Austin-Round Rock Metropolitan Statistical Area Annual Air Quality Report
January 1, 2013 – December 31, 2013

Prepared by the Capital Area Council of Governments Air Quality Program

Approved by the Central Texas Clean Air Coalition on June 25, 2014

1 Executive Summary

The Central Texas Clean Air Coalition (CAC) signed up to participate in the United States Environmental Protection Agency's (EPA's) Ozone Advance Program on May 16, 2012. In its letter to EPA, the CAC indicated that the emission reduction measures that were included in the region's 8-Hour Ozone Flex Plan (8-O3 Flex Plan) would remain in effect through December 31, 2013, and would then be replaced by a new action plan. As part of its ongoing planning efforts, and in accordance with the requirements of both the 8-O3 Flex Program and the Ozone Advance Program, the CAC submitted annual air quality reports in June 2012 and June 2013. These reports included information covering May 1 – April 30, based on when the 8-O3 Flex Plan was originally adopted. This year's report shifts the coverage period to the previous calendar year (January 1 – December 31) in order to align the report with emissions inventory and air monitoring data, and in order to simplify data collection, since stakeholders often only had data available on a calendar year or fiscal year (October 1 – September 1) basis.

This report provides:

- an update on the region's compliance with the ozone National Ambient Air Quality Standards (NAAQS) and analysis of ambient air quality data collected in 2013;
- a review of emission reduction measures implemented in 2013, including a comparison of what was implemented compared to each participant's commitments;
- a review of ozone planning and outreach and education activities completed in 2013;
- a review of ozone-related technical research completed in 2013; and
- a look forward to developments that could have impacts on regional air quality planning.

This report is intended to both fulfill EPA's program requirements for reporting under the Ozone Advance Program and to provide the region's stakeholders with regular review of the extent to which the region is meeting its air quality goals. As expressed in the Ozone Advance Program Action Plan adopted by the CAC in December 2013, the region's goals are to:

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.

The Action Plan describes the steps that participants plan to take to achieve these goals and to track performance over the period covered by the plan, January 1, 2014 – December 31, 2018. This year's report will provide the starting point for discussions about action plan updates scheduled for the end of this year. As part of the annual report, the Capital Area Council of Governments (CAPCOG) collected data from each plan participant on some key indicators that can be used to independently monitor performance of measures and to compare performance across entities. Plan participants were asked to submit data on their vehicle and equipment fleets, fuel consumption, electricity consumption, resource consumption, and contracted services that can result in emissions. These data will enable quantification of the emission reduction benefits of activities described in this plan.

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2 Air Quality Monitoring Data

2.1 Compliance with Ozone National Ambient Air Quality Standards

The Austin-Round Rock Metropolitan Statistical Area (MSA) remained in attainment of all ozone NAAQS through the end of 2013, with the eight-hour ozone design value decreasing from 74 ppb to 73 ppb. The region's two regulatory monitoring stations are Continuous Air Monitoring Station (CAMS) 3 and CAMS 38, which are designated in EPA's Air Quality System (AQS) as site numbers 484530014 and 484530020, respectively. The table below shows the fourth-highest maximum daily eight-hour ozone averages for 2011-2013 and the 2013 design values at each station. These monitoring data have been certified by the Texas Commission on Environmental Quality (TCEQ).

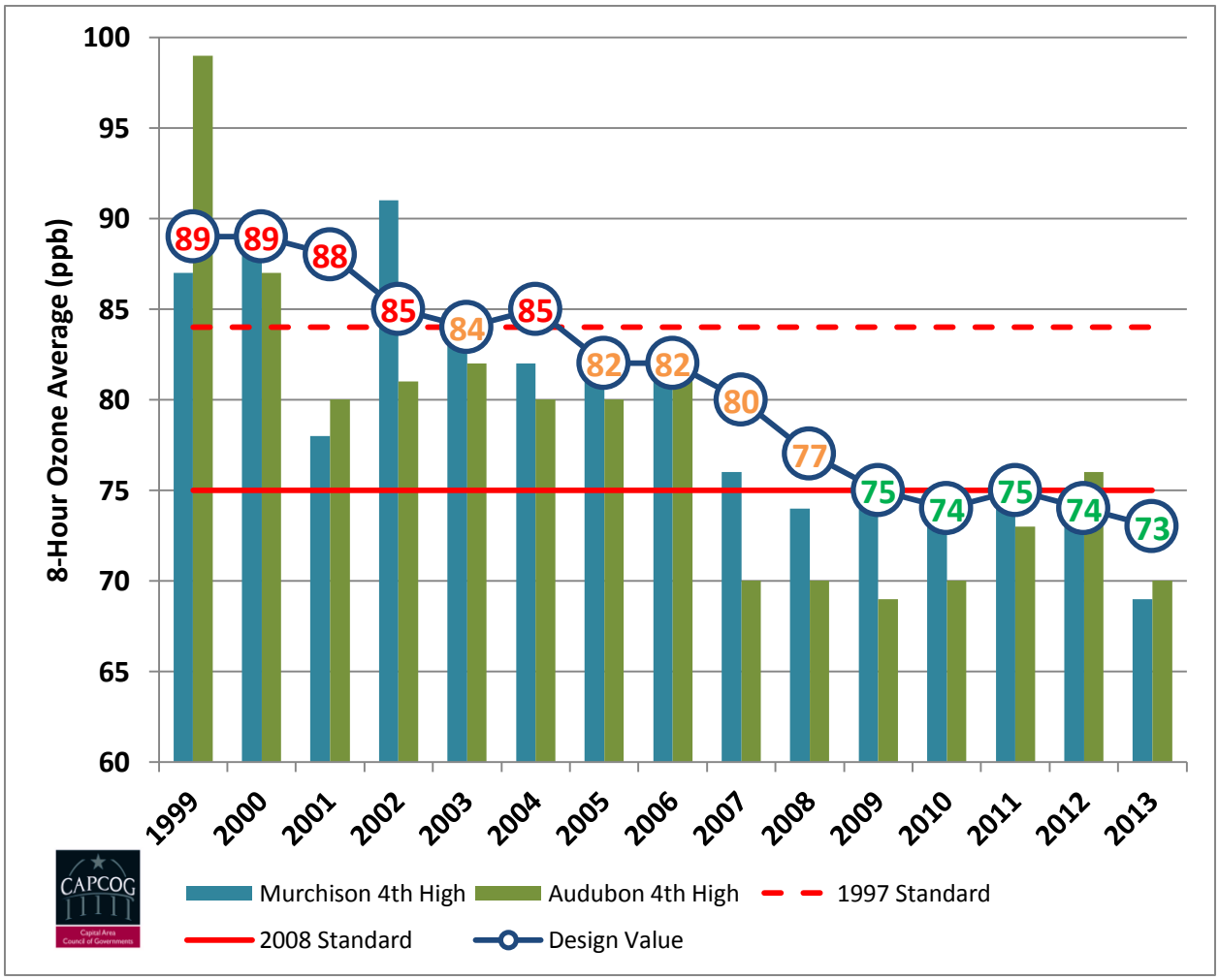
Table 1: Fourth Highest Maximum Daily Eight-Hour Ozone Averages and Design Values at Regulatory Stations, 2011-2013 (ppb)

Station	AQS Site Number	County	2011	2012	2013	Design Value
CAMS 3	484530014	Travis	75	74	69	**72**
CAMS 38	484530020	Travis	73	76	70	**73**

2.2 Ozone Design Value Trends

Ozone levels in 2013 were substantially lower than they had been in the previous several years. The resulting decrease in the design value from 74 ppb to 73 ppb continues the long-term downward trend in ozone levels within the region. From 2007-2012, it appeared that this progress may have stalled, since the fourth highest maximum daily eight-hour ozone averages at the key regulatory monitor (CAMS 3) were 74-76 ppb each year. However, with the fourth highest eight-hour ozone averages for the two regulatory monitors dropping to 69 ppb and 70 ppb in 2013, it appears that progress in reducing ozone design values has resumed. The figure below shows the ozone data for the regulatory monitoring stations from 1999-2013.

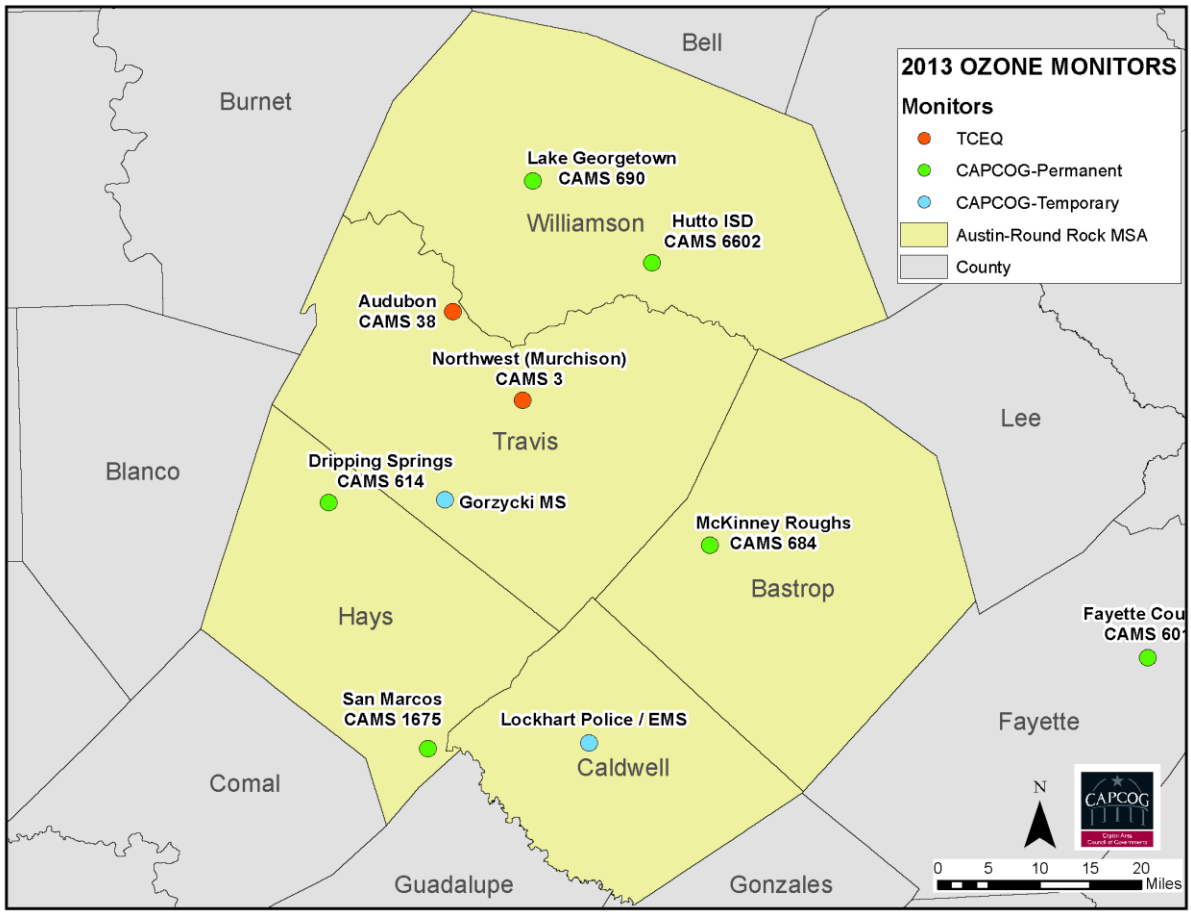
Figure 1: Austin-Round Rock MSA Design Value 1999-2013



2.3 Ozone Data from CAPCOG Research Monitors

CAPCOG operates a number of research ozone monitors within the region in order to supplement the regulatory ozone monitors operated by TCEQ. CAPCOG's monitors provide useful information on the spatial variations in ozone levels within the region and can be used to analyze ozone transport into and within the region. While these monitoring stations do not meet regulatory ozone monitoring station requirements, they do provide valuable air quality data to the region. In 2013, CAPCOG operated six CAMS, including one in Bastrop County, one in Fayette County, two in Hays County, and two in Williamson County. CAPCOG also operated two temporary monitoring stations that did not report out to TCEQ's website – one in southwestern Travis County, and one in Lockhart. These two sites will become permanent stations starting with the 2014 ozone season. The figure below shows the locations of the ozone monitors in the region.

Figure 2: Ozone Monitors in the Austin-Round Rock MSA, 2013



The table below shows the fourth highest maximum daily eight-hour ozone concentration recorded at each of the permanent stations within the MSA from 2011-2013, along with the three-year average at each station.

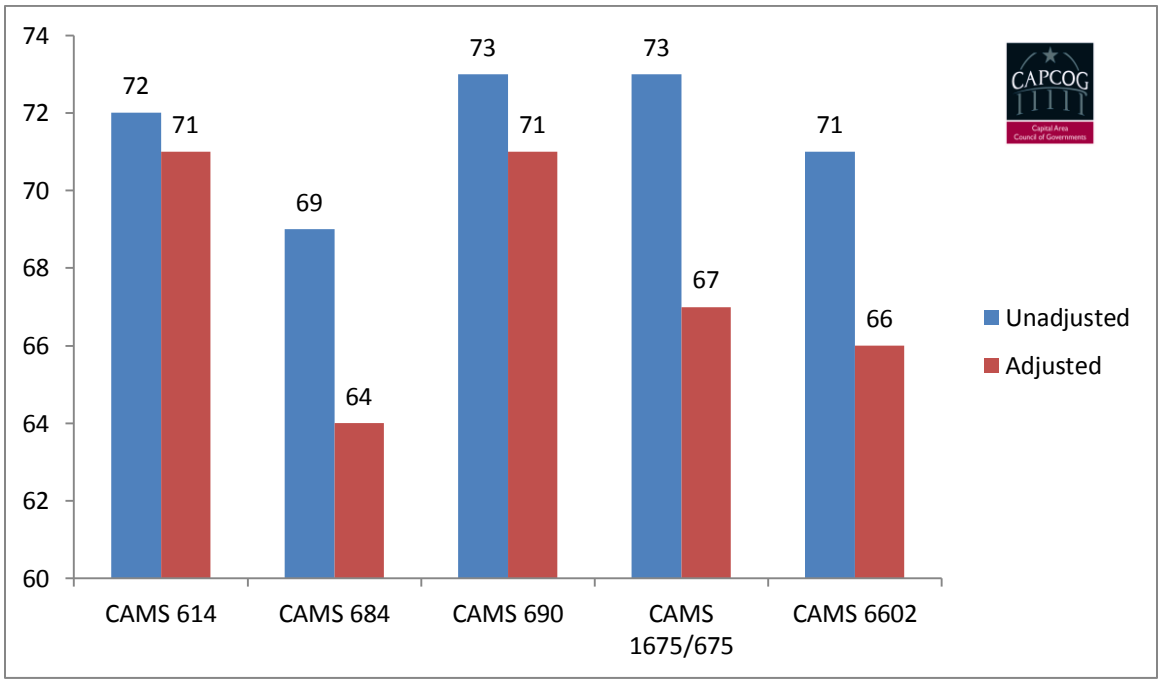
Table 2: Fourth Highest Daily Maximum Eight-Hour Ozone Averages at CAPCOG Stations, 2011-2013

Station	County	2011	2012	2013	3-Year Avg.
614	Hays	77	73	67	72
684	Bastrop	72	71	64	69
690	Williamson	73	73	75	73
1675/675	Hays	78	72	70	73
6602	Williamson	75	69	69	71

One of the differences between CAPCOG's regulatory monitoring stations and TCEQ's monitoring stations is the data quality procedures. TCEQ's stations are equipped with automated calibration systems which enable frequent calibrations of the ozone instruments and ensure higher data accuracy.

Up through the end of 2013, CAPCOG monitoring stations operated under a different set of data quality procedures that involved two or three manual calibrations over the course of the ozone season, and then monthly calibration checks in between manual calibrations. The calibration checks were used to assess whether instruments were recording data within an acceptable deviation from a known quantity of ozone. As long as the data were within that range, the instrument was left as is. This meant that the data as reported may be systematically high or low compared to what it should be. If the monitors had actually been recalibrated at each one of those checks, the ozone levels reported at each of the stations would have been lower at all five of CAPCOG's stations that were in operation from 2011-2013, some of them by 5 ppb or more for the three-year average of the 4th maximum daily eight-hour average. This indicates that ozone levels outside of Travis County are likely quite a bit lower than previously thought. The figure below shows the three-year averages with adjusted and unadjusted data.

Figure 3: Three-Year Average of Fourth Highest Daily 8-Hour Ozone Maxima at CAPCOG Stations, 2011-2013



2.4 Estimated Seasonal Ozone Exposure

In the 2nd External Draft of EPA's *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards*[1], which was released in January 2014, the Office of Air Quality Planning and Standards (OAQPS) recommended that the administrator adopt a new secondary ozone standard that would be more specifically targeted at protecting vegetation from cumulative seasonal ozone exposure. Specifically, they recommended a standard that uses a "W126" statistic uses weighted one-hour ozone averages between 8 am – 8 pm over a period of three consecutive months. This index would then be averaged across three years to get design values that would be expressed in "part-per million – hours," or "ppm-hours." They specifically recommended that the administrator consider a range from

[1] http://www.epa.gov/ttn/naaqs/standards/ozone/data/20140131pa.pdf

"somewhat above 15 ppm-hours" at the high end to 7 ppm-hours at the low end. For context, in 2011, as part of the reconsideration of the 2008 ozone standard, the EPA administrator went as far as sending a final ozone NAAQS to the Office of Management and Budget (OMB) that included a secondary ozone standard of 13 ppm-hours, before OMB asked EPA to cancel its reconsideration.

CAPCOG has calculated what the 2013 W126 design values would be for the two regulatory monitoring stations, and what the three-year average would be at the research monitors that have collected enough data to provide a useful 3-year average. These data are shown in the table below.

Table 3: Cumulative Seasonal Exposure Calculations for Austin-Round Rock MSA Ozone Stations, 2011-2013

CAMS	2011	2012	2013	Avg.
3	14	10	7	10
38	12	12	8	11
614	15	10	4	10
684	11	7	5	8
690	14	9	11	11
1675	14	8	6	9
6602	14	6	6	9

These data, which – for the research monitors includes the data as reported – indicate that the region falls within the lower end of the range recommended by OAQPS. The sharp decrease in the level of the index from 2011 to 2013 would seem to be yet another indication of the extent to which 2011 may have been an anomalous year for ozone levels – not only within the region, but across the entire state.

3 Emission Reduction Measures

This section provides details on the emission reduction measures that were implemented within the Austin-Round Rock MSA in 2013. These include on-going measures implemented by local governments and other participants in the regional air quality plan, emission reduction measures implemented regionally, and state rules that are applicable to counties within the Austin-Round Rock MSA.

3.1 Voluntary Local Measures

This section provides an update on implementation status of a number of emission reduction measures that were committed to as part of the 8-O3 Flex Plan, as well as other measures that may have been implemented and reported on by participating organizations above and beyond any commitment they may have made. The commitments that were in effect during 2013 were the measures listed in Appendix B to the 8-O3 Flex Plan and any other commitments made by organizations that began participating in this plan after the Flex Plan was adopted in 2008.

Each organization made a series of commitments from the following list of measures:

- Access Management;
- Airport Clean Air Plan, Including:
  - Airside infrastructure in place for use by airside tenants;

  - Alternative fuels for shuttle buses;
  - Alternative fuels available for aviation landside users;
- Alternative Fuel Vehicles;
- Business Evaluation of Fleet Including Operations and "Right-Sizing;"
- Cleaner Diesel;
- Commute Alternatives, Including:
  - Compressed Work Week;
  - Flexible Work Schedule;
  - Carpool or Alternative Transportation, May Include Incentives;
  - Employer Subsidized Transit;
  - Teleworking (Full Time);
  - Teleworking (Part Time);
  - Bicycle and Pedestrian Facilities;
  - Other Alternative Commute Infrastructure;
- Direct Deposit;
- Drive-Through Facility Restrictions on Ozone Action Days;
- Electric Utility Investments in Energy Demand Management Programs;
- Environmental Dispatch of Power Plants;
- E-Government and/or Available Locations;
- Expedited Permitting for Mixed-Use, Transit-Oriented, or In-Fill Development;
- Fueling of Vehicles in the Evening;
- Idling Restrictions for Employees;
- Landscaping Voluntary Start at Noon on High Ozone Days (Education Program);
- Low Emission Vehicles;
- Low-Volatile Organic Compounds (VOC) Striping Material;
- Low-VOC Asphalt;
- Open Burning Restrictions;
- Ozone Action Day Education Program, Including:
  - Employee Education Program;
  - Public Education Program;
  - Ozone Action Day Notification Program;
  - Ozone Action Day Response Program;
- Resource Conservation;
- Shaded Parking;
- Shifting the Electric Load Profile;
- Texas Emission Reduction Plan (TERP) Grants;
- Transit-Oriented Development;
- Transportation Emission-Reduction Measures (TERMs);
- Tree Planting;
- Urban Heat Island/Cool Cities Program;
- Vapor Recovery on Pumps; and
- Vehicle Maintenance According to Manufacturer Specifications.

