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Austin-Round Rock Metropolitan Statistical Area Ozone Advance Program Action Plan Update

Prepared by the Capital Area Council of Governments

Adopted by the Central Texas Clean Air Coalition of the Capital Area Council of Governments

December 9, 2015

PREPARED UNDER A GRANT FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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Executive Summary

This is the first update to the Austin-Round Rock Metropolitan Statistical Area (MSA) Ozone Advance Program (OAP) Action Plan, which was submitted to the EPA in December 2013. The OAP Action Plan is the regional ozone reduction plan adopted by the Central Texas Clean Air Coalition (CAC) of the Capital Area Council of Governments (CAPCOG) for the Austin-Round Rock Metropolitan Statistical Area (MSA), which consists of Bastrop, Caldwell, Hays, Travis, and Williamson Counties. The purpose of this update is to:

1. Update the goals of the Action Plan to reflect the new 2015 ozone National Ambient Air Quality Standard (NAAQS);
2. Update the list of CAC members who have joined since the original OAP Action Plan was adopted and identify their emission reduction commitments;
3. Update the scientific background for the plan based on research that has been completed since December 2013 and the new 2015 ozone NAAQS;
4. Provide updates on regional air quality planning activities;
5. Provide updates on several important state emission reduction measures applicable to the area;
6. Revise the air quality research priorities for the region; and
7. Scale back the commitment in the original OAP Action Plan for annual plan updates.

The CAC is also planning a more far-reaching revision to the OAP Action Plan in 2016 that could entail a restructuring of the plan's goals and objectives, evaluation of current control measures and consideration of changes to commitments, consideration of an extension of the plan, and incorporating any new guidance issued by EPA on the Ozone Advance Program, which it has indicated it plans to release in the near future. Given the ozone problems in the adjacent San Antonio-New Braunfels and Killeen-Temple areas, the CAC is also planning on increasing and improving coordination of air quality planning activities with these two areas in 2016 and beyond.

The Austin-Round Rock MSA's ozone levels have dropped steadily over time and the region's current ozone levels are in attainment of the new ozone 70 part per billion (ppb) 8-hour ozone NAAQS finalized on October 1, 2015. While the region's 2008 ozone design value was 77 ppb, the region's 2015 preliminary (uncertified) design value is expected to be 68 ppb, a 9 ppb reduction compared to a 5 ppb reduction in the ozone standard over that same period of time that puts the Austin-Round Rock MSA in compliance with the new ozone NAAQS and making it unlikely that any of the counties in the region would face a nonattainment designation in late 2017. Despite this achievement, the CAC and other regional partners remain committed to this plan and continuing to ensure that the region remains in attainment of the standard. The CAC is well aware that the new ozone standard was set at the highest level of the range proposed by EPA in 2014 and that there is a distinct possibility that the next ozone review due in 2020 may result in a further tightening of the ozone standard. This action plan and the state measures that apply to this region will help reduce the public health and regulatory risks associated with high ozone levels in the region.

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1 Goals

The existing 2013 OAP Action Plan goals have been revised in order to account for the new 2015 ozone NAAQS. The updated goals are as follows:

1. Remain in attainment of the 2015 eight-hour ozone standard of 70 parts per billion (ppb);
2. Continue reducing the region's 8-hour ozone design value to avoid being designated nonattainment for a new ozone NAAQS;
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 exposure of vulnerable populations to air pollution when the region experiences high ozone levels, and
5. Minimize the costs to the region of any potential future nonattainment designation.

2 Time Frame

The time frame for implementation of the 2013 OAP Action Plan remains January 1, 2014 – December 31, 2018. CAC members will consider whether to extend the plan beyond 2018 when it considers a more extensive set up updates to this plan in early 2016.

3 Changes to CAC Membership

Since the adoption of the OAP Action Plan in 2013, the following jurisdictions have become members of the CAC:

- City of Pflugerville (March 26, 2014);
- City of Buda (June 10, 2015);
- City of Leander (October 21, 2015);
- City of Bee Cave (October 21, 2015); and
- City of Lakeway (December 9, 2015).

While the City of Taylor had previously been a "supporting" (non-voting) member of the CAC under the 8-O_3 Flex Plan, the City did not adopt a resolution in support of the OAP Action Plan prior to December 31, 2013, and has not reported as part of the region's annual reporting in 2014 or 2015. As such, it no longer meets the requirements to be considered a "supporting member" of the CAC.

The current members of the CAC are listed in the table below.

Table 3-1: Clean Air Coalition Members as of December 9, 2015

County General Members	City General Members	Supporting Members
Bastrop County	City of Austin	City of Sunset Valley
Caldwell County	City of Bastrop	
Hays County	City of Bee Cave	
Travis County	City of Buda	
Williamson County	City of Cedar Park	
	City of Elgin	
	City of Georgetown	

County General Members	City General Members	Supporting Members
	City of Hutto	
	City of Lakeway	
	City of Leander	
	City of Lockhart	
	City of Luling	
	City of Pflugerville	
	City of Round Rock	
	City of San Marcos	

The CAC will consider in early 2016 whether to revise its bylaws in order to add other types of organizations as "supporting members" of the CAC and to revisit the requirements for being a general and supporting member of the CAC.

The CAC has an advisory committee (the Clean Air Coalition Advisory Committee – or CACAC), which consists of staff members from each jurisdiction, as well as staff members from other entities participating in regional air quality planning and other interested parties. As of December 2015, the non-CAC organizations participating in the CACAC include CAPCOG, the Capital Area Metropolitan Planning Organization (CAMPO), the Capital Metropolitan Transportation Authority (CapMetro), the Texas Department of Transportation (TxDOT), the Lower Colorado River Authority (LCRA), Austin Energy, Texas Lehigh Cement Company, Austin White Lime, the CLEAN AIR Force, the Sierra Club, HOLT CAT, the Texas Commission on Environmental Quality (TCEQ), and the U.S. Environmental Protection Agency (EPA). The CACAC meets once a month and provides policy advice, technical advice, and planning support to the CAC.

4 New CAC Member Resolutions in Support of Ozone Advance

This section provides copies of the resolutions approved by each new CAC member since January 1, 2014. The table below shows the dates that each CAC member adopted a resolution in support of this plan and outlining its commitments.

Table 4-1. CAC Member Resolution Adoption Dates

Entity	Resolution Number	Resolution Adopted	Date Accepted into the CAC
City of Pflugerville	1386-14-01-14-0177	January 14, 2014	March 26, 2014
City of Buda	2015-R-09	June 2, 2015	June 10, 2015
City of Leander	15-016-00	August 20, 2015	October 21, 2015
City of Bee Cave	2015-03	September 22, 2015	October 21, 2015
City of Lakeway	2015-11-16-01	November 16, 2015	December 9, 2015

4.1 City of Bee Cave Resolution

Figure 4-1. City of Bee Cave Resolution (pt. 1 of 2)

RESOLUTION NO. 2015-03

A RESOLUTION OF THE CITY OF BEE CAVE, TEXAS, TO JOIN THE CENTRAL TEXAS CLEAN AIR COALITION, A VOLUNTARY ORGANIZATION OF THE CAPITAL AREA COUNCIL OF GOVERNMENTS

WHEREAS, the local governments within the Austin/Central Texas region, including the counties of Bastrop, Caldwell, Hays, Travis and Williamson, recognize that they are near violation of the 8-hour National Ambient Air Quality Standards (NAAQS) for ozone; and

WHEREAS, the Ozone Advance Program is a voluntary local approach to ozone attainment whose purpose is to encourage early emission reduction that will help keep the area in attainment of the ozone NAAQS; and

WHEREAS, an Action Plan under the Ozone Advance Program would achieve air quality and public health benefits by implementing early voluntary pollution control measures for ozone tailored to local condition before air quality standard violations occur or before Federal measure are mandated; and

[redacted]

4.4 City of Leader Resolution

Figure 4-9. City of Leander Resolution

RESOLUTION NO. 15-016-00

A RESOLUTION OF THE CITY OF LEANDER, TEXAS, TO JOIN THE CENTRAL TEXAS CLEAN AIR COALITION, A VOLUNTARY ORGANIZATION OF THE CAPITAL AREA COUNCIL OF GOVERNMENTS

WHEREAS the local governments within the Austin-Round Rock Metropolitan Statistical Area (MSA), which consists of Bastrop, Caldwell, Travis, and Williamson Counties, recognize that they are near-violation of the 8-hour National Ambient Air Quality Standards (NAAQS) for ozone; and

WHEREAS, THE Ozone Advance Program is a voluntary local approach to ozone attainment whose purpose is to encourage early emission reduction that will help keep the area in attainment of the ozone NAAQS; and

WHEREAS, an Action Plan under the Ozone Advance Program would achieve air quality and public health benefits by implementing early voluntary pollution control measures for ozone tailored to local condition before air quality standard violations occur or before Federal measures are mandated; and

WHEREAS, the Central Texas Clean Air Coalition (CAC) of the Capital Area Council of Governments has signed up to participate in the Ozone Advance Program and has submitted an Action Plan on December 31, 2013, and annual updates since then; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF LEANDER:

The City of Leander formally requests full membership in the Central Texas Clean Air Coalition (CAC) of the Capital Area Council of Governments; and

The City of Leander commits to implement the attached list of measures as part of the region's Ozone Advance Program Action Plan and directs staff to implement these measures as part of the Action Plan:

- Encourage Carpooling
- Continue to fund and encourage use of Mass Transit
- Reduce Unnecessary idling
- Encourage Transit Oriented Development
- Improve Energy & Resource Efficiency in new buildings
- Enforce Development Standards to support water conservation
- Ozone Action Day Employee Notification
- Ozone Action Day Community notification
- Continue Direct Deposit for all Employees

City of Leander, Texas **August 20, 2015**

Christopher Fielder, Mayor

Attest:

Debbie Haile, TRMC City Secretary

4.5 City of Pflugerville Resolution

Figure 4-10. City of Pflugerville Resolution (pt. 1 of 2)

RESOLUTION NO. 1386-14-01-14-0177

RESOLUTION OF THE CITY OF PFLUGERVILLE, TEXAS TO JOIN THE CLEAN AIR COALITION AND AUTHORIZE THE IMPLEMENTATION OF THE OZONE ADVANCE PROGRAM ACTION PLAN MEASURES

WHEREAS, the local governments within the Austin-Round Rock Metropolitan Statistical Area (MSA), which consists of Bastrop, Caldwell, Hays, Travis, and Williamson Counties, recognize that they are near-violation of the 8-hour National Ambient Air Quality Standards (NAAQS) for ozone; and

WHEREAS, the Ozone Advance Program is a voluntary local approach to ozone attainment whose purpose is to encourage early emission reduction that will help keep the area in attainment of the ozone NAAQS; and

WHEREAS, an Action Plan under the Ozone Advance Program would achieve air quality and public health benefits by implementing early voluntary pollution control measures for ozone tailored to local condition before air quality standard violations occur or before Federal measures are mandated; and

WHEREAS, the City of Pflugerville has been invited and desires and requests to be a full member of the Central Texas Clean Air Coalition (CAC) of the Capital Area Council of Governments; and

WHEREAS, the City of Pflugerville commits to implement the attached list of priority and additional measures, identified in Exhibit "A", attached incorporated herein, as part of the region's Ozone Advance Program Action Plan and directs staff to implement these measures as part of the Action Plan;

NOW, THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF PFLUGERVILLE:

That the City of Pflugerville commits to improving air quality through full participation in the Central Texas Clean Air Coalition and to implement the attached list of measures that were implemented under the region's 8-Hour Ozone Flex Plan, and to also implement the following measures as part of the region's Ozone Advance Program Action Plan and directs the City Manager to implement these measures as part of Pflugerville's Action Plan attached as Exhibit A.

