ALAMO OZONE ADVANCE

Alamo Ozone Advance Program: Regional Sustainability Initiatives

Voluntary Measures for the AACOG Ozone Advance Path Forward

As approved by the Air Improvement Resources Executive Committee on July 24, 2013

2015 Update approved on July 23, 2015

Prepared by

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Ozone Advance
c/o Laura Bunte
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards, C304-01
Research Triangle Park, NC 27711

July 25, 2012

Dear Ms. Bunte,

Thank you for the release of the Ozone Advance program guidance dated April 4, 2012. Please consider this "sign-up letter" as our request to participate in the Ozone Advance program.

The Air Improvement Resources (AIR) Committee, meeting in partnership with the Alamo Area Council of Governments (AACOG), comprises representatives from local government throughout the San Antonio / New Braunfels Metropolitan Statistical Area, including representatives from Atascosa, Bexar, Comal, Guadalupe, Kendall, and Wilson counties. We appreciate the opportunity to work together with the EPA to preserve and improve the air quality here in south central Texas.

The AIR Committee serves as the air quality planning body for the San Antonio / New Braunfels Metropolitan Statistical Area (SA/NB MSA). The SA/NB MSA is designated as attainment for both the 1997 8-hour and 2008 ozone national ambient air quality standards (NAAQS). There are three regulatory ozone monitoring sites established in the AACOG region that continue to provide data representing the air quality in our region: San Antonio Northwest C23 (AQS Number 480290032); Camp Bullis C58 (AQS Number 480290052); and Calaveras Lake C59 (AQS Number 480290059). EPA has evaluated and accepted the state of Texas's compliance with existing emissions inventory requirements furnished by the Texas Commission on Environmental Quality.

The San Antonio / New Braunfels / AACOG region has long been successful in taking proactive measures for better air quality while challenged by transport and local emissions. We intend to maintain our attainment status, with the City of San Antonio as the largest city in the nation in attainment for all air quality standards, and make positive advances in the ozone challenge we face regionally. Our region's entrance into the Ozone Advance program will allow us a fresh opportunity to reconsider our status and our region's growth, to re-evaluate our air quality program for success in the future, and then to continue our path of progress.

Sincerely,

Diana J. Bautista
Chairman, Air Improvement Resources Committee
Judge, Atascosa County

Nelson Wolff
Vice-Chairman, Air Improvement Resources Committee
Judge, Bexar County

Cc: Sam Coleman, Acting Administrator for EPA Region 6

Ozone Advance participation letter from the Air Improvement Resources Committee of the Alamo Area Council of Governments, dated July 25, 2012.

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Chapter 1: Introduction

As a “near-nonattainment” area for ozone, the San Antonio region has a long history of air quality planning and voluntary control implementation aimed at keeping the region’s air quality within the thresholds established by the National Ambient Air Quality Standards (NAAQS). As early as 1995, the first air committee was formed by the Alamo Area Council of Governments to address air quality issues. This committee requested the first emissions inventory for the region, for inventory year 1994.

In January 1996, the San Antonio Mayor's Blue Ribbon Committee on Air Quality merged with the Air Quality Committee of the Alamo Area Council of Governments (AACOG) to form the Air Quality Task Force (AQTF). The charge of the AQTF was to develop public education and provide advice to elected officials on air quality issues. The major accomplishment of the early AQTF was the establishment of the Ozone Action Day program. During FY 1996 - 1997, the AQTF provided input on the first Near Non-Attainment grant, authorized by the 1997 Texas Legislature.

However, when the U.S. Environmental Protection Agency (EPA) proposed the new eight-hour ozone NAAQS in the summer of 1996, the focus of the AQTF began to shift, first by providing comments and guidance on the impact of the new eight-hour ozone NAAQS. Monitor results indicated that on high ozone level days, background levels coming into Bexar County were at or near ozone NAAQS threshold levels. Later that year when EPA finalized the eight-hour NAAQS it became apparent that, based on historical data, the San Antonio Metropolitan Statistical Area (SA/MSA) could well be designated non-attainment when the EPA made the first eight-hour non-attainment designations initially scheduled for July 2000.