During May 2014, CAPCOG surveyed the organizations participating in the plan to find out whether they were still implementing the measures included in the 8-O3 Flex Plan, and whether there were any other measures that were implemented beyond what were committed to. CAPCOG also asked organizations

to submit some operational details that will help facilitate quantification of the emission reduction benefits from these measures as the region moves forward. CAPCOG has summarized the results of the surveys of the participants by grouping the measures into several categories in order to enable easier comparison across organizations. The measures are grouped into the following categories, presented in tables that follow:

- Commute Reduction Measures – any measures designed to reduce the emissions from an organization's employees commuting to work, separated into the following sub-groupings:
  - Work Schedule Changes;
  - Commuter Reduction Programs; and
  - Alternative Commute Infrastructure;
- Development Measures – measures designed to reduce the growth in emissions-causing activity, such as vehicle miles traveled or energy consumption, through development-related policies;
- Energy and Resource Conservation Measures – measures designed to conserve or otherwise reduce emissions-generating activity attributable to consumption of energy, water, or other physical goods;
- On-Road Fleet Management – measures designed to reduce emissions attributable to on-road fleets owned and operated by organizations participating in the plan;
- Outreach and Education – measures designed to influence people to change their emissions-generating behavior;
- Other Measures – other emission reduction measures that do not fall into one of the other categories listed above.

Each table presented shows a series of check boxes. If a cell contains two check boxes, the first check box indicates that the organization made a specific commitment to implement that measure, and the second check box indicates whether they actually implemented that measure. Additional explanations are provided where appropriate to clarify how to interpret each table.

A handful of the measures that were initially committed to are no longer relevant, or have changed in nature such that they require further explanation here. These two measures are "Environmental Dispatch of Power Plants" and "Cleaner Diesel." The first of these was a measure that Austin Energy committed to under the 8-O3 Flex Plan, and which it implemented during ozone season from 2008-2010, but which no longer became possible to implement once the new "nodal market" structure of the electricity grid was implemented by the Electric Reliability Council of Texas (ERCOT) on December 1, 2010.

The second measure that has significantly changed is the "Cleaner Diesel" measure. For the 2008-2010 ozone seasons, fuel suppliers were able to meet the "Texas Low-Emission Diesel" (TxLED) requirements of 30 Texas Administrative Code (TAC), Chapter 114, Subchapter H, Division 2 – Low Emission Diesel, through credits that were generated from the early introduction of low-sulfur gasoline earlier in the decade.

The "Cleaner Diesel" measure included in the 8-O3 Flex Plan involved organizations including specifications in their fuel contracts that their diesel must be treated with a low-nitrogen oxides (NO_X) additive such as Oryxe in order to achieve equivalent emission reductions to TxLED. Since the option of using these credits to meet the requirements of the rule expired at the end of 2010, the "cleaner diesel"

measure was no longer relevant, since all fuel supplied would from that point on need to physically meet those requirements. However, TCEQ has issued guidance indicating that those rules apply only to petroleum-based diesel, and not to biodiesel or to the biodiesel portion of blends such as B20 (20% biodiesel, 80% petroleum diesel). The only organization that reported purchasing biodiesel was the City of Austin, and it has included specifications in its contracts to ensure that the biodiesel is treated with low-NO_X additives in order to ensure that it achieves equivalent emission reductions to TxLED. However, aside from this unique case, the "Cleaner Diesel" measure is now obsolete.

- County Governments:
  - Bastrop County;
  - Caldwell County;
  - Hays County;
  - Travis County; and
  - Williamson County;
- City Governments:
  - City of Austin (including Austin Energy and Austin-Bergstrom International Airport);
  - City of Bastrop;
  - City of Cedar Park;
  - City of Elgin;
  - City of Georgetown;
  - City of Hutto;
  - City of Lockhart;
  - City of Luling;
  - City of Pflugerville;
  - City of Round Rock;
  - City of San Marcos;
  - City of Sunset Valley; and
  - City of Taylor;
- Regional Governmental Agencies:
  - Capital Metropolitan Transit Authority (CapMetro);
  - Capital Area Metropolitan Planning Organization (CAMPO);
  - CAPCOG;
  - Central Texas Regional Mobility Authority (CTRMA); and
  - Lower Colorado River Authority (LCRA);
- State Government Agencies:
  - TCEQ;
  - Texas Department of Transportation Headquarters (TxDOT-HQ); and
  - Texas Department of Transportation-Austin District (TxDOT-Austin);
- Non-Profit Groups:
  - CLEAN AIR Force; and
  - Lone Star Clean Fuels Alliance; and
- Private Sector Entities:
  - Texas Lehigh Cement Company.

3.1.1 Commute Reduction Measures

Emissions from on-road passenger vehicles account for about 27 tons per day of NO_X emissions in 2013, which is just over a quarter of all anthropogenic NO_X emissions generated from the five-county MSA. Most of these emissions come from commuting, and therefore, commute reduction measures are a necessary component of any regional effort to reduce ozone. The table below shows the number of employees each organization directly participating in this plan reported for 2013.

Table 4: Number of Employees, 2013

Organization	Full-Time	Part-Time, Seasonal, or Contract	Total
Bastrop County	416	6	422
Caldwell County	220	4	224
Hays County	832	0	832
Travis County	4,000	1,418	5,418
Williamson County	1524	50	1574
City of Austin	12,587	1,201	13,788
City of Bastrop	112	5	117
City of Cedar Park	392	100	492
City of Elgin	67	30	97
City of Georgetown	509	27	536
City of Hutto	81	6	87
City of Lockhart	140	8	148
City of Luling	80	10	90
City of Pflugerville	302	101	403
City of Round Rock	767	50	817
City of San Marcos	531	73	604
City of Sunset Valley	29	15	44
City of Taylor	135	7	142
CAPCOG	52	5	57
CAMPO	15	0	15
CapMetro	250	1,950	2,200
CTRMA	19	1	20
LCRA	1,731	0	1,731
TCEQ	2,584	18	2,602
TxDOT-Austin	495	0	495
TxDOT-HQ	1,842	0	1,842
CLEAN AIR Force	2	1	3
Lone Star Clean Fuels Alliance	1	0	1
Texas Lehigh	148	5	153
TOTAL	**29,863**	**5,091**	**34,954**

Out of a total of 857,257 people employed MSA-wide in July 2013, based on Texas Workforce Commission Data on Quarterly Employment and Wages, organizations directly participating in this plan represent 4.1% of all employees within the region, who contribute approximately 1.1 ton per day of emissions from passenger vehicles. This does not include another 68,200 employees (8.0% of the region-wide total) who work for companies or organizations that participate in this plan indirectly through the Clean Air Partners Program.

3.1.1.1 Work Schedule Changes

Employers can reduce the emissions attributed to their employees commuting to work through changes in work schedules that either avoid the employee needing to commute to work at all – such as teleworking (when an employee can work remotely) or compressed work week options (when an employee works 80 hours, but only comes into the office eight or nine days over a two-week period) – or by shifting workers' commute times to when the roadways will be less congested, leading to the commute trip having a lower emission rate per mile traveled. The following table shows which organizations offered their employees work scheduling options that could reduce emissions, as well as whether or not that measure was a commitment for 2013.

Table 5: Which of the Following Work Scheduling Options are Offered to Employees?

Entity	Flexible Work Schedule	Compressed Work Week	Full-Time Teleworking	Part-Time Teleworking
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 Pflugerville	☐ ☒	☐ ☐	☐ ☐	☐ ☐
City of Round Rock	☒ ☒	☒ ☒	☐ ☒	☒ ☒
City of San Marcos	☐ ☒	☐ ☒	☐ ☐	☐ ☐
City of Sunset Valley	☐ ☒	☐ ☒	☐ ☐	☐ ☐
City of Taylor	☐ ☐	☐ ☐	☐ ☐	☐ ☐
CAMPO	☒ ☒	☒ ☒	☐ ☐	☒ ☒
CAPCOG	☒ ☒	☐ ☒	☐ ☐	☐ ☒
CapMetro	☒ ☒	☒ ☒	☐ ☒	☐ ☒

Entity	Flexible Work Schedule	Compressed Work Week	Full-Time Teleworking	Part-Time Teleworking
CTRMA	☐ ☒	☐ ☐	☐ ☐	☐ ☐
LCRA	☐ ☒	☐ ☒	☐ ☒	☐ ☒
TCEQ	☒ ☒	☒ ☒	☐ ☐	☒ ☒
TxDOT Austin	☒ ☒	☒ ☒	☐ ☒	☒ ☒
TxDOT HQ	☐ ☒	☐ ☒	☐ ☐	☐ ☒

Several organizations provided detailed data on the number of employees who participated in work schedule change options. These data are presented in the table below.

Table 6: Work Schedule Changes

Organization	Total Employees	Flex Schedules	Compressed Work Week	Telecommute
Bastrop County	Total: 422 Full-Time: 416 Other: 6	NR	58 (14%)	0
Travis County	Total: 5,418 Full-Time: 4,000 Other: 1,418	NR	600 (15%)	139 (3%)
Williamson County	Total: 1,574 Full-Time: 1,524 Other: 50	1,100 (72%)	100 (7%)	5 (0.3%)
City of Bastrop	Total: 117 Full-Time: 112 Other: 5	30 (27%)	0	0
City of Cedar Park	Total: 492 Full-Time: 392 Other: 100	200 (51%)	0	0
City of Hutto	Total: 87 Full-Time: 81 Other: 6	20 (25%)	8 days – 22 (27%) 9 days - 0	0
City of Lockhart	Total: 148 Full-Time: 140 Other: 8	13 (9%)	8 days – 13 (9%) 9 days – 0	0
City of Pflugerville	Total: 403 Full-Time: 302 Other: 101	87 (29%)	Total – 66 (22%) 8 days – 62 (21%) 9 days – 4 (1%)	0
City of San Marcos	Total: 604 Full-Time: 531 Other: 73	206 (39%)	21 (4%)	0
City of Sunset Valley	Total: 44 Full-Time: 29 Other: 15	18 (62%)	12 (27%)	0

Organization	Total Employees	Flex Schedules	Compressed Work Week	Telecommute
CAMPO	Total: 15 Full-Time: 15 Other: 0	10 (67%)	0 (0%)	2 (13%)
CAPCOG	Total: 57 Full-Time: 52 Other: 5	40 (77%)	4 (8%)	0
CTRMA	Total: 20 Full-Time: 19 Other: 1	15 (79%)	0	0
TCEQ	Total: 2,602 Full-Time: 2,584 Other: 18	NR	NR	61 (2%)
TxDOT-Austin	Total: 524 Full-Time: 495 Other: 29	269 (54%)	0	0
TxDOT-HQ	Total: 1,842 Full-Time: 0 Other: 1,842	NR	NR	14 (0.8%)
% of Total	**Total: 15237 Full-Time: 10692 Other: 4545**	**54% (2008/3692)**	**12% (896/7187)**	**2% (221/10017)**

3.1.1.2 Commute Reduction Programs Offered to Employees

Employers can also offer discrete programs to employees to specifically encourage them to reduce their commute-related on-road emissions, including carpool programs, vanpool programs, guaranteed ride home programs, parking cash out or pricing programs, subsidized transit passes, shuttles to park-and-ride facilities, or programs to encourage biking or walking. The following table shows the commute reduction programs that were offered to employees in 2013.

Table 7: Which of the Following Commute Reduction Programs Does Your Organization Offer Employees?

Entity	Carpool Matching Services	myCommuteSolutions.com Custom Sub-Site	Vanpool Program	Guaranteed Ride Home	Parking Cash-Out/Pricing	Subsidized Transit Passes	Shuttles to Park-and-Ride Facilities	Programs to Encourage Biking and Walking to Work
Bastrop County	☐	☐	☐	☐	☐	☐ ☐	☐	☐
Caldwell County	☐	☐	☐	☐	☐	☐ ☐	☐	☐

Entity	Carpool Matching Services	myCommuteSolutions.com Custom Sub-Site	Vanpool Program	Guaranteed Ride Home	Parking Cash-Out/Pricing	Subsidized Transit Passes	Shuttles to Park-and-Ride Facilities	Programs to Encourage Biking and Walking to Work
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 Pflugerville	☐	☐	☐	☐	☐	☐ ☐	☐	☐
City of Round Rock	☐	☐	☐	☐	☐	☐ ☐	☐	☐
City of San Marcos	☐	☐	☐	☐	☐	☐ ☐	☐	☐
City of Sunset Valley	☐	☐	☐	☐	☐	☐ ☐	☐	☐
City of Taylor	☐	☐	☐	☐	☐	☐ ☐	☐	☐
CAMPO	☐	☒	☐	☐	☐	☐ ☐	☐	☐
CAPCOG	☐	☐	☐	☐	☐	☐ ☐	☐	☐
CapMetro	☐	☐	☒	☒	☐	☐ ☒	☐	☒
CTRMA	☒	☐	☐	☐	☐	☐ ☐	☐	☐
LCRA	☐	☐	☐	☐	☐	☐ ☐	☐	☒
TCEQ	☒	☐	☒	☐	☐	☐ ☐	☐	☐
TxDOT Austin	☐	☐	☐	☐	☐	☐ ☐	☐	☐
TxDOT HQ	☐	☐	☐	☐	☐	☐ ☐	☐	☐

Austin and Travis County committed to implement the following: “carpool or alternative transportation program, may include incentive.” Since any of the measures in the table above would constitute a carpool or alternative transportation program, any of the above measures would fulfill that commitment.

City of Austin offers relief from parking and other planning and zoning requirements that implement commuter reduction plans in addition to providing technical assistance to businesses and institutions to

implement commuter reduction programs. CapMetro also offers technical assistance to businesses and institutions to implement commuter reduction programs.

Some organizations provided detailed information on participation in their commuter reduction programs. These are shown in the table below.

Table 8: Commute Reduction Programs

Organization	Carpool Program Participants	Subsidized Transit Passes
Travis County	2	830
City of Hutto	2	n/a
CAMPO	NR	7
TCEQ	70 (3%)	NR

3.1.1.3 Alternative Commute Infrastructure

Employers can encourage employees to take alternative commutes or drive cleaner vehicles through infrastructure improvements such as bike racks, showers and changing facilities, preferential parking for carpools/vanpools, and charging stations for electric vehicles.

Table 9: Which of the Following Types of Alternative Commute Infrastructure Does Your Organization Provide for Employees?

Entity	Bike Racks or Storage Lockers	Showers and Changing Facilities	Preferential Parking for Carpools/Vanpools	Charging Stations for Electric Vehicles
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 Pflugerville	☐	☒	☐	☒
City of Round Rock	☐	☐	☐	☐
City of San Marcos	☒	☒	☐	☐
City of Sunset Valley	☒	☒	☐	☒
City of Taylor	☐	☐	☐	☐
CAMPO	☒	☒	☐	☒

Entity	Bike Racks or Storage Lockers	Showers and Changing Facilities	Preferential Parking for Carpools/Vanpools	Charging Stations for Electric Vehicles
CAPCOG	☒	☒	☐	☐
CapMetro	☐	☐	☐	☐
CTRMA	☒	☒	☐	☐
LCRA	☒	☒	☒	☒
TCEQ	☒	☒	☒	☐
TxDOT Austin	☐	☐	☐	☐
TxDOT HQ	☐	☐	☐	☐

Three entities had commitments for "alternative commute infrastructure," but the 8-O3 Flex Plan commitments were not specific as to what kind of infrastructure would be provided. The three cities with alternative commute infrastructure commitments were the cities of Austin, Bastrop, and Elgin. Any of the above infrastructure investments qualify as alternative commute infrastructure. Additionally, LCRA had a commitment to provide "bicycle and pedestrian facilities," which would include bike facilities or showers and changing facilities.

Several organizations provided detailed data on the prevalence of alternative commute infrastructure at buildings they own and operate. These data are presented in the table below.

Table 10: Alternative Commute Infrastructure Data

Organization	Total Buildings	Buildings With Bike Racks or Lockers	Buildings with Showers + Changing Facilities	Preferential Parking for Carpools, Vanpools, or EVs
Bastrop County	13	NR	1	NR
Hays County	NR	1	1	0
Travis County	70	5	3	1 (2 spots)
City of Bastrop	6	2	2	0
City of Cedar Park	18	18	5	0
City of Elgin	5	0	0	0
City of Hutto	3	1	0	0
City of Pflugerville	8	2	2	0
City of San Marcos	NR	15	7	NR
City of Sunset Valley	3	2	2	1 spot
CAMPO	7	2	1	1 (4 spots)

3.1.2 Development Measures

Development measures are policies or programs that organizations undertake in order to try to promote development that reduces the growth in emissions-causing activities, including vehicle miles traveled or

energy consumption, attributable to new development, or to otherwise use planning and development tools to reduce emissions.

Table 11: Did Your Organization Have Policies or Programs to Promote the Following Development Practices in 2013?

Entity	Access Management	Transit-Oriented Development	Infill Development	Brownfield Development	Mixed Use Development	Pedestrian-Oriented Development	Developing Concentrated Activity Centers	Strengthening Downtowns	Jobs/Housing Balance in Development	Tree Planting	Tree Maintenance	Energy Efficiency in New Buildings	Water Efficiency in New Buildings
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 Pflugerville	☐ ☐	☐ ☐	☒	☐	☒	☒	☒	☒	☐	☐ ☒	☒	☐	☐
City of Round Rock	☐ ☒	☐ ☐	☒	☐	☒	☒	☐	☒	☐	☒ ☒	☒	☐	☐
City of San Marcos	☐ ☐	☐ ☒	☒	☐	☒	☒	☒	☒	☐	☒ ☒	☐	☒	☒
City of Sunset Valley	☐ ☐	☐ ☐	☐	☐	☐	☐	☐	☐	☐	☐ ☒	☒	☒	☒
City of Taylor	☐ ☐	☐ ☐	☐	☐	☐	☐	☐	☐	☐	☐ ☐	☐	☐	☐
CAMPO	☐ ☐	☐ ☐	☐	☐	☐	☐	☐	☐	☐	☐ ☐	☐	☐	☐
CAPCOG	☐ ☐	☐ ☐	☐	☐	☐	☐	☐	☐	☐	☐ ☐	☐	☐	☐
CapMetro	☐ ☐	☒ ☒	☐	☐	☐	☐	☐	☐	☐	☐ ☐	☐	☐	☐
CTRMA	☐ ☒	☐ ☐	☐	☐	☐	☒	☐	☐	☐	☒ ☐	☒	☐	☐
LCRA	☐ ☒	☐ ☐	☐	☐	☐	☐	☐	☐	☐	☒ ☐	☐	☒	☒
TCEQ	☐ ☐	☐ ☐	☐	☐	☐	☐	☐	☐	☐	☐ ☐	☐	☐	☐

Entity	Access Management	Transit-Oriented Development	Infill Development	Brownfield Development	Mixed Use Development	Pedestrian-Oriented Development	Developing Concentrated Activity Centers	Strengthening Downtowns	Jobs/Housing Balance in Development	Tree Planting	Tree Maintenance	Energy Efficiency in New Buildings	Water Efficiency in New Buildings
TxDOT Austin	☒ ☒	☐ ☐	☐	☐	☐	☐	☐	☐	☐	☒ ☒	☐	☒	☐
TxDOT HQ	☐ ☐	☐ ☐	☐	☐	☐	☐	☐	☐	☐	☐ ☐	☐	☐	☐

The cities of Bastrop and Elgin had 8-O3 Flex commitments for "expedited permitting for mixed use, transit-oriented, or in-fill development. The check boxes above indicate which specific types of policies fulfilled that commitment.

Trees can provide a variety of environmental services that are useful for air quality, including providing shade and cooling that can reduce the need for vehicles and buildings to use air conditioning. They can also help reduce the urban heat island effect, which can increase urban ambient air temperatures, which in turn can promote ozone development. The following table provides details on some of the tree planting efforts undertaken by participating organizations.

