ Available online here: ftp://amdaftp.tceq.texas.gov/pub/EI/nonroad/aerr/2017/for_EPA/

¹⁰ Available online here: <ftp://amdaftp.tceq.texas.gov/pub/EI/nonroad/trends/>

- For Aircraft, CAPCOG interpolated the 2019 data using ERG’s estimated O₃ season daily 2017 and 2020 NO_x emissions.¹¹
- For locomotives and drill rigs, CAPCOG used the existing trends inventories.¹²

2.4 Point Sources

The point source sector consists of any stationary source that reports its emissions to TCEQ. The most recent point source data that is publicly available from TCEQ is for 2018. In that year, there were 27 facilities in the Austin-Round Rock-Georgetown MSA that reported emissions to TCEQ.¹³ Emissions data specific to 2019 are also available for each electric generating unit (EGU) that reports to EPA, Austin White Lime, and Texas Lehigh Cement Company. CAPCOG estimated an average of 19.33 tpd NO_x emissions from point sources in the MSA in 2019:

- Except for the turbines at Decker Creek Power Plant, CAPCOG used the average daily NO_x emissions reported to EPA for May 1, 2019 – September 30, 2019 for all EGUs that report emissions to EPA,¹⁴ (8.55 tpd);
- For the eight turbine units at Decker Creek Power Plant, CAPCOG used the average daily NO_x emissions reported to EPA for May 1, 2019 – September 30, 2019, adjusted to reflect the ratio between the average OSD NO_x emissions reported in TCEQ’s EIQ for 2018 to the average OSD (May 1 – September 30) NO_x emissions reported to EPA for 2018¹⁵ (0.24 tpd);
- For Austin White Lime and Texas Lehigh Cement company, CAPCOG used the average 2019 OSD NO_x emissions reported to CAPCOG for this report (7.51 tpd);
- For all other sources of NO_x emissions, including sources at EGU facilities, CAPCOG used the OSD NO_x emissions reported in the facility’s 2017 EIQ (3.02 tpd).

Table 2-4 shows the estimated OSD NO_x emissions by county for EGU and non-EGU sources.

Table 2-4. Estimated 2019 Point Source OSD NO_x Emissions by County (tpd)

County	EGU ¹⁶	Non-EGU	TOTAL
Bastrop	5.23	0.15	5.38
Caldwell	0.00	0.94	0.94
Hays	0.85	6.14	7.00
Travis	2.76	3.08	5.84
Williamson	0.00	0.17	0.17
TOTAL	8.84	10.48	19.33

¹¹ E-mail from Roger Chang, ERG, to Andrew Hoekzema, CAPCOG, on July 26, 2019.

¹² Available online here: <ftp://amdaftp.tceq.texas.gov/pub/EI/offroad/locomotive/trends/> and ftp://amdaftp.tceq.texas.gov/pub/EI/oil_gas/drilling/.

¹³ “State Summary” file available online here: https://www.tceq.texas.gov/assets/public/implementation/air/ie/pseisums/2014_2018statesum.xlsx

¹⁴ Accessible online here: <https://ampd.epa.gov/ampd/>

¹⁵ The adjustment for the Decker Turbines is due to a known issue with data substitution required for reporting data to EPA that does not apply to the annual EIQs.

¹⁶ Includes all sources at these facilities, including sources that don’t report to AMPD; does not include UT Hal Weaver Plant.

Table 2-5 shows the facility-level OSD NO_x emissions estimates.

Table 2-5. Estimated Average 2019 OSD Point Source Emissions in the Austin-Round Rock-Georgetown MSA (tpd)

RN	COMPANY	SITE	COUNTY	NO_x
RN102038486	LOWER COLORADO RIVER AUTHORITY	SIM GIDEON POWER PLANT	BASTROP	2.47
RN100212034	MERIDIAN BRICK LLC	ELGIN FACILITY	BASTROP	0.08
RN100225846	ACME BRICK COMPANY	ELGIN PLANT	BASTROP	0.07
RN100723915	GENTEX POWER CORPORATION	LOST PINES 1 POWER PLANT	BASTROP	0.54
RN101056851	BASTROP ENERGY PARTNERS LP	BASTROP ENERGY CENTER	BASTROP	0.90
RN100212018	DAVIS GAS PROCESSING, INC	LULING GAS PLANT	CALDWELL	0.00
RN100220177	OASIS PIPELINE CO TEXAS LP	PRAIRIE LEA COMPRESSOR STATION	CALDWELL	0.94
RN105366934	FLINT HILLS RESOURCES CORPUS CHRISTI LLC	MUSTANG RIDGE TERMINAL	CALDWELL	0.00
RN102597846	TEXAS LEHIGH CEMENT COMPANY LP	TEXAS LEHIGH CEMENT	HAYS	6.01
RN100211689	HAYS ENERGY LLC	HAYS ENERGY FACILITY	HAYS	0.76
RN100219872	CITY OF AUSTIN ELECTRIC UTILITY DEPARTMENT DBA AUSTIN ENERGY	DECKER CREEK POWER PLANT	TRAVIS	3.46
RN100214337	AUSTIN WHITE LIME COMPANY	MCNEIL PLANT & QUARRY	TRAVIS	1.18
RN105074561	TEXAS MATERIALS GROUP INC	AUSTIN HOT MIX	TRAVIS	0.01
RN100843747	NXP USA INC	ED BLUESTEIN SITE	TRAVIS	0.03
RN102533510	UNIVERSITY OF TEXAS AT AUSTIN	HAL C WEAVER POWER PLANT	TRAVIS	1.07
RN100723741	SPANSION LLC	SPANSION AUSTIN FACILITY	TRAVIS	0.02
RN102752763	NXP USA INC	INTEGRATED CIRCUIT MFG OAK HILL FAB	TRAVIS	0.02
RN100542752	BFI WASTE SYSTEMS OF NORTH AMERICA INC	BFI SUNSET FARMS LANDFILL	TRAVIS	0.06
RN100218692	SILICON HILLS CAMPUS LLC	SILICON HILLS CAMPUS	TRAVIS	0.08
RN101059673	FLINT HILLS RESOURCES CORPUS CHRISTI LLC	AUSTIN TERMINAL	TRAVIS	0.00
RN100215938	WASTE MANAGEMENT OF TEXAS INC	AUSTIN COMMUNITY LANDFILL	TRAVIS	0.12
RN100518026	SAMSUNG AUSTIN SEMICONDUCTOR LLC	AUSTIN FABRICATION FACILITY	TRAVIS	0.26

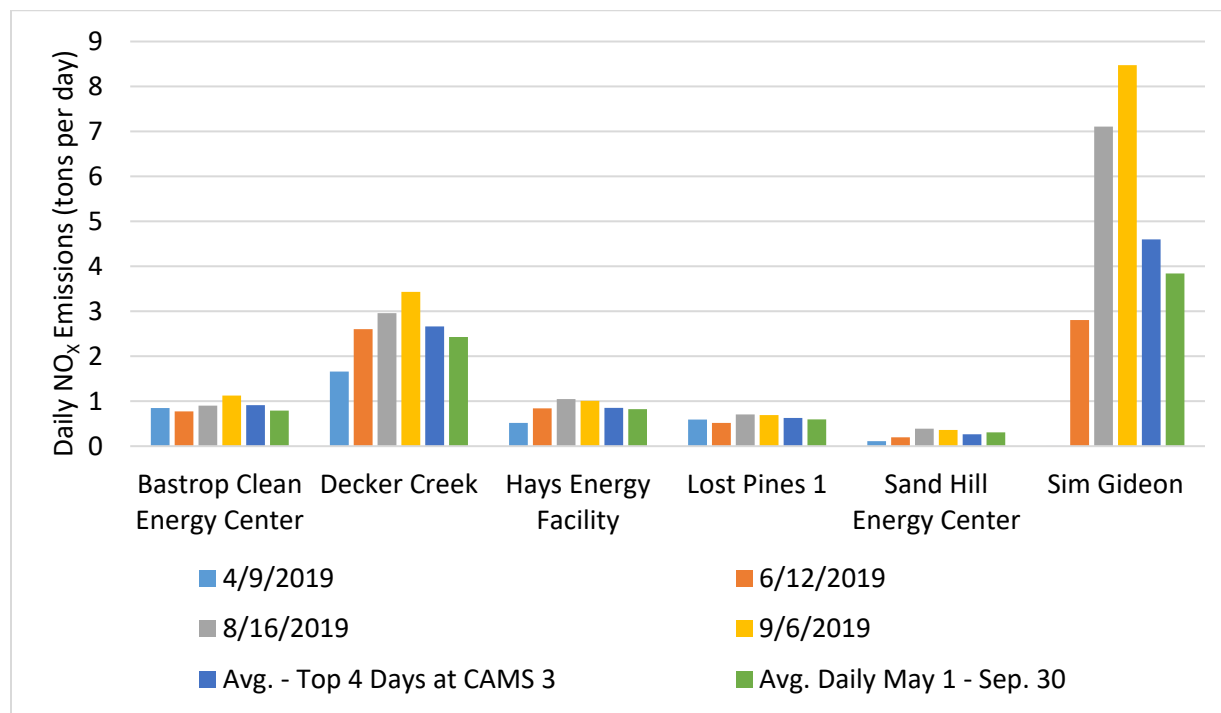
RN	COMPANY	SITE	COUNTY	NO_x
RN100215052	CITY OF AUSTIN ELECTRIC UTILITY DEPARTMENT DBA AUSTIN ENERGY	SAND HILL ENERGY CENTER	TRAVIS	0.33
RN102016698	TEXAS DISPOSAL SYSTEMS LANDFILL INC	TEXAS DISPOSAL SYSTEMS LANDFILL	TRAVIS	0.03
RN100225754	WASTE MANAGEMENT OF NORTH TEXAS	WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILITY	WILLIAMSON	0.05
RN100725712	SEMINOLE PIPELINE COMPANY LLC	COUPLAND PUMP STATION	WILLIAMSON	0.11
RN100728179	DURCON LABORATORY TOPS INCORPORATED	DURCON LABORATORY TOPS	WILLIAMSON	0.01
TOTAL	n/a	n/a	n/a	19.33

Since EPA data for EGUs are available at the daily level, CAPCOG also analyzed the NO_x emissions on the top four days at CAMS 3 with the highest 8-hour O₃ averages 2019, since these four days affect NAAQS compliance:

- 4/9/2019: 66 ppb
- 6/12/2019: 65 ppb
- 8/16/2019: 66 ppb
- 9/6/2019: 69 ppb

On these days, EGU NO_x emissions averaged 9.92 tpd, which is 13% higher than the May 1 – September 30 daily average. Although as the chart shows, there was a high degree of variation in emissions among these days. These data suggest that point sources generally, and EGUs specifically, contributed more to O₃ formation on those top four days than the use of the average OSD estimate would suggest.

Figure 2-3. Comparison of EGU NO_x Emissions on Top 4 O₃ Days at CAMS 3 Compared to Average Daily NO_x Emissions May 1 – September 30, 2019

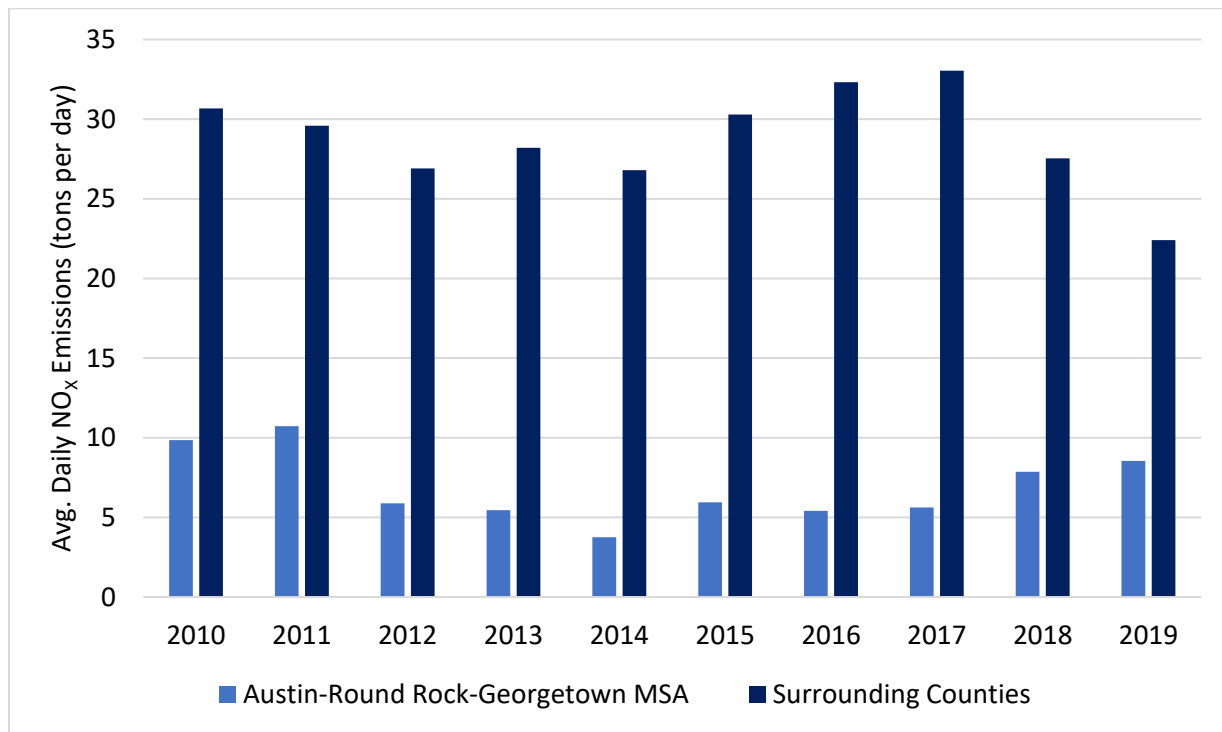


Looking at the 2019 data compared to previous years in the figure below, average OSD emissions from EGUs was higher in 2019 than in 2018. This increase in average daily NO_x emissions is due high emissions from the Sim Gideon Plant in Bastrop County. Sim Gideon is an older power plant that has been used to generate electricity during high demand periods. However, two power plants in surrounding counties have changed operations in the past two years; the Sandow Power Plant in Milam County closed in 2018¹⁷, and the Gibbons Creek Power Plant in Grimes County was not used in 2019¹⁸, and its closure was announced in late June 2019. With these two power plants no longer supplying electricity to the electric grid, it appears that local power plants, and especially Sim Gideon, picked up some of the load.

¹⁷ <https://www.bizjournals.com/austin/news/2017/10/16/central-texas-energy-plant-to-shut-down-as-part-of.html>

¹⁸ <https://www.kallanishenergy.com/2019/07/05/coal-fired-texas-power-plant-to-close-oct-23/>

Figure 2-4. Average Daily May – September NO_x Emissions from EGU Point Sources in Austin-Round Rock-Georgetown MSA and Surrounding Counties, 2010-2019



2.5 Area Sources

CAPCOG estimated the 2019 area sources using TCEQ's 2017 summer weekday NO_x emissions from its 2017 National Emissions Inventory submission.¹⁹

Table 2-6. Area Source OSD Weekday NO_x Emissions by County and Source Type (tpd)

County	Industrial Combustion	Commercial and Institutional Combustion	Residential Combustion	Oil and Gas	Other	TOTAL
Bastrop	0.10	0.10	0.00	0.16	0.09	0.46
Caldwell	0.09	0.04	0.00	1.73	0.02	1.89
Hays	0.31	0.35	0.00	0.00	0.13	0.80
Travis	2.34	4.04	0.02	0.01	0.05	6.47
Williamson	0.89	1.03	0.01	0.03	0.03	1.99
TOTAL	3.74	5.57	0.04	1.94	0.33	11.61

¹⁹ E-mailed from Matthew Southard, TCEQ, to Andrew Hoekzema, CAPCOG, on July 26, 2019.

3 Implementation of 2019-2023 Regional Air Quality Plan and Other Measures

This section provides details on emission reduction measures implemented within the Austin-Round Rock-Georgetown MSA in 2019. This includes both measures that had been included in the 2019-2023 Regional Air Quality Plan and other measures that were not explicitly committed to in that plan.

3.1 Regional and State-Supported Measures

Regional and state-supported measures involve multi-jurisdictional programs or state involvement in an emission reduction measure within the region. These include:

- The vehicle emissions inspection and maintenance (I/M) program;
- The Drive a Clean Machine program;
- Texas Emission Reduction Plan (TERP) grants;
- Volkswagen Environmental Mitigation Trust Beneficiary Mitigation Plan for Texas;
- The Commute Solutions Program;
- The Clean Air Partners Program;
- The Clean Cities Program;
- Outreach and Education Measures; and
- Property-Assessed Clean Energy (PACE).