During July 1998, the City of San Antonio (COSA), San Antonio-Bexar County Metropolitan Planning Organization (MPO), Bexar County, and AACOG staff recommended to elected officials that the AQTF be revised to fit the structure advised by the Texas Commission on Environmental Quality (TCEQ), then known as the Texas Natural Resource Conservation Commission (TNRCC). During January - February 1999, AACOG’s Boards of Directors and other responsible parties representing COSA, Bexar County, and the MPO approved the formation of the Air Improvement Resources (AIR) Committee consortium including the Executive/Advisory, Technical, and Public Education Committees and member appointments. The AIR Committee conducted their first official meeting during April 1999 with the goal to establish an organized, comprehensive, and aggressive plan of action to keep the SA/MSA from slipping into nonattainment of the ozone standard.

In 2002, EPA announced the Early Action Compact (EAC) protocol for helping regions achieve and maintain the 8-hour ozone NAAQS by facilitating early, voluntary ozone reduction plans in a manner consistent with applicable local, state, and federal air

quality policies. The protocol outlined specific deliverables and reporting requirements for participation. Later that year, the elected officials serving on the AIR Executive Committee, with the approval of the local municipalities and counties they represented, signed an EAC in partnership with the Chairman of the TNRCC (now the TCEQ) and the Regional Administrator for the EPA.

Although EPA designated the San Antonio region as being *nonattainment deferred* due to a recorded design value of 89 parts per billion (ppb) during the 2001-2003 averaging period, the EAC agreement allowed the region time to implement voluntary strategies that helped to reduce ozone precursor emissions. By the end of the effective term of the EAC on December 31, 2007, regulatory monitors were again showing compliance with the ozone standard. Under the terms of the EAC, the region was re-designated as being in attainment, that is, as being in full compliance with the federal ozone standard.

With the promulgation of a revised 8-hour average ozone standard in 2008, however, the San Antonio region again faced the possibility of a nonattainment designation. In April 2012, EPA designated 46 areas as nonattainment of the 75 ppb threshold established by the 2008 standard. Although the San Antonio region's ozone values met the standard at the time, within a few months, the three-year average on which attainment is based had climbed above the health-based standard.

The on-going challenge the region faces in meeting the 2008 standard as well as past successes with the EAC program provided local leaders the incentive to participate in EPA's Ozone Advance program. Although the program does not shield an area from a nonattainment designation, it does facilitate efforts aimed at reducing ozone pollution and maintaining healthy air quality. Therefore, the program has the potential for helping a region avoid a nonattainment designation and the requirements associated with such a designation.

In July 2012, the AIR Executive Committee submitted to EPA a letter of participation in the Ozone Advance program. In 2013 and 2014, the Committee submitted a Path Forward plan for the region that described activities implemented by multiple regional government agencies, industries, and organizations to reduce NOx and VOC emissions.

This document is the 2015 update to the Alamo Ozone Advance plan and describes successes, program enhancements, and new and proposed strategies for improving air quality and community health in the San Antonio region. Differences between the 2014 and 2015 Path Forward include updates to sections addressing background information and new/proposed control strategies in the 2015 version. Any subsections in the chapter listing ongoing strategies for which AACOG was provided updated information have been identified as updated from the 2014 Path Forward.

Chapter 2: Background

San Antonio, located in south-central Texas, is the second largest city in the state and the seventh largest in the nation.[1] The U.S. Census Bureau estimates that, among the nation's municipalities, San Antonio experienced the third largest numeric increase in population from April 1, 2010, to July 1, 2011. Nearby Austin was ranked fourth for numeric increase.

San Antonio is in Bexar County, which is centrally located in the 13-county AACOG region (figure 2-1). The metropolitan statistical area includes Bexar and seven surrounding counties. The second largest city in the MSA is New Braunfels, located in adjacent Comal County. County populations for the SA-NB MSA are listed in table 2-1.