Table 12: Trees Planted in 2013

Organization	Trees Planted in 2013
City of Austin	6,600 pare root seedlings 3,770 containerized trees
City of Hutto	500+
City of Pflugerville	250 (approximate)
City of San Marcos	103
Travis County	100
Total	**~5383**

3.1.3 Energy and Resource Conservation

Energy and resource conservation measures reduce emissions-causing activities, and can range from energy efficiency measures that reduce the need to generate electricity from fossil fuel power plants or supply fuel directly to facilities, to water conservation measures that in turn reduce electricity consumption, to recycling and composting measures that can reduce the need to produce raw or

manufactured goods. The following table shows which of these measures were undertaken in 2013 by each of the participants.

Table 13: Did Your Organization Implement any of the Following Resource Conservation Measures in 2013?

Entity	Energy Efficiency	Solar Energy	Wind Energy	Electric Vehicles	Water Conservation	Water Reuse	Recycling	Composting
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 Pflugerville	☐ ☐	☒	☒	☐	☒	☒	☒	☒
City of Round Rock	☐ ☐	☒	☐	☐	☒	☒	☒	☐
City of San Marcos	☐ ☒	☒	☒	☒	☒	☒	☒	☒
City of Sunset Valley	☐ ☒	☒	☐	☐	☒	☐	☒	☐
City of Taylor	☐ ☐	☐	☐	☐	☐	☐	☐	☐
CAMPO	☐ ☒	☐	☐	☐	☐	☐	☒	☐
CAPCOG	☐ ☒	☐	☐	☐	☐	☐	☒	☐
CapMetro	☐ ☐	☐	☐	☐	☐	☐	☐	☐
CTRMA	☐ ☒	☐	☐	☐	☐	☐	☐	☐
LCRA	☐ ☒	☒	☒	☒	☒	☒	☒	☐
TCEQ	☐ ☐	☐	☐	☐	☐	☐	☐	☐
TxDOT Austin	☒ ☐	☐	☐	☒	☐	☐	☒	☐
TxDOT HQ	☐ ☐	☐	☐	☐	☐	☐	☒	☐

Many entities made commitments to “resource conservation” in the 8-O3 Flex Plan, but the commitments were not specific. Each of the following organizations made a commitment to implement resource conservation measures: Austin, Travis County, Round Rock, Williamson County, San Marcos, Hays County, Luling, CapMetro, CAMPO, TxDOT-Austin, TCEQ, CAPCOG, LCRA, and CTRMA. Any of the measures listed in the table above would qualify as a resource conservation measure.

Several organizations provided detailed data on the amount of building space occupied and the quantities of electricity, natural gas, and water consumed, as well as the quantities of wastewater produced. These data can be used to evaluate and compare resource efficiency. The following table shows the total square feet occupied, electricity purchased from the grid, kilowatt-hours (kWh)/square foot, solar generation, and wind power purchases.

Table 14: Electricity Consumption Data, 2013

Organization	Sq. Feet Occupied	Electricity Consumed (kWh)	kWh/Sq. Ft.	Solar (kW)	Solar (kWh)	Wind (kWh)
Bastrop County	NR	3,765,298	N/A			
Hays County	NR	8,482,621	N/A			
Travis County	3,778,488	31,891,536	8.440			
Williamson County	NR	18,677,575	N/A			
City of Austin	5,919,317	546,734,310	92.364		2,731,756	
City of Bastrop	NR	4,331,392	N/A			
City of Cedar Park	258,857	28,611,927	110.532			
City of Georgetown	594,475	26,774,275	45.039			16,046,100
City of Hutto	19,000	NR	N/A			
City of Pflugerville	130,230	15,281,447	117.342	166	210,000*	
City of San Marcos	249,000	24,881,144	99.924	0.85	1,600	

Other utility data is useful for estimating the emissions impact of participants in this plan, including:

- natural gas consumption, which can be directly translated into emission estimates using emission factors in EPA's AP-42 (reported in hundreds of cubic feet, or "ccf");
- water consumption and wastewater produced (reported in gallons), which can be translated into electricity consumption, which can in turn be translated into emissions estimates; and
- number of emergency generators, which can be used to estimate emissions from regular testing.

Table 15: Gas, Water, Wastewater, and Backup Generator data

Organization	Gas Consumed (ccf)	Water Consumed (gallons)	Wastewater Produced (gallons)	Number of Generators
Bastrop County	57,370	234,856		
Hays County	43,498 + 329 gal propane	21,122,307	17,626,141	NR
Travis County	333,074	38,536,288		5

Organization	Gas Consumed (ccf)	Water Consumed (gallons)	Wastewater Produced (gallons)	Number of Generators
Williamson County	1,163,130	36,502,388		NR
City of Austin	1,265,163			NR
City of Cedar Park	20,423	4,050,900,000	13,288,550	NR
City of Georgetown	NR	16,046,100	150,550,000	NR
City of Hutto	NR	NR	NR	3
City of Pflugerville	38,290	630,045,920	1,224,586,000	3
City of San Marcos	NR	0	40,880,450	NR

In addition, several organizations reported specific information regarding building performance certification programs such as Energy Star and LEED. Travis County reported two buildings that are Energy Star certified, and Bastrop County reported one building that was Energy Star certified. Hays County indicated that it is now county policy for all new buildings to be LEED Certified Silver or better. This list is not exhaustive, but does reflect what was reported back by program participants.

Austin Energy also provided detailed data documenting its demand management programs and other operational characteristics, reported in megawatts (MW), megawatt-hours (MWh), cost, and customers.

Table 16: Austin Energy Demand Management Data

Item	Data
Incentives Given in 2013	$13,356,813
Reduction in Peak Demand in 2013	57.4 MW
Cumulative Reduction	1074 MW (2013)
Peak Demand	2,702 MW (2012)
Reduction in Consumption from New Conservation/Demand Management Measures in 2013	117,172 MWh
Total Solar Capacity Installed in 2013 Through Incentives	4,930 kW
Residential Customers	376,614 (2012)
Commercial Customers	44,006 (2012)
Industrial Customers	82 (2012)
Other Customers	1,668 (2012)
Charging Stations Installed	153

A number of entities provided detailed data for their water utilities that can be used to evaluate emission reductions resulting from water conservation efforts.

Table 17: Water Utility Data

Organization	Surface Water Supplied (1,000 gallons)	Ground Water Supplied (1,000 gallons)	Total Supplied (1,000 gallons)	Electricity Usage (kWh)	Conservation (1,000 gallons)	Reuse (1,000 gallons)
City of Austin	47,753,000,	0	473,753,000	NR	NR	NR
City of Cedar Park	3,804,000	0	3,804,000	10,708,900	300,000	169,335
City of Hutto	65,700	803,000	868,700	NR	NR	0
City of Pflugerville	1,733,562	1,004,003	2,737,565	5,370,158	11,100	308,976

The energy usage per million gallons pumped for the two entities that provided sufficient information to calculate this metric are the following:

- Cedar Park: 2,815 kWh/million gallons (MG); and
- Pflugerville: 1,962 kWh/MG.

Table 18: Wastewater Utility Data

Organization	Wastewater Treated (gallons)	Capacity (MG per day)	Electricity Usage (kWh)
City of Austin	36,725,750,000	175.124	NR
City of Cedar Park	817,000,000	2.5	2,268,960
City of Hutto	438,000,000	1.6	NR
City of Pflugerville	1,224,586,000	5.6 (5.3 + 0.3)	4,937,967

The energy usage per million gallons of wastewater treated for the two entities that provided sufficient information to calculate this metric are the following:

- Cedar Park: 2,777 kWh/MG; and
- Pflugerville: 4,032 kWh/MG.

3.1.3.1 Austin Energy Plant Emissions, 2013

Austin Energy operates two gas-fired utility-scale plants within the Austin-Round Rock MSA: Decker Creek (927 MW) and Sand Hill (570 MW). Activity and emissions data for these facilities are recorded regularly in EPA's Acid Rain Database, and in TCEQ's annual point source emissions inventory. The table below shows the activity and emissions data for each unit at these facilities during the 2013 ozone season (defined for both EPA's Acid Rain Database and TCEQ's point source emissions inventory as May 1 – September 30).

Note that the emissions data for the turbines at Decker Creek reflect the much lower emissions rate reported by Austin Energy in its 2012 emissions inventory for the facility than what is used for the Acid

Rain Database. This difference is due to EPA requirements regarding the use of "default" emissions rates of 0.70 tons of NO_X per million British thermal units (MMBTU) of heat input for such units if they are not equipped with continuous emissions monitoring systems (CEMS), but in fact, these units are controlled with steam or water injection and have a much lower emissions rate than what EPA requires for reporting to the Acid Rain Database. Therefore, CAPCOG applied the actual emissions rate calculated from the 2012 emissions inventory to the 2013 heat input for these units in order to develop the estimates in the table below indicated with an asterisk.

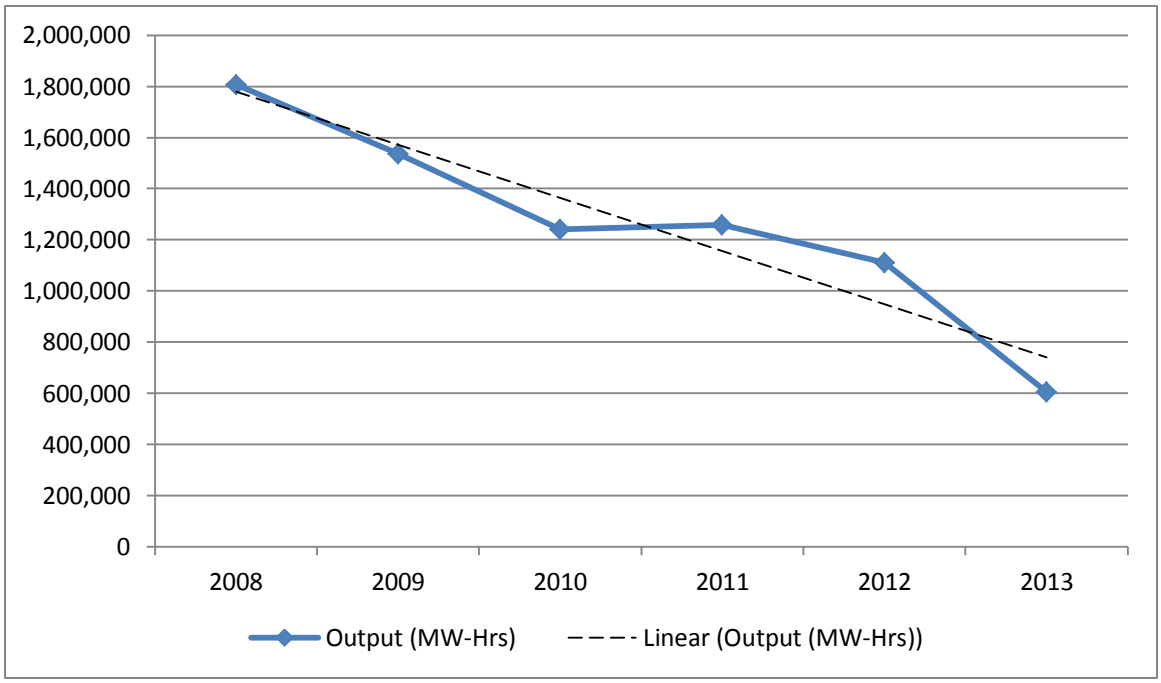
Table 19: Decker Creek and Sand Hill Ozone Season Activity and Emissions, 2013

Facility	Unit	Time On	Heat Input (MMBTU)	Gross Load (MW-Hr)	Efficiency (%)	Daily NO_X Emissions (tons per day)	Emissions Rate (lbs per MMBTU input)
Decker	1	34%	1,885,068	177,899	32%	0.73	0.12
Decker	2	47%	3,049,093	290,314	32%	0.81	0.08
Decker	GT-1A	4%	56,287	3,149	19%	0.02	0.12
Decker	GT-1B	3%	33,635	1,892	19%	*0.02	*0.20
Decker	GT-2A	5%	63,662	3,882	21%	*0.03	*0.16
Decker	GT-2B	5%	63,728	3,853	21%	*0.03	*0.16
Decker	GT-3A	5%	60,172	3,601	20%	*0.03	*0.17
Decker	GT-3B	5%	62,157	3,810	21%	*0.04	*0.17
Decker	GT-4A	5%	58,405	3,304	19%	*0.03	*0.16
Decker	GT-4B	4%	56,623	3,290	20%	*0.03	*0.16
Sand Hill	SH1	19%	270,239	30,756	39%	0.01	0.02
Sand Hill	SH2	29%	470,542	47,967	35%	0.02	0.01
Sand Hill	SH3	26%	411,517	42,109	35%	0.02	0.02
Sand Hill	SH4	18%	256,343	28,112	37%	0.02	0.02
Sand Hill	SH5	55%	3,570,957	479,459	46%	0.17	0.01
Sand Hill	SH6	24%	378,818	41,334	37%	0.02	0.02
Sand Hill	SH7	25%	385,645	42,069	37%	0.02	0.02
TOTAL	**n/a**	**n/a**	**11,132,889**	**1,206,802**	**37%**	**2.07**	**0.06**

Unit 2 of Decker is controlled with gas flue recirculation, which achieves an emissions reduction of about 25%, while – as mentioned above, Decker units GT-1A through 4B are controlled with steam or water injection, which achieves about a 50% reduction in emissions.

Staff at Austin Energy now project that Decker Creek Power Plant will no longer be economically viable by 2018. The output from the plant has steadily declines, and if it continues to decline at the rate it did between 2008 and 2013 (207,490 MW less per year), it could wind up no longer being used after 2016. The figure below shows the decline in output since 2008.

Figure 4: Decker Creek Power Plant Output, 2008-2013



3.1.3.2 LCRA Plant Emissions, 2013

LCRA operates two gas-fired utility-scale plants within the Austin-Round Rock MSA: Sim Gideon (608 MW) and Lost Pines 1 (511 MW). In addition to these facilities within the MSA, LCRA also operates three plants in nearby counties: the Fayette Power Project (1,035 MW, 2 units co-owned with Austin Energy), Winchester Power Park in Fayette County (176 MW), and T.C. Ferguson, in Llano County (420 MW, shut down September 30, 2013, to be replaced with new 540 MW facility). The tables below shows the activity and emissions data for each unit at these facilities during the 2013 ozone season (defined for both EPA's Acid Rain Database and TCEQ's point source emissions inventory as May 1 – September 30).

Table 20: Sim Gideon and Lost Pines Ozone Season Activity and Emissions, 2013

Facility	Unit	Time On	Heat Input (MMBTU)	Gross Load (MW-Hr)	Efficiency (%)	Daily NO_X Emissions (tons per day)	Emissions Rate (lbs per MMBTU input)
Sim Gideon	1	6%	84,593	8,827	36%	0.05	0.18
Sim Gideon	2	5%	75,457	7,400	33%	0.05	0.18
Sim Gideon	3	57%	2,538,408	236,278	32%	1.35	0.16
Lost Pines 1	1	96%	5,316,999	484,920	31%	0.29	0.02

Facility	Unit	Time On	Heat Input (MMBTU)	Gross Load (MW-Hr)	Efficiency (%)	Daily NO_X Emissions (tons per day)	Emissions Rate (lbs per MMBTU input)
Lost Pines 1	2	100%	5,755,665	494,281	29%	0.35	0.02
TOTAL	**n/a**	**n/a**	**11,132,889**	**1,206,802**	**37%**	**2.09**	**0.06**

Both of the Lost Pines units are equipped with SCR units that LCRA estimates achieve an 80% reduction in emissions.

Table 21: Fayette Power Project, T.C. Ferguson, and Winchester Power Project Emissions, 2013

Facility	Unit	Time On	Heat Input (MMBTU)	Gross Load (MW-Hr)	Efficiency (%)	Daily NO_X Emissions (tons per day)	Emissions Rate (lbs per MMBTU input)
FPP	1	99%	18,965,684	1,887,892	34%	5.88	0.09
FPP	2	100%	21,345,457	1,973,868	32%	7.08	0.10
FPP	3	100%	14,747,293	1,399,325	32%	4.37	0.09
T.C. Ferguson	1	29%	1,560,322	145,090	32%	0.61	0.12
WPP	1	4%	41,527	4,026	33%	0.00	0.01
WPP	2	4%	38,070	3,861	35%	0.00	0.01
WPP	3	5%	45,404	4,442	33%	0.00	0.01
WPP	4	5%	42,156	4,194	34%	0.00	0.01
TOTAL	**n/a**	**n/a**	**56,785,915**	**5,422,699**	**33%**	**17.96**	**0.10**

Fayette Power Project's boilers are equipped with low-NO_X burner technology with closed-coupled/separated over-fire air. Unit 1 began on November 1, 2002, Unit 2 began on March 1, 2004, and Unit 3 began on April 15, 2005. The Winchester Power Park units are all equipped with selective catalytic reduction (SCR).

3.1.4 On-Road Fleet Management

One of the areas in which participants in this plan can have the most direct impact on reducing their contribution to ozone-forming emissions is through policies and practices managing on-road fleets. The table below shows the on-road fleet management measures implemented by each organization in 2013.

Table 22: Did Your Organization Have Policies or Programs to Promote the Following Development Practices in 2013?

Entity	Maintain Vehicles According to Manufacturer Specs	Business Evaluation of Fleet Usage/Right-Sizing	Procurement Preference: Low-Emission vehicles	Procurement Preference: Low-NO_x Idle HD Vehicles	Procurement Preference: Alternative-Fueled Vehicles	Vapor Recovery on Fuel Pumps	Refueling in the Evening	Idle Reduction Technologies	Idle Reduction Restrictions for Employees	Fleet Management Software
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 Pflugerville	☐ ☒	☐ ☒	☐ ☐	☐	☐ ☐	☐ ☐	☐ ☐	☐	☐ ☒	☐
City of Round Rock	☒ ☒	☒ ☒	☒ ☐	☐	☐ ☐	☐ ☐	☒ ☒	☐	☐ ☐	☐
City of San Marcos	☒ ☒	☐ ☒	☐ ☒	☐	☐ ☒	☐ ☐	☐ ☒	☐	☐ ☒	☐
City of Sunset Valley	☐ ☒	☐ ☒	☐ ☐	☐	☐ ☐	☐ ☐	☐ ☐	☐	☐ ☒	☐
City of Taylor	☐ ☐	☐ ☐	☐ ☐	☐	☐ ☐	☐ ☐	☐ ☐	☐	☐ ☐	☐
CAMPO	☐ ☐	☐ ☐	☐ ☐	☐	☐ ☐	☐ ☐	☐ ☐	☐	☐ ☐	☐
CAPCOG	☐ ☐	☐ ☐	☐ ☐	☐	☐ ☐	☐ ☐	☐ ☐	☐	☐ ☐	☐
CapMetro	☒ ☒	☒ ☒	☒ ☒	☒	☒ ☐	☐ ☐	☐ ☐	☐	☒ ☒	☐
CTRMA	☐ ☒	☐ ☐	☐ ☐	☐	☐ ☐	☐ ☐	☐ ☒	☐	☐ ☐	☐
LCRA	☐ ☒	☐ ☒	☒ ☐	☐	☐ ☒	☐ ☒	☐ ☒	☐	☒ ☒	☐

Entity	Maintain Vehicles According to Manufacturer Specs	Business Evaluation of Fleet Usage/Right-Sizing	Procurement Preference: Low-Emission vehicles	Procurement Preference: Low-NO_X Idle HD Vehicles	Procurement Preference: Alternative-Fueled Vehicles	Vapor Recovery on Fuel Pumps	Refueling in the Evening	Idle Reduction Technologies	Idle Reduction Restrictions for Employees	Fleet Management Software
TCEQ	☐ ☒	☐ ☐	☒ ☒	☐	☒ ☒	☐ ☐	☐ ☐	☐	☐ ☒	☐
TxDOT Austin	☐ ☒	☐ ☒	☐ ☐	☐	☒ ☐	☐ ☐	☐ ☒	☐	☐ ☒	☐
TxDOT HQ	☐ ☒	☐ ☒	☒ ☒	☐	☐ ☐	☐ ☐	☐ ☒	☐	☐ ☒	☐

For the procurement preferences, some organizations indicated that they had in practice implemented those preferences, even if there wasn't a written policy to do so. For instance, Williamson County does not have written preferences/specifications for low-emission light duty vehicles or California Air Resources Board (CARB)-certified heavy duty vehicles, but all 38 of the light-duty vehicles purchased in 2013 were Tier 2, Bin 4 or better, and all 10 of the heavy-duty vehicles purchased were CARB low-NO_X-idle-certified.