3.1.1 Vehicle Emissions Inspection and Maintenance Program

The Austin-Round Rock-Georgetown MSA is home to Travis and Williamson Counties – the two largest “attainment” counties in the country that have a vehicle emissions inspection and maintenance (I/M) program. The I/M program has been in place since September 1, 2005, and it was implemented as part of the region’s participation in the Early Action Compact (EAC) program. The program’s rules are found in Title 30, Part 1, Texas Administrative Code (TAC) Chapter 114, Subchapter C, Division 3: Early Action Compact Counties. Under the program, all gasoline-powered vehicles (including heavy-duty vehicles but excluding motorcycles) that are 2-24 years old are required to undergo an annual emissions inspection along with their annual safety inspection. Vehicles model year 1995 and older are required to pass a “two-speed idle” (TSI) test, and vehicles model year 1996 and newer are required to pass an “on-board diagnostic” (OBD) test. 2019 was the last year in which TSI tests will be conducted for the I/M program due to the model year coverage. Up until the end of state fiscal year 2019, the inspection cost \$16 per test:

- The station may retain \$11.50
- \$4.50 is remitted to the state and deposited into the Clean Air Account (Fund 151):
 - \$2.50 is for state administration of the I/M program
 - \$2.00 is for DACM/LIRAP (no longer collected as of late 2019)

If a vehicle fails an emissions inspection, the owner is required to fix the vehicle as a condition of registration. As described in 37 TAC § 23.52(a), “an emissions testing waiver defers the need for full

compliance with vehicle emissions standards of the vehicle emissions inspection and maintenance (I/M) program for a specified period of time after a vehicle fails an emissions test.” The following waivers are available in certain circumstances:

- A “low-mileage” waiver if a motorist has paid at least \$100 for emissions-related repairs and is driven less than 5,000 per year
- An “individual vehicle” waiver if a motorist has paid at least \$600 in emissions-related repairs

Under 37 TAC § 23.53(a), time extensions are also available:

- A “low-income time extension” is available if the motorist has income at or below the federal poverty level and the motorist hadn’t previously received a time extension in the same cycle
- A “parts-availability time extension” is available if an applicant can show problems in obtaining the needed parts for repair

Some of the key metrics for the I/M program year-to-year are the number of emissions inspections and the failure rates. Table 3-1 summarizes the number and disposition of emissions inspections in 2019:

Table 3-1. I-M Program Statistics for 2019²⁰

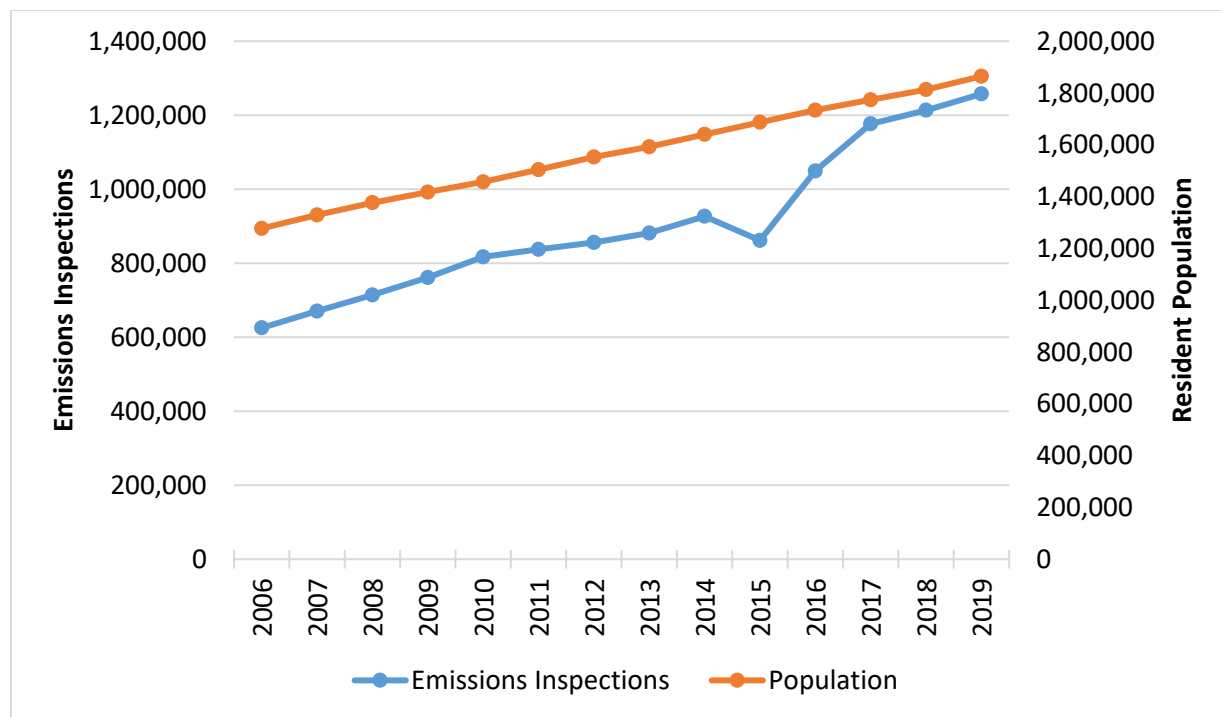
Metric	Travis County	Williamson County	Combined
Total Emission Tests	853,031	404,440	1,257,471
Initial Emission Tests	792,912	377,620	1,170,532
Initial Emission Test Failures	38,627	16,833	55,460
Initial Emission Test Failure Rate	4.86%	4.46%	4.74%
Initial Emission Retests	51,878	24,258	76,136
Initial Emission Retest Failures	4,925	2,010	6,935
Initial Emission Retest Failure Rate	9.49%	8.30%	9.11%
Other Emission Retests	6,105	2,562	8,667
Other Emission Retest Failures	1,645	608	2,253
Other Emission Retest Failure Rate	26.95%	23.70%	26.00%

In general, there have been year-over-year increases in the number of emissions inspections tracking with population increases, except for 2015. The difference in 2015 was that, due to a transition period in the state’s move from a two-sticker (registration and inspection) system to a one-sticker system, some vehicles were able to skip a cycle of inspections if they had a January 2015 or February 2015 registration renewal deadline. By March 1, 2016, however, all vehicles should have “caught up.” In 2019, there were approximately 0.67 emissions inspections per capita in Travis and Williamson Counties, compared to 0.49 emissions inspections per capita in 2006, meaning that growth in emissions inspections is outpacing population growth in these counties. There are several possible explanations for this:

1. A higher percentage of residents owning personal vehicles;
2. Increases in the average number of personal vehicles per household;
3. Increases in the number of commercial gasoline-powered vehicles.

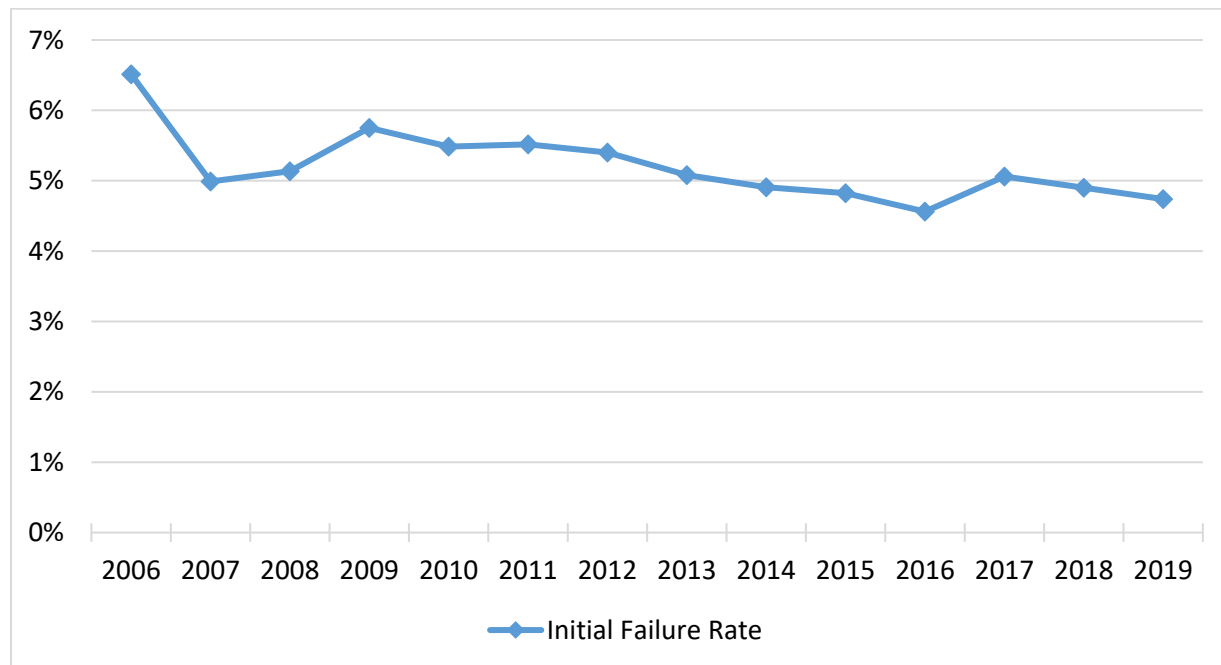
²⁰ Data e-mailed from David Serrins, TCEQ, to Andrew Hoekzema, CAPCOG, 7/16/2020.

Figure 3-1. Trend in Emissions Inspections Compared to Population in Travis and Williamson Counties 2006-2019



2019 saw a slight decline in the initial failure rate from the previous year, decreasing to 4.7%.

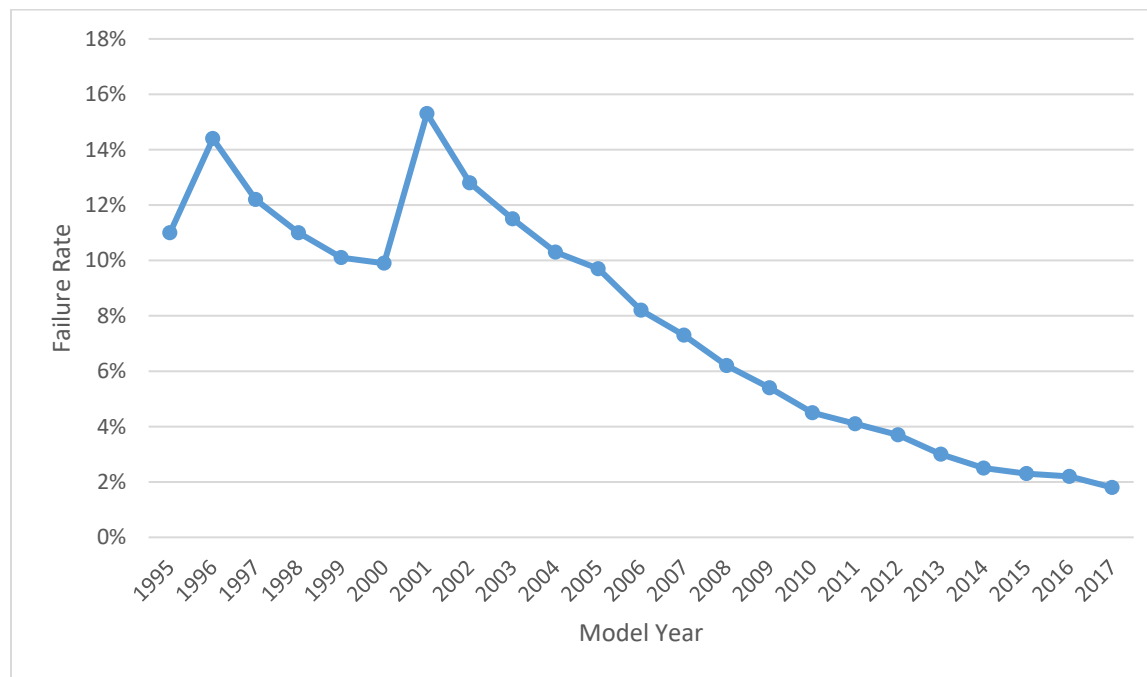
Figure 3-2. Initial Emissions Inspection Failure Rate Trend 2006-2019



Error! Reference source not found. shows the emissions test failure rates of each model year based on tests conducted in 2019. As the figure below shows, the chances of older model-year vehicles failing an emissions test are significantly higher than a newer model-year vehicle failing a test. In 2019, for

example, 2017 model year vehicles had a rate of only about 1.8%, whereas the rate for model year 2001 vehicles was 15.3%, 8.5 times higher.

Figure 3-3. 2019 Emission Test Failure Rate by Model Year



As described above, under certain circumstances, a vehicle subject to annual testing requirements is allowed to continue operating under an I/M program waiver. Table 3-2 summarizes the waivers issued in 2018 and 2019.

Table 3-2. 2018 and 2019 I-M Program Waivers

Waiver Type	2018	2019
Total Tests	1,126,143	1,172,669
Failing Vehicles	55,341	55,461
Total Waivers	106	81
Total Waiver Rate	0.19%	0.15%
Individual Waivers	44	29
Low Mileage Waivers	27	21
Low Income Time Extensions	34	31
Parts Availability Time Extensions	0	0
Other (Special Test)	1	0

3.1.2 Drive a Clean Machine Program

As a result of the Governor's veto of appropriations for the Drive a Clean Machine (DACM) program for state fiscal years 2018 and 2019 (Sep. 1, 2017 – Aug. 31, 2019), the program ended in May 2019. The DACM program helped support the I/M program in Travis and Williamson Counties by providing funding to moderate-income and low-income motorists for:

- Repairing emissions control systems on vehicles that fail an emissions test;
- Replacing a vehicle that fails an emissions test; and

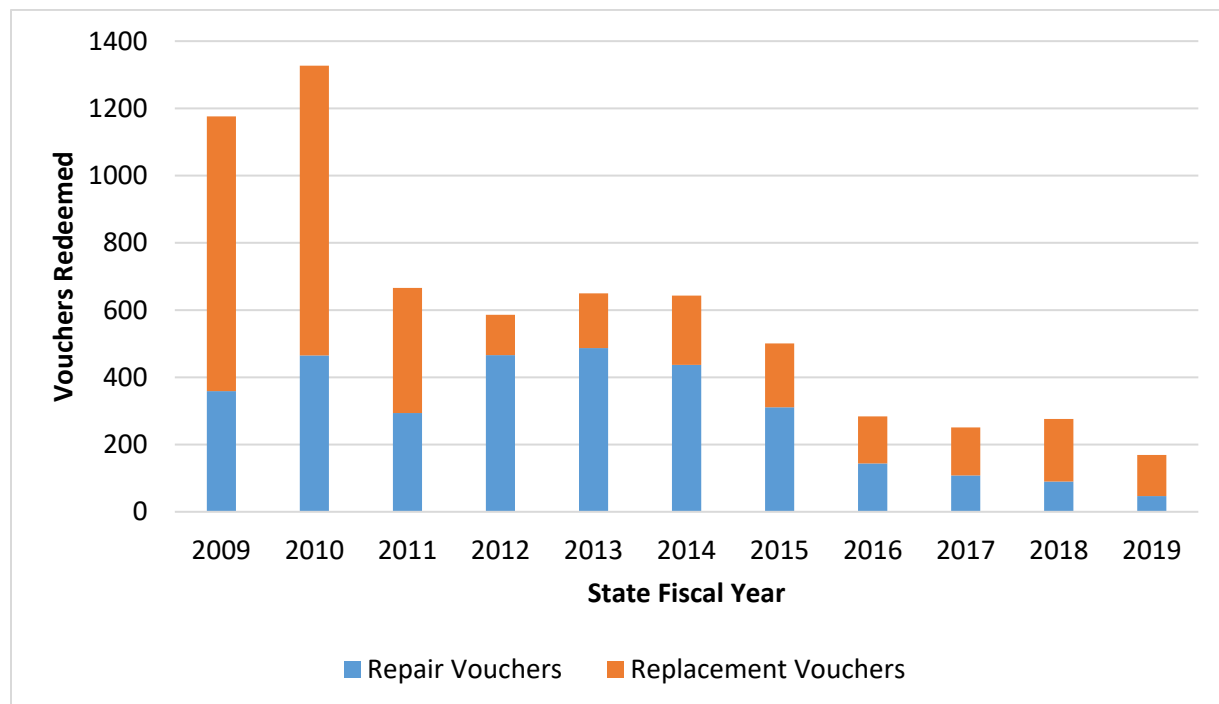
- Replacing a vehicle that is at least 10 years old.

Motorists could receive up to \$600 for repairs, \$3,000 for a car up to 3 years old, \$3,000 for a truck up to 2 years old, or \$3,500 for a hybrid or alternative-fueled vehicle up to 3 years old. New vehicles were required to meet Tier 2 bin 5 or Tier 3 bin 160 or cleaner standard. Replacement vehicles could not have an odometer reading of more than 70,000 miles. Replacement vehicles could only be purchased through a participating dealer and repairs must be performed by a recognized emissions repair facility for Travis and Williamson Counties. DACM achieved emission reductions beyond those that would be achieved by implementing an I/M program in the following ways:

- It increased I/M program compliance by making it more likely that a motorist brought in their vehicle for a vehicle inspection based on the knowledge that financial assistance was available if they failed the test;
- It increased I/M program compliance by reducing the need for low-income time extensions for repairs;
- It increased I/M program compliance by replacing older vehicles that were more likely to fail an emissions test with newer vehicles that were more likely to pass; and
- It accelerated the benefits of newer vehicle emissions standards by replacing older vehicles with newer vehicles.

