FY14-15
PGA 14-1
Task 1.2
Deliverable 1.2.3

Austin-Round Rock Metropolitan Statistical Area Annual Air Quality Report January 1, 2014 – December 31, 2014

Prepared by the Capital Area Council of Governments Air Quality Program

July 14, 2015

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 report provides information on local air quality and the status of air quality planning efforts in Austin-Round Rock Metropolitan Statistical Area (MSA) for 2014. The Austin-Round Rock MSA, as defined by the Office of Management and Budget (OMB) in 2013, includes Bastrop, Caldwell, Hays, Travis, and Williamson Counties.

The report was prepared by the Capital Area Council of Governments (CAPCOG) Air Quality Program on behalf of the Central Texas Clean Air Coalition (CAC). CAPCOG is a Texas regional planning commission, established under state law, covering ten counties in Central Texas, including Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, and Williamson Counties. The CAC is a committee of local elected officials representing jurisdictions that participate in the region's air quality planning efforts. The CAC is the organization that is formally participating in the U.S. Environmental Protection Agency's (EPA) Ozone Advance Program (OAP), and CAPCOG provides staff support to the CAC.

In addition to providing a general overview of the status of air quality in the region, this report also serves as the first annual report for the region's OAP Action Plan, adopted by the CAC in December 2013. As such, the report is designed to fulfill the U.S. Environmental Protection Agency's (EPA's) requirements for annual reporting under the OAP and to provide the region, the Texas Commission on Environmental Quality (TCEQ), and the public at large a regular review of the extent to which the region is meeting its air quality goals. As expressed in the Action Plan, the region's air quality goals are the following:

1. Stay in attainment of the 2008 eight-hour ozone NAAQS of 75 parts per billion (ppb);
2. Continue reducing the region's 8-hour ozone design value to avoid being designated nonattainment;
3. Put the region in the best possible position to bring the area into attainment of an ozone standard expeditiously if it is does violate an ozone standard or gets designated nonattainment;
4. Reduce the ozone exposure of vulnerable populations on high ozone days; and
5. Minimize the costs to the region of any potential future nonattainment designation.

This report provides updated information on the following:

- The status of ambient air quality in the MSA (Section 1);
- Status updates and data on emission reduction measures implemented as part of the OAP Action Plan in 2014 (Section 2);
- Other data useful for understanding the context of local ozone-related planning efforts (Section 3);
- A summary of ozone-related planning activities conducted in 2014 (Section 4); and
- An outlook for air quality activities in 2015 and beyond (Section 5).

In general, local ground-level ozone concentrations were lower in 2014 than they have been since the state began monitoring air pollution in the region in the 1970s. A combination of favorable meteorology and ongoing emission reductions from federal, state, regional, and local efforts helped the region stay in attainment of all National Ambient Air Quality Standards (NAAQS). A continuation of this trend could put the region in a position to avoid a nonattainment designation for a new ozone NAAQS, even if EPA sets the standard at the lowest level of the 65-70 part per billion (ppb) range it proposed in November 2014.

Contents

1 Update on Air Pollution Levels

This section provides data on ambient air pollution levels in the Austin-Round Rock MSA through the end of 2014. While traditionally, the region's air quality reports exclusively included data on ambient ozone concentrations, CAPCOG decided to include data on all pollutants measured within the region in order to provide an overall picture of air quality within the region. By providing a fuller picture of ambient air quality data for region, CAPCOG hopes that this report will help policymakers and the public gain a better understanding of how the region's ozone pollution problems fit into the larger context of ambient air quality within the region. This section includes data on the region's compliance with the NAAQS for all pollutants, a review of trends in the design values for ozone and particulate matter (PM), the number of days when air pollution levels reached "moderate" or higher, a review of the accuracy of local air quality forecasts, and the estimated ozone seasonal exposure for vegetation.

1.1 Air Pollution Monitoring Stations Operated in 2014

TCEQ and CAPCOG both operated a number of continuous air monitoring stations (CAMS) within the Austin-Round Rock MSA in 2014. Pollutants measured included ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_x) – which includes nitrogen oxide (NO) and nitrogen dioxide (NO_2), fine particulate matter ($PM_{2.5}$), coarse particulate matter (PM_{10}), sulfur dioxide (SO_2), and hydrocarbons (HC). There are no lead monitoring stations within the region. Major changes in the network included in 2014 included the following:

- TCEQ started operating CAMS 1026 on September 4, 2014, in order to monitor $PM_{2.5}$ levels near a foundry in East Austin.
- TCEQ started operating CAMS 1068 on April 16, 2014, in order to fulfill the requirement for a near-road NO_2 monitor for core-based statistical areas (CBSAs) with populations of 500,000 or more under 40 CFR Part 58 Appendix D.
- TCEQ suspended monitoring of CO at CAMS 3 in late 2014 due to measurements continuing to show ambient levels far below the level of the NAAQS.
- CAPCOG converted two research ozone monitors that had been operated on a temporary basis in 2013 into full-fledged CAMS that report to TCEQ's web-based data collection system (CAMS 1603 – Gorzycki Middle School and CAMS 1604 – Lockhart).

1.1.1 Ozone Monitoring

For O_3, there are nine monitoring stations that collected ozone data in 2014, two of which meet full federal regulatory requirements –CAMS 3 and CAMS 38, which are operated by TCEQ. The other seven ozone monitoring stations are operated by CAPCOG and are used for research purposes, but do not meet full regulatory requirements. Apart from the addition of CAMS 1603 and CAMS 1604 to the network on a permanent basis, the other event of note in the network was the relocation of instruments at CAMS 6602 (Hutto), which caused problems for the data for the entirety of the ozone season. The equipment was moved to a third, better location in 2015 and future data collected at CAMS 6602 should not suffer from the same problems as occurred in 2014.

1.1.2 Carbon Monoxide Monitoring

For carbon monoxide CO, there was only one monitoring station that collected data in 2014 – CAMS 3. CO data had been collected at this station for several years, and collected data in 2014 through

November 26, at which point TCEQ suspended data collection due to pollution levels consistently far below the level of the NAAQS.

1.1.3 Nitrogen Oxides Monitoring

There are two monitoring stations that collected data on NO_X in 2014 – CAMS 3 and the new CAMS 1068. Neither one of these stations has the full three years of data necessary for a comparison to the NAAQS.

1.1.4 Particulate Matter Monitoring

For fine particulate matter ($PM_{2.5}$), while there are five stations that collect $PM_{2.5}$ data, only two – CAMS 38 and CAMS 171 – have Federal Reference Method (FRM) $PM_{2.5}$ sampling. These two stations are also the only two stations that collect coarse particulate matter (PM_{10}) data, both of which conform to the FRM. CAMS 326 and 1026 are equipped with tapered element oscillating microbalance (TEOM) instruments and are designed to measure micro-scale $PM_{2.5}$ levels associated with a nearby foundry. CAMS 3 is also equipped with a TEOM.

1.1.5 Sulfur Dioxide Monitoring

For SO_2, the only sampler in operation in 2014 was at CAMS 3. The station's SO_2 sampler has been collecting data since November 30, 2012. Since there is less than a full three years of data required for comparison to the NAAQS, , there is no full design value for SO_2 for 2012-2014.

1.1.6 Hydrocarbon Canister Sampling

CAMS 171 is equipped with a canister sampler that is used by TCEQ toxicologists to analyze the levels of certain HC species to compare them to effects screening levels (ESLs) as part of their annual toxicological evaluations for each region. These data can also be used to measure the hydrocarbon species that are considered volatile organic compound (VOC) concentrations.

1.1.7 Summary of Parameters Measured at Local Continuous Air Monitoring Stations

Table 1 below shows a list of all of the air monitoring stations operated in the Austin-Round Rock MSA in 2014, including the pollutant parameters measured and meteorological parameters measured. Meteorological parameters include wind speed (WS), wind direction (WD), outdoor temperature (Temp.), and solar radiation.

Table 1: Air Monitoring Stations in Operation in 2014

Monitoring Station AQS Number	Monitoring Station CAMS Number	County	Owner	Pollution Parameters Measured in 2014	Meteorological Parameters Measured in 2014
484530014	CAMS 0003	Travis	TCEQ	CO, NO_X (NO and NO_2) O_3, $PM_{2.5}$ (TEOM), SO_2	WS, WD, Temp.
484530020	CAMS 0038	Travis	TCEQ	O_3, $PM_{2.5}$ (FRM), $PM_{2.5}$ (TEOM), PM_{10}	WS, WD, Temp., Solar Radiation

Monitoring Station AQS Number	Monitoring Station CAMS Number	County	Owner	Pollution Parameters Measured in 2014	Meteorological Parameters Measured in 2014
484530021	CAMS 0171	Travis	TCEQ	$PM_{2.5}$ (FRM), $PM_{2.5}$ (TEOM), PM_{10}, HC	WS, WD, Temp.
484530326	CAMS 0326	Travis	TCEQ	$PM_{2.5}$ (TEOM)	WS, WD, Temp.
484531026	CAMS 1026	Travis	TCEQ	$PM_{2.5}$ (TEOM)	WS, WD, Temp.
484531068	CAMS 1068	Travis	TCEQ	NO_X (NO and NO_2)	WS, WD, Temp.
482090614	CAMS 0614	Hays	CAPCOG	O_3	WS, WD, Temp.
480210684	CAMS 0684	Bastrop	CAPCOG	O_3	WS, WD, Temp.
484910690	CAMS 0690	Williamson	CAPCOG	O_3	WS, WD, Temp.
484531603	CAMS 1603	Travis	CAPCOG	O_3	WS, WD, Temp.
480551604	CAMS 1604	Caldwell	CAPCOG	O_3	WS, WD, Temp.
482091675	CAMS 1675	Hays	CAPCOG	O_3	WS, WD, Temp.
484916602	CAMS 6602	Williamson	CAPCOG	O_3	WS, WD, Temp.

1.2 Local Air Quality Compared to the NAAQS

As of the end of 2014, the Austin-Round Rock MSA remains in attainment of all NAAQS. **Error! Reference source not found.** shows the region's "design value," which is the statistic used to compare monitoring data to a NAAQS. As the table shows, ozone remains the pollutant that the region is closest to violating in terms of the design value compared to the level of the standard – at 92% of the NAAQS. The region's annual $PM_{2.5}$ levels are the next-highest, at 79% of the NAAQS.

Table 2: 2012-2014 Design Values for the Austin-Round Rock MSA Compared to All NAAQS

Pollutant	Type of Standard	Averaging Time	Concentration	2012-2014 Design Value	% of NAAQS Level
CO	Primary	8-hour	9 ppm	0.4 ppm	4%
CO	Primary	1-hour	35 ppm	0.5 ppm	1%
Lead	Primary and Secondary	3 months	0.15 µg/m^3	Not Monitored	n/a
NO_2	Primary	1-hour	100 ppb	Less than 3 years of data	n/a
NO_2	Primary and secondary	Annual	53 ppb	Less than 3 years of data	n/a
O_3	Primary and Secondary	8-hour	0.075 ppm	0.069 ppm	92%
$PM_{2.5}$	Primary	Annual	12 µg/m^3	9.5 µg/m^3	79%
$PM_{2.5}$	Secondary	Annual	15 µg/m^3	9.5 µg/m^3	63%
$PM_{2.5}$	Primary and Secondary	24-hour	35 µg/m^3	23.3 µg/m^3	67%
PM_{10}	Primary and Secondary	24-hour	150 µg/m^3	0 Expected Exceedances (4th High = 58 µg/m^3)[1]	39%
SO_2	Primary	1-hour	75 ppb	Less than 3 years of data	n/a
SO_2	Secondary	3-hour	0.5 ppm	Less than 3 years of data	n/a

Due to very low ozone levels throughout the 2014 ozone season, the region's ozone design value dropped from 73 ppb in 2013 to 69 ppb in 2014. At this level, the region's ozone measurements are at 92% of the 2008 ozone NAAQS, and would be in compliance of a new ozone NAAQS if EPA set the standard at the higher end of the 65-70 ppb range proposed in November 2014. The 4th highest daily maximum 8-hour ozone averages measured at CAMS 3 and 38 were only 62 and 63 ppb, respectively, in 2014. This means that the area's 2014-2016 ozone design value could be in attainment of a 65 ppb standard if the average 4th highest daily maximum 8-hour ozone averages for 2015 and 2016 were as high as 67.5 ppb and 67 ppb at CAMS and CAMS 38, respectively. For comparison, the 4th highest daily maximum 8-hour ozone averages at CAMS 3 and 38 in 2013 were 69 ppb and 70 ppb, respectively, 7 ppb higher than the 4th highest daily maximum 8-hour ozone average for each station in 2014.

[1] While the design value for PM_{10} is expressed in terms of expected number of exceedances, an alternative way to compare monitoring data to the PM_{10} NAAQS is to compare a monitor's fourth highest 24-hour average over a three-year period. A monitor would be exceeding the NAAQS if that fourth highest value exceeded 150 µg/m^3 and meeting the standard if the fourth highest value was 150 µg/m^3 or less. Using this type of a comparison, the peak 4th highest PM10 concentration at a monitoring station from 2012-2014 was 58 µg/m^3, which translates into 39% of the NAAQS.

The region's annual $PM_{2.5}$ levels for 2012-2014 were 79% of the annual $PM_{2.5}$ NAAQS, and 67% of the 24-hour $PM_{2.5}$ NAAQS. Based on information provided by TCEQ in its daily air quality forecasts, elevated $PM_{2.5}$ levels within the region can often be attributed to international pollution transport, including Central American agricultural burning and Saharan dust. The region's PM_{10} levels remain well below the PM_{10} NAAQS – the region's fourth highest 24-hour PM_{10} concentration for 2012-2014 was only 39% of the level of the PM_{10} NAAQS.

While there are two regulatory NO_2 monitors that collected data in 2014, these monitors do not have sufficient data for 2012-2014 in order to meet the necessary data completeness requirements for a direct comparison to the NO_2 NAAQS. However, based on the data collected through the end of 2014, including at the new near-road NO_2 monitor (CAMS 1068), local NO_2 levels appear to be well below both NO_2 NAAQS. Using the forms of the NO_2 NAAQS as a point of comparison, the annual mean NO_2 concentrations and the 98th percentile of daily maximum one-hour NO_2 levels at CAMS 3 in 2014 were 5 ppb and 30 ppb, respectively (9% of the annual NO_2 NAAQS level and 30% of the hourly NO_2 NAAQS level). CAMS 1068, the new near-road NO_2 monitor located along interstate highway 35 (IH-35), started collecting data on April 16, 2014. CAMS 1068's annual average NO_2 concentration was 14 ppb (26% of the NAAQS) and its 98th percentile of daily peak 1-hour averages was 46 ppb (46% of the NAAQS). Both of these levels are higher than levels measured at CAMS 3, but are also well below the level of the annual and 1-hour NO_2 NAAQS.

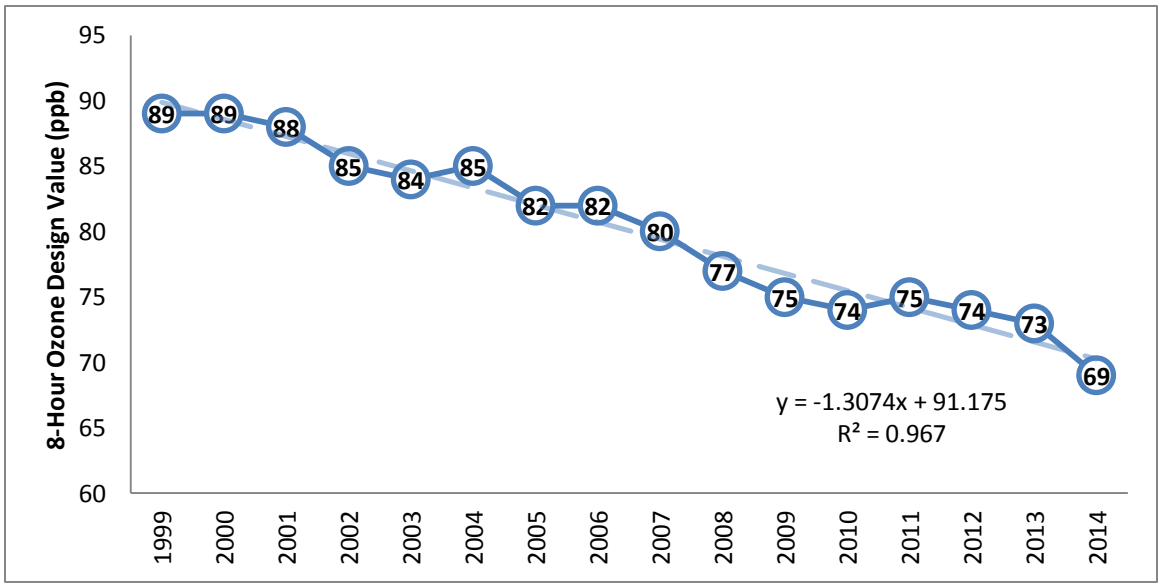
Since SO_2 data collection at CAMS 3 didn't begin until November 2012, there is not sufficient data in 2012 to enable a full 2012-2014 design value. In both 2013 and 2014, the values for the 99th percentile of daily peak 1-hour SO_2 averages were both 5 ppb – only 7% of the level of the hourly SO_2 NAAQS.

Carbon Monoxide CO data was collected at CAMS 3 through November 2014. Both the 8-hour and 1-hour concentrations were far below the level of the NAAQS: 4% of the 8-hour NAAQS and 1% of the 1-hour NAAQS, respectively.

1.3 Ozone and PM Design Value Trends

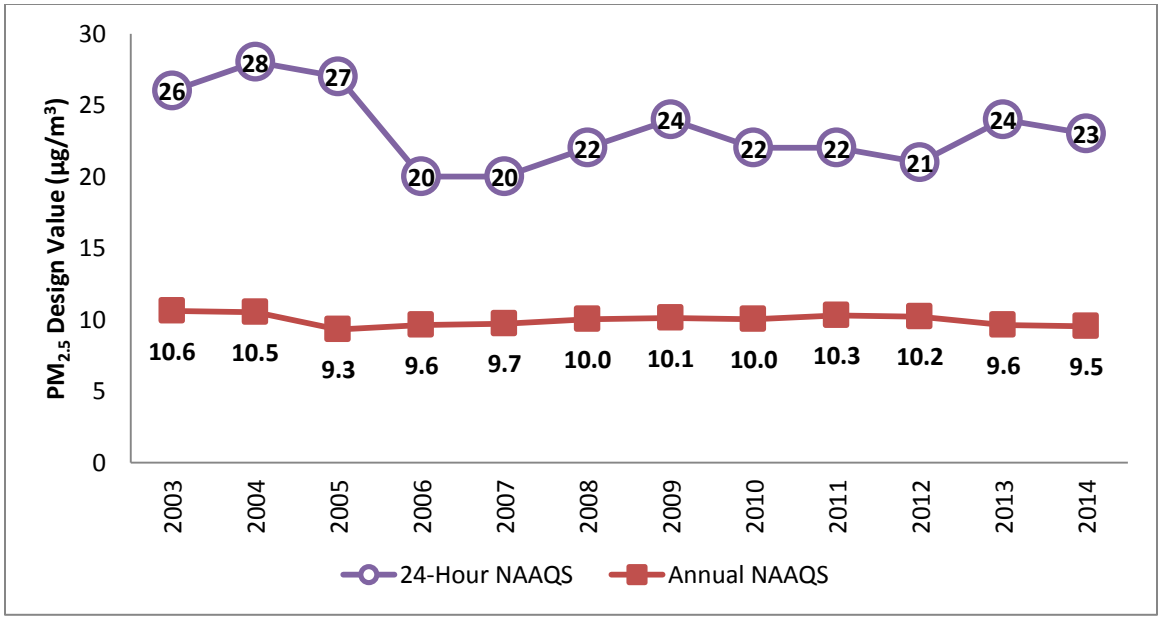
As Figure 1 below shows, the Austin-Round Rock MSA's ozone design value declined sharply in 2014. This was based on the very low ozone levels measured in 2014, with a fourth highest daily maximum 8-hour ozone average of only 63 ppb at CAMS 38. From 1999 to 2014, the design value trend shows a typical decrease of about 1.3 ppb each year, while the decrease between 2013 and 2014 was more than three times that. As a result of the ozone levels measured in 2014, the Austin-Round Rock MSA's design value is now low enough that it could be in compliance with the higher end of the range of values EPA is considering for the new 2015 ozone standard (65-70 ppb).

Figure 1: Ozone Design Value Trend, 1999-2014



Unlike the clear downward trend in local ozone levels, there has not been much change in $PM_{2.5}$ levels over the past 12 years. Figure 2 below shows the $PM_{2.5}$ design values for the region from 2003-2014, based on the 2012 $PM_{2.5}$ NAAQS.[2]

Figure 2: $PM_{2.5}$ Design Value Trend, 2003-2014



[2] Design values for 2003-2013 are based on EPA's design value spreadsheet for $PM_{2.5}$, found online at: http://www.epa.gov/airtrends/pdfs/PM25_DesignValues_20112013_FINAL_08_28_14.xlsx. In the spreadsheet, EPA notes that the Austin area's design values for 2003-2009 are not considered valid any longer based on the EPA's new rules for the 2012 $PM_{2.5}$ NAAQS.

1.4 Comparison of Number of Days with Moderate or Higher Air Pollution

While EPA uses design values in order to assess whether an area is formally complying with a NAAQS or not, an area can be in compliance with the NAAQS but still have air pollution levels high enough to be considered "moderate" or even "unhealthy for sensitive groups" several times a year. An alternative way to characterize local air quality is to count the number of days when air pollution levels were high enough to be considered "moderate" or worse. The table below shows the ozone and particulate matter levels associated with the various Air Quality Index (AQI) levels.