Several organizations reported on the number of light-duty and heavy-duty vehicles purchased in 2013, as well as reporting on how many heavy-duty vehicles were CARB low-NO_X certified. These data are presented below.

Table 23: Vehicles Purchased

Organization	LDV Purchased	LDV Purchased Bin 4 or Better	Heavy Duty Vehicles Purchased	CARB Low-NO_X Certified?
Travis County	108, 22 non-law	NR	5	NR
Williamson County	38	38	10	10
City of Bastrop	2	2	1	1
City of Cedar Park	31	NR	0	0
City of Hutto	2	NR	1	0
City of Pflugerville	18	NR	1	1

Organization	LDV Purchased	LDV Purchased Bin 4 or Better	Heavy Duty Vehicles Purchased	CARB Low-NO_X Certified?
City of San Marcos	25	NR	1	1
City of Sunset Valley	1	1	0	0
CTRMA	1	NR	0	NR
TxDOT-HQ	9	NR	0	0

Several organizations were able to report on the quantities of fuel consumed for on-road vehicles in 2013. The following table summarizes the data reported on gasoline, diesel, compressed natural gas (CNG), liquefied petroleum gas (LPG), ethanol (E85), 20% biodiesel/80% diesel blends (B20), and pure biodiesel (B100) consumed. All quantities are reported in gallons except for CNG, which is reported in gallons of gas equivalent (GGE).

Table 24: Fuel Consumed for On-Road Sources

Organization	Gasoline	Diesel	CNG	LPG	E85	B20	B100
Travis County	706,631	250,822	NR	4,069	NR	NR	NR
Williamson County	272,596	145,382	0	31,772	0	0	0
City of Austin	1,767,477	1,582,021	291,416	128,973	572,977	965,762	NR
City of Cedar Park	131,369	22,353	0	14,179	0	0	0
City of Pflugerville	NR	NR	0	871	0	0	0
City of San Marcos	175,816	75,568	0	0	1,060.6	0	0
CapMetro	NR	4,700,000	NR	NR	NR	NR	NR
TxDOT-HQ	163,840	70,279	0	4,216	0	0	0

Several jurisdictions were able to report the total vehicle miles traveled from fleet vehicles, as well as the total vehicle miles traveled (VMT) from employee-reimbursed work trips. These data can be used to help quantify emissions resulting from on-road fleets operated by organizations participating in the plan, as well as other work-related trips sponsored by the organization.

Table 25: VMT Data

Jurisdiction	VMT	VMT-Employee Reimbursement	Total VMT
Williamson County	7,307,166	NR	N/A
City of Austin	54,504,133	3,377,267	57,881,400
City of Cedar Park	1,808,559	NR	N/A
City of Pflugerville	1,253,243	8,594	1,261,837
City of San Marcos	1,391,831	NR	N/A

Jurisdiction	VMT	VMT-Employee Reimbursement	Total VMT
TxDOT-Head Quarters	3,245,507	NR	N/A

Additionally, TCEQ provided fleet data showing the breakdown of alternative-fueled vehicles in its fleet:

- 7 LPG vehicles
- 54 electric vehicles
- 7 B20 vehicles,
- 150 E85 vehicles

3.1.5 Outreach and Education

Outreach and education measures can help influence people's behavior in ways that can reduce emissions or reduce exposure to ozone. Specific commitments that covered 2013 included educating employees, educating the public, providing ozone action day notification to employees and/or the public, and taking specific actions in response to ozone action days. The table below also summarizes what other types of air quality outreach and education activities participants undertook in 2013.

Table 26: Which of the Following Air Quality-Related Outreach Activities Did Your Organization Undertake in 2013?

Entity	Employee Education About Ozone	Public Education About Ozone	Ozone Action Day Notification Program	Ozone Action Day Response Program
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 Pflugerville	☐ ☒	☐ ☒	☐ ☐	☐ ☐
City of Round Rock	☒ ☒	☒ ☒	☒ ☒	☒ ☒

Entity	Employee Education About Ozone	Public Education About Ozone	Ozone Action Day Notification Program	Ozone Action Day Response Program
City of San Marcos	☒ ☒	☒ ☒	☒ ☒	☐ ☒
City of Sunset Valley	☐ ☒	☐ ☒	☐ ☒	☐ ☐
City of Taylor	☐ ☐	☐ ☐	☐ ☐	☐ ☐
CAMPO	☒ ☒	☒ ☒	☒ ☒	☐ ☒
CAPCOG	☒ ☒	☐ ☐	☒ ☐	☐ ☐
CapMetro	☒ ☒	☒ ☒	☒ ☒	☐ ☒
CTRMA	☒ ☒	☒ ☐	☒ ☒	☐ ☒
LCRA	☒ ☒	☐ ☐	☒ ☒	☐ ☒
TCEQ	☒ ☐	☒ ☐	☒ ☐	☐ ☐
TxDOT Austin	☒ ☒	☒ ☒	☒ ☒	☐ ☐
TxDOT HQ	☐ ☒	☐ ☒	☐ ☒	☐ ☒

3.1.6 Other Measures

Other measures include various measures that reduce emissions but do not fit well into the other categories mentioned. They include contracting provisions, roadway maintenance provisions, measures designed to reduce non-commuting trips, and various other measures. This section also includes details on a measure that is specific to one large point source – Texas Lehigh Cement Company – which was not included in the 8-O3 Flex Plan, but has been implemented by the company since 2009.

3.1.6.1 Other Local Commitments

A variety of other miscellaneous measures were implemented by local participants in the regional air quality plan, including contractor provisions for high ozone days, low-VOC materials, measures to reduce VMT attributable and emissions due to visits to government offices and government drive-through services and check deposits. These measures also include open burning restrictions and provision of shaded parking, which reduces evaporative emissions from vehicles while parked.

Table 27: Which of the Following Other Measures Did Your Organization Implement in 2013?

Entity	Construction Contract Provisions	Landscaping Contract Provisions	Low VOC Striping Materials	Low VOC Asphalt	E-Government or Available Locations	Direct Deposit	Drive-Through Measures	Open Burning Restrictions	Shaded Parking	Local Sourcing of Materials
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 Pflugerville	☐ ☒	☐ ☐	☐ ☒	☐ ☐	☐ ☒	☐ ☒	☐ ☐	☐ ☐	☐ ☒	☐
City of Round Rock	☐ ☐	☐ ☐	☒ ☒	☒ ☐	☐ ☒	☒ ☒	☐ ☐	☒ ☒	☐ ☒	☐
City of San Marcos	☐ ☐	☐ ☐	☐ ☒	☐ ☒	☐ ☒	☒ ☒	☐ ☐	☐ ☐	☐ ☐	☐
City of Sunset Valley	☐ ☐	☐ ☒	☐ ☐	☐ ☐	☐ ☐	☐ ☒	☐ ☐	☐ ☐	☐ ☐	☐
City of Taylor	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐
CAMPO	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☒ ☒	☒ ☒	☐ ☐	☐ ☐	☐ ☒	☐
CAPCOG	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☒ ☒	☒ ☒	☐ ☐	☐ ☐	☐ ☐	☐
CapMetro	☐ ☐	☐ ☐	☐ ☐	☒ ☐	☒ ☒	☒ ☒	☐ ☐	☐ ☐	☐ ☒	☐
CTRMA	☐ ☐	☐ ☐	☐ ☒	☐ ☒	☐ ☐	☒ ☒	☐ ☐	☐ ☐	☒ ☒	☐
LCRA	☐ ☒	☐ ☒	☐ ☒	☐ ☒	☐ ☒	☒ ☒	☐ ☐	☐ ☐	☐ ☒	☐
TCEQ	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☒ ☐	☐
TxDOT Austin	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☒ ☒	☐ ☐	☐ ☐	☐ ☒	☐
TxDOT HQ	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☒	☐ ☐	☐ ☐	☐ ☒	☐

In order to assess the extent to which roadway construction and maintenance activities may produce emissions, it is useful to know the extent of the roadway network each organization is responsible for. The following table shows the data for the organizations that submitted specific information on their own roadway networks in the region.

Table 28: Road Paving (miles)

Jurisdiction	Centerline Miles	Lane-Miles	Paved in 2013	Still Unpaved
Bastrop County	925	NR	25	236
Hays County	NR	765	0	2
City of Cedar Park	255.16	751.09	0	0
City of Hutto	NR	63.55	2	2
City of Lockhart	53	172	1	3
City of Pflugerville	206.1	465	0	0.1
City of San Marcos	155	310	7.59	NR
CTRMA	11.2	105	0	0

Low-VOC roadway materials, including asphalt and striping materials, were some of the measures included in the 8-O3 Flex Plan. The following table shows data submitted by organizations that quantify these measures.

Table 29: Low-VOC Road Materials

Organization	Tons of Cutback Asphalt	Tons of Emulsified Asphalt	Gallons of Striping Material Applied
City of Cedar Park	0	27.5	NR
City of Lockhart	560	NR	130
City of San Marcos	14,488	NR	55

Several entities provided detailed data on road construction activity and expenditures that can be used to estimate the emissions attributable to these activities based on profiles developed by Eastern Research Group for CAPCOG as part of a 2013 research project.

Table 30: Road Construction Data, 2013

Organization	New or Rebuilt Roads (lane-miles)	Repair or Resurfacing Work (lane-miles)	Turn Lanes Completed (lane-miles)	Bridgework ($)	Misc. Other ($)
City of Bastrop	0.75	NR	NR	NR	NR
City of Cedar Park	4.152	0.75	0	$0	NR
City of Hutto	NR	NR	NR	$0	$20,000
City of Lockhart	NR	6	NR	NR	NR
City of Pflugerville	4.5	NR	0.08	$644,000	$2,308,807
City of San Marcos	18	12	6	0	$82,000
CTRMA	60	0	NR	NR	NR

Finally, one entity provided detailed information on fuel consumption for construction equipment owned and operated by the organization.

Table 31: Fuel for Non-Road Construction Equipment

Organization	Diesel	Gasoline	LPG	CNG
City of Cedar Park	845	0	0	0

3.1.6.2 Texas Lehigh

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 TACT Chapter 117, Subchapter E, Division 2 –Cement Kilns. Under this rule, Texas Lehigh chose the technology option under §117.3110 – Emission Specifications. Texas Lehigh installed the SNCR system in December 2008, and operates the system to comply with the established NO_X emission limits. During the 2013 ozone season, Texas Lehigh's NO_X emissions averaged 6.79 tons per day, or 566 pounds per hour.

Additionally, as part of Texas Lehigh's OAP commitment and participation in the regional air quality plan, the SNCR operation is increased to reduce the NO_X emitted between 9:00 am and 3:00 pm to about 300 pounds per hour (approximately an 0.80 ton reduction over the 6-hour period) 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 when Texas Lehigh implemented this measure are listed below:

- May 6, 13, 22;
- June 3, 4, 5, 8, 28;
- July 4, 6, 13, 14;
- August 19, 20, 30, 31; and
- September 1, 2, 3, 5, 25, 30;

3.1.6.3 Austin-Bergstrom International Airport

Under the 8-O3 Flex Plan, the Austin-Bergstrom International Airport (ABIA), which is under the control of the City of Austin Department of Aviation, made four commitments under it's "Airport Clean Air Plan:"

- Airside incentives: infrastructure in place at airport for use by airside tenants;
- Alternative fuels for shuttle buses;
- Alternative fuels available for aviation fleet landside users;
- ABIA alternative fuel infrastructure available at airport for landside users.

ABIA continues to implement these measures, and in 2013, installed 20 fast-charging stations to facilitate the conversion of ground-support equipment from diesel to electric.

3.2 Regional 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. They include:

- A Regional Rideshare Matching Program;
- Clean Air Coalition;
- An Ozone Alert System;
- Transportation Emission Reduction Measures;
- AirCheck Texas;
- Paving of Unpaved Roads; and
- Clean Air Partners Program.

3.2.1 Regional Rideshare Matching Program

8-O3 Flex participants committed to implementing commute solutions programs for employees of local jurisdictions, agencies and businesses. Commute Solutions is a voluntary trip reduction program that was created in response to Federal requirements for metropolitan planning organizations (MPOs) addressing the need to manage congestion, improved air quality, and promote energy conservation. It is housed under CAMPO. 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. The program and resources are available to everyone.

Commute Solutions of Central Texas comprises Coalition Partners from regional businesses and governmental entities. Staff works with multiple partners in both the private and public sectors. Commute Solutions hosts monthly partner meetings that include transportation-related presentations and updates on Commute Solutions, myCommuteSolutions, air quality, and on partner programs. The Commute Solutions partnerships allow for the organizations to: cross promote, expand bandwidth, increase education, share information, maximize outreach, and to network with peers. The partners are significant to the Commute Solutions program, and all CAMPO jurisdictions are welcome to become partners.

- Advanced Micro Devices (AMD);
- American Lung Association;
- Austin Community College (ACC);
- BikeAustin;
- CAPCOG;
- Capital Area Rural Transit System (CARTS);
- CapMetro;
- Car2Go;
- City of Austin;
- CTRMA;
- CLEAN AIR Force;

- Downtown Austin Alliance;
- Hertz;
- LCRA;
- Movability Austin;
- Safe Routes to School;
- TCEQ;
- Texas Department of Insurance (TDI);
- TxDOT-Austin;
- Travis County;
- University of Texas-Austin; and
- ZipCar.

The CAMPO Commute Solutions program offers a regional approach and includes Bastrop, Burnet, Caldwell, Hays, Travis, and Williamson counties. In March 2013, CAMPO added Burnet County to its planning area. During the current reporting period the Commute Solutions program accomplished the following:

- Hosted monthly meetings with Commute Solutions partners;
- Commute Solutions website as a one-stop shop for regional commuter needs. The website also hosts the live Commute Solutions Twitter feed, a blog, news articles, and commuter-related YouTube videos;
- Developed and implemented an outreach plan for Commute Solutions and myCommuteSolutions. This included educational materials, Commute Solutions animated video, interactive banners, bus ads on CapMetro, graphics for the website and social media, radio ads, newspaper ads, regional college newspaper ads, online ads, and hosted “Capture Your Commute”;
- Maintained an active social media presence through Facebook and Twitter. The number of likes and followers continues to increase;
- Participated in numerous public information events related to upcoming road and regional transportation projects with CapMetro, TxDOT, CARTS, and CTRMA;
- Attended regional community events. Some of the events included The Heart of Texas Green Expo in Bastrop, Austin Police Department VIN Etching, Telework Training for City of Austin employees, IBM Earth Day, St. Edward’s Earth Day, City of Austin Earth Day, Texas State University Resource Fair, Huston-Tillotson student event, Austin Community College Commuter Appreciation, TxDOT Health Fair, CARTS public meeting – San Marcos, Women’s Transportation Seminars presentation, and more;
- Increased number of website visits to commutesolutions.com with over 22,000 visitors to the site in 2013; and
- Nominated for the Innovative Transportation Solution Award by the Women’s Transportation Seminar (WTS) – Heart of Texas Chapter.

The myCommuteSolutions site (www.mycommutesolutions.com) is a regional ridematching and trip-planning site that expands on the “one-stop shop” concept offered by commutesolutions.com. The site supports both ridematching and trip planning. This feature makes the site useful to transit users, bicyclists, walkers, carpoolers, and teleworkers. They can log trips on the calendar (allowing for data

collection) and be eligible for incentives. By logging their commute, users can track fuel and money saved, calories burned and pollution reduced.

A key feature of myCommuteSolutions is the ability to offer employers a custom subsite. An employer can use the framework to set up an in-house, ridematching/trip-planning site branded with the look and feel of their company and available exclusively to their employees. Employers can manage incentives, collect data, and promote the program to suit their needs. The Commute Solutions program is able to offer the service at no cost to individuals and employers. The myCommuteSolutions component of the website went live on August 17, 2011 and the site was formally launched in early April 2012. The site serves Bastrop, Burnet, Caldwell, Hays, Travis, and Williamson counties.

Table 32: Rideshare Website Statistics

Data Point	2013
Registered Users	1805
Total Miles Saved	346,512
Money Saved	$70,150
Fuel Saved (gallons)	14,199
VOC Emissions Reduced (pounds)	937.03
NO_X Emissions Reduced (pounds)	224.22
CO Emissions Reduced (pounds)	2,811

In 2013, the myCommuteSolutions website expanded the reach of the Commute Solutions program through the following accomplishments:

- Increased the number of registered users in myCommuteSolutions through outreach, education, and Commuter Challenges and Commuter Contests;
- Increased the number of business sub-sites; and
- Hosted a large-scale, regional Commuter Challenge in April 2013. During the other months, the program focused on smaller contests targeted towards certain modes, such as bike commuting for Bike Month.

The myCommuteSolutions site tracks the following Commute Modes: Carpool, Vanpool, Bus, Rail, Bicycle, Walk, Telework, Drive Alone, Out of Office – Business or Personal, Day Off – Compressed Work Week, and Day Off – Regular (e.g. weekend).

3.2.2 Clean Air Coalition

As part of the regional effort to develop a new air quality plan to replace the 8-O3 Flex Plan, members of the Clean Air Coalition Advisory Committee undertook significant outreach efforts, including recruiting new Clean Air Coalition members. CAPCOG delivered presentations to the Hutto City Council and Pflugerville City Council in late 2013 to recruit the cities to join the coalition. The City of Hutto joined the Coalition on December 11, 2013, and the City of Pflugerville was in the process of joining as of the end of 2013. The Clean Air Coalition held meetings on the following dates:

- February 13, 2013;

- April 17, 2013;
- May 8, 2013;
- June 12, 2013;
- September 12, 2013; and
- December 11, 2013.

The Clean Air Coalition Advisory Committee held meetings on the following dates:

- February 7, 2013;
- March 7, 2013;
- April 4, 2013;
- May 2, 2013;
- June 6, 2013;
- July 18, 2013
- August 22, 2013;
- October 3, 2013; and
- November 21, 2013.

An Ozone Advance Program Action Plan outreach planning subcommittee met early in 2013 prior to the kickoff of the outreach effort:

- January 18, 2013;
- January 25, 2013;
- February 1, 2013;
- February 15, 2013; and
- February 25, 2013.

3.2.3 Ozone Alert System

Ozone forecasting is an important part of the region's air quality plan – both because it can help residents of Central Texas take precautions to avoid exposure to unhealthy pollution levels when they are expected to occur, and because the forecasts are used to prompt the general public, businesses, governments, and non-profits within the region to take action to reduce their emissions. This section includes information on both "Ozone Action Days" (otherwise known as "Ozone Watches" from 2009-2012) and daily Air Quality Forecasts.

On February 27, 2013, the TCEQ announced that all ozone alerts would now be called "Ozone Action Days", which is what they used to be called prior to 2008. This replaced the "Ozone Watch" and "Ozone Warning" terminology that was in place for some areas, such as Austin. Now, the same terminology is used state-wide, and alerts are only given the day before an expected ozone exceedance – there are no longer "day-of" warning notices e-mailed out.