Figure 3-4 shows the number of DACM vouchers redeemed through the end of the program in FY 2019, when a total of 122 replacement vouchers and 47 repair vouchers were redeemed.

Figure 3-4. DACM Repair and Replacement Voucher Trends 2009-2019



3.1.3 Texas Emission Reduction Plan Grants

Texas Emission Reduction Plan (TERP) grants provide funding for a variety of types of projects designed to reduce emissions, particularly NO_x. These include:

- The Diesel Emissions Reduction Incentive (DERI) program, designed to achieve emission reductions by incentivizing the early replacement or repowering of older diesel-powered engines with newer engines:
 - The Emission Reduction Incentive Grant (ERIG) program is a competitive grant program based on the cost/ton of NO_x reduced;
 - The Rebate Grant program is a first-come, first-served grant program based on fixed rebate dollar amounts based on fixed cost/ton of NO_x reduced assumptions;
- The Texas Natural Gas Vehicle Grant Program (TNGVGP) incentivizes the replacement of diesel-powered trucks with natural gas vehicle-powered trucks, with the newer engine needing to achieve at least a 25% reduction in emissions compared to the diesel power it is replacing;
- The Texas Clean Fleet Program (TCFP) incentivizes owners of large fleets to replace a significant portion of their conventionally-fueled vehicles with alternative-fueled vehicles, achieving emission reductions by replacing the older, dirtier engines with newer, cleaner engines;
- The Texas Clean School Bus (TCSB) program provides funding for the retrofit and replacement of older school buses;
- The Light Duty Motor Vehicle Purchase or Lease Incentive Program (LDPLIP) provides rebate incentives statewide to purchase or lease an eligible new light-duty motor vehicle powered by natural gas, propane, hydrogen fuel cell, or electric drive;
- The New Technology Implementation Grants (NTIG) program provides funding for new/innovative technology to reduce emissions from stationary sources; and
- The Alternative Fueling Facilities Program (AFFP) provides funding for the construction of a variety of types of alternative fuel infrastructure in nonattainment areas;
- The Seaport and Rail Yard Areas Emission Reduction (SPRY) Program provides funding for the early replacement of drayage trucks and equipment at eligible in ports and class I railyards in nonattainment areas (this program was formerly known as the Drayage Truck Incentive Program or DTIP). The Austin area is not eligible for this program.

Notable program changes adopted by the 2019 Texas legislative session included:

- Creation of a fund for TERP projects that will separate future TERP funding from the appropriations process starting in August 31, 2021;
- Reducing the minimum activity in nonattainment and “affected counties” from 75% to 55% for the DERI program (while still calculating cost/ton based on activity in those counties); and
- Removal of Victoria as an “affected county,” thereby slightly reducing TERP revenue and disqualifying activity occurring in Victoria County as counting towards the minimum activity requirements for DERI projects.

TCEQ posted a series of reports on their program website in October 2019 that summarizes the estimated OSD weekday NO_x emission reductions being achieved by each program for 2019 – 2022

based on grants awarded through August 31, 2019. Table 3-3 summarizes these data for the Austin area.²¹

Table 3-3. Quantified OSD Weekday NO_x Emissions from TERP Grants by Program from Grants Awarded through August 31, 2019 (tpd)

Program	2019	2020	2021	2022
DERI²²	2.35	2.08	2.07	2.05
TCFP²³	0.04	0.01	0.01	0.02
TNGVGP²⁴	0.08	0.03	0.03	0.03
TCSB²⁵	0.00	0.00	0.00	0.01
TOTAL	2.47	2.12	2.11	2.11

Table 3-4 shows the TERP funding awarded to the Austin-Round Rock-Georgetown MSA in FY 2019, along with any quantified NO_x emissions reductions from those grants. TCEQ does not provide NO_x estimates for funding awarded for the NTIG, AFFP, or LDPLIP grant programs.

Table 3-4. TERP Grants Awarded in the Austin Area in FY 2019²⁶

Grant Program	Total Funding Awarded ²⁷	Funding Awarded to the Austin Area	% of Funding Going to MSA	Austin Area NO _x Emissions Reductions (tons)	Cost Per Ton of NO _x Emissions Reductions in Austin Area
AFFP	n/a	n/a	n/a	n/a	n/a
DERI-Rebate	\$4,916,561	\$832,735	16.94%	49.84	\$16,707.40
DERI-ERIG	\$56,184,625	\$7,572,990	13.48%	626.62	\$12,085.46
LDPLIP	\$5,453,315	\$1,335,830	24.50%	Unquantified	Unquantified
NTIG	\$3,642,192	\$0	0.00%	0.00	n/a

²¹ TCEQ develops OSD weekday NO_x emission reduction estimates by dividing the annual NO_x reductions by 260, which corresponds roughly to the number of weekdays in a year.

²² TCEQ. "Diesel Emission Reduction Incentive (DERI) Program Projects by Area 2001 through August 31, 2019." Prepared by Air Grants Division, 10/1/2019. Available online at: https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/DERI_Area_Summary_20190831.pdf. Accessed 7/16/2020.

²³ TCEQ. "Texas Clean Fleet Program Projects by Area 2010 through August 31, 2019." Prepared by Air Grants Division, 10/1/2019. Available online at: https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/TCFP_by_Area_20190831.pdf. Accessed 7/16/2020.

²⁴ TCEQ. "Texas Natural Gas Vehicle Grant Program (TNGVGP) Projects by Area 2010 through August 31, 2019." Prepared by Air Grants Division, 10/1/2019. Available online at: https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/TNGVGP_by_Area_20190831.pdf. Accessed 7/16/2020.

²⁵ TCEQ. "Texas Clean School Bus (TCSB) Program Replacement Projects by Area 2017 through August 31, 2018." Prepared by Air Grants Division, 10/1/2019. Available online at: https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/TCSB_Replacement_Projects_by_Area_20190831.pdf. Accessed 7/16/2020.

²⁶ Based on information provided by Nate Hickman, TCEQ, on 12/18/2019, by e-mail to Andrew Hoekzema.

²⁷ For the purposes of this table, the fiscal year award is identified as the fiscal year in which a grant contract was executed, rather than the fiscal year in which an award announcement was made or the fiscal year in which a grant round was announced.

Grant Program	Total Funding Awarded ²⁷	Funding Awarded to the Austin Area	% of Funding Going to MSA	Austin Area NO _x Emissions Reductions (tons)	Cost Per Ton of NO _x Emissions Reductions in Austin Area
SPRYP	\$9,284,384	\$0	0.00%	0.00	n/a
TCFP	\$7,322,766	\$3,443,437	47.02%	20.44	\$168,486.23
TCSB ²⁸	\$3,121,500	\$111,000	3.56%	0.676	\$164,201.18
TNGVGP	\$14,273,374	\$730,228	5.12%	9.9852	\$73,131.03
TOTAL	\$104,198,717	\$14,026,220	13.46%	707.56	\$19,823.34

The NO_x reductions from grants awarded in the Austin in 2019 area translate to about 0.40 tpd of additional NO_x reductions in at least 2019, 2020, 2021, and 2022, with most projects also having emission reduction benefits in 2023, 2024, and 2025.

3.1.4 Texas Volkswagen Environmental Mitigation Program (TxVEMP)

In 2018, the TCEQ released the final version of their Beneficiary Mitigation Plan which identified the Austin metro area as a “priority” area and allocated \$16,297,602 of the \$169,548,522 total available funds to the Austin-Round Rock-Georgetown MSA. The funds are for the replacement or repower of diesel vehicles and equipment to new diesel, alternative fuel (compressed natural gas, propane, or hybrid electric), or all-electric vehicles and equipment. In spring 2019, TCEQ began opening their grant rounds for the Texas Volkswagen Environmental Mitigation Program (TxVEMP). The table below shows the vehicle types for each grant round, the grant amount available for the MSA, and total grant amount requested as of 7/16/2020, the total NO_x emissions anticipated to be reduced, and cost per ton of NO_x reduced.

Table 3-5. TxVEMP Grant Funding for Austin Area as of 7/16/2019²⁹

Vehicle Grants	Grant Amount Available for Austin Area	Grant Amount Awarded in Austin Area as of 7/16/2020	Estimated NO _x reductions (tons)	Cost/Ton of NO _x Reduced
School Buses, Shuttle Buses, and Transit Buses	\$5,704,161	\$5,704,161	41.82	\$136,406
Refuse Vehicles including Garbage Trucks, Recycling Trucks, Dump Trucks, Chipper Trucks, Street Sweepers, and Roll-Off Trucks	\$4,074,401	\$735,711	22.46	\$32,757
Local Class 4-8 Freight and Drayage Trucks	\$3,259,521	\$365,471	32.67	\$11,186
Total	\$9,778,562	\$6,805,343	96.95	\$70,195

The school bus round was over-subscribed, but the refuse truck and local freight truck rounds have been open for some time at this stage and have not had as much demand as TCEQ anticipated, so the

²⁸ TCSB only included replacement projects in FY 2019

²⁹ Includes projects pending execution

remaining amounts for those categories may be allocated to another category for future grant rounds. The Beneficiary Mitigation Plan for Texas and information about the grants can be found at www.TexasVWFund.org.

3.1.5 Commute Solutions Program

The Commute Solutions program is the region-wide Travel Demand Management (TDM) program that promotes activities to increase the efficiency and use of existing roadways by encouraging shifts from less efficient travel behaviors like, single occupant vehicle use, vehicle use during peak congestion hours, and travel on high-congestion roadways, to more efficient behaviors like, the use of public transit, carpools, vanpools, walking, biking, teleworking, alternative work schedules, and travel on less congested roadways. Due to the importance of these types of activities as part of the region's air quality plan, CAPCOG leveraged the local air quality funding in order to support this activity. Apart from air quality, other benefits of the program and other TDM activities include:

- Improved regional mobility;
- Improved safety outcomes;
- Reduced fuel consumption;
- Reduced time wasted in traffic;
- Improved workforce and economic development outcomes;
- Improved public quality of life; and
- Reduced space needed to service the transportation system

At the end of January 2019, CAPCOG launched a new Commute Solutions website with a fresh look, user experience, and resources for travelers in the region. The Commute Solutions website provides the public with information about Central Texas mobility options and encourages the public to shift from single occupant vehicle use to a more efficient mode. Additionally, the Commute Solutions program expanded the Emergency Ride Home (ERH) Program to the entire CAPCOG region. The ERH Program provides sustainable commuters a free or reduced-cost emergency ride home from work.

In 2019, CAPCOG maintained and updated the Commute Solutions website; the following graphs summarize the key statistics during this period. The increase in traffic to the page in January was a result of the new site launch and an increased advertising effort.

Figure 3-5. Commute Solutions Website Traffic, 2019

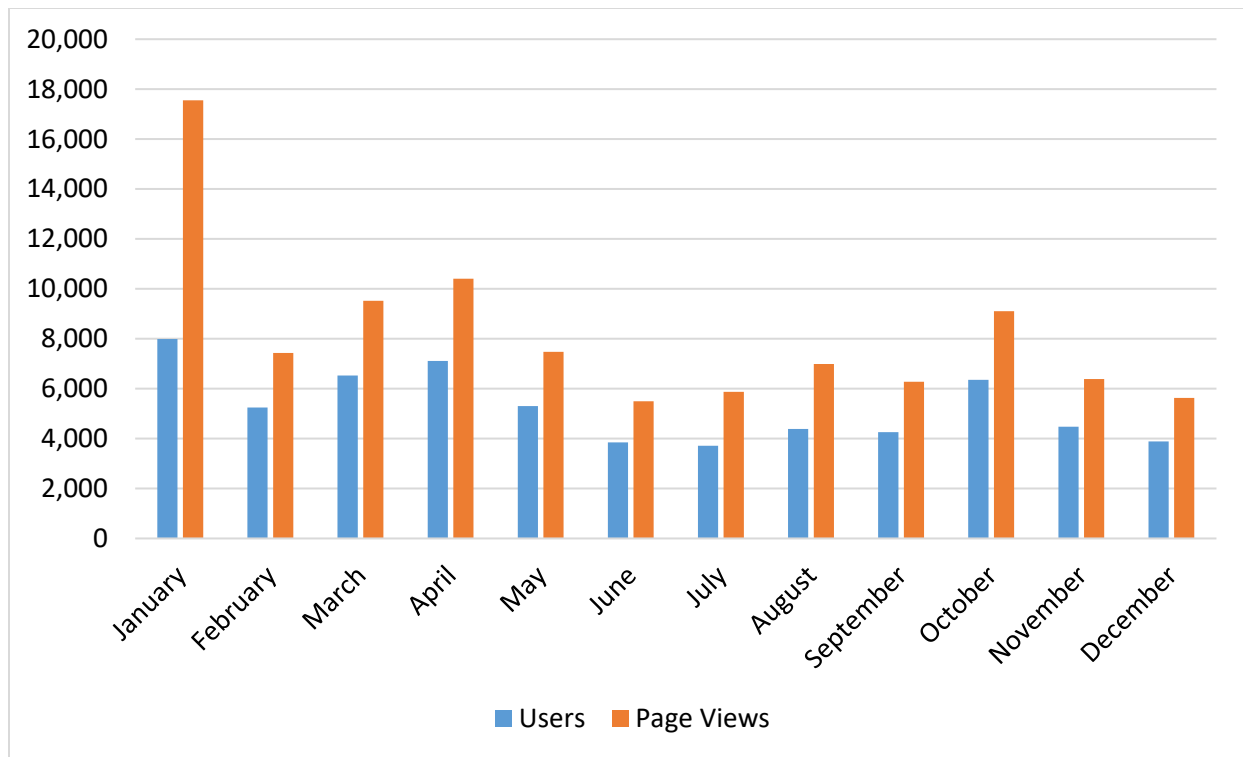
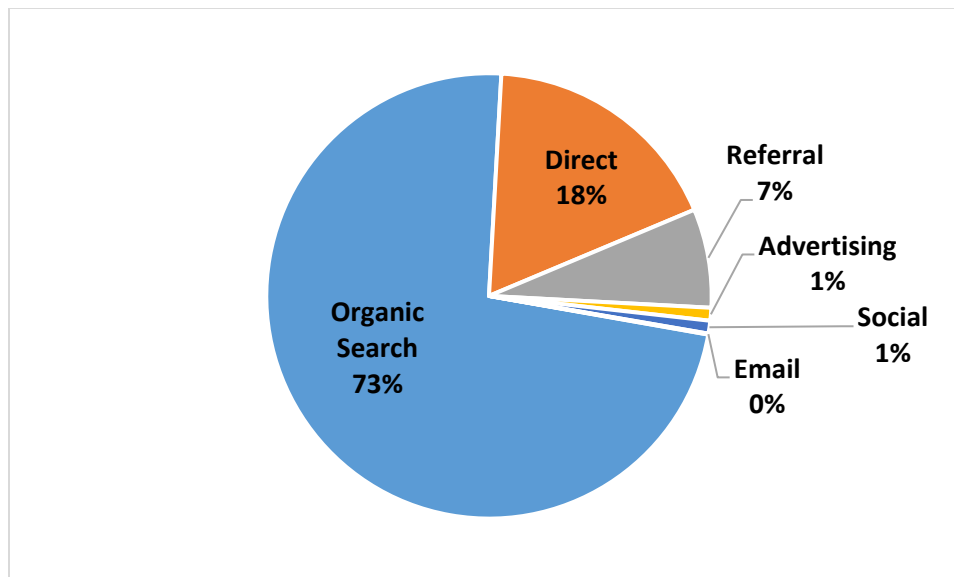


Figure 3-6. Commute Solutions Website Acquisition Method, 2019



The top 10 Commute Solutions webpages viewed in 2019 are listed below.

Table 3-6. Top 10 Commute Solutions Website Pages by Page Views, 2019

Page Rank	Page Title	Page Views
1	Commute Cost Calculator	66,298

Page Rank	Page Title	Page Views
2	Home Page	7,192
3	Carpool	2,906
4	Emergency Ride Home	2,820
5	Seniors & Disabilities	1,416
6	Flexible Work	1,899
7	Vanpool	1,718
8	Transit	1,454
9	Ride Guide	1,131
10	Alternative Work Schedules	634

CAPCOG maintains a Commute Solutions Facebook account with 823 followers and a Twitter account with 722 followers. The table below shows data from the Commute Solutions Facebook account; the high number of impressions and engagement in March, April, August, and October is from paid advertising. A sample social media post is shown in Figure 3-7.