APPROVED this 14 day of January, 2014.

CITY OF PFLUGERVILLE, TEXAS

By: _____
Jeff Coleman, Mayor

ATTEST:

Karen Thompson, City Secretary

Figure 4-11. City of Pflugerville Resolution (pt. 2 of 2)

Exhibit A

Priority Measures

1. Business evaluation of fleet usage (A)*
2. Commit to applying for Texas Emissions Reduction Plan (TERP) and/or Diesel Emissions Reduction Act (DERA) funding when available to retrofit, repower or replace older diesel vehicles and equipment owned and operated by the jurisdiction. (B)
3. Regularly plan for Transportation Emission Reduction Measures (TERMS) within the community and report progress to CAMPO annually. (C)
4. Implement an Ozone Action Day program. (G)
5. Participate in regional measures. (H)
6. Annually track and report to CAPCOG for inclusion in an annual OAP report and performance evaluation:
    a. Vehicle and equipment usage,
    b. Electricity and gas usage,
    c. Contracted construction and landscaping work, and
    d. Details on performance of locally adopted measures. (I)

Additional Measures

1. Implement energy, efficiency, renewable energy, and resource conservation policies that will result in reduced energy consumption. (K)
2. Evaluate other additional measures for approval by the city of Pflugerville.

*Items with referenced parentheses relate to specific measures within the "Clean Air Coalition Advisory Committee Ozone Advance Plan Recommendations" attached as Exhibit A-1.

5 Background on Ozone in Central Texas

This chapter provides an updated scientific background on ozone in Central Texas, including ozone data for the Austin-Round Rock MSA and adjacent areas, highlights from a new ozone conceptual model for the region, an estimate of 2015 ozone season day NO_X emissions, and highlights from recent findings from photochemical modeling analyses.

5.1 Status of Ozone Levels in the Austin-Round Rock MSA

This section provides the current status of ozone levels in the Austin-Round Rock MSA at both the two regulatory ozone monitors operated by TCEQ in Travis County as well as the seven non-regulatory research ozone monitors that CAPCOG operates across all five counties. Data has been updated to reflect ozone monitoring data collected in 2014 and 2015.

5.1.1 Design Values at Ozone Regulatory Monitors in the Austin-Round Rock MSA

The Austin-Round Rock MSA's certified 2014 ozone design value (DV) was 69 parts per billion, based on ambient ozone concentrations measured at the TCEQ's two regulatory ozone monitors for the region from 2012-2014. Based on preliminary data reported on TCEQ's website, the 4th highest daily eight-hour ozone averages at both of the regulatory ozone monitors in 2015 were 73 ppb, which would make the region's design value 68 ppb. The table below shows the fourth highest daily eight-hour ozone concentration for 2012, 2013, 2014, and 2015, and the DV for each of these monitors are shown in the table below.

Table 5-1: 2012-2015 4th Highest Daily Maximum Eight-Hour Ozone Averages

Station	EPA Number	2012 4th High	2013 4th High	2014 4th High	2014 Design Value	2015 4th High	2015 Design Value
Murchison CAMS 3	484530014	74 ppb	69 ppb	62 ppb	**68 ppb**	73 ppb	**68 ppb**
Audubon CAMS 38	484530020	76 ppb	70 ppb	63 ppb	**69 ppb**	73 ppb	**68 ppb**

The region's 2015 ozone design value of 68 ppb is attaining the new ozone standard of 70 ppb. CAMS 3 would need to measure a 4th highest daily maximum 8-hour ozone concentration of 78 ppb or higher in 2016 in order for its 2014-2016 ozone design value to reach 71 ppb, and CAMS 38 would need a 4th highest daily maximum 8-hour ozone concentration of 77 ppb or higher in 2016 in order for its 2014-2016 design value to reach 71 ppb.

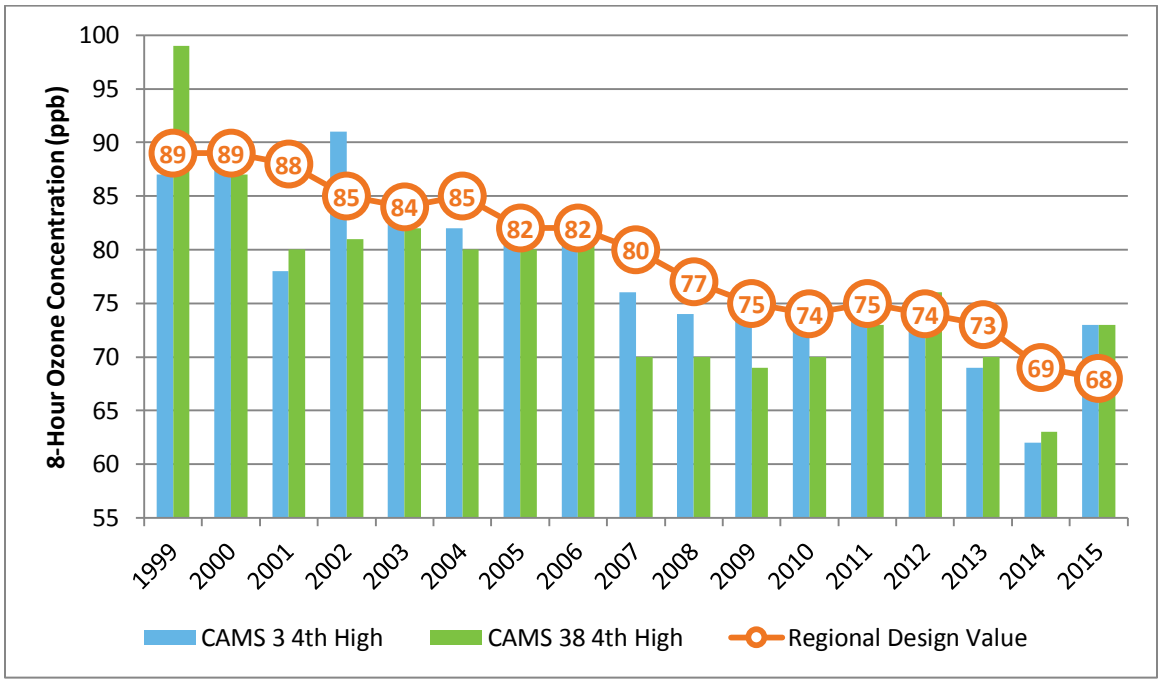
EPA's analysis of the standard deviations in 4th highest daily maximum 8-hour ozone concentrations from design values of 70 ppb and 75 ppb design value that was included as part of the technical documentation for the 2015 ozone NAAQS indicated that the standard deviation was 4.8 ppb for a 75 ppb design value and 4.4 ppb for a 70 ppb design value.[1] If this relationship was extrapolated to the Austin-Round Rock MSA's 2013-2015 design value of 68 ppb, it would mean a standard deviation of approximately 4.2 ppb. Given that a 4th highest daily maximum 8-hour ozone concentration of 77 ppb or higher would be necessary for the region's ozone design value to be 71 ppb or higher, the 4th high would need to be at least 8 ppb higher in 2016 than the 2013-2015 design value. The probability of this occurring using these data is about 2.9%. From 2013-2015, the actual standard deviation for CAMS 3

[1] http://www3.epa.gov/ttn/naaqs/standards/ozone/data/20150923wells.pdf

was 5.6 ppb, and the standard deviation for CAMS 38 was 5.1 ppb. If these numbers were used instead, the probability of a 4th high of 78 ppb or higher at CAMS 3 would be 5.4% and the probability of a 4th high of 77 ppb or higher at CAMS 3 would be 5.8%. This means that there is a 94-97% probability that the Austin-Round Rock MSA's 2014-2016 ozone design value will be in attainment of the 2015 ozone NAAQS.

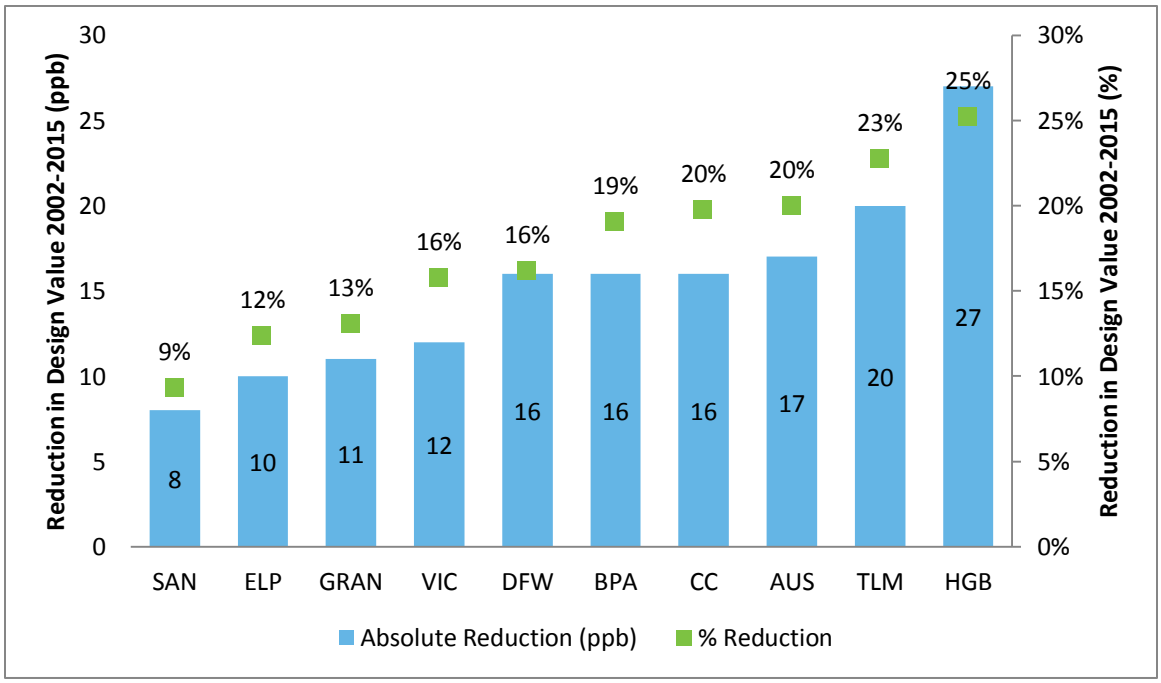
The following chart shows the trend in ozone levels at the region's regulatory monitors from 1999 to 2015 in comparison to the 1997 and 2008 eight-hour ozone averages.