3.2.3.1 Ozone Action Days

In 2013, there were four days when measured eight-hour ozone averages within the Austin-Round Rock MSA exceeded the current standard of 75 ppb. For two of these days, TCEQ had issued an Ozone Action Day (OAD) alert. TCEQ also issued alerts for another three days when none of the monitors measured

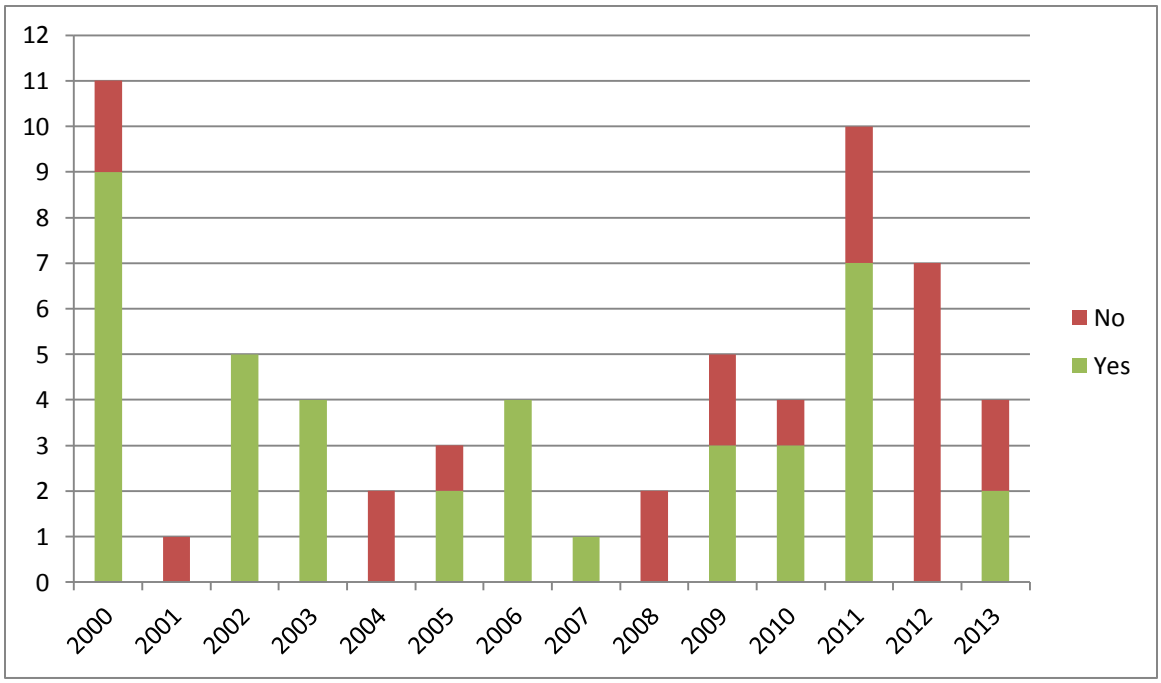
eight-hour ozone levels above the current standard. This means that TCEQ forecasts successfully identified 50% of the days when ozone levels exceeded the standard – which will be identified here as the "success rate" – and 40% of their forecasts accurately predicted that ozone would exceed the standard – which will be identified here as the "accuracy rate."

Table 33: Ozone Action Days Compared to All Days > 75 ppb in 2013

Date	OAD Alert	CAMS 3	CAMS 38	Region-Wide Max
6/3/2013	☐	65	68	79
7/3/2013	☒	70 (#2)	68	82
7/4/2013	☒	69 (#4)	66	75
7/5/2013	☐	67	72 (#3)	78
8/19/2013	☒	61	66	66
8/30/2013	☒	69 (#4)	n/a	69
9/25/2013	☐	79 (#1)	74 (#1)	89

From a public health perspective, the success rate is an important performance measurement of ozone forecasting because it shows the extent to which OAD alerts can be relied on to determine whether to take measures to prevent exposure to high levels of ozone. This rate is measured as the total number of correct OAD alerts divided by the total number of days with ozone levels that exceeded the standard in at least one location in the region. From this perspective, false positives are not a problem, but false negatives are (i.e., when actual ozone levels were above the standard but TCEQ had not issued an OAD alert). From 2000 – 2013, the overall success rate for the Austin-Round Rock MSA has been 63%, using days when ozone levels exceeded 84 ppb from 2000-2007, and 75 ppb from 2008-2013. For any given year, the success rate was as low as 0% (2001, 2004, 2008, and 2012) and as high as 100% (2002, 2003, 2006, and 2007), and an unweighted average across all 14 years shows that for any given year, about 57% of days with ozone above the standard are projected to be ozone action days by TCEQ, with a confidence interval range of 36%-79%. The figure below shows the number of days when at least one ozone monitor measured ozone levels above the applicable standard and whether or not TCEQ had issued and OAD alert for that day.

Figure 5: OAD Alert Issued When Measured Ozone Actually Exceeded NAAQS



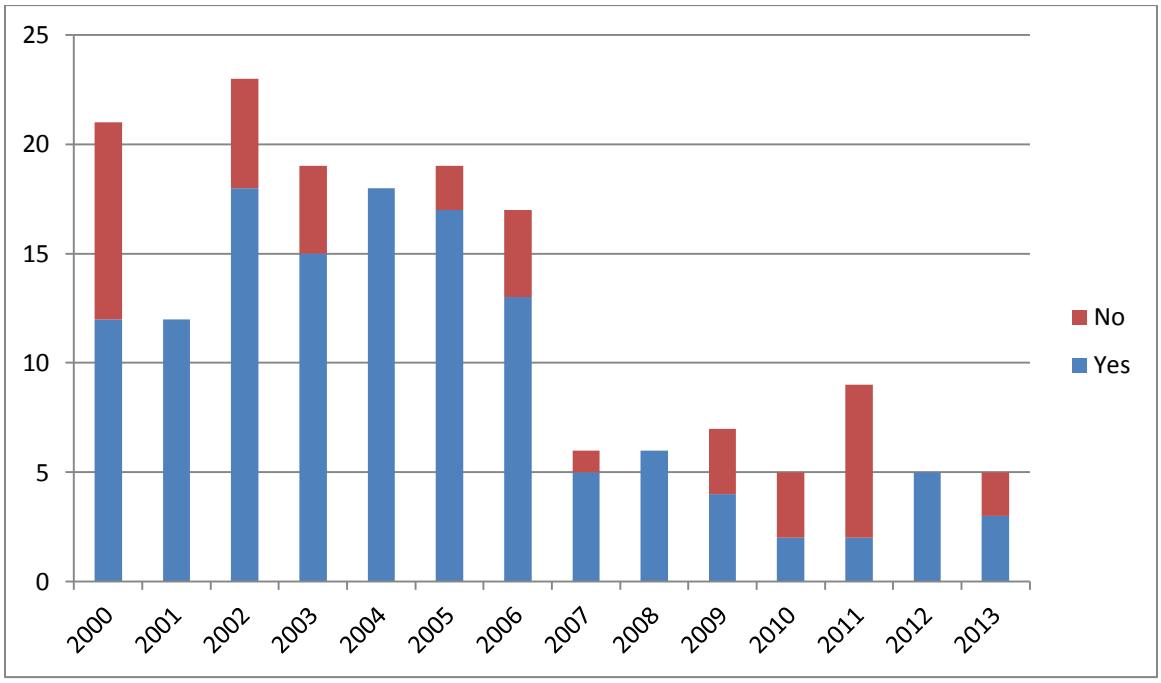
Since one of the goals of the OAP Action Plan is not only to stay in attainment of the current standard, but also to continue decreasing ozone levels, it is also useful to analyze the extent to which OAD alerts were issued for days that are included in the region's ozone design value. This provides a measurement of the utility of OAD alerts in prompting emission reductions on days that are critical to the region's design value calculation. CAPCOG measured this "design value success rate" by dividing the number of OAD alerts issued on the four highest eight-hour daily ozone averages across three years by 12.

Table 34: Success of OAD Action Days in Predicting Days Used in Design Value Calculation

Years	Controlling Monitor	DV Success Rate
2000-2002	C38	75%
2001-2003	C3	75%
2002-2004	C3	75%
2003-2005	C3	58%
2004-2006	C3	58%
2005-2007	C3	50%
2006-2008	C3	42%
2007-2009	C3	17%
2008-2010	C3	33%
2009-2011	C3	42%
2010-2012	C3	33%
2011-2013	C3	25%
Average	**n/a**	**49%**

From a cost perspective, the accuracy rate is an important performance metric. If there are too many false positives, the motivation to take actions to reduce emissions that incur costs in response to OAD alerts diminish because they may perceive that they had unnecessarily reduced emissions on those days. Measured as the total number of days when TCEQ correctly issued an OAD alert divided by the total number of OAD alerts, he accuracy rate was 23% for all OAD notices, with an annual average of 26% and confidence interval of 13-38%. Accuracy rates have ranged from as low as 0% (2012, 2008, and 2004) to as high as 78% (2011). This metric does not account for the extent to which emissions and ozone levels may actually be reduced as a result of an OAD alert or the extent to which OAD notices capture the four highest eight-hour ozone concentrations at regulatory monitors. It is unlikely that actions taken in response to an OAD alert would have an impact in excess of 1 ppb, so it is possible to adjust the metric to also include days that exactly meet the standard, such as July 4, 2013 – including such days would only marginally increase the accuracy rate during this period, though – there were only two such days since 2008 – one in 2011 and one in 2013. The following figure shows the number of days when OAD alerts were issued and whether they accurately predicted ozone levels above the standard.

Figure 6: Ozone Levels Exceeding NAAQS when OAD Notice Issued



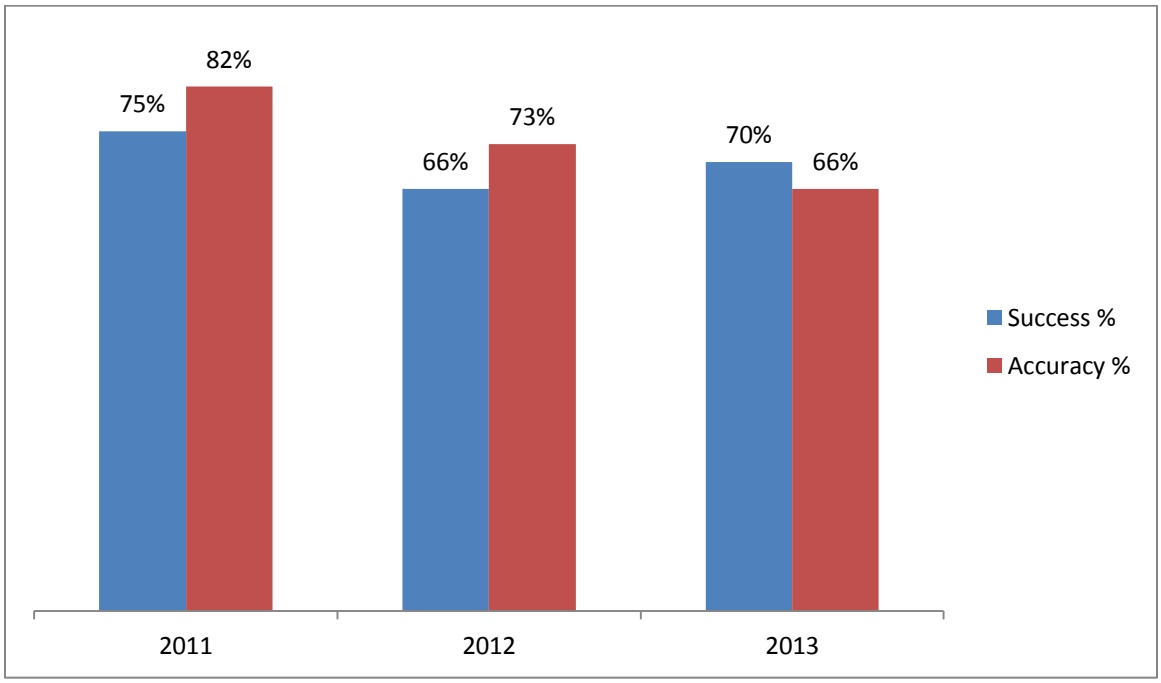
The CLEAN AIR Force augments the TCEQ's Ozone Action Day alerts by redistributing these alerts to over 71,000 recipients within the region. CLEAN AIR Force also makes Ozone Action Day alerts available via a hotline number, 512-343-SMOG (7664), for those that did not have Internet access or did not wish to share their email address. The alerts caution citizens with lung disease, children and the elderly to avoid prolonged exposure and minimize exertion outdoors, and 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. Alerts are also issued via the CLEAN AIR Force Facebook page, Twitter feed and website. To register for these alerts, citizens can visit www.cleanairforce.org or call 1-866-916-4AIR (4247).

3.2.3.2 General Ozone Forecasts

Every weekday other than on holidays, TCEQ staff issues a five-day air quality forecast that includes more detailed information about what ozone levels TCEQ staff expect to see within the region. The forecast will specify whether TCEQ meteorologist predicts that ozone levels will be "good" (<60 ppb), "moderate" (60-75 ppb), and "unhealthy for sensitive groups" (76-90 ppb). Just as OAD alerts can be used to prompt action, these forecasts can also be used to prompt the public and organizations within the region to take actions to reduce emissions or reduce exposure when ozone is predicted to be moderate or higher in order to capture all of the days within the range that EPA is now looking at for a new ozone standard (60-70 ppb). For 2011 – 2013, all of the four highest daily eight-hour ozone averages measured at CAMS 3 and 38 in each year were on days when TCEQ predicted that ozone would be "moderate" or "unhealthy for sensitive groups." If people used a forecast of "moderate" or higher as a cue to take action, rather than only ozone action days, the success rates and accuracy rates are much higher. The figure below shows these rates for 2011 – 2013.

Figure 7: Success and Accuracy Rates of Ozone Forecasts of Moderate or Higher



3.2.3.3 Subscriptions to E-mail Notifications

One measure of the extent to which the region is aware of ozone forecasts is the number of subscriptions to TCEQ's e-mail service. As of April 17, 2014, there were 1,145 subscriptions for the Austin-Round Rock MSA OAD alerts. This is a significantly higher subscription rate than the other four large metropolitan areas of the state, as the table below shows.

Table 35: Subscriptions to TCEQ Ozone Action Alerts for Selected MSAs as of April 17, 2014

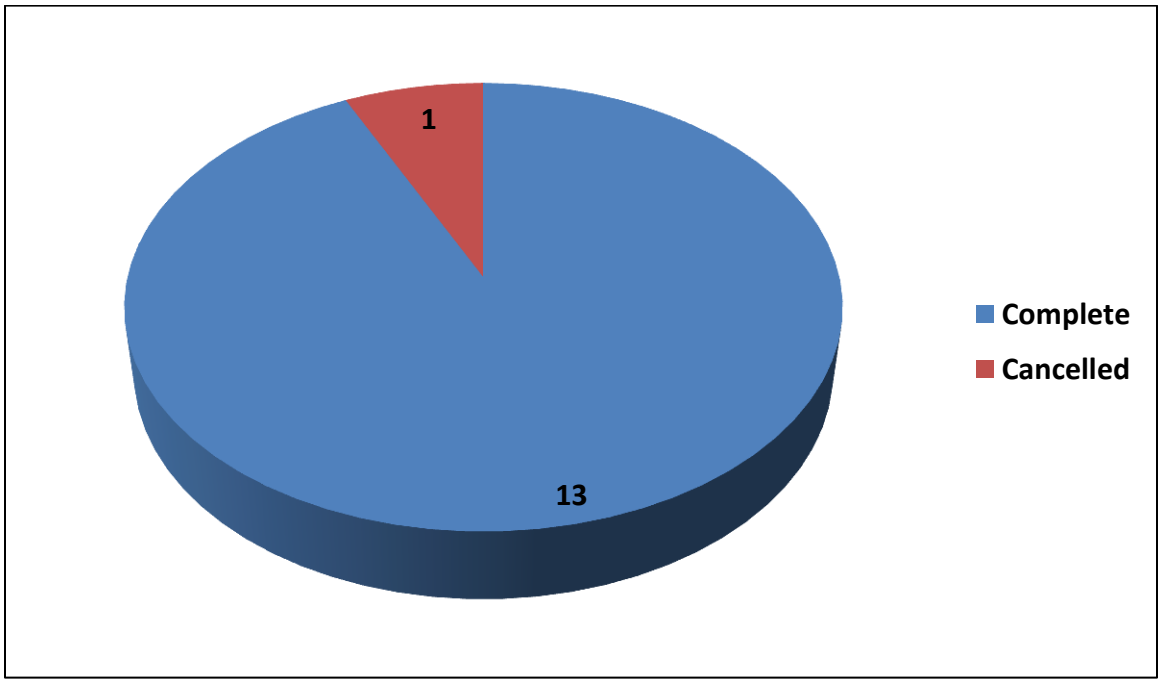
Area	Subscriptions	Population, 2013	Subscriptions/10,000
Austin-Round Rock MSA	1,145	1,880,794	6.1
Dallas-Fort Worth-Arlington MSA	1,819	6,838,498	2.7
Houston-The Woodlands-Sugarland MSA	1,480	6,338,026	2.3
San Antonio-New Braunfels MSA	732	2,285,163	3.2

Not counted in the number above are the estimate 71,000+ e-mail addresses that the CLEAN AIR Force redistributes the alerts to, which – if counted – would obviously show much higher participation rate in receiving these notices.

3.2.4 TERMs

In addition to the TERMs that were continued as commitments of the EAC, new TERMs commitments were made in the 8-O3 Flex program. As was reported in 2013, all but one of these TERMs have been completed as of April 30, 2013. The one project that has not completed was cancelled. The details of each 8-O3 Flex TERM project can be found in Appendix B of this document.

Figure 3-8: 8-O3 Flex TERMs Status as of April 30, 2013



As part of the development of the OAP Action Plan, CAMPO asked agencies to submit lists of any new TERMs.

3.2.5 AirCheck Texas

The AirCheck Texas program provides funding to low-income individuals to replace or repair vehicles that do not pass the emissions inspection tests or are at least 10 years old. The program is administered by Travis and Williamson Counties in partnership with the TCEQ and the Texas Department of Public Safety (DPS). The table below shows the number of vehicles repaired and replaced in 2013 reported by Travis County.

Table 36: AirCheck Texas Program Data for 2013

County	Vehicles Repaired	Repair Expenses	Per Vehicle	Vehicles Replaced	Replacement Expenses	Per Vehicle	Total Expenses
Travis	422	$228,454.02	$541.36	148	$444,500.00	$3,003.38	$672,954.02
Williamson	42	$25,985.40	$618.70	52	$156,000.00	$3,000.00	$181,985.40
TOTAL	**464**	**$254,439.42**	**$548.36**	**200**	**$600,500.00**	**$3,002.50**	**$854,939.42**

3.2.6 Paving of Unpaved Roads

Research conducted by the Texas Transportation Institute (TTI) that was included in the 8-O3 Flex Plan showed that NO_X emissions from light-duty trucks operating paved roads were 20-70% lower than they were on paved roads, both due to the extra engine power required to operate on a dirt road and due to the effect of the dirt on the vehicle's air filter. The following data shows the extent to which the region was able to pave any remaining unpaved roads:

Table 37: Paving of Unpaved Roads

Entity	Paving of Unpaved Roads in 2013 (miles)	Remaining Unpaved Roads (miles)
City of Hutto	2	2
City of Lockhart	1	3
City of Pflugerville	0	0.1
Hays County	0	2
Subtotal	**3**	**7.1**

3.2.7 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 2013 Ozone Season (April 1 – October 31), the CLEAN AIR Force offered an Ozone Action Day email notification service to over 71,000 participants when unhealthy levels of ozone were expected for the following day. Ozone Action Day alerts were also available via a hotline number, 512-343-SMOG (7664), for those that did not have Internet access or did not wish to share their email address. The alerts cautioned citizens with lung disease, children and the elderly to avoid prolonged exposure and minimize exertion outdoors. The email alerts also encouraged 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 email provided direct contact information for citizens having questions or concerns regarding the alert. Alerts are also issued via the CLEAN AIR Force Facebook page, Twitter feed and website. Ozone Season updates were presented at 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 2013 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 and Williamson County Commissioner Ron Morrison, Board Member and Austin Mayor Lee Leffingwell, CAF Board Vice Chair Tim Jones of Samsung Austin Semiconductor, and CLEAN AIR Force Executive Director Deanna Altenhoff as speakers.

To help improve Austin's air quality and traffic congestion, on February 8, 2013 the CLEAN AIR Force assisted Social Good Summit with the first ever citywide Work From Home Day Pilot Project. Work From Home Day saw major employers, small businesses, entrepreneurs and the local and state governments pledge to telecommute on February 8. Many local companies, including Dell, AMD, Rackspace, PGI, Google, GSD&M, Jason's Deli, St. Edward's University and Austin Community College pledged to take a guaranteed amount of employees off the road. This pledge led to a reduction in traffic, carbon emissions, and lower energy expenses for offices. Work From Home Day received the support and cooperation from Governor Rick Perry's office, the City of Austin, CapMetro, Travis County, TxDOT and CAMPO. On January 25, Governor Perry's office issued a formal document of recognition for the Work From Home Day. Work From Home Day also received widespread media attention, including coverage on all major news outlets in Austin. KXAN and KEYE had all day coverage of Work From Home Day with reporters participating by reporting from their homes. This coverage brought attention to the environmental causes and helped promote future Work From Home Days including the second one held on September 10, 2013.

3.2.7.1 CLEAN AIR Force Board of Directors

The CLEAN AIR Force Board of Directors consists of 28 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 Williamson County Commissioner Ron Morrison, Vice Chair Tim Jones of Samsung Austin Semiconductor, and Secretary/Treasurer Brett Davis of Zephyr Environmental and met to discuss air quality issues and policies, including the 8-Hour O3 Flex and Ozone Advance Plans.