Table 3-7. Commute Solutions Facebook Metrics, 2019

Month	Number of Posts	Impressions ³⁰	Reach ³¹
January	10	1,592	1,008
February	4	579	363
March	3	47,642	40,635
April	8	30,019	24,718
May	5	593	417
June	4	569	256
July	4	251	162
August	5	161,957	110,592
September	6	1,227	425
October	4	229,461	183,589
November	6	702	612
December	3	293	258
Total	62	474,885	363,035

³⁰ The number of people who had any content from Commute Solutions or About Commute Solutions enter their screen. This includes posts, check-ins, ads, social information from people who interact with your Page and more. (Unique Users)

³¹ The number of times any content from Commute Solutions or About Commute Solutions entered a person's screen. This includes posts, check-ins, ads, social information from people who interact with your Page and more. (Total Count)

Figure 3-7. Commute Solution Facebook Post Example



The Commute Solutions newsletter provides the public with relevant TDM news, events, tips, and info on myCommute Solutions promotions.

Table 3-8. Commute Solutions Newsletters Campaign Summary, 2019

Campaign Name	Send Date	Total Recipients	Opens	Clicks	Bounces	Unsubscriptions
February Commute Solutions Newsletter	2/28/2019	2,336	391	61	74	9
March Commute Solutions Newsletter	3/29/2019	2,278	302	36	51	16
April Commute Solutions Newsletter	4/29/2019	2,243	526	289	39	8
Commute Solutions Survey: Enter for a Chance to a \$50 Amazon Gift Card	5/24/2019	2,756	658	355	87	18
May Commute Solutions Newsletter	5/28/2019	2,194	515	294	28	6
June Commute Solutions Newsletter	6/27/2019	2,184	317	77	30	8
July Commute Solutions Newsletter	7/31/2019	2,169	280	35	21	9

Campaign Name	Send Date	Total Recipients	Opens	Clicks	Bounces	Unsubscriptions
August Commute Solution Newsletter	8/29/2019	2,156	289	70	25	7
September Commute Solutions Newsletter	9/30/2019	2,147	260	38	26	7
October Commute Solutions Newsletter	10/31/2019	2,133	239	35	29	6
November Commute Solutions Newsletter	11/27/2019	2,122	252	53	33	4
Total	n/a	2,756	4,029	1,343	443	98

Figure 3-8. Example Commute Solutions Newsletter Article from the April 2019 Newsletter

New myCommute Solutions Tool



myCommute Solutions has a new look! We have officially updated the myCommute Solutions tool. You can check it out on the [website](#) or the new [iOS](#) and [Android](#) applications. Current myCommute Solutions users should receive an email asking if they want to transfer their previous myCommute Solutions account to the new platform. If you have not previously created an account, now is a perfect time. New features include:

- New Program/Incentives for users
- [Community Events](#)
- Integrations with Waze, Waze Carpool, and Strava
- Passive tracking through the mobile app
- More to come



Learn More

CAPCOG staff coordinated and collaborated with regional partners via the Regional TDM Coordinating Committee, formerly known as the Commute Solutions Steering Committee. This committee met twelve times in 2019.

In addition to Commute Solutions, CAPCOG also maintains the [myCommute Solutions](#) platform which is a tool that allows users to log their commutes, find carpool to join, and look for commute options. In March 2019, a revamped myCommute Solutions platform was launched. The table below shows the program participation from the myCommuteSolutions.com platform over the 2019 calendar year.

Table 3-9. myCommuteSolutions Data, 2019

Mode	Entries	Miles	NO _x Savings (grams/mile)	CO ₂ Savings (grams/mile)	Dollar Savings
Bicycle	14,846	71,448	119,486	25,098,283	\$38,950.45

Mode	Entries	Miles	NO _x Savings (grams/mile)	CO ₂ Savings (grams/mile)	Dollar Savings
Bus	28,227	388,001	507,171	112,301,467	\$43,248.43
Carpool	18,221	328,361	266,606	58,153,537	\$90,435.50
Compressed Schedule	1,188	21,856	14,555	7,732,583	\$12,128.88
Drove Alone	9,072	118,205	0	0	\$0.00
Stayed in the Office for Lunch	1,423	13,782	12,412	4,983,672	\$7,800.44
Scooter Share	137	439	280	158,220	\$248.27
Telework	9,967	166,829	240,530	59,605,472	\$92,779.71
Train	4,943	82,263	83,289	22,537,008	\$9,147.87
Vanpool	9,289	348,027	131,952	68,909,283	\$162,916.90
Walk	4,150	5,877	326,129	2,042,980	\$3,174.85
Total	101,463	1,545,087	9,233	361,522,505	\$460,831.31

3.1.6 Clean Air Partners Program

CLEAN AIR Force's Clean Air Partners Program includes reporting from a number of organizations outside of the CAC. These include:

1. 3M;
2. American Lung Association;
3. Applied Materials;
4. Austin Community College District;
5. Austin Independent School District (AISD);
6. Chemical Logic, Inc.;
7. Emerson Process Management;
8. EnviroMedia Social Marketing;
9. Environmental Defense Fund;
10. HNTB Corporation;
11. Metropia;
12. NXP;
13. Oracle;
14. Pfizer;
15. R&R Limousine and Bus;
16. Samsung Austin Semiconductor;
17. Seton Healthcare Family;
18. Spectrum;
19. St. David's Healthcare;
20. TECO-Westinghouse;
21. Tokyo Electron;
22. University of Texas at Austin; and
23. Zephyr Environmental Corporation.

In addition, there are several CAC members who also participate in the Clean Air Partners Program:

1. CAPCOG;
2. City of Austin;
3. Central Texas Regional Mobility Authority (CTRMA);
4. CAMPO;

5. Lone Star Clean Fuels Alliance (LSCFA);
6. Lower Colorado River Authority (LCRA);
7. Travis County;
8. TxDOT Headquarters;
9. TxDOT Austin District; and
10. Williamson County

3.1.7 Outreach and Education Measures

Continued outreach and education is essential to achieving CAC goals. 2019 outreach and education activities are organized into six tasks:

1. Electronic Outreach;
2. In-person Outreach;
3. Development of Air Quality Educational Materials;
4. Air Quality Outreach and Education Coordination and Collaboration;
5. Air Quality Outreach Activities Milestones; and
6. Commute Solutions Outreach Program.

3.1.7.1 Electronic Outreach and Education

One of the primary ways CAPCOG staff accomplished outreach goals during this period was through electronic outreach. Electronic outreach allows the program to provide air quality information to a large audience with limited resources. Electronic outreach completed during this period was carried out through the Air Central Texas (ACT) website, social media accounts, and ACT newsletters.

3.1.7.1.1 Air Central Texas Website

The ACT website (www.aircentraltexas.org) provides the public with information about Central Texas air quality, supports existing air quality programs, and promotes activities to protect local air quality; this is all to motivate everyone to make decisions that are “Air Aware.” In 2019, CAPCOG continued to maintain and update the ACT website. Figure 3-9 shows the number of users and page views for each month. The increase in website visits during the summer is likely a combination of an increased number of OADs and paid advertising which directed to the ACT website.

Figure 3-9. Air Central Texas Website Traffic, 2019

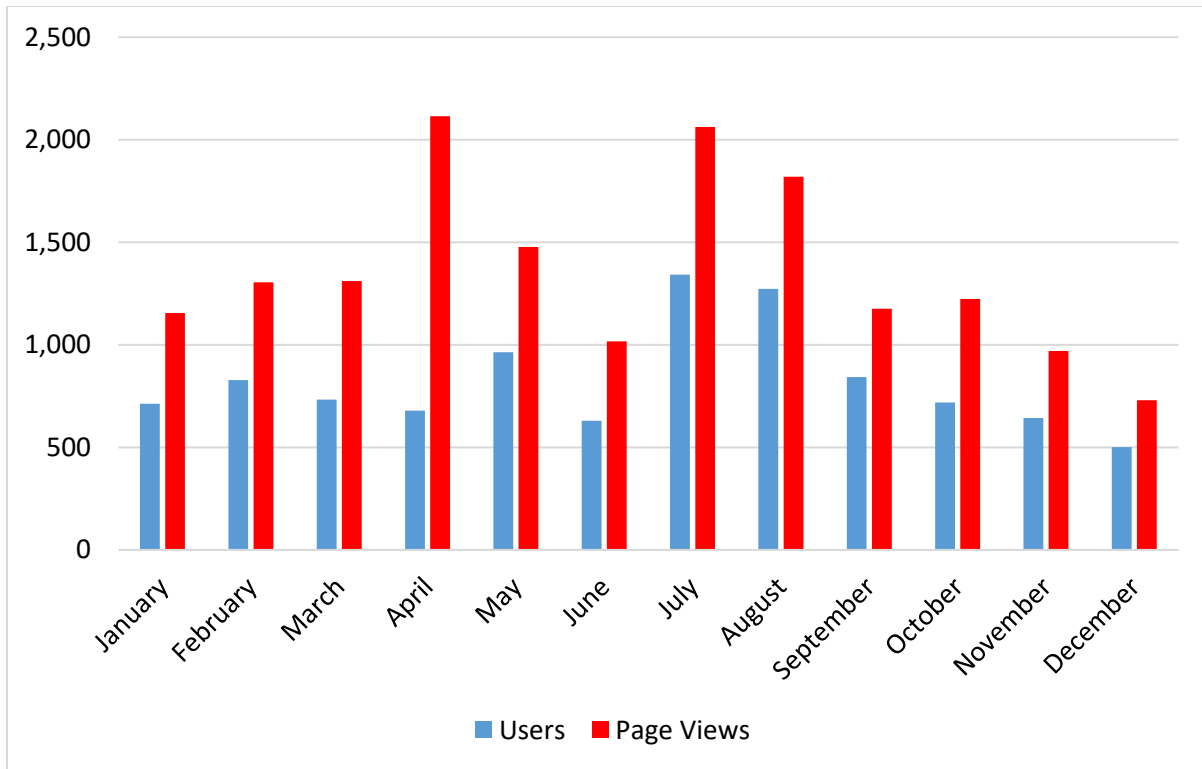
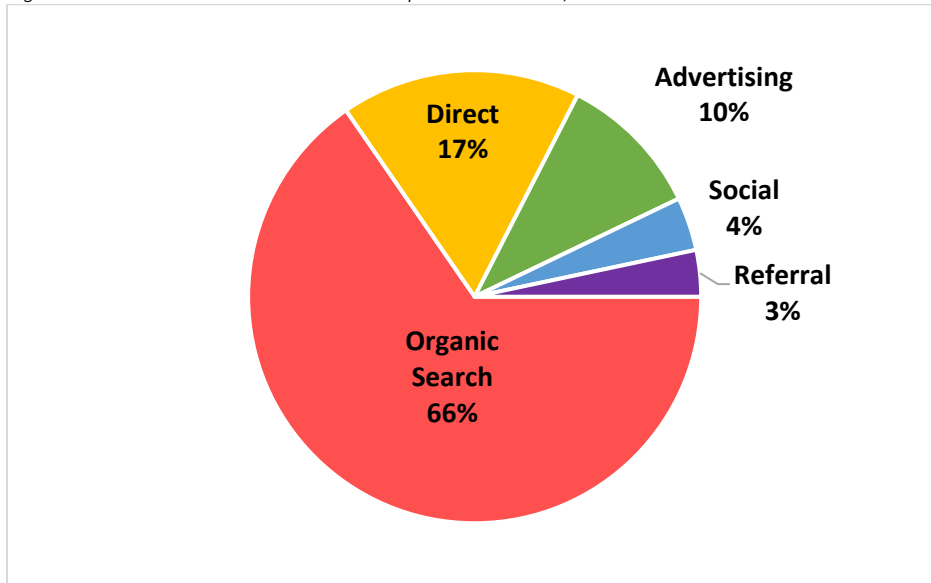


Figure 3-10 shows where website visitors came from. Around two-thirds of all visitors found the website from an organic search of terms in a search engine (Google, Bing). 17% of visitors used a direct web search in which the users typed in an ACT URL or were directed from an email or newsletter. Also, visitors found the site through paid advertising, social media links, and referrals from other websites – mainly the City of Austin and CAPCOG websites.

Figure 3-10. Air Central Texas Website Acquisition Method, 2019



The top 10 ACT Webpages viewed in 2019 are listed below. The page with the highest views was the “What is Ground-Level-Ozone?” page; this suggests that visitors are searching for specific information about ground-level ozone rather than the Air Central Texas program. It is notable that two of the top ten pages, #4 and #10, are in Spanish.

Table 3-10. Top 10 Air Central Texas Website Pages by Pageviews, 2019

Page Rank	Page Title	Page Views
1	What is Ground-Level Ozone?	3,739
2	Home Page	2,549
3	Clean Air Commitments for Individuals	1,866
4	¿Qué Es El Ozono Troposférico?	807
5	Conserve	739
6	Central Texas Air Quality	722
7	Air Central Texas Toolkit	395
8	Clean Air Coalition	390
9	Hazy skies expected in Austin this weekend as African dust cloud looms	383
10	¿Quién está en Riesgo?	360

The ACT newsletter is CAPCOG’s public facing air quality newsletter. It provides the public with relevant air quality news, events, tips, and AQI data. Table 3-10 shows the data associated with each newsletter.

Table 3-10. Air Central Texas Monthly Newsletters Campaign Summary, 2019

Campaign Name	Send Date	Recipients	Opens	Clicks	Bounces	Unsubscriptions
March Air Central Texas Newsletter	3/13/2019	137	40	14	3	0
April Air Central Texas Newsletter	4/29/2019	139	44	8	3	0
May Air Central Texas Newsletter	5/24/2019	146	41	16	5	1
June Air Central Texas Newsletter	6/24/2019	160	35	15	4	1
July Air Central Texas Newsletter	7/29/2019	161	43	21	5	0
August Air Central Texas Newsletter	8/31/2019	187	49	19	8	1
September Air Central Texas Newsletter	9/30/2019	197	44	18	7	0
October Air Central Texas Newsletter	10/31/2019	194	36	8	5	0
November Air Central Texas Newsletter	11/27/2019	191	41	14	7	0
Total	n/a	197	373	133	47	3

Figure 3-11. Sample Newsletter Article from the March 2019 ACT Newsletter



3.1.7.1.2 Social Media

CAPCOG maintains an ACT Facebook account with 358 followers and a Twitter account with 98 followers. Table 3-11 shows data from the ACT Facebook Account, the high number of people reached, and gained impressions is from paid advertising that occurred during this period. Figure 3-122 shows an example of a social media post.

Table 3-11. ACT Facebook Metrics, 2019

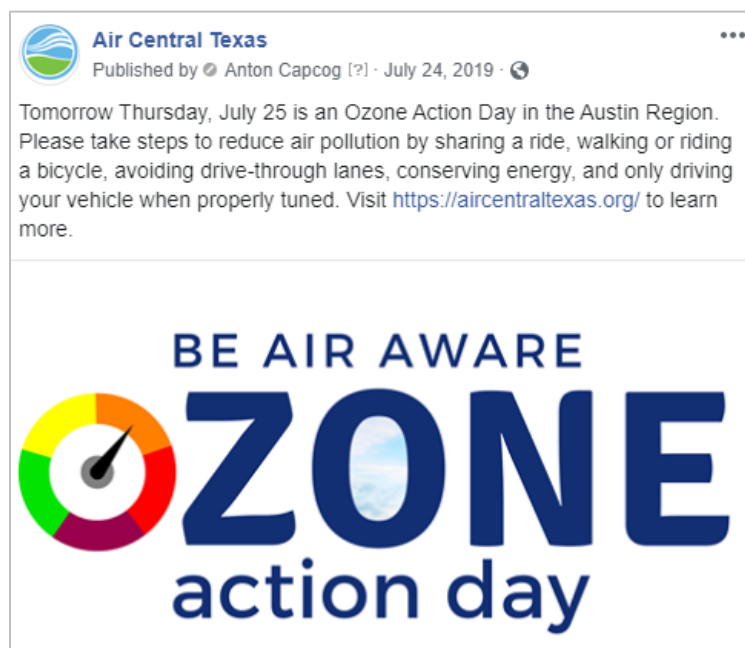
Month	Number of Posts	Page Views	Reach ³²	Impressions ³³
January	5	8	143	224

³² The number of people who had any content from ACT or About ACT enter their screen. This includes posts, check-ins, ads, social information from people who interact with your Page and more. (Unique Users)

³³ The number of times any content from ACT or About ACT entered a person's screen. This includes posts, check-ins, ads, social information from people who interact with your Page and more. (Total Count)

Month	Number of Posts	Page Views	Reach ³²	Impressions ³³
February	3	31	89	127
March	4	6	99	188
April	9	72	351	533
May	5	34	161	243
June	5	23	1,005	1,394
July	6	61	31,329	35,591
August	4	64	69,288	109,214
September	6	42	289	452
October	3	11	85	153
November	2	19	81	96
December	3	33	61	95
Total	55	404	102,981	148,310

