PGA 582-16-60851-01, Amendment 2
Task 1.1, Deliverable 1.1.2

2016 Air Quality Report for the Austin-Round Rock Metropolitan Statistical Area

Prepared by the Capital Area Council of Governments

August 23, 2017

PREPARED UNDER A GRANT FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

The preparation of this report was financed through grants from the state of Texas through the Texas Commission on Environmental Quality. The content, findings, opinions, and conclusions are the work of the author(s) and do not necessarily represent findings, opinions, or conclusions of the TCEQ.

Executive Summary

This is the annual air quality report for the Austin-Round Rock 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 Clean Air Coalition's participation in the Ozone Advance Program (OAP) and also serves as a deliverable to TCEQ under our 2016-2017 air quality planning grant. The report covers January 1, 2016, through December 31, 2016. Under the most recent MSA definitions promulgated by the Office of Management and Budget (OMB) in 2015, the Austin-Round Rock MSA consists of Bastrop, Caldwell, Hays, Travis, and Williamson Counties.

The report is intended to do the following:

- Provide an update on the status of air quality in the Austin-Round Rock MSA through 2016 (Section 1);
- Provide an update on the latest understanding of the contribution of the region's emissions to high ozone levels when they occur (Section 2);
- The status of emission reduction measures implemented in the region in 2016 (Section 3);
- Ongoing planning activities in the region (Section 4); and
- Planning for the future (Section 5).

Except for the following organizations, all Clean Air Coalition members provided a report on 2016 activities to CAPCOG:

- Capital Metropolitan Transit Authority (CapMetro)
- City of Bastrop
- City of Luling
- City of Taylor
- Texas Nursery and Landscaping Association
- Williamson County

CAPCOG will provide an update version of this report to EPA and TCEQ if these organizations provide reports after this report has been submitted. A supplemental Excel spreadsheet provides details of each organization's reported activities.

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List of Acronyms

AACOG: Alamo Area Council of Governments
AFFP: Alternative Fueling Facilities Program
AQI: Air Quality Index
CAC: Clean Air Coalition
CACAC: Clean Air Coalition Advisory Committee
CAMPO: Capital Area Metropolitan Planning Organization
CAPCOG: Capital Area Council of Governments
CapMetro: Capital Metropolitan Transit Authority
CAMS: Continuous Air Monitoring Station
CAPP: Clean Air Partners Program
CO: Carbon Monoxide
CSB: Clean School Bus
CTRMA: Central Texas Regional Mobility Authority
CTT: Clean Transportation Triangle
DACM: Drive a Clean Machine
DERI: Diesel Emission Reduction Incentive
DFW: Dallas-Fort Worth
DTIP: Drayage Truck Incentive Program
EAC: Early Action Compact
EE/RE: Energy efficiency and renewable energy
EPA: U.S. Environmental Protection Agency
ERIG: Emission Reduction Incentive Grant Program
I/M: Inspection and maintenance
ILA: Inter-Local Agreement
LCRA: Lower Colorado River Authority
LSCFA: Lone Star Clean Fuels Alliance
LIP: Local Initiative Project
LIRAP: Low-Income Vehicle Repair, Retrofit, and Accelerated Vehicle Retirement Program
MDA8: Maximum Daily 8-Hour Average
µg/m_3: Microgams per cubic meter
MOVES: Motor Vehicle Emissions Simulator
MSA: Metropolitan Statistical Area
NAAQS: National Ambient Air Quality Standards
NO_X: Nitrogen oxides
NO_2: Nitrogen dioxide
NTIG: New Technology Implementation Grant
O_3: Ozone
OAD: Ozone Action Day
OAP: Ozone Advance Program
PACE: Property-Assessed Clean Energy

Pb: Lead
$PM_{2.5}$: Particulate matter with a diameter of 2.5 microns or less
PM_{10}: Particulate matter with a diameter of 10 microns or less
PPB: Parts per billion
PPM: Parts per million
SIP: State Implementation Plan
SO_2: Sulfur dioxide
TCEQ: Texas Commission on Environmental Quality
TERP: Texas Emission Reduction Plan
TCFP: Texas Clean Fleet Program
TMRS: Texas Municipal Retirement System
TNGVGP: Texas Natural Gas Vehicle Grant Program
TxDOT: Texas Department of Transportation
TexN: Texas NONROAD Model
VOC: Volatile Organic Compound

1 Air Quality Status

This section provides an update on the status of air quality in the Austin-Round Rock MSA through the end of 2016. It includes:

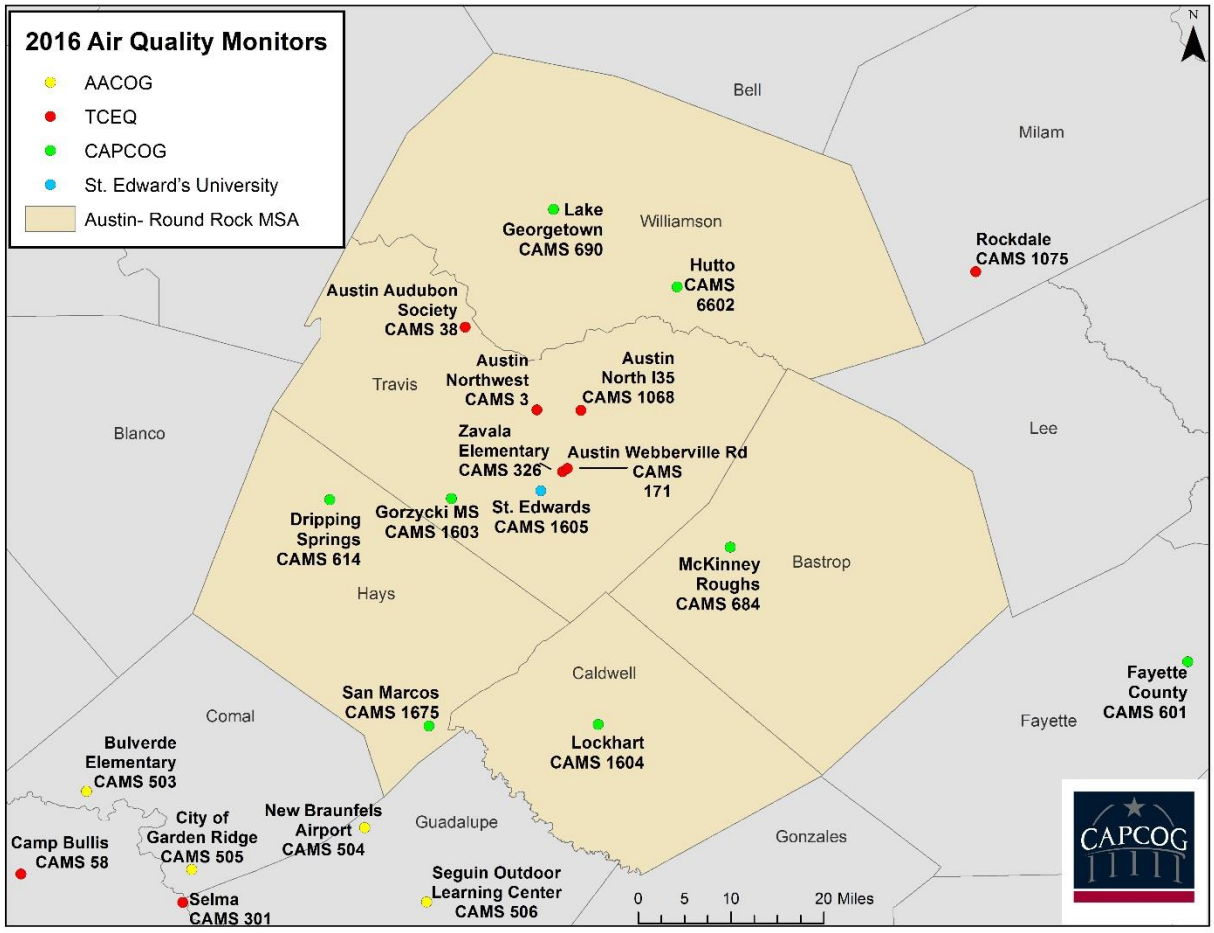
- A general overview of air quality in the region;
- Information on the region's compliance with the NAAQS for all criteria pollutants;
- Information on the fourth-highest ozone measurements at all monitoring stations in the region for 2014-2016;
- A comparison of daily air pollution levels compared to EPA's AQI for 2016;
- An estimate of peak seasonal ozone exposure at each monitoring station; and
- An analysis of the predictability of regional air pollution levels based on comparisons of actual air pollution measurements in 2016 to TCEQ's Ozone Action Day (OAD) forecasts and daily air quality forecasts.

Air quality data collected in the Austin-Round Rock MSA between 2014 and 2016 shows that the region remains in compliance with all NAAQS, and TCEQ's Toxicological Evaluation of volatile organic compounds (VOC) measurements collected in the region indicates that all concentrations were below the agency's "Air Monitoring Comparison Values."[1] There was 1 day when ozone levels exceeded the 70 ppb level of the 2015 Ozone NAAQS compared with 12 days over 70 ppb in 2015, and there were 98 days when air pollution levels were considered "Moderate" or worse in the region according to the EPA's Air Quality Index (AQI), a decrease from 153 days in 2015. The region's air pollution levels were better in 2016 than 2015, and were better than four other large metro areas of the state (Dallas-Fort Worth, Houston, San Antonio, and El Paso), however, there are still air pollution problems in the region, and the region's ozone levels remain close to the 2015 ozone NAAQS.

The following map shows the locations of all of the Continuous Air Monitoring Stations (CAMS) that collect air pollution samples in and near the Austin-Round Rock MSA, including the monitors operated by TCEQ, CAPCOG, St. Edward's University, and the Alamo Area Council of Governments (AACOG).

[1] https://www.tceq.texas.gov/assets/public/implementation/tox/monitoring/evaluation/2015/reg11.pdf

Figure 1-1. 2016 Air Quality Monitors in the Austin-Round Rock MSA and Nearby Counties



1.1 Compliance with the NAAQS

The Austin-Round Rock's 2016 design values for nitrogen dioxide (NO_2), ground-level ozone (O_3), fine particulate matter ($PM_{2.5}$), coarse particulate matter (PM_{10}), and sulfur dioxide (SO_2) were all in compliance with the applicable NAAQS. There is no 2016 CO design value since data collection was suspended in November 2014, and there is no lead design value for the region, since lead monitoring is not conducted in the region. There are four monitoring stations that TCEQ used for collecting ambient pollution concentrations used for comparisons to the NAAQS in 2014-2016.

Table 1-1. Summary of Criteria Pollutant Measurement Periods at Federal Reference Method (FRM) Monitors in the Austin-Round Rock MSA, 2014-2016

Pollutant	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	Jan. – Nov. 2014	n/a	n/a	n/a
NO_2	2014 – 2016	n/a	n/a	Apr. 2014 – 2016
O_3	2014 – 2016	2014 – 2016	n/a	n/a
$PM_{2.5}$	n/a	2014 – 2016	2014 – 2016	n/a
PM_{10}	n/a	2014 – 2016	2014 – 2016	n/a
SO_2	2014-2016	n/a	n/a	n/a

The 2016 design values were calculated by CAPCOG, while 2015 design values (except for PM_{10}) are based on data from EPA's design value website at https://www.epa.gov/air-trends/air-quality-design-values.

Table 1-2. Austin-Round Rock MSA Criteria Pollutant Design Values Compared to Primary NAAQS

NAAQS	Concentration	2014 Design Value	2015 Design Value	2016 Design Value
CO – 1 hr.	35 ppm	0.5 ppm	n/a	n/a
CO – 8 hr.	9 ppm	0.3 ppm	n/a	n/a
NO_2 –Annual Mean	53 ppb	5 ppb	15 ppb[2]	15 ppb
NO_2 –1-hr.	100 ppb	n/a	32 ppb	48 ppb
O_3 – 8-hr.	0.070 ppm	0.069 ppm	0.068 ppm	0.066 ppm
$PM_{2.5}$ – Annual Mean	12.0 µg/m3	9.4 µg/m3	9.2 µg/m3	9.6 µg/m3
$PM_{2.5}$ – 24-hr.	35 µg/m3	24 µg/m3	22 µg/m3	21 µg/m3
PM_{10} –24-hr.[3]	150 µg/m3	58 µg/m3	68 µg/m3	71 µg/m3
SO_2 –1-hr.	75 ppb	n/a	5 ppb	4 ppb

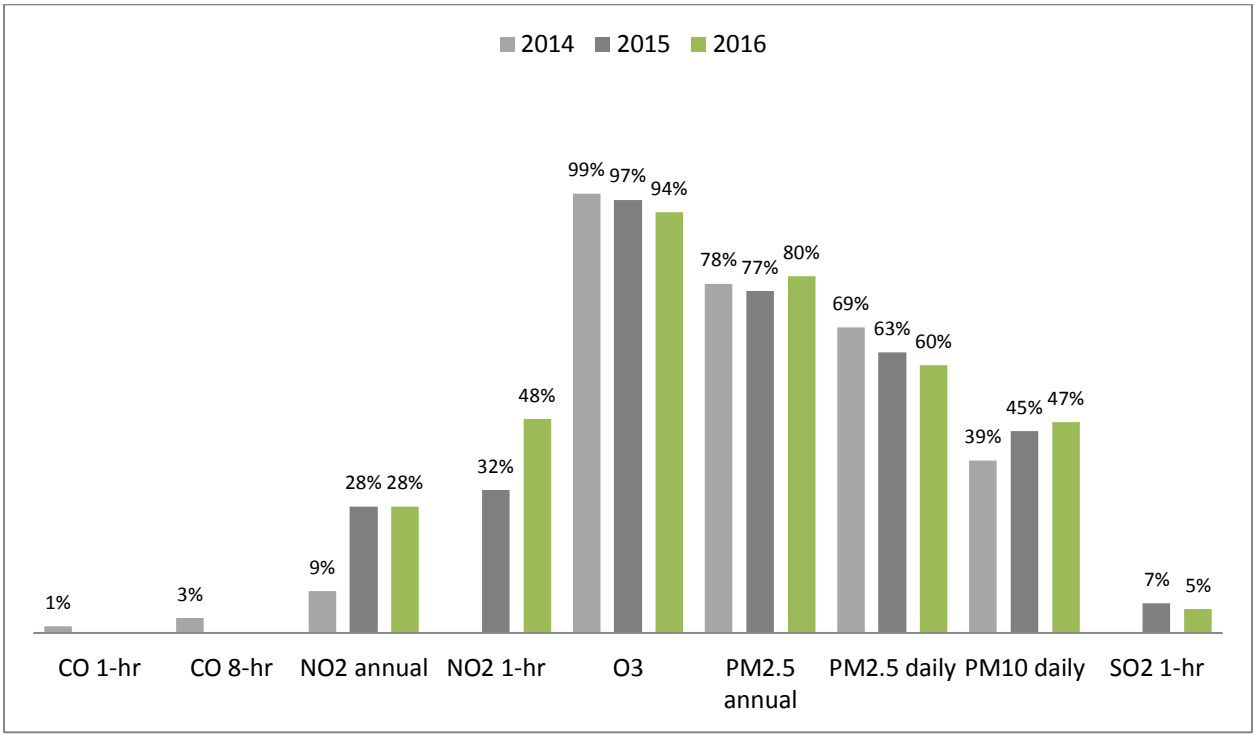
The following figure shows the region's 2014, 2015, and 2016 design values as a percentage of the NAAQS in order to provide a comparison of the extent to which the region is in compliance with each NAAQS. As the figure shows, the Austin-Round Rock MSA's O_3 levels are compliant, but just barely. After O_3, annual $PM_{2.5}$ levels are the closest to the NAAQS, followed by 24-hour $PM_{2.5}$ levels, both of which are

[2] The increase in the design value from 2014 to 2015 reflects the fact that 2015 was the year in which data collected at Austin's near-road NO_2 monitor (CAMS 1068) could be used for this design value, since it began collecting data in April 2014 and there must be at least 75% data completeness in each quarter for an annual NO_2 mean to be used for a design value. The annual NO_2 design value at CAMS 3 decreased in 2015 to 4 ppb from 5 ppb in 2014 and 6 ppb in 2013.

[3] The actual form of the standard is based on the number "expected exceedances," which is calculated based on the average number of days that a monitor measured an exceedance of 150 µg/m^3 per year over a 3-year period. Since the standard limits this average to 1, it means that the 4th highest 24-hour average would need to be at or below 150 µg/m^3. Expressing the PM_{10} design value in this way allows an easier comparison of the region's air quality as a percentage of the NAAQS.

more than 50% of the NAAQS. The region's 1-hour and 8-hour CO levels, 1-hour NO_2 levels, annual NO_2 levels, 24-hour PM_{10} levels, and 1-hour SO_2 levels are all less than 50% of the applicable NAAQS.

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



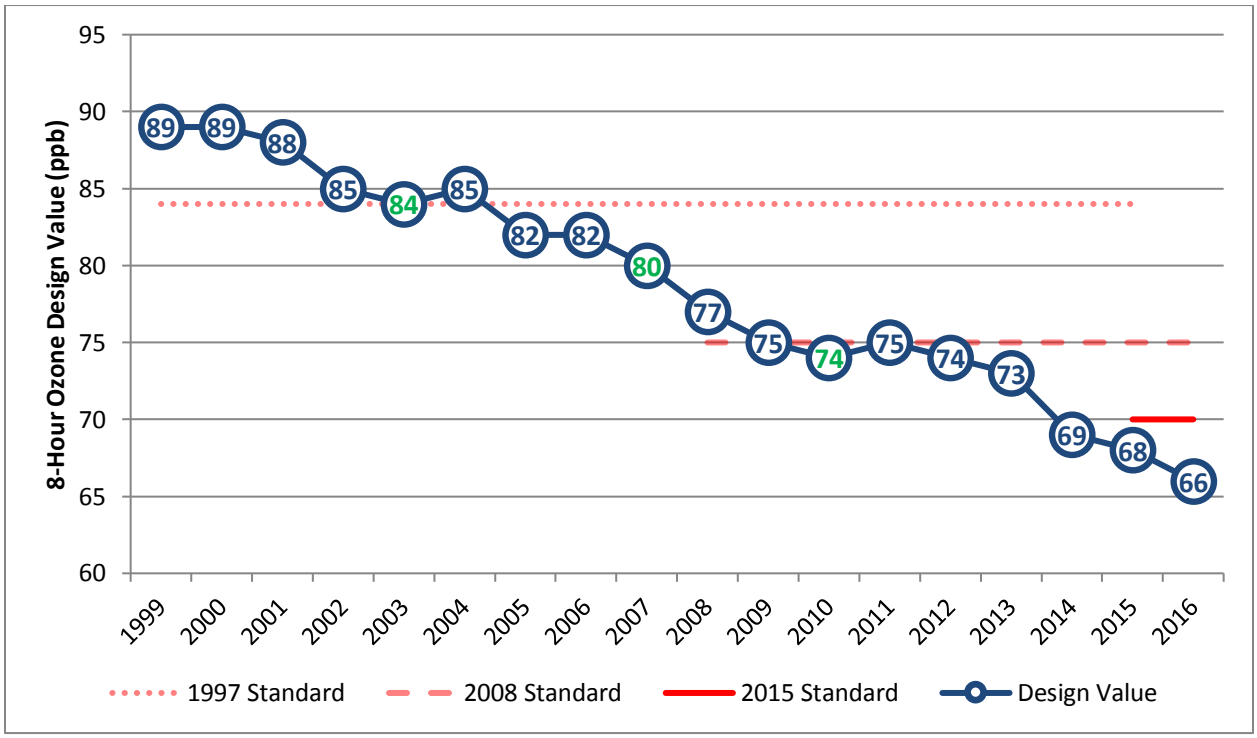
While the region's 2014-2016 O_3 design value remains close to the level of the 2015 O_3 NAAQS, ozone design values continued to decline for the sixth consecutive year and the. The figure below shows the trend in the region's design value over this period, along with the levels of the 1997, 2008, and 2015 O_3 NAAQS. Looking forward, ongoing turnover of older on-road and non-road engines and the gradual replacement of older power plants with newer, lower-emitting plants are expected to reduce NO_X emissions in the region and across the country, which should continue to drive ozone levels down within the region.