Figure 5-1. Ozone Trends at Regulatory Monitors



Since the first voluntary ozone plan was adopted in 2002, the Austin-Round Rock MSA has experienced a larger decrease in ozone than all but one of the other near-nonattainment areas (areas with a design value of 85% of the NAAQS or higher that are not currently designated nonattainment), and even experienced reductions in ozone levels that were comparable to those achieved in the Dallas-Fort Worth area, a region about 5 times larger than the Austin-Round Rock MSA.

Figure 5-2. Change in Design Values 2002-2015 in Texas Nonattainment and Near-Nonattainment Areas[2]



5.1.2 Ozone Non-Regulatory Monitors in the Austin-Round Rock MSA

In addition to the two regulatory monitors operated by TCEQ, the Austin-Round Rock MSA also has seven permanent, continuous research ozone monitors that are operated by CAPCOG during ozone season each year. In 2014, CAPCOG made two temporary monitoring stations that it had operated in Southwest Austin and Lockhart into permanent stations designated as CAMS 1603 and 1604. CAPCOG's monitoring stations do not meet EPA's requirements for being used in formal regulatory decisions such as ozone designations, but they do provide valuable data on regional ozone levels. The table below shows each site's fourth highest daily eight-hour ozone average for 2013 – 2015 and the "design value" that would be calculated for that site if it were a regulatory monitor (technically, a "design value" is a regulatory term, and since these are not regulatory monitors, these do not meet the definition of a design value).

[2] HGB = Houston-Galveston-Brazoria, TLM = Tyler-Longview-Marshall, AUS = Austin, CC = Corpus Christi, BPA = Beaumont-Port Arthur, DFW = Dallas-Fort Worth, VIC = Victoria, GRAN = Granbury, ELP = El Paso, and SAN = San Antonio

Table 5-2: Ozone Data at Non-Regulatory Ozone Monitors in the Austin-Round Rock MSA

Station	EPA Number	2013 4th High	2014 4th High	2015 4th High	2013-2015 Average	2016 4th High Target
Dripping Springs CAMS 0614	482090614	67	63	71	67	**<79**
McKinney Roughs CAMS 0684	480210684	64	53	69	62	**<91**
Lake Georgetown CAMS 0690	484910690	75	66	75	72	**<72**
Gorzycki MS CAMS 1603	484531603	41[3]	57	72	56	**<84**
Lockhart CAMS 1604	480551604	66[4]	64	67	65	**<82**
San Marcos CAMS 1675	482091675	70	61	70	67	**<82**
Hutto CAMS 6602	484916602	69	39[5]	71	59	**<103**

The one ozone monitor that has a three-year average that exceeds 70 ppb would have a 56% chance of having a 4th highest 8-hour ozone concentration measurement that would be 72 ppb or higher in 2016 if there were no long-run trends of reduced ozone concentrations in the region. Since there is an overall trend across the country and within the region of a 1 ppb reduction or more per year, the actual likelihood of the 4th high at CAMS 690 measuring 72 ppb or higher is actually 50%.

This value is somewhat misleading, however, since the calibration checks at this station from June through October 2013 at the 90 ppb reference level all showed deviations above 90 ppb of 9-12 ppb and measurements of 2-4 ppb when the 0 ppb reference level was checked. All of the top four measurements for that year occurred within this time span. The 9-12 ppb deviation above the 90 ppb level exceeds the +/- 7% deviation that EPA allows for regulatory monitoring for a sample to be considered valid. CAPCOG estimates that if the 2013 data were adjusted to reflect the results of the calibrations, they would show a 4th highest 8-hour ozone concentration of 69 ppb at CAMS 690 for that year. Procedures were changed for 2014 so that the instrument was required to meet more stringent data quality objectives, and the calibration checks showed much smaller deviations of -2 ppb to +4 ppb from the 90 ppb checks in 2014 and –X ppb to +X ppb from the 90 ppb checks in 2015. If the adjusted 69 ppb 4th high for 2015 were used for the 3-year average along with the recorded 4th highs in 2014 and 2015, the value would be 70 ppb.

[3] CAMS 1603 was a temporary site in 2013, and did not begin operation until late September of that year. The 2013 4th high concentration is not a good representation of what the actual 4th highest concentration likely was at that location over the course of the 2013 ozone season.

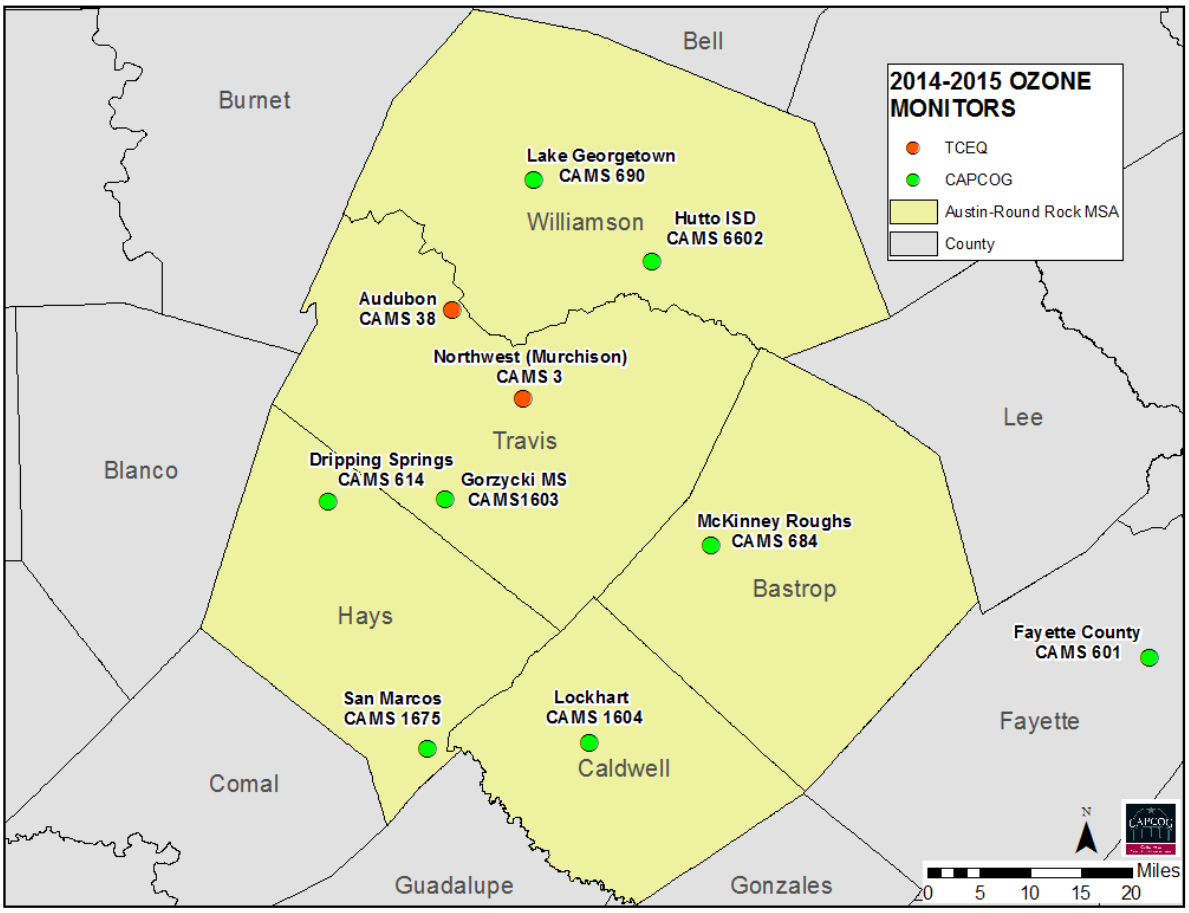
[4] CAMS 1604 was a temporary site in 2013.

[5] CAMS 6602 was in slightly different locations on the same piece of property in the 2013, 2014, and 2015 ozone seasons. Due to siting issues, the 2014 ozone data was skewed very low and should not be considered representative of the actual 4th highest ozone concentrations in the general vicinity of the monitor for that year.

5.1.3 Locations of Regional Ozone Monitors

The map below shows the locations of all of the ozone monitors that were in operation from 2013-2015.

Figure 5-3: Regional Ozone Monitors



5.2 Status of Air Quality in Adjacent Metropolitan Areas

Since the Clean Air Act requires EPA to designate areas as nonattainment if they are contributing to violations of the ozone NAAQS even if they themselves have air quality that is attaining the standard, the region's attainment status is affected not only by ozone levels measured within the MSA, but also by ozone levels measured in adjacent areas. There are two MSAs adjacent to the Austin-Round Rock MSA: the San Antonio-New Braunfels MSA, which located to the southeast of the Austin-Round Rock MSA and which Hays County and Caldwell County border; and the Killeen-Temple MSA, which is located to the north of the Austin-Round Rock MSA and which borders Williamson County. Since one of the objectives of this Action Plan is to avoid any of the counties in the Austin-Round Rock MSA from being designated nonattainment for the ozone NAAQS, the status of these monitors is relevant to successful implementation of this Action Plan.

Table 5-3. Ozone Data from Regulatory Ozone Monitors Located in the San Antonio-New Braunfels (SAN) and Killen-Temple (KT) MSAs

Station	EPA Number	County	MSA	2014 Design Value (certified)	2015 Design Value (preliminary)	2016 Target for 4th Highest Daily Maximum 8-Hour Ozone Avg.
C23	480290032	Bexar	SAN	75 ppb	74 ppb	<65 ppb
C58	480290052	Bexar	SAN	80 ppb	78 ppb	<61 ppb
C59	480290059	Bexar	SA	67 ppb	66 ppb	<82 ppb
C1045	480271045	Bell	KT	n/a	64 ppb	<74 ppb
C1047	480271047	Bell	KT	72 ppb	69 ppb	<77 ppb

Based on these data, there is a very high likelihood that the San Antonio area's 2014-2016 ozone design value will be violating the 2015 ozone NAAQS. Given the 2013-2015 design value at CAMS 58 of 78 ppb and a standard deviation in the values of the 4th highest daily maximum 8-hour ozone averages of 5.7 ppb, there is a 99.9% probability that its 2016 value would be 61 ppb or higher, giving it a 2014-2016 design value that violated the NAAQS. There is a much smaller probability that the Temple-Killeen MSA's 2014-2016 design value will exceed the ozone NAAQS (approximately 16%), but that possibility is several times more likely than the Austin-Round Rock MSA having a 2014-2016 design value that exceeds 70 ppb.