- Board Meetings
  - March 6, 2013
  - December 13, 2013
- Executive Committee Meetings:
  - January 7, 2013;
  - February 6, 2013;
  - March 6, 2013;
  - April 5, 2013;
  - May 1, 2013;

- June 26, 2013;
- August 7, 2013;
- October 16, 2013; and
- December 13, 2013.

3.2.7.2 CLEAN AIR Force 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 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). To receive meeting notices and agendas by email, citizens can send a request to info@cleanairforce.org.

In 2013 the TAC hosted a series of panel discussions to support efforts to develop the new community-wide Ozone Advance Plan. The discussions included precursor emission (NO_X and VOC) reduction activities currently in place, what is working or not working, and ideas to implement in the near future. Topics included: transportation, landscaping and lawn care, industry, utilities and demand-side utilities.

On September 20, 2013, the TAC, in coordination with the Society for the Advancement of Materials and Process Engineering (SAMPE), hosted a presentation by Skyonic on their carbon capture process at the University of Texas. This presentation was of special interest to people wishing to limit CO2 emissions, or continue burning hydrocarbons for energy, and those wishing to learn more about process control options for electric generating facilities.

- CAF TAC Meetings:
  - January 24, 2013;
  - February 28, 2013;
  - March 28, 2013;
  - May 2, 2013;
  - June 27, 2013;
  - July 25, 2013;
  - September 5, 2013;
  - October 24, 2013; and
  - November 21, 2013.

3.2.7.3 CLEAN AIR Force Public Involvement / Communications Committee

The CLEAN AIR Force Public Involvement Committee (PI) was a committee that helped to develop and implement air quality programs and campaigns designed to educate citizens and businesses on the effects of poor air quality on our health and the economy. The PI Committee was chaired by Board Member Nancy McDonald of the Real Estate Council of Austin (RECA) and had approximately 20 members. Meetings were open to the public and meeting notices posted on the CLEAN AIR Force website (www.cleanairforce.org). During the summer of 2013, the Committee was reorganized to form the Communications Committee and create a more focused effort on public communications.

CAF PI Meetings/Communications Committee Meetings:

- March 14, 2013 – CAF Public Involvement Committee Meeting

- August 16, 2013 – CAF Communications Committee Meeting

3.2.7.4 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 50 Partners participating, the program aims to reduce at least 9,200 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 92,000 employees in Central Texas. The table below shows the list of current partners, and indicates whether the partner is also an operator of a point source within the region.

Table 38: Clean Air Partners, 2013

Partner	Sector	Point Source Operator
3M	Private	☒
3MD Ranch	Private	☐
AMD	Private	☐
Apple, Inc.	Private	☐
Applied Materials, Inc.	Private	☐
Dell	Private	☐
Electric Avenue Scooters	Private	☐
Emerson Process Management	Private	☐
EnviroMedia Social Marketing	Private	☐
Farmers Insurance	Private	☐
Flextronics	Private	☐
Freescale Semiconductor	Private	☒
Green Mountain Energy Company	Private	☐
HNTB Corporation	Private	☐
Hospira, Inc.	Private	☐
IBM	Private	☐
Intel	Private	☐
National Instruments	Private	☐
Oracle	Private	☐
R&R Limousine and Bus	Private	☐
Sage Environmental Consulting	Private	☐
Samsung	Private	☒
The Seton Family of Hospitals	Private	☐
Spansion LLC	Private	☒
St. David's HealthCare Partnership	Private	☐
TECO-Westinghouse	Private	☐

Partner	Sector	Point Source Operator
Texas Gas Service	Private	☐
Thompson & Knight LLP	Private	☐
Tokyo Electron	Private	☐
Zephyr Environmental Corporation	Private	☐
American Lung Association-Plains-Gulf Region	Non-Profit	☐
Austin Chamber of Commerce	Non-Profit	☐
ACC	Non-Profit	☐
Austin Independent School District	Non-Profit	☐
Del Valle Independent School District	Non-Profit	☐
Downtown Austin Alliance	Non-Profit	☐
Environmental Defense Fund	Non-Profit	☐
University of Texas at Austin	Non-Profit	☒
Hays County	Government	☐
Travis County	Government	☐
Williamson County	Government	☐
City of Austin	Government	☒
City of Round Rock	Government	☐
City of San Marcos	Government	☐
CAPCOG	Government	☐
CAMPO	Government	☐
CTRMA	Government	☐
LCRA	Government	☒
TxDOT-Austin	Government	☐

Clean Air Partners report their emission-reducing business activities each year via a user-friendly online tool that calculates their emission reductions. Based on data reported in 2012, CLEAN AIR Force estimated partners reduced 310,314 pounds of ozone-forming emissions. 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.

The CAPP held their second Partner Networking/Recruiting Happy Hour on September 26, 2013 at Eddie V's in the Arboretum. This event was an opportunity for current Partners to meet with potential new Partners to tell them more about the program and relay ways that their companies reduce ozone emissions.

3.2.7.5 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 goals of the Clean School Bus Program are 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.

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.

3.2.7.6 Other CLEAN AIR Force Public Outreach Activities & Meetings

- **Ozone Action Day Alerts:**
  - July 3, 2013 - Ozone Action Day Announced
  - July 4, 2013 – Ozone Action Day Announced
  - August 19, 2013 – Ozone Action Day Announced
  - August 30, 2013 – Ozone Action Day Announced
  - September 25, 2013 – Ozone Action Day Announced
- **CAPP Activities:**
  - May 1, 2013 – CAPP Receives TCEQ's Texas Environmental Excellence Finalist Award
  - June 30, 2013 – CAPP Reports Due
  - September 4, 2013 – CAPP Receives Greater Austin Chamber Business Finalist Award
  - September 26, 2013 – CAPP Networking and Recruiting Event
- **Presentations:**
  - June 10, 2013 – CAF Staff, Sarah Holland, speaks at Bastrop County Commissioners Court
  - June 13, 2013 – CAF Staff, Sarah Holland, speaks at Luling City Council Meeting
  - June 18, 2013 – CAF Board Member, Nancy McDonald, speaks at Sunset Valley City Council Meeting
  - June 26, 2013 – CAF Board Member, Nancy McDonald, speaks at Westlake City Council Meeting
  - July 2, 2013 – CAF Board Member, Chris Colemon, speaks at Elgin City Council Meeting
  - July 16, 2013 – CAF Staff, Sarah Holland, speaks at Lockhart City Council Meeting
  - July 18, 2013 – CAF Board Member, Jennifer Clymer, speaks at Leander City Council Meeting
  - September 10, 2013 – CAF Staff, Sarah Holland, speaks at Dripping Springs City Council Meeting
  - September 24, 2013 – CAF Staff, Sarah Holland, speaks at Bastrop City Council Meeting
  - October 14, 2014 – CAF Staff, Sarah Hoover, speaks at Caldwell County Commissioners Court
  - October 15, 2013 – CAF Board Member, Rick Perkins, speaks at Travis County Commissioners Court
  - October 15, 2013 – CAF Staff, Sarah Holland, speaks at Buda City Council Meeting
  - October 29, 2013 – CAF Board Vice Chair, Tim Jones, speaks at Williamson County Commissioners Court
  - November 12, 2013 – CAF Staff, Sarah Holland, speaks at Hays County Commissioners Court
  - November 26, 2013 – CAF Board Vice Chair, Tim Jones, speaks at Round Rock City Council Meeting
- **Public Outreach Booths:**
  - March 27, 2013 – CAF Booth at Texas Department of Aging and Disability Services Health Fair
  - April 10, 2013 – CAF Booth at Eugene Clark Public Library
  - April 17, 2013 – CAF Booth at Bastrop Library
  - April 18, 2013 – CAF Booth at IBM's Earth Day Event
  - April 20, 2013 – CAF Booth at Austin's Earth Day Event at Mueller Development Center
  - April 22, 2013 – CAF Booth at Austin Community College's Earth Day Event in Round Rock

  - April 24, 2013 – CAF Booth at Buda Library
  - April 30, 2013 – CAF Booth at Travis County's Air Quality Awareness Fair
  - August 9, 2013 – CAF Booth at Luling Public Library
- **Other Activities:**
  - February 8, 2013 – Work From Home Day Pilot
  - April 8, 2013 – Ozone Season Kick-Off Event at Round Rock City Hall
  - September 10, 2013 – 2nd Work From Home Day
  - September 20, 2013 – TAC Presentation with Skyonic at UT Austin
- **Media Hits:**
  - February 28, 2013 – Amplify Austin, Austin EcoNetwork online newsletter
  - March 4, 2013 – Amplify Austin, Austin EcoNetwork online newsletter
  - April 2, 2013 – Local Organization Hosting Ozone Conference, Austin American-Statesman article online
  - April 4, 2013 – Ozone Season Kick-Off Event, Community Impact News
  - April 4, 2013 – Ozone Season is Upon Us, Austin EcoNetwork online newsletter
  - April 8, 2013 – Ozone Action Days: What Do They Really Mean, EDF blog
  - April 8, 2013 – Ozone Action Days - What They Mean, KEYE article online
  - April 8, 2013 – Ozone Season is Upon Us, Austin EcoNetwork online newsletter
  - April 8, 2013 – High Pollution Levels May Hurt Wallets, KXAN article online
  - April 8, 2013 – Interview with Executive Director, Deanna Altenhoff, Univision
  - April 8, 2013 – Ozone Season Kick-Off Event, KXAN
  - April 8, 2013 – Ozone Season, KEYE
  - April 8, 2013 – Ozone Season, KVUE
  - April 9, 2013 – Ozone Season, KXAN
  - April 12, 2013 – Ozone Emissions Impact Air and Economy, Round Rock Leader
  - April 16, 2013 – Ozone Emissions Impact Environment and Economy, Austin American-Statesman article online
  - April 17, 2013 – Preparing for Dangers of Summer Ozone Levels, Williamson County Sun
  - May 29, 2013 – Comments from the website, Hays County Free Press
  - June 11, 2013 – Austin's Pilot Telework Program, White Paper by Social Good Summit Austin
  - June 20, 2013 – CAF looking for public input on air quality, KLBJ radio website
  - July 1, 2013 – CAF air quality survey, Austin EcoNetwork online newsletter
  - July 2, 2013 – Ozone Action Day Declared, KXAN news online
  - July 3, 2013 – CAF Executive Director interviewed regarding Ozone Season, KLBJ radio
  - July 3, 2013 – Ozone Action Day Declared, KUT article online
  - July 3, 2013 – Ozone Action Day Declared, KEYE article online
  - July 3, 2013 – Ozone Action Day Declared, KLBJ radio
  - July 3, 2013 – Ozone Action Day Declared, YNN TV news
  - July 3, 2013 – Ozone Action Day Declared, In Fact Daily online
  - July 8, 2013 – CAF air quality survey, Austin EcoNetwork online newsletter
  - July 10, 2013 – CAF air quality survey, CAN online newsletter
  - July 11, 2013 – CAF air quality survey, Austin EcoNetwork online newsletter
  - July 12, 2013 – CAF air quality survey, Williamson County website
  - July 15, 2013 – CAF air quality survey, Austin EcoNetwork online newsletter
  - July 18, 2013 – CAF air quality survey, Austin EcoNetwork online newsletter
  - July 22, 2013 – CAF air quality survey, Austin EcoNetwork online newsletter
  - July 25, 2013 – CAF air quality survey, Austin EcoNetwork online newsletter
  - July 29, 2013 – CAF air quality survey, Austin EcoNetwork online newsletter

- August 7, 2013 – CAF air quality survey, CAN online newsletter
- August 19, 2013 – CAF Executive Director interviewed regarding Ozone Season, KUT radio
- August 19, 2013 – Ozone Action Day Declared, KHOU online
- August 19, 2013 – Ozone Action Day Declared, KVUE news online
- August 19, 2013 – Ozone Action Day Declared, KXAN TV news and online
- August 19, 2013 – Ozone Action Day Declared, KVUE TV news
- August 19, 2013 – Ozone Action Day Declared, KEYE TV news
- August 19, 2013 – Ozone Action Day Declared, KLBJ radio news
- August 19, 2013 – Ozone Action Day Declared, KUT radio news
- August 29, 2013 – Ozone Action Day Declared, KXAN online
- August 30, 2013 – Ozone Action Day Declared, KUT online
- September 3, 2013 – Clean Air Coalitions take steps to improve air quality, EDF blog online
- September 23, 2013 – Clean Air Partners networking happy hour, Austin EcoNetwork online newsletter
- September 24, 2013 – Ozone Action Day Declared, KXAN online

3.2.8 Lone Star Clean Fuels Alliance

Clean Cities is a program designed to assist the United States to use its own renewable fuels and to cut its dependence on foreign oil. The Department of Energy is committed to energy use in America's transportation sector that is more efficient, less dependent on foreign oil, less environmentally disruptive, sustainable and safe. By encouraging alternative fuel and vehicle use, the Clean Cities helps enhance energy security and environmental quality at both the national and local levels. The Clean Cities program fosters public-private partnerships between alternative fuel providers and public and private fleets as well as providing a resource for consumers to find information on alternative fuel vehicles and their costs of ownership.

For 20 years, Clean Cities has advanced the nation's economic, environmental, and energy security by supporting local actions to reduce petroleum consumption in transportation. A national network of nearly 100 Clean Cities coalitions nationwide brings together stakeholders in the public and private sectors to deploy alternative and renewable fuels, idle-reduction measures, fuel economy improvements, and emerging transportation technologies supporting energy security and environmental quality at both the national and local levels.

The Clean Cities coalition was established in Austin in 1994. Formerly Central Texas Clean Cities, Lone Star Clean Fuels Alliance became a stand-alone, membership based 501(c)(3) in 2012, serving Bastrop, Caldwell, Hays, Travis, and Williamson Counties. Lone Star Clean Fuels Alliance conducted a survey of stakeholders, finding that they reduced over 1.3 million gasoline gallon equivalents in 2013. The coalition added 2 public propane fueling stations, 55 public electric chargers, and 1 public access E85 station. Reporting stakeholders spent $2,229,225 in grant funds in 2013.

Lone Star Clean Fuels Alliance and its stakeholders also conducted dozens of outreach efforts and other activities meant to educate consumers, fleet managers and emergency personnel about alternative fuels and emerging vehicle technologies.

3.3 State Measures

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. The table below shows which measures apply to each county in the region, and whether the measures also apply state-wide.

Table 39: 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-Natural Gas Vehicle 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	☐	☐	☒	☐	☐	☐

Measure	Citation	Bastrop	Caldwell	Hays	Travis	Williamson	Statewide
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	☒	☒	☒	☒	☒	☒

In accordance with the EPA's Ozone Advance Program guidance that areas should estimate the NO_X and VOC emission reductions being achieved through control strategies to the extent possible, CAPCOG has developed emission reduction estimates for most of the measures listed above.

Table 40: Summary of Estimated Emission Reductions from State Measures, 2013 (tons per day)

Measure	NO_X Reduction (tpd)	VOC Reduction (tpd)
Vehicle I/M	2.95	2.45
TERP-ERIG, Rebate, and Third-Party Grants	3.14	0.00
TERP-Clean Fuel Fleet	0.08	0.00
TERP-Natural Gas Vehicle Replacement	<0.01	0.00
TxLED	2.49	0.00
Low RVP Gasoline	0.31	1.16

Measure	NO_X Reduction (tpd)	VOC Reduction (tpd)
Water Heaters, Small Boilers, and Process Heaters	0.51	0.00
Stage I Vapor Recovery	0.00	6.46
Degreasing Rules	0.00	0.92
Cutback Asphalt Rules	0.00	0.24
Subtotal – Quantified State Rules	**9.48**	**11.23**

3.3.1 TERP

The TERP program provides grant funding for the early replacement, repowering, or retrofitting of older diesel-powered vehicles and equipment, as well as investments in infrastructure that can lead to emission reductions, such as idle reduction infrastructure or alternative fueling infrastructure. In 2013, TERP funding included the following programs:

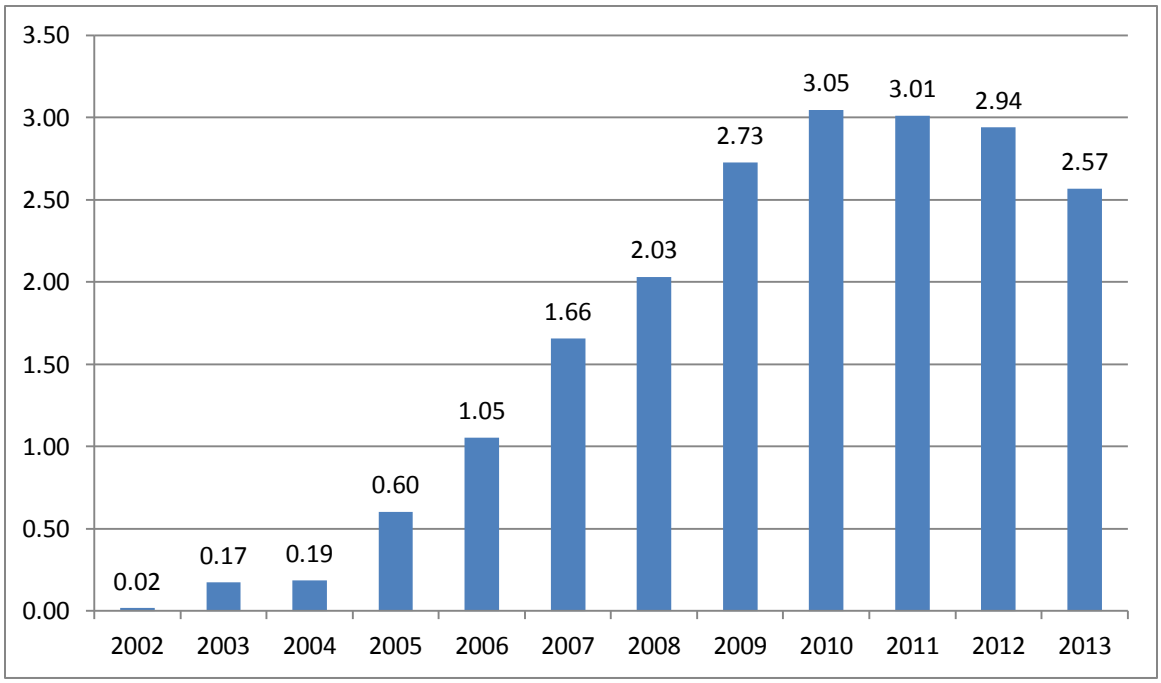
- The Emission Reduction Incentive Grant (ERIG) and Rebate Programs;
- The Natural Gas Vehicle Grant Program (TNGVGP);
- The Clean Fuel Fleet Program (CFFP); and
- The Clean Transportation Triangle and Alternative Fueling Facilities Programs (CTTP and AFFP).

3.3.1.1 ERIG and Rebate Grants

The ERIG program provides funding on a competitive basis, based on the cost per ton of NO_X reduced, for replacing, repowering, or retrofitting older diesel vehicles and equipment. Eligible vehicles must have several years of useful life remaining on the vehicle that is going to be replaced/repowered/retrofitted so that the funding is being used to reduce emissions beyond what would be achieved through normal attrition. The rebate program is structured in a similar manner, but provides an incentive at a set cost/ton level on a first-come, first-serve basis. These programs have been in place for a number of years, and the emission reductions accumulate year-over-year as new projects are funded.

In 2013, TCEQ awarded $8,196,394.39 in ERIG and Rebate grants to the Austin-Round Rock MSA, which should produce 879 tons of NO_X reductions over the lives of the projects funded, resulting in 0.504 tons per day of NO_X emission reductions during typical ozone season weekdays. A total of 38 projects that had previously been funded ended their reporting periods during 2013, which had accounted for 0.4471 tons per day of emission reductions, but another 20 projects began reporting in 2013, for a total of 0.0765 tons per day of net emission reductions achieved through new projects funded in 2013. The figure below shows the total cumulative emission reductions from ERIG and Rebate grants within the Austin-Round Rock MSA as of the end of each year from 2002-2013.

Figure 9: Cumulative NO_X Emission Reductions: ERIG, Rebate, and Third-Party Grants (end of year)



Several participants in the regional air quality planning effort have received ERIG or Rebate grants, accounting for 0.1661 tons per day of NO_X emission reductions. One of the projects was awarded in 2013 – a $215,636.99 grant to Texas Lehigh to replace 1 off-highway truck. These projects are shown in the table below.