The figure below shows the trend in the Austin-Round Rock MSA's 8-hour O_3 design values from 1999-2016 compared to the 1997, 2008, and 2015 8-hour O_3 NAAQS. Over this time, the region's design value has decreased an average of 1.4 ppb per year. Key design values that were used in the area designation process for these NAAQS are highlighted in green:

- The region's 2003 design value was used as the basis for the EPA's initial area designation for the 1997 O_3 NAAQS in April 2004, although through the Early Action Compact (EAC) process, final action on this designation was deferred until after 2007
- The region's 2007 design value was required to be in attainment of the 1997 O_3 NAAQS as part of the EAC

- The region's 2010 design value was used as the basis for the region's designation for the 2008 O_3 NAAQS following EPA's delay in issuing initial area designations due to its reconsideration of the 2008 O_3 NAAQS.

Figure 1-3. Austin-Round Rock MSA 8-Hour Ozone Design Value 1999-2016



The region's 2014-2016 design value was originally thought to be the key design value that would be used for initial area designations for the 2015 O_3 NAAQS, but on June 6, 2017, the EPA Administrator announced that the EPA would be delaying initial area designations by one year, pushing the date back to October 1, 2018, and also likely pushing the key design value period back to 2015-2017. As of the date of this report, the Austin-Round Rock MSA's 2015-2017 design value would be 68 ppb, but it remains highly unlikely that the region's 2015-2017 design value would exceed 70 ppb. The region would need a 4th-highest maximum daily 8-hour O_3 average at CAMS 3 to be at least 76 ppb or the 4th-highest maximum daily 8-hour O_3 average at CAMS 38 to be at least 78 ppb in order for Travis County's 2015-2017 design value to exceed 70 ppb, and the region has not had O_3 levels that high since 2009 and 2006, respectively.

1.2 Maximum Daily 8-Hour Ozone Averages in the Region

While compliance with the ozone NAAQS is based on readings recorded at "regulatory" Federal Reference Method (FRM) or Federal Equivalent Method (FEM) ozone samplers, there are also a number of non-regulatory ozone monitoring stations in the region that can be used to understand regional ozone levels.

In addition to the two regulatory ozone monitors that TCEQ operates, CAPCOG collected ozone data at nine monitoring stations between 2014 and 2016. These use EPA-approved ozone sampling methods and data collected during this period followed a Quality Assurance Project Plan (QAPP) approved by TCEQ, but were not operated as FRM or FEM monitors, and these monitors are not included in TCEQ's Annual Monitoring Network Plan that is approved by EPA.

The following table summarizes the fourth-highest MDA8 ozone measurements collected at each monitoring station in the CAPCOG region 2013, 2014, and 2015, as well as the three-year average for each station. CAMS 3 and 38 are the "regulatory" monitoring stations operated by TCEQ, while CAMS 601, 614, 684, 690, 1603, 1604, 1605, 1675, and 6602 are research monitoring stations operated by CAPCOG. Reports documenting the quality-checks performed at these 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 Ozone Monitoring Stations in the CAPCOG Region, 2014-2016 (ppb)

CAMS	AQS Site Number	County	2014	2015	2016	2014-2016 Average
3	484530014	Travis	62	73	64	**66.3**
38	484530020	Travis	63	73	62	**66.0**
601	481490601	Fayette	69	70	59	**66.0**
614	482090614	Hays	63	71	65	**66.3**
684	480210684	Bastrop	53	69	59	**60.3**
690	484910690	Williamson	66	75	61	**67.3**
1603	484531603	Travis	57	72	63	**64.0**
1604	480551604	Caldwell	64	67	60	**63.7**
1605	484531605	Travis	N/A	N/A	*52	***52**
1675	482091675	Hays	61	70	62	**64.3**
6602	484916602	Williamson	*39	71	58	***64.5**

- CAMS 1605 was installed by St. Edward's University at their campus in Austin ahead of the 2016 O_3 season in order to support scientific research involving the launching of "ozonesondes" to collect vertical measurements of O_3 on predicted high ozone days. Throughout the 2016 O_3 season, the monitor recorded lower than expected ambient O_3 measurements for the vicinity based on analysis of modeling data and comparisons to the nearby CAMS 1603 monitor. Following a series of quality-checks, St. Edward's University researchers determined that the O_3 data at CAMS 1605 was accurate and precise, but believed that values were likely lower than expected due to some NO_X titration issues on campus where the monitor is located (less than 1 kilometer from IH-35, U.S.-71, and Congress Avenue, causing a potentially high localized concentration of NO_X on campus).[4] The CAMS 1605 data is therefore reliable for ground-level

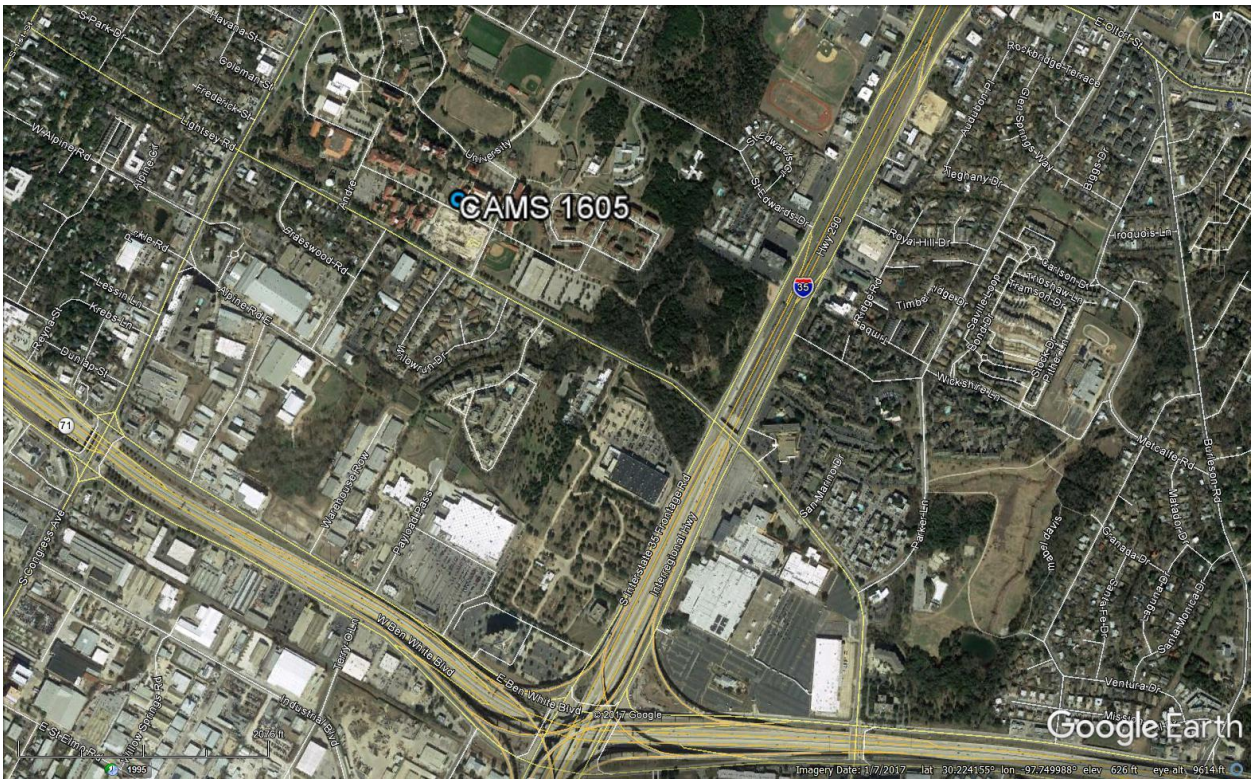
[4] On days in 2016 when at either CAMs 1603 or CAMS 1605 had MDA8 values of of 55 ppb or higher, CAMS 1605 had MDA8 values that were, on average, 10.6 ppb lower than CAMS 1603, with a range of 2-19 ppb below the values at CAMS 1603. Modeling results from release 2 of the June 2012 episode available from TCEQ, on the other hand, showed that CAMS 1605 was only 1.1 ppb lower, on average, than CAMS 1603 when either site had MDA8 values of 55 ppb or higher, ranking from 3.5 below to 10.6 ppb above.

verification of the ozonesonde measurements, but not a good indication of neighborhood-level exposure of ozone in the vicinity of the monitor.

- CAMS 6602 was physically located in a different location on the campus of Hutto Independent School District's administration facility in 2014 than it was in 2015 and 2016. CAPCOG believes that the 2014 data – while accurate – is not representative of the neighborhood-level O_3 exposure due to NO_X titration from vegetation or other interference near the inlet of the O_3 instrument in 2014. As the 2014 monitoring report documents, possible alternative explanations for substantially lower readings at CAMS 6602 than were expected based on other monitors in the region, modeling results, and the prior year's readings were ruled out through supplemental quality-assurance/quality control work performed by Dios Dado Environmental, Ltd. on that station.[5]

Google earth maps of CAMS 1605 and CAMS 6602 below illustrate the proximity of each station to these potential problems.

Figure 1-4. Map of CAMS 1605 and vicinity



[5] http://www.capcog.org/documents/airquality/reports/2014/Task_3-2_2014_CAPCOG_Monitoring_Report_Final.pdf , p. 100. "The persistence of low readings at CAMS 6602, despite changing out the sample line and using two separate instruments to record data, indicates that the low ozone levels are likely due to the site location, which may be resulting in some scrubbing action from nearby interference factors, such as trees, forced air vents, or any number of ozone scrubbing activities that can occur."

Figure 1-5. Map of locations of sampling equipment at CAMS 6602, 2011-2016

Figure 1-6. Close-up aerial photography of the location of CAMS 6602 sampling equipment in October 2014

These data generally show that the 2014-2016 three-year average of the fourth highest MDA8 values in the region ranged from 60 ppb – 67 ppb. However, the data also show significant variability in these values year-to-year, with the fourth highest MDA8 values for 2015 exceeding 70 ppb at all six of ten locations in 2015.

1.3 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 exceedances of an air pollution level that exceed the level of the NAAQS 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 fall within each of the AQI categories established by EPA. The following table shows the concentrations of NO_2, O_3, and $PM_{2.5}$ that correspond to each AQI level.[6]

Table 1-4. Summary of AQI for NO2, O3, and PM2.5

AQI Level	AQI Number	NO_2 (1-Hr., ppb)	O_3 (8-Hr., ppb)	$PM_{2.5}$ (24 hr., µg/m^3)
Good	0-50	0-53	0-54	0.0-12.0
Moderate	51-100	54-100	55-70	12.1-35.4

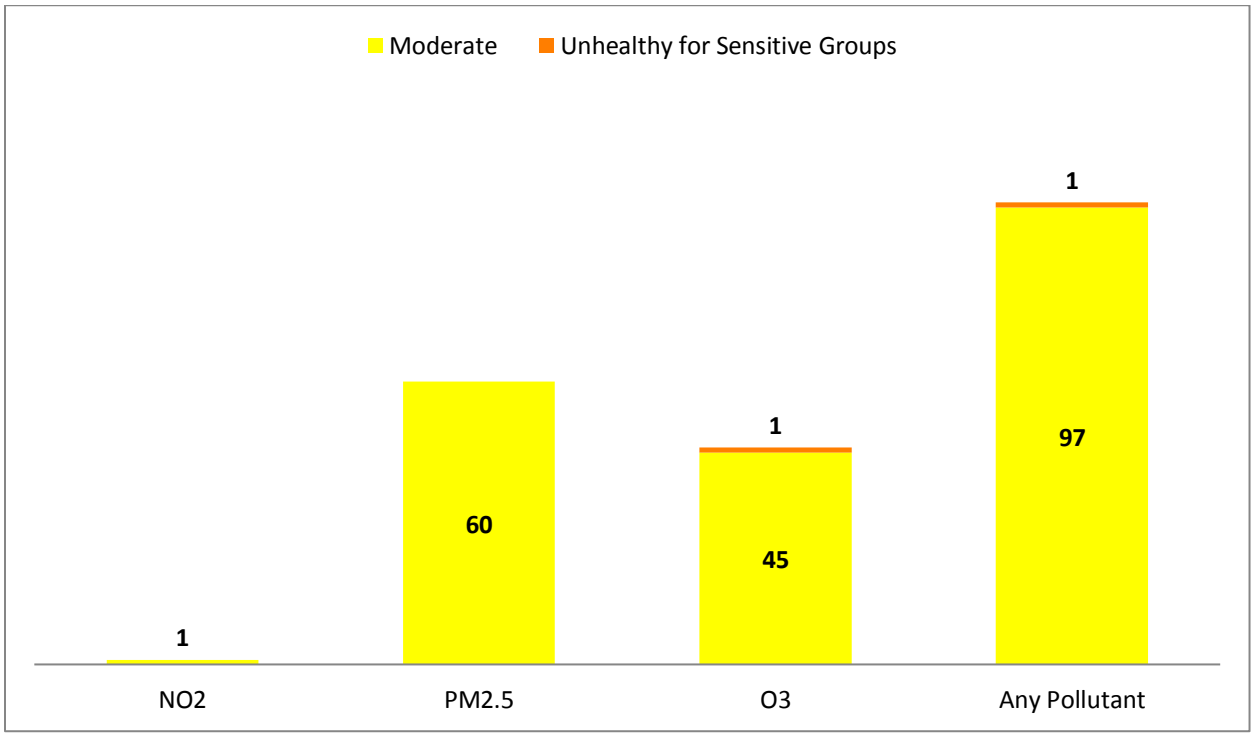
[6] There were no days when PM10, SO2, or CO AQIs were above 50, so those values are excluded from this table.

AQI Level	AQI Number	NO_2 (1-Hr., ppb)	O_3 (8-Hr., ppb)	$PM_{2.5}$ (24 hr., µg/m^3)
Unhealthy for Sensitive Groups	101-150	101-360	71-85	35.5-55.4
Unhealthy	151-200	361-649	86-105	55.5-150.4
Very Unhealthy	201-300	650-1,249	106-200	150.5-250.4
Hazardous	301-500	1,250-2,049	201-600	250.5-500

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" category described below are higher than if only the TCEQ regulatory monitors were used.

The following figures show the number of days in 2016 when NO_2, $PM_{2.5}$, or O_3 concentrations measured in the CAPCOG region were high enough to be considered Moderate or Unhealthy for Sensitive Groups. There were some days when AQI levels were above 50 for more than 1 pollutant, so the "any pollutant" bar below reflects the total number of days when the overall AQI for the region was at least 50. There were no days with AQI values of 151 or higher recorded in the CAPCOG region in 2016. There was only 1 day when AQI levels exceeded 100 in 2016, down substantially from the 12 days in 2015, but more than the 0 days when AQI levels exceeded 100 in 2014.

Figure 1-7. Number of "Moderate" or "Unhealthy for Sensitive Groups" Air Pollution Days in the CAPCOG Region in 2016 by Pollutant

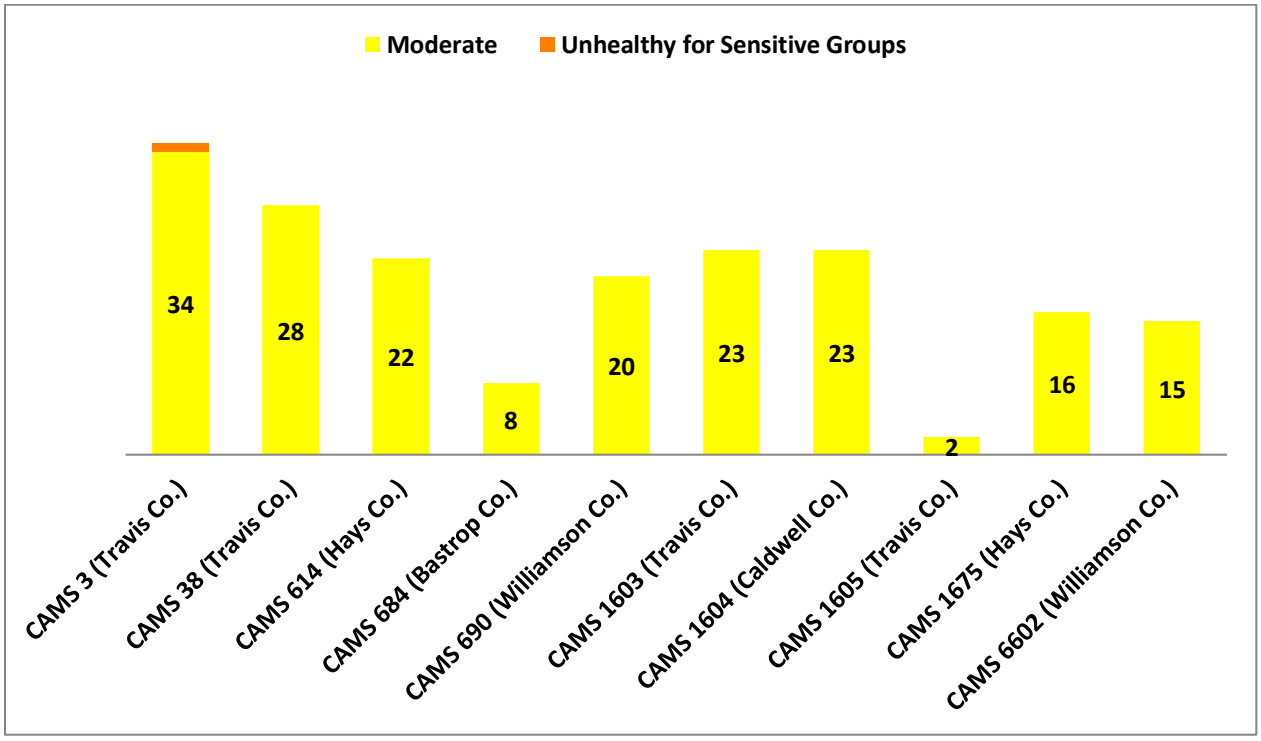


There was one day when at least one ozone monitor in the region measured ozone concentrations considered Unhealthy for Sensitive Groups. While the region only reached levels considered Unhealthy for Sensitive Groups for ozone, over half of the days when air pollution reached levels considered Moderate or worse were due to elevated NO_2 or $PM_{2.5}$ concentrations. Finally, while the region's air pollution levels were considered Good on a majority of the days in 2016, they were Moderate or worse on 27% of the days in 2016. While "moderate" air pollution levels are not exceeding the level of the NAAQS, and the number of people affected by air pollution levels in this range is very small, there is a very small part of the population unusually sensitive to air pollution that could potentially have experienced health issues related to air pollution exposure on about 1 out of every 4 days in 2016.