Table 3: Ozone and $PM_{2.5}$ AQI Values

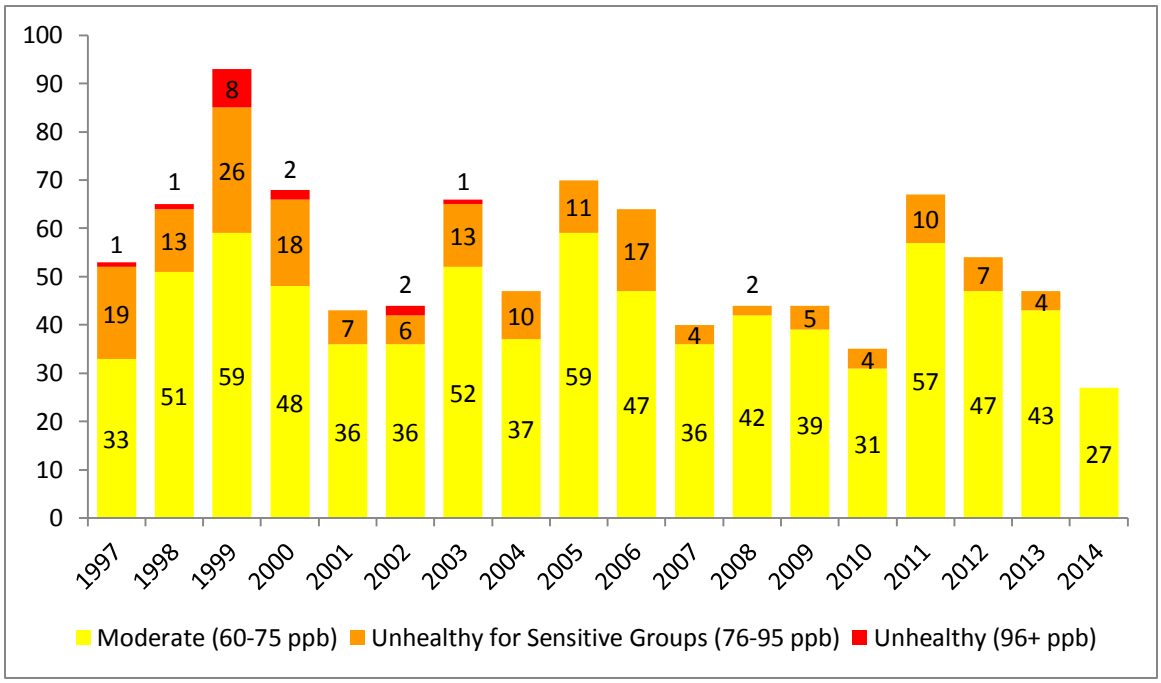
AQI Level	8-Hour Ozone Concentrations (ppb)	24-Hour $PM_{2.5}$ Concentrations (µg/m3)
Good	0 – 59	0.0 – 12.0
Moderate	60 – 75	12.1 – 35.4
Unhealthy for Sensitive Groups	76 – 95	35.5 – 55.4
Unhealthy	96 – 115	55.5 – 150.4
Very Unhealthy	116 – 374	150.5 – 250.4
Hazardous	375 – 600	350.5 – 500

Air pollution levels reached "moderate" levels on 107 days in 2014 – 29% overall – but there were no days when air pollution levels were high enough to be considered unhealthy for sensitive groups or worse. 24-hour $PM_{2.5}$ levels were considered "moderate" on 87 days in 2014 and 8-hour ozone levels were considered "moderate on 27 days, with seven days when both $PM_{2.5}$ and ozone levels were "moderate."

These data indicate that, while the region's 2012-2014 ozone design value is closer to the ozone NAAQS than the region's $PM_{2.5}$ design values, $PM_{2.5}$ concentrations more frequently reached "moderate" levels than ozone concentrations did in 2014. This is partly due to the recent revision to the $PM_{2.5}$ AQI. Prior to December 2012, "moderate" 24-hour $PM_{2.5}$ levels were considered 15-40 µg/m^3. Of the 87 days when $PM_{2.5}$ levels were considered "moderate" in 2014, 48% of those were 24-hour concentrations in the 12.1 – 14.9 µg/m^3 range that had previously been considered "good" prior to the 2012 $PM_{2.5}$ NAAQS.

Figure 3 below shows the total number of days when ozone levels reached "moderate," "unhealthy for sensitive groups", or "unhealthy" levels from 1999-2014. For the first time in this period, the Austin-Round Rock MSA measured no days when ozone levels were considered "unhealthy for sensitive groups" according to the Air Quality Index (AQI), which includes daily maximum 8-hour ozone concentrations of 76-95 ppb. 2014 also experienced the lowest number of total days when ozone levels were moderate or higher during this period.

Figure 3: Number of Days in the Austin-Round Rock MSA with Elevated Ozone Levels, 1999-2014



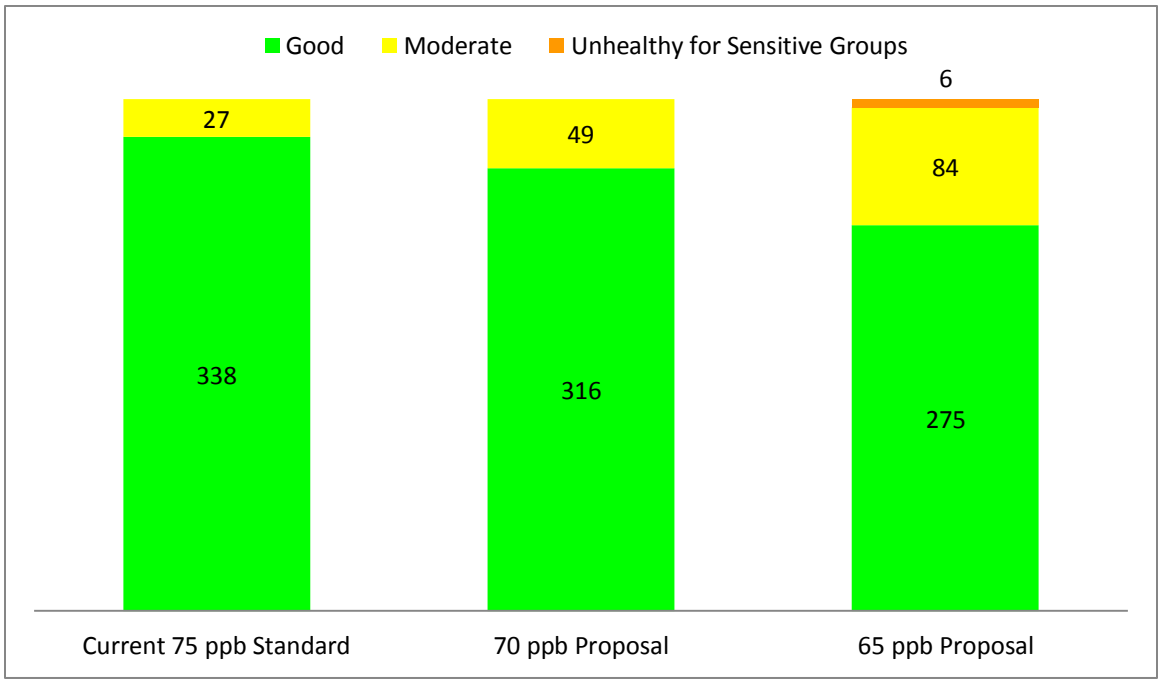
EPA's proposed change to the ozone NAAQS also included proposed changes to the AQI, which would affect how the number of days considered "moderate" or higher would be counted. Table 4 below shows the proposed changes.

Table 4: Comparison of Current Ozone AQI to EPA's Proposed Ozone AQI Changes

AQI Level	2008 NAAQS (ppb)	Proposed 70 ppb Standard Level	Proposed 65 ppb Standard Level
Good	0 – 59	0 – 54	0 – 49
Moderate	60 – 75	55 - 70	50 – 65
Unhealthy for Sensitive Groups	76 – 95	71 – 85	66 – 85
Unhealthy	96 – 115	86 – 105	86 – 105
Very Unhealthy	116 – 374	105 – 374	105 – 374
Hazardous	375 – 600	375 – 600	375 – 600

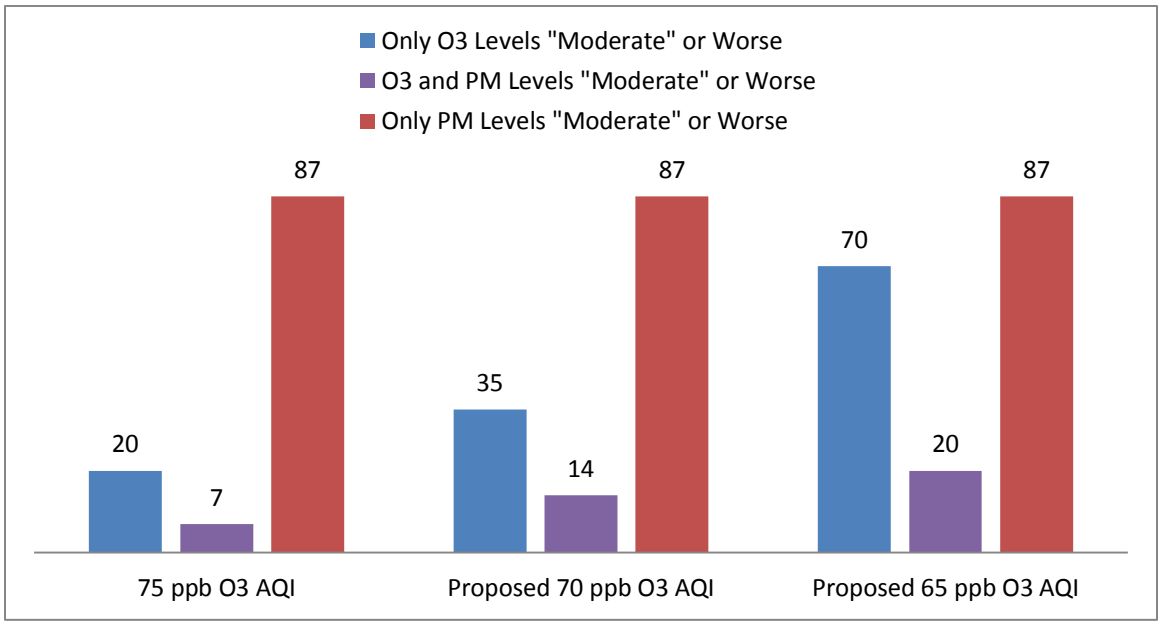
Using the proposed AQI levels as a reference point, CAPCOG reanalyzed the 2014 ozone levels measured within the region compared to these levels. Figure 4 below shows the number of days when ozone levels would have been considered "good," "moderate," and "unhealthy for sensitive groups" based on these proposed AQI levels.

Figure 4: Number of Days When Ozone Levels Fell Within Proposed Ozone AQI Ranges, 2014



Based on this distribution, there would have been 90 days when ozone levels were "moderate" or higher based on a potential 65 ppb standard, and 49 days when ozone levels were "moderate" or higher based on a 70 ppb standard. In total, this would mean either 157 or 122 days when either the ozone or $PM_{2.5}$ AQI reached "moderate" or "unhealthy for sensitive group" levels in 2014, including either 20 or 14 days when the AQI level was "moderate" or higher for both pollutants. Figure 5 below summarizes these data for the current AQI and the AQI levels associated with the proposed 70 ppb and 65 ppb proposed NAAQS.

Figure 5: Number of Days in 2014 when O_3 or PM Levels were "Moderate" or Worse Based on Current and Proposed AQI



This analysis indicates that the same particularly sensitive groups that could be affected by ozone levels in the "moderate" range may also benefit by paying attention to PM forecasts, since PM concentrations reached "moderate" or higher levels much more frequently than ozone levels do compared to the current AQI, about as frequently as the number of days when ozone would have been considered "moderate" or higher under the strictest level of the ozone NAAQS EPA has proposed, and there is not much overlap between the two sets of days.

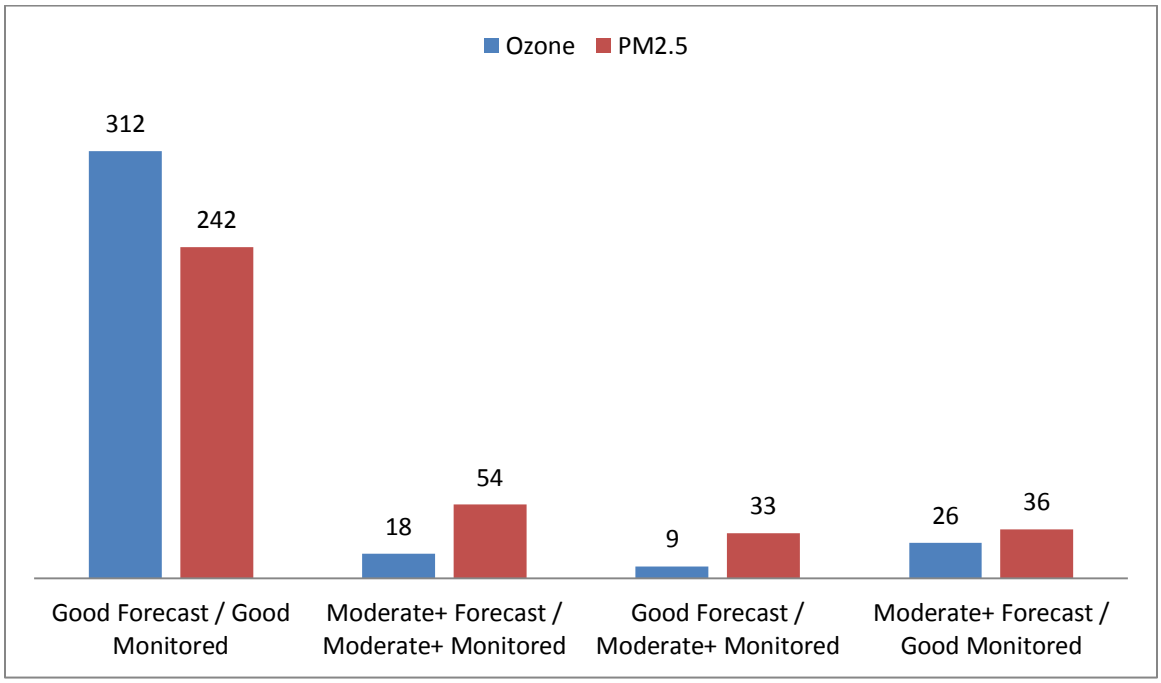
1.5 Accuracy of Air Quality Forecasts in 2014

Accurate air quality forecasting is important for the regional air quality plan, both in terms of helping ensure that people can take action to reduce their exposure to high levels of air pollution when it occurs and in terms of implementing certain emission reduction measures that are tied to air quality forecasts. For example, the Texas Lehigh Cement Company implements a voluntary NO_X reduction measure on predicted high ozone days and people may choose to take individual actions on predicted high ozone days to reduce their emissions on those days. Such measures would be considered "episodic" voluntary measures, according to EPA's guidance on incorporating voluntary emission reduction measures into the SIP. Measuring the accuracy of such forecasts would be important to establishing the appropriate level of emission reduction "credit" that should be assigned to voluntary emission reduction efforts tied to such forecasts.

Each weekday, TCEQ meteorologists issue air quality forecasts for $PM_{2.5}$ and ozone. From a public health perspective, days when air quality was forecast to be "good" was actually "moderate" or higher (a false negative) would be a problem because people who might otherwise take steps to reduce personal exposure based on an air quality forecast would not have done so on such a day. For emission reduction efforts – to some extent, days that were forecast to be "moderate" or worse but turned out to be

"good" (a false positive) could reduce the willingness of people to take action on such days, although – at levels that might be close to the dividing line between AQI levels, it's possible that such efforts could also have reduced enough emissions to change a day that would have otherwise been a "moderate" day into a "good" day or an "unhealthy for sensitive groups" day into a "moderate" day. Figure 6 below shows the number of days when: a) TCEQ forecast "good" pollution levels and the monitored levels were, in fact, "good", b) TCEQ forecast "moderate" or higher pollution levels and monitored levels were, in fact, "moderate" or higher, c) TCEQ forecast "good" pollution levels and monitored levels were "moderate" or higher, and d) TCEQ forecast "moderate" or higher levels, and monitored levels were "good."

Figure 6: Austin-Round Rock Area Air Quality Forecasts for 2014



Overall, TCEQ's forecasts were correct 81% percent of the time for $PM_{2.5}$ levels and 90% of the time for ozone levels, including days when TCEQ correctly projected air quality to be "good" and actual air pollution levels were in fact "good." TCEQ correctly issued a "moderate" forecast for $PM_{2.5}$ on 54 days in 2014, which accounts for 60% of the days when TCEQ issued a "moderate" $PM_{2.5}$ forecast for the region and 62% of the days when actual $PM_{2.5}$ concentrations measured in the region reached "moderate" levels. For ozone, TCEQ correctly issued a "moderate" ozone forecast on 18 days, making up 41% of all of TCEQ's "moderate" ozone forecasts and 67% of all days when 8-hour ozone concentrations measured in the region actually reached "moderate" levels. TCEQ issued only one Ozone Action Day alert in 2014, for August 14, 2014. Ozone levels were "moderate" on this day, but only reached a peak of 63 ppb, and this day was not the day with the highest overall ozone levels within the region.

1.6 Estimated Seasonal Ozone Exposure for Vegetation

In EPA's current review of the secondary standard for ozone, it indicated that the best way to measure the impact of ozone levels on vegetation was by using a seasonal exposure index that uses a three-month average of weighted one-hour ozone concentrations from 8 am – 8 pm. CAPCOG has calculated this statistic – known as "W126" – for the nine ozone monitors that collected data in the Austin-Round Rock MSA in 2014. Table 5 shows the peak 3-month sum of the daily W126 indices. Data for CAMS 6602 is not included due to the siting issues encountered in 2014 that are described earlier in this section.

Table 5: W126 Ozone Statistics for 2014 by Monitoring Station

Station	Name	County	W126 Statistic (ppm-hours)
CAMS 3	Austin Northwest	Travis	5
CAMS 38	Audubon	Travis	3
CAMS 614	Dripping Springs	Hays	4
CAMS 684	McKinney Roughs	Bastrop	1
CAMS 690	Lake Georgetown	Williamson	5
CAMS 1603	Gorzycki Middle School	Travis	2
CAMS 1604	Lockhart	Caldwell	3
CAMS 1675	San Marcos Staples Rd.	Hays	3

2 Status of Ozone Advance Program Action Plan Emission Reduction Measures

This section provides details on the OAP Action Plan emission reduction measures that were implemented within the Austin-Round Rock MSA in 2014. These include:

- Organization-specific commitments made by city governments, county governments, regional agencies, state agencies, non-profit groups, and private sector firms;
- Additional measures implemented by participating organizations specific commitments listed in the OAP Action Plan;
- Emission reduction measures implemented on a regional basis; and
- State rules and programs applicable to the region.

2.1 Voluntary Local Emission Reduction Measures

This section provides an update on implementation status of a number of emission reduction measures that were committed to as part of the OAP Action Plan, other measures that may have been implemented and reported on by participating organizations above and beyond any commitments they may have made, and any new commitments that organizations are making. The commitments that were in effect during 2014 are found in sections 3.2 and 3.3 of the OAP Action Plan, and – for Transportation Emission Reduction Measures (TERMS) – in Appendix C of the OAP Action Plan. New commitments from the City of Pflugerville in 2014 were also added to the list of emission reduction measure commitments.

In May-June 2015, CAPCOG surveyed participating organizations in order to check on the status of each of the emission reduction measures each organization committed to implement. Table 6 shows the

organizations that had responded as of July 13. If CAPCOG receives any additional information later, we will either submit that information as an addendum or submit an updated version of this report.

Table 6: Status of Annual Air Quality Reporting for 2014

Organization	Category	Report Submitted as of 7/13/2015
Bastrop County	CAC Member	☒
Caldwell County	CAC Member	☐
Hays County	CAC Member	☒
Travis County	CAC Member	☒
Williamson County	CAC Member	☒
City of Austin	CAC Member	☒
City of Bastrop	CAC Member	☐
City of Cedar Park	CAC Member	☒
City of Elgin	CAC Member	☒
City of Georgetown	CAC Member	☒
City of Hutto	CAC Member	☒
City of Lockhart	CAC Member	☒
City of Luling	CAC Member	☐
City of Pflugerville	CAC Member	☐
City of Round Rock	CAC Member	☒
City of San Marcos	CAC Member	☐
City of Sunset Valley	CAC Member	☒
CAPCOG	Participating Organization	☒
Capital Area Metropolitan Planning Organization (CAMPO)	Participating Organization	☒
Capital Metropolitan Transit Agency (CapMetro)	Participating Organization	☒
Central Texas Regional Mobility Authority (CTRMA)	Participating Organization	☒
CLEAN AIR Force	Participating Organization	☒
Lone Star Clean Fuels Alliance (LSCFA)	Participating Organization	☐
Lower Colorado River Authority (LCRA)	Participating Organization	☒
Texas Commission on Environmental Quality (TCEQ)	Participating Organization	☒
Texas Department of Transportation (TxDOT) – Austin District	Participating Organization	☒
TxDOT – Headquarters	Participating Organization	☒
Texas Lehigh Cement Company	Participating Organization	☒
Texas Nursery and Landscaping Association	Participating Organization	☒

Full lists of emission reduction measures implemented are included in the appendices to this report. This section provides summaries of the data submitted.

2.1.1 Summary of Implementation Status of Emission Reduction Measures by Organization

CAPCOG reviewed survey responses and tabulated the total number of each organization's emission reduction measure commitments, the number of those commitments that were implemented, the number of additional measures that were implemented beyond the organization's existing commitments, and the number of additional commitments each organization made. While the sheer number of emission reduction measures an organization implemented isn't necessarily the best indicator for the scale of the emission reductions achieved, they do provide some insight into the level of effort involved by participating organizations in 2014. "NR" indicates that the organization did not provide a report as of June 29, 2015. For certain measures that involve an organization making an option available, such as work schedule changes or transit-oriented development incentives, the organization is considered to have implemented their commitment if the option remained available, even if it was not taken advantage of during 2014. Table 7 summarizes the implementation status for each organization.