Table 41: ERIG and Rebate Grants Received by Air Quality Plan Participants Reporting in 2013

Organization	Projects	NO_X Reductions, 2013
Hays County	Replace 1 Truck	0.0030 tons per day
City of Austin	Replaced 6 trucks, refueling infrastructure for 1 truck, on-vehicle infrastructure for 29 trucks,	0.0447 tons per day
City of Pflugerville	Replace 1 School Bus	0.0004 tons per day
Caldwell County	Replace 2 On-Road Dump Trucks	0.0016 tons per day
CapMetro	Repower 98 Transit Buses	0.1164 tons per day
Texas Lehigh Cement Company	Replace 1 Non-Road Off-Highway Truck	0.0259 tons per day

3.3.1.2 TNGVGP

The TNGVGP provides grant funding for up to 90% of the replacement of diesel-powered trucks with natural-gas powered trucks on a first-come, first-serve basis. The replacement projects must result in at least a 25% reduction in NO_X emissions, and grant recipients must use the trucks within a defined region

of East Texas for at least 400,000 miles or four years, whichever is earlier. There were no projects awarded in 2013 listing the Austin-Round Rock MSA as the primary area of operation, but TCEQ did quantify the amount of emission reductions that are expected to occur within the region based on the applicant's reported usage distribution. In 2013, TCEQ signed contracts for $17,164,500 in grant funding for this program state-wide, which is expected to result in 575 tons of NO_X emissions reductions over the lives of the projects ($29,851 per ton reduced) for an average of 0.5747 tons per day during ozone season. Of this total, TCEQ expects 0.0491 tons per day of NO_X reductions to occur within the Austin-Round Rock MSA.

3.3.1.3 CFFP

The CFFP provides funding to encourage operators of large fleets to replace diesel-powered vehicles with alternative-fueled or hybrid vehicles. Entities must operate at least 75 vehicles in Texas, and at least 20 of the vehicles must be diesel-powered. Applicants must commit to replacing at least 20 eligible diesel-powered vehicles – each with at least two years of remaining life – with qualifying alternative fuel or hybrid vehicles over a 12-month period. The grant covers 50-80% of the cost of purchasing the new vehicle, and applicants must use the vehicles for at least 5 years or 400,000 miles.

In 2013, one project in the region that had previously been awarded began reporting. This project involved a grant $3,181,967.23 that is covering 70% of the cost to UPS to replace 35 on-road delivery trucks and replace 20 on-road box trucks. This project is expected to produce 29.5695 tons of NO_X reductions over the life of the project ($107,609.78 per ton reduced), and result in an average reduction in 0.0237 tons per day of NO_X emissions. Another project was awarded in 2013, but had not yet begun reporting – a $2,292,115.80 grant to the City of Austin that is covering 60% of the replacement cost for 13 garbage trucks. This project is expected to result in 33.8975 tons of NO_X reductions, for an average of 0.0273 tons per day during ozone season, at $67,619.02 per ton. In total, including projects that began reporting prior to 2013, this program produced 0.0827 tons per day of NO_X reductions in 2013.

3.3.1.4 CTT and AFFP

The Texas Clean Triangle Program and Alternative Fueling Facilities Program provide funding for alternative fuel infrastructure in selected areas. The Austin-Round Rock MSA is not eligible for funding from the AFFP, but is eligible for the CTT program. In 2013, TCEQ awarded Bison Fuels LLC a $100,000 grant for a CNG station located at 8103 Cross Park Drive in Austin.

3.3.2 Vehicle Emissions Inspection and Maintenance Program

Since September 1, 2005, a vehicle emissions inspection and maintenance program (I/M program) has been in place in the two largest counties – Travis and Williamson Counties. Here are some highlights of the program:

- Subject vehicles: gasoline vehicles (including heavy-duty gasoline vehicles) model years 2-24 years;
- Test frequency: annually, beginning with the vehicles 2nd anniversary;
- Inspection method: 1996 and newer vehicles are subject to on-board diagnostics (OBD) inspections, and model-year 1995 and older vehicles are subject to two-speed idle (TSI) inspections;
- Inspection Fees: $16.00 for TSI or OBD inspection, plus $12.75 for a safety inspection;

- State administration fees: $2.50 from all inspections for TCEQ/DPS administration and $2.00 to fund the Drive a Clean Machine program, which provides financial assistance to qualified motorists needing repairs to or retirement of vehicles.

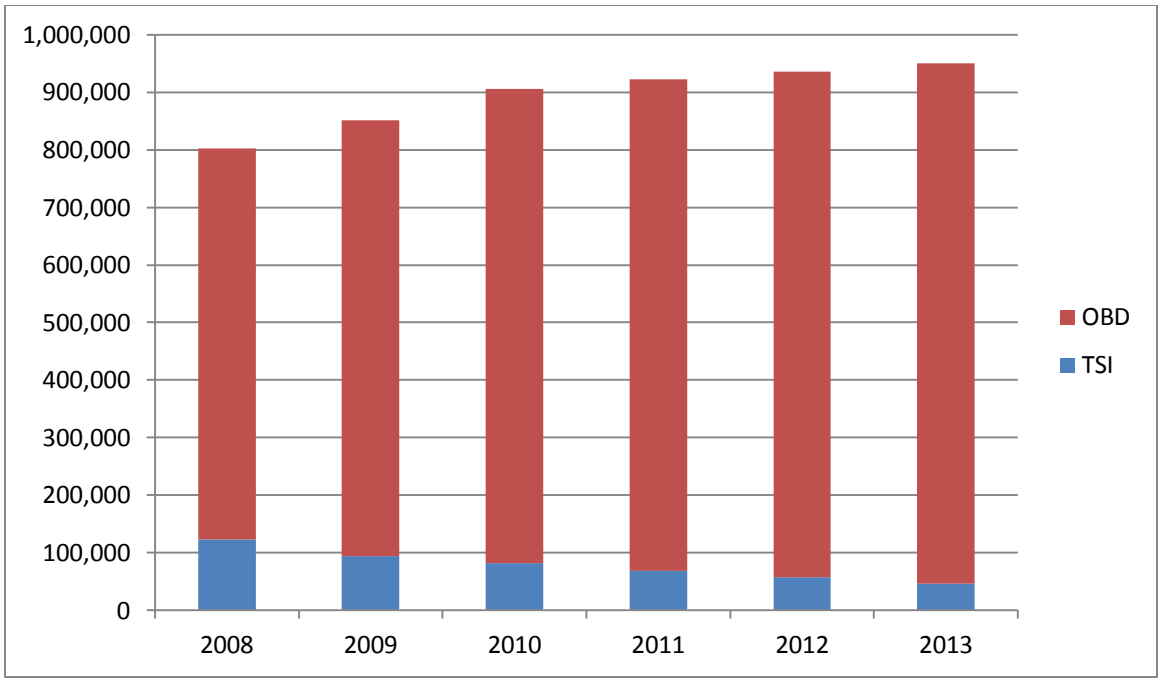
CAPCOG has estimated that during the 2013 ozone season, the I/M program achieved 2.96 tons per day of NO_X emission reductions, and 2.45 tons per day of VOC emissions reductions. This is based on a 2015 link-based emissions inventory developed by TTI for CAMPO in early 2013 that included an estimate of the emission reductions from the I/M program for 2015, the 2012 and 2018 link-based emissions inventories developed by TTI for CAMPO in 2013 for photochemical modeling, and an estimate of switching to OBD-only testing completed by ERG in 2010.

Table 42: Estimated NO_X and VOC Emission Reductions from the I/M Program, 2013 (tons per day)

Year	NO_X	VOC
2013	2.96	2.45

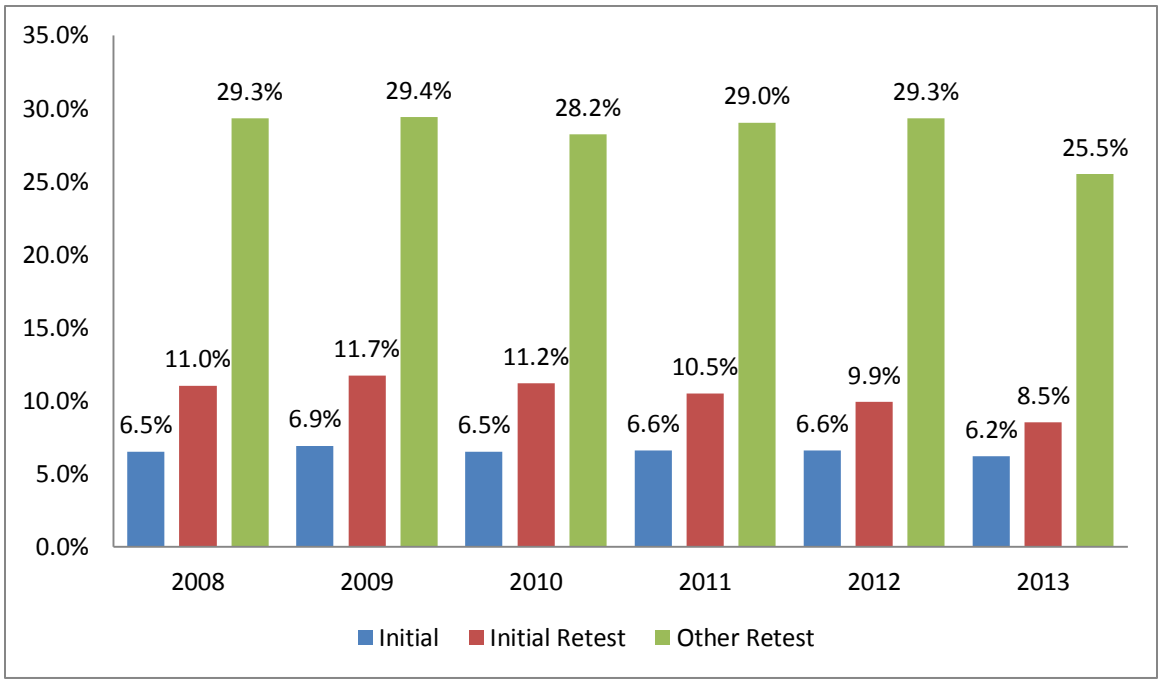
The following figure shows the total number of emissions tests completed in Travis and Williamson Counties from 2008 to 2013, broken down by test type. The total number of tests has increased from 802,847 in 2008 to 950,643 in 2013, although the annual increase has decreased significantly in recent years.

Figure 10: Total Emissions Tests in Travis and Williamson Counties, 2008-2013



The following figure shows the failure rates for initial tests, initial retests, and other retests from 2008 to 2013.

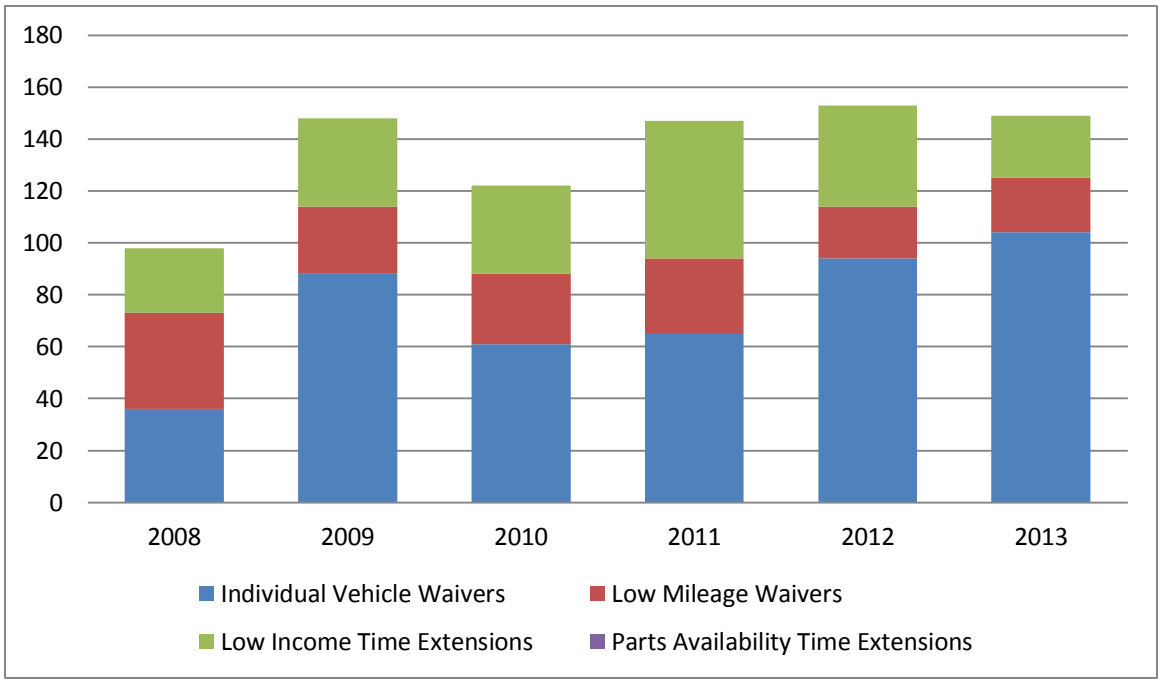
Figure 11: Emissions Test Failure Rates, 2008-2013



The failure rate has remained fairly steady over this time period, ranging from 6.2% to 6.9%. 2013 marked the lowest failure rates for all three categories of tests, and was significantly lower for retests even compared to 2012.

The following figure shows the number of I/M program waivers that have been granted for vehicles within Travis and Williamson Counties over the past several years. Waivers and extensions can be issued based on low income, low mileage, cumulative expenditures on repairs, and parts availability. These waivers are rarely issued, however, with only 149 issued for calendar year 2013 out of 950,643 tests conducted in 2013.

Figure 12: I/M Program Waivers by Year



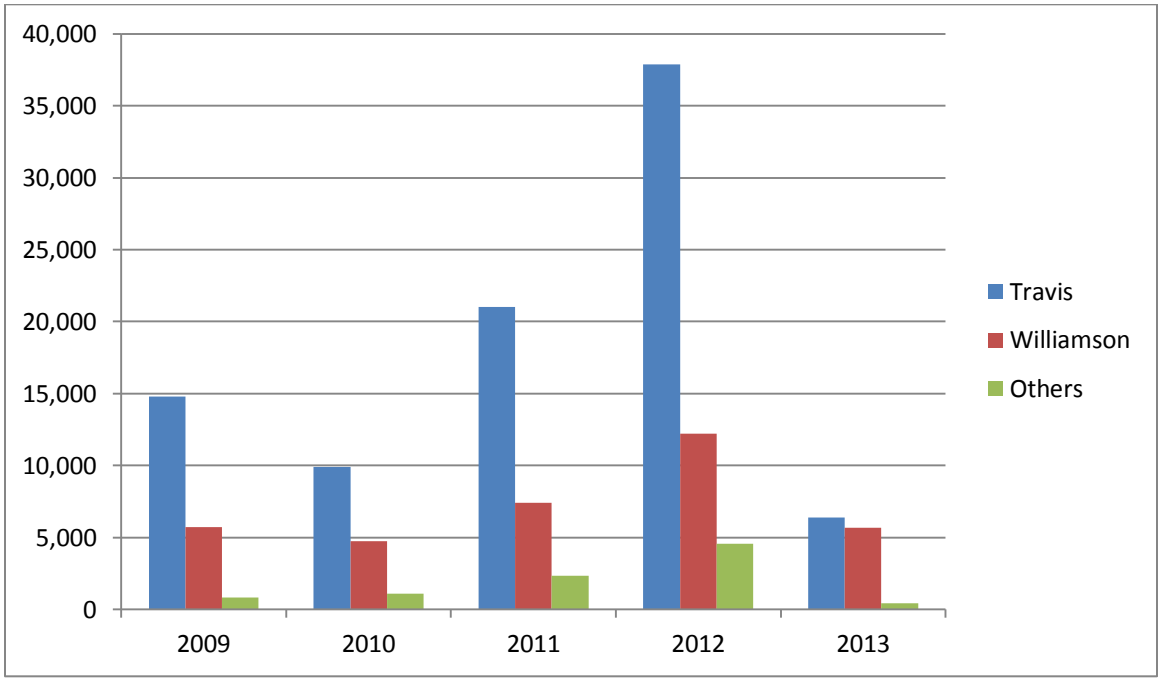
The following table shows the total number of vehicles recorded in Travis and Williamson Counties as part of the remote sensing program, as well as the extent to which the program recorded emissions levels above certain cutpoints. The cutpoint for CO was 1.2%, the cutpoint for hydrocarbons (HC) was 220 ppm, and the cutpoint for NO_X was 4,000 ppm.

Table 43: Remote Sensing Data, 2013

COUNTY	Subject	Failed Station Standard	Failed All	Failed CO Only	Failed HC Only	Failed NO Only	Failed CO and HC	Failed HC and NO	Failed CO and NO	High Emitter	Notice
BASTROP	107	10	0	4	3	1	2	0	0	0	0
BELL	69	4	0	1	0	2	1	0	0	0	0
BLANCO	7	0	0	0	0	0	0	0	0	0	0
BURNET	45	3	0	3	0	0	0	0	0	0	0
CALDWELL	21	0	0	0	0	0	0	0	0	0	0
HAYS	145	8	0	6	2	0	0	0	0	0	0
LEE	15	0	0	0	0	0	0	0	0	0	0
MILAM	23	1	0	0	1	0	0	0	0	0	0
TRAVIS	6,380	190	0	90	62	2	35	1	0	8	8
WILLIAMSON	5,681	126	1	59	38	2	26	0	0	1	1
TOTAL	**12,493**	**342**	**1**	**163**	**106**	**7**	**64**	**1**	**0**	**9**	**9**

The total number of vehicles recorded by remote sensing in the region from 2009 to 2013 is shown below.

Figure 13: Vehicle Records Collected from Remote Sensing Program in Travis and Williamson Counties, 2009-2013



3.3.3 TxLED and Low-RVP Gasoline

The TCEQ has two fuel standards in place that apply to the Austin-Round Rock MSA: a low-emission diesel fuel standard, known as "Texas Low-Emission Diesel" or "TxLED," and low- RVP gasoline. These standards are achieving significant emission reductions within the region.

The TxLED rules, found in 30 TAC Chapter 114, Subchapter H, Division 2, require that diesel offered for sale within the Eastern portion of the state achieve emission reductions equivalent to what could be achieved by limiting the aromatic content to 10% and achieving a minimum cetane number of 48. Fuel suppliers are allowed to use alternative formulations as long as they would achieve equivalent emission reductions. The following table shows the estimated emission reductions attributable to TxLED in 2013.

Table 44: Estimated NO_X Emission Reductions from TxLED, 2013

Source	NO_X Reduction (tons per day)
On-Road Vehicles	1.15
TexN Sources	1.16
Locomotives	0.49
Airport Ground Support Equipment	0.01
TOTAL	**2.80**

The low-RVP rules are found in 30 TAC Chapter 114, Subchapter H, Division 1. These rules require that the Reid Vapor Pressure be limited to 7.8 pounds per square inch for gasoline sold in the eastern portion

of the state from June 1 – October 1 at the retail level, and May 1 – October 1 at bulk facilities. The following table shows the estimated NO_X and VOC emission reductions from low-RVP gasoline within the region:

Table 45: Estimated Emission Reductions from Low-RVP Gasoline (tons per day)

Source	NO_X	VOC
On-Road	0.59 tpd	0.44 tpd
Non-Road	0.15 tpd	0.28 tpd
TOTAL	**0.74 tpd**	**0.76 tpd**

3.3.4 Area Source VOC Controls

There are three area source VOC controls that were included in the Austin Area Early Action Compact SIP that continue to achieve emission reductions: 1) stage 1 vapor recovery rules, 2) restrictions on the use of cutback asphalt, and 3) degreasing rules.

3.3.4.1 Stage 1 Vapor Recovery

The Stage 1 vapor recovery rules applicable to Bastrop, Caldwell, Hays, Travis, and Williamson Counties are found in Ch. 115, Subchapter C, Div. 2. These rules limit emissions from filling gasoline storage vessels at retail gasoline stations to no more than 0.8 pounds per 1,000 gallons of gasoline transferred. The EPA's emissions factor for "submerged filling" is 7.3 pounds per 1,000 gallons[2], so for stations that are in compliance with the rule, it is achieving at least an 89% reduction in emissions. For most "attainment" counties, the applicability threshold is 125,000 gallons per month of throughput, but for the five counties in the Austin-Round Rock MSA, the applicability threshold is 25,000 gallons per month. In the Early Action Compact SIP for the Austin-Round Rock MSA, the TCEQ estimated that 33% of the gasoline supplied was at stations that averaged over 125,000 gallons a month, while another 64% of the gasoline was at stations that averaged 25,000 – 125,000 gallons a month. Using data supplied for the 2011 NEI, and assuming an 80% rule efficiency (meaning that 80% of the stations required to comply with the rule are in fact complying), CAPCOG estimates the following emission reductions are being achieved by these rules.