1.3.1 High Ozone AQI Days

The following figures show the number of days when O_3 levels were considered moderate or unhealthy for sensitive groups at each monitoring station in the region in 2016. CAMS 3 in Travis County measured the one and only MDA8 value over 70 ppb. All other CAMS measured no MDA8 values over 70 ppb.

Figure 1-8. Number of Days when Ozone Pollution was "Moderate" or Worse by Monitoring Station and County, 2016

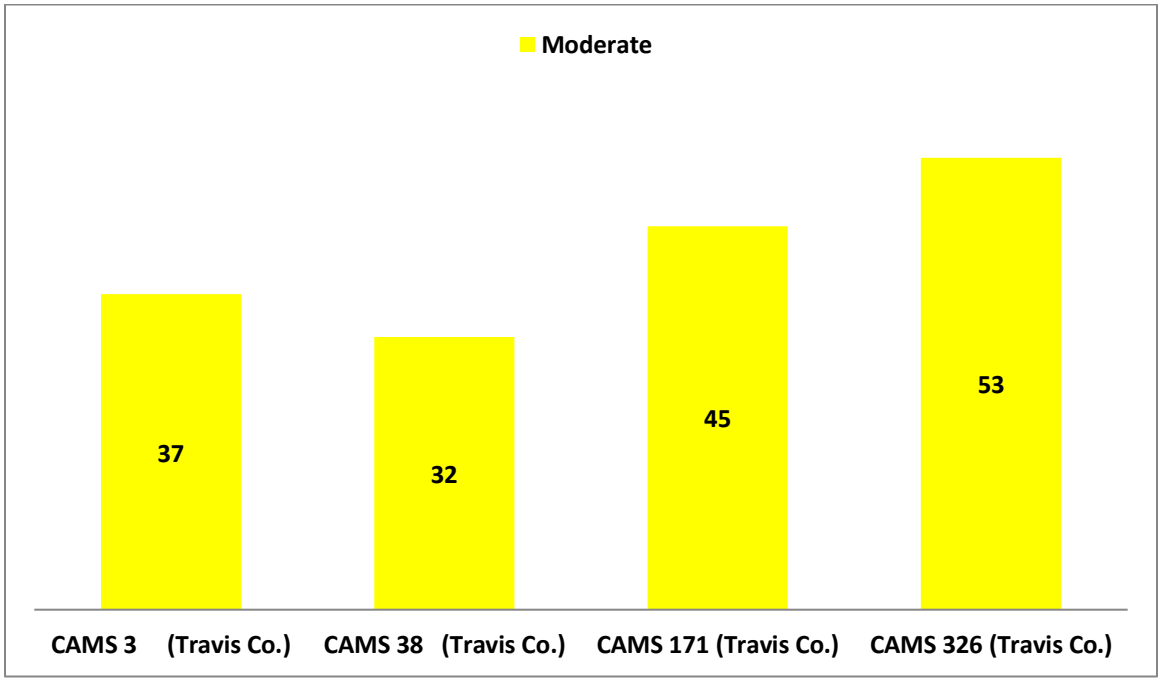


1.3.2 High $PM_{2.5}$ AQI Days

The figure below shows the number of days when $PM_{2.5}$ levels were considered Moderate at each monitoring station. The location with the highest number of Moderate days for $PM_{2.5}$ was CAMS 326,

which is located at Zavala Elementary School in Austin. The highest 24-hour $PM_{2.5}$ average in 2015 was recorded on July 11, 2016, when CAMS 171 (located in East Austin on Webberville Road) had a 24-hour average of 28.3 µg/m^3 (81% of the level of the 24-hour $PM_{2.5}$ NAAQS).

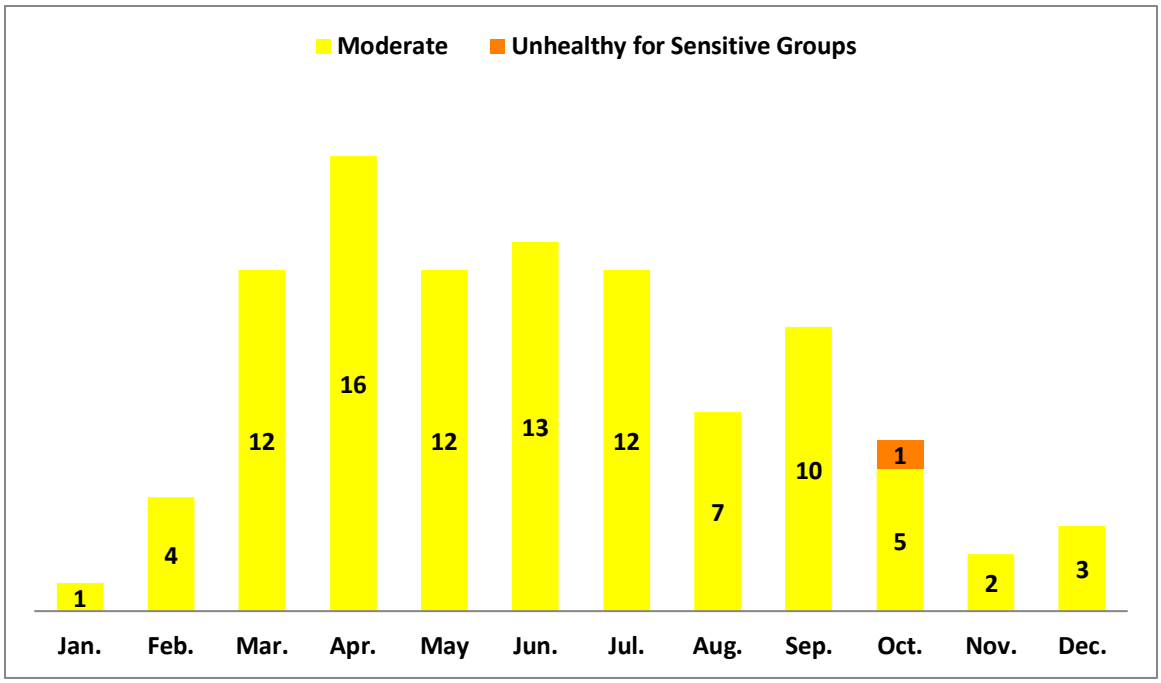
Figure 1-9. Number of Days when $PM_{2.5}$ Pollution was "Moderate" or Worse by Monitoring Station and County, 2016



1.3.3 Distribution of Moderate or Worse AQI Days by Month

Air pollution levels vary significantly by season in the CAPCOG region. In 2016, air pollution levels were considered Moderate over 50% of the days in April, and as low as 3% in January. The AQI only exceeded 100 once during the season, in October. In 2015, by contrast, there was 1 day when the AQI exceeded 100 in April, 2 in May, 6 in August, and 3 in October.

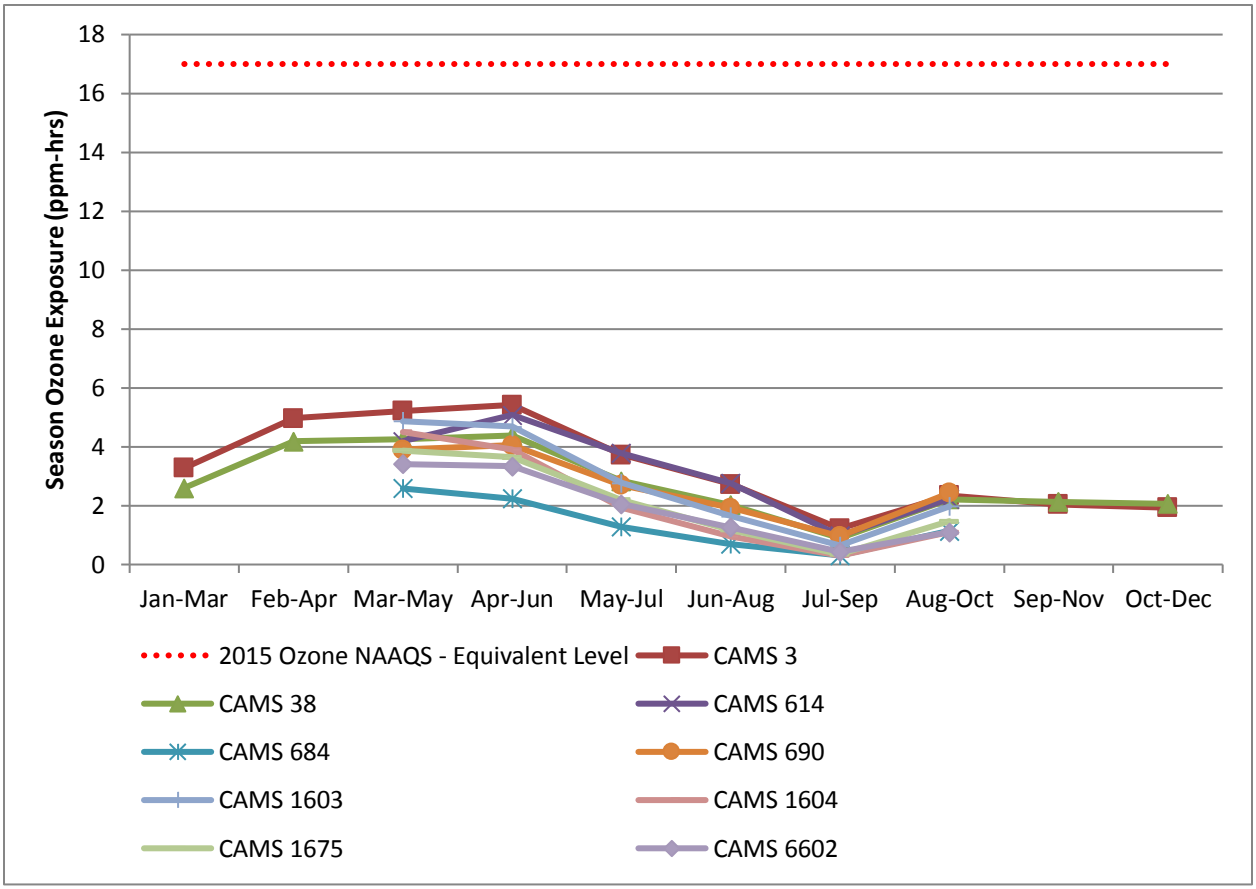
Figure 1-10. Number of Days when Air Pollution was "Moderate" or Worse in the CAPCOG Region by Month, 2016



1.4 Seasonal Ozone Exposure

While EPA set the 2015 secondary O_3 standard identical to the 2015 primary O_3 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." 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." The region's peak seasonal O_3 exposure levels were 22-70% below the 17 ppm-hr levels EPA referenced in the final 2015 O_3 NAAQS rulemaking. The figure below shows the 3-month seasonal exposure levels at each monitoring station by month (the month on the x-axis corresponds with the final month in the 3-month sum).

Figure 1-11. Weighted Seasonal Ozone Exposure by Monitoring Station and 3-month period, 2016 (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 – Ozone Action Days (OADs) and daily Air Quality Forecasts.

1.5.1 Ozone Action Days

TCEQ issues OADs the afternoon before a day when it believes that ozone levels may exceed the level of the NAAQS. While the level of the Ozone NAAQS changed on October 1, 2015, states were required to start reporting AQI in terms of the new Ozone NAAQS starting January 1, 2016. Therefore, 2016 was the first year for which the new ozone AQI thresholds were used. Therefore, it is important to understand that the data analysis in this section includes both forecast data using the 2008 ozone AQI and forecast data using the 2015 AQI. TCEQ issued two OADs for the Austin-Round Rock area in 2016 (for April 23, 2016, and for May 6, 2016), and one day when Ozone MDA8 exceeded 70 ppb (October 3, 2016).

There are two ways CAPCOG has measured 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 ozone levels were high enough to be considered unhealthy for sensitive groups.

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

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

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

Using these metrics means that TCEQ's OAD forecasting efforts for the region in 2016 were 0% accurate (zero out of two forecasts for an exceedance of 70 ppb were incorrect), and the agency missed 100% of the days (one out of one) when ozone levels were actually over 70 ppb.

Note that, to the extent that TCEQ's two OADs may prompt individuals in the region to take action to reduce emissions, it is possible that the ozone AQI levels would have exceeded 100 if not for the OAD. For example, on– April 23, 2016, the highest ozone MDA8 in the region was 69 ppb, corresponding to an AQI level of 99. It is possible that the action taken by residents of Central Texas on this date accounted for the difference between this day's ozone levels being 69 ppb and 71 ppb. This is less likely for and May 6, 2016, when the highest MDA8 value recorded in the region was 62 ppb.

These metrics are only accounting for days when either a forecast was for > 70 ppb or actual ozone was >70 ppb, and does not account for the other 362 days in 2016 when TCEQ correctly did not issue an OAD and ozone did not exceed 70 ppb.

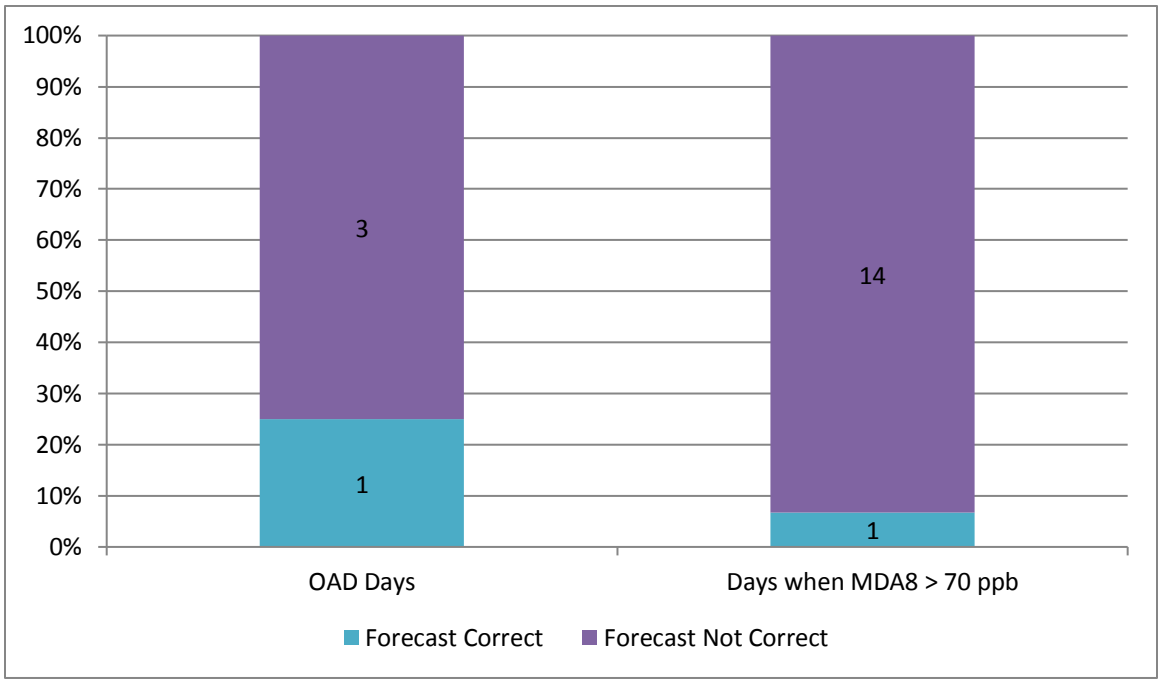
From 2014-2016, TCEQ issued a total of four OAD alerts for the Austin-Round Rock area – one in 2014, one in 2015, and two in 2016. During this time frame, there were a total of five days when ozone levels exceeded the level of the Ozone NAAQS: 0 in 2014, 4 in 2015, and 1 in 2016. The following table lists each of these dates.

Table 1-5. OAD Dates and Dates when O_3 Exceeded Level of NAAQS, 2014-2016

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
8/14/14	Yes	75 ppb	63 ppb	CAMS 614
8/13/15	No	75 ppb	76 ppb	CAMS 3
8/27/15	Yes	75 ppb	82 ppb	CAMS 3
8/28/15	No	75 ppb	85 ppb	CAMS 3
8/29/15	No	75 ppb	83 ppb	CAMS 3
4/23/16	Yes	70 ppb	69 ppb	CAMS 38
5/6/16	Yes	70 ppb	62 ppb	CAMS 1603
10/3/16	No	70 ppb	72 ppb	CAMS 3

One of these forecasts correctly predicted ozone levels over the NAAQS in effect at the time the applicable NAAQS (the 2008 Ozone NAAQS in 2014 and 2015, the 2015 Ozone NAAQS in 2016) in the region on the following day – a 25% accuracy rate. Conversely, there were a total of five days from 2014-2016 when MDA8 levels exceeded the level of the NAAQS, one of which was forecast as an OAD, a 20% success rate.

Figure 1-12. Ozone Action Day Forecast Accuracy and Success, 2014-2016



1.5.2 Daily Air Quality Forecasts

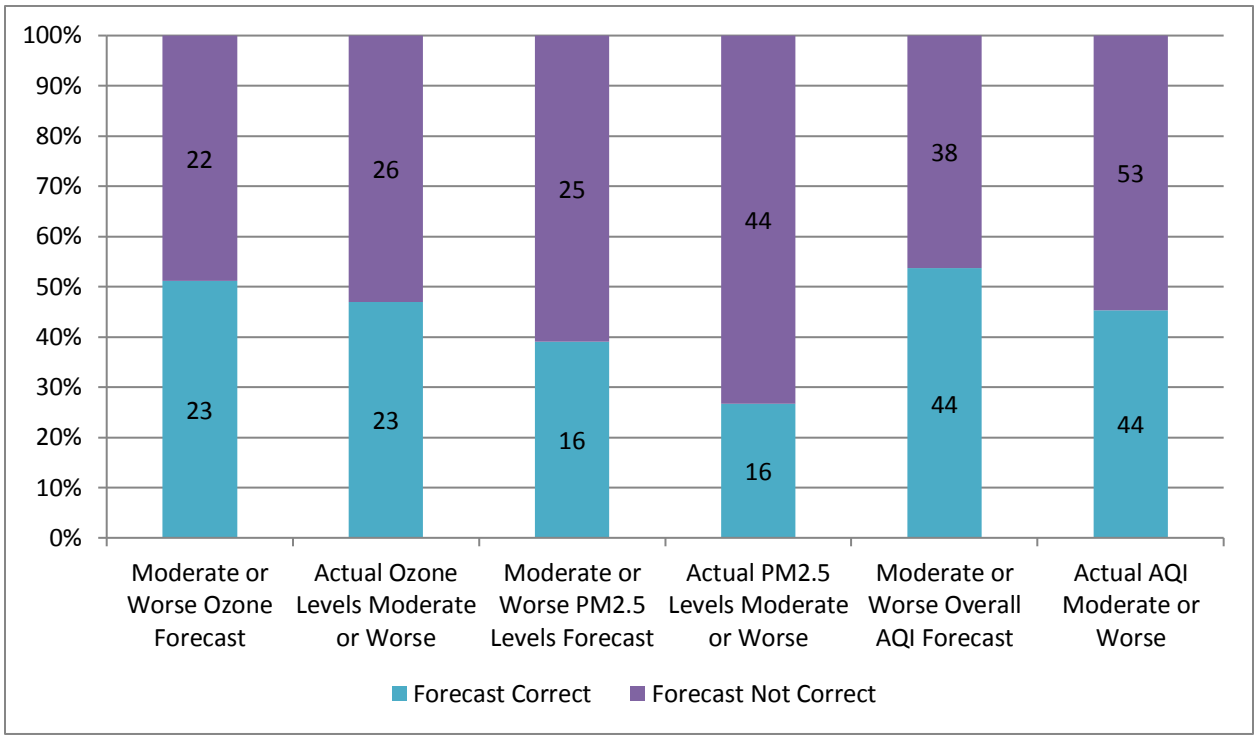
Unlike OADs, which are only issued for days when TCEQ believes O_3 will reach levels considered unhealthy for sensitive groups; daily air quality forecasts include forecasts for "good" and "moderate" air pollution levels as well, and include forecasts for pollutants other than O_3. The performance of these forecasts can also 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.