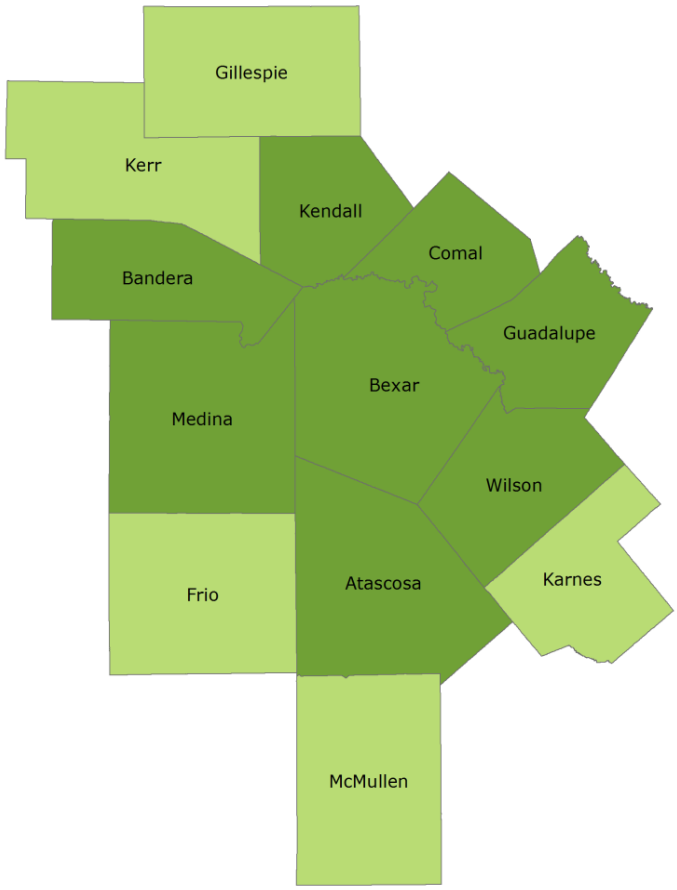


Figure 2-1: Map of the 13-county AACOG region and 8-county San Antonio-New Braunfels Metropolitan Statistical Area (dark green)

[1] U.S. Census Bureau Texas Dominates List of Fastest-Growing Large Cities Since 2010 Census, Census Bureau Reports, June 28, 2012, available at: https://www.census.gov/newsroom/releases/archives/population/cb12-117.html

Table 2-1: 2010, 2013, and 2014 population estimates for the SA-NB MSA, U.S. Census data[2]

MSA County	2010 Population	2013 Population	2014 Population
Atascosa	44,911	47,093	47,774
Bandera	20,485	20,601	20,892
Bexar	1,714,774	1,817,610	1,855,866
Comal	108,472	118,480	123,694
Guadalupe	131,537	143,183	147,250
Kendall	33,410	37,766	38,880
Medina	46,006	47,399	47,894
Wilson	42,913	45,418	46,402

This Path Forward plan covers the eight-county SA-NB MSA, as this is the presumptive boundary for a nonattainment designation under the federal Clean Air Act, should the area be subject to such a designation.

2.1 Ozone Monitoring

Ozone concentrations are measured by a network of continuous air monitoring stations in and surrounding San Antonio (figure 2-2). TCEQ operates three regulatory monitors, AACOG operates six non-regulatory monitors, and CPS Energy, the local energy utility in San Antonio, operates two monitors. While other air monitors exist in the region, the common feature of the mapped monitors is that they all measure ambient ozone concentrations. In addition to ozone, several stations measure other chemicals and/or meteorological parameters, as described in table 2-2.