Table 46: VOC Emissions Reductions from Stage 1 Vapor Recovery Rules

Scenario	<25,000 gal/month	25,000 – 125,000 gal/month	125,000+ gal/month	Total gal/month
Uncontrolled	0.30 tpd	5.99 tpd	3.08 tpd	9.37 tpd
Controlled	0.30 tpd	1.72 tpd	0.89 tpd	2.91 tpd
Reduction	0.00 tpd	4.27 tpd	2.20 tpd	6.46 tpd

3.3.4.2 Degreasing Controls

Degreasing controls apply to a wide variety of industrial sources. These controls are codified in 30 TAC Ch. 115, Subchapter E, Div. 1. The TCEQ's 2011 emissions estimates included in the NEI incorporated

[2] http://www.epa.gov/ttn/chief/ap42/ch05/final/c05s02.pdf

these controls, assuming a rule penetration of 87%, a rule efficiency of 50%, and a control efficiency of 65%. The table below shows the county-level reductions estimated from this control.

Table 47: Emission Reductions from Degreasing Controls (VOC emissions, tons per ozone season weekday)

County	Controlled	Uncontrolled	Reduction
Bastrop	0.06	0.08	0.02
Caldwell	0.04	0.06	0.02
Hays	0.17	0.24	0.07
Travis	1.58	2.20	0.62
Williamson	0.49	0.68	0.19
TOTAL	**2.34**	**3.27**	**0.92**

3.3.4.3 Cutback Asphalt Controls

Cutback asphalt controls are codified in 30 TAC Ch. 115, Subchapter F, Div. 1. The TCEQ's 2011 emissions estimates included in the NEI incorporated these controls, assuming a rule penetration of 80%, a rule efficiency of 80%, and a control efficiency of 60%, for a combined reduction of 38.4%. The table below shows the county-level reductions estimated from this control.

Table 48: Emission Reductions from Degreasing Controls (VOC emissions, tons per ozone season weekday)

County	Controlled	Uncontrolled	Reduction
Bastrop	0.01	0.02	0.01
Caldwell	0.01	0.01	0.01
Hays	0.04	0.06	0.02
Travis	0.25	0.41	0.16
Williamson	0.08	0.13	0.05
TOTAL	**0.39**	**0.63**	**0.24**

4 Planning Efforts and Technical Research Completed in 2013

4.1 Emissions Inventories

CAPCOG and CAMPO completed or finalized a large number of emissions inventory research projects in 2013 that are useful for air quality planning. These research projects included studies on the following categories and activities:

- On-Road Emissions Inventory Research:
  - Short-Term Idling;
  - Long-Term Idling; and
  - Link-Based Emissions Inventories for 2012, 2015, and 2018;
- Non-Road Emissions Inventories:
  - ABIA;
  - Agricultural Equipment;

  - Industrial Equipment;
  - Heavy Highway Construction;
  - Mine and Quarry Equipment; and
  - Residential Lawn and Garden Equipment;
- Area Sources:
  - Industrial Fuel Combustion;
  - Commercial Fuel Combustion;
  - Oil and Gas Production; and
  - Graphic Arts.

4.2 Photochemical Modeling

In 2013, CAPCOG completed or finalized a number of important photochemical modeling reports, including:

- June 2006 Episode Performance Evaluation;
- Anthropogenic Precursor Culpability Assessment (APCA) Analysis;
- NO_X and VOC Emission Reduction Sensitivity Runs; and
- 2012 and 2018 Scenario Modeling.

Among the more important findings from these studies were:

- The June 2006 Ozone Photochemical Modeling Episode performs well enough compared to measurements collected during that time that it would be suitable for attainment demonstration development for the Austin-Round Rock MSA.
- During the June 2006 episode, emissions from the Austin-Round Rock MSA contributed about 17 ppb to the peak eight-hour ozone averages on high ozone days (over 75 ppb) at the regulatory monitors in Travis County, with the rest of Texas contributing about 21-22 ppb, areas outside of Texas contributing 19-20 ppb, and boundary conditions of the model contributing 22-23 ppb.
- Emission reductions from the Alcoa/Sandow facility in southern Milam County that occurred between 2006 and 2007 likely reduced peak 8-hour ozone levels at Audubon by about 0.34 ppb and 0.24 ppb at Murchison.
- In order to reduce peak 8-hour ozone averages at CAMS 3 by 1 ppb, it requires about a 13 ton per day reduction in NO_X emissions from within the Austin-Round Rock MSA, and it requires about a 15 ton per day reduction in order to reduce peak 8-hour ozone averages at CAMS 38 by 1 ppb.
- Anthropogenic NO_X emission reductions have 41 times the ozone impact per ton reduced compared to VOC emission reductions at CAMS 3, and 74 times the impact at CAMS 38.
- Emissions from oil and gas production in the Eagle Ford Shale region contributed approximately 0.8 ppb to peak ozone levels at CAMS 3 in 2012, and contributed about 0.7 ppb to peak ozone levels at CAMS 38; by 2018, the contribution to these monitors is expected to rise to 1.0 ppb and 0.9 ppb, respectively.
- By 2018, the design value at CAMS 3 is projected to be 66.4 ppb, and the design value at CAMS 38 is projected to be 65.3 ppb. Ozone levels in Bastrop County would likely be low enough to be incompliance with a 65 ppb standard by the end of 2016, and levels in Hays and Williamson Counties may be low enough by the end of 2016 to meet a 65 ppb standard, if that is how low it is set. This modeling did not take into account emission reductions from Tier 3 vehicle standards, so it is likely that the values for 2013 will be about 0.6 ppb lower, based on EPA modeling (see later section on Tier 3 standards). Most likely, the official design value for Travis County will be 67-68 ppb in 2016 in

the absence of any further significant emission reduction measures being put in place beyond what is currently being implemented.

4.3 Ozone Advance Program Action Plan Development

In December 2013, the Clean Air Coalition adopted a new air quality plan to replace the expiring 8-O3 Flex Plan. The new Ozone Advance Program Action Plan was the culmination of over a year and a half of planning work conducted by members of the Clean Air Coalition Advisory Committee. The following timeline shows some of the important milestones in the development of the plan:

- October 2012 – January 2013: Clean Air Coalition Advisory Committee develops stakeholder outreach plan and community survey;
- February – August 2013: Stakeholder outreach and surveys conducted by the Clean Air Coalition Advisory Committee and the CLEAN AIR Force resulted in over 1,200 responses that were used to evaluate public attitudes towards various emission reduction measures considered by the CAC.
- August 2013: Clean Air Coalition Advisory Committee develops recommendations for emission reduction measures.
- September 2013: Clean Air Coalition Advisory Committee presents recommendations to Clean Air Coalition; Coalition approves list or regional emission reduction measures;
- October – December, 2013: Organizations formalize commitments for the new plan.
- December 11, 2013 – Clean Air Coalition meeting to discuss, approve plan.

5 Looking Forward

5.1 Regulatory Developments

5.1.1 New Ozone Standard

Based on recent court rulings, there is likely to be a new ozone standard proposed by December 1, 2014, and finalized by October 1, 2015. Based on an analysis of the staff support documents and the Clean Air Scientific Advisory Committee recommendations, CAPCOG believes that the most likely outcome of this process is a new 8-hour primary standard of 65 ppb using the same statistical form as the 2008 standard, and a new seasonal exposure secondary standard of 13 ppm-hours, based on the W126 statistic. Based on this timeline, nonattainment designation recommendations would be due to EPA by October 1, 2016, and EPA would finalize designations by October 1, 2017, based on 2014-2016 data. If EPA sets the primary standard as low as 65 ppb, this region would be challenged to meet it in time to avoid a nonattainment designation, but would likely be able to attain it by 2020, which would the attainment deadline for “marginal” areas if EPA uses the Subpart 2 classification scheme under the Clean Air Act.

5.1.2 On-Road Vehicle Standards

On April 28, 2014, the final rulemaking for the Tier 3 light-duty vehicle standards and fuel standards was published in the Federal Register (79 FR 23414). This rulemaking will further reduce NO_X and VOC emissions from light-duty vehicles starting with the 2017 model year vehicles.

Table 49: Tier 3 Vehicle Standards (µg/mile of NMOG+NO_X)

Model Year	LDV, LDT1	LDT2, HLDT
Tier 1	910	1370/1440/2090
Tier 2	140	140
2017	86	101
2018	79	92
2019	72	83
2020	65	74
2021	58	65
2022	51	56
2023	44	47
2024	37	38
2025	30	30

Table 50: Fuel Sulfur Standards

Standard	Refinery Average	Per-Gallon Cap (refinery gate)	Per-Gallon Cap (downstream)
Tier 2 (January 1, 2006 and later)	30 ppm	80 ppm	95 ppm
Tier 3 (January 1, 2017 and later)	10 ppm	80 ppm	95 ppm

The EPA's photochemical modeling of the emission reductions indicated that the Tier 3 vehicle and fuel standards would result in a 0.63 ppb reduction in Travis County's 2018 design value (65.77 ppb in the baseline scenario, 65.14 ppb in the controlled scenario), and a 1.32 ppb reduction in the 2030 design value (63.03 ppb in the baseline case, and 61.71 ppb in the controlled case).[3]

5.1.3 Cross-State Air Pollution Rule and Clean Air Interstate Rule

The Clean Air Interstate Rule (CAIR), along with its annual and ozone season NO_X emission limits, remains in effect while the courts address the challenges to EPA's substitute rule, the Cross-State Air Pollution Rule (CSAPR). Texas was included in the annual NO_X trading program, which limited NO_X emissions from power plants in 24 states to no more than 1,504,871 tons in each year from 2009-2014.[4] The 2nd phase of CAIR takes effect in 2015, when the limit is decreased by 17% to 1,254,061 tons per year of NO_X emissions from power plants for these states. As of 2012, the 122,997 tons of NO_X emissions from facilities classified under SIC code 4911 – Electric Services (based on TCEQ's 2012 point source inventory)[5], was below both the 2009-2014 budget of 181,014 tons per year, and also below the budget for 2015 and beyond of 150,845 tons. Since the statewide emissions are already below the annual

[3] http://www.epa.gov/otaq/documents/tier3/454r14002.pdf
[4] Minnesota's inclusion has been stayed, meaning that the rule is effective for only 23 states.
[5] http://www.tceq.texas.gov/assets/public/implementation/air/ie/pseisums/2012statesum.xlsx

budgets, CAPCOG does not expect further emission reductions from power plants in Texas directly as a result of the state's CAIR budget, although, based on the emissions reported in the 2011 NEI for all the states in the annual trading program, it looks like the 2015 budgets will require another 159,214 tons per year of NO_X emission reductions beyond what had been achieved by 2011.

Table 51: 2011 Emissions Compared to CAIR Budgets

Geography	2011 NO_X Emissions (tons per year)	2009-2014 Annual Budget (tons per year)	2015 and Beyond Budget (tons per year)
Texas	142,991	181,014	150,845
23 States in Annual Trading Program	1,387,072	1,473,428	1,227,858

June 24, 2014 – Supreme Court granted the US asking to review the DC Circuit Court of Appeal's decision on CSAPR. On April 29, 2014, the Supreme Court reverse the D.C. Circuit opinion, but CAIR remains in effect while lower courts address the Supreme Court's ruling. It is unlikely that the remaining issues would be resolved prior to the beginning of 2015, which – more than likely – means that the 2015 CAIR budgets will go into effect. For the subset of states that had annual NO_X budgets under both CAIR and CSAPR, the difference between the sum of the budgets for 2014 and beyond under CSAPR are actually slightly higher than the sum of the budgets for 2015 and beyond under CAIR: 1,116,094 tons per year for 2014 and beyond under CSAPR, and 1,100,435 tons per year for 2015 and beyond under CAIR. For the subset of states subject to both the CAIR and CSAPR ozone season budgets, again – the sum of the 2015 and beyond budgets under CAIR (473,705 tons per year) is actually slightly stricter than the sum of the budgets for 2014 and beyond under CSAPR (473,980).

Moreover, for 2013, the states included in CAIR for the annual budget trading program already had met the budget for 2015 and beyond (as a group, if not state-by-state). As a result, CAPCOG does not expect that there would be any significant additional NO_X emission reductions in 2014 and 2015 that would result from the implementation of CSAPR prior to the end of the year that would not have occurred anyway under CAIR. EPA has indicated that it is planning on proposing a new cross-state air pollution rule to address the 2008 ozone NAAQS and the 2012 particulate matter NAAQS sometime in late 2014, but it is not clear that the implementation time frame for that rule is.

5.1.4 Greenhouse Gas Standards for Power Plants

On June 2, 2014, EPA proposed greenhouse gas standards for existing power plants that should – over time – result in less combustion-based electricity generation, which should in turn reduce NO_X emissions and ozone formation in Central Texas. Under the proposal, states would be required to submit plans to the EPA by summer 2016 to reduce carbon dioxide emissions from the electricity sector down to a target of 791 lbs per megawatt-hour by 2030. While the proposal doesn't directly reduce NO_X emissions or ozone, it is likely to have a significant impact on NO_X emissions and ozone in the future as the electricity sector shifts from coal to natural gas and renewable energy. Since this proposal is quite new and won't be finalized until 2015 – and is likely to face litigation – it isn't clear what impact it may have ozone in Central Texas over the course of this plan, but if it proceeds according to the schedule EPA has laid out, at least some progress towards interim targets could be expected by 2018.

Table 52: EPA Greenhouse Gas Emission Rate Targets for Texas, 2020-2030 and Beyond

Year	Emissions Rate (tons CO2/MW-hr)
2012 (baseline)	1298
2020	930
2021	914
2022	896
2023	878
2024	859
2025	841
2026	824
2027	807
2028	795
2029 and beyond	791

5.1.5 Mercury Air Toxics Standards

Like the Cross State Air Pollution Rule, the Mercury Air Toxics Standard remains working its way through the court system. Although the rule directly address toxics, one of the emission controls it is likely to encourage coal plant operators to use – selective catalytic reduction systems – would also significantly reduce NO_X emissions. Recently, the courts have ruled in favor of EPA on these standards, but it is not yet clear when the remaining legal issues will be resolved.

5.2 Technical Research

CAPCOG plans to continue to conduct technical research in support of ongoing air quality planning efforts, including ambient ozone monitoring, emissions inventory research, quantification of emission reduction measures included in the region's air quality plan, photochemical modeling, and updating the region's ozone conceptual model.

5.2.1 Ambient Monitoring

CAPCOG completed a review of its ambient monitoring network in early 2014, and decided to field all eight of the monitoring stations that were in place in 2013 again for the 2014 and 2015 ozone seasons. CAPCOG's monitoring operator will perform new quality assurance procedures in order to make the data reported from the ozone monitors more comparable to TCEQ's monitoring data, and to better represent ambient conditions. New relative humidity and temperature sensors will be deployed at all seven of the stations located within the MSA, and the start date for the 2015 ozone season will be moved up to March 1, to match the official beginning of the ozone season for the region. More on the ambient monitoring network review can be found in the report, which is located on the "Technical Reports" section of CAPCOG's Air Quality Program website:

http://www.capcog.org/divisions/regional-services/aq-reports

5.2.2 Emissions Inventory Research Projects

CAPCOG is planning to complete the following emissions inventory research projects in 2014 and 2015:

- Updated agricultural equipment emissions inventory using the 2012 Census of Agriculture data;
- Refinement of photochemical modeling point source emissions inventories;
- Construction equipment emissions;
- Compliance rate determination for vehicle I/M program; and
- Updated link-based on-road emissions inventories using MOVES2014.

5.2.3 Emission Reduction Measure Quantification

CAPCOG plans to use data reported for 2013 and 2014 to quantify the local emission reduction measures that have been undertaken as part of the regional air quality plan. This will involve extensive data collection from local participants in the plan in order to properly measure the extent of the impact of these measures, develop reference cases, and calculate the estimated emissions with and without the local efforts. The goal of this effort will be to document – to the extent possible – the emission reductions for 2014 such that they could be directly comparable to the 2014 National Emissions Inventory data that will likely form the baseline for areas designated nonattainment under the new ozone standard.

5.2.4 Photochemical Modeling Projects

CAPCOG is planning to complete two photochemical modeling projects in 2014 and 2015:

1. Modeling the impacts of major events held at the Circuit of the Americas racetrack; and
2. Modeling the impact of various point source emission scenarios for 2018.

5.2.5 Updated Conceptual Model

Upon completion of the 2014 ozone season and the release of the proposal for the new ozone standard, CAPCOG will develop an updated ozone conceptual model based on both the current ozone standard and the proposed primary and secondary standards. This evaluation will help differentiate conditions that lead to high ozone for different standards, and will also include an analysis for each monitor in the region in order to assess the extent to which different meteorological conditions may be responsible for high ozone days within the region. CAPCOG will likely update the conceptual model again following the 2015 ozone season, once EPA finalizes the standards.

5.3 Planning and Emission Reduction Measure Implementation

5.3.1 Outreach and Education Plan

The Clean Air Coalition Advisory Committee has developed a new outreach and education plan for the region to guide air quality outreach and education efforts for the region. This plan includes specific regional outreach goals, identifies roles and responsibilities, and prioritizes outreach and education activities for 2014 and beyond. For 2014, the plan calls for regional coordination of outreach and education activities in order to better leverage existing efforts, radio advertising, development of regional outreach materials and tools, and continuing to staff events conduct presentations throughout the region.

5.3.2 Air Quality Plan Updates

Following the submission of this report, the Clean Air Coalition Advisory Committee will begin the process of identifying any updates that may be needed for the air quality plan for 2014.

6 Conclusion

2013 was a significant year in air quality planning for the region. As this report shows:

- Ozone continued to decline, reaching the lowest levels yet and putting the region in a position to at least potentially avoid a nonattainment designation for a new primary ozone standard if it is set at 70 ppb;
- Existing participants in this plan continued to fulfill commitments made as part of the 8-O3 Flex Plan and implemented other measures beyond what they committed to;
- Existing participants made a new series of emission reduction commitments for the next five years as part of the Ozone Advance Program Action Plan development process
- New participants were recruited to make commitments as part of the new plan;
- Regional partners completed a number of important air quality research projects that provide new insights into regional ozone formation that have been already used as part of this planning process.

In April 2014, the region was honored by the EPA with a Clean Air Excellence Award for its successful implementation of the 8-O3 Flex Plan and ongoing planning activities. This award helped provide well-earned recognition for the region's efforts and have proven a source of encouragement for our regional partners to remain committed to implementing proactive emission reduction measures in order to keep the region's air clean and keep the area in attainment of federal ozone standards. The new Ozone Advance Program Action Plan provides a "path forward" for the region to achieve its air quality goals, and a blueprint for continual improvements in not only the air quality planning process and technical research, but hopefully, in regional air quality itself.

7 Appendix A: EPA Guidance Relevant to This Report

This report is intended to fulfill the region's obligations as a participant in the Ozone Advance Program to provide annual updates to EPA, and to include estimates of emission reductions that will be achieved as part of the action plans implemented under this program. The relevant guidance can be found here:

- Ozone Advance Memo (2012): http://www.epa.gov/ozoneadvance/pdfs/20120404memo.pdf
- Ozone Advance Guidance (2012): http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf

7.1 On Reporting

"Each year from the time the path forward is sent to EPA, a participating area should briefly summarize the status of the area's measures and programs undertaken under Ozone Advance (including a comparison between current status for each measure/program as compared with the schedule laid out in the path forward letter), current air quality, stakeholder meetings/events, and any other information the area would like to highlight." (Ozone Advance Guidance, p. 13-14)

7.2 On Action Plans

"The measures and programs in the plan should, as a group, achieve emission reductions beyond those already being achieved in the area, given that the program is aimed at taking action to keep ozone levels below the level of the NAAQS. However, participants are encouraged to highlight existing, ongoing measures along with new, planned measures in order to fully represent the proactive work being done to maintain/improve air quality in the area. To the extent possible, the amount of NO_X and/or VOC emission reduction anticipated from each measure or combination of measures should be estimated. The plan should not include measures that are required under state/tribal or Federal law, such as measures included in approved maintenance plans. The state, tribe, and/or local government should commit to adjusting the list of measures and programs as appropriate in order to speed up progress in achieving reductions, and to ensure continued attainment in light of any future revised ozone NAAQS." (Ozone Advance Guidance, p. 21)