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

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

Since the daily AQI forecasts for the region included forecasts for both O_3 and $PM_{2.5}$, it is possible to analyze these accuracy and success rates by pollutant, as well as for the overall AQI. The figure below shows the results of this analysis for 2016.

Figure 1-13. Accuracy and Success of AQI Forecasts for 2016



Overall, TCEQ's forecasts for O_3 levels to be moderate or worse were 51% accurate (actual O_3 levels were good 49% of the time TCEQ made a forecast for O_3 to be moderate or worse) and 47% successful (53% of days when actual O_3 levels were moderate or worse has been forecast to have good O_3 levels). The accuracy and success rates for $PM_{2.5}$ forecasting were lower – 39% and 27%, respectively. Overall, the AQI forecasts were 54% accurate and 45% successful.

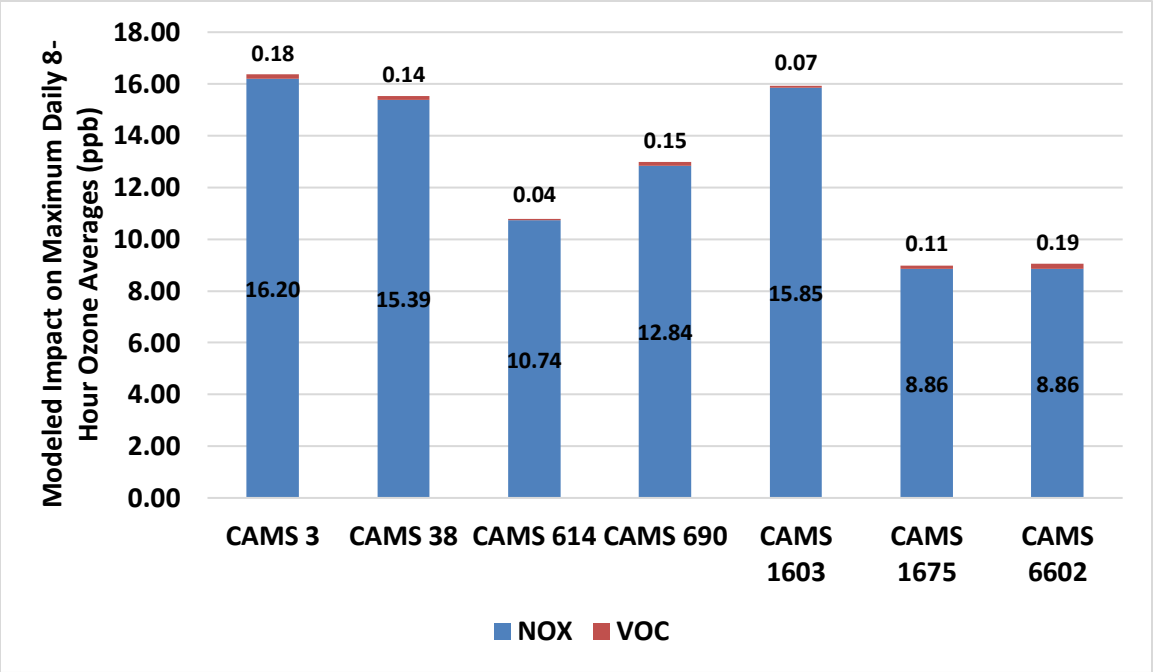
2 Regional Ozone-Forming Emissions

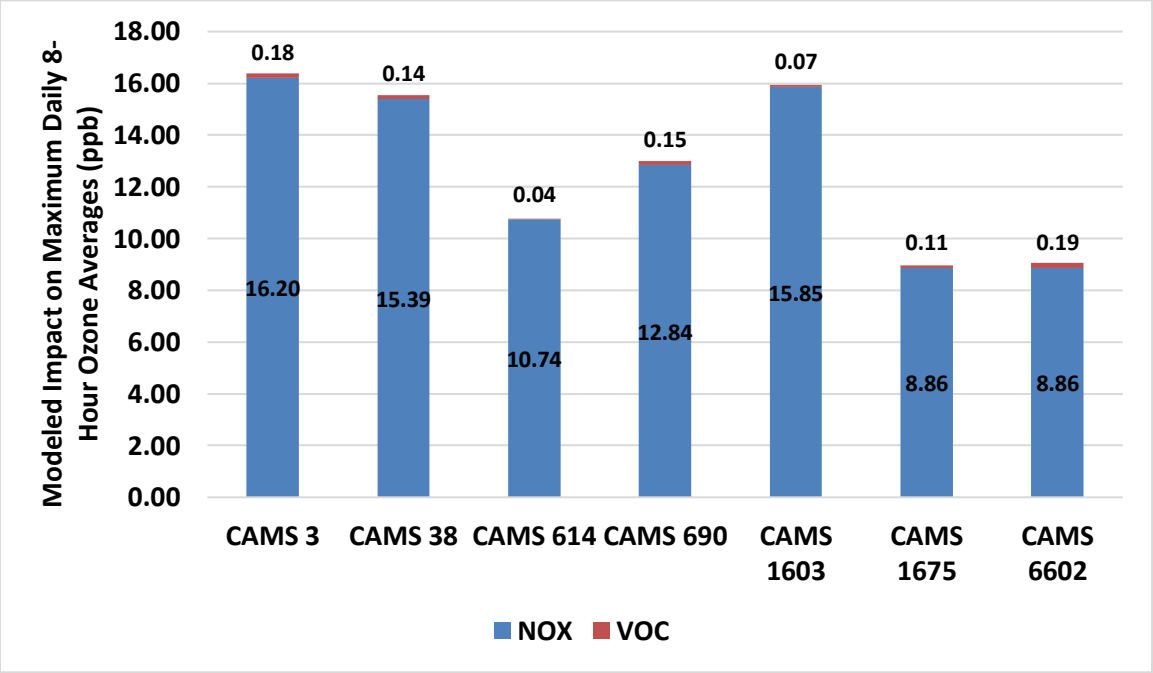
This section provides information on ozone-forming emissions in the Austin-Round Rock area and their estimated impact on ambient ozone levels.

2.1 Impact of NO_X Emissions v. VOC Emissions on Ozone Concentrations

Modeling conducted by AACOG for CAPCOG of projected 2017 ozone levels showed that NO_X emissions account for 97.9-99.7% of the impact from anthropogenic emissions from the Austin-Round Rock MSA on maximum daily 8-hour ozone averages on high ozone days. The figure below shows the contributions at each of the seven monitoring stations in the region that were analyzed.

Figure 2-1. Modeled Impact of Anthropogenic NO_X and VOC Emissions from the Austin-Round Rock MSA on High O_3 Days





Using these contribution estimates and EPA's 2017 NO_X emissions estimates for each county (estimated to be 5.57 tpd, 4.89 tpd, 13.63 tpd, 30.54 tpd, and 11.77 tpd for Bastrop, Caldwell, Hays, Travis, and Williamson Counties, respectively, for a total of 66.39 tpd), the following table shows an approximate ratio of ozone contribution to NO_X emissions for each county to each of the monitoring stations analyzed.

Table 2-1. Average 2017 Ozone Concentration Contribution per TPD of NO_X Emissions

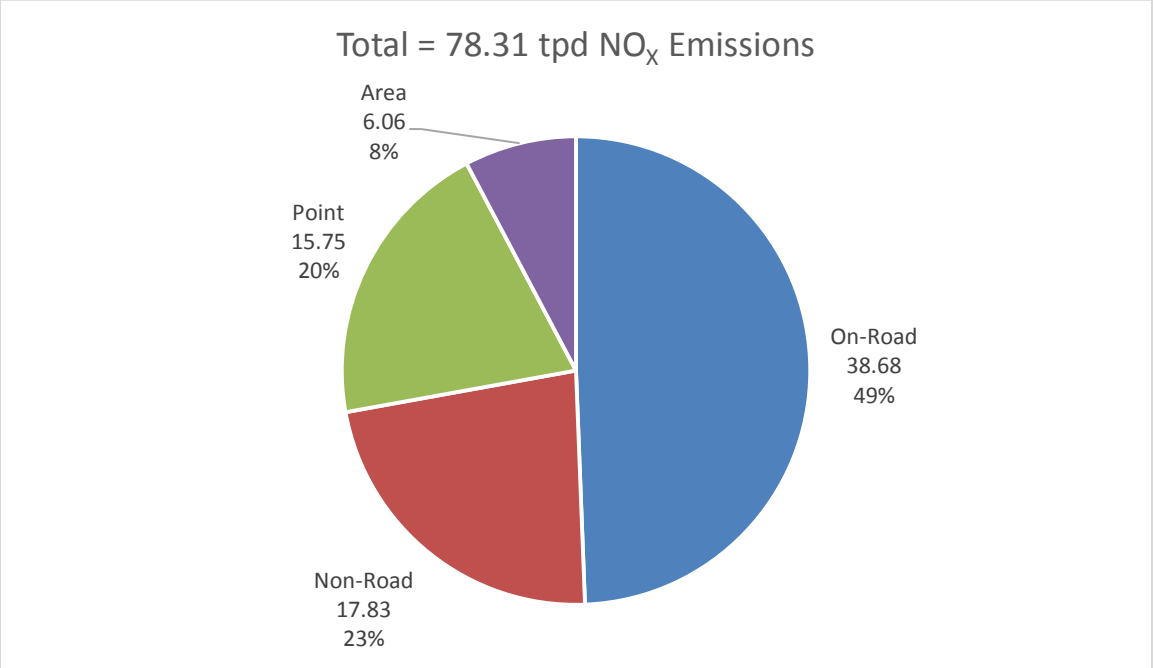
County	CAMS 3	CAMS 38	CAMS 614	CAMS 690	CAMS 1603	CAMS 1675	CAMS 6602
Bastrop	0.23	0.18	0.13	0.23	0.23	0.15	0.26
Caldwell	0.08	0.09	0.19	0.07	0.15	0.32	0.04
Hays	0.10	0.13	0.30	0.07	0.19	0.22	0.06
Travis	0.40	0.36	0.16	0.27	0.34	0.10	0.17
Williamson	0.08	0.09	0.02	0.16	0.06	0.03	0.11
TOTAL	**0.24**	**0.23**	**0.16**	**0.19**	**0.24**	**0.13**	**0.13**

These data show that NO_X emissions from Travis County have about 1.72-5.20 the impact on peak O_3 concentrations at the two regulatory O_3 monitors in the region as NO_X emissions from any of the other counties in the region.

2.2 2016 Regional Ozone Season Weekday NO_X Emissions Profile

The following pie chart shows the general break-down of 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. 2016 Ozone Season Weekday NO_X Emissions for the Austin-Round Rock MSA (tpd)



2.2.1 NO_X Emissions by Source Type by County

The following table shows the break-down of the region's NO_X emissions by county and source type.

Table 2-2. 2016 Ozone Season Weekday NO_X Emissions by Source Type and County

County	On-Road	Non-Road	Point	Area	Total
Bastrop	2.40	1.53	3.29	0.37	7.59
Caldwell	1.39	1.17	0.66	1.86	5.07
Hays	5.10	1.42	7.27	0.41	14.20
Travis	21.23	8.99	4.36	2.61	37.18
Williamson	8.56	4.73	0.17	0.81	14.27
TOTAL	**38.68**	**17.83**	**15.75**	**6.06**	**78.31**

2.2.2 On-Road Sector

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 38.68 tons per day (tpd) of NO_X emissions on a typical 2016 ozone season weekday. The table below shows the typical 2016 ozone season weekday NO_X emissions for the region by source use type.

Table 2-3. 2016 Austin-Round Rock Ozone Season Weekday NO_X Emissions by Source Use Type

Source Use Type	NO_X (tpd)
Motorcycle	0.03
Passenger Car	12.01
Passenger Truck	8.17
Light Commercial Truck	2.37
Intercity Bus	0.18
Transit Bus	0.25
School Bus	0.49
Refuse Truck	0.45
Single-Unit Short-Haul Truck	2.39
Single-Unit Long-Haul Truck	0.26
Motor Home	0.22
Combination Short-Haul Truck	4.71
Combination Long-Haul Truck	7.14
TOTAL	**38.68**

Passenger cars and passenger trucks combined to account for 20.18 tpd of NO_X emissions, while commercial trucking accounted for 14.95 tpd NO_X emissions, and the remaining sources accounting for 3.54 tpd NO_X emissions, most of which come from light commercial trucks.

2.2.3 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 2nd-largest source of NO_X emissions within the region in 2016, accounting for 17.83 tpd of NO_X emissions on a typical ozone season weekday. The non-road sector includes any mobile source not registered to operate on a public roadway. There are four different TCEQ “trends” data sets from which CAPCOG extracted non-road emissions estimates:

equipment modeled in the "Texas NONROAD" (TexN) model, locomotives/rail equipment, aircraft (including ground support equipment), and drill rigs.

Table 2-4. 2016 Ozone Season Weekday Non-Road NO_X Emissions by County (tpd)

County	TexN	Rail	Aircraft	Drill Rigs	Total
Bastrop	1.06	0.46	0.00	0.00	1.53
Caldwell	0.64	0.50	0.01	0.02	1.17
Hays	0.96	0.46	0.00	0.00	1.42
Travis	6.26	0.45	2.28	0.00	8.99
Williamson	4.16	0.55	0.02	0.00	4.73
TOTAL	**13.08**	**2.43**	**2.30**	**0.02**	**17.83**

2.2.4 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 2015. In that year there were 30 facilities from the Austin-Round Rock MSA that reported their emissions to TCEQ, accounting for a total of 16.27 tpd of NO_X emissions. Since EPA makes data for EGUs available online more quickly than TCEQ publishes the annual emissions data it collects, 2016 EGU data are already available. Substituting the 2016 EGU data from EPA into the 2015 TCEQ emissions data brings the total to 16.91 tpd from point sources. The following table combines the 2015 non-EGU emissions with the 2016 EGU emissions for a combined 2015/2016 point source emissions estimate by county.

Table 2-5. 2015/2016 Ozone Season Weekday Point Source NO_X Emissions by County (tpd)

County	Non-EGU	EGU	TOTAL
Bastrop	0.11	3.18	3.29
Caldwell	0.66	0.00	0.66
Hays	6.54	0.73	7.27
Travis	3.72	1.80	5.52
Williamson	0.17	0.00	0.17
TOTAL	**11.20**	**5.70**	**16.91**

Table 5-6 below shows the 2015 NO_X emissions by facility.

Table 2-6. 2015 Ozone Season Day Point Source Emissions in the Austin-Round Rock MSA

RN	COMPANY	SITE	COUNTY	NO_X (tpd)
RN102038486	LOWER COLORADO RIVER AUTHORITY	SIM GIDEON POWER PLANT	BASTROP	1.35
RN100212034	FORTERRA BRICK LLC	ELGIN FACILITY	BASTROP	0.04
RN100225846	ACME BRICK COMPANY	ELGIN PLANT	BASTROP	0.07
RN100723915	GENTEX POWER CORPORATION	LOST PINES 1 POWER PLANT	BASTROP	0.60

RN	COMPANY	SITE	COUNTY	NO_X (tpd)
RN101056851	BASTROP ENERGY PARTNERS LP	BASTROP ENERGY CENTER	BASTROP	1.15
RN100212018	DAVIS GAS PROCESSING, INC	LULING GAS PLANT	CALDWELL	0.27
RN100220177	OASIS PIPELINE CO TEXAS LP	PRAIRIE LEA COMPRESSOR STATION	CALDWELL	0.39
RN105366934	FLINT HILLS RESOURCES CORPUS CHRISTI LLC	MUSTANG RIDGE TERMINAL	CALDWELL	0.00
RN102597846	TEXAS LEHIGH CEMENT COMPANY LP	TEXAS LEHIGH CEMENT CO	HAYS	6.54
RN100211689	HAYS ENERGY LLC	HAYS ENERGY FACILITY	HAYS	0.71
RN100219872	CITY OF AUSTIN ELECTRIC UTILITY DEPARTMENT DBA AUSTIN ENERGY	DECKER CREEK POWER PLANT	TRAVIS	2.06
RN100214337	AUSTIN WHITE LIME COMPANY	MCNEIL PLANT & QUARRY	TRAVIS	0.01
RN105074561	APAC-TEXAS INC	AUSTIN HOT MIX	TRAVIS	0.03
RN100843747	NXP USA INC	ED BLUESTEIN SITE	TRAVIS	0.02
RN102533510	UNIVERSITY OF TEXAS AT AUSTIN	HAL C WEAVER POWER PLANT	TRAVIS	1.69
RN100723741	SPANSION LLC	SPANSION AUSTIN FACILITY	TRAVIS	0.02
RN102752763	NXP USA INC	INTEGRATED CIRCUIT MFG OAK HILL FAB	TRAVIS	0.02
RN101957769	AUSTIN AMERICAN STATESMAN	AUSTIN AMERICAN STATESMAN	TRAVIS	0.00
RN100542752	BFI WASTE SYSTEMS OF NORTH AMERICA INC	BFI SUNSET FARMS LANDFILL	TRAVIS	0.05
RN100218692	3M COMPANY	3M AUSTIN CENTER	TRAVIS	0.08
RN100216746	AUSTIN COUNTER TOPS INC	AUSTIN COUNTER TOPS	TRAVIS	0.00
RN101059673	FLINT HILLS RESOURCES CORPUS CHRISTI LLC	AUSTIN TERMINAL	TRAVIS	0.00
RN100215938	WASTE MANAGEMENT OF TEXAS INC	AUSTIN COMMUNITY LANDFILL	TRAVIS	0.11
RN101992246	SUNSET FARMS ENERGY LLC	SUNSET FARMS ENERGY	TRAVIS	0.09
RN100518026	SAMSUNG AUSTIN SEMICONDUCTOR LLC	AUSTIN FABRICATION FACILITY	TRAVIS	0.34
RN100215052	CITY OF AUSTIN ELECTRIC UTILITY DEPARTMENT DBA AUSTIN ENERGY	SAND HILL ENERGY CENTER	TRAVIS	0.40
RN102016698	TEXAS DISPOSAL SYSTEMS LANDFILL INC	TEXAS DISPOSAL SYSTEMS LANDFILL	TRAVIS	0.06
RN100225754	WASTE MANAGEMENT OF NORTH TEXAS	WILLIAMSON COUNTY LANDFILL HUTTO	WILLIAMSON	0.04
RN100725712	SEMINOLE PIPELINE COMPANY LLC	COUPLAND PUMP STATION	WILLIAMSON	0.12

RN	COMPANY	SITE	COUNTY	NO_X (tpd)
RN100728179	DURCON LABORATORY TOPS INCORPORATED	DURCON LABORATORY TOPS INCORPORATED	WILLIAMSON	0.01
TOTAL	**n/a**	**n/a**	**n/a**	**16.27**

The following table shows the estimates 2016 ozone season day NO_X emissions for electric generating units in the region. The NO_X emissions for the Decker Creek Power Plant turbines is based on an adjustment to the data reported to EPA due to certain acid rain data defaults that must be used in absence of recent stack tests; the adjustment ensures that the emission rates are consistent with the reported emissions rates in the facilities 2015 EIQ submitted to TCEQ.