5.3 2015 Ozone Conceptual Model

The most recent ozone conceptual model for the region was prepared by CAPCOG in 2015, using monitoring data from 2006-2014.[6] The previous conceptual model referenced in the original OAP Action Plan had been developed in 2012 by the University of Texas at Austin for CAPCOG and had covered ozone data from 2006-2011 and had focused only on 8-hour ozone concentrations at or above 75 ppb at the two regulatory ozone monitors in Travis County. [7] CAPCOG's 2015 conceptual model includes analysis of peak ozone concentrations defined in five different ways:

- 8-hour ozone averages at any Austin-Round Rock MSA ozone monitor over 75 ppb;
- 8-hour ozone averages at any Austin-Round Rock MSA ozone monitor over 70 ppb;
- 8-hour ozone averages at any Austin-Round Rock MSA ozone monitor over 65 ppb;
- The top four annual maximum 8-hour ozone averages at regulatory monitors in the Austin-Round Rock MSA; and
- The top ten annual maximum 8-hour ozone averages at the regulatory monitors in the Austin-Round Rock MSA.

Now that EPA has set the standard at 70 ppb, the most relevant analyses from this report relate to ozone concentrations above 70 ppb and the four annual maximum 8-hour ozone averages. Since the conceptual model covers nine years of data during which emissions have dropped significantly within the region, the same conditions that would be conducive to ozone levels above 70 ppb in 2006 may not have been sufficient to bring ozone levels above 70 ppb in 2014. Since compliance is based on the 4

[6] http://www.capcog.org/documents/airquality/reports/2015/Ozone_Conceptual_Model_Final_-_10-1-15.pdf

[7] http://www.capcog.org/documents/airquality/reports/2013/Task_1-Austin_Area_Conceptual_Model_2012.pdf

highest days each year, the analysis of the conditions associated with the top 4 days can help control for the change in emissions over that period of time.

5.3.1 Meteorological Conditions Conducive to High Ozone Formation

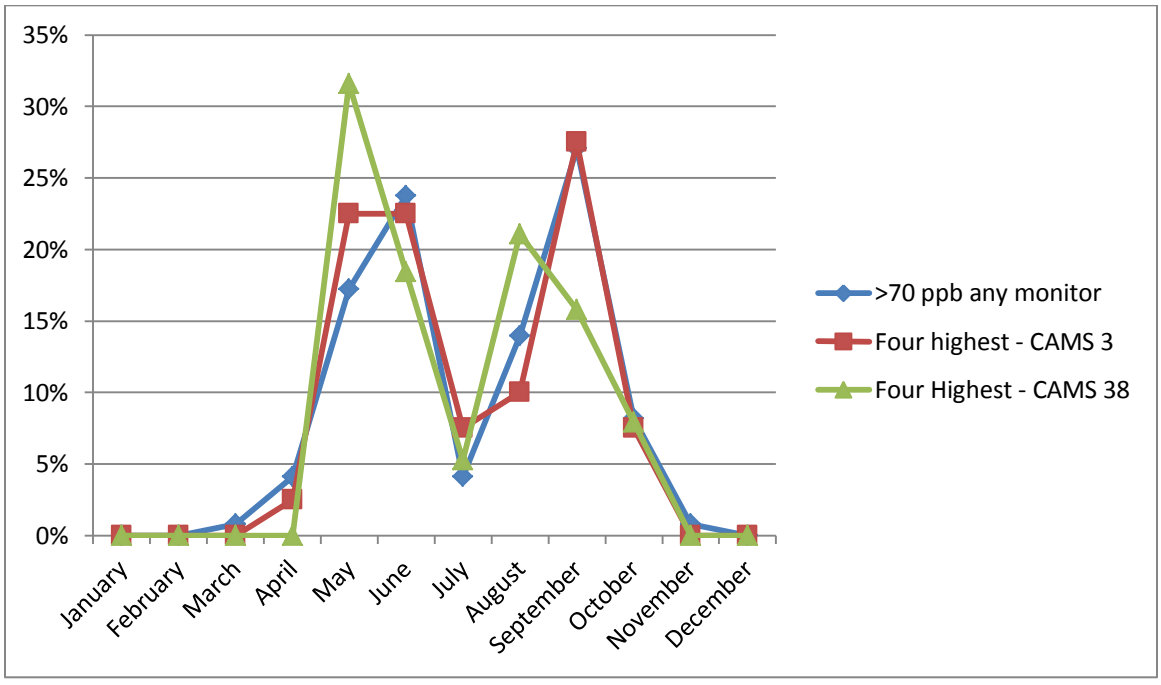
Based on the 2015 conceptual model, the following conditions are typical of peak 8-hour ozone concentrations above 70 ppb or among the top four daily maximum 8-hour ozone concentrations at the two regulatory monitoring stations:

- Peak hourly temperatures over 81 degrees Fahrenheit (F);
- Diurnal changes in temperature over 24 degrees F;
- Wind speeds of below 8.4 miles per hour;
- Mid-day (2 pm) relative humidity of less than 40%; and
- Wind directions clockwise from the NNE direction clockwise to the SSW direction.

5.3.2 Monthly Distribution of High Ozone Days

The chart below shows the distribution of high ozone days by month. It shows the percentage of all days when 8-hour ozone averages exceeded 70 ppb at any ozone monitor in the Austin-Round Rock MSA in each month, as well as the percentage of the annual four highest days at CAMS 3 and CAMS 38 during this period that occurred in each month.

Figure 5-4. Monthly distribution of high ozone days 2006-2014

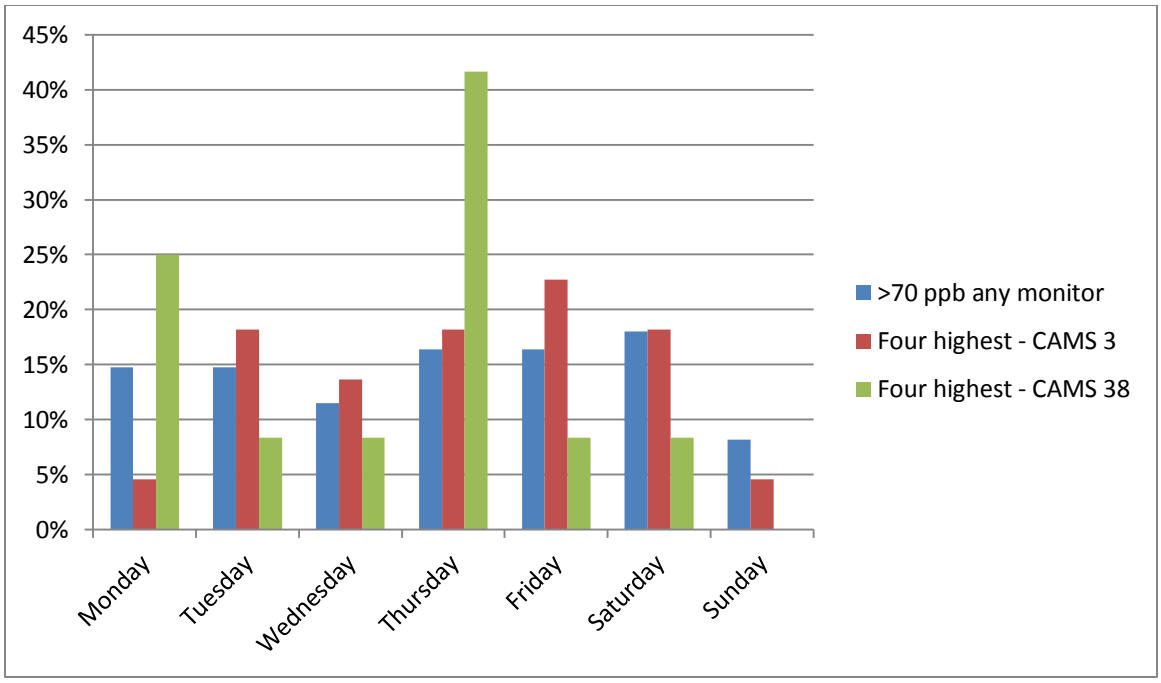


As the figure above shows, high ozone levels have occurred as early as March and as late in November in the Austin-Round Rock MSA, which coincides with the EPA's change to the Austin area's ozone monitoring season along with the rest of the northern half of Texas. However, high ozone concentrations predominantly occur from May through October, with high ozone levels occurring more frequently in the beginning of that period for CAMS 38 and towards the later part of that period for CAMS 3.

5.3.3 Impact of Day of Week on High Ozone Formation

The 2015 ozone conceptual model also includes an analysis of the frequency of occurrence of high-ozone days by day of the week. These data show that high ozone levels are substantially more likely to occur on Thursday, Friday, or Saturday than what would be expected if there was a flat distribution (30% higher likelihood), and substantially less likely to occur on Sunday (70% lower likelihood). While the higher likelihood of high ozone on Friday is understandable based on Friday having the highest on-road activity of any day of the week, the frequency of high ozone occurrences on Thursdays and Saturdays is less readily explainable.

Figure 5-5. High ozone day distribution by day of the week 2006-2014



5.3.4 Impact of Time of Day on High Ozone Formation

The conceptual model also includes an analysis of the hourly distribution of the peak 1-hour ozone concentrations on high ozone days and the distribution of the start hour for peak 8-hour ozone concentrations. The figures below shows these hourly distributions for any 8-hour ozone measurement over 70 ppb, as well as the annual four highest days at CAMS 3 and CAMS 38.