Figure 3-12. Air Central Texas Facebook Post Example



3.1.7.2 In-Person Outreach and Education

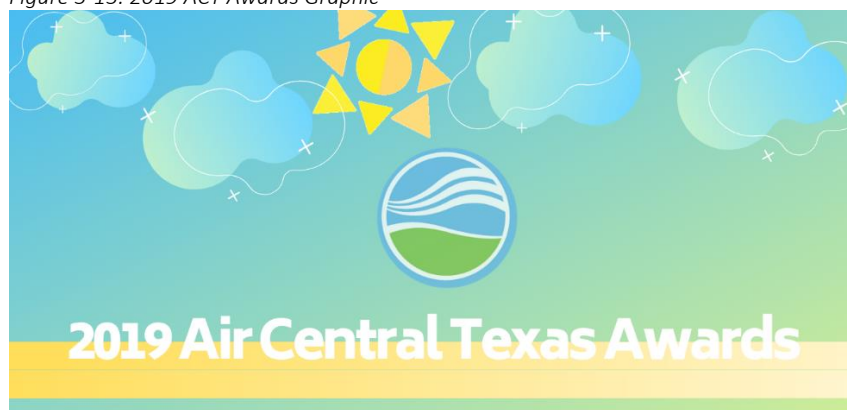
In addition to electronic outreach, CAPCOG staff continued to engage the public in-person at community events and hosted one event, the 2019 Air Central Texas Awards. CAPCOG reached approximately 2,000 individuals at events in all five of the CAC counties in 2019. The in-person outreach events that CAPCOG attended are listed below:

- February 9, 2019: Smithville Green Expo (Bastrop County) – promote the Air Central Texas and Commute Solutions programs to Smithville-area residents
- February 20, 2019: 2019 Mayor’s Mobility Breakfast (Travis County) – promote the Commute Solutions program to organizations involved with Movability and the Mayor’s Mobility Challenge

- February 26, 2019: Lower Colorado River Authority (LCRA) Open House (Travis County), Headquarters (Travis County) - promote the Air Central Texas and Commute Solutions programs to LCRA employees
- February 28, 2019: LCRA Open House, Dalchau Service (Travis County) – promote the Air Central Texas and Commute Solutions programs to LCRA employees
- April 18, 2019: IBM Earth Day - part 1 (Travis County) – promote the Air Central Texas and Commute Solutions programs to IBM employees
- April 18, 2019: IBM Earth Day - part 2 (Travis County) – promote the Air Central Texas and Commute Solutions programs to IBM employees
- April 24, 2019: Austin Independent School District (AISD) Commuter Event (Travis County) – promote the Commute Solutions program to AISD employees
- April 27, 2019: Earth Day ATX (Travis County) – promote the Air Central Texas and Commute Solutions programs to Earth Day ATX attendees
- May 11, 2019: Austin History Center Transportation Expo (Travis County) - promote the Air Central Texas and Commute Solutions programs to Austin History Center attendees
- June 26, 2019: City of Austin Safety Conference (Travis County) – promote the Air Central Texas and Commute Solutions programs to City of Austin employees
- June 26, 2019: Annual City of Austin Safety Conference (Travis County) – promote the Air Central Texas and Commute Solutions programs to City of Austin employees
- August 29, 2019: Texas State University Orientation Event (Hays County) – promote the Air Central Texas and Commute Solutions programs to Texas State students
- September 1, 2019: Cedar Park Splash Jam (Williamson County) – promote the Air Central Texas and Commute Solutions programs to Cedar Park residents
- September 25, 2019: City of Austin Employee Health Fair (Travis County) – promote the Air Central Texas and Commute Solutions programs to Austin employees
- September 28, 2019: Lockhart Western Swing Fest (Caldwell County) - promote the Air Central Texas and Commute Solutions programs to Lockhart Western Swing Fest attendees

The 2019 ACT Awards were awarded at CAPCOG’s General Assembly Meeting on December 11, 2019.

Figure 3-13. 2019 ACT Awards Graphic



The winners of the 2019 Air Central Texas Awards were:

- The Air Central Texas Outstanding Organization Award - Capital Metropolitan Transportation Authority (Capital Metro)
 - Capital Metro received the 2019 Air Central Texas Outstanding Organization award for its commitment to being a sustainability service provider. In 2018, Capital Metro launched Connections 2025, a re-imagining of the transit service. This offered more frequent, connected and reliable service delivery which resulted in over 5% ridership increase - one of only a few transit agencies to see a significant increase in ridership. In 2020, Capital Metro will launch their first zero-emission electric buses. A total of ten buses will be put into service, and the North Ops Bus Depot will be transformed into one of the first fully electric ready bus depots with a capacity to expand the E-Bus fleet to over 180 buses.
- Bill Gill Central Texas Air Quality Leadership Award - Scheleen Walker, Travis County
 - Scheleen Walker received the 2019 Bill Gill Central Texas Air Quality Leadership Award for her career in air quality planning. While managing Travis County's Air Quality Program, Ms. Walker was an essential partner in the development and implementation of the region's ground-breaking, voluntary air quality improvement agreements. Working with the Texas Commission on Environment Quality and US Environmental Protection Agency, the region was able to enact voluntary regulations to reduce ozone-forming emissions, and remain in compliance with the Clean Air Act's standards for ground-level ozone. During Ms. Walker's first tenure at Travis County she was instrumental in crafting vehicle emissions testing legislation, and supporting Travis County's buy-in of the program. As Legislative Director for Representative Donna Howard, Ms. Walker she facilitated the region's air quality legislative agenda, and worked with Rep. Howard to author and pass legislation allowing local enforcement of heavy-duty vehicle idling restrictions. Now in her current position at Travis County, Ms. Walker continues to support efforts to reduce emissions and improve air quality in the County's long-range planning initiatives.

3.1.7.3 Outreach and Education Materials

CAPCOG staff updated and developed air quality outreach materials for CAPCOG and the CAC to use to promote regional air quality. The materials updated or developed in 2019 include:

- Updated existing materials to newest available information and data
 - Children and Air Quality
 - Aging and Air Quality
 - EPA AQI for O₃ Guide
 - Air Central Texas Guide to the AQI
- New Educational Materials Developed
 - Electronic Graphics and GIFs (Graphics Interchange Format)
 - Update Ozone Action Day (see figure 3-12)
 - Ozone Season Kickoff – “Take care of our air. Air Quality Awareness Week, find out what you can do”
 - Bicycle Graphic – “Take care of our air. Ride your bike for a healthier commute”
 - Festival Month – “Take care of our air. Switch your ride, reduce pollution”
 - No Idling – “Take care of our air. Limit idling for cleaner air”
 - Ride Share – “Take care of our air. Share a ride and reduce pollution”
 - Transit – “Take care of our air. Take the bus to improve air quality”

- Vehicle Maintenance – “Take care of our air. Keep your vehicle maintained for clean air”

An example of ACT materials is below.

Figure 3-14. Vehicle Maintenance ACT Graphic



3.1.8 PACE Program

The PACE program provides an innovative mechanism for financing renewable energy and energy-efficiency improvements to industrial, commercial, multi-family residential, and non-profit buildings in participating jurisdictions. In order to address pay-back periods for energy efficiency and renewable energy (EE/RE) projects that may not align properly with a private property owner, the PACE program enables jurisdictions to put a property tax lien on a piece of property where an EE/RE improvement is made using private financing until the loan for the project has been paid back. PACE is authorized under state law in Section 399 of the Texas Local Government Code Chapter 399.³⁴ Projects include:

- HVAC modification or replacement;
- Light fixture modifications such as LED;
- Solar panels;
- High-efficiency windows or doors;
- Automated energy control systems;
- Insulation, caulking, weather-stripping or air sealing;
- Water-use efficiency improvements;
- Energy- or water-efficient manufacturing processes and/or equipment;
- Solar hot water;
- Gray water reuse; and
- Rainwater collection systems.

In 2019, Bastrop, Hays, Travis, and Williamson Counties participated in PACE. Travis County and Williamson County adopted PACE in 2016. Hays County adopted it in 2017. Lastly, Bastrop County adopted PACE on September 24, 2018. Caldwell County is the only county in the MSA that does not participate in PACE.

³⁴ <http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.399.htm>

As of June 26, 2019, eight of the nineteen completed PACE projects in the state were in Bastrop, Hays, Travis, and Williamson Counties. Table 3- summarizes key data from the projects for each county³⁵.

Table 3-12. PACE Project Summary for Austin-Round Rock-Georgetown MSA as of June 26, 2019

Data Point	Bastrop County	Hays County	Travis County	Williamson County	TOTAL – Austin-Round Rock-Georgetown MSA
Projects	1	1	4	2	8
Investments	\$120,000.00	\$1,800,000	\$2,245,935.00	\$1,767,982	\$5,933,917.00
Jobs Created	2	10	22	14	48
CO₂ Reduced (tons/yr.)	49	429	861	1,018	2,357
SO_x Reduced (tons/yr.)	0.08	0.23	0.52	0.54	1.37
NO_x Reduced (tons/yr.)	0.03	0.72	1.25	0.96	2.96
Water Saved (gallons/yr.)	n/a	3,139,000	658,000	1,780,000	5,577,000
Energy Saved (kWh/yr.)	94,081	824,903	1,625,845	1,956,657	4,501,486

For more information on PACE, visit <http://www.texaspaceauthority.org/>.

3.2 Organization-Specific Measures and Updates

This section provides updates on measures implemented by CAC members. Supplemental electronic files provide detailed, measure-by-measure, organization-by-organization details. This section of the report provides an overview of these measures and a stand-alone section for Texas Lehigh Cement Company's NO_x emission reduction program. These measures are based on reports collected from CAC members in May and June 2020.

Organizations that provided a report to CAPCOG included:

1. Austin White Lime Company;
2. Bastrop County;
3. Caldwell County;
4. CAPCOG;
5. City of Austin;
6. City of Bastrop;
7. City of Bee Cave;
8. City of Buda;
9. City of Cedar Park;
10. City of Elgin;
11. City of Hutto;

³⁵ <https://pace.harcresearch.org/>

12. City of Kyle;
13. City of Lago Vista;
14. City of Leander;
15. City of Pflugerville;
16. City of Round Rock;
17. City of San Marcos;
18. City of Taylor;
19. Central Texas Regional Mobility Authority (CTRMA);
20. CLEAN Air Force;
21. Hays County;
22. Lone Star Chapter of the Sierra Club;
23. Lone Star Clean Fuels Alliance (LSCFA);
24. Lower Colorado River Authority (LCRA);
25. Public Citizen;
26. TCEQ;
27. Texas Department of Transportation (TxDOT);
28. Texas Lehigh Cement Company;
29. Texas Parks and Wildlife Department (TPWD);
30. Travis County; and
31. Williamson County.

Organizations that did not report as of the date of this report included:

1. CAMPO;
2. CapMetro;
3. City of Georgetown;
4. City of Lakeway;
5. City of Lockhart;
6. City of Luling;
7. City of Sunset Valley; and
8. Federal Highway Administration.

3.2.1 Emission Reduction Measures

CAC members reported on their implementation of Tier 1 and 2 emissions reduction measures in 2019. A summary of the number of organizations that implemented each measure is listed below.

- Tier 1
 - Educating employees about regional air quality and encouraging them to sign up for daily air quality forecasts and Ozone Action Day alerts = 20 organizations
 - Where feasible, encourage employees to telecommute at least once a week and on all Ozone Action Days = 12 organizations
 - When employees are not telecommuting, encourage them to take low-emission modes of transportation, such as carpooling, vanpooling, transit, biking, and walking = 17 organizations
 - Where flexible schedules are allowed, encourage employees to consider work schedules with start times earlier than 8 am rather than later in the morning due to the higher impact of emissions on O₃ levels later in the morning = 19 organizations

- Conserve energy, particularly on Ozone Action Days = 17 organizations
- Establish and enforce idling restriction policies for use of organization's vehicles, equipment, and property = 9 organizations
- Establish fleet management policies that prioritize the use of vehicles and equipment with low NO_x rates = 9 organizations
- Educate fleet users on driving and equipment operation practices that can reduce NO_x emissions = 9 organizations
- Reschedule discretionary emission-generating activities such as engine testing and refueling to late afternoon rather than the morning, particularly on Ozone Action Days = 10 organizations
- Seek funding to accelerate replacement of older, higher-emitting vehicles and equipment with newer, cleaner vehicles and equipment, such as Texas Emission Reduction Plan (TERP) grants = 8 organizations
- Tier 2
 - Establish low-NO_x purchasing policies for new on-road vehicles, non-road equipment, and stationary equipment = 4 organizations
 - Establish "green" contracting policies to encourage the use of low-NO_x vehicles and equipment and avoid the use of engines during the morning on Ozone Action Days = 1 organizations
 - Purchase higher-grade gasoline with lower sulfur content in August and September = 3 organizations
 - Provide incentives to employees to avoid single-occupancy vehicle commuting, particularly on Ozone Action Days = 3 organizations
 - Optimize combustion and pollution controls for NO_x reductions, particularly on Ozone Action Days = 1 organizations
 - Enforce vehicle idling restrictions within the community [either through an ordinance if a city or a memorandum of agreement with TCEQ if a county] = 8 organizations
 - Educating the public about regional air quality and encouraging them to sign up for daily air quality forecasts and Ozone Action day alerts = 18 organizations

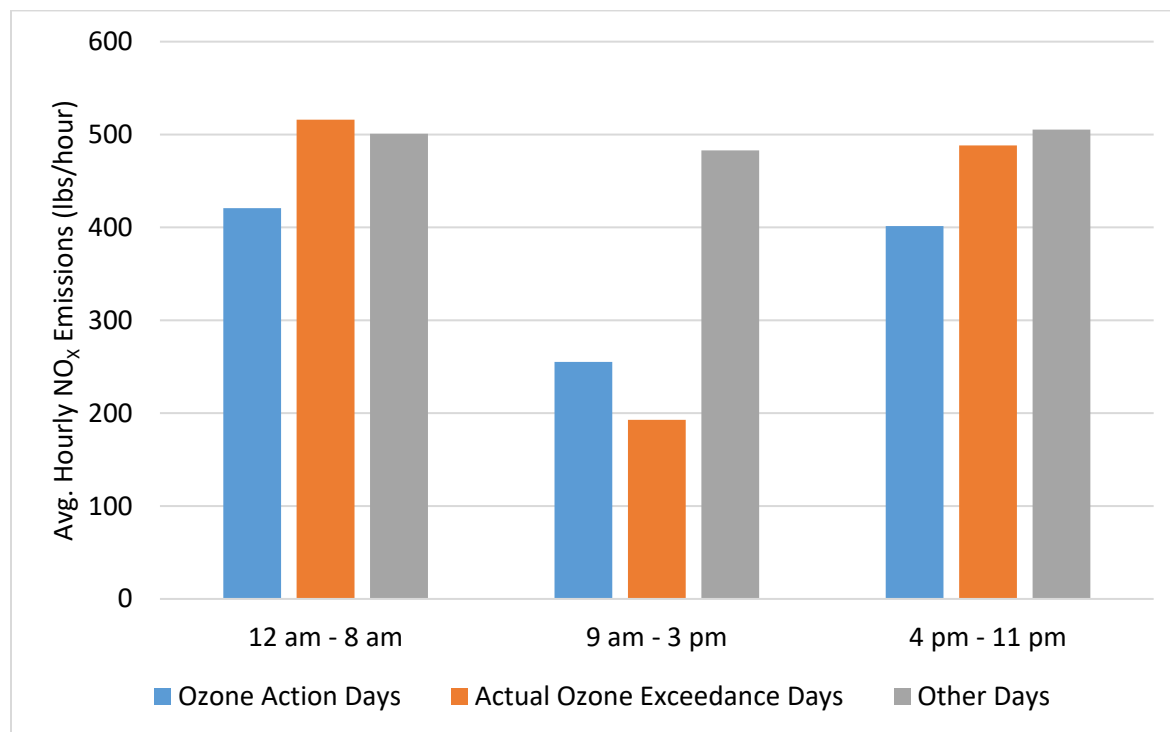
If these organizations provide data subsequent to this report, CAPCOG will provide an updated version of this report. Organization-specific information is available in the accompanying spreadsheet.

3.2.2 Texas Lehigh Cement Company

The Texas Lehigh Cement Company in Buda (Hays County) voluntarily implements a NO_x emission reduction program on days when TCEQ forecasts "moderate" or higher O₃ levels in the region. The facility, which is the largest point source of NO_x emissions within the Austin-Round Rock-Georgetown MSA, is equipped with a selective non-catalytic reduction (SNCR) system that it operates as needed to maintain compliance with permit requirements. On days when TCEQ predicts that O₃ levels in the region will be "moderate" or higher, Texas Lehigh will increase the NO_x reduction efficiency of the system between the key hours of 9 am – 3 pm, which prior modeling had shown were the most important hours for the facility to reduce NO_x emissions in order to reduce its contribution to high O₃ levels within the

region. Previous annual reports illustrate the NO_x reductions that can be achieved on high forecasted O₃ days. Also, a 2015 report by CAPCOG showed that this measure could reduce peak 8-hour O₃ concentrations at regional O₃ monitors by as much as 0.7-0.8 ppb in some locations. While Texas Lehigh provided their hourly NO_x data for 2019, they did not provide any notes on their implementation of this measure in 2019. However, the data for OADs and O₃ exceedances indicates that this measure was clearly implemented on these key days. The average for the “other” days also includes days with a “moderate” O₃ forecast, which explains why the average hourly emissions from 9 am – 3 pm for these days was lower than the other hours.