Table 2-7. 2016 Austin-Round Rock MSA Electric Generating Unit Ozone Season Day NO_X Emissions by Facility

Facility	County	NO_X (tpd)
Bastrop Clean Energy Center	Bastrop	1.07
Decker Creek	Travis	2.16
Hays Energy Facility	Hays	0.63
Lost Pines 1	Bastrop	0.46
Sand Hill Energy Center	Travis	0.34
Sim Gideon	Bastrop	1.65
TOTAL	**TOTAL**	**6.32**

2.2.5 Area Sources

CAPCOG estimated the 2016 area sources using EPA's 2017 emissions inventory projections used in recent ozone modeling for its 2011v6.3 platform.[7]

Table 2-8. 2017 Area Source NO_X Emissions by County and Type (tpd)

County	Agricultural Fires	Non-Point	Non-Point Oil and Gas	Residential Wood Combustion	Total
Bastrop	0.0032	0.1864	0.1822	0.0003	**0.3721**
Caldwell	0.0003	0.0771	1.7803	0.0001	**1.8579**
Hays	0.0000	0.4081	0.0000	0.0006	**0.4087**
Travis	0.0000	2.5864	0.0143	0.0048	**2.6055**
Williamson	0.0000	0.7833	0.0265	0.0020	**0.8117**
TOTAL	**0.0036**	**4.0413**	**2.0033**	**0.0079**	**6.0560**

[7] ftp://ftp.epa.gov/EmisInventory/2011v6/v3platform/reports/2011el_county_monthly_report.xlsx

3 Implementation of Ozone Advance Program Action Plan and Other Measures

This section provides details on emission reduction measures implemented within the Austin-Round Rock MSA in 2016. This includes both measures that had been included in the OAP Action 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
- The Commute Solutions Program
- The Clean Air Partners Program
- The Clean Cities Program
- Outreach and Education Measures
- Property-Assessed Clean Energy (PACE)
- CAPCOG's Regional Air Quality Grants

3.1.1 Vehicle Emissions Inspection and Maintenance Program

The Austin-Round Rock 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 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. The inspection costs $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 the Low-Income Vehicle Repair, Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP)

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

Based on research conducted by CAPCOG in 2015[8] and TCEQ's most recent "trends" emissions inventories,[9] CAPCOG estimates that the emissions reductions from light-duty vehicles (vehicles with gross vehicle weight ratings of <8,500 pounds) in the Austin-Round Rock MSA in 2016 were approximately 2.27 tpd for NO_X and 1.99 tpd for VOC across the two counties.

Table 3-1. Estimated 2016 NO_X and VOC Emission Reductions from I/M Program for Light-Duty Vehicles (tpd)

Pollutant	Travis	Williamson	Total
NO_X	1.63	0.64	2.27
VOC	1.41	0.59	1.99

These estimates were based on empirically-based compliance factors in conjunction with the MOVES2014 model. CAPCOG's research found the following:

- About 86.17% of vehicles in the Austin-Round Rock MSA that are required to get tested on-time do so
- Testing fraud impacts approximately 0.89% of vehicles subject to on-board diagnostic (OBD) testing
- The combined 85.19% "compliance rate" is lower than the 96% default compliance rate in MOVES2014
- The average waiver rate (the percentage of vehicles that failed a test but received a waiver) for the region was 0.26% from September 2005 – December 2013, ranging from 0.21% - 0.30% in any given year, significantly lower than the 3.00% default waiver rate in MOVES2014

[8] Eastern Research Group. *Inspection and Maintenance Program Benefits Analysis*. Report Prepared for the Capital Area Council of Governments. September 21, 2015, revised December 16, 2015. Available online at: http://www.capcog.org/documents/airquality/reports/2015/Austin_Area_I-M_Benefit_Analysis_2015_revised_2015_12_16.pdf

[9] Available online at: ftp://amdaftp.tceq.texas.gov/pub/EI/onroad/mvs14_trends/. Last Accessed 5/15/2017.

- The combined 85.19% "compliance factor" for light-duty gasoline-powered vehicles is lower than the 93.12% default compliance factor in MOVES2014

The estimates do not account for the additional 0.20 – 0.67 tpd NO_X emissions reductions and 0.12 – 0.25 tpd VOC emissions reductions from heavy-duty gasoline vehicles estimated by ERG in CAPCOG's 2015 study for 2012 and 2018, respectively. Since MOVES2014 does not model emission reductions for heavy-duty vehicles, these estimates are more uncertain than the emission reductions for light-duty vehicles.

Some of the key metrics for I/M program year-to-year is the number of emissions inspections and the failure rates. The following table summarizes the number and disposition of emissions inspections in 2016:

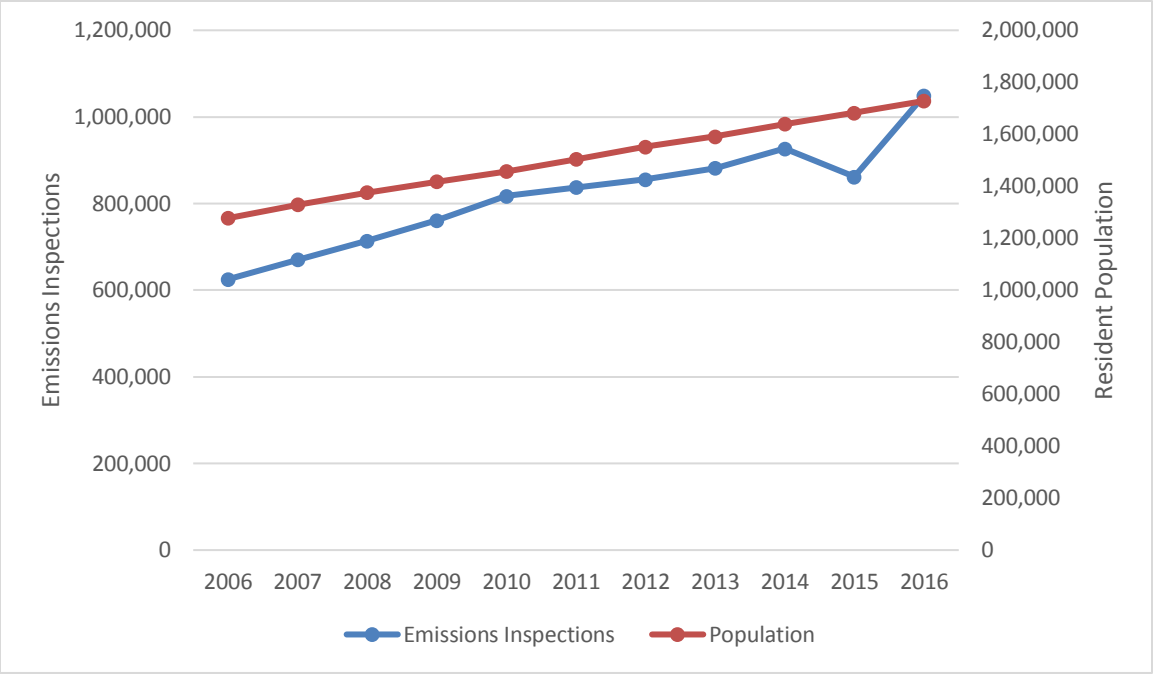
Table 3-2. I-M Program Statistics for 2016[10]

Metric	Travis County	Williamson County	Combined
Total Emission Tests	757,656	346,499	1,104,155
Initial Emission Tests	701,779	321,486	1,023,265
Initial Emission Test Failures	38,421	16,312	54,733
Initial Emission Test Failure Rate	5.5%	5.1%	5.3%
Initial Emission Retests	49,676	22,591	72,267
Initial Emission Retest Failures	4,945	1,934	6,879
Initial Emission Retest Failure Rate	10.0%	8.6%	9.5%
Other Emission Retests	6,201	2,422	8,623
Other Emission Retest Failures	1,706	647	2,353
Other Emission Retest Failure Rate	27.5%	26.7%	27.3%

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 transition 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."

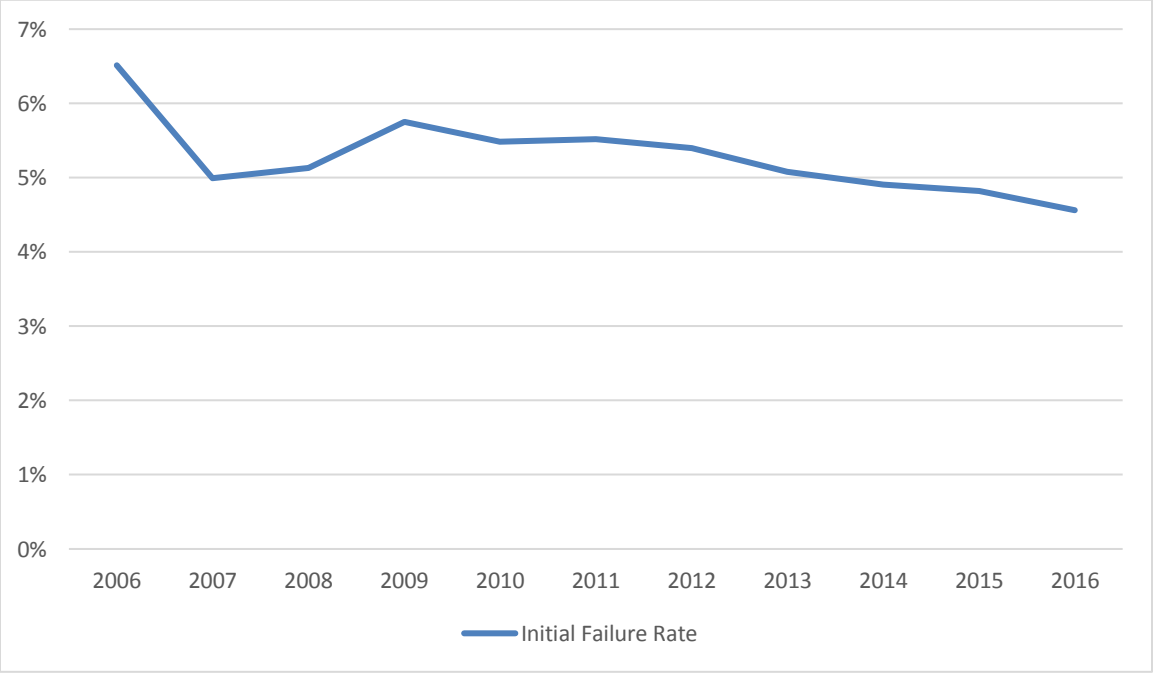
[10] Reports generated 3/28/2017

Figure 3-1. Trend in Emissions Inspections Compared to Population in Travis and Williamson Counties 2006-2016



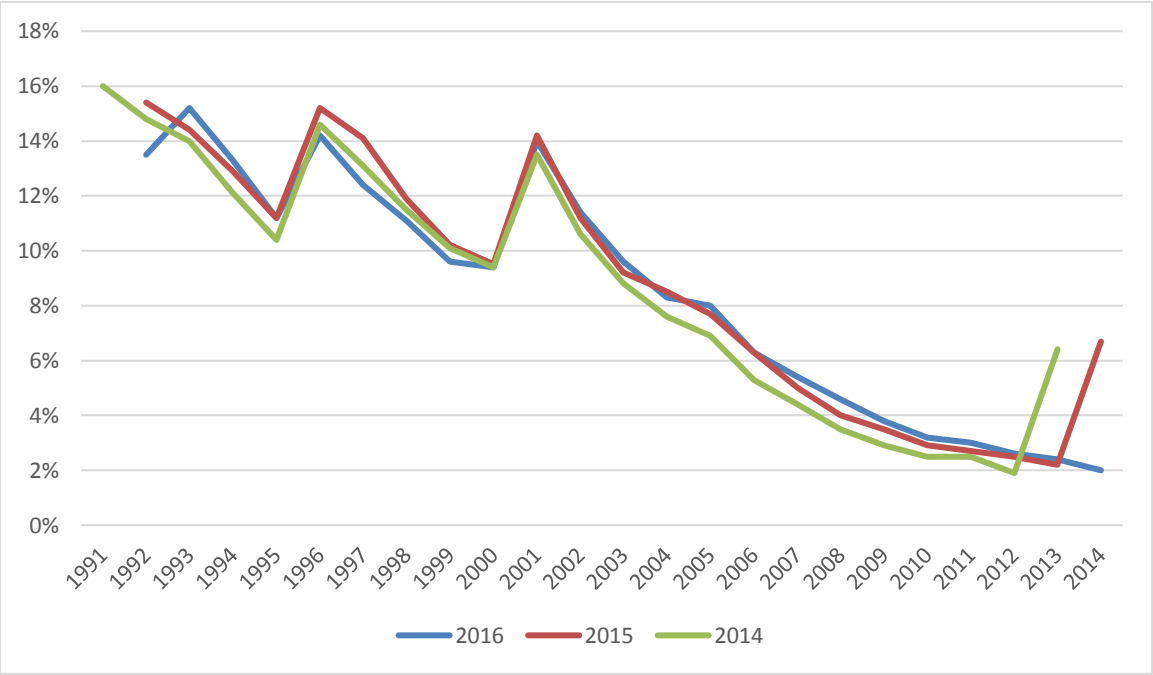
Despite the 1-year transition period in the inspection program in 2015, this did not halt the long-run downward trend in the percentage of vehicles failing their initial tests.

Figure 3-2. Initial Emissions Inspection Failure Rate Trend 2006-2016



The figure below shows the failure rate of each model year based on tests conducted in 2014, 2015, and 2016. 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. For example, 2014 model year vehicles had a failure rate of only about 2%, whereas model year 2001 vehicles had a failure rate of 14%, 7 times higher.

Figure 3-3. Failure Rate by Model Year



3.1.2 Drive a Clean Machine Program

The Drive a Clean Machine (DACM) program helps 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 can 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 are required to meet Tier 2 bin 5 or Tier 3 bin 160 or cleaner standard. Replacement vehicles cannot have an odometer reading of more than 70,000 miles. Replacement vehicles can only be purchased through a participating dealer and repairs must be performed by a recognized emissions repair facilities for Travis and Williamson Counties.

- There are 13 recognized repair facilities in Austin, 1 in Pflugerville, and 1 in Cedar Park[11]
- There are 104 participating dealers in the Austin-Round Rock MSA[12]

The program achieves emission reductions beyond those that would be achieved by implementing an I/M program without DACM in the following ways:

- Increases program compliance by making it more likely that a motorist will bring in their vehicle for a vehicle inspection based on the knowledge that financial assistance is available if they fail the test
- Increases program compliance by reducing low-income time extensions for repairs
- Increases program compliance by replacing older vehicles more likely to fail an emissions test with newer vehicles more likely to pass an emissions test
- Accelerates the benefits of newer vehicle emissions standards by replacing older vehicles with newer vehicles

In 2016, Travis County and Williamson County entered into an agreement to jointly administer their DACM programs through Travis County in order to improve the program's administrative efficiency. Starting June 1, 2016, Travis County's DACM staff began accepting applications from Williamson County motorists. Data reported by Travis County for state fiscal year 2016 (September 1, 2015 – August 31, 2016) are shown below.

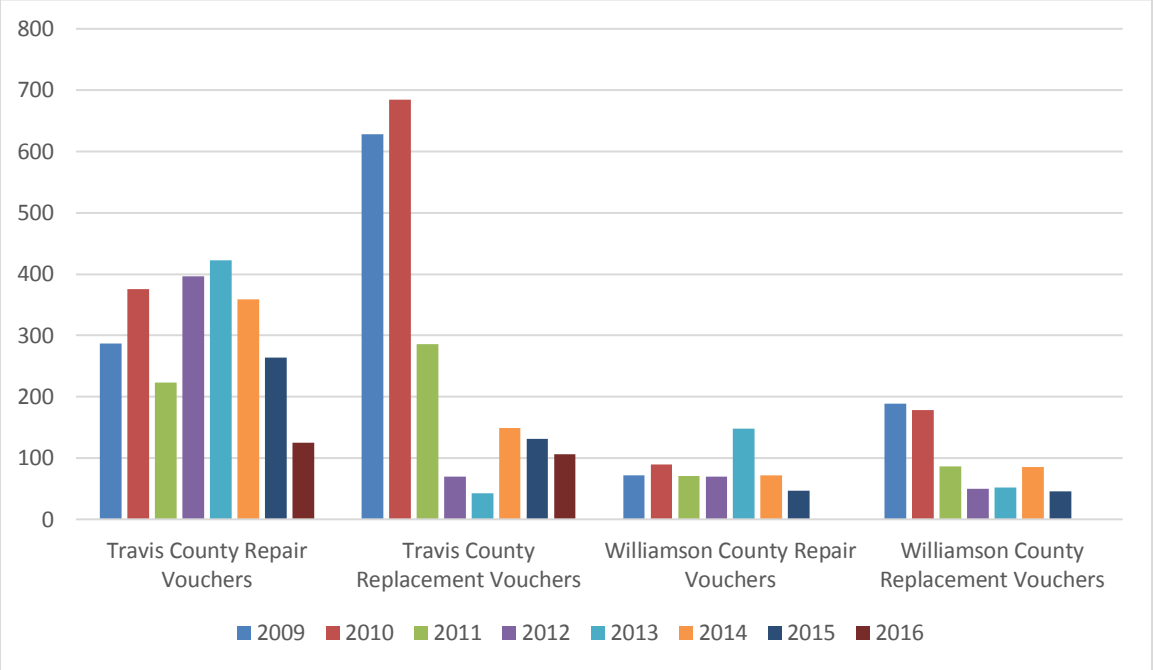
Table 3-3. DACM Program Data for State FY 2016

Item	Travis County
Total Applications for Assistance	497
Number of Repair Vouchers Issued	172
Number of Replacement Vouchers Issued	179
Total Number of Vouchers Issued	351
Value of Repair Vouchers Issued	$103,200
Value of Replacement Vouchers Issued	$626,500
Total Value of Vouchers Issued	$729,700
Number of Repair Vouchers Redeemed	125
Number of Replacement Vouchers Redeemed	106
Total Number of Vouchers Redeemed	231
Value of Repair Vouchers Redeemed	$61,642
Value of Replacement Vouchers Redeemed	$314,000
Total Value of Vouchers Redeemed	$375,642
% of Applications Vouchers Issued For	71%
% of Repair Vouchers Redeemed	73%
% of Replacement Vouchers Redeemed	59%
% of Vouchers Redeemed	66%
% of Applications Ultimately Redeemed	46%

[11] https://www.traviscountytx.gov/images/air_quality/docs/recognized_emission_repair.pdf, accessed 7/12/2017
[12] https://www.traviscountytx.gov/images/air_quality/docs/AutoDealerList.xls, accessed 7/12/2017

As the figure below shows, the number of vouchers redeemed declined from 2015 to 2016, continuing a trend from 2014. The program was under-subscribed in 2016 as in prior years; Travis County used 35% of the funding appropriated for vouchers in 2016.