Figure 5-6. Distribution of peak 1-hour ozone concentration on high ozone days 2006-2014

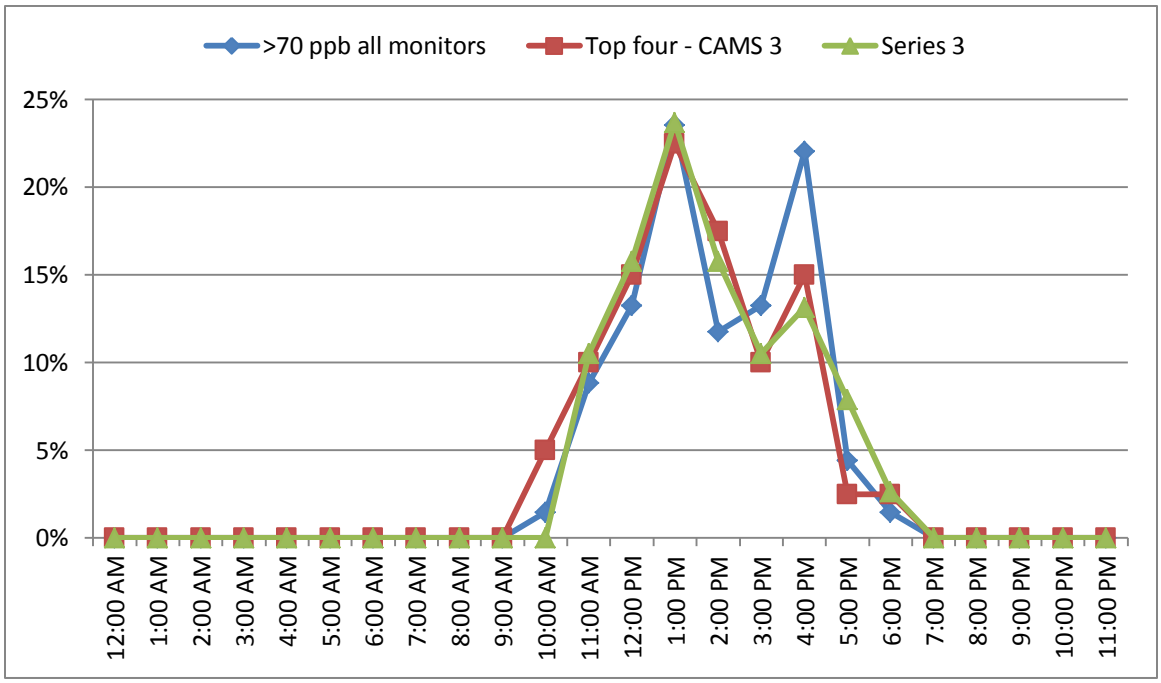
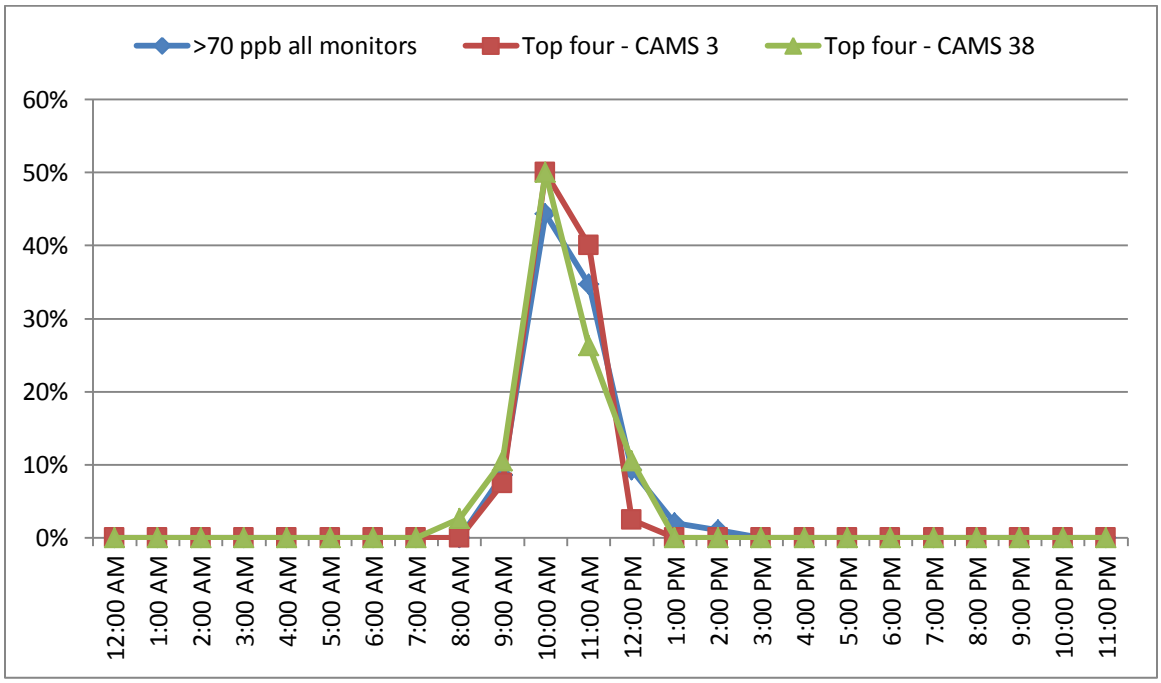


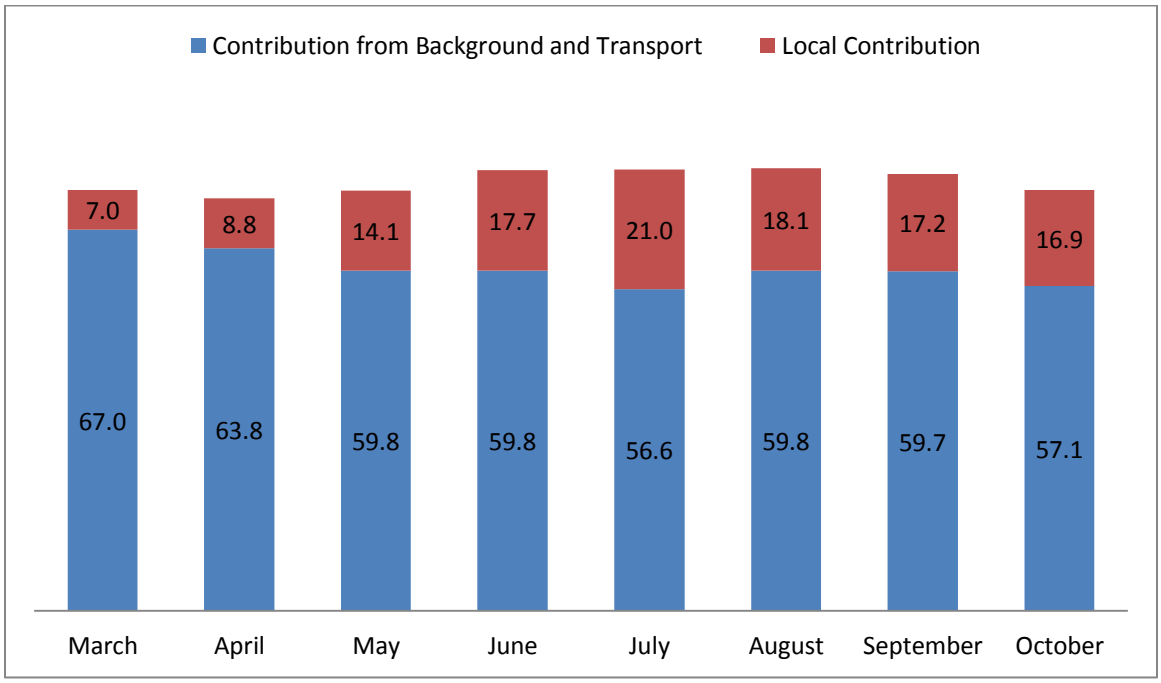
Figure 5-7. Distribution start hour for peak 8-hour ozone concentrations on high ozone days 2006-2014



5.3.5 Estimation of Local Contributions to Peak 8-hour Ozone Levels

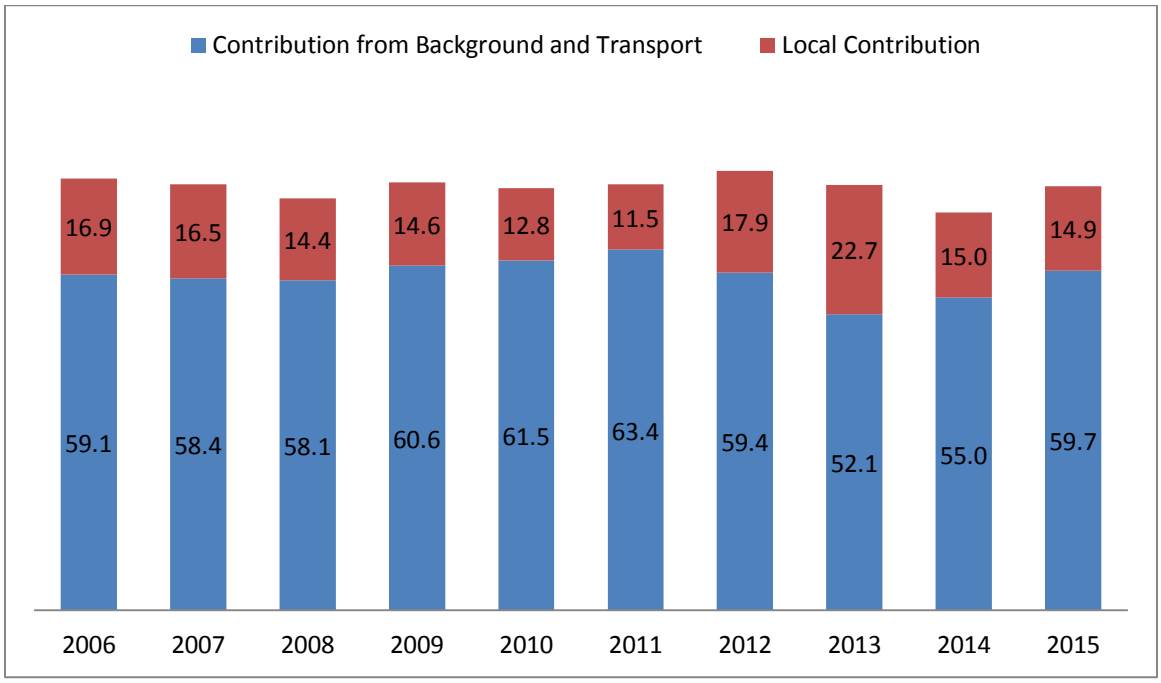
The 2015 conceptual model also included an analysis of the local contributions to peak 8-hour ozone concentrations based on the difference between the highest and lowest 8-hour ozone concentrations on days when 8-hour ozone levels exceeded 70 ppb. The following figure shows the average peak 8-hour ozone concentration at the monitors with the lowest and highest maximum daily 8-hour ozone concentrations when the highest levels exceeded 70 ppb by month. On average, ozone levels transported into the region were already 59.6 ppb, with the highest peak concentrations in the region averaging 16.5 ppb higher when the highest concentration exceeded 70 ppb.

Figure 5-8. Estimation of local and background/transport contributions to peak 8-hour ozone concentrations (ppb) by month on days > 70 ppb, 2006-2014



Since emissions have declined significantly, it is also useful to look at this analysis year-by-year. Since there were no days when 8-hour ozone averages exceeded 70 ppb in 2014, CAPCOG set the threshold for this analysis at >= 70 ppb.