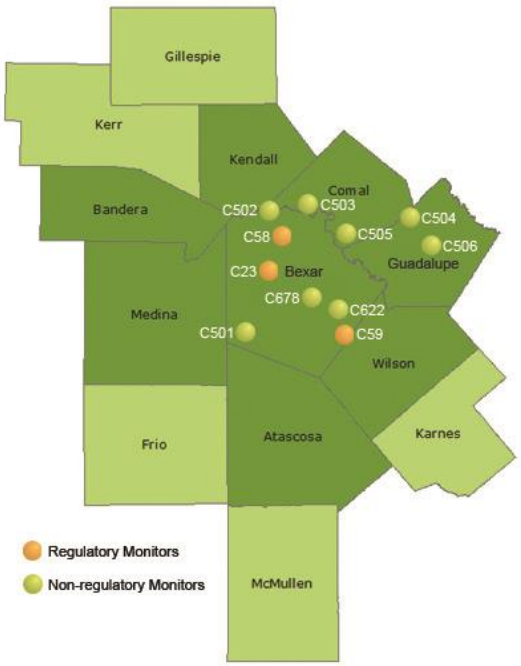


Figure 2-2: Locations of regulatory and non-regulatory ozone monitors in the San Antonio area

[2] U.S. Census Bureau, American FactFinder, available at: http://factfinder2.census.gov/bkmk/table/1.0/en/PEP/

Table 2-2: Ozone-measuring monitors in the San Antonio region with locations, types of data collected, and reporting details

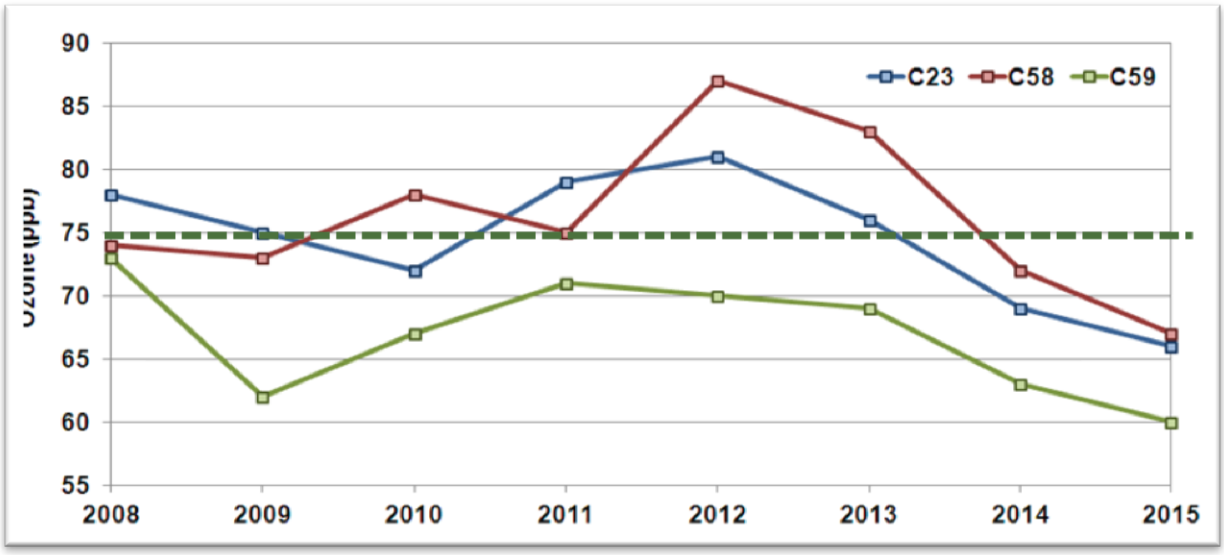
Designation / Site Name	Location Description	Data Measured	First date of reporting (online) / Currently maintained by
C23 Marshall High School	6655 Bluebird Lane San Antonio	O_3, meteorology	September 17, 1996 TCEQ
C58 Camp Bullis	Near Wilderness Road, San Antonio	NO_x, O_3, meteorology	August 12, 1998 TCEQ
C59 Calaveras Lake	14620 Laguna Road San Antonio	SO_2, NO_x, O_3, $PM_{2.5}$, meteorology	May 13, 1998 CPS San Antonio Metropolitan Health District
C678 CPS Pecan Valley	802 Pecan Valley Dr. San Antonio	CO, SO_2, NO_x, O_3, $PM_{2.5}$, meteorology	March 4, 1999 Dios Dado for CPS
C501 Elm Creek ES	11535 Pearsall Road Bexar County	O_3, meteorology	June 17, 2002 Dios Dado for AACOG
C502 Fair Oaks Ranch	7286 Dietz Elkhorn Rd, Fair Oaks Ranch	O_3, meteorology	June 28, 2002 Dios Dado for AACOG
C503 Bulverde ES	1715 E. Ammann Rd. Bulverde, Comal County	O_3, meteorology	August 26, 2002 Dios Dado for AACOG
C504 New Braunfels Airport	2090 Airport Rd. New Braunfels, Guadalupe County	Ozone	August 30, 2002 Dios Dado for AACOG
C505 Garden Ridge	21340 FM 3009 City of Garden Ridge	Ozone	March 26, 2003 Dios Dado for AACOG
C506 Seguin Outdoor Learning Center	1865 Hwy 90 East City of Seguin	Ozone	March 26, 2003 Dios Dado for AACOG
C622 Heritage Middle School	7145 Gardner Road San Antonio	CO, SO_2, NO_x, O_3, $PM_{2.5}$, meteorology	July 29, 2004 Dios Dado for CPS