Figure 3-4. DACM Repair and Replacement Voucher Trends 2009-2016



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 Clean School Bus (CSB) program provides funding for the installation of PM control devices on older buses

- The Drayage Truck Incentive Program (DTIP) provides funding for the early replacement of drayage trucks in port/intermodal facility areas
- The New Technology Implementation Grants (NTIG) program provides funding for new/innovative technology to reduce emissions from stationary sources
- The Clean Transportation Triangle (CTT) provides funding for the construction of natural gas fueling infrastructure in the region between Dallas-Fort Worth, San Antonio, and Houston in order to encourage wider usage of natural gas-fueled vehicles
- The Alternative Fueling Facilities Program (AFFP) provides funding for the construction of a variety of types of alternative fuel infrastructure in nonattainment areas

The table below shows the TERP funding awarded to the Austin-Round Rock MSA in 2016, along with any quantified NO_X emissions reductions from those grants.

Table 3-4. TERP Grants Awarded in the Austin Area in 2016

Grant Program	Number of Grants Awarded to the Austin Area	Funding Awarded to the Austin Area	NO_X Emissions Reductions from Grants Awarded (tons)	NO_X Emission Reductions from Grants Awarded (tpd)
CTT[13]	3	$1,148,623	Unquantified	n/a
CSB[14]	1	$407,487	Unquantified	n/a
NTIG[15]	0	$0	N/A	n/a
TCFP[16]	1	$1,070,220	11.03	0.0085
TNGVGP[17]	1	$210,000	7.71	0.0074
ERIG[18]	74	$7,647,598	817.89	0.4494
TOTAL	**80**	**$10,483,928**	**836.63**	**0.4653**

The following table shows the cumulative weekday NO_X emission reductions projected for 2016-2019 from projects funded under the DERI, TCFP, and TNGVGP in the Austin area that were active as of 8/31/2016. Note that this projection does not account for any new grants awarded after 8/31/2016, and the declines in emission reductions between 2017 and 2016 and between 2018 and 2017 reflect projects that were funded years before that had reached their contract expiration dates.

[13] https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/FY17/CTT_ActiveProjectList.pdf

[14] https://www.tceq.texas.gov/assets/public/implementation/air/terp/clean_schoolbus/CSB_Active_Projects_for_WEB.pdf

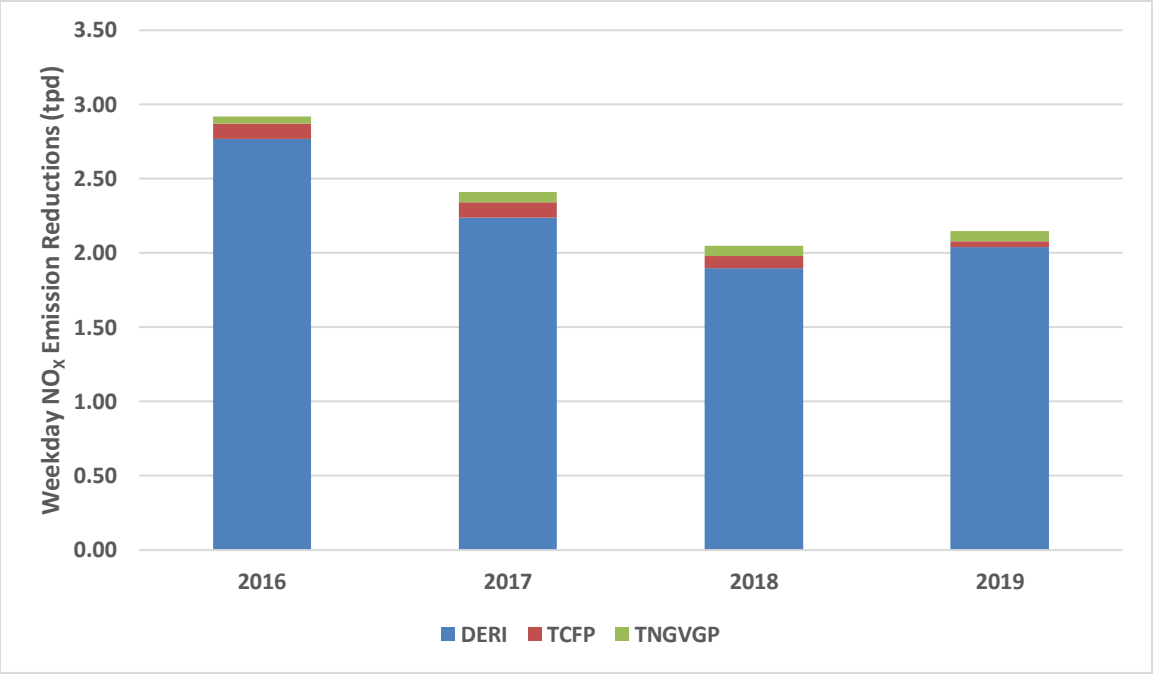
[15] https://www.tceq.texas.gov/assets/public/implementation/air/terp/ntig/Active_Projects_List_for_Website_minus_GC_083116.pdf

[16] https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/FY17/TCFP_ActiveProjectList.pdf

[17] https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/FY17/TNGVGP_ActiveProjectList.pdf

[18] https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/FY17/DERI_ActiveProjectList.pdf

Figure 3-5. Emission Reductions from TERP Grants Active as of 8/31/2016, 2016-2019



3.1.4 Commute Solutions Program

In 2016, the Capital Area Metropolitan Planning Organization (CAMPO) was not actively staffing the Commute Solutions program, although it did continue to maintain the CommuteSolutions.com website and the MyCommuteSolutions.com ride-sharing site. Towards the end of 2016, CAPCOG and other stakeholders starting having discussions with CAMPO about possibly moving the program over to CAPCOG. That process culminated in the transfer of the program in March 2017. Since the program was not advertised or otherwise actively promoted in 2016, statistics for 2016 are significantly lower than they were in prior years.

Table 3-5. MyCommuteSolutions.com Data for 2016

Mode/Type	Entries	Distance Miles	Fuel Saved	NO_x Saved (lbs)	VOC Saved (lbs)
Drove Alone	1,569	21,882	n/a	n/a	n/a
Carpool Driver	1,280	18,525	428	4.88	28.23
Carpool Passenger	819	12,023	246	3.52	16.19
Vanpool Driver	22	688	18	0.28	1.17
Vanpool Passenger	58	1,842	52	0.81	3.41
Bus	2,702	22,134	1,035	16.35	68.32
Rail	1,214	25,301	1,182	18.69	78.09
Bicycle	2,337	10,648	498	7.86	32.86
Walk	315	209	196	0.15	0.64
Telework	311	8,386	392	6.19	25.88
TOTAL	**10,627**	**121,638**	**4,047**	**58.73**	**254.79**

The following organizations outside of the Clean Air Coalition have custom sub-sites for their organizations:

- Austin Community College
- AMD
- Applied Materials
- BigCommerce
- Dell
- Downtown Austin Alliance
- IBM
- LDR Spine
- NetSpend
- Samsung Semiconductor
- Texas State University
- Texas Municipal Retirement System (TMRS)
- W Austin Hotel

3.1.5 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. Applies Materials
4. Austin Community College
5. Chemical Logic, Inc.
6. Emerson Process Management
7. EnviroMedia Social Marketing
8. Environmental Defense Fund
9. HNTB Corporation
10. Metropia
11. NXP
12. Oracle
13. Pfizer
14. R&R Limousine and Bus
15. Samsung Austin Semiconductor
16. Seton Healthcare Family
17. Spectrum
18. St. David's Healthcare
19. TECO-Westinghouse
20. Tokyo Electron

21. University of Texas at Austin
22. Zephyr Environmental Corporation

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

1. CAPCOG
2. Central Texas Regional Mobility Authority (CTRMA)
3. Lone Star Clean Fuels Alliance (LSCFA)
4. Lower Colorado River Authority (LCRA)
5. TxDOT Headquarters
6. TxDOT Austin District
7. Williamson County

3.1.6 Outreach and Education Measures

With funding from City of Austin and the TCEQ air quality planning grant (Rider 7), CAPCOG completed a number of outreach and education tasks in 2016, including:

- Developing a new "Air Central Texas" outreach and education website
  - ULR: www.AirCentralTexas.org;
  - Created 56 pages with 16 total updates
  - Spanish-language versions of all pages available
  - An emissions impact calculator was created to help people understand the impact of their day-to-day activities on regional ozone
  - A total of 3,451 unique visitors through 11/30/2016
- Conducting and coordinating regional in-person outreach and education;
  - 29 events were staffed, with at least 3 in each county; up from 15 events in 2015
  - 154.5 total staff hours at events, down from 168.5 in 2015
  - 4,255 individuals contacted, up from 3,992 in 2015
  - Average contact rate: 27.5 contacts/hour, up from 23.5 contacts/hour in 2015
- Conducting electronic outreach and education;
  - 2,077,166 total gross impressions[19] (GIs) made at a cost of $18,050 ($8.70 per thousand)
  - In 2015, CAPCOG spent $37,715 on radio ads from CAPCOG's Inter-local Agreement (ILA) with City of Austin, achieving 2,642,479 GIs ($13.44 per thousand)
- Providing technical assistance to fleet managers for emission reduction grants;
  - Contacted 23 organizations to provide technical assistance regarding applying for ERIG grants
    - 9 no response
    - 7 no interest
    - 2 possible interest (Georgetown and Hutto)

[19] A "gross impression" is an instance in which 1 person sees or hears a message. The number of gross impressions is therefore equivalent to the number of persons who saw or heard a message times the average number of times they saw or heard the message.

        - 5 active interest (Austin White Lime, Texas Lehigh Cement Company, Caldwell County, Travis County, and TxDOT)
- Conduct targeted senior outreach to help reduce exposure on high air pollution days;
    - 780 contacts with seniors using targeted outreach materials
    - Leveraged existing contacts through CAPCOG's Area Agency on Aging
- Establish an "Air Central Texas" awards program
    - Held an awards ceremony attended by 42 individuals on November 4, 2016
    - Public Sector Award given to Williamson County Commissioner Ron Morrison
    - Private/Non-Profit Sector Award given to the Lone Star Clean Fuels Alliance
    - Bill Gill Central Texas Air Quality Leadership Award given to Tom "Smitty" Smith

CLEAN AIR Force's (CAF) High School Public Service Announcement (PSA) contest received 6 entries from 5 high schools. Entries were due on January 31, 2016, with the winner selected in March 2016. Austin Mayor Steve Adler made a proclamation for the winners on April 7, 2016. The first-place PSA ran from April-May 2016.

City of Austin and CAF sponsored a Media & Meteorologist Lunch & Learn on August 5, 2016.

LSCFA sends out bi-monthly e-mail blasts and quarterly e-newsletters. They receive $45,000 per year from the Department of Energy for specific deliverables, with additional funding coming from grants and membership dues. LSCFA has 125 identified stakeholders in the region with 5 financially supporting members. LSCFA events in 2016 included:

- Propane in the Park – a propane mower event April 8 (75 attendees)
- First responder training in use of alternative fueled vehicles August 17-18 (20 attendees)
- Drive electric week promoting electric vehicles and hybrids (100 attendees)
- CNG Tank Inspection Workshop for 1st-responders (40 attendees)

3.1.7 Property-Assessed Clean Energy (PACE) Program

The Property-Assessed Clean Energy (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.[20] Projects include:

- HVAC modification or replacement
- Light fixture modifications such as LED
- Solar panels

[20] http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.399.htm

- 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
- Rainwater collection systems

In 2016, both Travis and Williamson Counties participated in PACE. Travis County joined the PACE program on March 24, 2015[21], and Williamson County joined on March 22, 2016[22]. Hays County joined on January 22, 2017.

The first PACE project in Texas was in Travis County and was announced on February 24, 2016 at Temple Beth-Israel in Austin. The first solar PACE project in Texas was also in Travis County – a $262,000 investment at Family Eldercare in Travis County. On October 3, 2016, three projects in Travis and Williamson Counties were initiated with Simon Property Group totaling $3 million in investments.

As of July 13, 2017 6 of the 9 completed PACE projects in the state were in Hays, Travis and Williamson Counties.

- Hays County:
  - 1 project totaling $1,800,000 in investments
  - 824,903 kWh in electricity consumption savings
  - 3,139,000 gallons/year in water consumption savings
- Travis County:
  - 3 projects totaling $4,436,986 in investments
  - 1,436,986 kWh/yr in electricity consumption savings
  - 658,000 gallons/year in water consumption savings
- Williamson County:
  - 2 projects totaling $1,767,982
  - 1,956,657 kWh/yr in electricity consumption savings
  - 1,780,000 gallons/yr in water consumption savings

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

[21] https://www.traviscountytx.gov/images/commissioners_court/Doc/04-2015-resolution-pace.pdf

[22] https://agenda.wilco.org/docs/2016/COM/20160308_1211/14757_2016%200227%20Williamson%20County%20Resolution%20of%20Intent%20%28030116%29.pdf

3.1.8 CAPCOG Regional Air Quality Grants

CAPCOG received about $240,000 in air quality funding for the 2016-2017 biennium beyond what it had initially sought and decided to use these funds to provide air quality grants within the region. Through two rounds of grant applications, CAPCOG ultimately awarded five grants:

- A grant to Austin Community College to help pay for the installation of solar panels on their Highland Campus buildings
- A grant to the City of Austin to support a pilot alternative commuting project at the City of Austin for its employees
- A grant to Travis County to incentivize the use of Capital Metropolitan Transit Authority (CapMetro) vanpool services
- A grant to Austin White Lime to replace several light-duty trucks used on the premises with smaller, cleaner off-road vehicles to perform the same work
- A grant to Austin White Lime to install an "electric ear" to improve the energy efficiency of one of their kilns when burning coal

These projects had not yet been implemented as of the end of 2016, but are all in the process of being completed as of the date of this report.

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, while this section of the report provides an overview of these measures, a. A stand-alone section for Texas Lehigh Cement Company's NO_X emission reduction program is detailed here, as well as a note on Austin Energy's decision to postpone retirement of the Decker Creek Power Plant's boilers 1 and 2. These measures are based on reports collected from CAC members in May and June 2016. Organizations that did not report as of the date of this report include:

- City of Luling
- City of Pflugerville
- City of Taylor
- Williamson County
- CapMetro

If these organizations provide data subsequent to this report, CAPCOG will provide an updated version.

Many jurisdictions provided detailed operational data. CAPCOG intends to use this in a subsequent technical report analyzing the emissions reduction impact of various OAP Action Plan measures.

3.2.1 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 ozone levels in the region. The facility, which is the largest point source of NO_X emissions within the Austin-Round Rock 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 ozone 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 ozone levels within the region.

In 2016, Texas Lehigh implemented this measure on 25 days, with an additional 20 days when it intended to implement the measure but ultimately didn't:

- 16 days when ozone levels were "moderate" or higher
  - 37% of the days when ozone levels were "moderate" or higher
  - 50% of the days that were in the top 4 for CAMS 3 and CAMS 38
  - 15 days when O_3 levels were forecast to be "moderate" or higher
  - 1 day when O_3 levels were forecast to be "good"
- 9 days when ozone levels were "good"
  - 7 days when O_3 levels were forecast to be "moderate" or higher
  - 2 days when O_3 levels were forecast to be "good"
- 5 days when there was a delayed start due to a late TCEQ forecast or other issues
- 10 days when Texas Lehigh intended to participate but couldn't due to process issues
- 1 day not implemented due to operator error
- 2 days not implemented due to a change in TCEQ's forecast
- 2 days not implemented due to other issues

Texas Lehigh noted the following days in their 2016 report.