Figure 5-9. Estimation of local and background/transport contributions to peak 8-hour ozone concentrations (ppb) by year on days >= 70 ppb, 2006-2014



What this indicates is that while emission reductions have reduced the frequency of exceedances of 70 ppb, when peak ozone levels do exceed 70 ppb, the local contribution to those levels has remained approximately the same over this period, and that the relative role of ozone transport and local emissions on ozone concentrations over 70 ppb when they do occur has not changed much over this time frame.

5.4 Emissions Inventory Summary

CAPCOG has developed an updated regional ozone season weekday NO_X emissions inventory for 2015 to provide a comparison to the 2012 NO_X emissions estimates that were included in the 2012 OAP Action Plan. The update focused on NO_X emissions since ozone formation in the Austin-Round Rock area is NO_X-limited. An explanation of the basis for these estimates is available.

Table 5-4: Typical Ozone Season Weekday Anthropogenic NO_X Emissions for the Austin-Round Rock MSA by Source Type, 2012 and 2015

Source Type	2012	2015	Difference	% Difference
On-Road	55.41	37.81	-17.60	-31.76%
Non-Road	20.52	19.81	-0.71	-3.46%
Point	18.04	17.77	-0.27	-1.50%
Area	9.85	11.50	1.65	16.75%
Total	**103.82**	**86.25**	**-17.57**	**-16.92%**

Table 5-5: Typical Ozone Season Weekday Anthropogenic NO_X Emissions for the Austin-Round Rock MSA by County, 2012 and 2015

County	2012	2015	Difference	% Difference
Bastrop	10.15	8.06	-2.09	-20.59%
Caldwell	8.11	7.60	-0.51	-6.29%
Hays	16.07	14.69	-1.38	-8.59%
Travis	50.77	40.91	-9.86	-19.42%
Williamson	18.72	15.00	-3.72	-19.87%
Total	**103.82**	**86.25**	**-17.57**	**-16.92%**

For reference, there are also a number of large point sources of NO_X emissions (>100 tons per year) in adjacent counties. Changes in emissions at these plants may, at times, have a significant impact on local ozone levels. In the original OAP Action Plan, the emissions data for these facilities was from 2011, with a combined total of 14,518 tons of NO_X emissions. In 2013, these sources emitted a combined total of 13,660 tons of NO_X, 6% lower. The table below shows the NO_X and VOC emissions from point sources with more than 100 tons of NO_X emissions reported in 2013 in nearby counties.

Table 5-6: Major Point Sources of NO_X Emissions in Adjacent Counties, 2013

County	Point Source Name	NO_X (tpy, 2013)	VOC (tpy, 2013)
Comal	TXI Operations Hunter Plant	789.98	21.62
Comal	Cemex Balcones Plant	2,295.10	51.15
Comal	Lhoist Lime Plant	356.20	4.63
Fayette	Fayette Power Project	5,940.98	123.24
Fayette	Giddings Plant	464.19	104.14
Fayette	La Grange Plant	209.80	55.83
Guadalupe	Structural Metals Steel Mill	116.84	34.81
Guadalupe	Guadalupe Generating Station	436.51	8.57
Guadalupe	Rio Nogales Power Plant	245.52	2.44
Llano	TC Ferguson Power Plant	0.00	0.00
Milam	Sandow 4	1,378.69	65.58
Milam	Sandow 5	1,426.41	0.78

There are some limited data available on the impacts of some of these facilities on local ozone levels – particularly, the Fayette Power Project and the Sandow Plant. These emissions data are presented

because they help provide a more complete picture of regional emissions that could affect local ozone levels at times.

5.5 Photochemical Modeling

In 2015, CAPCOG completed an extensive review of ozone modeling data for the region, including recent modeling completed by EPA for the 2015 ozone NAAQS rulemaking and the 2008 ozone transport analysis.[8] This project also included new photochemical modeling of the impacts of the vehicle inspection and maintenance programs that are in place in Travis and Williamson Counties and Texas Lehigh's voluntary emissions reductions on days when high ozone is forecast for the region. The following are some of the highlights of this analysis:

- The region's ozone design value is projected to continue to decline, reaching 65 ppb at some point between 2017 and 2022.
- Average impacts:
  - Biogenic emissions contribute approximately 4-5 ppb to peak 8-hour ozone averages;
  - Fire emissions in 2011 contributed 2-3 ppb to peak 8-hour ozone averages;
  - One state (Louisiana) is modeled to have a contribution of more than 1% of the new ozone NAAQS in 2017 at 2.00 ppb at CAMS 3 and 1.90 ppb at CAMS 38.
  - Anthropogenic emissions from Texas were estimated to have 21-22 ppb impact on peak 8-hour ozone averages at CAMS 3 and CAMS 38 in 2017.
  - The average contribution of emissions from oil and gas operations in the Eagle Ford Shale on peak 8-hour ozone concentrations at CAMS 3 and CAMS 38 is between 0.7 and 1.0 ppb.
  - The modeled impact of the I/M program on peak ozone levels 2012 at current monitoring locations in each county was the following:
    - Bastrop: 0.2 ppb reduction;
    - Caldwell: 0.0 ppb reduction;
    - Hays: 0.4-0.9 ppb reduction;
    - Travis: 0.6-0.9 ppb reduction; and
    - Williamson: 0.4-0.6 ppb reduction.
  - Texas Lehigh emission reduction program typically reduces peak 8-hour ozone concentrations by 0.06 ppb at CAMS 3 and CAMS 38, but much larger impacts of 0.10 – 0.16 ppb at CAMS 1603 and 1675. However, there are some occasions in which the NO_X reductions were modeled to actually increase peak 8-hour ozone concentrations.
- Sensitivities:
  - The sensitivity of peak 8-hour ozone levels at CAMS 3 and CAMS 38 to NO_X emissions from local point sources ranged from 0.0142 ppb per tpd of NO_X emissions (impact of Prairie Lea Compressor station in Caldwell County on CAMS 38) to as high as 0.2856 ppb per tpd of NO_X emissions (impact of Austin White Lime on CAMS 3), with an average contribution of about 0.05 – 0.06 ppb per tpd of NO_X emissions.
  - Average sensitivity of peak 8-hour ozone concentrations at CAMS 3 and 38 to NO_X reductions across the MSA are 0.09 ppb to 0.10 ppb per tpd of NO_X. This means it would take approximately 10-11 tons per day of NO_X emission reductions to achieve a 1 ppb reduction in peak 8-hour ozone levels.
  - Average sensitivity of peak 8-hour ozone concentrations at CAMS 3 and 38 to VOC reductions across the MSA are 0.001 to 0.002 ppb per tpd VOC reductions.

[8] http://www.capcog.org/documents/airquality/reports/2015/Photochemical_Modeling_Analysis_Report_2015-09-04_Final_Combined.pdf

- Peak 8-hour ozone concentrations at CAMS 3 and 38 are 50-70 times more responsive to changes in NO_X emissions than VOC emissions.
- Sensitivity of peak 8-hour ozone concentrations at CAMS 3 and 38 to NO_X reductions from the I/M program is 0.19 – 0.27 ppb per tpd of NO_X emissions.

6 CAPCOG 2016-2017 Near-Nonattainment Grant

In 2015, the Texas Legislature adopted a budget that included significant changes to the funding for the near-nonattainment grant program that provides the primary source of funding for CAPCOG's Air Quality Program. These changes included a new formula for allocating funding based on a minimum amount for each area and population and an increase in total funding for the program up to $6 million. Due to these changes, the near-nonattainment funding for CAPCOG's Air Quality Program increased from $699,986 for the FY 2014-2015 biennium up to $1,247,165.59 for the FY 2016-2017 biennium. On September 22, 2015, TCEQ approved CAPCOG's work plan, which includes:

1. Planning and Implementation Activities;
   1.1. Preparation of Annual Air Quality Reports;
   1.2. Preparation of Air Quality Plan Updates;
   1.3. Regional Air Quality Surveys;
   1.4. Local and Voluntary Emission Reduction Quantification;
   1.5. Updated Analysis of Potential Costs of Nonattainment;
   1.6. Air Quality Plan Implementation Assistance;
   1.7. Air Quality Outreach and Education Activities;
   1.8. Staff Support for the Central Texas Clean Air Coalition;
2. Emissions Inventory Projects;
   2.1. Analysis of 2014 National Emissions Inventory Data;
   2.2. Emissions Inventory Projections;
   2.3. Emissions Inventory Spatial Allocation Surrogates;
3. Conceptual Model Updates;
4. Program Administration and Management Activities;
   4.1. General Program Administration and Management Activities;
   4.2. Development of a Work Plan for the 2018-2019 Biennium;
5. Monitoring Projects;
   5.1. Continuous Monitoring in the 2016 and 2017 Ozone Seasons;
   5.2. CAPCOG Region Ozone Monitoring Network Review;
   5.3. Additional Ozone Monitoring Projects (including ozone sondes and field-testing new small-scale, commercially available ozone monitoring devices for accuracy);
6. Photochemical Modeling Projects;
   6.1. Source Apportionment Modeling;
   6.2. 2012 Modeling Platform Performance Evaluation;
   6.3. Future Year Baseline Projection;
   6.4. Sensitivity and Control Strategy Modeling;
   6.5. Secondary Analysis of Photochemical Modeling Data; and
7. Local Emission Reduction Grants.

A copy of this work plan is being submitted along with this Action Plan update.

7 CAMPO 2016-2017 Unified Planning Work Program

Through CAMPO's 2016-2017 Unified Planning Work Program (UPWP),[9] adopted in June 2015 and amended in November 2015, CAMPO is continuing to support regional air quality planning activities. Specific air quality activities identified in the UPWP include the following:

- **Task 2: Data Development and Maintenance**
  - **Subtask 2.1: MPO Staff Work for Task 2**
    - **2.1.5**: Air Quality and Energy Conservation Data Collection, Analysis and Planning, and Air Quality Modeling: This subtask includes identifying, analyzing, documenting, and reporting annually on transportation emission reduction measures (TERMS); providing technical and other support for regional air quality planning initiatives such as Ozone Advance Program and other initiatives to reduce transportation-related emissions; monitoring, evaluating, and reporting on relevant policy and technical information pertaining to air quality and energy conservation, conducting public education, outreach and support programs, including websites and social media, pertaining to air quality and energy conservation; conducting emissions modeling and providing training for staff.
    - **2.1.7**: Commute Solutions Program: This subtask covers activities related to conducting the regional Commute Solutions program. Specific activities will include, but are not limited to, coordinating the Regional Commute Solutions program with Commute Solutions Coalition members, developing, implementing, promoting, supporting, and participating in programs and activities that encourage alternative transportation commuting and travel demand management, maintaining and updating the Commute Solutions transportation information and ride-matching websites, e-mail lists, and social media, assisting employers with developing their own custom sub-sites within the framework of the myCommuteSolutions ride-matching and trip-planning website, and conducting a multi-media, bi-lingual (English and Spanish) outreach campaign to promote and provide educational information on various aspects of the Commute Solutions Program. The outreach campaign also includes educational promotional items and materials. This subtask also includes program tracking, evaluating, and reporting.
  - **Subtask 2.3: Air Quality/Commute Solutions – Related Work**
    - **2.3.1**. Commute Solutions Outreach Campaign: This task provides support for the Commute Solutions Outreach campaign. The general scope of services includes developing and implementing a regional multi-media, bi-lingual outreach campaign, including campaign materials, to promote the Commute Solutions website and motivate behavioral change to consider commute options other than by single occupancy vehicles. This ongoing work program identified is carryover from FYs 2014 and 2015; work will be done in FYs 2016 and 2017.
    - **2.3.3**: Commute Solutions Ride-matching and Trip Planning Website: This subtask includes providing website maintenance, hosting, support, and updates

[9] http://www.campotexas.org/wp-content/uploads/2015/11/UPWP-FYs-2016-and-2017_am-1_approved-11162015.pdf

to the myCommuteSolutions site. This website functions as a regional automated, web-based ride-matching system and a trip planner for alternative transportation modes. This ongoing work program identified is carryover from FYs 2014 and 2015; the work will be done in FYs 2016 and 2017.