2.2 Air Quality Trends and Design Values

Ground-level ozone is one of the most pervasive air pollutants in the country. Like many areas, San Antonio struggles to remain in compliance with the federal ozone standard. As shown in figure 2-3, the annual fourth highest 8-hour average ozone values, upon which attainment calculations are based, have exceeded the 2008 standard's 75 ppb threshold (dotted green line) at one or more San Antonio monitors, four of the seven years between 2008 and 2015.

Monitors C23 and C58 in northwest Bexar County typically record the highest ozone concentrations of the three regulatory monitors, as these are located at "downwind" sites. Wind directions during the ozone season are more likely to originate from the northeast, east and southeast quadrants than other directions. Conversely, C59 located in southeast Bexar County is an "upwind" monitor that typically provides data on background ozone concentrations, before air parcels reach San Antonio's urban core.

Figure 2-3: Annual fourth highest 8-hour average ozone concentrations in ppb recorded at regulatory monitors in the San Antonio area, 2008 – 2015*



*2015 data as of 7/2/2015. Note: Data validated by TCEQ through May 2015.

While the region experienced generally decreasing ozone levels between 2004 and 2009, based on the rolling three-year averages or design values for that period, local design values began to increase in 2010 and continued that trend through 2013. Table 2-3 lists the design values for regulatory monitors between 2010 and 2015. Exceedances of the NAAQS are distinguished by orange font.

Table 2-3: San Antonio design values between 2010 and 2015

Monitoring Site	2010	2011	2012	2013	2014	2015*
San Antonio Northwest C23	75	75	**77**	**78**	75	70
Camp Bullis C58	75	75	**80**	**81**	**78**	**74**
Calaveras Lake C59	67	66	69	70	68	64

*2015 data as of 7/2/2015. Note: Data validated by TCEQ through May 2015.

2.3 Seasonal Variations in Ozone Concentrations

In addition to annual trends, AACOG tracks seasonal ozone trends as part of the development of a conceptual model for the region. From April through June, there is a seasonal increase in the number of high ozone days in most Texas cities. This period represents the first and longest high ozone seasonal peak that San Antonio typically experiences. However, by early July the number of high ozone days decline. The next seasonal increase covers a period beginning in August and ending in late October, during which the frequency of high ozone days is slightly lower than the spring period.

Ozone concentrations fluctuate by season depending on several factors including variations in transport, meteorology, chemical loss of ozone, and upper stratospheric ozone levels. During the spring and fall ozone season peaks, for example, ozone transport is significant. Ozone transport is lowest in July before increasing again into the late summer and fall.

2.4 Meteorology and Ozone Concentrations

Certain identifiable regional-scale meteorological pressure systems are associated with high ozone events. Prevailing wind directions, wind speeds, mixing, and dispersion conditions are influenced by high-pressure systems. High-pressure systems suppress vertical mixing of pollutants and influence wind direction, and are characterized by clear skies, relatively low wind speeds, and low humidity in San Antonio. These meteorological conditions typically increase ozone formation and transport of pollutants into the San Antonio area and generate elevated concentrations of local ozone.