Figure 3-15. Hourly NO_x Emissions at Texas Lehigh on OADs and Actual O₃ Exceedance Days compared to Other Days, 2019



3.2.3 Idling Restrictions

The following jurisdictions implement idling restrictions, either with a local ordinance, through a memorandum of agreement (MOA) with TCEQ, or both. In 2018, a number of the TCEQ MOA's expired, and the following jurisdictions chose not to renew the MOA – City of Austin, City of Buda, and City of Georgetown.

Table 3-13. Jurisdictions Implementing Idling Restrictions in the Austin-Round Rock-Georgetown MSA, 2019

Jurisdiction	Local Ordinance	TCEQ MOA
City of Austin	<input checked="" type="checkbox"/>	<input type="checkbox"/>
City of Bastrop	<input checked="" type="checkbox"/>	<input type="checkbox"/>
City of Elgin	<input checked="" type="checkbox"/>	<input type="checkbox"/>
City of Georgetown	<input checked="" type="checkbox"/>	<input type="checkbox"/>
City of Hutto	<input checked="" type="checkbox"/>	<input type="checkbox"/>
City of Lockhart	<input checked="" type="checkbox"/>	<input type="checkbox"/>
City of Round Rock	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Jurisdiction	Local Ordinance	TCEQ MOA
City of San Marcos	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Bastrop County	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Travis County	<input type="checkbox"/>	<input checked="" type="checkbox"/>

These idling restrictions are “passive” controls in that the jurisdictions will respond to complaints when they are made, but they don’t devote dedicated resources to idling restriction enforcement.

3.2.4 Other Notable Distinctions for Local Communities

This section identifies a number of other distinctions that local communities have received in regards to air quality, climate change, and energy efficiency.

- American Council for an Energy-Efficient Economy (ACEEE) City Clean Energy Scorecard:
 - ACEEE scores 75 US cities on their efforts to achieve a clean energy future by improving energy efficiency and scaling up renewable energy.
 - In 2019, the City of Austin ranked 9th out of all the national cities that were evaluated: <https://www.aceee.org/local-policy/city-scorecard>
- Bloomberg American Cities Climate Challenge
 - The Bloomberg American Cities Climate Challenge is a \$70 million-dollar program that accelerates 25 cities’ efforts to tackle climate change and promote a sustainable future for residents.
 - In 2019, the City of Austin won the challenge. Over two years, Austin will be provided with powerful new resources and access to cutting-edge support to help meet or beat its near-term carbon reduction goals: <https://www.bloomberg.org/program/environment/climatechallenge/#overview>
- STAR Communities:
 - The STAR Community Rating System provides a comprehensive framework and certification program for evaluating local sustainability, encompassing economic, environmental, and social performance measures since its release in 2012.
 - City of Austin is a 4-Star Certified Community, the highest rating of any city in Texas, receiving this designation in 2014: <https://reporting.starcommunities.org/communities/5-austin-texas>
- SolSmart:
 - Recognizes cities, counties, and regional organizations for making it faster, easier, and more affordable to go solar.
 - The City of Austin is designated as a “Gold”-level designee and the City of Smithville (in Bastrop County) is designated as a “Bronze”-level designate: <http://www.solsmart.org/our-communities/designee-map/>
- Climate Mayors:
 - A bipartisan, peer-to-peer network of U.S. mayors working to demonstrate leadership on climate change through meaningful actions in their communities.
 - City of Austin, City of San Marcos, and City of Smithville are all members: <http://climatemayors.org/about/members/>
 - City of Austin also participates in a collaborative electric vehicle purchasing initiative through the Climate Mayors: <https://driveevfleets.org/what-is-the-collaborative/>

4 Ongoing Planning Activities

This section documents notable air quality planning milestones and activities completed in 2019.

4.1 Clean Air Coalition Meetings

During 2019, there were a total of three Clean Air Coalition meetings:

- February 13, 2019;
- May 8, 2019; and
- November 13, 2019.

Significant policy-related actions taken by the CAC in 2019 included:

- A Resolution Regarding Air Quality Issues for the 86th Texas Legislature;
- A comment letter to TCEQ regarding TCEQ's 2019 Annual Monitoring Network Plan; and
- A Subcommittee to Make Recommendations on Future CAPCOG Local Air Quality Funding Requests.

The Clean Air Coalition Advisory Committee (CACAC) met three times:

- February 1, 2019;
- October 31, 2019; and
- November 1, 2019.

The CACAC Outreach and Education Subcommittee met twice in 2019:

- April 3, 2019; and
- May 13, 2019.

4.2 LSCFA

The LSCFA held a number of meetings and workshops throughout 2019.

Board Meetings:

- January 9, 2019;
- April 10, 2019;
- July 10, 2019; and
- December 9, 2019.

Workshops:

- May 15, 2019: Austin Energy Electric Vehicle Charging Station Workshop
- June 20, 2019: Voltabox Presentation and Tour
- August 29, 2019: Heavy Duty Compress Natural Gas Technical Listening Session with TxDOT
- September 18, 2019: City of Austin Biofuel Facilities Workshop
- December 4, 2019: Eanes ISD Propane School Bus Facility Tour and Roundtable

4.3 Statewide Collaborative Initiatives

CAPCOG participates in several statewide air quality-related initiatives in 2019, which are listed below.

4.3.1 Texas Clean Air Working Group

CAPCOG participated in Texas Clean Air Working Group (TCAWG) meetings in 2019, as well as a TCAWG subcommittee on Outreach and Education.

- General TCAWG Meetings:

- January 14, 2019;
- February 12, 2019; and
- March 28, 2019;
- Research and Education Subcommittee Meeting:
 - August 15, 2019.

4.4 Regional Air Quality Technical Research Activities

CAPCOG completed a number of air quality technical research activities in 2019 including:

- 2018 Austin-Round Rock-Georgetown MSA Air Quality Report
- Monitoring projects:
 - Continued O₃ and meteorological data collection at eight CAPCOG-owned monitoring stations in the region to supplement the two TCEQ O₃ monitors in the region; and
 - 2018 Air Quality Monitoring Report;
- Modeling and data analysis projects:
 - 2018 Air Quality Monitoring Data Analysis.

Reports and data from these projects can be found at <https://www.capcog.org/documents/>.

4.4.1 Technical Working Group for Mobile Source Emissions

CAPCOG participated in the Technical Working Group for Mobile Source Emissions (TWG) meetings in 2019. The TWG meets to discuss Texas transportation issues regarding on-road mobile source emission inventories and transportation policy. CAPCOG attended the meetings on the following dates:

- March 7, 2019;
- June 6, 2019; and
- November 6, 2019.

4.5 EPA Travel Efficiency Assessment Method Technical Assistance Project

In early 2019, CAPCOG applied to EPA for technical assistance through its Travel Efficiency Assessment Method (TEAM) initiative and was one of two organizations selected by EPA for this round of projects. CAPCOG worked with local partners to select strategies that EPA's contractor evaluated. Strategies that were modeled include:

- Scenario 1: Improved Transit Frequency and Travel Times on Key Corridor
- Scenario 2: Region-wide Transit Frequency Improvements
- Scenario 3: Public Sector Worker Transit Subsidy
- Scenario 4: Region-wide VMT Pricing

The following table shows the initial VMT and emissions reductions by scenario compared to a business as usual (BAU) situation in 2040. The final report will be available in 2020.

Table 4-1. EPA TEAM Analysis Results of Daily VMT (mi) and Emission (kg) Reductions by Scenario Compared to the 2040 BAU

Scenario	Light-Duty VMT (mi)	CO ₂ e (kg)	PM _{2.5} (kg)	NO _x (kg)	VOC (kg)
Scenario 1: Improved Transit Frequency and Travel Times on Key Corridor	-56,671	-12,672	-1.90	-0.37	-1.14
Scenario 2: Region-wide Transit Frequency Improvements	-233,425	-52,197	-7.81	-1.52	-4.69
Scenario 3: Public Sector Worker Transit Subsidy	-587,977	-132,398	-21.64	-3.90	-14.42
Scenario 4: Region-wide VMT Pricing	-2,443,044	-552,762	-95.53	-16.38	-67.42

4.6 CapMetro Bus Electrification Initiative

As part of its long-term planning efforts, CapMetro has begun the process of converting significant parts of its fleet from diesel to electric. On July 25, 2019, staff from CapMetro announced that it will be receiving funding from several different grant applications it submitted, including the Federal Transit Administration (FTA) Low and No Emission Bus Program, TCEQ's Clean Fleet Program, and the Texas VW Environmental Mitigation Program. CapMetro is also in the process of converting its North Operations Bus Depot into an electric bus charging depot. When the work is finished, the depot will support charging capacity for 187 battery electric buses. In 2020, the first two electric buses were deployed on routes by CapMetro and ten more buses are planned to be deployed in 2020.

4.7 2019 Commuter Survey

In late 2019, CAPCOG conducted a regional phone survey as part of the Commute Solutions program in order to collect data on the region's commuting behavior and assess the region's success in influencing driving behavior through outreach efforts, including the extent to which commuters reported changes in behavior related to O₃ Action Day alerts.

Some highlights of the survey:

- 69% of respondents were aware of Ozone Action Days;
- 11% of respondents changed their commutes on Ozone Action Days (16% of people who were aware of Ozone Action Days);
- 10% of survey respondents were familiar with Commute Solutions, and 9% of survey respondents indicated that they had seen or heard Commute Solutions ads;
- Of those who recalled hearing or seeing Commute Solutions ads in 2019:
 - 39% indicated the ads persuaded them to change at least one commuter behavior;
 - 29% indicated the ads persuaded them to shift travel times or routes;
 - 21% indicated the ads persuaded them to avoid unnecessary travel;
 - 17% responded the ads persuaded them to shift travel mode;
- Levels of awareness of other TDM-related programs or services are shown below:

- Movability: 18%;
- Capital Metro's Express Bus Service: 83%;
- Capital Metro's MetroRideShare Vanpool Program: 59%;
- CARTS Interurban Bus Services: 39%;
- CARTS Country Bus Services: 25%;
- MoPac Express Lanes: 88%;
- City of Austin Smart Trips program: 16%; and
- None: 4%;
- 7% of commuters who usually drive alone used alternative commuting at least once in the prior month;
- The top three alternative modes people would be willing to consider were:
 - Working at home: 21%;
 - Railroad: 14%; and
 - Carpool or vanpool: 14%.

These results provide an excellent baseline for future planning efforts, and they can help local TDM planning efforts target their outreach efforts and messaging in the future.

5 Planning for the Future

This section details some important issues to note for the region's air quality plan moving forward, including new issues that have arisen between the end of 2019 and the completion of this report.

5.1 EPA Proposals to Retain Existing NAAQS for O₃ and PM_{2.5}

On April 30, 2020, EPA's proposal to retain the existing primary and secondary PM NAAQS³⁶, and on July 13, 2020, the EPA announced its proposal to retain the existing primary and secondary O₃ NAAQS³⁷. Both reviews are expected to be completed by the end of 2020. Barring some exceptional situation, such as a reconsideration of the final NAAQS decision if a new administration takes office in 2021, this means that it is likely that these NAAQS will remain in place through the end of the term of the current plan.

EPA's Integrated Science Assessments for O₃ and PM resulted in a downgrading of the health effects associated with O₃ (particularly mortality), and an upgrading of the health effects associated with PM (particularly cancer). In both cases, the lack of a clear threshold below which there are no health effects suggests that the Austin-Round Rock-Georgetown MSA will continue to benefit from ongoing emission reductions even with the area's design value in attainment of the O₃ and PM NAAQS.

One issue that related to PM NAAQS review that seems likely to result in litigation is that the EPA staff concluded in the Policy Assessment that the existing PM_{2.5} NAAQS were not protective enough, and recommended consideration of a more stringent annual PM_{2.5} NAAQS in the range of 8.0 – 11.9 µg/m³.

³⁶ <https://www.federalregister.gov/documents/2020/04/30/2020-08143/review-of-the-national-ambient-air-quality-standards-for-particulate-matter>

³⁷ https://www.epa.gov/sites/production/files/2020-07/documents/review_of_ozone_naqs_admin.pdf

Although, the EPA Administrator chose not to propose a more stringent NAAQS. Since the Austin area's annual PM_{2.5} design value is 9.8 µg/m³, a more stringent NAAQS in the range proposed by EPA staff would potentially put the Austin area at a much higher risk of a nonattainment designation for the PM NAAQS than for the O₃ NAAQS. The decision by the Administrator not to propose a more stringent PM NAAQS despite staff recommendations could form the basis for a reconsideration of the decision if a new administration takes office in January 2021. This could mean that a more stringent NAAQS may be likely as part of the next NAAQS review that would be due in 2025.

5.2 2020 Update to Austin Energy's Generation Plan

Austin Energy periodically updates its Resource, Generation, and Climate Protection Plan, and completed its most recent update on March 9, 2020.³⁸ Since Austin Energy both owns generating assets and serves as a retail provider of electricity, its generation plan is a significant part of the region's efforts to control air pollution. Highlights of the 2020 update include the following:

- **Continuation of Plan to Shut Down Decker Steam Units in 2020 and 2021:** Austin Energy reiterated its plan to shut down Decker Power Plant's gas-powered steam unit 1 after the 2020 summer peak and steam unit 2 after the 2021 summer peak. Due to its location and high NO_x emissions on high O₃ days (see Section 2.4), despite load-shifting that would be expected to occur that would result in higher output at other fossil-fuel plants in the Electric Reliability Council of Texas (ERCOT) grid, these actions would be expected to significantly reduce peak O₃ concentrations in the next few years.
- **Continuation of target to Shut Down of Austin Energy Share of Fayette Power Project by end of 2022:** Austin Energy also reiterated its target to cease operation of Austin Energy's portion of the Fayette Power Project (FPP) coal plant by the end of 2022 and is recommending that City Council establishes cash reserves that would be necessary to provide for that schedule. Austin Energy owns a 50% stake in two of the three units at FPP, with LCRA owning the other 50% stakes in those units and a 100% stake in the third unit. While FPP is outside of the Austin-Round Rock-Georgetown MSA, such an action would be expected to reduce background O₃ concentrations coming into the region when winds blow from that direction.
- **"REACH" for Carbon-Free by 2035:** Austin Energy will adopt a new market-based approach to accelerate reduction of carbon emissions by its legacy generators in the most economic manner available. This approach, known as "Reduce Emissions Affordably for Climate Change" (REACH) will incorporate a cost of carbon in the generation dispatch price, thereby allowing Austin Energy to reduce generation output during low-margin periods but keep the resources available for high-margin periods. Since this approach will be expected to have the effect of reducing the dispatch of Austin Energy's fossil fuel generating assets within the region, it should also reduce emissions of all other pollutants from these facilities as well.
- **Local Solar Resources:** Austin Energy plans to achieve a total of 375 megawatts (MW) of local solar capacity by the end of 2030, of which 200 MW will be customer-sited. They will also continue a shared solar pilot program for multi-family housing and, upon development of an automated electronic billing system, allow for expansion of the program.

³⁸ <https://austinenenergy.com/wcm/connect/6dd1c1c7-77e4-43e4-8789-838eb9f0790d/gen-res-climate-prot-plan-2030.pdf?MOD=AJPERES&CVID=n85G1po>

- **Energy Efficiency and Demand Response:** Austin Energy will continue to sponsor energy efficiency and demand response initiatives aimed at reducing overall system load and peak demand as follows:
 - Achieve energy efficiency savings equal to at least 1% per year of retail sales, targeting at least 1,200 MW of demand-side management capacity by 2030, including a target of 225 MW of economic peak demand response capacity by 2030;
 - Target serving at least 25,000 residential and business customer participants per year for all programs (Energy Efficiency, Austin Energy Green Building, Demand Response, and Solar) with at least 25% of those customers being limited-income customers.
 - Commit to achieving 30 MW of local thermal storage by 2027 and 40 MW of local thermal storage by 2030.
 - Allow near-real time access to hourly energy use data for Austin Energy customers via automated meter infrastructure, including compatibility with Green Button products and services.
 - Continue to move forward on energy code and green building development, including assessing the 2021 International Energy Conservation code, and specific solar-ready, EV-ready, electric building-ready and net-zero requirements for commercial and residential construction for possible adoption in future codes.
- **Support Electric Transportation:** Austin Energy will be supporting the transition to increased electric vehicle usage within the region, including supporting public-private partnerships that promote, market, and provide electric vehicle support; support the City of Austin’s Fleet Services electrification plan; and evaluate equitable growth of public and private charging station deployments by offering rebates, operational support, outreach, and special public charging rates that include support for limited-income populations.
- **Transmission Study:** Starting in 2020, Austin Energy will conduct a transmission study to assess the costs, benefits, technical and asset requirements of upgrading transmission resources to allow for the retirement of Austin Energy’s existing natural gas generators as early as 2027, 2030, or as per the schedule set forth in the 2030 plan. Austin Energy will also consider the viability of large-scale energy storage units and local solar installations within the Austin Energy load-zone to mitigate transmission requirements and exposure to peak electric market risks.