8 Texas Emission Reduction Plan Grants

One of the cornerstones of the local emission reduction strategy is the Texas Emission Reduction Plan (TERP). Despite the importance of this program and its various types of emission reduction grants, the 2013 OAP Action Plan lacked as extensive of an analysis of the program's emission reduction benefits as may have been warranted. Therefore, this update includes a more thorough explanation of the program and its emission reduction benefits for the region.

8.1 Program Descriptions and Emission Reductions in the Austin-Round Rock MSA

TERP is a state program that provides financial incentives to reduce NO_X emissions in areas of the state with ozone problems. It includes a number of different programs, including a competitive emission reduction incentive grant (ERIG) program, a rebate program, programs targeted at promoting alternative-fueled vehicles, and a program designed at supporting new emission reduction technology. These programs are estimated to have achieved approximately 2.97 tons per day of NO_X emissions during the 2015 ozone season. Since this program began, the Austin-Round Rock MSA has received approximately 7% of the grant funding TCEQ has provided to areas across the state.

From 2001 through August 31, 2015, the TERP Diesel Emission Reduction Incentive (DERI) grant program that includes the ERIG program and the rebate grant program has reduced 8,675 tons of NO_X emissions within the Austin-Round Rock MSA through $67,707,651 in grants to replace and repower heavy-duty diesel vehicles and non-road equipment.[10] This translates into an average cost-effectiveness of $7,805 per ton of NO_X reduced. The estimated emission reductions from the program were 2.87 tons per day of NO_X emissions in fiscal year 2015 (September 1, 2014 – August 31, 2015).

There are also a number of programs aimed at achieving emission reductions specifically through the replacement of diesel vehicles with alternative-fueled vehicles. The Texas Clean Fleet Program (TCFP) provides funding to replace large fleets of vehicles with alternative-fueled vehicles, and the Texas Natural Gas Vehicle Grant Program (TNGVGP) provides funding to replace diesel-powered trucks with natural gas-powered trucks. Between 2010 and August 31, 2015, the TCFP program has provided $11,815,913 to reduced 123 tons of NO_X emissions in the Austin-Round Rock MSA, and reduced 0.10 tons per day of NO_X emissions in FY 2015.[11] This translates into a cost-effectiveness of $96,274 per ton of NO_X reduced for TCFP projects funded in the Austin-Round Rock MSA. While the TNGVGP had not yet financed replacement of vehicles that were operating primarily in the Austin-Round Rock MSA between 2012 and August 31, 2015, the program did finance four projects for a total of $1,975,141 that will achieve 78 tons of NO_X reductions over the next several years starting in FY 2016. This translates into an

[10] http://www.tceq.state.tx.us/assets/public/implementation/air/terp/reports/FY15/DERI_Projects_Area_WEB.pdf

[11] http://www.tceq.state.tx.us/assets/public/implementation/air/terp/reports/FY15/TCFP_Projects_Area_FuelType_WEB.pdf

average cost-effectiveness of $25,452 per ton of NO_X reduced, and 0.05 tons per day of NO_X emissions reductions between FY 2016 and 2020.[12]

The table below shows the current and projected emissions reductions in the Austin-Round Rock MSA for FY 2015-2020 from all projects under these programs that are currently underway. The decrease in emission reductions reflects the fact that each year, existing grants reach the end of their terms. The end of these terms corresponds with the period when the grant recipients would have likely replaced the older vehicles or equipment without the grant, so there are no emission reductions claimed after that point. This is why the emission reductions from current projects diminish each year beyond FY 2015.

Table 8-1. TERP Program NO_X Reductions FY 2015-FY 2020 from Current Projects for the Austin-Round Rock MSA

Program	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
DERI	2.87	2.42	1.80	1.88	1.61	1.24
TCFP	0.10	0.10	0.10	0.08	0.03	0.00
TNGVGP	0.00	0.05	0.05	0.05	0.05	0.05
TOTAL	**2.97**	**2.57**	**1.95**	**2.01**	**1.69**	**1.29**

The Texas Clean Transportation Triangle (CTT) Program provides grants for the installation of alternative fueling infrastructure in the region bounded by the Dallas-Fort Worth, Houston, and San Antonio metro areas along interstate highways 35, 45, and 10. While these grants do not directly reduce emissions, they do facilitate the conversion of diesel-fueled trucks to alternative fuels, which can reduce NO_X emissions. Between 2012 and August 31, 2015, this program has provided two grants of $400,000 each to stations in the Austin-Round Rock MSA – one in San Marcos, and one in Austin.

The New Technology Implementation Grant (NTIG) program is intended to offset the incremental cost of implementing existing technologies that reduce emissions from facilities and other stationary sources in Texas. Eligible projects include:

- **Advanced Clean Energy** projects that involve the use of coal, biomass, petroleum coke, solid waste, or fuel cells which use derived hydrogen in the generation of electricity, or creation of liquid fuels outside of existing fuel production infrastructure while co-generating electricity that meet minimum emission reduction requirements;
- **New Technology** projects that reduce emissions of criteria pollutants, hazardous air pollutants, or any other pollutants regulated under the Federal Clean Air Act or subject to requirements under TCEQ rules, regulations, permits, orders of the commission, or court orders; and
- **Electricity Storage** projects that stores electricity produced from wind and solar generation that provides efficient means of making the stored energy available during periods of peak energy use.

Projects selected for funding will receive a grant covering up to 50% of the implementation costs. $1 million in funding is set aside for electricity storage projects.

12 http://www.tceq.state.tx.us/assets/public/implementation/air/terp/reports/FY15/TNGVGP_Area_FuelType_WEB.pdf

During the last grant round for the NTIG program, which was open between March 26, 2014, and June 27, 2014, Austin Energy was awarded $1 million for an electricity storage project. This project involves a utility-scale renewable energy storage system, comprising six lithium-ion battery modules providing 1.5 megawatts (MW) of electric output and storing 3 MW-hours (MWh) of electricity from solar photovoltaic power. This project enables electricity generated from solar panels to be dispatched similar to a peaking plant. During the 2015 ozone season, based on data reported under EPA's Clean Air Market Data (CAMD) program, the gas-fired boilers and turbines at Austin Energy's Decker Creek Power Plant had peak emissions rates as high as 6.4 pounds (lbs) of NO_X per MW-hr of electricity generated at the boiler units with an average of 1.0-1.3 lbs of NO_X/MW-hr, and the turbines had peak rates as high as 57 lbs of NO_X/MW-hr, with averages of 2.0-3.8 lbs of NO_X/MW-hr.[13] To the extent that local dispatchable solar energy could displace generation that would otherwise occur at these units, this project is capable of reducing 3.744 pounds of NO_X per day from the Decker Creek plant based on a 2015 ozone season average of 1.248 lbs/MW-hr.

8.2 Projected Emission Reductions and Infrastructure Grants 2016-2020

During the 84th Legislative Session, the Texas Legislature approved significant increases in TERP grant funding for the 2016-2017 biennium compared to funding in the 2014-2015 biennium. The following table shows the total funding for each of the five key TERP programs mentioned above.

Table 8-2. TERP Grant Funding Authorized for FY 2014-2015 and FY 2016-2017

Program	FY 2014-2015	FY 2016-2017	Change	% Change
Emission Reduction Incentive Grants	$68,523,781	$123,475,284	$54,951,503	80%
Texas Clean Fleet Program	$7,759,616	$11,813,150	$4,053,534	52%
Texas Natural Gas Vehicle Grant Program	$24,830,772	$37,802,081	$12,971,309	52%
Clean Transportation Triangle Program	$7,759,616	$11,813,150	$4,053,534	52%
New Technology Implementation Grants	$4,655,770	$7,078,490	$2,422,720	52%
COMBINED	**$113,529,555**	**$191,982,155**	**$78,452,600**	**69%**

The table below shows an estimate of NO_X emission reductions for FY 2016-2017 based on current projects, funding amounts in the current budget, the Austin area's share of grant funding and cost-effectiveness for the DERI, TCFP, and TNGVGP programs. CAPCOG would expect another two alternative fuel station grants in the region in this period as well.

[13] Calculations for the turbine units were adjusted to reflect emissions rates used in the facility's annual emissions inventory. The emissions from these units reported in CAMD do not represent actual emissions rates, but rather, the "worst case scenario" default emissions rates that are used when recent stack test data is not available. A recent CAPCOG report includes further details about the rationale for adjusting the emissions data reported for these units in CAMD and is available online at: http://www.capcog.org/documents/airquality/reports/2015/Point_Source_Emissions_Inventory_Refinement.08-31-15.pdf.

Table 8-3. Estimated NO_X Reductions FY 2015-FY 2020 Based on Current Projects and FY 2016/2017 Funding

Program	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
DERI	2.87	2.76	2.48	2.56	2.29	1.92
TCFP	0.10	0.10	0.11	0.09	0.04	0.01
TNGVGP	0.00	0.08	0.11	0.11	0.11	0.11
TOTAL	**2.97**	**2.94**	**2.70**	**2.76**	**2.44**	**2.04**

One of the primary ways that participants in the OAP Action Plan can increase the emission reductions from the TERP program is to conduct outreach and technical assistance to potential grant recipients in order to increase the volume of applications from the Austin-Round Rock MSA and improve the average cost-effectiveness of grant applications that are submitted. CAPCOG will coordinate these outreach and technical assistance efforts.