An analysis between meteorology and ambient ozone indicates a number of local meteorological factors that contribute to elevated ozone concentrations in the San Antonio region. The following summarize the relationship between local meteorology and ozone photochemistry:

- Meteorological conditions on days with elevated ozone typically include stagnated winds over Texas, limited frontal movement, lack of precipitation, reduced mixing between layers, and clear skies.
- High ozone days are typically absent of strong synoptic weather systems.
- Local meteorological conditions associated with high ozone days include lack of precipitation, low atmospheric moisture content in the afternoon, and clear skies.
- Wind vectors on high ozone days were more stagnated and often originated from the east and northeast.
- Mixing heights are typically lower in the early morning hours and experience a rapid rise in the late morning through early afternoon on high ozone days. Low nighttime mixing height can trap nocturnal pollutants from the local area as well as emissions from the previous day. When combined with a rapid rise in mixing height that allows downward mixing of transported pollutants from higher inversion layers, ozone can become significantly elevated.

2.5 Emission Sources and Trends

AACOG develops periodic emissions inventories of non-road, off-road, and area sources in the region. Combining AACOG data with point and on-road emissions calculated by other state agencies provides an indication of the daily and annual anthropogenic VOC and NOx emissions generated in the region by sector.

Despite a consistently increasing population in the region and escalating activity in the nearby Eagle Ford Shale play, analyses of emissions trends indicates that regionally-generated NO_X emissions should continue a downward trend, in large part due to improvements in vehicle emission standards. Local VOC emissions are expected to remain static (table 2-4).

Table 2-4: Tons of anthropogenic NO_X and VOC emissions per ozone season weekday, San Antonio - New Braunfels MSA, 2012, 2018, 2023

Source	VOC			NO_X		
	2012	2018	2023	2012	2018	2023
Eagle Ford	3	7	7	4	4	4
Non-Road	27	19	17	20	11	8
Off-Road	3	3	3	8	8	7
Area	151	154	190	16	16	17
Point	6	7	7	66	64	57
On-Road	33	22	19	77	43	32
Total	224	213	244	190	146	125

On-road vehicles have traditionally represented the largest source of NOx in the region. San Antonio is transected by a number of major highways and its proximity to multiple land and ocean ports guarantees an abundance of heavy duty vehicle traffic. Development of the Eagle Ford Shale area has served to further increase the use of heavy-duty vehicles on the region's roadways. Figure 2-4 highlights the most heavily-traveled roads in the region.

Weekday NOx emissions for 2012 from on-road sources in the SA-NB MSA were estimated at 77 tons per day, followed by point sources at 66 tons per day. By 2018, that trend is expected to reverse, so that point sources are expected to be the largest source of NOx, at 64 tons per day, and on-road sources fall to second largest at 43 tons per day.

The largest point sources for NOx emissions in the region are coal-fired power plants and cement plants. Other point sources include military bases, research facilities, and manufacturing operations. Appendix A lists major stationary sources in the SA-NB MSA.

In terms of anthropogenic emissions, most VOCs generated in the SA-NB MSA are the facilities and activities collectively categorized as area sources. This trend is expected to continue through 2023, the last date for which emissions have been estimated.

Modeling and other analyses indicate the SA-NB MSA is NOx limited. Therefore, air quality planning tends to focus on controls that reduce NOx emissions, although VOC controls are also evaluated.

Figure 2-4: Map of the most heavily-traveled roadways in the AACOG region. Data courtesy of the Texas Department of Transportation, San Antonio District

2.6 Photochemical Models

AACOG conducts analysis of factors influencing local ozone concentrations using photochemical models that simulate actual high ozone episodes in the region. Since photochemical models simulate the atmospheric and meteorological conditions that helped produce high ozone values during a particular episode, an important advantage the models provide is the ability to test various scenarios, such as changes in emission rates, under the same set of meteorological conditions that favor high ozone concentrations.