5.3 State and Local Revenue Reductions and Limits

State and local revenues are being significantly impacted by the economic recession stemming from the COVID-19 pandemic, and these revenue shortfalls may mean less funding for air quality programs in FY 2021 and for the FY 2022-2023 biennium. On May 20, 2020, the Governor, Lieutenant Governor, and Speaker of the Texas House of Representatives sent a letter to state agencies instructing them to submit a plan for reducing their budgets for the *current* 2020-2021 biennium by 5%, with these plans due to the Legislative Budget Board (LBB) by June 15, 2020. The TCEQ’s plan is not currently posted online, but the last time this occurred following the 2008 recession, TCEQ used reductions in TERP grants in order to meet the 5% reduction target, and then reduced the amounts requested for the following biennium for TERP, local air quality grants, and the DACM program in order to meet budget reduction targets. It is not yet clear what impact the current directive will have on air programs or how the new revenue outlook may affect the agency’s LAR for 2022-2023. The table below shows a comparison of the original and

updated revenue estimates for the Clean Air Account, which funds the Rider 7 grant program, and the Emission Reduction Plan account funds TERP grants.

Table 5-1. Updated FY 2020-2021 Revenue Estimates for Texas Air Quality Accounts

GR-Dedicated Account	Original	Updated	Change	% Change
Clean Air (151)	\$143,518,000	\$137,584,000	(\$5,934,000)	-4.13%
Emission Reduction Plan (5071) (not including transfer of revenue from title transfer fees from State Highway Fund)	\$245,770,000	\$210,778,000	(\$34,992,000)	-14.24%
TOTAL	\$389,288,000	\$348,362,000	(\$40,926,000)	-10.51%

Local budgets are also being affected by reduced revenue, and while CAPCOG anticipates being able to raise all of the funding required for FY 2021 from local governments, new legislation enacted in 2019 that limits the ability of local governments to raise revenue year to year could make it more difficult for local governments to continue funding the regional air quality program in the future.

5.4 Texas Emission Reduction Plan

As mentioned in Section 3.1.3, the Legislature passed landmark TERP legislation in 2019 (HB 3745) in that is intended address the continued growth of the TERP account due to under-appropriation of funds for grants (\$155 million for 2020-2021) relative to the revenues collected (over \$550 million for the 2020-2021 biennium), which has resulted in a fund balance approaching \$2 billion that has accumulated since 2001. The legislation extended all TERP revenue provisions until all areas of the state are designated “attainment” for all O₃ NAAQS, coinciding with when the authorization for awarding grants would end, and would establish a new “TERP Fund” that would receive all TERP revenue collected after August 31, 2021, and enable TCEQ to award funds out of the fund without needing to go through the appropriations process. This is expected to dramatically increase the amount of funding available for the TERP program starting in FY 2022. One issue to watch closely in the 2021 legislative session is whether the Legislature pushes this date back in order to again use TERP revenues to balance other parts of the budget, given the state’s problematic revenue estimates related to the economic recession and lower than expected oil prices.

5.5 TxVEMP

In 2020, TCEQ continued the Refuse Vehicle grants, and as of 5/22/2020, \$1,636,439 had been requested of the \$4,074,400.50 available, and \$397,200 had been awarded to the Austin area. TCEQ opened grants for Freight & Port Drayage Vehicles. In February 2020, the TCEQ opened up the next round of grants for local freight and port drayage trucks with \$3,259,521 available for the Austin area. As of 5/22/2020, \$388,060 has been requested from the Austin area. The TCEQ will continue to open grant rounds for the remaining vehicle types within the next few years, but has indicated that it may close these two rounds in fall 2020 and re-allocate the funding to other grant rounds for different vehicle types. TCEQ has also not yet opened up any funding for electric charging infrastructure under the VW grant program.

5.6 Inspection and Maintenance Program Changes

Starting in January 2020, two-speed idle testing will no longer be required as part of the vehicle I/M program due to vehicles from 1995 and earlier now being exempt from testing. The program's requirement to conduct testing of gasoline vehicles 2-24 years old means that only vehicles model year 1996 and later are now subject to testing, and all of these vehicles have on-board diagnostic (OBD) capabilities, which can be checked by service stations much more easily than conducting the kind of exhaust testing that was required for older vehicles.

One other potential change that might be on the horizon would be an increase in testing fees. TCEQ's most recent fee analysis, released in June 2020, indicated that only 10% of the stations responded that the fees covered their costs for conducting the tests, and a cost model indicating that 31% of stations in the Austin area did not have enough throughput to cover their costs. The report recommends a fee in the range of \$18.00 - \$22.00 for OBD tests moving forward (on top of the \$7.00 safety inspection cost required statewide and the \$2.50 administrative fee paid to the state at registration renewal), up from the \$11.50 currently charged in the Austin area. This would bring the Austin area's fee in line with the OBD testing in the Dallas-Fort Worth and Houston areas.³⁹

5.7 Forthcoming MOVES 2020 Release

EPA has indicated that it plans to release its new mobile source emissions model in late 2020, and since on-road emissions are estimated to be the largest source of NO_x emissions within the region and across the country, this new model should be an important tool for future planning efforts. Among other items, this new model will incorporate new vehicle testing data for Tier 2 light duty vehicles, which have not been included in the MOVES 2010 or MOVES 2014 models, and new data for heavy-duty vehicles showing significantly higher NO_x emissions in low-speed/idling conditions. CAPCOG will review the documentation for the model when it is released and will work with TCEQ and other partners on new on-road emissions inventories for the region to support on-going planning efforts.

5.8 Relocation of Monitoring Stations

In 2018, CAPCOG developed and received approval from the CAC for a 2019-2023 monitoring plan, which called for the closure of three of its eight monitoring stations (CAMS 601 in Fayette County, CAMS 684 in Bastrop County, and CAMS 1603 in Southwest Austin) and opening of three new monitoring stations within the region – one in Elgin, one in Bastrop, and one in East Austin.⁴⁰ Ahead of the 2019 O₃ season, CAPCOG was able to complete the closure of CAMS 601 and 684 and the opening of new sites in Bastrop (CAMS 1612) and Elgin (CAMS 1613). At the end of 2019, CAPCOG decommissioned CAMS 1603 and relocated the monitoring equipment to a new site in East Austin. The new site, CAMS 1619, came online in February 2020, and it is located on the City of Austin property of the former Holly Street Power Plant.

TCEQ's 2019 Annual Monitoring Network Plan (AMNP) called for the relocation of CAMS 3, the region's key regulatory O₃ monitoring station, by May 2020 due to construction occurring at Murchison Middle School where the monitoring station is located.⁴¹ CAPCOG and TCEQ worked with Austin Independent

³⁹ <https://www.tceq.texas.gov/assets/public/implementation/air/ms/IM/2020%20IM%20Fee%20Analysis.pdf>

⁴⁰ CAPCOG. "2019-2023 Ozone Monitoring Network Review Report." May 31, 2018. Available online at: http://www.capcog.org/documents/airquality/reports/2018/5.2.3_O3_Monitoring_Network_Review_for_2019-2023_final.pdf

⁴¹ TCEQ. "Annual Monitoring Network Plan." July 3, 2019. Available online at: https://www.tceq.texas.gov/assets/public/compliance/monops/air/annual_review/historical/2019-AMNP.pdf

School District (AISD) to relocate the station to another site on the campus in order to ensure data continuity. The existing site was shut down in February 2020 and TCEQ expects the relocation of CAMS 3 should to be finalized by August 2020. Unfortunately, this has meant the loss of more than 6 months' worth of monitoring data at the region's most important O₃ monitoring station, which may cause the region's 2018-2020, 2019-2021, and 2020-2022 O₃ design values to be based only on data from CAMS 38.

5.9 Transition of Commute Solutions Program to CAMPO

In February 2020, CAPCOG and CAMPO entered into an agreement to transfer the Commute Solutions program to CAMPO, following the CAMPO board's decision to award approximately \$500,000 in Surface Transportation Block Grant (STBG) funding to CAMPO for a regional TDM program from 2020-2022, and to provide funding to CAPCOG to continue managing the Commute Solutions website and myCommuteSolutions.com platform until the transition takes place, which has not yet occurred as of the date of this report.

5.10 Rider 7 Local Air Quality Grant Program

The 86th Texas Legislature reinstated local air quality planning funding for "near-nonattainment" areas for the 2020-2021 biennium, although their use will be restricted to monitoring and emissions inventory work. TCEQ allocated \$281,250 of this funding to the Austin area, and CAPCOG entered into a grant agreement with TCEQ in March 2020 that will enable CAPCOG to use these funds to cover the costs of CAPCOG's monitoring contract in 2020 and 2021. As of the date of this report, TCEQ has not yet approved its Legislative Appropriation Request (LAR) for the 2022-2023 biennium, so it isn't certain yet whether they will propose to retain this program next biennium or not.

5.11 Air Quality Study Related to Transportation and COVID-19

CAPCOG and City of Austin staff are working on conducting a study evaluating the air quality impacts of changes in transportation behavior connected to the COVID-19 pandemic in 2020, which should be helpful in, among other things, understanding the potential long-term air quality benefits of increased telecommuting. A report should be available in 2021.

5.12 Clean Air Coalition Consideration of Participation in PM Advance

In late 2019, EPA sent comments to CAPCOG on its 2018 Annual Air Quality report that included a recommendation that the region consider participating in the PM Advance Program in light of the region's increases in PM_{2.5} design values in recent years. EPA's draft Policy Assessment for the PM NAAQS also included a recommendation that the EPA Administrator consider strengthening the annual PM_{2.5} NAAQS from 12.0 µg/m³ to a level in the range of 8.0 – 11.9 µg/m³. With the Austin area's 2017-2019 design value at 9.8 µg/m³, a tightening of the NAAQS as recommended by EPA staff could put the Austin area at greater risk of a nonattainment designation for a PM NAAQS than for the O₃ NAAQS. And while the EPA Administrator has now proposed retaining the PM NAAQS unchanged, these developments have elevated the consideration of PM as a public health concern and a regulatory risk for the region. CAPCOG brought these issues and EPA's suggestion to the Clean Air Coalition for consideration in November 2019, and at their direction, CAPCOG staff have been dedicating some time and effort in 2020 researching and discussing the issue with the Clean Air Coalition Advisory Committee, and plan to bring a recommendation to the CAC at a future meeting, possibly as soon as August. CAPCOG staff is working with EPA staff to review existing PM modeling data EPA developed for the

Regional Haze program for 2028 that can also be used to improve the understanding of local PM levels and the sources contributing to those levels.

On July 30, 2020, the CACAC voted to recommend that the CAC participate in PM Advance, and CAPCOG staff will place an action item on the August 12, 2020, CAC meeting agenda to consider this recommendation. CAPCOG will inform staff from EPA Region 6 and the Advance Program one way or another on what the CAC decides.

6 Conclusion

Air pollution levels in the Austin metro area were better in 2019 than in 2018; however, O₃ levels were high enough to put the region at risk of recording a violation of the O₃ NAAQS for 2017-2019. Despite lower O₃ in 2019, the region's design value climbed from 68 ppb to 69 ppb due to the high O₃ levels in 2017 and 2018, and the fact that O₃ levels were even lower in 2016, which is no longer included in the region's 3-year average. The region's emission reductions continued to be implemented. While emissions from regional power plants on average were higher from May 1 – September 30 than they were in 2018, they were substantially lower on the top 4 days that affected the region's design value calculation. With Austin Energy continuing to plan to shut down the Decker Creek Power Plant's two boiler units from late 2020 to late 2021, emissions from power plants should be even lower in 2021 and 2022.

Moving forward, a number of steps taken at the state and regional level in 2019 and 2020 will help control air pollution levels within the region over the next few years.

- The CAC implemented measures committed to in the 2019-2023 Austin-Round Rock-Georgetown MSA Regional Air Quality Plan;
- The CAMPO Policy Board awarded approximately \$500K for a regional TDM program for 2020-2022;
- TCEQ opened the vehicle grant rounds for the \$16 million in VW mitigation funds that were allocated for the Austin area;
- TCEQ awarded more than \$14 million in TERP grants to the Austin area in 2019, which will reduce over 700 tons of NO_x emissions over the next 4-7 years.

Organization	Tier 1 Measures				
	Educating employees about regional air quality and encouraging them to sign up for daily air quality forecasts and Ozone Action Day alerts	Where feasible, encourage employees to telecommute at least once a week and on all Ozone Action Days	When employees are not telecommuting, encourage them to take low-emission modes of transportation, such as carpooling, vanpooling, transit, biking, and walking	Where flexible schedules are allowed, encourage employees to consider work schedules with start times earlier than 8 am rather than later in the morning due to the higher impact of emissions on O3 levels later in the morning	Conserve energy, particularly on Ozone Action Days
Austin White Lime	No	No	No	No	No
Bastrop County	Yes	No	Yes	No	No
Caldwell County	Yes	Yes	Yes	Yes	Yes
CAMPO					
CAPCOG	Yes	Yes	Yes	Yes	Yes
CapMetro					
City of Austin	Yes	Yes	Yes	Yes	Yes
City of Bastrop	N/A	N/A	N/A	Yes	N/A
City of Bee Cave	Yes	No	Yes	Yes	Yes
City of Buda	Yes	No	Yes	Yes	No
City of Cedar Park	Yes	Yes	Yes	Yes	Yes
City of Elgin	Yes	No	No	Yes	Yes
City of Georgetown					
City of Hutto	No	No	No	No	No
City of Kyle		Yes		Yes	
City of Lago Vista	Yes	No	No	Yes	Yes
City of Lakeway					
City of Leander	No	No	No	No	No
City of Lockhart					
City of Luling					
City of Pflugerville	Yes	No	No	No	No
City of Round Rock	N/A	N/A	N/A	N/A	N/A
City of San Marcos	NO	NO	NO	NO	NO
City of Sunset Valley					
City of Taylor	No	No	No	No	No
CLEAN Air Force					
CTRMA	Yes	Yes	Yes	Yes	Yes
FHWA					
Hays County	N/A	N/A	Yes	Yes	N/A
LCRA	Yes	Yes	Yes	Yes	Yes
Lone Star Chapter of the Sierra Club	Yes	Yes	Yes	Yes	Yes
Lone Star Clean Fuels Alliance	Yes	Yes	Yes	N/A	Yes
Public Citizen	yes	no	yes	yes	yes
TCEQ	Yes	No	Yes	Yes	Yes
Texas Lehigh Cement Co.					
TPWD	Yes	Yes	Yes	Yes	Yes
Travis County	Yes	Yes	Yes	Yes	Yes
TxDOT	yes	yes	yes	yes	yes
Williamson County	Yes	Yes	No	No	Yes
Total Yes	20	12	17	19	17
Total No	5	13	9	8	8

	sures				
Organization	Establish and enforce idling restriction policies for use of [Organization]'s vehicles, equipment, and property	Establish fleet management policies that prioritize the use of vehicles and equipment with low NOX rates	Educate fleet users on driving and equipment operation practices that can reduce NOX emissions	Reschedule discretionary emission-generating activities such as engine testing and refueling to late afternoon rather than the morning, particularly on Ozone Action Days	Seek funding to accelerate replacement of older, higher-emitting vehicles and equipment with newer, cleaner vehicles and equipment, such as Texas Emission Reduction Plan (TERP) grants
Austin White Lime	No	No	No	No	No
Bastrop County	No	No	No	No	Yes
Caldwell County	No	No	No	No	No
CAMPO					
CAPCOG	N/A	N/A	N/A	N/A	N/A
CapMetro					
City of Austin	Yes	Yes	Yes	N/A	Yes
City of Bastrop	N/A	N/A	No	Yes	N/A
City of Bee Cave	No	No	No	No	Yes
City of Buda	Yes	No	Yes	Yes	No
City of Cedar Park	Yes	Yes	Yes	Yes	Yes
City of Elgin	No	No	No	Yes	No
City of Georgetown					
City of Hutto	No	Yes	No	No	No
City of Kyle					
City of Lago Vista	Yes	No	Yes	Yes	No
City of Lakeway					
City of Leander	No	No	No	No	No
City of Lockhart					
City of Luling					
City of Pflugerville	No	No	No	No	No
City of Round Rock	N/A	N/A	N/A	N/A	N/A
City of San Marcos	YES	YES	NO	NO	NO
City of Sunset Valley					
City of Taylor	No	No	No	No	No
CLEAN Air Force					
CTRMA	Yes	Yes	Yes	No	No
FHWA					
Hays County	N/A	N/A	N/A	N/A	Yes
LCRA	Yes	Yes	Yes	Yes	No
Lone Star Chapter of the Sierra Club	N/A	N/A	N/A	N/A	Yes
Lone Star Clean Fuels Alliance	N/A	N/A	Yes	N/A	Yes
Public Citizen	n/a	n/a	n/a	n/a	n/a
TCEQ	No	Yes	No	No	No
Texas Lehigh Cement Co.				Yes	
TPWD	No	No	No	No	No
Travis County	Yes	Yes	Yes	Yes	
TxDOT	n/a	n/a	n/a	yes	n/a
Williamson County	Yes	Yes	Yes	Yes	Yes
Total Yes	9	9	9	10	8
Total No	11	11	13	12	14