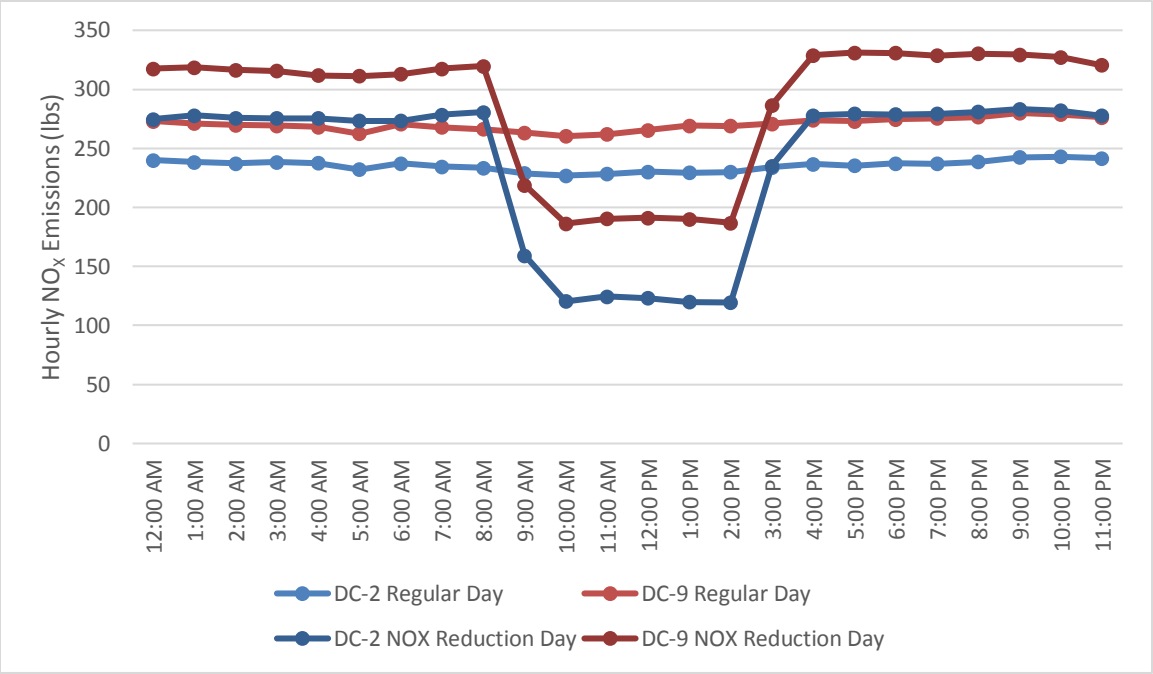
Table 3-6. Days Texas Lehigh Highlighted on its 2016 Report

Date	Note	Most Recent O_3 AQI Forecast	Actual MSA Max MDA8 O_3 (ppb)	Actual O_3 AQI
3/14/2016	Participated	Moderate	66	Moderate
3/15/2016	Late Start	Moderate	49	Good
4/2/2016	Didn't Participate	Good	49	Good
4/3/2016	Didn't Participate	Good	54	Good
4/4/2016	Process Down	Moderate	63	Moderate
4/5/2016	Process Down	Moderate	61	Moderate
4/6/2016	Process Down	Moderate	55	Moderate
4/7/2016	Process Down	Moderate	62	Moderate
4/8/2016	Process Down	Moderate	60	Moderate
4/15/2016	Process Down	Moderate	49	Good
4/22/2016	Participated	Moderate	59	Moderate
4/23/2016	Participated	Unhealthy for Sensitive Groups	69	Moderate
4/27/2016	Operator Forgot	Moderate	62	Moderate

Date	Note	Most Recent O_3 AQI Forecast	Actual MSA Max MDA8 O_3 (ppb)	Actual O_3 AQI
4/30/2016	Delayed Start	Moderate	58	Moderate
5/4/2016	Participated	Moderate	55	Moderate
5/5/2016	Participated	Moderate	65	Moderate
5/6/2016	Process Issues	Unhealthy for Sensitive Groups	62	Moderate
5/13/2016	Participated	Good	60	Moderate
5/14/2016	Process Issues	Moderate	44	Good
6/6/2016	Process Issues	Moderate	61	Moderate
6/7/2016	Participated	Moderate	66	Moderate
6/8/2016	Participated	Moderate	60	Moderate
6/9/2016	Participated	Moderate	55	Moderate
6/19/2016	Participated	Moderate	45	Good
6/29/2016	Process Issues	Moderate	64	Moderate
6/30/2016	Participated	Moderate	65	Moderate
7/1/2016	Participated	Moderate	59	Moderate
7/22/2016	Participated	Moderate	48	Good
8/8/2016	TCEQ Canceled Forecast	Moderate	39	Good
9/1/2016	Participated	Moderate	58	Moderate
9/2/2016	TCEQ Canceled Forecast	Good	57	Moderate
9/4/2016	Participated	Moderate	49	Good
9/12/2016	Participated	Moderate	50	Good
9/20/2016	Late AQ Forecast from TCEQ	Moderate	56	Moderate
9/21/2016	Participated	Moderate	58	Moderate
9/22/2016	Participated	Good	54	Good
9/28/2016	Participated	Moderate	62	Moderate
9/29/2016	Participated	Good	54	Good
10/3/2016	Process Issues	Moderate	72	Unhealthy for Sensitive Groups
10/9/2016	Participated	Moderate	54	Good
10/10/2016	Participated	Moderate	61	Moderate
10/11/2016	Participated	Moderate	70	Moderate
10/28/2016	Participated	Moderate	47	Good
11/16/2016	Late AQ Forecast from TCEQ	Moderate	51	Good
11/17/2016	Late AQ Forecast from TCEQ	Moderate	42	Good

Texas Lehigh also provided CAPCOG with hourly NO_X emissions data for each of its two stacks: DC-2 and DC-9. The figure below shows a comparison of the average hourly NO_X emissions for each stack on days when the NO_X reduction measure was implemented versus when it was not. As the figure shows, on days when the measure was implemented, NO_X emissions are slightly higher between 12 am-9 am and 3 pm – 12 am on NO_X reduction days than on normal days, but emissions much lower on days when the measure was implemented.

Figure 3-6. Texas Lehigh NO_X Emissions by Hour on NO_X Reduction Days and Regular Days, 2016



A 2015 report by CAPCOG showed that this measure could reduce peak 8-hour O_3 concentrations at regional ozone monitors by as much as 0.7-0.8 ppb in some locations.

Some other data reported by Texas Lehigh for 2016 includes the following:

- Total 2016 Ozone-Forming Emissions Reported to TCEQ:
  - NO_X: 2,257 tpy, 12,705 pounds per ozone season day
  - VOC: 189 tpy, 1,033 pounds per ozone season day
- Total 2016 kiln fuel input:
  - Coal: 3,572,551 MMBtu (63%)
  - Petroleum Coke: 1,239,747 MMBtu (22%)
  - Natural Gas: 832,142 MMBtu (15%)
- Other Operational Data for 2016:
  - 150 employees
  - 66,043,000 CF natural gas consumed for non-kiln purposes
  - 168,894 kWh electricity consumed
  - 353,967 gallons of diesel consumed
  - 4,846 gallons of gasoline consumed
  - 22.2996 million gallons of water consumed

3.2.2 Austin Energy

Austin Energy's decision in May 2016 to postpone the decommissioning of the Decker Creek Power plant's two boilers due to low natural gas prices was a setback for progress in reducing NO_X emissions

and ozone levels in the region. Based on an article in the Austin-American Statesman on May 26, 2016, the utility now does not expect the replacement for Decker's two boilers to be completed until 2022.[23]

3.2.3 Commuter Programs

CAC members implemented a number of commuter programs in 2016. These include:

- Providing alternative commuting infrastructure (3 organizations)
- Allowing employees to work compressed work weeks (4 organizations)
- Allowing employees to work flexible work schedules (11 organizations)
- Carpool or other alternative transportation programs (9 organizations)
- Transit pass subsidized by employer (2 organizations)
- Part-time teleworking (9 organizations)
- Full-time teleworking (3 organizations)
- Incentivizing alternative commuting among organization's own employees (3 organizations)
- Encouraging alternative commuting within the community (3 organizations)

3.2.4 Development Measures

Development measures implemented in 2016 included:

- Access management: 3 organizations
- Expedited permitting for mixed use, transit-oriented development, or in-fill development: 1 organization
- Transit-oriented development: 2 organizations
- Tree planting programs: 10 organizations
- Tree maintenance programs: 9 organizations
- Development policies to improve energy and resource efficiency in new buildings: 8 organizations
- Codes and ordinances that encourage a more pedestrian-friendly environment: 5 organizations

3.2.5 Energy and Resource Conservation

Energy and Resource Conservation measures implemented in 2016 included:

- Resource conservation: 7 organizations
- Energy efficiency programs: 4 organizations
- Renewable energy programs: 5 organizations
- Electric vehicle programs: 1 organization
- Water conservation programs: 7 organizations
- Resource recovery and recycling programs: 7 organizations

[23] http://www.mystatesman.com/news/local-govt--politics/austin-energy-hits-pause-plans-for-new-gas-plant-decker/bgRdQFZYtf2DOd2usGurcO/

3.2.6 Fleet and Fuel Efficiency Measures

Fleet and Fuel Efficiency Measures included:

- Alternative fuel vehicles: 4 organizations
- Business evaluation of fleet usage, including operations and right-sizing: 7 organizations
- Fueling of vehicles in the evening: 2 organizations
- Low-emission vehicles: 4 organizations
- Texas Low-Emission Diesel Equivalent for Fleets: 5 organizations
- Vehicle maintenance by manufacturer specifications: 4 organizations
- Prioritize purchasing of low-emission light-duty vehicles: 3 organizations
- Prioritize purchasing of alternative-fueled vehicles and equipment: 2 organizations
- Prioritize purchasing of hybrid vehicles: 2 organizations
- Increase fuel efficiency: 3 organizations
- Increase substitution of conventional fuels with alternative fuels: 2 organizations
- Idling limits for vehicles and equipment: 7 organizations
- Pursue replacement/repower/retrofit of old diesel-powered vehicles and equipment through TERP and/or DERA funding: 5 organizations
- Employee training on alternative fuels and fuel efficiency: 1 organization

3.2.7 Outreach and Awareness

Outreach and Awareness measures implemented by individual CAC members in 2016 included:

- Employee education program: 7 organizations
- Public education: 6 organizations
- Ozone action day notification program: 9 organizations
- Ozone action day response programs: 6 organizations
- Programs to improve awareness of and compliance with air quality rules: 2 organizations

3.2.8 Regulation and Enforcement

Regulation and enforcement measures implemented by individual CAC members in 2016 included:

- Open burning restrictions: 4 organizations
- Special event emission reduction policies: 3 organizations

The following jurisdictions implement idling restrictions, either with a local ordinance, through a memorandum of agreement (MOA) with TCEQ, or both.

Table 3-7. Jurisdictions Implementing Idling Restrictions in the Austin-Round Rock MSA

Jurisdiction	Local Ordinance	TCEQ MOA
City of Austin	☒	☒
City of Bastrop	☒	☐
City of Elgin	☒	☐
City of Georgetown	☒	☒
City of Hutto	☒	☐
City of Lockhart	☒	☐
City of Round Rock	☒	☐
City of San Marcos	☒	☐
Bastrop County	☐	☒
Travis County	☐	☒

These idling restrictions are "passive' controls in that the jurisdictions will respond to complaints when they are made, but don't devote dedicated resources to idling restriction enforcement. None of the jurisdictions reported any citations being issued for idling in 2016.

3.2.9 Sustainable Procurement and Design

Sustainable procurement and design measures implemented by individual CAC members in 2016 included:

- Direct deposit: 11 organizations
- Restrictions on use of organization's drive-through facilities on ozone action days: 2 organizations
- E-government and/or remote locations: 6 organizations
- Landscaping voluntary start at noon on ozone action days education program: 2 organizations
- Low VOC asphalt: 1 organization
- Low VOC roadway striping material: 2 organizations
- Shaded parking: 3 organizations
- Clean landscaping contracting: 3 organizations
- Clean construction contracting: 3 organizations
- Local sourcing of materials: 3 organizations

4 Ongoing Planning Activities

This section documents notable air quality planning milestones and activities completed in 2016.

4.1 Clean Air Coalition Meetings

During 2016, there were a total of five Clean Air Coalition meetings, two of which were joint meetings with AACOG's AIR Executive Committee:

- February 10, 2016
- April 29, 2016 (joint meeting with AACOG)

- June 8, 2016
- August 10, 2016
- November 4, 2016 (joint meeting with AACOG)

Significant action taken by the CAC in 2016 included:

- Updates to the CAC by-laws at the February meeting
- Approval of a joint resolution on the Ozone NAAQS area designations and implementation at the April meeting with AACOG
- Approval of a comment letter to TCEQ regarding its 2016 annual monitoring plan at the June meeting
- Approval of a comment letter to EPA regarding its PM NAAQS review plan at the June meeting
- Approval of Austin White Lime and City of Taylor as Clean Air Coalition members at the August meeting
- Approval of a joint resolution on 2017 air quality legislative priorities at the November meeting with AACOG

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

- January 7, 2016
- February 4, 2016
- May 12, 2016
- July 14, 2016
- October 13, 2016

The CACAC Outreach and Education Subcommittee bet a total of 7 times in 2016

- April 21, 2016
- May 11, 2016
- June 1, 2016
- August 3, 2016
- September 7, 2016
- October 5, 2016
- November 2, 2016

The CACAC also established an idling workgroup that met four times in early 2016

- January 27, 2016
- February 24, 2016
- March 30, 2016
- April 28, 2016

4.2 CLEAN AIR Force Meetings

CLEAN AIR Force's Board and Executive Committee met a number of times throughout the year.

Executive Committee Meetings:

- January 25, 2016
- February 3, 2016
- September 20, 2016
- September 28, 2016
- November 2, 2016
- December 7, 2016

Board Meetings:

- February 3, 2016
- November 2, 2016

Other special meetings & events included a field trip to Austin Water Utility's Hornsby Bend facility, and a December 7, 2016 meeting on potential LIP projects.

4.3 Regional Air Quality Technical Research Activities

CAPCOG completed a number of air quality technical research activities in 2016 including:

- Continued ozone and meteorological data collection at 8 CAPCOG-owned monitoring stations in the region to supplement the 2 TCEQ ozone monitors in the region
- Support for a new ozone monitor at St. Edward's University (CAMS 1605)
- Vertical measurement of ozone levels using balloons through a contract with St. Edward's University (St. Edward's conducted a total of 16 launches)
- An analysis of EPA's 2014 National Emissions Inventory and development of updates for fuel properties, inspection and maintenance compliance factors, and the area source commercial fuel combustion categories based on local data
- Development of a new ozone conceptual model for the region based on data collected between 2010 and 2015
- Completion of a regional telephone survey of residents regarding air quality awareness and issues

Reports and data from these projects can be found at http://www.capcog.org/divisions/regional-services/aq-reports.

4.4 Statewide Collaborative Initiatives

4.4.1 Regional Air Quality Planning Group

CAPCOG participated in meetings with the other 11 regional air quality planning groups across the state on the following dates:

- March 11, 2016
- July 7, 2016

4.4.2 Texas Clean Air Working Group

CAPCOG participated in four Texas Clean Air Working Group (TCAWG) meetings in late 2016, as well as a number of TCAWG subcommittees on TERP and Transboundary Air Pollution issues during this time.

- September 15, 2016
- October 20, 2016
- November 9, 2016
- December 15, 2016

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 2016 and the completion of this report. This includes:

- The implications of the Governor's veto of funding for regional air quality planning, the DACM program, and LIP program for FY 2018-2019
- Changes to the TERP statute and TERP appropriations
- The transfer of the Commute Solutions Program from CAMPO to CAPCOG
- The EPA's postponement of initial area designations for the 2015 Ozone NAAQS
- Updates to the Region's Advance Program Action Plan

5.1 Implications of Veto of Regional Air Quality Planning Funding

On June 12, 2017, Governor Abbott line-item vetoed Rider 7 to TCEQ's 2018-2019 budget, which was the grant program that CAPCOG and a number of other "near-nonattainment areas" across the state have relied on to fund regional air quality planning efforts for the past 20 years.[24] This funding would have provided $6 million out of the state's Clean Air Account to fund planning efforts in the Austin, Beaumont-Port Arthur, Corpus Christi, El Paso, Granbury, Killeen-Temple, San Antonio-New Braunfels, Tyler-Longview-Marshall, Victoria, and Waco areas. CAPCOG had expected $1.26 million from this funding for the biennium to fund planning activities for the Austin area. This grant had made up 76% of the funding for CAPCOG's air quality program between 2010 and 2017, including 94% of its staffing costs.

Immediately following the veto, CAPCOG issued notices to its contractors to suspend uncompleted work in order to preserve as much of CAPCOG's funding from FY 2016-2017 as possible. CAPCOG will be able to use the FY 2016-2017 funding out through June 30, 2018, but will need to rely on other sources of

[24] https://gov.texas.gov/uploads/files/press/06122017_BudgetAndLineItemVetos.pdf

funding beyond that. In absence of any new funding, CAPCOG would permanently shut down its ozone monitors, reduce its staffing levels from 2.5 full-time equivalents (FTEs) to 1.5 FTEs on October 1, 2017, and shut down the air quality program entirely after June 30, 2018.

At a June 28, 2017, emergency meeting of the CAC, CAPCOG explained the situation and laid out various options for proceeding. The CAC unanimously endorsed a course of action that would involve CAPCOG submitting funding requests totaling $287,000 to each of the jurisdictions in the CAC, with the request to each jurisdiction based on population. The funding raised through these requests will be used in the following priority order:

1. Resume air quality monitoring activities for the 2017 ozone season
2. Extend staffing for the air quality program at a 1.5 FTE level beyond June 30, 2018 to September 30, 2018 (the end of CAPCOG's FY 2018 fiscal year)
3. Resume a limited monitoring program for the 2018 ozone season
4. Maintain staffing for the air quality program at 2.5 FTE through the end of September 30, 2018
5. Resume the full monitoring program for the 2018 ozone season

As of the date of this report, several jurisdictions had already approved funding in some fashion, while others have scheduled consideration of this request at a City Council and County Commissioner Court meeting. CAPCOG has asked for a response by July 24, 2017, and will proceed accordingly based on the responses received by that date. Between August 2017 and March 2018, CAPCOG will work with the CAC and other stakeholders to develop a longer-term strategy for funding the air quality program starting October 1, 2018. The first opportunity for some kind of resumption of state funding would be September 1, 2019.

5.2 Implications of Veto of Drive a Clean Machine and Local Initiative Project Funding

In addition to the line-item veto of the Rider 7 air quality planning grants, Governor Abbott also line-item vetoed Rider 24 to TCEQ's FY 2018-2019 budget, which appropriated $97 million in funding out of the state's Clean Air Account for the state's Low-Income Vehicle Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP), also known as the "Drive a Clean Machine" or DACM program, and Local Initiative Projects (LIP) program. Travis and Williamson Counties are currently evaluating how to handle this development, but it appears that both counties are going to plan to suspend terminate their collection of the $2 per inspection LIRAP surchargefee at some point after September 1, 2017, while continuing to make any leftover money from LIRAP available out to August 31, 2019. The timing of when the fee suspension is important, since suspension prior to September 1, 2017, would mean that the counties would not be able to continue administering the program with leftover funding during the 2018-2019 biennium.