Table 7: Summary of Implementation Status of Emission Reduction Measures by Organization

Organization	Existing Commitments Reported On	Commitments Implemented in 2014	Commitments Not Implemented in 2014	Other Measures Implemented in 2014	Measures to be Implemented in 2015	New Commitments Made for 2015-2018	Commitments Not Reported On
Bastrop County	17	10	7	2	2	0	0
Caldwell County	0	0	0	0	0	0	9
Hays County	15	13	2	7	0	0	0
Travis County	20	20	0	9	0	0	0
Williamson County	16	16	0	3	0	0	0
City of Austin	34	34	0	0	0	0	0
City of Bastrop	0	0	0	0	0	0	23
City of Cedar Park	23	23	0	1	0	0	0
City of Elgin	12	10	2	1	0	0	0
City of Georgetown	13	1	12	0	3	1	0
City of Hutto	7	4	3	8	8	8	0
City of Lockhart	16	16	0	2	0	0	0
City of Luling	0	0	0	0	0	0	6
City of Round Rock	22	22	0	3	3	3	0
City of Pflugerville	0	0	0	0	0	0	6
City of San Marcos	0	0	0	0	0	0	14
City of Sunset Valley	15	15	0	0	0	0	0
CAPCOG	7	7	0	0	0	0	0
CAMPO	11	10	1	0	0	0	0

Organization	Existing Commitments Reported On	Commitments Implemented in 2014	Commitments Not Implemented in 2014	Other Measures Implemented in 2014	Measures to be Implemented in 2015	New Commitments Made for 2015-2018	Commitments Not Reported On
CapMetro	35	21	14	4	2	2	0
CTRMA	13	13	0	4	0	0	0
CAF	6	6	0	0	0	0	0
LCRA	8	8	0	0	0	0	0
TCEQ	14	14	0	3	1	0	0
TxDOT-Austin	15	12	3	16	15	15	0
TxDOT-HQ	4	4	0	3	0	0	0
Texas Lehigh	1	1	0	0	0	0	0
TNLA	2	2	0	0	0	0	0
TOTAL	**326**	**282**	**44**	**66**	**34**	**29**	**58**

2.1.2 Summary of Implementation Status of Emission Reduction Measures by Category

CAPCOG also tabulated the status of emission reduction measures by emission reduction category, as show in Table 8.

Table 8: Summary of Implementation Status of Emission Reduction Measures by Category

Emission Reduction Measure Type	Existing Commitments Reported On	Commitments Implemented in 2014	Commitments Not Implemented in 2014	Implemented in 2014	Measures to be Implemented in 2015	New Commitments Made for 2015-2018	Commitments Not Reported On
Commute Solutions	59	48	11	14	4	4	6
Development Measures	31	27	4	8	1	1	3
Energy and Resource Conservation	25	22	3	12	7	5	7
Fleet and Fuel Efficiency Measures	73	61	12	15	14	13	17
Outreach and Awareness	64	59	5	3	0	0	11
Regulation and Enforcement	19	15	4	4	2	2	5
Sustainable Procurement and Operations	55	50	5	10	6	4	9
TOTAL	**326**	**282**	**44**	**66**	**34**	**29**	**58**

2.1.3 Details on Texas Lehigh Cement Company Voluntary NO_X Reduction Program

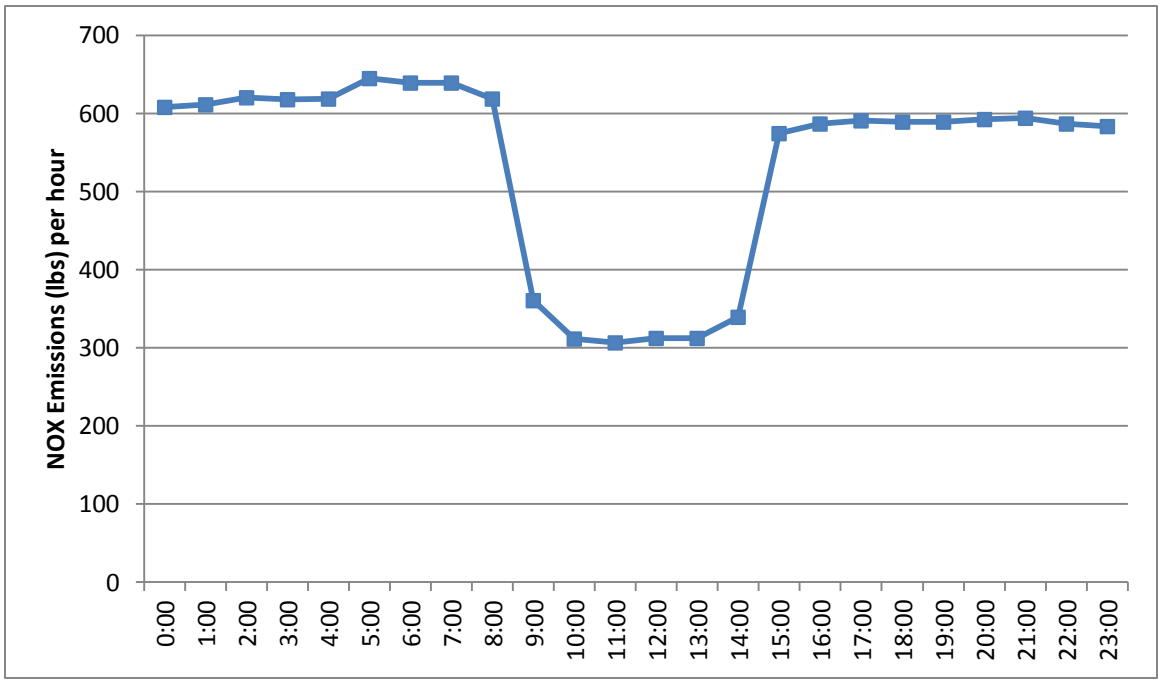
Texas Lehigh Cement Company is a manufacturing plant in Hays County and is equipped with a selective non-catalytic reduction (SNCR) system that achieves 30-50% reductions of NO_X emissions. Texas Lehigh is subject to the requirements of 30 TAC Chapter 117, Subchapter E, Division 2 –Cement Kilns. Under this rule, Texas Lehigh chose the technology option under §117.3110 – Emission Specifications. The company installed the SNCR system in December 2008, and operates the system to comply with the established NO_X emission limits.

As part of Texas Lehigh's OAP participation in the regional air quality plan, plan management increases SNCR operation to reduce the NO_X emitted between 9:00 am and 3:00 pm to about 300 pounds per hour during ozone action days and selected days when ozone is predicted to be "moderate." On predicted "moderate" days, Texas Lehigh and CAPCOG staff will consult with one another to evaluate whether implementing the measure on the following day would help reduce peak ozone within the region. The days in 2014 when Texas Lehigh implemented this measure are listed below:

- April 4;
- May 2, 3, 15, 16, 29, and 31;
- June 11 and 13;
- July 4 and 5;
- August 14, 27, and 28;
- September 24, 27, 28, 29, and 30; and
- October 24, 25, and 26.

Texas Lehigh provided hourly emissions data for these days. Figure 7 shows the average NO_X emissions for each hour on days when Texas Lehigh implemented this measure. The average emissions rate from midnight to 9 am on such days was 624 pounds per hour, compared to an average rate of 324 pounds per hour from 9 am – 3 pm, a 48% reduction. This results in an overall reduction in NO_X emissions on such days of approximately 0.90 tpd.

Figure 7: Average NO_X Emissions per Hour at Texas Lehigh on Ozone Action Days and Selected "Moderate" Prediction Days



2.2 Regional Emission Reduction Measures

Regional measures include measures that are implemented or tracked at a regional level, as opposed to the voluntary measures implemented by just one organization participating in this plan. These measures are described in section 3.1 of the OAP Action Plan. This section includes updates on the Commute Solutions program and regional air quality outreach and education efforts. It also includes data on the Diesel Emission Reduction Act (DERA) grant that CAPCOG administered for the region in 2014.

2.2.1 Commute Solutions Program

The CAMPO Commute Solutions program serves as an informational and educational resource center for residents, employees, and visitors who travel to and within the six CAMPO counties. Commute Solutions is a voluntary trip reduction program that was created in response to federal requirements for designated Metropolitan Planning Organizations, like CAMPO, to manage congestion, improve air quality, and promote energy conservation. The program offers information and resources on transportation options such as carpools, vanpools, transit, bicycling, and walking, as well as provides information on work schedule alternatives such as flextime, compressed workweeks, and teleworking. Commute Solutions of Central Texas comprises coalition partners from regional businesses and governmental entities.

The myCommuteSolutions.com website provides encouragement, incentives, and support for commuters to use alternative modes (such as walking, cycling, ridesharing, public transit, and teleworking), alternate work hours, and other efficient transportation options. The myCommuteSolutions website is a ridematching and trip planning tool that allows registered users to

search for commuting partners, explore sustainable travel options, search single trip matching, and log their commutes for incentives and data collection. By logging their commute, users can track fuel and money saved, calories burned, and emissions avoided. A key feature of myCommuteSolutions.com is the ability to offer employers, cities, universities, colleges, and organizations a custom sub-site at no cost to the individual or employer. Employers can use the myCommuteSolutions framework to set up their own ridematching and trip-planning site. They can manage incentives, collect data, and promote the program to suit their needs. Samsung, the City of Austin, Travis County, Texas State University, NetSpend, Austin Community College, and others are using custom myCommuteSolutions sub-sites.

Table 9 provides program statistics for 2014.

Table 9: Commute Solutions Data, January 1, 2014 - December 31, 2014

Data Item	Number
Total Page Hits for CommuteSolutions.com	35,518
Number of Custom Sub-Sites Maintained in MyCommuteSolutions.com as of 12/31/2014	13
Number of Registered Users for MyCommuteSolutions.com as of 12/31/2014	3,194
Total Miles of Commuting Logged	565,431
Total Miles of Alternative Commuting Logged	464,982
Miles of Carpool Commuting Logged	178,091
Miles of Vanpool Commuting Logged	15,421
Miles of Bus Commuting Logged	127,270
Miles of Rail Commuting Logged	65,576
Miles of Bicycle Commuting Logged	54,446
Miles of Walking Commuting Logged	8,946
Miles of Telework Logged	15,232
NO_X Emissions Reduced	290.7 lbs
VOC Emissions Reduced	1,224.9 lbs
Fuel Saved	17,525 gal.

2.2.2 Air Quality Outreach and Education

In December 2014, CAPCOG prepared an extensive report on regional air quality outreach and education activities conducted during the 2014 ozone season and data related to those activities. That report is available online at http://www.capcog.org/documents/airquality/reports/COA_Outreach_and_Education_2014_Final_Report.pdf.

2.2.3 DERA Grant Emission Reductions

In 2012, CAPCOG was awarded a grant from the EPA under the DERA program in order to replace and repower diesel-powered vehicles and non-road equipment within the region. In 2014, CAPCOG funded the replacement of four on-road trucks owned by the City of Austin and the electrification of 12 pieces of airport ground support equipment (GSE) owned by Southwest Airlines under this grant. Table 10 summarizes the annual emissions reductions achieved through these projects.

Table 10: DERA Grant Emission Reductions, Lifetime Reductions (tons)

Project	NOX Reduced (tons)	HC Reduced (tons)
City of Austin Truck Replacement	9.9033	0.6489
ABIA GSE Electrification	9.5850	1.5432
TOTAL	**19.4883**	**2.1921**

2.3 State Emission Reduction Measures Applicable to the Region

This section provides details and data on three key state programs that reduce ozone-forming emissions within the region:

1. The vehicle emissions inspection and maintenance (I-M) program in Travis and Williamson Counties;
2. The Drive a Clean Machine (DACM) program in Travis and Williamson Counties; and
3. The Texas Emission Reduction Plan (TERP) Grant Programs, applicable to all five counties.

2.3.1 A full list of state rules and their citations in the Texas Administrative Code (TAC) is available in Appendix C.Vehicle Emissions Inspection and Maintenance Program Data

Since September 2005, all gasoline-powered vehicles 2-24 years old in Travis and Williamson Counties are required to pass an annual emissions test. Vehicles with model years 1996 and newer are required to pass an on-board diagnostic (OBD) test, and vehicles with model years 1995 and older are required to pass a two-speed idle (TSI) test. Waivers are available for the following situations:

1. A minimum expenditure waiver if the vehicle owner has spent at least $600 on repairs;
2. A low-income waiver;
3. A “low mileage” waiver (less than 5,000 miles in a year); and
4. A “parts availability” waiver if the parts needed for a repair are not available.

Fewer than 200 waivers a year are issued in Travis and Williamson Counties each year.

In 2014, a total of 985,584 emission tests were performed, an increase of 34,941 tests from 2013, which equates to a 3.7% increase in the number of total tests performed. Table 11 below shows the summary statistics for these tests.

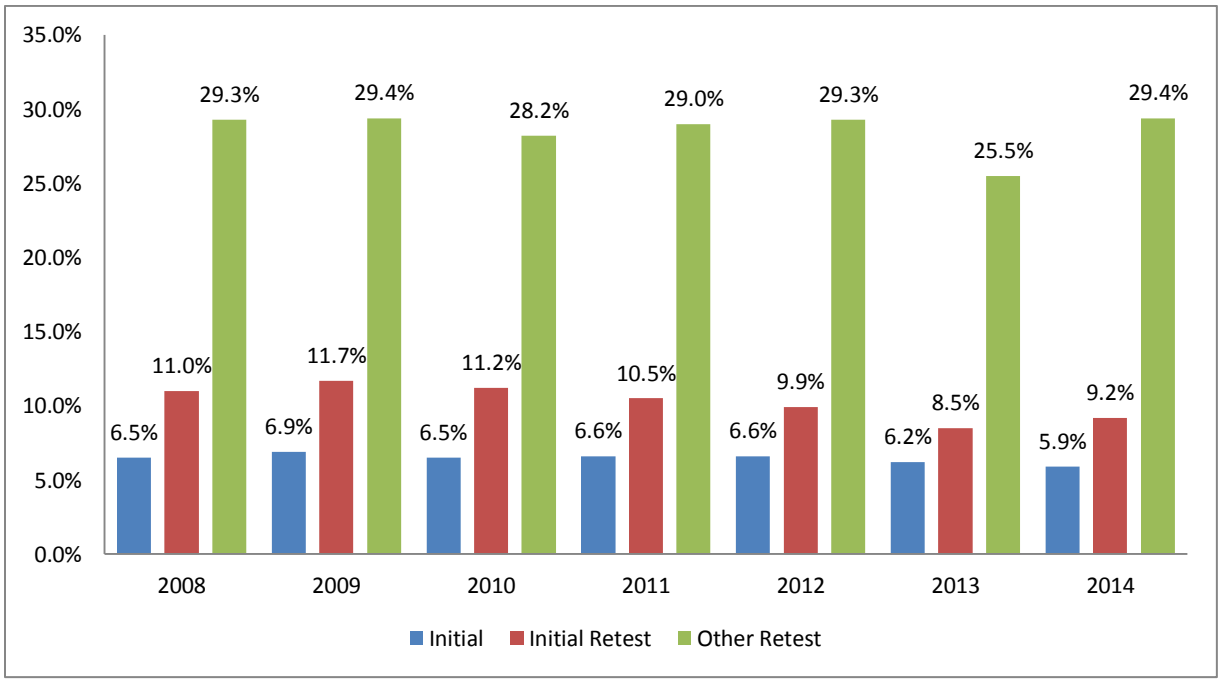
Table 11: Emissions Inspection and Maintenance Tests in Travis and Williamson Counties, 2014

Statistic	Total Emission Tests	OBD Tests	TSI Tests	Gas Cap Tests
Total Tests	985,584	949,016	36,568	985,587
Initial Tests	900,475	870,028	30,447	900,477
Initial Test Failures	53,515	43,068	2,659	9,045
Initial Test Failure %	5.9%	5.0%	8.7%	1.0%
Initial Retests	76,071	71,216	4,855	76,072
Initial Retest Failures	7,009	5,997	795	332
Initial Retest Failure %	9.2%	8.4%	16.4%	0.4%
Other Retests (if Initial Retest Failed)	9,038	7,772	1,266	9,038

Statistic	Total Emission Tests	OBD Tests	TSI Tests	Gas Cap Tests
Other Retest Failures	2,659	2,075	552	75
Other Retest Failure %	29.4%	26.7%	43.6%	0.8%

The data for 2014 show a lower initial failure rate than the previous year, from 6.2% to 5.9%, continuing a trend from 2012-2013 that resulted in a decrease from 6.6% to 6.2%.

Figure 8: I-M Emissions Test Failure Rates, 2008-2014



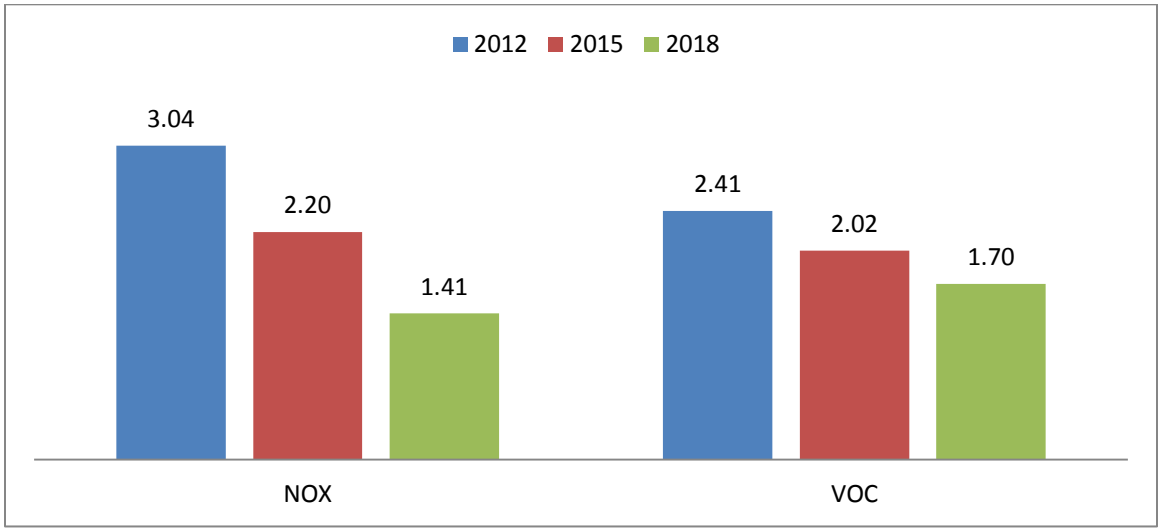
The I-M program remains one of the most local significant emission reduction measures. While its relative impact will increase somewhat due to higher emission reductions from OBD testing compared to TSI testing, the absolute magnitude will decrease as the on-road fleet gets cleaner and cleaner each year. Table 12 below shows the percentage of NO_X and VOC emissions reductions in 2012 and 2018 from the three vehicle types for which EPA's MOVES2014 models I-M program emissions reduction benefits for. While the local I-M program also applies to heavy-duty gasoline-powered vehicles, it is not possible to model those emission reduction benefits in the current version of MOVES.

Table 12: Modeled NO_X and VOC Reductions from the I-M Program by Vehicle Type

Vehicle Type	NOX 2012	NOX 2018	VOC 2012	VOC 2018
Passenger Car	-11.4%	-13.1%	-12.8%	-13.5%
Passenger Truck	-11.1%	-11.2%	-11.7%	-13.4%
Light Commercial Truck	-8.5%	-8.5%	-10.0%	-11.5%

Recent on-road emissions inventory modeling for the region shows that the program was achieving over 3 tons per day of NO_X emissions and over 2 tons per day of VOC emissions in 2012.

Figure 9: Estimated Emission Reductions from I-M Program, 2012, 2015, and 2018 (tons per day)[3]



2.3.2 Drive a Clean Machine Program

The Drive a Clean Machine (DACM) program provides funding to help moderate-income and low-income families in Travis and Williamson Counties reduce emissions from light-duty vehicles. The program has also been operated under other names, including "AirCheck Texas" and the "Low-Income Repair and Replacement Assistance Program" (LIRAP). A local surcharge on all vehicle inspections in Travis and Williamson Counties is used to finance vouchers that can be used to:

- Repair a vehicle that has failed an emissions test;
- Replace a light-duty vehicle that has failed an emissions test; and
- Replace light-duty vehicles with a model year 10 years old or older with a newer, cleaner vehicle.

The program achieves emission reductions by improving compliance rates for the vehicle emissions inspection and maintenance program and by accelerating fleet turnover. Table 13 below provides details of the program for 2014.

[3] 2012 and 2018 emissions estimates are based emission on summertime Monday-Thursday activity data used in MOVES2014 non-link-based inventories created by the Texas Transportation Institute (TTI) in December 2014, which are available here: ftp://amdaftp.tceq.texas.gov/pub/Mobile_EI/Statewide/mvs/. The 2015 emissions estimates are based on MOVES2010b link-based emissions inventories created by TTI for CAMPO in January 2013 based on summertime Monday-Friday activity data. Both estimates use default compliance factors for the I-M program.

Table 13: Drive a Clean Machine Data for 2014

Data	Travis County	Williamson County	Combined
Applications for Repair Vouchers	572	NR	NR
Repair Vouchers Issued	381	NR	NR
% of Repair Applications Accepted	67%	NR	NR
Value of Repair Vouchers Issued	$228,600.00	NR	NR
Repair Vouchers Redeemed	359	72	431
% of Repair Vouchers Redeemed	94%	NR	NR
Value of Repair Vouchers Redeemed	$228,333.10	$31,642.35	$259,975.45
Applications for Replacement Vouchers	270	NR	NR
Replacement Vouchers Issued	185	NR	NR
% of Replacement Applications Accepted	69%	NR	NR
Value of Replacement Vouchers Issued	$551,100.00	NR	NR
Replacement Vouchers Redeemed	149	85	234
% of Replacement Vouchers Redeemed	81%	NR	NR
Value of Replacement Vouchers Redeemed	$551,100.00	$179,000	$730,100
Total Applications	842	212	1,054
Total Vouchers Issued	566	153	721
Acceptance Rate	67%	72%	68%
Vouchers Redeemed	508	157	665
Redeemed / Applications	60%	74%	63%

2.3.3 Texas Emission Reduction Plan (TERP) Grants

The TERP program provides funding for voluntary emission reduction incentive grants. Among the programs that the Austin-Round Rock MSA has received funding for are:

- Emission Reduction Incentive Grant (ERIG) Program;
- Rebate Grant Program;
- Texas Clean Fleet Program (TCCP);
- Texas Natural Gas Vehicle Grants Program (TNGVGP);
- Light-Duty Purchase or Lease Incentive (LDPLI) Program; and
- The Clean Transportation Triangle (CTT) Program.