Organization	Tier 2 Measures				
	Establish low-NOX purchasing policies for new on-road vehicles, non-road equipment, and stationary equipment	Establish "green" contracting policies to encourage the use of low-NOX vehicles and equipment and avoid the use of engines during the morning on Ozone Action Days	Purchase higher-grade gasoline with lower sulfur content in August and September	Provide incentives to employees to avoid single-occupancy vehicle commuting, particularly on Ozone Action Days	Optimize combustion and pollution controls for NOX reductions, particularly on Ozone Action Days
Austin White Lime	No	No	No	No	No
Bastrop County	No	No	No	No	No
Caldwell County	No	No	Yes	No	No
CAMPO					
CAPCOG	N/A	N/A	N/A	No	N/A
CapMetro					
City of Austin	Yes	No	No	Yes	No
City of Bastrop	N/A	No	N/A	N/A	N/A
City of Bee Cave	N/A	N/A	N/A	N/A	N/A
City of Buda	No	No	No	No	No
City of Cedar Park	Yes	No	Yes	No	Yes
City of Elgin	No	No	No	No	No
City of Georgetown					
City of Hutto	Yes	No	No	No	No
City of Kyle					
City of Lago Vista	No	No	No	No	No
City of Lakeway					
City of Leander	No	No	No	No	No
City of Lockhart					
City of Luling					
City of Pflugerville	No	No	No	No	No
City of Round Rock	N/A	N/A	N/A	N/A	N/A
City of San Marcos	N/A	NO	YES	NO	NO
City of Sunset Valley					
City of Taylor	No	No	No	No	No
CLEAN Air Force					
CTRMA	Yes	Yes	No	No	No
FHWA					
Hays County	N/A	N/A	N/A	N/A	N/A
LCRA					
Lone Star Chapter of the Sierra Club	N/A	N/A	N/A	N/A	N/A
Lone Star Clean Fuels Alliance	N/A	N/A	N/A	N/A	N/A
Public Citizen					
TCEQ	No	No	No	No	No
Texas Lehigh Cement Co.					
TPWD	No	No	No	No	No
Travis County	No	No	No	Yes	No
TxDOT	n/a	n/a	n/a	yes	n/a
Williamson County	No	No	No	No	No
Total Yes	4	1	3	3	1
Total No	13	18	15	17	17

Organization	Enforce vehicle idling restrictions within the community [either through an ordinance if a city or a memorandum of agreement with TCEQ if a county]	Educating the public about regional air quality and encouraging them to sign up for daily air quality forecasts and Ozone Action day alerts	Any other actions or activities that you would like to mention for 2019?
Austin White Lime	No	No	Several older, higher-emitting vehicles and equipment were replaced with newer, cleaner vehicles and equipment via TERP grants as follows: Four (4) higher-emitting Class 8 trucks were replaced with newer cleaner vehicles; an older crane was replaced with a new crane, an older water truck was replaced with a newer water truck, and 2 new forklifts were purchased in October 2019 to replace older forklifts.
Bastrop County	Yes	Yes	
Caldwell County	No	Yes	
CAMPO			
CAPCOG	N/A	Yes	
CapMetro			
City of Austin	Yes	Yes	Public Works 2019 Highlights that promote sustainable transportation: Built 13 miles of new sidewalks and 180 accessible curb ramps; Trained 48,200 students in safe street crossing and bicycle riding
City of Bastrop	N/A	Yes	During the 2019-2020 budget year we are developmng communication plans that will allow us to post things quickly such as Ozone action days etc...
City of Bee Cave	N/A	N/A	
City of Buda	No	Yes	
City of Cedar Park	No	Yes	
City of Elgin	Yes	Yes	
City of Georgetown			
City of Hutto	Yes	No	
City of Kyle			
City of Lago Vista	Yes	No	
City of Lakeway			
City of Leander	No	No	
City of Lockhart			
City of Luling			
City of Pflugerville	No	Yes	
City of Round Rock	N/A	Yes	We issued a proclamation for Air Quality Awareness Week and provided some educational material through the City of Round Rock's social media account.
City of San Marcos	YES	NO	
City of Sunset Valley			
City of Taylor	No	Yes	
CLEAN Air Force			
CTRMA	No	Yes	Research studies related to assessing the emissions and fuel consumption impact of our roadways : 1. MoPac Expres Lane Emissions and Fuel Consumption Analysis (Completed in 2019); 2. MoPac Express Lane Carpool Analysis and Peformance Analysis of (Completed in 2019); 3. Systemwide Emission and Fuel Consumption Analysis (In Progress; Completion date June 2020)
FHWA			
Hays County	N/A	N/A	
LCRA			
Lone Star Chapter of the Sierra Club	N/A	Yes	In addition to those actions listed above, the Sierra Club advocated for extension and full funding of the TERP program at TCEQ. In addition, in 2019, we advocated in Austin and other cities for better building codes, and supported efforts to update building codes at the federal level through the International Code Council. Finally, we participated in efforts at Austin Energy to adopt a new Generation plan through the Electric Utility Commission. In early, 2020, City Council adopted a new generation plan that commits Austin Energy to a zero carbon future by closing all gas plants by 2035.
Lone Star Clean Fuels Alliance	N/A	Yes	
Public Citizen			
TCEQ	No	Yes	
Texas Lehigh Cement Co.			
TPWD	No	No	
Travis County	Yes	Yes	
TxDOT	n/a	yes	
Williamson County	Yes	Yes	
Total Yes	8	18	
Total No	10	6	

Organization	Educating employees about regional air quality and encouraging them to sign up for daily air quality forecasts and Ozone Action Day alerts	Where feasible, encourage employees to telecommute at least once a week and on all Ozone Action Days	When employees are not telecommuting, encourage them to take low-emission modes of transportation, such as carpooling, vanpooling, transit, biking, and walking	Where flexible schedules are allowed, encourage employees to consider work schedules with start times earlier than 8 am rather than later in the morning due to the higher impact of emissions on O3 levels later in the morning
Austin White Lime				
Bastrop County	Email messaging to all employees on Ozone Action Days		Messaging to employees during Ozone Action Days only	
Caldwell County				
CAMPO				
CAPCOG				
CapMetro				
City of Austin	Cross departmental social media messaging is used for air quality notifications.	Commute Connections program educates employees regarding benefits of sustainable commute options, including teleworking and alternative schedules.	Commute Connections program educates employees regarding benefits of sustainable commute options and Smart Commute Rewards incentives people who actively take and log sustainable commutes. The City of Austin supports the Commute Solutions Program.	Commute Connections program educates employees regarding benefits of sustainable commute options, including teleworking and alternative schedules.
City of Bastrop				
City of Bee Cave		continuing to evaluate feasibility		
City of Buda	Staff are forwarded the Ozone Action Day alerts so that they may adjust mowing, fueling, and driving to reduce Ozone.	No telecommuting was established for staff. However, the City did begin implementing virtual meetings with contractors and consultants to reduce travel to and from city facilities.	City travel policy requires carpooling when appropriate.	Staff are allowed to flex schedules with some staff arriving at 7:30 am.
City of Cedar Park				
City of Elgin				
City of Georgetown				
City of Hutto		Due to COVID19 telecommuting has increased significantly for employees able to work from home. However, this is not due to Air Quality Concerns		
City of Kyle	Pending	Implemented in 2018	Pending	Implemented in 2018
City of Lago Vista				
City of Lakeway				
City of Leander				
City of Lockhart				
City of Luling				
City of Pflugerville				

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City of Round Rock				
City of San Marcos				
City of Sunset Valley				
City of Taylor				
CLEAN Air Force				
CTRMA	Associated outreach with Pilot Telecommute program	Implemented Pilot telecommute program in 2019; Approximately 75% of our employees telecommuted one or more day a week in 2019		
FHWA				
Hays County			With the County's Car Pool Program	The following Departments arrive earlier than 8:00 am :Sheriff's Office, Juvenile Detention, Building Maintenance and Custodial, Transportation
LCRA	Held open houses and created an informative web page to educate employees. Developed and implemented an internal "Drive for the Sky" program which includes an election to receive notification of ozone action days by email.	Employees are encouraged to sign up for an in house program called "Drive for the Sky." Employees who log in their ozone reducing activities, including telecommuting, qualify for wellness points and gift cards.	"Drive for the Sky" program encourages low emission modes of transportation, such as carpooling, vanpooling, transit, biking and walking	"Drive for the Sky" program encourages low-emission modes of transportation, such as carpooling, vanpooling, transit, biking and walking
Lone Star Chapter of the Sierra Club	We did this through the local austin group	We have a small staff but we do encourage telecommuting and because we have several who live down South and our office in North we avoid driving in the late afternoon.		
Lone Star Clean Fuels Alliance				
Public Citizen				
TCEQ				
Texas Lehigh Cement Co.				
TPWD				
Travis County				
TxDOT				
Williamson County				

	Tier 1 Measures				
Organization	Conserve energy, particularly on Ozone Action Days	Establish and enforce idling restriction policies for use of [Organization]'s vehicles, equipment, and property	Establish fleet management policies that prioritize the use of vehicles and equipment with low NOX rates	Educate fleet users on driving and equipment operation practices that can reduce NOX emissions	Reschedule discretionary emission-generating activities such as engine testing and refueling to late afternoon rather than the morning, particularly on Ozone Action Days
Austin White Lime					
Bastrop County			Have struggled to do this due to a lack of centralized "Fleet Management" department - each Precinct is responsible for its own fleet		
Caldwell County					
CAMPO					
CAPCOG					
CapMetro					
City of Austin	As part of the Bloomberg American Cities Climate Challenge, the city is focusing on municipal energy efficiency as part of its projects and all city buildings are subscribed to clean energy via the Austin Energy GreenChoice program.	Anti-idling policy in place; sticker with messaging located within city vehicles	Austin fleet set a goal to have 330 plug in electric vehicles by 2020. In 2019, it purchased over 70 electric vehicles to add to its stock.	Anti-idling; fleet training for operating vehicles efficiently.	Implemented by AE in large facilities and power plants, but unsure that this is implemented consistently across city in other areas that have backup generators.
City of Bastrop					
City of Bee Cave		continuing to work towards implementation	continuing to work towards implementation	continuing to work towards implementation	continuing to work towards implementation
City of Buda	The City takes steps to conserve energy at all opportunities but does not take any other actions on Ozone Action Days.			Staff has annual training on driving which includes fuel efficiency, vehicle idling, etc.	
City of Cedar Park					
City of Elgin					
City of Georgetown					
City of Hutto					
City of Kyle	Pending	Pending	Pending	Pending	Pending
City of Lago Vista					
City of Lakeway					
City of Leander					
City of Lockhart					
City of Luling					
City of Pflugerville		Drafting policy in 2020	No policy yet		

	Tier 1 Measures				
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City of Round Rock					
City of San Marcos			E85 compatible vehicles when available since 2008. Diesels use TXLED as mandated.		
City of Sunset Valley					
City of Taylor					
CLEAN Air Force					
CTRMA					
FHWA					
Hays County					
LCRA	"Drive for the Sky" emphasizes Ozone Action Days	Included in the corporate fleet management policy	Included in the corporate fleet management policy	Included in the corporate fleet management policy	Engine testing mostly performed either early in the morning or in the afternoon, and none on ozone action days. Refueling performed primarily at beginning or end of shifts; either early morning (before 8 a.m.) or in the afternoon.
Lone Star Chapter of the Sierra Club		We do not have any vehicles that are not privately owned.			
Lone Star Clean Fuels Alliance					
Public Citizen					
TCEQ					
Texas Lehigh Cement Co.					
TPWD					
Travis County					
TxDOT					
Williamson County					

Tier 2 Measures					
Organization	Seek funding to accelerate replacement of older, higher-emitting vehicles and equipment with newer, cleaner vehicles and equipment, such as Texas Emission Reduction Plan (TERP) grants	Establish low-NOX purchasing policies for new on-road vehicles, non-road equipment, and stationary equipment	Establish "green" contracting policies to encourage the use of low-NOX vehicles and equipment and avoid the use of engines during the morning on Ozone Action Days	Purchase higher-grade gasoline with lower sulfur content in August and September	Provide incentives to employees to avoid single-occupancy vehicle commuting, particularly on Ozone Action Days
Austin White Lime	AWL applied for TERP grants in 2017 & 2018. Those grants were approved. Pursuant to the grants, vehicles and equipment were replaced in 2019 (see Notes below)				
Bastrop County	Applied for and received TCEQ ERIG funding for the replacement of an older heavy duty vehicle for Precinct 3 Road and Bridge				
Caldwell County					
CAMPO					
CAPCOG					
CapMetro					
City of Austin	Fleet Department seeks and uses outside funding to supplement purchase of cleaner vehicles.	Austin fleet set a goal to have 330 plug in electric vehicles by 2020, and continues to look for options to reduce emissions from additional equipment as technology is feasible and available.			Employees qualify for paid time off and prizes when participating in city Smart Commute Rewards program.
City of Bastrop					
City of Bee Cave					
City of Buda					
City of Cedar Park	The City of Cedar Park uses a vehicle and equipment replacement fund.				
City of Elgin					
City of Georgetown					
City of Hutto					
City of Kyle	Pending	Pending	Pending		
City of Lago Vista					
City of Lakeway					
City of Leander					
City of Lockhart					
City of Luling					
City of Pflugerville					

		Tier 2 Measures			
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City of Round Rock					
City of San Marcos		Heavy equipment come with the latest emission standards in place. All should be at least Tier 4.		Fuel blends are set by EPA and TCEQ that go with summer blends and winter blends. All unleaded fuel is E10. E85 is available at select locations. No bio diesel available. TxLed mandated for diesel fuel.	
City of Sunset Valley					
City of Taylor					
CLEAN Air Force					
CTRMA					
FHWA					
Hays County	In 2019 funding sources were allocated to replace older, higher-emitting vehicles in the Sheriff's Office				
LCRA	Based on initial analysis, TERP is not viable at this time.				
Lone Star Chapter of the Sierra Club					
Lone Star Clean Fuels Alliance					
Public Citizen					
TCEQ					
Texas Lehigh Cement Co.					
TPWD					
Travis County					
TxDOT					
Williamson County					

Organization	Optimize combustion and pollution controls for NOX reductions, particularly on Ozone Action Days	Enforce vehicle idling restrictions within the community [either through an ordinance if a city or a memorandum of agreement with TCEQ if a county]	Educating the public about regional air quality and encouraging them to sign up for daily air quality forecasts and Ozone Action day alerts
Austin White Lime			
Bastrop County		MOU with TCEQ - although is rarely enforced	Public outreach activities during Air Quality Awareness Week - online and in person. When feasible, Ozone Action Day alerts have been posted on County's homepage and Facebook page.
Caldwell County			
CAMPO			
CAPCOG			
CapMetro			
City of Austin		Anti-idling ordinance in place	Air quality messaging used throughout different departments: Ozone Action Day posts were used on the general city page, Austin Transportation and Office of Sustainability.
City of Bastrop			it is a topic at Council meetings by proclamation and staff updates
City of Bee Cave			
City of Buda			The Ozone Action Days are shared on the City's social media accounts.
City of Cedar Park			
City of Elgin			
City of Georgetown			
City of Hutto		City has ordinance that prohibits idling vehicles.	
City of Kyle			Pending
City of Lago Vista			
City of Lakeway			
City of Leander			
City of Lockhart			
City of Luling			
City of Pflugerville			It was in place prior to 2019, but remains on our webpage, so it is in effect: https://www.pflugervilletx.gov/city-government/development-services-center/planning-department/ozone-action-information

Organization	Optimize combustion and pollution controls for NOX reductions, particularly on Ozone Action Days	Enforce vehicle idling restrictions within the community [either through an ordinance if a city or a memorandum of agreement with TCEQ if a county]	Educating the public about regional air quality and encouraging them to sign up for daily air quality forecasts and Ozone Action day alerts
City of Round Rock			
City of San Marcos			
City of Sunset Valley			
City of Taylor			
CLEAN Air Force			
CTRMA			Reposts of Social Media Posts by CAPCOG
FHWA			
Hays County			
LCRA			
Lone Star Chapter of the Sierra Club			
Lone Star Clean Fuels Alliance			
Public Citizen			
TCEQ			
Texas Lehigh Cement Co.			
TPWD			
Travis County			
TxDOT			
Williamson County			