9 Drive a Clean Machine Program

The budget adopted by the Texas Legislature for the FY 2016-2017 biennium maintains funding for the Drive a Clean Machine (DACM) Program (Also known as the Low-Income Vehicle Repair, Retrofit, and Replacement Program, or "LIRAP") that is being administered in Travis and Williamson Counties. For the FY 2016-2017 biennium, DACM funding for Travis and Williamson Counties is shown in the table below.

Table 9-1. DACM Program Funding FY 2016-2017

County	FY 2016	FY 2017	Total FY 2016-2017
Travis	$1,059,459	$1,059,459	$2,118,918
Williamson	$423,494	$423,494	$846,988
TOTAL	**$1,482,953**	**$1,482,953**	**$2,965,906**

In a July 30, 2014, response from EPA to CAPCOG following the submission of the annual air quality report for 2013, EPA stated, "*The low-income repair subsidy program is good for the local soul, but not necessarily a source of additional emission reductions compared to I/M. LIRAP simply helps poor people comply with I/M…If you could gather data that suggests that LIRAP increases the I/M compliance rate, then that might be a reason for thinking that additional emission reductions will come from that project*."

In light of this response, additional language is being provided to clarify the ways that the CAC understands the DACM/LIRAP reduces emissions. There are three primary ways that the CAC believes that the DACM/LIRAP reduces vehicle emissions compared to areas that have the I/M program but do not have a program like DACM/LIRAP:

1. Repair and replacement assistance for qualifying drivers with vehicles that fail an emissions test increases the emission reduction benefit from the I/M program by increasing **compliance rates** and reducing **waiver rates**;
2. Replacement assistance for qualifying drivers with vehicles that are over 10 years accelerates the replacement of higher-emitting vehicles with lower-emitting vehicles and reduces initial test failure rates since newer vehicles are less likely to fail an initial test;

3. The availability of financial assistance for repair or replacement improves the **compliance rate** for the I/M program, since moderate/low income drivers have an assurance that financial assistance will be available to them if needed if they fail an emissions test.

On the 1st count, since the rules for the I/M program allow for low-income waivers if a vehicle fails an emissions test, the DACM's funding for repair or replacement of a failing vehicle directly reduces the number of motorists who would otherwise be able to receive a low-income time extension or an individual vehicle waiver. Since the **waiver rate** is one of the three components of the **compliance factor** used in modeling on-road emissions in counties with I/M programs, a reduction in the waiver rate results in reductions in emissions. In 2013, there were only 149 vehicles in Travis and Williamson Counties that received any kind of waiver out of a total of 53,778 vehicles that failed an initial test, meaning that the waiver rate was only 0.26%. For comparison, EPA's performance standard for I/M programs is a waiver rate of 3%.[14]

In 2014, DACM funding provided repair assistance for 431 vehicles in Travis and Williamson Counties that had failed an emissions test. Given the limited transportation options low-income individuals have available to them, it is reasonable to assume that a large percentage of the drivers of these vehicles would have continued operating these vehicles out of compliance if they had not received funding assistance, since there is a requirement that the driver spend at least $600 on repairs before qualifying for an individual vehicle waiver. By ensuring that the pollution control systems on these vehicles are operating properly, the DACM program ensures that these motorists are not out of compliance with the program rules, thereby increasing the **compliance rate**.

On the 2nd count, one important feature of the DACM/LIRAP program is that motorists with vehicles that are over 10 years old may receive assistance to replace the vehicle, even if it has not failed an emissions test. Technically, this situation is not directly related to any aspect of the I/M program. Vehicle replacement funding under this circumstance acts much in the same way that TERP grants or DERAQ grants do by accelerating turnover of older, dirtier vehicles. Since newer vehicles are required to meet more stringent emissions standards and are less likely to fail an initial emissions test, replacement assistance is able to reduce emissions by ensuring that **motorists are able to drive lower-emitting vehicles**. In 2014, a total of 234 vehicles were replaced using DACM funding.

On the 3rd count, the existence of the program and availability of financial assistance should – in and of itself – increase the compliance rate for the I/M program. Low-income motorists would be expected to be less likely to bring their vehicle in for a test if they knew or suspected their vehicle wouldn't pass and they had no means to get it repaired. By providing a compliance mechanism, the DACM program should also help convince such individuals to bring their vehicles in for testing, thereby increasing the **compliance rate**.

While CAPCOG does not have a direct estimate of the emissions reductions that the program is achieving, it plans to work on developing an estimate in 2016.

10 Local Initiative Projects

Under Section 382.220 of the Texas Health and Safety Code, jurisdictions that participate in the LIRAP program also receive funding for "Local Initiative Projects" (LIP). According to the statute, eligible activities that can be funded under this program include:

[14] http://www3.epa.gov/otaq/epg/general/420b14006.pdf

1. Expand and enhance the AirCheck Texas Repair and Replacement Assistance Program;
2. Develop and implement programs or systems that remotely determine vehicle emissions and notify the vehicle's operator;
3. Develop and implement projects to implement the commission's smoking vehicle program;
4. Develop and implement projects in consultation with the director of the Department of Public Safety for coordinating with local law enforcement officials to reduce the use of counterfeit registration insignia and vehicle inspection reports by providing local law enforcement officials with funds to identify vehicles with counterfeit registration insignia and vehicle inspection reports and to carry out appropriate actions;
5. Develop and implement programs to enhance transportation system improvements; or
6. Develop and implement new air control strategies designed to assist local areas in complying with state and federal air quality rules and regulations.

The funding for this program is not allowed to be used for local government fleet acquisition or replacement, call center management, application oversight, invoice analysis, education, outreach, or advertising purposes. The funding is provided as a 50% match for any such efforts undertaken by the participating counties. For FY 2016 and FY 2017, a total of $393,910.00 has been allocated to Travis and Williamson Counties for LIP. The table below shows the funding for LIP for FY 2016 and 2017 for each county. These amounts are a significant increase from the funding that had been provided for FY 2014 and 2015.

Table 10-1. LIP Funding FY 2016-2017

County	FY 2016	FY 2017	Total FY 2016-2017
Travis	$136,713	$136,713	$273,426
Williamson	$60,242	$60,242	$120,484
TOTAL	**$196,955**	**$196,955**	**$393,910**

11 Outreach and Education Plan

In early 2014, CAPCOG developed a specific plan for implementing the outreach and education regional measure in the OAP Action Plan. This plan should be considered a companion to this Action Plan, and describes in detail the specific types of actions and timeframes for outreach and education activities within the region. A copy of this plan can be found at: http://www.capcog.org/documents/airquality/Ozone_Advance/Outreach_and_Education_Plan.pdf.

12 Research Priorities

The research priorities identified by the CAC in December 2013 were the following:

- An assessment of vehicle inspection and maintenance program compliance levels;
- An assessment of air quality impacts of options for shifting traffic from Interstate Highway 35 to State Highway 130;
- An assessment of impacts of shifting modes of transportation; and
- An assessment of air quality impacts of regional non-road fleets and policy evaluation.

Since December 2013, CAPCOG has completed an assessment of the vehicle emissions inspection and maintenance program compliance levels[15] and an assessment of emissions from non-road construction equipment in key sectors where participants in the OAP Action Plan have significant leverage to impact emissions,[16] as well as updates to emissions estimates for non-road agricultural equipment.[17] To date, CAPCOG has not completed a policy evaluation for non-road fleets, nor has it completed assessments of shifting traffic from Interstate Highway 35 to State Highway 130 or shifting modes of transportation.

Based on CAPCOG's FY 2016-2017 near-nonattainment grant work plan, regional research priorities for 2016 and 2017 that would specifically support or guide actions to reduce emissions or exposure include:

- Continued ozone monitoring at all current monitoring stations in the region;
- Quantification of emission reduction measures being implemented in the region;
- Analysis of the costs and benefits of various emission reduction measures that could be implemented in the region through voluntary or local action;
- Assessment of the impact of outreach and education activities on behavior change, including the impact of ozone action day notification and air quality forecasts;
- Projecting ozone levels for key future analysis years; and
- Modeling the impact of changes in local emissions on peak ozone levels.

CAPCOG plans to complete a number of other research projects between 2016 and 2017 under its near-nonattainment grant. Other research projects planned for 2016 and 2017 include:

- Evaluating high ozone days to determine if they were influenced by exceptional events;
- Evaluating the impacts of wildfires on local ozone levels;
- Evaluating the performance of new photochemical modeling platforms for the region; and
- Reviewing and analyzing the 2014 National Emissions Inventory.

13 Coordination with Adjacent Metro Areas

In recognition of the impact that the adjacent San Antonio-New Braunfels MSA and the Killeen-Temple MSA have on ozone pollution in the Austin-Round Rock MSA and the impact that emissions within the Austin-Round Rock MSA has on these adjacent MSAs, CAPCOG's Air Quality Program and the CAC will undertake efforts in 2016 to step up coordination with the air quality programs at the Alamo Area Council of Governments (AACOG) and the Central Texas Council of Governments (CTCOG) and their air quality committees. Three primary objectives of these efforts will be to coordinate:

1. Air quality technical research;
2. Regional air quality plan development and implementation; and
3. Reviews of and comments on air quality-related rules and legislation.

Coordination among these three areas will enable each COG and air quality committee to benefit from the experiences, insights, and perspectives of the other areas and will help reduce the risk that counties

[15] http://www.capcog.org/documents/airquality/reports/2015/Austin_Area_I-M_Benefit_Analysis_2015.pdf

[16] http://www.capcog.org/documents/airquality/reports/2014/Final_Report_Constr_Equip_Update_12-30-14.pdf

[17] http://www.capcog.org/documents/airquality/reports/2015/CAPCOG_Non-Road_Ag_Equipment_EI_Updates_2015-08-19.pdf

within the Austin-Round Rock MSA are designated nonattainment due to ozone NAAQS violations that may occur in these other areas and vice-versa.

Already, air quality staff members from AACOG and CAPCOG are included in communications sent to the CAC and the CACAC, and CAPCOG has collaborated with AACOG on a number of research projects and the development of near-nonattainment grant work plans in recent years.

14 Future Plan Updates

The existing Action Plan calls for annual status summaries of the region's Action Plan by December 31st of each year through 2018. The summary, based on information tracked for the annual report was to include:

- Implementation status of planned measures/programs
- Current air quality
- Stakeholder meetings/event
- Additions or revisions to the Action Plan

Since the region's annual air quality report covers the first three of these items, and it is not necessarily desirable to update the specific commitments and actions every single year, the Action Plan is being updated as follows:

The Clean Air Coalition members and other participating organizations will conduct a thorough review of emission reduction measure commitments in early 2016 in order to evaluate whether changes to the commitments may be warranted at this time. Once new commitments are made, CAPCOG will prepare an update to the Action Plan and submit it to the CAC for adoption. Beyond 2016, the CAC will evaluate the status of the plan on an ongoing basis and consider updates to the plan as needed to account for new information, strategies, or actions.