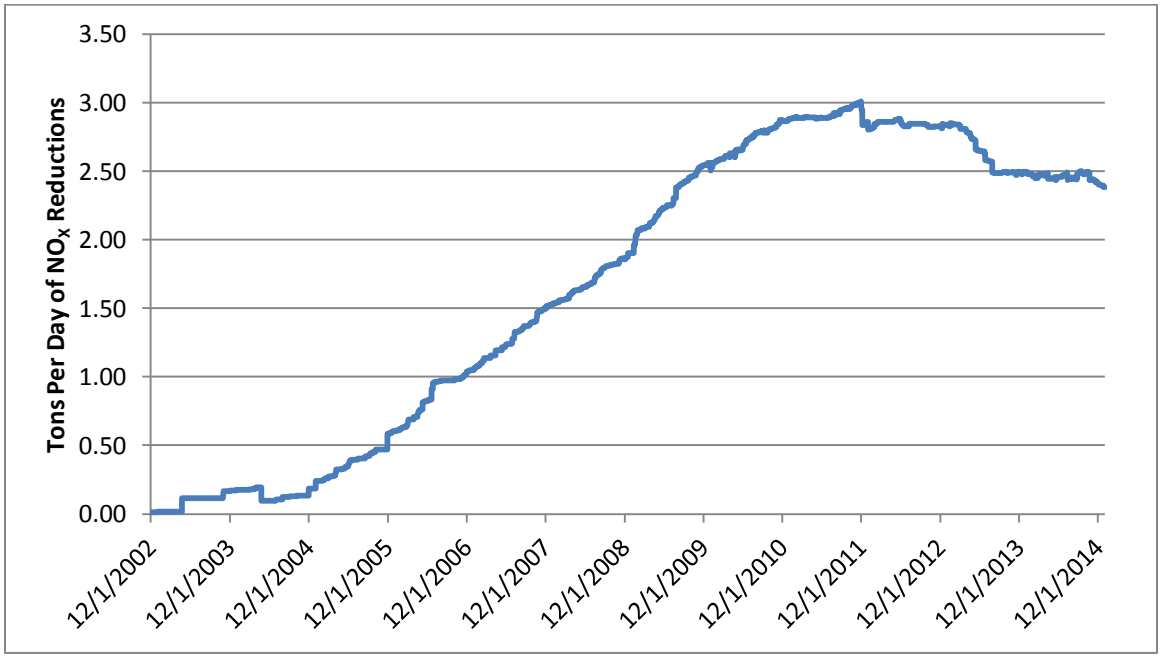
For full descriptions of these programs, please visit http://www.tceq.state.tx.us/airquality/terp. Table 14 below shows the funding for each TERP program through the end of 2013, as well as the new funding under contract in 2014 where activities primarily occurred within the Austin-Round Rock MSA. At the end of 2014, TCEQ opened up a new round of ERIG grants, expecting to award approximately $60 million statewide, but selections were not made until spring 2015. A significantly larger portion of this funding was awarded to projects in the Austin area (over $7 million) than had occurred in previous years. Information on those grants will be included in the annual report covering 2015.

Table 14: TERP Funding for Austin-Round Rock MSA Area Projects 2002 through 2013 and New in 2014

Program	Funding Provided Through 2013	New Funding Under Contract in 2014
ERIG & Rebate	$53,391,864.42	$0.00
CFFP	$13,702,014.15	$0.00
TNGVGP	$0.00	$0.00
LDPLI	$0.00	$372,500.00
CTT	$0.00	$800,000.00
Combined	**$67,093,878.57**	**$1,172,500.00**

TCEQ calculates the estimated NO_X emission reduction benefits from the ERIG, Rebate, and CFFP programs. Figure 10 shows the combined emission reductions from these two programs from the program's inception in December 2002 through the end of 2014. For the 2014 ozone season, TERP programs were achieving approximately 2.47 tpd of NO_X reductions, which is down somewhat from the 2.62 tpd of NO_X reductions over the course of the 2013 ozone season.

Figure 10: Estimated Austin-Round Rock MSA NO_X Emission Reductions from the TERP Program, 2002-2014



3 Other Data Relevant to Local Air Quality Planning

This section provides various data for the region that are useful for understanding and potentially quantifying emission reduction measures implemented by participants in the regional air quality plan.

3.1 Population Data

The Austin-Round Rock MSA is the fourth largest MSA in the state of Texas and the 35th largest MSA in the country. It is one of the fastest growing MSA's in the country, adding 57,496 people between 2013 and 2014, a 3.05% increase. By comparison, the combined growth rate for all metro areas in the country from 2013-2014 was 0.88%. The region ranked 11th in terms of total population growth between 2013-2014 nationwide and 3rd in terms of % change, and the #1 and #2 metro areas both have populations of less than 500,000.

Table 15 and Table 16 show the most recent population data for the cities and counties that participated in the Ozone Advance Program Action Plan in 2014.

Table 15: CAC County Population Data, 2013-2014[4]

County	2013 Population	2014 Population	Change 2013-2014	% Change 2013-2014
Bastrop	76,099	78,069	1,970	2.59%
Caldwell	39,248	39,810	562	1.43%
Hays	176,483	185,025	8,542	4.84%
Travis	1,122,748	1,151,145	28,397	2.53%
Williamson	471,225	489,250	18,025	3.83%
TOTAL	**1,885,803**	**1,943,299**	**57,496**	**3.05%**

Table 16: CAC City Population Data, 2013-2014[5]

City	County	2013	2014	Change	% Change
Austin	Travis	887,124	912,791	25,667	2.89%
Bastrop	Bastrop	7,558	7,856	298	3.94%
Cedar Park	Williamson	61,292	63,574	2,282	3.72%
Elgin	Bastrop	8,429	8,622	193	2.29%
Georgetown	Williamson	54,934	59,102	4,168	7.59%
Hutto	Williamson	19,737	21,170	1,433	7.26%
Lockhart	Caldwell	13,063	13,232	169	1.29%
Luling	Caldwell	5,650	5,732	82	1.45%
Pflugerville	Travis	53,812	54,644	832	1.55%
Round Rock	Williamson	109,725	112,744	3,019	2.75%
San Marcos	Hays	54,567	58,892	4,325	7.93%
Sunset Valley	Travis	687	697	10	1.46%
COMBINED	**n/a**	**1,276,578**	**1,319,056**	**42,478**	**3.33%**

[4] U.S. Census Bureau. Annual Estimates of the Resident Population for Counties: Texas: April 1, 2010 to July 1, 2014. http://factfinder.census.gov/bkmk/table/1.0/en/PEP/2014/PEPANNRES/0400000US48.05000. Accessed July 12, 2015.

[5] U.S. Census Bureau. Annual Estimates of the Resident Population for Incorporated Places: Texas: April 1, 2010 to July 1, 2014. http://factfinder.census.gov/bkmk/table/1.0/en/PEP/2014/PEPANNRES/0400000US48.16200. Accessed July 12, 2015.

3.2 Operational Data for OAP Action Plan Participating Organizations

This section provides data reported by some of the OAP Action Plan participating organizations on their operations in 2014 that can be useful for quantifying the emissions each organization is generating both directly and indirectly, and for quantifying the organizations' emission reduction measures. "NR" indicates that the organization did not report the information in 2014.

3.2.1 Employees & Commuting Data

One of the key areas in which all organizations can reduce emissions is in encouraging employees to reduce commute-related emissions, either by using an alternative mode of commuting or through work schedule changes. This section provides employee and commute-related data from organizations that provided such data.

Table 17: Employees, 2014

Organization	Employees
Bastrop County	416
Caldwell County	NR
Hays County	NR
Travis County	5,100
Williamson County	1624
City of Austin	11,995
City of Bastrop	NR
City of Cedar Park	457
City of Elgin	73
City of Georgetown	592
City of Hutto	NR
City of Lockhart	140
City of Luling	NR
City of Pflugerville	NR
City of Round Rock	878
City of San Marcos	NR
City of Sunset Valley	30
City of Taylor	NR
CAPCOG	67
CAMPO	17
CapMetro	NR
CTRMA	20
LCRA	NR
TCEQ	1,912
TxDOT-Austin	521
TxDOT-HQ	2,581
CLEAN AIR Force	1
Lone Star Clean Fuels Alliance	1
Texas Lehigh	NR
TOTAL REPORTED	**26,188**

One way to reduce commute-related emissions is to allow employees to work flexible schedules that either allow the employees to avoid commuting during times when traffic congestion is at its worst or to work more hours per day in order to avoid one or more weekday commutes to the office, such as working 8 or 9 days Monday-Friday over two weeks, rather than the normal 10. The table below shows the percentages of employees who were reported to have a "normal" Monday-Friday, 8am-5pm schedule, the percentages who were reported to have a flexible schedule Monday-Friday, and the percentages who worked "compressed work weeks."

Table 18: Employee Work Schedule Data

Organization	% M-F, 8am-5pm	% Flex Sched. M-F	% Compressed 9 of 10	% Compressed 8 of 10
City of Cedar Park	67.4%	0%	0%	32.6%
City of Elgin	78%	0%	22%	0%
City of Lockhart	75%	NR	NR	NR
Travis County	36%	64%	0%	1%
CAPCOG	41%	54%	0%	5%
CAMPO	50%	50%	0%	0%
CTRMA	90%	10%	0%	0%
TxDOT Austin District	7%	53%	0.2%	40%

Another way to reduce emissions from employee commuting is to encourage employees to use commuting alternatives other than driving to work alone. Alternative modes that can reduce emissions include carpools, vanpools, mass transit, motorcycles, biking, walking, or working from home. The table below shows the data reported on commuting modes and average length of commute for 2014.

Table 19: Avg. Commuting Distance and % of Employees Commuting by Mode

Org.	Avg. Distance (mi)	Drove Alone	Carpool or Vanpool	Mass Transit	Taxicab	Motorcycle	Biking	Walking	Work from Home	Other Means
City of Cedar Park	24	99.78%	0%	0%	0%	0%	0.22%	0%	0%	0%
City of Elgin	10	100%	0%	0%	0%	0%	0%	0%	0%	0%
City of Lockhart	32	70%	1%	NR	NR	1%	1%	1%	NR	NR
Travis County	25	79%	1%	6%	0%	0.5%	2%	2%	4%	0%
CAPCOG	NR	NR	NR	NR	NR	NR	NR	NR	2%	NR
CAMPO	9.7	51%	0%	25%	0%	0%	20%	0%	4%	0%
CTRMA	15	100%	0%	0%	0%	0%	0%	0%	0%	0%
TCEQ	22.5	NR	2.6%	NR	NR	NR	NR	NR	2.9%	0%
TxDOT Austin District	21	94.4%	3.3%	0.2%	NA	0.9%	0.1%	0.2%	0%	NA
TxDOT HQ	22.4	89.7%	6.3%	1.2%	0%	0.6%	0.3%	0.3%	0.3%	1.2%

One way to encourage employees to reduce emissions is to subsidize transit passes for employees. Both CAMPO and Travis County reported data on the number of transit passes issued and used. These data are shown in the table below.

Table 20: Subsidized Transit Passes for Employees

Organization	Subsidized Transit Passes Issued	Subsidized Transit Passes Used	Amount Spent on Transit Passes
Travis County	1000	405	$54,070
CAMPO	9	6	NR
CTRMA	0	0	0

3.2.2 Parking

Certain emission measures implemented under the OAP Action Plan relate to parking management. Participating organizations can reduce emissions associated with commuting by encouraging the use of vanpools or carpools and by encouraging the use of cleaner vehicles, including providing preferred parking spaces. Parking cash-out programs are another type of emission reduction measure that involved the quantity of parking organizations provide to employees. Parking management practices such as provision of shaded parking can also reduce evaporative emissions from parked cars and reduce the engine load required to cool a vehicle when it starts.

Table 21: Parking Data

Organization	Parking Spaces	% Equipped with Charging Stations	% Reserved for Carpools or Vanpools	% Covered or Shaded
Travis County	4,300	0%	0%	40%
City of Elgin	40	0%	0%	0%
TCEQ	~2,000	0%	0.5%	25%

3.2.3 Data on Gas, Electricity, and Water Consumption

Each organization's natural gas, electricity, and water consumption contributes to local emissions, and conservation efforts can help reduce those emissions. Table 22 shows the data that was reported for selected organizations for 2014.

Table 22: Organizational Data on Consumption of Natural Gas, Electricity, and Water

Organization	Natural Gas (CF)	Electricity (kWh)	Water (MGal)
Travis County	42,574,400	34,222,031	33.369
Williamson County	230,648	18,714,595	NR
City of Austin	1,382,417	446,473,612	NR
City of Cedar Park	31,929	25,238,881	47.1
City of Elgin	4,195	15,585,430	2.8
City of Georgetown	NR	28,594,826	NR
City of Lockhart	5,300	1,860,00	22
City of Round Rock	NR	43,397,005	NR

3.2.4 Fleet and Fuel Consumption Data

One of the ways participating organizations can most directly reduce emissions is through fleet operations. This section provides data on fleet operations for several participating organizations.

Table 23: Fuel Consumption

Organization	Unspecified (gal)	Diesel (gal)	Gasoline (gal)	E85 (gal)	LPG (gal)	CNG (gge)
Travis County	n/a	243,914	707,466	0	0	0

Organization	Unspecified (gal)	Diesel (gal)	Gasoline (gal)	E85 (gal)	LPG (gal)	CNG (gge)
City of Austin	n/a	2,540,000	1,710,000	633,370	154,760	304,774
City of Cedar Park	n/a	28,112	134,187	0	9,262	0
City of Elgin	n/a	6,380	26,008	0	0	0
City of Georgetown	n/a	91,730	113,095	0	4,442	0
City of Lockhart	n/a	16,275	46,040	0	320	1,811
City of Round Rock	n/a	83,836	275,327			
TCEQ	233,676	NR	NR	NR	NR	NR
TxDOT Austin District	n/a	227,773	180,948	382	27,299	NR

Table 24: Fuel Dispensed

Organization	Gasoline Dispensed (gallons)
Travis County	707,466
City of Cedar Park	134,187
City of Elgin	0

Table 25: Fuel Consumption

Organization	% of Diesel Used for On-Road Vehicles	% of Diesel Used for Non-Road Equipment	% of Diesel Used for Stationary Sources	% of Gasoline Used for On-Road Vehicles	% of Gasoline Used for Non-Road Equipment	% of LPG Used for On-Road Vehicles	% of LPG Used for Non-Road Vehicles	% of Electricity used for On-Road Vehicles
City of Cedar Park	50%	46%	4%	85%	15%	100	0%	NR
City of Georgetown	NR	NR	NR	NR	NR	76%	24%	NR
City of Lockhart	75%	23%	2%	80%	20%	NR	NR	NR

Table 26: Fleet Data

Organization	# Vehicles Purchased	# Alt. Fueled Vehicles Purchased	# Tier 2, Bin 4 or Better Vehicles Purchased	# Pieces of Non-Road Equipment Purchased	# Pieces of Alt. Fueled Non-Road Equipment Purchased
Travis County	94	0	54	25	0
City of Cedar Park	24	0	24	5	0
City of Elgin	2	0	0	0	0
City of Georgetown	40	3	NR	9	NR
City of Lockhart	3	0	3	1	0
City of Round Rock	12	0	12	20	1
TCEQ	20	18	2	0	0

3.2.5 Backup Generators

Although backup generators are rarely used, they tend to be very old and have very high NO_X emissions rates, and it is possible to reschedule regular engine testing that may be scheduled to occur on a predicted high ozone day. The table below provides some data on the number of generators several organizations own and the average number of hours per year the generators are run, primarily for testing.

Table 27: Generators

Organization	Number of Generators	Total Hours Used	Hours/Year/Unit	Testing Time
Travis County	6	428	71	NR
City of Cedar Park	23	469.8	20	Mon. 7:00 am
City of Elgin	6	NR	NR	NR
City of Lockhart	4	NR	NR	NR
City of Round Rock	23	600	26	Mon. 8-8:30 am
CTRMA	21	336	16	NR
TxDOT Austin District	9	36	4	NR

3.2.6 Local Renewable Energy Generated

Locally installed solar panels can reduce the need to generate electricity at fossil-fueled power plants. The table below provides data on the amount of local solar-powered electricity generated by Travis County and Round Rock.

Table 28: Renewable Energy

Organization	Solar Power Energy Generated (kWh)
Travis County	0
City of Round Rock	156,797

3.2.7 Road Construction and Maintenance

Non-road equipment makes up a significant portion of the NO_X emission within the region, and road construction and maintenance operations can generate substantial NO_X emissions depending on the scale of the projects. Eastern Research Group (ERG) recently developed tools that enable certain operational data on road construction and maintenance to be used to calculate non-road emissions. Table 29 below shows the data that was submitted by several organizations for 2014.

Table 29: Road Construction and Maintenance Data

Organization	New or Rebuilt Roads (lane-miles)	Repair or Resurfacing (lane-miles)	Turn Lanes (lane-miles)	Bridgework ($)	Other ($)
Travis County	5.5	120	0.5	$215,000	NR
City of Cedar Park	4.39	8	(incl. in new)	(incl. in "other")	$454,730
City of Elgin	0.79	3	0	$0	$0
City of Lockhart	42	22	0	0	0

Paving unpaved roads can reduce the emissions from vehicles driving on those roads – both by decreasing the engine load needed to drive on the road and by reducing fouling of the catalyst as a result of dust on the roadway. The table below shows data on the amount of unpaved roads that were paved by local jurisdictions in 2014.

Table 30: Extent of Roads Maintained & Paved in 2014

Organization	Centerline Miles Maintained	Lane-Miles Maintained	Unpaved Centerline Miles Maintained in 2014	Unpaved Lane-Miles Maintained in 2014
Travis County	1,400	3,261	0	0
City of Cedar Park	NR	989.42	0	0
City of Elgin	NR	68.92	NR	1.4
City of Lockhart	180	NR	NR	NR

Material substitution in road maintenance activities is one way to reduce VOC emissions. The table below provides data on striping materials and asphalt.

Table 31: Road Striping Material & Asphalt Data

Organization	Road Striping Material Applied (gallons)	Low-VOC Road Striping Material Consumed (gallons)	Thermal Plastic Striping Material Consumed (pounds)	Asphalt Consumed (tons)	Low-VOC Asphalt Consumed (tons)
Travis County	11,000	11,000	NR	NR	59,580
City of Elgin	45	NR	NR	NR	NR
City of Lockhart	22	NR	NR	2,500	NR
City of Round Rock	100	NR	20,000	NR	NR

3.2.8 Other Operational Data

This section provides other data submitted by participating organizations that can be used to quantify emission reductions.

Table 32: City of Round Rock Demand Response Bus Service Data

Data	Quantity
Demand Response Passengers	15,253
Demand Response Bus Service Trips	15,008
Demand Response # Subsidized by Area Agency on Aging	5,321

Table 33: Direct Deposit Data

Organization	% of Employees who Receive Direct Deposit
Travis County	90%
Williamson County	98.34%
City of Cedar Park	90.01%
City of Elgin	100%
City of Lockhart	80%
CAPCOG	100%
CAMPO	87.5%
TxDOT Austin District	99.5%

Table 34: Landscaping Data

Organization	Acres Landscaped through Contracts
Travis County	114
Williamson County	98
City of Cedar Park	149
City of Elgin	0

Table 35: Tree Planting and Maintenance Data

Organization	Trees Planted	Trees Maintained
Travis County	13	132
Williamson County	6	906
City of Elgin	0	40
City of Lockhart	32	0
City of Round Rock	165	1,554

3.3 Regional Electricity Data

This section provides 2014 data on emissions from electric generating units (EGUs) located within the region, electricity consumption data for Austin Energy, and Austin Energy's energy efficiency and renewable energy programs.

3.3.1 2014 Emissions Data for Electric Generating Units

During the official 2014 ozone season for Central Texas (March 1, 2014 – October 31, 2014), Electric Generating Units (EGUs) located in the Austin-Round Rock MSA that report to EPA's Clean Air Markets Database (CAMD) emitted an estimated 874 tons (3.57 tons per day) of NO_X and generated an estimated 7,057,356 megawatt-hours (MW-hrs) of electricity, for an average emissions rate of 0.248 pounds of NO_X per MW-hr of electricity generated. On a heat-input basis, the average rate for power plants in the MSA was 0.030 lbs of NO_X per million British thermal units (MMBtu). Thermal efficiencies for units ranged averaged 41%, from a low of 19% (output/input) to a high of 49%.

As the data in Table 36 show, EGUs in the Austin-Round Rock MSA are well-controlled relative to the EGUs Dallas-Fort Worth ozone nonattainment area, the Houston-Galveston-Brazoria ozone nonattainment area, the San Antonio-New Braunfels MSA, and the El Paso MSA.

Table 36: Comparison of Local Power Plant NOX Emissions Rates and Efficiencies to Other Areas in Texas

Area	Thermal Efficiency	NO_X Emissions Rate (lbs/MMBtu input)	NO_X Emissions Rate (lbs/MW-hr output)
Austin-Round Rock MSA	41%	0.030	0.248
Dallas-Fort Worth Nonattainment Area	40%	0.082	0.207
Houston-Galveston Brazoria Nonattainment Area	34%	0.101	0.299
San Antonio-New Braunfels MSA	36%	0.258	0.722
El Paso MSA	33%	0.389	1.186

On the six days in 2014 used to establish the fourth highest peak 8-hour ozone averages for 2014 at CAMS 3 and CAMS 38, emissions from EGUs ranged from 1.69 tpd to 9.841 tpd.