5.3 Texas Emission Reduction Plan

One of the more significant pieces of air quality-related legislation that passed during the 85th Texas Legislative Session was Senate Bill (SB) 1731, which extended the TERP grant programs and made a number of adjustments to the statutory authorizations for those programs found in Texas Health and Safety Code (THSC). Some of the highlights of SB 1731 include the following:

- Extension of TERP grant programs until all areas of the state have been designated attainment for all federal air quality standards
- Re-establishes the Light-Duty Motor Vehicle Purchase or Lease Incentive Program, which had expired at the end of FY 2015
- Establishes a new Government Alternative Fleet Grant program
- Expands the Drayage Truck Incentive Program to be a "Seaport and Rail Yard Areas Emission Reduction Program" by adding cargo-handling equipment
- Consolidates the Clean Transportation Triangle natural gas fueling infrastructure program with the Alternative Fueling Facilities Program and adding counties in an area bounded by San Antonio, Laredo, Corpus Christi, and Houston to the "Clean Transportation Zone" of eligible counties
- Allows repowers under the NGVGP and Drayage/Seaport program
- Adds three new authorized uses of TERP funding:
    - Research on the impact of foreign emissions and exceptional events
    - Port studies
    - A new government alternative fuel fleet grant program established under Chapter 395
- Requires that TCEQ create a separate small business grant program or give preference to small businesses in implementing the program, while also changing the definition of small businesses:
    - Increases the maximum number of vehicles owned and operated from two to five
    - Changes the requirement that the business own at least one on-road vehicle with a pre-1994 engine or a non-road diesel piece of equipment with uncontrolled emissions, to instead simply require that they own at least own and operate one on-road diesel vehicle or one non-road diesel vehicle
- Abolishes the TERP advisory board
- Changes to the "Use of Fund" Section as outlined below

Table 5-1. Changes in TERP "Use of Fund" Restrictions for FY 2018-2019

Use of Fund	Existing Citation	Existing Use Restriction	New Citation	New Use Restriction
CSB	§386.252(a)(1)	≤ 4%	No Change	No Change
NTIG	§386.252(a)(2)	≤ 3%	No Change	No Change
TCFP	§386.252(a)(3)	= 5%	No Change	≤ 5%
N. Texas Air Toxics Monitoring	§386.252(a)(4)	≤ $3,000,000	No Change	No Change
NGVGP (§386.252(a)(5))	§386.252(a)(5)	≥ 16%	No Change	≤ 10%
CTT	§386.252(a)(6)	≤ 5%	Eliminated	Eliminated
AFFP	§386.252(a)(7)	≤ 5%	§386.252(a)(6)	≤ $6,000,000, none for FY 2019
Air Quality Research	§386.252(a)(8)	Specified Amount	§386.252(a)(7)	≤ $750,000
Health Effects Study	§386.252(a)(9)	≤ $200,000	§386.252(a)(8)	No Change

Use of Fund	Existing Citation	Existing Use Restriction	New Citation	New Use Restriction
Transfer into Clean Air Account for Planning in Affected Counties	§386.252(a)(10)	= $500,000	§386.252(d)	No Change
TCEQ Administration	§386.252(a)(11)	= 4%, with minimum of $4,000,000 and maximum of $7,000,000	§386.252(a)(9))	$6,000,000 to $8,000,000
Drayage Truck Incentive Program/Seaport and Rail Yard Areas Emission Reduction Incentive Program	§386.252(a)(12)	2-5%	§386.252(a)(10)	≤ 6%
Light Duty Motor Vehicle Purchase or Lease Incentive Program	§386.252(a)(13)	≤ 5%[25]	§386.252(a)(11)	No Change
TEES Contract to Quantify Emission Reductions	§386.252(a)(14)	$216,000	§386.252(a)(12)	No Change
TEES Administrative Costs	§386.252(a)(15)	= 1.5%	§386.252(e)	As may be appropriated
DERI	§386.252(a)(16)	Remaining	§386.252(a)(14)	No Change
Other programs[26]	§386.252(f)	As may be appropriated	§386.252(b)	No Change
Port Studies	n/a	n/a	§386.252(a)(13)	≤ $500,000
Foreign Emissions and Exceptional Events Research	n/a	n/a	§386.252(f)	Up to $2,500,000 to the extent that money is appropriated for this purpose
Government Alternative Fuel Grant Program	n/a	n/a	§386.252(g)	Up to 3% of the TERP fund balance to the extent money is appropriated for this purpose

[25] This program had expired on August 31, 2015, although the language related to this "use of fund" had not.
[26] Encompasses three citations: §386.051(13), §386.051(14), and §386.051(b-1). These include "other programs the commission may develop that lead to reduced emissions of nitrogen oxides, particulate matter, or volatile organic compounds in a nonattainment area or affected county," "other programs the commission may develop that support congestion mitigation to reduce mobile source ozone precursor emissions," and other programs to reduce emissions, prevent areas of the state from being in violation of NAAQS, reducing emissions from school buses, and advancing new technologies that reduce emissions from stationary sources.

Under the appropriations bill SB1, the Legislature appropriated a total of $77,369,870 per year, $154,739,740 for the biennium, to TERP for FY 2018-2019, down 35% from the $236,263,007 appropriated for FY 2016-2017 and Although Rider 24 to TCEQ's budget provides an estimate of the allocation of the funding, based on the existing statutory language present for FY 2016-2019, it does not actually specify the amounts expected to be made available for each program.

Under the TERP statute, §386.252(c) (formerly (g)) "If the Legislature does not specify amounts or percentages from the total appropriation to the commission to be allocated under Subsection (a) or (b), the commission shall determine the amounts of the total appropriation to be allocated under each of those subsections, such that the total appropriation is expended while maximizing emission reductions." Based on the cost-effectiveness of the DERI program compared to all of the other grant programs, this language would seem to suggest that TCEQ would be obligated to allocate as much funding as possible to the DERI program, even if it meant eliminating funding for some of the authorized uses entirely.

Traditionally though, in the face of similar language in the appropriation bills, TCEQ has simply allocated the amounts that correspond with some limit described in the TERP statute, whether it was a maximum or minimum. If this were the case in the coming biennium, TCEQ would allocate the maximum 3% allowable allocation for the Clean School Bus program and the minimum 16% allowable allocation for the Natural Gas Vehicle Grant Program. The air quality research allocation traditionally has been $1 million per year, despite lack of specific direction in statute or in the appropriations bills. After all of these allocations were accounted for, TCEQ would then use the remaining balance for the DERI program. CAPCOG has no knowledge or understanding of how TCEQ will actually allocate TERP funding in the coming biennium.

The table below shows the estimated allocation each program would receive based on: 1) a scenario in which TCEQ allocated the maximum amount of funding allowable to each use of fund for which a specific statutory restriction exists in 386.252(a), and 2) a scenario in which TCEQ allocated the maximum amount of funding allowable to the most cost-effective program (DERI). This illustrates two ends of the spectrum of possibilities for how the funding could be initially allocated.

Table 5-2. Alternative Allocation Scenarios for FY 2018-2019 TERP Funding

Program	Each Program Allocated Maximum Described in §386.252(a)	Estimated NO_X Reductions from Allocating Maximum Described in §386.252(a)	Allocation to Maximize NO_X Reductions	Estimated NO_X Reductions from Allocating to Maximize NO_X Reductions
Clean School Bus	$6,189,589	281[27]	$0	0
NTIG	$4,642,192	0[28]	$0	0

[27] CSB cost/ton estimated to be $22K per ton based on table 7 from EDF report on federal clean school bus program: https://www.edf.org/sites/default/files/cleanbuses_14_screen.pdf.

[28] NTIG: there are no reports on TCEQ's website accounting for the NO_X reductions from this program

Program	Each Program Allocated Maximum Described in §386.252(a)	Estimated NO_X Reductions from Allocating Maximum Described in §386.252(a)	Allocation to Maximize NO_X Reductions	Estimated NO_X Reductions from Allocating to Maximize NO_X Reductions
TCFP	$7,736,987	99[29]	$0	0
N. Texas Air Toxics Monitoring	$6,000,000	0	$0	0
NGVGP	$15,473,974	553[30]	$0	0
AFFP	$6,000,000	0	$0	0
Research	$1,500,000	0	$0	0
Health Effects Study	$400,000	0	$0	0
Administration	$8,000,000	0	$6,000,000	0
Drayage/Ports	$9,284,384	546[31]	$0	0
Light Duty Program	$7,736,987	8[32]	$0	0
ESL Contract	$432,000	0	$0	0
Port Studies	$500,000	0	$0	0
DERI	$72,343,624	7,234[33]	$142,739,737	14,274
TOTAL	**$154,739,737**	**8,721**	**$154,739,737**	**14,274**

This suggests that TCEQ could achieve 64% more NO_X reductions if it allocated all of the funds to the DERI program except the minimum $6 million/year required for administration beyond the emission reductions that could be counted on if TCEQ allocated the maximum allowable funding to each of the other programs.

In reality, though, the DERI, TCFP, and NTIG programs have been over-subscribed, while the other programs have tended to be under-subscribed. The following table shows the most recent account TCEQ has provided to CAPCOG of the "demand" for each grant round during the 2016-2017 biennium.

[29] TCFP: cost/ton estimated to be $78K per ton ratio from all projects funded through 8/31/2016: https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/FY17/TCFP%20Projects%20by%20Area%20and%20Fuel%20Type.pdf

[30] NGVGP: cost/ton estimated to be $28,000 based on all projects funded through 8/31/2016: https://www.tceq.texas.gov/assets/public/implementation/air/terp/reports/FY17/TNGVGP%20by%20Area%20and%20Fuel%20Type.pdf

[31] Drayage/Ports: cost/ton estimated to be $17,000 based on all projects funded through 8/31/2016: https://www.tceq.texas.gov/assets/public/comm_exec/pubs/sfr/079-16.pdf (appendix 11)

[32] Light Duty: based on $1 million/ton figure cited by NCTCOG at a TCAWG meeting

[33] DERI Based on $10K per ton ratio; slightly higher than the average ratio from the most recent ERIG grant round for FY 17

Table 5-3. TERP Grant Demand Summary as of April 21, 2017

Program	Period	Initial Allocation	Revised Allocation	Grant Applications	Awarded
DERI-ERIG	FY 2016	Remaining	$61,573,092	$64,250,080	$50,478,325
DERI-ERIG	FY 2017	Remaining	$51,741,371	$140,676,284	Pending
DERI-Rebate	FY 2016	Remaining	$0	n/a	n/a
DERI-Rebate	FY 2017	Remaining	$10,000,000	$13,012,274	$11,833,188
Drayage Trucks	FY 2016-2017	$4,725,260	$4,725,260	$1,351,805	$911,936
TCFP	FY 2016	$5,906,908	$7,402,663	$37,962,808	$7,402,663
TCFP	FY 2017	$5,906,908	$22,488,990	$30,981,608	$21,026,614
TNGVGP	FY 2016-2017	$37,802,081	$37,802,081	$5,602,500	$3,759,000
CTT/AFFP	FY 2016	$11,812,424	$11,812,484	$8,497,573	$5,879,623
CTT/AFFP	FY 2017	$11,813,816	$17,720,377	$5,308,893	$4,176,888
CSB	FY 2016	$4,724,994	$4,724,994	$3,667,340	$2,247,218
CSB	FY 2017	$4,725,527	$6,554,330	$3,104,370	$1,545,545
NTIG	FY 2016	$3,543,745	$3,543,745	$7,274,169	$3,543,745
NTIG	FY 2017	$3,544,145	$3,544,145	$15,869,959	$3,544,145

Subsequent reports from TCEQ on awards granted indicate show:

- $58,884,422.22 was ultimately awarded for FY 2017 ERIG grants, achieving an estimated 6,339 tons of NO_X reductions[34]; and
- $6,162,750 was ultimately awarded for the TNGVGP[35].

Final amounts awarded for DTIP and rebate grants have not been announced yet.

TCEQ's TERP reports to the 84th and 85th Texas Legislatures also indicate that the North Texas Air Monitoring program used an average of $1.3 million/year, $1.7 million less money than the $3 million/year that it has been allocated, and that this $1.7 million/year extra is allocated to DERI.

To the extent that there is unused money in other programs after a grant solicitation and the TCEQ had the authority to re-allocate the funding, it typically would redirect funding unused funding into the DERI program. However, that does not change the extent to which any funding awarded under these other programs may be achieving fewer emission reductions than what could be achieved by allocating the maximum available into the DERI program. CAPCOG estimates that, after funding re-allocations (assuming any surplus funding were to be allocated to the DERI program), the total amount of

34 https://www.tceq.texas.gov/assets/public/implementation/air/terp/FY17_ERIG_Applications_Selected_For_Funding_FOR_WEB.pdf

35 https://www.tceq.texas.gov/assets/public/implementation/air/terp/FY17_TNGVGP_Applications_Selected_For_Funding_FOR_WEB.pdf

quantified NO_X reductions from FY 2018-2019 would be 9,552 tons of NO_X, 33% lower than what could be achieved by allocating the maximum amount of funding allowable to the DERI program.

It is not yet clear what approach to the initial allocations or subsequent re-allocation of funding TCEQ may take, although CAPCOG believes that the language in 386.252(c) strongly suggests that TCEQ would be obligated to demonstrate how allocating the maximum allowable to each grant program would other than DERI would be expected to achieve a higher level of emission reductions than allocating the maximum amount of funding to DERI if that is the path they chose.

Based on CAPCOG's analysis of the allowable uses of the fund for analyzing foreign emissions and the alternative fuel fleet grant program in §386.252(f) and (g) in the new statute and CAPCOG's analysis of the appropriations bill, CAPCOG believes that it is unlikely that TCEQ will interpret the Legislature as having authorized any expenditures for those two purposes, particularly since a contingency rider in the Senate version of the appropriations bill that would have provided that funding did not make it into the final version of the appropriations bill signed into law. Some reports on SB 1731 suggest that these two funding amounts could only come out of "the corpus" of the TERP fund balance, although the actual statutory language contains no such restriction. The Comptroller's 2018-2019 revenue estimate projects a $1.384 billion fund balance for TERP at the end of FY 2017 and, based on the final appropriations bill, this balance would rise to $1.522 billion at the end of FY 2018 and $1.670 billion at the end of FY 2019. This means that the Government Alternative Fuel Grant Program could receive as much as $50 million per year for FY 2020 and 2021. Due to some of the Legislature's budgetary practices, however, it is likely that any appropriation to this program would wind up reducing the amount available to the DERI program.

General Revenue-Dedicated fund balances, including TERP, are used by the Texas Legislature and the State Comptroller to certify budgets. The Comptroller includes any fund balances as of the start of a biennium as funding available for appropriation in that biennium. Since any spending from these funds in excess of the revenue deposited into them would require spending reductions or revenue increases elsewhere in the budget, these general revenue-dedicated funds are functionally treated as unrestricted for the purpose of certifying that the budget balances, even though they can only be used for the TERP programs. Therefore, any appropriation of TERP funding to the government alternative fuel grant program or the foreign emissions and exceptional events analysis would necessitate an equivalent cut elsewhere in the budget or an overall increase in state revenue. As a result, the TERP account continues to grow since less money is appropriated than is collected. Without a significant change in the way this budgetary issue is handles, it seems likely that TERP will continue to receive significantly less in appropriations than is collected in revenue, and the fund balance will continue to increase, limiting the emission reductions that could be achieved through these programs.

Two other items of note:

- If EPA decides to rescind or back-track on the 2015 Ozone NAAQS and instead just continue implementing the 2008 Ozone NAAQS, as apparently they are considering at the moment, this could move up the expiration of the TERP program to a significantly earlier date, as only the Dallas-Fort Worth and Houston areas have ozone levels that exceed the 2008 ozone NAAQS. In 2023 ozone modeling released by EPA on January 25, 2017, it showed that both areas would be

expected to have attained the 2008 NAAQS by 2023, but would still have design values of 74 ppb and 73 ppb, respectively.[36]

- While SB 1731 did extend the authorization for expenditures on TERP grants, it did not extend the revenue authorizations, which are set to expire on August 31, 2019. If this revenue is not re-authorized, it could pose significant problems for appropriating funding out of the FY 2020-2021 budgets and beyond for TERP grants.

5.4 Commute Solutions Program

In early 2017, CAPCOG convened a meeting of stakeholders interested in the Commute Solutions program to try to determine the future of the program, since it had not been actively managed by CAMPO since the summer of 2015. At that meeting, the organizations present, including CAMPO, CapMetro, CTRMA, City of Austin, and Travis County, agreed to work towards moving the program to CAPCOG and establishing a steering committee of organizations to help guide the program moving forward. On March 8, 2017, CAMPO and CAPCOG executed an interlocal agreement formally transferring the Commute Solutions program to CAPCOG. CAPCOG has since taken over operational control of the program, including management of the CommuteSolutions.com website and MyCommuteSolutions.com ride-sharing/trip-planning platform. CAPCOG has continued to convene steering committee meetings for the program and has started to raise money for the program, sponsor electronic advertising, purchase incentives for users of the MyCommuteSolutions.com platform to use the platform, and re-establish relationships with organizations that previously participated in the program. CAPCOG will be developing a business plan for the program and expects that to be completed in late 2017.

5.5 Postponement of Area Designations for 2015 Ozone NAAQS

EPA's announcement on June 6, 2017, that the Administrator had decided to extend the initial area designations for the 2015 Ozone NAAQS injected some new uncertainty into the Austin area's air quality planning process. The Austin area's 2014-2016 design value of 66 ppb was below the 2015 Ozone NAAQS and presumably would have been the basis of EPA's designation if it had proceeded with its initial plan to complete designations by October 1, 2017. However, midway through the 2017 ozone season, the Austin area's design value has now climbed to 68 ppb, While 2015 had higher-than expected ozone concentrations, based on modeling data, the long-term trends in ozone concentrations, and the typical year-to-year variability on ozone concentrations, 2014 and 2016 had lower-than expected ozone levels.

As a result, the 2014-2016 66 ppb average was lower than what one might have expected for the region. While the first half of the 2017 ozone season has resulted in an increase in the three-year average by 2 ppb, it is unlikely that the Austin area will wind up with a 2015-2017 design value of 71 ppb or higher. That would require an MDA8 value of 76 ppb at CAMS 3, which hasn't been reached since 2009, or 78

[36] https://www.epa.gov/airmarkets/notice-data-availability-preliminary-interstate-ozone-transport-modeling-data-2015-ozone

ppb at CAMS 38, which hasn't been reached since 2006. However, CAPCOG will continue to monitor the situation as it proceeds.

5.6 Updates to the Region's Advance Program Action Plan

The Austin-Round Rock MSA's Advance Program Action Plan is set to expire on December 31, 2018. While the Clean Air Coalition has expanded since the adoption of the action plan, the EPA's decision to set the 2015 Ozone NAAQS at 70 ppb, combined with the status of the region's air pollution levels and the Governor's veto of funding for the air quality planning and DACM programs creates a very different set of circumstances than what the CAC faced in 2013 when the current plan was adopted. CAPCOG believes that the CAC will wish to have a new Action Plan adopted at some point in 2018, but it is uncertain what that might look like in light of these uncertainties. Some key questions that CAPCOG believes will need to be addressed in the process of creating a new plan to cover 2019-2023 include:

- Whether the plan should address only ozone or be a multi-pollutant plan?
- Whether Travis and Williamson Counties will continue to want to implement a vehicle emissions inspection and maintenance program in light of the elimination of the DACM program as a way to mitigate the financial burden of the I/M program on low- and moderate-income residents?
- Which organizations are not in the Clean Air Coalition that should be?
- Which of the measures in the current plan are high-value and warrant careful tracking, analysis, and reporting, versus ones that are not?
- Are there measures not in the current plan that should be?
- What types of ongoing air quality planning, outreach and education, and technical research work should be conducting conducted by CAPCOG or others to support the regional air quality plan?
- How should a regional air quality plan be funded starting with FY 2019?

CAPCOG will keep EPA and TCEQ informed of progress in the development of a new Action plan as we start to tackle these questions with the CAC.

6 Conclusion

In 2016, the Austin-Round Rock MSA continues to make progress on air quality, although cuts to TERP funding and the Governor's veto of funding for regional air quality planning, the DACM program, and the LIP program in 2017 pose significant challenges to the region's air quality planning efforts. As reported in mid-2016[37] and in CAPCOG's 2015 air quality report,[38] Austin Energy's decision to postpone retirement of the Decker Creek power plant also delays the significant emission reductions that this development

[37] Hicks, Nolan. "Austin Energy hits pause on plans for a new gas plant at Decker." Austin-American Statement. May 24, 2016. Available online at: http://www.mystatesman.com/news/local-govt--politics/austin-energy-hits-pause-plans-for-new-gas-plant-decker/bgRdQFZYtf2DOd2usGurcO/.

[38] http://www.capcog.org/documents/airquality/reports/2016/Deliverable_1.1.1-2015_Air_Quality_Report_for_the_Austin-Round_Rock_MSA.pdf

would be expected to achieve[39]. As one of the largest sources of NO_X reductions in the Austin-Round Rock MSA (see section 3.1.3 of this report), and based on the impact of NO_X emissions relative to VOC emissions in the region (see section 2.1 of this report) and the narrow margins by which the region has been able to remain in compliance with the ozone NAAQS over the past several years, TERP grants have been critical to the region's success at maintaining compliance with the NAAQS. The funding cuts for TERP are likely to slow the progress the region has been making in reducing emissions.

[39] See CAPCOG's 2015 report page 79 for more details on the emission reductions expected.