Table 37: NO_X Emissions from Local EGUs on Selected High-Ozone Days, 2014 (tons per day)[6]

Facility Name	Unit ID	5/4	5/16	5/17	8/12	9/8	10/24
Bastrop Clean Energy Center	CTG-1A	0.438	0.528	0.428	0.697	0.566	0.000
Bastrop Clean Energy Center	CTG-1B	0.409	0.535	0.455	0.704	0.655	0.000
Decker Creek	1	0.000	0.000	0.000	2.758	0.000	0.000
Decker Creek	2	0.692	0.000	0.000	1.177	1.473	0.528
Decker Creek	GT-1A	0.000	0.000	0.080	0.000	0.000	0.058
Decker Creek	GT-1B	0.000	0.000	0.080	0.001	0.000	0.058
Decker Creek	GT-2A	0.000	0.000	0.090	0.000	0.000	0.072
Decker Creek	GT-2B	0.000	0.000	0.090	0.000	0.000	0.072

[6] Note that emissions from Decker Creek

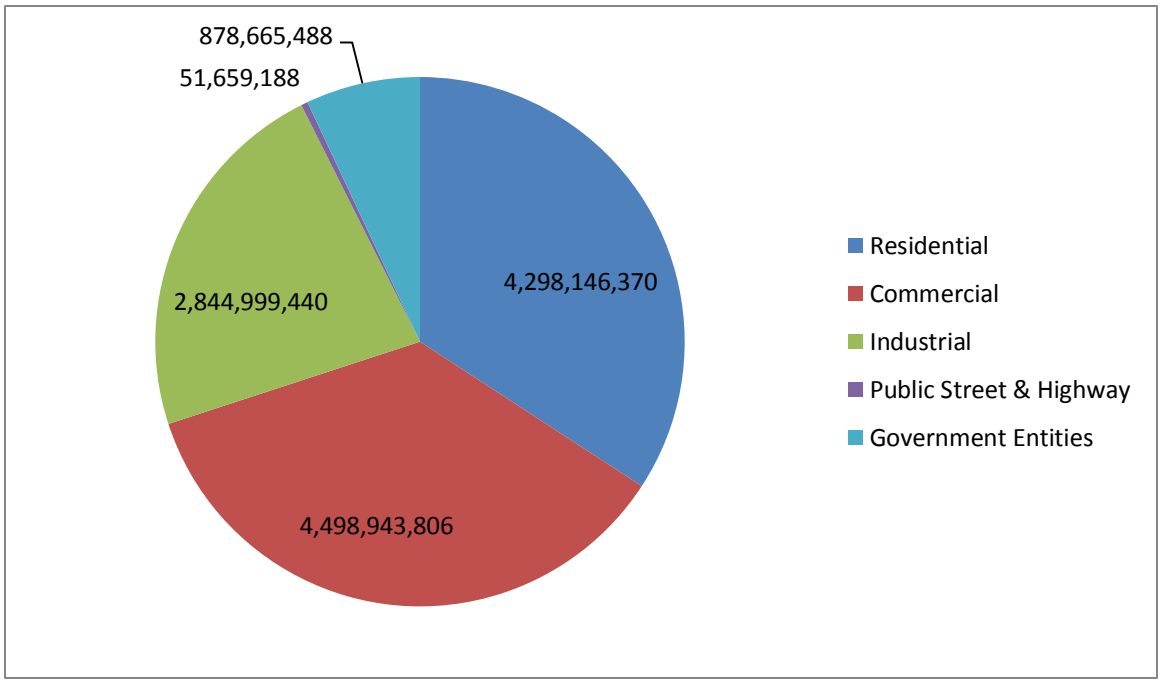
Facility Name	Unit ID	5/4	5/16	5/17	8/12	9/8	10/24
Decker Creek	GT-3A	0.000	0.000	0.088	0.000	0.000	0.063
Decker Creek	GT-3B	0.000	0.000	0.087	0.000	0.000	0.063
Decker Creek	GT-4A	0.000	0.000	0.000	0.000	0.000	0.059
Decker Creek	GT-4B	0.000	0.000	0.075	0.000	0.000	0.058
Hays Energy Facility	STK1	0.203	0.211	0.213	0.218	0.000	0.000
Hays Energy Facility	STK2	0.000	0.000	0.000	0.171	0.206	0.000
Hays Energy Facility	STK3	0.000	0.000	0.000	0.201	0.000	0.000
Hays Energy Facility	STK4	0.000	0.000	0.000	0.192	0.154	0.172
Lost Pines 1	1	0.303	0.000	0.000	0.332	0.314	0.321
Lost Pines 1	2	0.322	0.353	0.360	0.346	0.328	0.332
Sand Hill Energy Center	SH1	0.000	0.023	0.013	0.025	0.028	0.014
Sand Hill Energy Center	SH2	0.000	0.005	0.014	0.029	0.029	0.000
Sand Hill Energy Center	SH3	0.014	0.010	0.023	0.027	0.031	0.015
Sand Hill Energy Center	SH4	0.014	0.009	0.014	0.024	0.029	0.011
Sand Hill Energy Center	SH5	0.000	0.000	0.174	0.254	0.268	0.256
Sand Hill Energy Center	SH6	0.010	0.006	0.012	0.024	0.025	0.000
Sand Hill Energy Center	SH7	0.000	0.007	0.014	0.040	0.031	0.000
Sim Gideon	1	0.000	0.000	0.000	0.000	0.000	0.000
Sim Gideon	2	0.000	0.000	0.000	0.000	0.000	0.000
Sim Gideon	3	0.000	0.000	0.000	2.618	0.000	0.000
TOTAL	**n/a**	**2.405**	**1.687**	**2.310**	**9.838**	**4.137**	**2.152**

3.3.2 Austin Energy Electricity Sales

Austin Energy's total electricity sales for 2014 totaled 12,572,414,292 kWh – represented a 2.14% increase from 2013. The largest share of this total supplied commercial customers (35.78%), followed by residential customers (34.19%), then by industrial customers (22.63%) and government customers (6.99%). A small percentage (0.41%) was used for public streets and highways.[7]

[7] Draft Austin Energy Performance Report for 2014. Provided by Ravi Joseph.

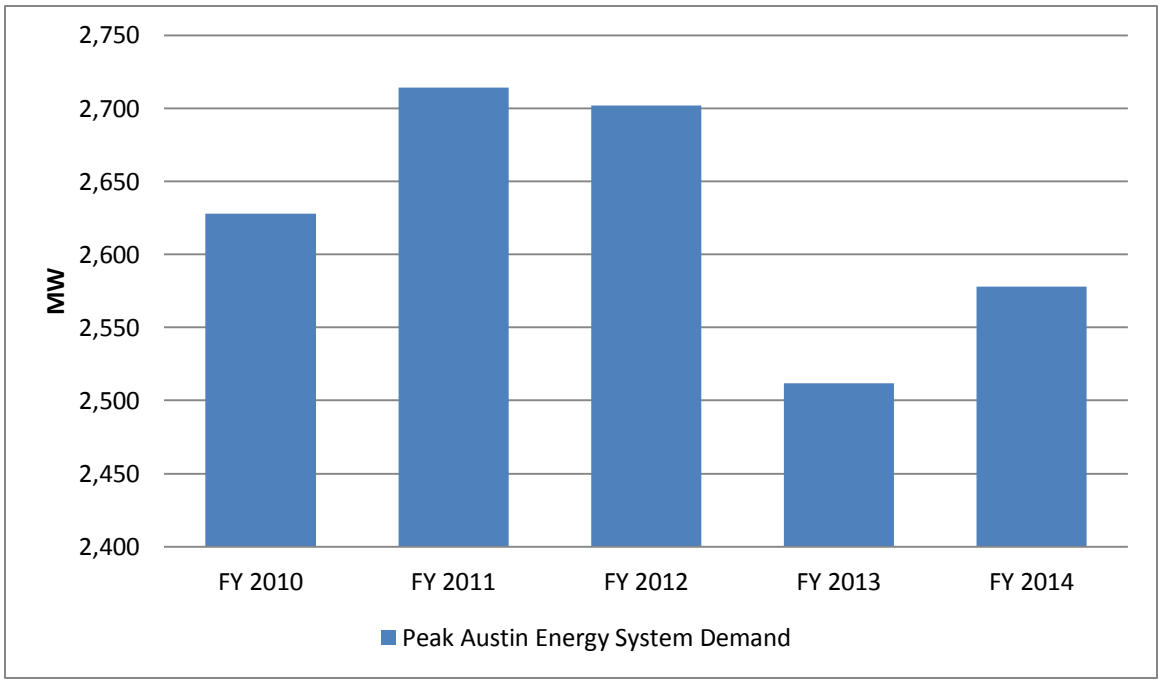
Figure 11: Austin Energy Electricity Sales by Customer Type, 2014 (kWh)



3.3.3 Energy Efficiency Peak Demand Savings

Peak demand is the highest point of energy use on any given day and typically occurs between the hours of 4 and 6 p.m. Peak energy usage days are usually also high ozone days, so reducing emissions on such days can be particularly useful, especially since a large share of local EGU emissions comes from peaker units. Overall, Austin Energy's peak demand increased in 2014 compared to 2013, although it was still well below the demand in 2011 and 2011. Figure 12 below shows peak demand for Austin Energy's system from FY 2010 – FY 2014.

Figure 12: Peak Austin Energy System Demand, FY 2010-FY 2014 (MW)



Austin Energy's energy efficiency programs have helped reduce peak demand, however, and have thereby helped reduce the emissions that might have otherwise occurred on such days.

Table 38: Reductions in Austin Energy Peak Demand by Customer Type, FY 2010-2014 (MW)

Peak Demand Reduction in MW	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Residential	14.5	14.9	12.2	11.9	15.5
Commercial	20.5	24.5	27	27.7	31.8
Demand Response	6.2	6.9	8.4	17.7	19.6
Total	**41.2**	**46.3**	**47.6**	**57.4**	**67.0**

3.3.4 Energy Efficiency Avoided Emissions

Due to the nature of the electricity grid, it is not possible to clearly identify where emission reductions might occur due to energy efficiency or renewable eneryg generation in any one area. The table below shows Austin Energy's estimate of the amount of statewide NOX and VOC tons reduced through its local energy efficiency programs in 2014.

Table 39: Austin Energy Estimate of Avoided NOX and VOC Emissions through Energy Efficiency Programs for 2014 (tons)

Customer Type	NO_X Avoided (tons)	VOC Avoided (tons)
Residential	11.4	0.4
Commercial	47.5	1.7
TOTAL	**58.8**	**2.1**

3.3.5 Solar Rebate Program

Local solar installations may have more of a potential to displace local fossil fuel electricity generation than wind generation installed in west Texas or the Gulf may be able to achieve. Austin Energy has a comprehensive Solar Rebate Program. In FY 2014, residential customers were provided $1.50 per watt installed — reduced to $1.25 per watt in December and again to $1.10 per watt in June — with annual rebate amounts limited to $15,000 and maximum rebates set at $50,000 for any individual customer. As of November 2009, residents must complete the Austin Energy Home Performance with ENERGY STAR program to qualify for a solar rebate.

The commercial rebate program pays a fixed dollar per kWh performance-based incentive to the customer over a 10-year period passed on the kWh of solar energy produced by the system. The initial PBI for systems implemented during FY 2014, was 10 cents/kWh, and reduced to 9 cents/kWh in June.

Since the Solar Rebate Program began in 2004, Austin Energy has issued more than $43 million in rebates to residential customers and $7 million in rebates to commercial customers totaling 20.2 MW-AC at the end of FY 2014. In addition to the solar rebate program, Austin Energy also owns a 30 MW solar power plant in Webberville.

Table 40: Solar Rebate Installations under Austin Energy Solar Rebate Program, FY 2010-FY 2014 (kW)

Program	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Residential (Capacity-Based Incentive)	793.26	1,352.65	1,913.26	3,503.00	3,777.00
Commercial (Capacity-Based Incentive)	106.28	n/a	n/a	n/a	n/a
Commercial (Performance-Based Incentive)	18.50	157.90	89.91	925.00	3,831.00
Solar Water Heating	26.65	30.88	60.45	18.20	1.95
Municipal	178.00	14.00	139.00	1,018.00	0.00
Schools	8.62	2.77	38.81	0.00	0.00
Combined	**1,131.31**	**1,558.20**	**2,241.43**	**5,464.20**	**7,609.95**

3.4 Emissions and Activity Data for Surrounding Counties

Previous modeling analyses have shown that the Austin-Round Rock area's emissions are only contributing about 10-15% to the peak ozone concentrations measured within the region, and that emissions from areas outside of the MSA can have a significant impact on peak ozone levels within the region. Keeping track of these emissions is important to understanding the relative role of local emission reductions in the context of changes in emissions in the surrounding area.

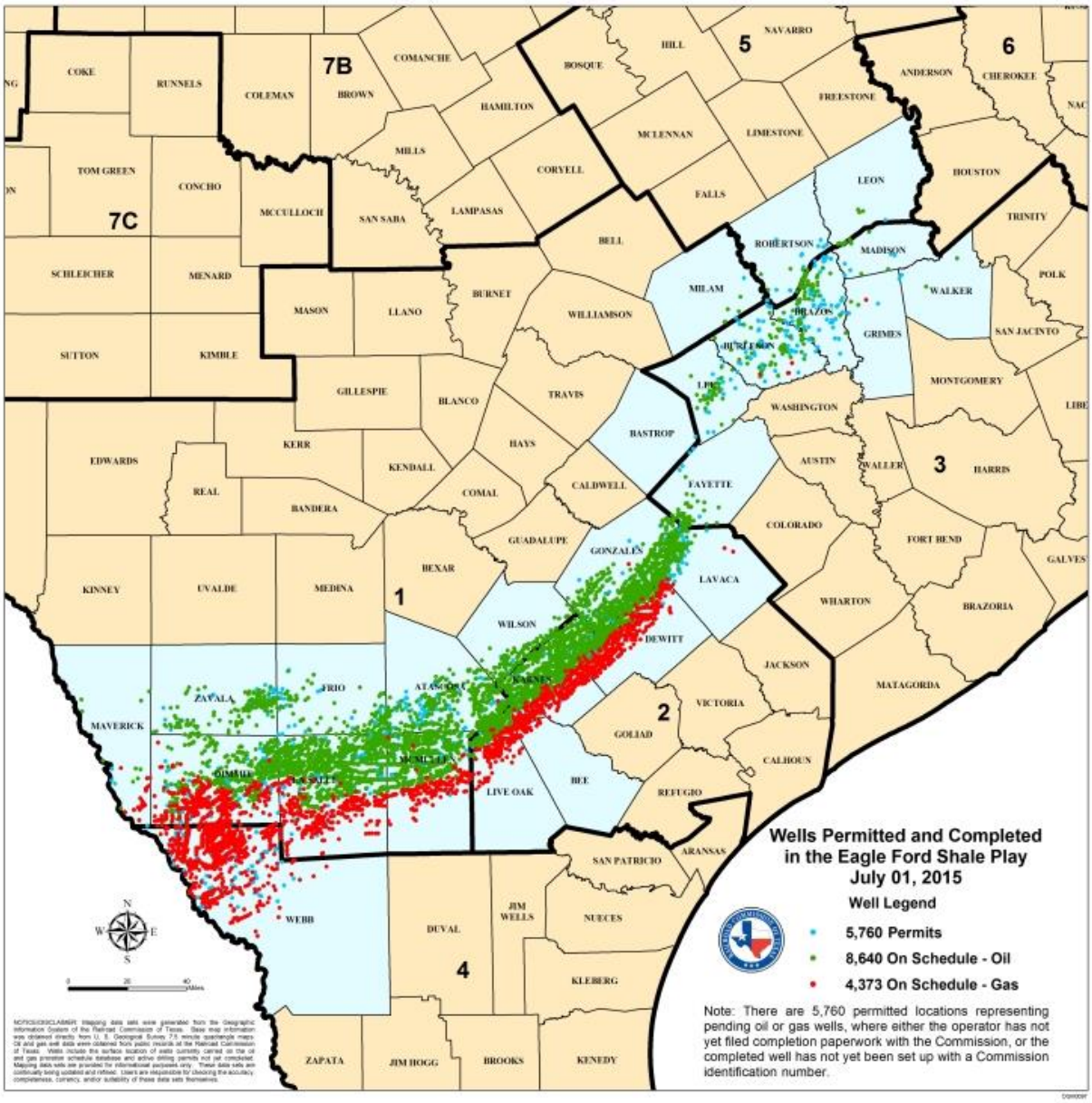
3.4.1 Activity in the Eagle Ford Shale Oil and Gas Play

In 2013, a modeling analysis that the Alamo Area COG performed for CAPCOG showed impacts from these sources to be contributing an average of 0.7 ppb to peak 8-hour ozone averages CAMS 38 and an average of 0.8 ppb to peak 8-hour ozone averages at CAMS 3 in 2012.[8] These numbers were projected to grow to 0.9 ppb at CAMS 38 and 1.0 ppb at CAMS 3 by 2018 under a "moderate" growth scenario,

[8] http://www.capcog.org/documents/airquality/reports/2013/AACOG_2012_and_2018_Modeling_Report-Body_Only.pdf.

and 1.1 ppb at CAMS 38 and 1.2 ppb at CAMS 3 under a "high" growth scenario. A large amount of production occurs just upwind of the MSA, as the map below shows.

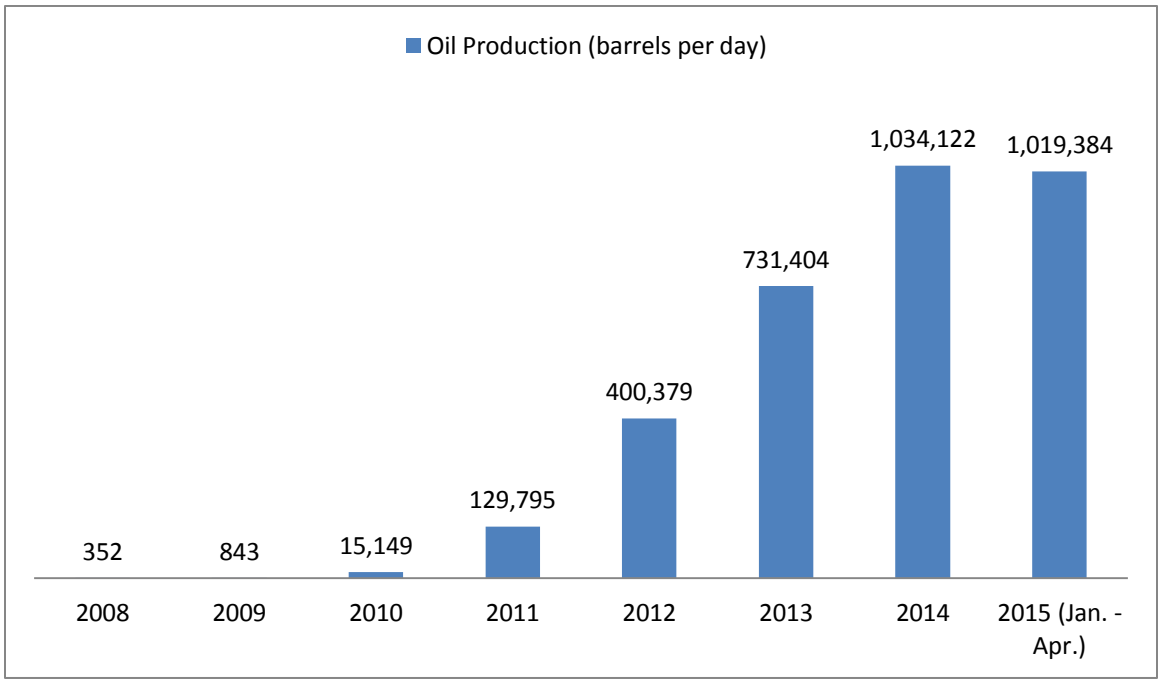
Figure 13: Wells Permitted and Completed in the Eagle Ford Shale Play, July 1, 2015[9]



Oil production continued to grow in the region 2014, up 41% compared to 2013 levels. And despite the decrease in oil prices lately, production for the first four months of 2015 nearly matched the production level for all of 2014.[10]

[9] http://www.rrc.state.tx.us/media/29335/eaglefordshaleplay2015-07-lg.jpg
[10] http://www.rrc.state.tx.us/media/7078/eaglefordproduction_oil_perday.pdf

Figure 14: Eagle Ford Shale Oil Production, 2008-April 2015



Growth in natural gas[11] and condensate[12] production also increased significantly between 2013 and 2014, but at about half the rate of oil production growth – 26% and 18%, respectively. Drilling permits increased from 4,416 issued in 2013 to 5,613 issued in 2014, a 27% increase. The lower price of oil is likely to lead to a reduction in wells drilled in 2015, however.

Overall, production and drilling in 2014 exceeded the levels AACOG had used for its "aggressive" growth strategy.[13]

Table 41: 2014 Oil and Gas Production in Eagle Ford Shale Compared to AACOG Projections

Activity	Low Growth Forecast	Moderate Growth Forecast	Aggressive Growth Forecast	Actual
Oil Production (MMBbl)	299	328	363	377
Gas Production (BCF)	1,125	1,260	1,418	1,821
Condensate Production (MMBbl)	64	74	85	101

Given the impact that emissions from the Eagle Ford oil and gas activities were having already as of 2012 and the continued growth in this sector, CAPCOG remains concerned about the potential of the growth in emissions from this region to undermine local efforts to reduce ozone levels by reducing NO_X and VOC emissions from within the region. Compared to the threshold EPA uses for screening air quality impacts

[11] http://www.rrc.state.tx.us/media/7079/eagleford_totalnaturalgas_perday.pdf
[12] http://www.rrc.state.tx.us/media/7077/eaglefordproduction_condensate_perday.pdf
[13] http://www.aacog.com/documentcenter/view/19069, see table 8-14.

for interstate transport emission reduction obligations (1% of the NAAQS), the oil and gas emissions from this region would be considered having a "significant" impact on peak ozone values in the region and could be large enough to make a difference in the region's designation status for EPA's proposed ozone standards.

3.4.2 Point Source Emissions Data from Surrounding Counties

Data from point sources within the Austin-Round Rock MSA and surrounding counties continues (Bell, Blanco, Burnet, Comal, Fayette, Gonzales, Guadalupe, Lee, and Milam Counties) to show reductions in both NO_X and VOC emissions. TCEQ released the 2013 emissions inventory data in early 2015. These data showed larger NOX and VOC emission reductions from point sources immediately adjacent to the MSA from 2011 to 2013 relative to the emission reductions form point sources within the region, but the percentage reduction in NOX emissions from within the MSA was a bit more than double the percentage reduction in NOX emissions from the adjacent counties.

Table 42: NO_X Emissions from Point Sources in the Austin-Round Rock MSA and Adjacent Counties (tons per year)

Region	2011	2012	2013	Change 2011-2013	% Change, 2011-2013
Austin-Round Rock MSA	5,696	5,490	5,160	-536	-9.4%
Adjacent Counties	14,502	12,977	13,890	-612	-4.2%

Table 43: VOC Emissions from Point Sources in the Austin-Round Rock MSA and Adjacent Counties (tons per year)

Region	2011	2012	2013	Change 2011-2013	% Change, 2011-2013
Austin-Round Rock MSA	742	723	678	-64	-8.6%
Adjacent Counties	1,593	1,519	1,410	-184	-11.5%

4 Air Quality Planning Activities Conducted in 2014

This section describes general air quality planning activities and research projects conducted in 2014.

4.1 Clean Air Coalition

The Clean Air Coalition (CAC) consists of elected officials from city and county governments in the Austin-Round Rock MSA that participate in the regional air quality planning efforts. The table below shows the jurisdictions that were members of the CAC in 2014 and their representative on the CAC.

Table 44: 2014 CAC Members

Organization	Representative Title	Name	CAC Position
Bastrop County	Commissioner	William Pina	First Vice-Chair
Caldwell County	Judge	Tom Bonn	Member
Hays County	Commissioner	Ray Whisenant	Member
Travis County	Judge	Sam Biscoe	Chair
Williamson County	Commissioner	Ron Morrison	Second Vice-Chair
City of Austin	Council Member	Chris Riley	Member

Organization	Representative Title	Name	CAC Position
City of Bastrop	Mayor	Ken Kesselus	Member
City of Cedar Park	Council Member	Stephen Thomas	Member
City of Elgin	Council Member	Chris Cannon	Member
City of Georgetown	Council Member	Rachael Jonrowe	Member
City of Hutto	Mayor	Debbie Holland	Member
City of Lockhart	Mayor	Lew White	Member
City of Luling	Mayor	Mike Hendricks	Member
City of Pflugerville	Mayor	Jeff Coleman	Member
City of Round Rock	Mayor	Alan McGraw	Member
City of San Marcos	Mayor	Daniel Guerrero	Member

Several members' terms as elected officials ended at the end of 2014, including:

- Travis County Judge and CAC Chair Sam Biscoe;
- Caldwell County Judge Tom Bonn; and
- City of Austin Council Member Chris Riley.

4.1.1 New CAC Members

The City of Pflugerville, which is the region's 6th largest city (population: 54,644 as of 2014) joined the Clean Air Coalition at the March 26, 2014, meeting. In the resolution adopted by the City of Pflugerville on January 14, 2014, the city committed to implement the following measures:

- Business evaluation of fleet usage;
- Apply for Texas Emission Reduction Plan (TERP) and/or Diesel Emission Reduction Act (DERA) funding when available to retrofit, repower or replace older diesel vehicles and equipment owned and operated by the jurisdiction;
- Regularly plan for Transportation Emission Reduction Measures (TERMS) within the community and report progress annually;
- Implement an Ozone Action Day Program;
- Participate in regional measures; and
- Implement energy efficiency, renewable energy, and resource conservation policies that will result in reduced energy consumption;
- Annually track and report to CAPCOG:
  - Vehicle and equipment usage;
  - Electricity and gas usage;
  - Contracted construction and landscaping work; and
  - Details on performance of locally adopted measures.

4.1.2 CAC Meetings

The Clean Air Coalition held four meetings during 2014:

- March 26, 2014;
- June 25, 2014;
- September 10, 2014; and
- December 10, 2014.

4.1.3 Clean Air Coalition Advisory Committee

The Clean Air Coalition Advisory Committee (CACAC) consists of staff members from organizations participating in the regional air quality plan, and is co-chaired by CAPCOG Air Quality Program Manager Andrew Hoekzema and City of Austin Air Quality Program Manger Pharr Andrews. The CACAC held meetings on the following dates:

- January 8, 2014;
- February 6, 2014;
- March 6, 2014;
- April 3, 2014;
- May 1, 2014;
- June 5, 2014;
- July 10, 2014;
- August 7, 2014;
- September 4, 2014;
- October 2, 2014;
- November 6, 2014; and
- December 4, 2014.

4.2 Outreach and Education Plan and CACAC Outreach and Education Subcommittee

The CACAC developed a new outreach and education plan in early 2014. This plan can be found online at http://www.capcog.org/documents/airquality/Ozone_Advance/Outreach_and_Education_Plan.pdf.

As a result of this effort, the CACAC established a new outreach and education subcommittee, which met on the following dates:

- April 14, 2014;
- May 19, 2014;
- June 16, 2014;
- July 21, 2014;
- August 25, 2014;
- September 26, 2014;
- October 22, 2014;
- November 20, 2014; and
- December 18, 2014.

4.3 CLEAN AIR Force

Founded in 1993, the CLEAN AIR Force of Central Texas (CAF) is a 501(c)(3) organization of business, government, environmental, and community leaders united in the common goal of finding workable solutions for improving air quality in Central Texas. CAF conducts and coordinates public awareness and education campaigns and implements voluntary programs to reduce ozone-forming emissions.

During the 2014 Ozone Season (April 1 – October 31), the CLEAN AIR Force offered a free Ozone Action Day email notification service and alerted participants of one Ozone Action Day, when unhealthy levels of ozone were expected for the following day. Ozone Action Day alerts are also available via a hotline

number, 512-343-SMOG (7664), for those that do not have Internet access or do not wish to share their email address. The alerts, available in both English and Spanish, caution citizens with lung disease, children, and the elderly to avoid prolonged exposure and minimize exertion outdoors. The email alerts also encourage Central Texans to reduce their driving, avoid idling and postpone other polluting activities until late in the day when ozone is less likely to form. The emails provide direct contact information for citizens having questions or concerns regarding the alerts. Alerts are also issued via the CLEAN AIR Force Facebook page, Twitter feed and website. Ozone Season updates were presented at CAF Technical Advisory Committee meetings, CAF Board meetings and Executive Committee meetings during Ozone Season. To register for these alerts, citizens can visit www.cleanairforce.org or call 1-866-916-4AIR (4247).

To kick-off the 2014 Ozone Season, on April 8 the CLEAN AIR Force held a press conference at Round Rock City Hall with Board Member and Round Rock Mayor Alan McGraw, CLEAN AIR Force Board Chair Tim Jones of Samsung Austin Semiconductor, and Andrew Hoekzema of CAPCOG as speakers. This public outreach event reminded citizens of simple things they can do to improve air quality in Central Texas.

4.3.1 Clean Air Partners Program

The Clean Air Partners Program (CAPP) is a voluntary program of the CLEAN AIR Force of Central Texas that encourages businesses and organizations to voluntarily reduce their ozone-forming emissions in Central Texas by at least 10% over a three-year period. With approximately 40 Partners participating, the program aims to reduce at least 10,000 commuters from Central Texas roads through efforts such as carpooling/vanpooling, transit, teleworking, flexible schedules, and car sharing. Partners are able to customize additional strategies to achieve ozone reductions, such as the use of green power sources, water and energy conservation, low-emission landscaping methods, clean fleet and fuel strategies, and other proactive measures that lead to cleaner air. The program includes the participation of over 100,000 employees in Central Texas. A current list of Partners can be found on the program website at www.cleanairpartnerstx.org.

Clean Air Partners report their emission-reducing business activities each year via a user-friendly online tool that calculates their emission reductions. The 2013 Partner data reported in 2014 amounted to the reduction of 92,856 pounds of ozone-forming emissions reduced by Partners. Although the overall total was less than in years past, the total pounds of emissions per employee was reduced an additional 6.8%. Partners were publicly thanked by the CLEAN AIR Force and the community for their clean air efforts in a large color ad in the Austin American-Statesman on November 5.

The CAPP held their third Partner Networking/Recruiting Happy Hour on November 6, 2014 at Abel's on the Lake. This was a great opportunity for current Partners to meet potential new Partners and tell them more about the program and relay ways that their companies reduce ozone emissions.

In 2014 the CAPP published two newsletters, one in the spring and one in the fall, reminding Partners to encourage alternative commutes for their employees, conduct vampire energy audits, notifying them of available TERP and DERA grant funding and encouraging cleaner fuels for fleets.

This year the Clean Air Partners Program was selected as a finalist for TCEQ's Texas Environmental Excellence Award in the Civic/Community category, and won the Austin Chamber's Greater Austin Business Award in the Environmental Responsibility and Sustainability category.

4.3.2 Clean School Bus Program

The Central Texas Clean School Bus Program (CSBP) is managed by the CLEAN AIR Force of Central Texas and was established to help Central Texas school districts reduce children's exposure to harmful pollutants from school buses. The primary goal of the Clean School Bus Program is to raise funds acquired through the solicitation of donations, gifts, and bequests in order to:

- Replace older, polluting school buses with new, cleaner technology buses;
- Retrofit older buses with new, cleaner emissions controls; and
- Reduce school bus vehicle idling and encourage the use of cleaner fuels.

Overall the program has worked with 32 Central Texas school districts to retrofit/replace older polluting school buses. Last year the program continued to educate parents about the health risks of vehicles idling in pick-up lines at schools through materials developed in collaboration with the Environmental Defense Fund and the American Lung Association. Materials are available on the Clean School Bus website (www.cleanschoolbus.net) in both English and Spanish. This year the program worked with Carpenter Hill Elementary in Hays County Independent School District to implement a no idling policy.

4.3.3 CAF Board of Directors

The CLEAN AIR Force Board of Directors consists of 21 members united in the common goal of finding workable solutions for improving air quality in Central Texas. The CAF Board represents environmental, governmental, corporate, academic, and community interests in air quality in the Austin-Round Rock metropolitan statistical area ("Central Texas"). The Board was led by Tim Jones of Samsung Austin Semiconductor, Vice Chair Rick Perkins of Chemical Logic, and Secretary/Treasurer Brett Davis of Zephyr Environmental Corp. and met to discuss air quality issues and policies.

- CAF Board Meetings:
  - June 4, 2014;
  - September 17, 2014; and
  - December 17, 2014.
- CAF Executive Committee Meetings:
  - January 15, 2014;
  - February 5, 2014;
  - March 5, 2014;
  - April 2, 2014;
  - June 4, 2014;
  - July 2, 2014;
  - August 13, 2014;
  - September 17, 2014;
  - November 5, 2014; and
  - December 17, 2014.

4.3.4 CAF Technical Advisory Committee

The CLEAN AIR Force Technical Advisory Committee (TAC) is a committee that provides businesses, governments and citizens the opportunity to stay abreast of the latest technical and policy related air quality developments. The TAC is chaired by CLEAN AIR Force Treasurer Brett Davis of Zephyr Environmental Corp. and monthly meetings are open to the public and available via teleconference. Meeting notices are posted on the CLEAN AIR Force website (www.cleanairforce.org).

TAC topics in 2014 included ways to improve the Clean Air Partners Program and the CLEAN AIR Force's Nonattainment Impacts Study.

CAF TAC Meetings were held on the following dates:

- January 23, 2014;
- March 20, 2014;
- April 24, 2014;
- June 12, 2014;
- July 30, 2014;
- August 28, 2014; and
- September 25, 2014.

4.3.5 Other CAF Activities

- Ozone Action Day Alerts Given to the Public
  - August 13, 2014 – Ozone Action Day Announced for the Following Day
- CAPP Activities
  - May 7, 2014 – CAPP Receives TCEQ's Texas Environmental Excellence Award
  - July 1, 2014 – 2013 CAPP Reporting Due
  - August 27, 2014 – CAPP Receives Greater Austin Chamber Business Award
  - November 5, 2014 – CAPP Thank You Ad in the Austin American-Statesman
  - November 6, 2014 – CAPP Networking and Recruiting Event
- Public Outreach Events and Activities
  - January 17, 2014 – Presentation to St. Ignatious Church and School
  - March 27, 2014 – 20th Anniversary Celebration and Fundraiser Event
  - April 8, 2014 – Ozone Season Kick-Off Event
  - April 22, 2014 – Austin Community College Earth Day Event
  - April 26, 2014 – Austin's Earth Day Event at Mueller Development Center
  - October 9, 2014 –Freescale's Health and Lifestyle Expo
  - October 18, 2014 – Hutto Olde Tyme Days
  - October 20 - 24, 2014 – Mobility Week
  - October 31, 2014 – Commute All-Star Commuter Celebration
- Media Hits
  - March 24, 2014 – Ozone Season Starts Next Week, Austin EcoNetwork online newsletter
  - April 3, 2014 – Ozone Season Is Here, Austin EcoNetwork online newsletter
  - April 7, 2014 – Sign Up for Ozone Action Day Alerts, Austin EcoNetwork online newsletter
  - August 5, 2014 – Ozone Season Update, KUT radio interview
  - August 13, 2014 – Ozone Action Day Declared and Season Update, KUT radio interview
  - August 13, 2014 – Ozone Action Day Declared, KXAN news online
  - August 14, 2014 – Today is an Ozone Action Day, KUT

4.4 Technical Research

CAPCOG completed the following air quality technical research projects in 2014:

- Conducted a review of the regional ozone monitoring network;
- Collected ozone and meteorological data at seven continuous air monitoring stations within the MSA to supplement the two regulatory ozone monitoring stations operated by TCEQ;
- Developed updated non-road emissions estimates for several key construction sectors; and
- Performed a photochemical modeling analysis of the impact of major events held at the Circuit of the Americas.

Reports associated with these projects can be found at http://www.capcog.org/divisions/regional-services/aq-reports. Data collected at CAPCOG's monitoring stations can be retrieved from TCEQ's website. The daily maximum 8-hour ozone averages can be found at: https://www.tceq.texas.gov/cgi-bin/compliance/monops/8hr_monthly.pl.

TCEQ also completed a number of projects that included new data relevant for emissions analysis for the Austin-Round Rock area in 2014. These included:

- A 2014 Summer Fuel Field Study[14]; and
- Non-Link-Based MOVES2014 On-Road Emissions Inventories for 2006, 2012, and 2018[15].

The 2014 Summer Fuel Study's results are notable for the Austin-Round Rock MSA because they again showed that sulfur levels in the local gasoline supply appear to be the highest in the state. Whereas the average sulfur content for the state was at 28.07 ppm, the sulfur levels in the Austin area samples were 41.90 ppm. Similarly, in the 2011 fuel study, the Austin area's gasoline sulfur levels were 42.6 ppm, while they were 26.43 ppm statewide[16]. While the cause for this difference is not known, one possible explanation could be the fact that the region only has one fuel supplier (Flint Hills Resources) and the pipeline used to supply bulk terminals may be used for both aviation fuel (which does not need to meet the 30 ppm refinery gate standard) and on-road gasoline. If both fuels are using the same pipeline, it is possible that sulfur from the aviation fuel might be making its way into the on-road gasoline, causing higher sulfur levels in the on-road gasoline than would otherwise be the case.

[14] https://www.tceq.texas.gov/assets/public/implementation/air/am/contracts/reports/mob/5821199776FY1420-20140815-ergi-summer_2014_fuels.pdf
[15] ftp://amdaftp.tceq.texas.gov/pub/Mobile_EI/Statewide/mvs/
[16] https://www.tceq.texas.gov/assets/public/implementation/air/am/contracts/reports/mob/5821199776FY1103-20110831-ergi-summer_2011_fuels.pdf

Table 45: Comparison of Recent On-Road Emissions Estimates for the Austin-Round Rock MSA

County	Year	Day Type	Pollutant	MOVES2010b Link-Based (tpd)	MOVES2014 Non-Link-Based (tpd	Difference (tpd)	Difference (%)
Bastrop	2012	M-R	NO_X	3.62	3.29	-0.33	-9.12%
Bastrop	2012	M-R	VOC	1.78	1.30	-0.48	-26.97%
Caldwell	2012	M-R	NO_X	2.67	1.47	-1.2	-44.94%
Caldwell	2012	M-R	VOC	1.36	0.59	-0.77	-56.62%
Hays	2012	M-R	NO_X	7.21	7.02	-0.19	-2.64%
Hays	2012	M-R	VOC	3.38	2.65	-0.73	-21.60%
Travis	2012	M-R	NO_X	30.46	29.84	-0.62	-2.04%
Travis	2012	M-R	VOC	15.56	13.23	-2.33	-14.97%
Williamson	2012	M-R	NO_X	11.31	11.88	0.57	5.04%
Williamson	2012	M-R	VOC	5.82	5.36	-0.46	-7.90%
MSA Total	2012	M-R	NO_X	55.27	53.50	-1.77	-3.20%
MSA Total	2012	M-R	VOC	27.90	23.13	-4.77	-17.10%

4.5 Update of Austin Energy Resource, Generation, and Climate Protection Plan Update

In December 2014, Austin Energy completed an update to its *2020 Resource, Generation, and Climate Protection Plan*. Milestones for this process are listed below:[17]

- April 2014:
  - Austin City Council appoints the 2014 Austin Generation Resource Planning Task Force;
  - Austin City Council passes Resolution No. 20140410-024, which seeks to accelerate reduction of greenhouse gas emissions beyond the 2007 Austin Climate Protection Plan standards; and set a goal of reaching net zero community-wide greenhouse gas emissions by 2050 or sooner if feasible.
- July 9, 2014: Task Force approves recommendations for updating the Plan.
- August 2014: Austin City Council approves Resolution No. 20140828-157 and Resolution No. 20140828-158, which placed several Task Force recommendations into policy, subject to affordability metrics.
- October 9, 2014: Austin Energy presents results of the planning effort to Council, recommending expanded renewable generation and replacement of the Decker Creek Power Station's steam units with a highly efficient combined cycle gas turbine unit by 2018.
- December 11, 2014: Austin Energy publishes plan update.

The 2025 Generation Plan involves the replacement of Decker's two old steam-powered boilers with a combined capacity of 726 MW with 500 MW in new, gas-fired combined cycle turbines capacity by the end of 2018 and increase the amount of renewable energy to 55% of customer demand.

[17] http://austinenergy.com/wps/wcm/connect/461827d4-e46e-4ba8-acf5-e8b0716261de/aeResourceGenerationClimateProtectionPlan2025.pdf?MOD=AJPERES

Based on the 2014 emissions from LCRA's new 540 MW combined cycle T.C. Ferguson power plant in Llano County, which would be expected to be very similar to any replacement for Decker, this replacement would reduce emissions from 0.722 tpd (average daily emissions from 3/1/2014 – 10/31/2014 for units 1 and 2) to approximately 0.104 tpd (average daily emissions from TC Ferguson from 3/1/2014 – 10/31/2014), a 0.618 tpd reduction.

Austin Energy has issued a request for proposals to evaluate the costs and benefits of different alternatives for power generation including the proposed 500 MW combined cycle plant Decker replacement option.

5 Looking Forward

This section provides an outlook for 2015 and beyond.

5.1 Air Quality Plan Update

Based on the information provided by CAC members and other participating organizations for this report and based on where EPA decides to set the new ozone NAAQS later this year, CAPCOG will work on developing an update to the region's OAP Action Plan by the end of 2015 to reflect these and any other developments that may have occurred by that time.

5.2 New Near-Nonattainment Grant

In the recently completed 84th Texas Legislative session, the state of Texas reauthorized the near-nonattainment grant that has provided local air quality planning funding for CAPCOG's air quality program. Funding will increase from about $700,000 for the 2014-2015 biennium to over $1.2 million for the 2016-2017 biennium. This increase in funding will provide the regional air quality program with sufficient resources to continue to:

- operate all of its air quality monitoring stations in 2016 and 2017;
- complete new emissions inventory research;
- complete new photochemical modeling analyses; and
- conduct additional work to implement new emission reductions within the region.

These activities will help ongoing air quality planning activities, help ensure that existing emission reduction commitments are achieving the maximum possible emission reductions ahead of the end of the 2016 ozone season, and thereby help put the region in the best possible position to stay in attainment of all NAAQS.

5.3 CLEAN AIR Force Projects for 2015

CLEAN AIR Force initiated the 7th High School Public Service Announcement (PSA) Air Quality Contest aimed at educating and engaging the youth of Central Texas in air quality related issues. Time Warner Cable was the presenting sponsor for the 2014-2015 PSA Contest and the CLEAN AIR Force, in partnership with Samsung Austin Semiconductor, held the contest with students from all high schools in the five-county region. High School students were asked to create a 30-second PSA incorporating air quality information and tips on simple ways citizens can reduce ground-level ozone and air pollution.

The winning first place entry was announced in March of 2015 and received a 32GB Samsung Galaxy Tab, and the second place winner received a 16GB Samsung Galaxy Tab, courtesy of Samsung Austin Semiconductor. The winning PSA aired on Time Warner Cable News Austin in April and May of 2015 and posted on the CAF website and You Tube channel. The winner was also be recognized in a proclamation by the Mayor of the City of Austin. All past winning PSAs can be viewed on the CAF You Tube channel and Facebook page.

CLEAN AIR Force and CAPCOG are also working on updating the emissions factors used in the Clean Air Partners Reporting Tool and evaluating other possible changes to improve the value of the data collected by each organization. Among other things, CAF and CAPCOG are developing data that would enable consistency between the CAPP reporting data and emissions factors from EPA's MOVES2014 model, the Texas NONROAD model, and the latest factors for area sources and electricity generating units.

5.4 Technical Research Projects Planned for 2015

CAPCOG is planning on completing a number of air quality research projects in 2015. These include:

1. Collecting ozone and meteorological measurements at eight ozone monitoring stations in the region;
2. Development of updated non-road agricultural equipment emissions inventories for 2012 and 2018;
3. Refinement of local point source emissions inputs used for photochemical modeling data;
4. Development of updated link-based on-road emissions estimates for 2012 and 2018 using MOVES2014 and CAMPO's new travel demand model data for 2020 and 2040;
5. Updating the region's ozone conceptual model, covering monitoring data from 2006-2014;
6. Analyzing available of air quality survey data;
7. Analyzing of the potential costs to the region of an ozone nonattainment designation;
8. Analyzing the emission reduction benefits from the I-M program;
9. Modeling of the ozone reduction impacts of the I-M program;
10. Modeling of the ozone reduction impacts of Texas Lehigh's NO_X reduction program;
11. Conducting a secondary analysis of other photochemical modeling data applicable to the region; and
12. Conducting a new regional air quality survey.

Conclusion

The Austin-Round Rock MSA experienced one of the best years on record for air quality in 2014. Dating back to the 1970s when the Texas Air Control Board began collecting ozone data in the region, ozone levels in the region have never been as low as they were in 2014. Based on the region's 2012-2014 ozone design value, the region is in compliance with the 2008 ozone NAAQS, and would be in compliance with a new ozone NAAQS set at the higher end of the range proposed by EPA. With continued improvement in air quality, there is a chance that the region could avoid a nonattainment designation in 2017 for a standard set as low as 65 ppb. While the steep reduction in the Austin-Round Rock area's ozone levels between 2013 and 2014 were likely due overwhelmingly to the differences in meteorology, as was seen across the state, continuing reductions in local ozone-forming emissions due to voluntary local efforts and regional, state, and federal programs also contributed to improvements in

local air quality and put the region within striking distance of again getting through a round of ozone designations while remaining in attainment.

The focus of regional air quality planning efforts has been and remains ground-level ozone due to the region's ozone levels relative to the ozone NAAQS. But while the ozone design value is closer to the ozone NAAQS than the region's PM design values are to the PM NAAQS, the area actually experienced significantly more days with "moderate" PM levels than with "moderate" ozone levels. Interestingly, a majority of the monetized health improvements that the EPA estimates would be associated with reducing ozone levels below 75 ppb are actually co-benefits from PM reductions, 2014 monitoring data may suggest that the region could benefit from incorporating PM into its existing planning efforts for ozone under the OAP Action Plan. Moving forward, CAPCOG will open discussions with the CACAC and the CAC on whether it might be appropriate for the region to consider such an approach, including whether participating in EPA's PM Advance Program may be beneficial for regional air quality efforts. For other pollutants, the region's air quality remains well below the level of the NAAQS.

2014 also marks the first full year for the region under the 2013 OAP Action plan, and the momentum from the effort to develop that plan carried forward into 2014 with the development of a new air quality regional outreach and education plan. The region's air quality outreach and education efforts are now much better coordinated, with clearly defined goals and objectives. These efforts will remain a focus moving forward, especially ahead of the 2016 ozone season in order to put the region in the best possible position to avoid a nonattainment designation for the new ozone standard.

This report provides a way to hold the participants in the OAP Action Plan accountable for implementation of commitments and performance of the plan – to each other, to the TCEQ, to the EPA, and to the public at large. The numerous emission reduction measures enumerated in this report are helping reduce ozone levels and maintain the region's status as being in attainment for all NAAQS. The region's efforts were recognized in 2014 by the EPA in when it awarded the CAC a Clean Air Excellence Award for Community Engagement and by the TCEQ when it named the CAF as a finalist for the Texas Environmental Excellence Award in the Civic/Community Category. As this report and these awards highlights, the region remains committed to reducing air pollution and improving the quality of life for all Central Texans.

Appendix A: Complete List of Emission Reduction Measures Reported

This section provides a complete list of the emission reduction measures reported by participating organizations, except for TERMS, which are reported in Appendix B. The legend for the tables is the following:

- C = Commitment
- 14 = Implemented in 2014
- 15 = Plans to implement in 2015
- N = New commitment for 2015-2018. In some cases, an organization may have already been implementing these measures, but had not made a commitment to implement them as part of the OAP Action Plan.
- 0 = No report on Commitment

CAC Members

This section provides details on information provided by participating organizations other than CAC members.

Table 46: Status of Emission Reduction Measures by CAC Members

Measure	Bastrop County	Caldwell County	Hays County	Travis County	Williamson County	City of Austin	City of Bastrop	City of Cedar Park	City of Elgin	City of Georgetown	City of Hutto	City of Lockhart	City of Luling	City of Round Rock	City of Pflugerville	City of San Marcos	City of Sunset Valley
Alternative Commute Infrastructure				C, 14			0										
Commute Solutions Programs, May Include:																	
***Compressed Work Week**	C, 14		14	14	14	C, 14								C, 14		0	C, 14
***Flexible Work Schedule**	C, 14		14	14		C, 14	0							C, 14		0	C, 14
***Carpool or Alternative Transportation Program, May Include Incentive**						C, 14											
***Transit Pass Subsidized by Employer**				C, 14		C, 14											
***Teleworking (Full Time)**						C, 14											
***Teleworking (Part Time)**	C, 14			C, 14		C, 14								C, 14			
Implement Internal Employer Commute Reduction Program	C				14**	C, 14	0				C, 14						

Measure	Bastrop County	Caldwell County	Hays County	Travis County	Williamson County	City of Austin	City of Bastrop	City of Cedar Park	City of Elgin	City of Georgetown	City of Hutto	City of Lockhart	City of Luling	City of Round Rock	City of Pflugerville	City of San Marcos	City of Sunset Valley
Encourage Private Sector Commuter Trip Reduction Programs	C					C, 14	0				C						
Incentivize Alternative Commuting by Employees				C, 14		C, 14											
Access Management							0				15, N	C, 14		C, 14			
Expedited Permitting for Mixed Use, Transit-Oriented or In-Fill Development							0		C		14						
Transit-Oriented Development									C*		14						
Tree Planting	C, 14		C, 14	C, 14	C, 14	C, 14	0	C, 14	C, 14	15	14	C, 14		C, 14			C, 14
Tree Maintenance Programs	C		14	14	14	C, 14		C, 14		C							
Development Policies to Improve Energy and Resource Efficiency in New Buildings			14			C, 14		C, 14			C						
Codes and Ordinances That Encourage or Require a More Pedestrian-Friendly Environment											C, 14						
Resource Conservation			C, 14	C, 14	C, 14	C, 14								C, 14	0	0	
Energy Efficiency Programs			C, 14			C, 14	0	C, 14	C	C, 15			0		0	0	C, 14

Measure	Bastrop County	Caldwell County	Hays County	Travis County	Williamson County	City of Austin	City of Bastrop	City of Cedar Park	City of Elgin	City of Georgetown	City of Hutto	City of Lockhart	City of Luling	City of Round Rock	City of Pflugerville	City of San Marcos	City of Sunset Valley
Renewable Energy Programs						C, 14				N					0		
Electric Vehicle Programs						C, 14											
Water Conservation Programs			14					C, 14		C, 15	14			14, 15, N			
Resource Recovery and Recycling Programs			14	14				14		C, 14	14	14					
Alternative Fuel Vehicles					C, 14			C, 14		C	15, N					0	C, 14
Business Evaluation of Fleet Usage, Including Operations and Right-Sizing			C, 14	14	C, 14	C, 14		C, 14						C, 14	0	0	
Fueling of Vehicles in the Evening		0	C, 14	C, 14	C, 14		0	C, 14	C, 14		15, N	C, 14		C, 14			C, 14
Low Emission Vehicles		0		C, 14	C, 14			C, 14			15, N	C, 14		C, 14			
Texas Low-Emission Diesel (TxLED) Equivalent for Fleets						C, 14		C, 14		C	15, N			C, 14		0	
Vehicle Maintenance by Manufacturer Specifications		0	14	C, 14	C, 14		0	C, 14	C, 14	C	14			C, 14		0	
Prioritize Purchasing of Low-Emission Light Duty Vehicles				14	***	C, 14	0					14					

Measure	Bastrop County	Caldwell County	Hays County	Travis County	Williamson County	City of Austin	City of Bastrop	City of Cedar Park	City of Elgin	City of Georgetown	City of Hutto	City of Lockhart	City of Luling	City of Round Rock	City of Pflugerville	City of San Marcos	City of Sunset Valley
Prioritize Purchasing of Alternative-Fueled Vehicles and Equipment					***	C, 14					15, N						
Prioritize Purchasing of Hybrid Vehicles and Equipment					***	C, 14					15, N						
Increase Fleet Fuel Efficiency				14	***	C, 14		C, 14			15, N						
Increase Substitution of Alternative Fuels for Conventional Fuels					***	C, 14											
Idling Limits for Fleet Vehicles and Equipment			C, 14		***	C, 14	0	C, 14		C, 15	C	C, 14	0	C, 14			C, 14
Retrofit/Repower/Replace Vehicles and Equipment through TERP/DERA Funding					***	C, 14		C, 14							0	0	
Employee Training on Alternative Fuels and Fuel Efficiency					***	C, 14		C, 14									
Vapor Recovery on Pumps		0	C				0										
Ozone Action Day Program, Includes:															0		
***Employee Education Program**	C	0	C, 14	C, 14	C, 14	C, 14	0	C, 14	C, 14		C, 14	C, 14		C, 14		0	
***Public Education**	C, 14	0	C, 14	C, 14	C, 14	C, 14	0	C, 14	C, 14			C, 14		C, 14			
***Ozone Action Day Notification Program**		0	C, 14	C, 14	C, 14	C, 14	0	C, 14	C, 14			C, 14		C, 14		0	

Measure	Bastrop County	Caldwell County	Hays County	Travis County	Williamson County	City of Austin	City of Bastrop	City of Cedar Park	City of Elgin	City of Georgetown	City of Hutto	City of Lockhart	City of Luling	City of Round Rock	City of Pflugerville	City of San Marcos	City of Sunset Valley
***Ozone Action Day Response Program**		0	C, 14	C, 14	C, 14	C, 14	0	C, 14						C, 14			
Programs to Improve Awareness of and Compliance With Air Quality Rules				14		C, 14		C, 14		C							
Open Burning Restrictions	C						0	C, 14	C, 14			C, 14	0	14, 15, N			C, 14
Idling Enforcement-Enforce State Rule			C, 14	C, 14	C, 14	C, 14	0			C				14, 15, N			C, 14
Idling Enforcement: Local Ordinance	C, 14			14		C, 14			C, 14	C	14	C, 14	0	C, 14		0	
Special Event Emission Reduction Policies	C					C, 14											
Contractor Provisions for High Ozone Days																	C, 14
Direct Deposit	C, 14	0	C, 14	C, 14	C, 14		0	C, 14	14	C	C, 14	C, 14	0	C, 14		0	C, 14
Drive-Through Facilities on Ozone Action Days												C, 14					C, 14
e-Government and/or Available Locations	C		C, 14	C, 14	C, 14		0	C, 14	C, 14	C			0	C, 14		0	C, 14
Landscaping Voluntary Start at Noon on High Ozone Days Education Program				C, 14								C, 14					C, 14

Measure	Bastrop County	Caldwell County	Hays County	Travis County	Williamson County	City of Austin	City of Bastrop	City of Cedar Park	City of Elgin	City of Georgetown	City of Hutto	City of Lockhart	City of Luling	City of Round Rock	City of Pflugerville	City of San Marcos	City of Sunset Valley
Low VOC Asphalt	14, 15			C, 14	C, 14		0					C, 14		C, 14			
Low VOC Roadway Striping Material	14, 15		C	C, 14	C, 14		0					C, 14		C, 14			C, 14
Shaded Parking				C, 14							14	C, 14		C, 14			
Clean Landscaping Contracting	C, 14																
Clean Construction Contracting	C, 14																
Local Sourcing of Materials	C, 14																

*On the books, no investors yet

**Experimentation in 2014, not full-fledged yet

***Departmental goal

Other Participating Organizations

This section provides details on information provided by participating organizations other than CAC members.

Table 47: Status of Emission Reduction Measures by Other Participating Organizations

Measure	CAPCOG	CAMPO	CapMetro	CTRMA	CAF	LCRA	TCEQ	TxDOT-Austin	TxDOT-HQ	Texas Lehigh	TNLA
Alternative Commute Infrastructure			C						C, 14		
Commute Solutions Programs, May Include:									C, 14		
***Compressed Work Week**	C, 14	C	C			C, 14	C, 14	C, 14			
***Flexible Work Schedule**	C, 14	C, 14	C	C, 14		C, 14	C, 14	C, 14			
***Carpool or Alternative Transportation Program, May Include Incentive**		C, 14	C	C, 14		C, 14	C, 14	14, 15, N	14		
***Transit Pass Subsidized by Employer**		C, 14	C								
***Teleworking (Full Time)**			C			C, 14					
***Teleworking (Part Time)**		C, 14	C			C, 14	C, 14	14, 15, N	14		
Implement Internal Employer Commute Reduction Program			C, 14					14, 15, N	C, 14		
Encourage Private Sector Commuter Trip Reduction Programs			C, 14		C, 14				C, 14		
Incentivize Alternative Commuting by Employees			14					14, 15, N	14		
Access Management			C					C, 14	C, 14		
Expedited Permitting for Mixed Use, Transit-Oriented or In-Fill Development									C, 14		
Transit-Oriented Development	C, 14	C	C			C, 14	C, 14	C, 14			

Measure	CAPCOG	CAMPO	CapMetro	CTRMA	CAF	LCRA	TCEQ	TxDOT-Austin	TxDOT-HQ	Texas Lehigh	TNLA
Tree Planting	C, 14	C, 14	C	C, 14		C, 14	C, 14	C, 14			
Tree Maintenance Programs		C, 14	C	C, 14		C, 14	C, 14	14, 15, N	14		
Development Policies to Improve Energy and Resource Efficiency in New Buildings		C, 14	C								
Codes and Ordinances That Encourage or Require a More Pedestrian-Friendly Environment			C			C, 14					
Resource Conservation			C, 14	C, 14							
Energy Efficiency Programs											
Renewable Energy Programs			C, 14								
Electric Vehicle Programs			C, 14	C, 14		C, 14					
Water Conservation Programs			C, 14	14							
Resource Recovery and Recycling Programs			C, 14								
Alternative Fuel Vehicles		C, 14	IN	C, 14			C, 14				
Business Evaluation of Fleet Usage, Including Operations and Right-Sizing			C, 14		C, 14			C, 14			
Fueling of Vehicles in the Evening			15, N					C, 14			
Low Emission Vehicles			15, N								
Texas Low-Emission Diesel (TxLED) Equivalent for Fleets			C, 14								
Vehicle Maintenance by Manufacturer Specifications			C, 14	14			14, 15	14, 15, N			
Prioritize Purchasing of Low-Emission Light Duty Vehicles		C, 14	IN	C, 14			C, 14				
Prioritize Purchasing of Alternative-Fueled Vehicles and Equipment			C, 14		C, 14			C, 14			
Prioritize Purchasing of Hybrid Vehicles and Equipment			15, N					C, 14			

Measure	CAPCOG	CAMPO	CapMetro	CTRMA	CAF	LCRA	TCEQ	TxDOT-Austin	TxDOT-HQ	Texas Lehigh	TNLA
Increase Fleet Fuel Efficiency			15, N								
Increase Substitution of Alternative Fuels for Conventional Fuels			C, 14								
Idling Limits for Fleet Vehicles and Equipment			C, 14	14			14, 15	14, 15, N			
Retrofit/Repower/Replace Vehicles and Equipment through TERP/DERA Funding		C, 14	IN	C, 14			C, 14				
Employee Training on Alternative Fuels and Fuel Efficiency			C, 14		C, 14			C, 14			
Vapor Recovery on Pumps			15, N					C, 14			
Ozone Action Day Program, Includes:											
***Employee Education Program**	C, 14	C, 14	C, 14	C, 14			C, 14	C, 14			C, 14
***Public Education**	C, 14	C, 14	C, 14	C, 14	C, 14		C, 14	14			C, 14
***Ozone Action Day Notification Program**	C, 14	C, 14	C	C, 14	C, 14		C, 14	C, 14			
***Ozone Action Day Response Program**	C, 14		C		C, 14		14	C		C, 14	
Programs to Improve Awareness of and Compliance With Air Quality Rules			C, 14		C, 14						
Open Burning Restrictions											
Idling Enforcement-Enforce State Rule											
Idling Enforcement: Local Ordinance											
Special Event Emission Reduction Policies											
Contractor Provisions for High Ozone Days											
Direct Deposit	C, 14	C, 14	C, 14	C, 14			C, 14	14, 15, N			
Drive-Through Facilities on Ozone Action Days											
e-Government and/or Available Locations		C, 14	C, 14				C, 14				

Measure	CAPCOG	CAMPO	CapMetro	CTRMA	CAF	LCRA	TCEQ	TxDOT-Austin	TxDOT-HQ	Texas Lehigh	TNLA
Landscaping Voluntary Start at Noon on High Ozone Days Education Program											
Low VOC Asphalt				C, 14				14, 15, N			
Low VOC Roadway Striping Material				C, 14							
Shaded Parking			C, 14				C, 14	14, 15, N			
Clean Landscaping Contracting				14				C			
Clean Construction Contracting				14				C, 14			
Local Sourcing of Materials								14, 15, N			

Appendix B: TERMS

This appendix provides updates on TERMS based on information submitted by organizations participating in the OAP Action Plan. The first section provides details on TERMS described in the OAP Action Plan, and the second section provides details on additional TERMS reported by CAC members and participating organizations beyond what was detailed in the OAP Action Plan.

Existing TERMS Commitments

Table 48: Status of Existing TERMS Commitments

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
Travis County	Gilbert Road	5’ bike lane and 6’ sidewalk constructed with new 2-lane collector road between FM 969 and Westall Street	2014	Bicycle / Pedestrian	Construction will begin in Dec. 2016
Travis County	Hunters Bend Road Sidewalk	New 6’ sidewalk between Austin’s Colony Boulevard and Red Tails Dr.	2014	Bicycle / Pedestrian	Complete
Travis County	Tuscany Way South	5’ bike lanes and 6’ sidewalks constructed with new 4-lane divided arterial between US 290 E and Springdale Road	2015	Bicycle / Pedestrian	Complete

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
Travis County	Wells Branch Parkway	5’ bike lanes and 6’ sidewalks constructed with new 4-lane divided arterial between Immanuel Road and Cameron Road	2016	Bicycle / Pedestrian	5% complete
Travis County	Lost Creek Blvd. Sidewalk	New 6’ sidewalks from Quaker Ridge Drive to Barton Creek	2014	Bicycle / Pedestrian	No Status Update
Travis County	US 290 at Circle Drive	Align intersection of Spring Valley and Circle Drive at US 290 W, add right turn lanes on Spring Valley Road and Circle Drive	2014	Operational Improvements	Complete
Travis County	Flint Rock Road	Add wide outer shoulder to accommodate bicycles with widening of existing travel lanes	2016	Bicycle / Pedestrian	Will begin in 2017

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
Travis County	Bee Creek Road	5’ bike lanes and 6’ sidewalks constructed with widening to 4-lane divided arterial from SH 71 to Highland Blvd.	2014	Bicycle / Pedestrian	Complete
Travis County	El Rey Blvd. sidewalk	New 6’ sidewalk from US 290 to Espanola Trail	2014	Bicycle / Pedestrian	80% Complete
Travis County	Slaughter Lane	5’ bike lanes and 6’ sidewalks on new 4-lane divided arterial from Old Lockhart Rd. to Vertex Blvd	2014	Bicycle / Pedestrian	Complete
Travis County	Slaughter Lane	5’ bike lane and 6’ sidewalk on new 2-lane arterial from Vertex Blvd. to Thaxton Road	2015	Bicycle / Pedestrian	Design is 95% complete. Completion expected by 5/2017
Travis County	Cameron Road	5’ bike lanes and 6’ sidewalks with widening to 4-lane divided arterial from Howard Lane to SH 130	2017	Bicycle / Pedestrian	30% design complete.

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
Travis County	Braker Lane	5’ bike lanes and 6’ sidewalks on new 4-lane divided arterial from FM 973 to Taylor Lane	2016	Bicycle / Pedestrian	40% complete
Travis County	Frate Barker Road	5’ bike lanes and 6’ sidewalks with widening to 4-lane arterial from Brodie Lane to Manchaca Road	2016	Bicycle / Pedestrian	5% Complete
Travis County	Howard Lane	5’ bike lanes and 6’ sidewalks on new 4-lane divided arterial from Cameron Road to SH 130	2016	Bicycle / Pedestrian	80% Complete
Travis County	Parmer Lane	5’ bike lanes and 6’ sidewalks on new 4-lane divided arterial from Austin-Manor Railroad to SH 130	2016	Bicycle / Pedestrian	60% Complete
City of Round Rock	Traffic signals	Red Bud @ Mickey Mantle	2014-2018	Operational Improvements	Construction
City of Round Rock	Traffic signals	Gattis @ Rusk Road	2014-2018	Operational Improvements	Planning

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Round Rock	Traffic signals	Hidden Valley @ Sunrise	2014-2018	Operational Improvements	Design
City of Round Rock	Traffic signals	University @ Tera Vista Club	2014-2018	Operational Improvements	Complete
City of Round Rock	Traffic signals	University @ Eagles Nest	2014-2018	Operational Improvements	Complete
City of Round Rock	Traffic signals	University @ Sandy Brook	2014-2018	Operational Improvements	Complete
City of Round Rock	Traffic signals	Mays @ Mays Crossing	2014-2018	Operational Improvements	Design
City of Round Rock	Traffic signals	Greenlawn @ Pflugerville Parkway	2014-2018	Operational Improvements	Complete
City of Round Rock	Traffic signals	A.W. Grimes @ Creek Ridge	2014-2018	Operational Improvements	Complete
City of Round Rock	RM 620 Safety Improvements	Grade separation of the UPRR RR with related safety and access improvements. Includes sidewalks and bicycle facilities. From Deepwood Drive to IH 35	2018	Operational Improvements	Design
City of Round Rock	Right turn lanes	Red Bud @ Forest Creek, NB to EB	2014-2016	Operational Improvements	Complete
City of Round Rock	Right turn lanes	Red Bud @ Forest Creek, SB to WB	2014-2016	Operational Improvements	Complete

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Round Rock	Right turn lanes	Red Bud @ Gattis, SB to WB	2014-2016	Operational Improvements	Complete
City of Round Rock	Right turn lanes	University @ Sunrise, EB to SB	2014-2016	Operational Improvements	Complete
City of Round Rock	Right turn lanes	Old Settlers Boulevard @ A.W. Grimes, EB to SB	2014-2016	Operational Improvements	Complete
City of Round Rock	Right turn lanes	S. Mays Street @ Gattis School Road	2014-2016	Operational Improvements	Complete
City of Round Rock	Left turn lanes	Gattis School Road @ Rusk Road	2014	Operational Improvements	Complete
City of Round Rock	Left turn lanes	Greenlawn @ Gattis School Road	2014	Operational Improvements	Complete
City of Round Rock	Signal Timing	Louis Henna corridor	2014-2015	Operational Improvements	Complete
City of Round Rock	Signal Timing	Gattis School Road corridor	2014-2015	Operational Improvements	Complete
City of Round Rock	Signal Timing	University corridor	2014-2015	Operational Improvements	Complete
City of Round Rock	Signal Timing	Old Settlers Boulevard corridor	2014-2015	Operational Improvements	Complete
City of Round Rock	Old Settlers Boulevard turn lanes	Provide right and left turn lanes, between Chisholm Trail Road and Mays Street on FM 3406	2014	Operational Improvements	Complete

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Round Rock	Kenney Fort Boulevard	Joe DiMaggio to Forest Creek Boulevard, six lane divided arterial on a new location. Provides a grade separated crossing of the UPRR and US 79. Includes bicycle and pedestrian facilities.	2014	Bicycle / Pedestrian	Complete
City of Round Rock	IH 35 Ramp reversals	FM 3406 to US 79, relocate ramps to urban "X" type configuration	2016	Operational Improvements	Construction
City of Round Rock	Reverse commute bus route	Implement a reverse commute bus route between Tech Ridge and Sears Teleserve	2014	Transit	Complete
City of Round Rock	Advanced Traffic Management System	Implement ITS infrastructure in phases across the City to better manage incidents and improve traffic flow	2015-2016	Operational Improvements	Complete
City of Round Rock	Sidewalk Gap Program	Old Settlers Boulevard	2014	Bicycle / Pedestrian	Complete
City of Round Rock	Sidewalk Gap Program	Sunrise Road	2014	Bicycle / Pedestrian	Complete
City of Round Rock	Sidewalk Gap Program	US 79	2014	Bicycle / Pedestrian	Complete

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Round Rock	Sidewalk Gap Program	Donnell Drive	2014	Bicycle / Pedestrian	Complete
City of Round Rock	Sidewalk Gap Program	Joe DiMaggio	2014	Bicycle / Pedestrian	Complete
City of Round Rock	Chisholm Trail Road	Widen existing 2 lane rural road to a 4 lane divided arterial, with curb and gutter and sidewalks. Between FM 3406 and Sam Bass Road	2014	Bicycle / Pedestrian	Complete
City of Round Rock	Downtown Improvements	Improve streetscapes by rebuilding the roadways to include 10-20 foot wide sidewalks along all downtown streets.	2014-2017	Bicycle / Pedestrian	Under Construction
Bastrop County	Signals along US 290	Elgin	2014	Operational Improvements	Complete
Bastrop County	US 290E	Upgrade to 4-lane MAD	Various - 2018	Operational Improvements	Under Construction
Bastrop County	FM 1704	Upgrade w/ shoulders (to facilitate crash management)	2015	Operational Improvements	Complete
Bastrop County	SH 71 @ Loop 150	Signal Improvements	2018	Operational Improvements	Under Construction

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
Bastrop County	FM 1100	Add sidewalks	2014	Bicycle / Pedestrian	Complete
City of Austin	Northern Walnut Creek	Preliminary Engineering and partial construction for a 10' wide concrete pathway with trail heads and amenities at strategic points along trail	2014	Bicycle / Pedestrian	Ongoing
City of Austin	North Lamar Sidewalks	Build components of ADA compliant sidewalks on North Lamar Blvd from US 183 to Parmer Ln	2014-2018	Bicycle / Pedestrian	Ongoing
City of Austin	Sabine Street Promenade	Construction of sidewalks, bike lanes, and pedestrian amenities to implement a Sabine Street Promenade between 4th and 7th Streets	2017	Bicycle / Pedestrian	Not Started
City of Austin	Bike Share/Safety Program	First phase of bike share system paired with bicycle safety enforcement program	2013-2014	Bicycle / Pedestrian	Ongoing

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Austin	MoPac Bicycle and Pedestrian Bridge Phase 1	Construct Phase 1 of Mopac Bicycle and Pedestrian Bridge of Loop 360	2015	Bicycle / Pedestrian	Pending
City of Austin	North Acres Park Bike Trail	Construct a shared use path	2014	Bicycle / Pedestrian	Ongoing
City of Austin	New Bicycle Lanes	Install approximately 20 miles of new bicycle lanes per year. Locations to be determined through coordination with routine street maintenance	2014-2018	Bicycle / Pedestrian	Ongoing
City of Austin	New Sidewalk	Install new sidewalk citywide consistent with the Sidewalk Master Plan funded with 2012 ADA Sidewalk Bonds	2014-2018	Bicycle / Pedestrian	Ongoing

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Austin	Travel Time Monitoring Program	Phase I - Deploying travel time data collection equipment along key arterial streets and continuously collect travel time data. Travel times will be used to: (1) influence travel behavior by disseminating traveler information on dynamic message signs and the web; (2) improve traffic flow.	2013-2014	Operational Improvements	Ongoing
City of Austin	Bicycle Signal and Detection Grant	Purchase and install bicycle signals and bicycle detection equipment. Project enhances bicycle environment and safety at signalized intersections which is intended to increase bicycle usage.	2013-2014	Bicycle / Pedestrian	Ongoing

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Austin	Advanced Intersection Detection for Adaptive Signal Control	Adaptive signal control enables signals to automatically adjust timings to better respond to unexpected changes in traffic conditions (e.g., a freeway incident that diverts traffic to the frontage road signals). Additional detection is needed to implement adaptive signal control. This project deploys detection at signals along I-35 frontage roads and other roadways.	2014-2016	Bicycle / Pedestrian	Ongoing

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Austin	Advanced Bicycle Detection via Mobile App	This Pilot Project improves bicycle detection at signalized intersections. A cyclist starts a smart phone application (app) prior to beginning their trip. The app communicates with the City's signal system which detects the cyclist at one of the project signals and then turns the signal green to facilitate their crossing. Improved detection enhances the cycling environment and is intended to increase bicycle usage.	2014-2015	Bicycle / Pedestrian	Ongoing

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Austin	Pedestrian Enhancement Program (Arterial Operations)	Deploy traffic signals, pedestrian hybrid beacons, pedestrian countdown timers, enhanced pedestrian push buttons and accessible pedestrian signals. These enhancements improve pedestrian mobility which is intended to increase walking as a transportation choice.	2013-2016	Bicycle / Pedestrian	Ongoing
Sponsor	**Project Name**	**Project Description**	**Year of Implementation**	**Project Categorization**	**Status**
TxDOT	US 290: 372 ft west of Joe Tanner Ln to 585 ft east of Joe Tanner Ln	Innovative intersection improvement	2014	Operational Improvements	Complete
TxDOT	US 290: 800 ft east of Joe Tanner Ln to 372 ft west of Joe Tanner Ln	Innovative intersection improvement	2014	Operational Improvements	Complete

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
TxDOT	SH 21 at intersection of RM 150	Construct left turn lane on SH 21 NB	2014	Operational Improvements	Complete
TxDOT	Hays County: various locations	Statewide curb ramp program	2014	Bicycle/Pedestrian	Complete
TxDOT	Travis County: various locations	Statewide curb ramp program	2014	Bicycle/Pedestrian	Complete
TxDOT	Downtown Austin Transp Mgt Assoc	Various Locations in MPO area	2013-2014	Other	Ongoing
TxDOT	Manchaca Rd from Frate Barker Ln to Brodie Ln	Upgrade existing 2 lane to 4 Ln arterial: Includes sidewalks	2015	Bicycle/Pedestrian	Not letting until 2021
TxDOT	Various Locations	Bike share/Bike Safety Program	2015	Bicycle/Pedestrian	Complete
TxDOT	Brushy Creek Regional Trail: from 2500' E of Arterial A to AW Grimes	Construction Trail	2015	Bicycle/Pedestrian	Complete
TxDOT	RM 1431: on Bagdad Rd from Kettering DR	Widen, add LTLS, sidewalks and lighting	2015	Bicycle/Pedestrian	Complete
TxDOT	Safe Routes to School: Various locations in Smithville	Ped path, sidewalks, and school zone signs	2014	Bicycle/Pedestrian	Complete

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
TxDOT	Safe Routes to School: Various locations in Smithville	Ped path, sidewalks, and school zone signs	2015	Bicycle/Pedestrian	Complete
TxDOT	US 183: Pecan St to FM 20	reconstruct to 5 lane urban section, including sidewalks	2015	Bicycle/Pedestrian	5% Complete
TxDOT	US 183: FM 20 to .274 miles south of MLK/Industrial Blvd	reconstruct to 5 lane urban section, including sidewalks	2015	Bicycle/Pedestrian	5% Complete
TxDOT	SH 80: Long St to Clarewood Dr	Intersection Improvements	2014	Operational Improvements	Complete
TxDOT	Loop 82: IH 35 NB frontage rd to .40 miles west of NBFR	Intersection Improvements	2014	Operational Improvements	Complete

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
TxDOT	CS: IH 35 NB frontage rd to .12 miles east of IH 35 NBFR	Intersection Improvements	2014	Operational Improvements	Complete
TxDOT	FM 685: US 79 to SH 130	Reconstruct to 4 lane divided roadway with bridge structure, including sidewalks	2015	Bicycle/Pedestrian	30% Complete
TxDOT	RM 1431: FM 734 to CR 175	Widen to 6 lane urban roadway/add sidewalks	2015	Bicycle/Pedestrian	30% Complete
TxDOT	Loop 1: north of Loop 360 to north of US 290	add bicycle bridge	2015	Operational Improvements	50% Complete
CTRMA	Loop 1 Managed Lanes (phase 1)	Construction of 1 northbound and 1 southbound managed lane from .1 mile north of FM 734 to Cesar Chavez Interchange. Also, construct Intelligent Transportation System (ITS) consisting of DMS's , closed circuit cameras (CCTV), and radar vehicle sensing devices.	2015	Operational Improvements	Time frame extended from 2015 to 2015-2016

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
CTRMA	HERO	Extend IH 35 corridor Highway Emergency Response Operator program for three additional years	2014-2016	Operational Improvements	Ongoing
CTRMA	Manor Expressway	Construct 5 miles of a 10-foot shared use path. Also, construct Intelligent Transportation System (ITS) consisting of 2 dynamic message signs (DMS), 8 closed circuit cameras (CCTV), and 32 radar vehicle sensing devices.	2014	Bicycle / Pedestrian	Complete
CMTA	MetroRapid Lanes	MetroRapid dedicated lane on Guadalupe and Lavaca Streets in downtown Austin	2014	Transit	Implemented, continue to explore additional
CMTA	MetroBike Shelters	Design and install six MetroBike shelters for protected storage at Metro facilities	2014	Bicycle/Pedestrian	Installed 7 , exploring additional opportunities

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
CMTA	Capital Metro Rails with Trails	Construct enhanced Rails with Trails on Capital Metro's right of way where feasible. The initial trail will connect the Crestview and Highland stations and provide access to the nearby neighborhoods	2014-2018	Bicycle/Pedestrian	Completed Crestview trail. Continuing to develop additional opportunities and coordinate access with local govts in region
CMTA	Intelligent Transportation System (ITS)	ITS will be a feature of MetroRapid	2013-2015	Transit	Implemented, continue to improve
CMTA	Kramer Station	Develop Kramer Station as a TOD	2014-2018	Transit	On-going
CMTA	Transit Facility	Construct an Intermodal Transit Facility in downtown Austin	2016	Transit	On-going

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
CMTA	Bus Acquisition	Purchase lower emission vehicles to replace older, higher-emission vehicles	2014-2108	Transit	Initial procurement, on-going
CMTA	Plaza Saltillo TOD	Enhance TOD features with construction of double tracked rail at the southern edge of the CMTA Plaza Saltillo property	2014-2017	Transit	On-going
CMTA	Downtown Austin Transportation Management Association	Support the Downtown Austin Transportation Management Association (DATMA) in its development and implementation of an Individualized Marketing campaign	2014-2018	Other	On-going
CMTA	Environmental and Sustainability Management System (ESMS)	Implement an ISO 14001 certified ESMS at CMTA facilities to improve environmental and sustainability performance through measures such as idling and emission	2015	Transit	Partially implemented, on-going

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
CMTA	Project Connect	Integrated planning process to increase multi-modal, transportation options throughout the Central Texas region	2014-2018	Other	On-going
CMTA	North Corridor	Integrated planning process to increase multi-modal transportation options in the in the north portion of the Capital Metro region	2014-2018	Other	On-going
CMTA	Commute Solutions	Enhanced planning and programming to encourage the increased use of transit and alternative transportation methods among Capital Metro staff, contractors and the community.	2014-2018	Other	On-going

New TERMS

The following table lists new TERMS reported by participating organizations.

Table 49: New TERMS Reported

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
Bastrop County	New interchange	Build overpass at SH 95 and SH 71	let 2015	Operational improvement	New
Travis County / COA	Slaughter Lane-Goodnight	New 2 lane road w/sidewalk & bike lane from Bluff Springs Rd to 4500' East	Complete	New Road	New
City of Round Rock	Traffic signal	Red Bud Ln @ Forest Ridge Dr	2015 – 2017	Operational Improvement	New
City of Round Rock	Traffic signal	Red Bud Ln @ Old Settler's Blvd	2015	Operational Improvement	New
City of Round Rock / TxDOT	FM 3406 West	Addition of center turn lane	2015	Operational Improvement	New
City of Round Rock	Right turn lane addition	Red Bud Ln @ Gattis School Rd - NB to EB	2015 – 2017	Operational Improvement	New

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Round Rock	Right turn lane addition	Mays St @ Gattis School Rd - WB to NB	2015 – 2017	Operational Improvement	New
City of Round Rock	Sidewalk Gap Program	Extend sidewalks to connect to existing sidewalks on Somerset Dr	2015 – 2017	Bicycle / Pedestrian Project	New
City of Round Rock	Sidewalk Gap Program	Extend sidewalks to connect to existing sidewalks on Mays St	2015 – 2017	Bicycle / Pedestrian Project	New
City of Round Rock	Sidewalk Gap Program	Extend sidewalks to connect to existing sidewalks on Greenlawn Blvd	2015 – 2017	Bicycle / Pedestrian Project	New
City of Round Rock	Sidewalk Gap Program	Extend sidewalks to connect to existing sidewalks on Greenhill Subdivision	2015 – 2017	Bicycle / Pedestrian Project	New
City of Round Rock	Creek Bend Blvd Extension	The extension of Creek Bend Blvd will include pedestrian amenities, including a 10' path across the bridge	2015 – 2017	Bicycle / Pedestrian Project	New
City of Round Rock	University Blvd Widening	The widening of University Blvd will include pedestrian amenities	2015 – 2017	Bicycle / Pedestrian Project	New

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Round Rock	Kenney Fort Blvd Segment 4	The construction of this segment will include pedestrian amenities, which will connect pedestrians to Old Settler's Park	2015 – 2017	Bicycle / Pedestrian Project	New
TxDOT	Downtown Austin Transp Mgt Assoc	Various Locations in MPO area	2016	Other	Ongoing
TxDOT	US 183: Pecan St to FM 20	reconstruct to 5 lane urban section, including sidewalks	2015	Bicycle / Pedestrian	5% Complete
TxDOT	US 183: FM 20 to .274 miles south of MLK/Industrial Blvd	reconstruct to 5 lane urban section, including sidewalks	2015	Bicycle / Pedestrian	5% Complete
TxDOT	FM 685: US 79 to SH 130	Reconstruct to 4 lane divided roadway with bridge structure, including sidewalks	2015	Bicycle / Pedestrian	30% Complete
TxDOT	RM 1431: FM 734 to CR 175	Widen to 6 lane urban roadway/add sidewalks	2015	Bicycle / Pedestrian	30% Complete
TxDOT	Loop 1: north of Loop 360 to north of US 290	Add bicycle bridge	2015	Operational Improvements	50% Complete
TxDOT	Bastrop, Caldwell, and Lee Counties: various locations	Statewide curb ramp program	2016	Bicycle / Pedestrian	New

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
TxDOT	FM 969 from Tannehill to FM 3177	Overlay and re-striping to include Bike Lanes	2016	Bicycle / Pedestrian	New
TxDOT	FM 969 from Airport to Tannehill	Overlay and re-striping to include Bike Lanes	2016	Bicycle / Pedestrian	New
TxDOT	IH 35 from Stassney to William Cannon	Mainlane, auxiliary lane, ramp, and bike / ped improvements	2015	Operational Improvements	New
TxDOT	IH 35 from Woodward to Woodland	Mainlane, auxiliary lane, ramp, and bike / ped improvements	2015	Operational Improvements	New
TxDOT	IH 35 from RM 1431 to SH 45N	Mainlane, auxiliary lane, ramp, and bike / ped improvements	2015	Operational Improvements	New

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
CTRMA	Bergstrom Express	Three new toll lanes and three improved non-tolled general purpose lanes in each direction, New bicycle lanes, sidewalks, and shared use paths for pedestrians and cyclists and Landscaping and aesthetics improvements along the corridor. Also, construct Intelligent Transportation System (ITS) consisting of DMS's and closed circuit cameras (CCTV).	2020	Operational Improvements	New

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
CTRMA	SH 45SW	SH 45SW is an innovative four-lane toll road to be constructed between MoPac and FM 1626 that will feature extensive water quality protection measures, bicycle and pedestrian accommodations and Green Mobility Challenge and Context Sensitive Solutions initiatives. Also, construct Intelligent Transportation System (ITS) consisting of DMS's and closed circuit cameras (CCTV).	2018	Operational Improvements	New
CTRMA	SH 71 Express Project	The project will include two new toll lane overpasses at FM 973 and SH 130. Also, construct Intelligent Transportation System (ITS) consisting of DMS's and closed circuit cameras (CCTV).	2016	Operational Improvements	New

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
CMTA	Service Plan 2025	Re-envisioning CMTA's service delivery to enhance efficiency, improve access, and increase ridership	Begin planning, public involvement, and outreach 2016; begin implementation 2017	Transit	New
CMTA	Sustainable Fleet Initiative	Research options for alternative clean fuels such as electric and pilot new technologies as funding allows	2016 – 2019	Transit	New
CMTA / Car2go	Car sharing partnerships	Explore ways to deliver multi-modal transportation options by partnering with car sharing providers	2016	Transit	New
CMTA / Austin B-Cycle	Bike sharing partnerships	Explore ways to deliver multi-modal transportation options by partnering with bike sharing providers	2016	Bicycle / Pedestrian	New
City of Elgin	Downtown sidewalks	New sidewalk in downtown district	2016	Bicycle / Pedestrian	New

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Elgin	Shenandoah trail	New trail in existing park connecting park and neighborhoods to ACC campus	2015	Bicycle / Pedestrian	New
City of Cedar Park	US 183 at intersection of Walton Way	add dual left turn lanes, NB to WB	completed	Operational Improvements	New
City of Cedar Park	FM 734 at Ranch Trails and Colonial Parkway	extend left turn lanes for safety	completed	Operational Improvements	New
City of Cedar Park	RM 1431 and FM 734 intersection	upgrade to a continuous flow intersection with pedestrian crossings and sidewalks	2016	Operational Improvements, Bicycle/Pedestrian	New
City of Cedar Park	Cypress Creek and Lakeline intersection	add dual left turn lanes, WB to SB and EB to NB; extend right turn lanes	2016	Operational Improvements	New
City of Cedar Park	Buttercup Creek west of US 183	remedy sidewalk gap	2016	Bicycle/Pedestrian	New
City of Cedar Park	El Salido north of Cypress Creek	remedy sidewalk gap	2016	Bicycle/Pedestrian	New
City of Cedar Park	Enchanted Rock and Alamo Plaza	add pedestrian ramps	2016	Bicycle/Pedestrian	New
City of Cedar Park	S Lakeline and Shenandoah	signal timing	2015	Operational Improvements	New

Sponsor	Project Name	Project Description	Year of Implementation	Project Categorization	Status
City of Cedar Park	S Lakeline and Old Mill	signal timing	completed	Operational Improvements	New
City of Cedar Park	S Lakeline and Little Elm Trl	signal timing	completed	Operational Improvements	New
City of Cedar Park	US 183 and Cypress Creek	signal timing	completed	Operational Improvements	New
City of Cedar Park	RM 1431 from Toro Grande to Anderson Mill	signal timing	2015	Operational Improvements	New
City of Cedar Park	FM 734 from Brushy Creek to FM 1431	signal timing	2015	Operational Improvements	New
City of Cedar Park	Bell Blvd from Avery Ranch to New Hope	signal timing	2015	Operational Improvements	New

Appendix C: State Rules and Programs Applicable to the Region

There are a number of state-adopted regulations and programs to reduce NO_x and VOC emissions that apply to the Austin-Round Rock MSA. This section provides details on some of the key state programs applicable to the region. Table 50 shows which measures apply to each county in the region.

Table 50: State Emission Reduction Measures Applicable to the Austin-Round Rock MSA

Measure	Citation	Bastrop	Caldwell	Hays	Travis	Williamson	Statewide
Vehicle Emissions I/M Program	Ch. 114, Subchapter C, Div. 3	☐	☐	☐	☒	☒	☐
TERP-Emission Reduction Incentive Grant	Ch. 114, Subchapter K, Div. 3	☒	☒	☒	☒	☒	☐
TERP-Texas Clean Fleet Program	Ch. 114, Subchapter K, Div. 5	☒	☒	☒	☒	☒	☐
TERP-N.G. Grant Program	Ch. 114, Subchapter K, Div. 7	☒	☒	☒	☒	☒	☐
TERP-Texas Clean Transportation Triangle	n/a	☒	☒	☒	☒	☒	☐
LIRAP	Ch. 114, Subchapter C, Div. 3, Sec. 86	☐	☐	☐	☒	☒	☐
Low-Reid Vapor Pressure (RVP) Gasoline	Ch. 114, Subchapter H, Div. 1	☒	☒	☒	☒	☒	☐
TxLED	Ch. 114, Subchapter H, Div. 2	☒	☒	☒	☒	☒	☐
Large Spark-Ignition Non-Road Engines	Ch. 114, Subchapter I, Div. 3	☒	☒	☒	☒	☒	☒
Locally Enforced Idling Restrictions	Ch. 114, Subchapter J, Div. 2	☒	☒	☒	☒	☒	☐
East Texas EGU	Ch. 117, Subchapter E, Div. 1	☒	☐	☐	☒	☐	☐
Cement Kilns	Ch. 117, Subchapter E, Div. 2	☐	☐	☒	☐	☐	☐
Water Heaters, Small Boilers, and Process Heaters	Ch. 117, Subchapter E, Div. 3	☒	☒	☒	☒	☒	☒
Nitric Acid Manufacturing	Ch. 117, Subchapter F, Div. 3	☒	☒	☒	☒	☒	☒
Storage Tank VOC Rules	Ch. 115, Subchapter B, Div. 1	☐	☐	☐	☒	☐	☐
Vent Gas VOC Control	Ch. 115, Subchapter B, Div. 2	☐	☐	☐	☒	☐	☐
Water Separation VOC Control	Ch. 115, Subchapter B, Div. 3	☐	☐	☐	☒	☐	☐
Controls on Loading and Unloading VOC	Ch. 115, Subchapter C, Div. 1	☐	☐	☐	☒	☐	☐
Stage I Vapor Recovery	Ch. 115, Subchapter C, Div. 2	☒	☒	☒	☒	☒	☐
Degreasing Rules	Ch. 115, Subchapter E, Div. 1	☒	☒	☒	☒	☒	☐
Cutback Asphalt Rules	Ch. 115, Subchapter F, Div. 1	☒	☒	☒	☒	☒	☐
Automotive Windshield Washer Fluid	Ch. 115, Subchapter G, Div. 1	☒	☒	☒	☒	☒	☒