The most recently completed photochemical modeling project was based on a May 31 – June 2, 2006 episode provided by TCEQ and refined by AACOG with regional emissions inputs.[3] The focus of the AACOG work, completed in 2013, was to predict the impact of oil and gas operations in the Eagle Ford Shale on local ozone concentrations.

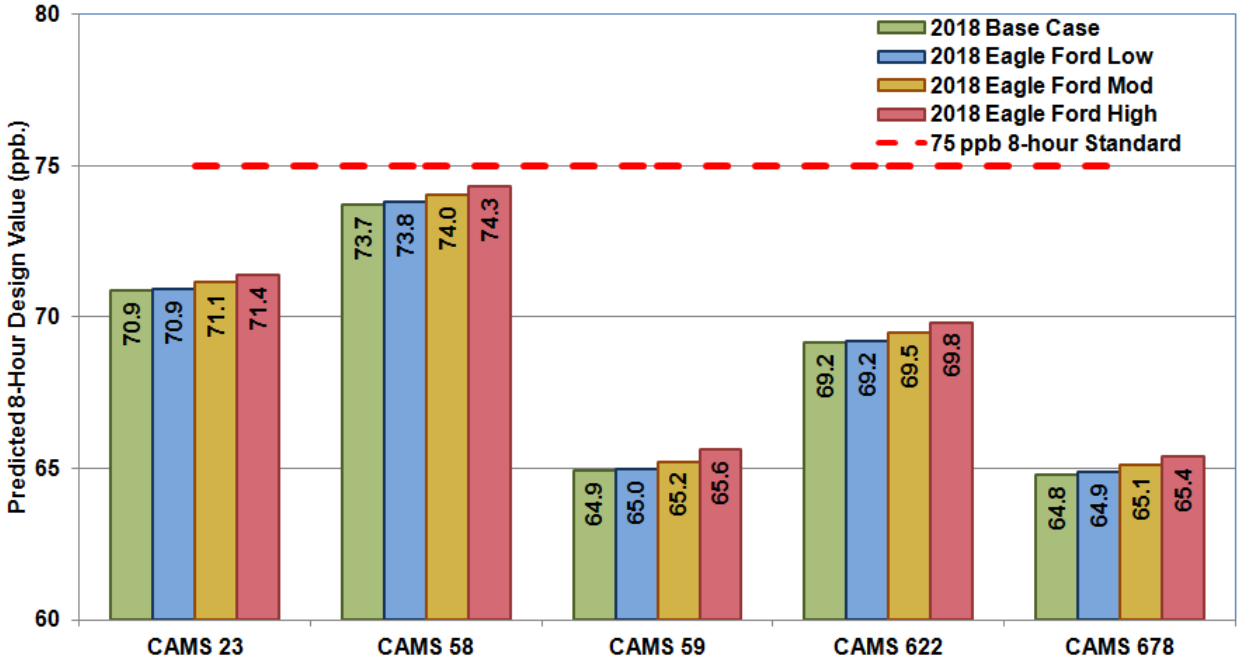
The June 2006 model was projected to 2012 and 2018 using forecasted changes in anthropogenic emissions. Several emission inventory scenarios were developed for Eagle Ford Shale oil and gas production in 2018 in order to gauge the area's impact

[3] The photochemical model used for this analysis was CAMx version 5.40. Three-dimensional hourly meteorological fields were generated by WRF via the WRF2CAMx interface tool. A complete description of the model's configurations is provided in AACOG's report *Development of the Extended June 2006 Photochemical Modeling Episode,* developed with funding from the Alamo Area MPO.

over a range of predictions for growth in oil and gas production.

An attainment test was conducted on the 2018 modeling results. For the Eagle Ford Shale low production scenario, the 2018 design value was predicted to be 70.9 ppb at C23, 73.8 ppb at C58, and 65.0 ppb at C59. Under the Eagle Ford high scenario, the design values were 71.4 ppb at C23, 74.3 ppb at C58, and 65.6 ppb at C59. Concentrations at all regulatory-sited monitors were predicted to meet the 75 ppb 8-hour ozone standard for every 2018 projection case, although the 2018 design value at C58 was very close to the current 75 ppb 8-hour ozone NAAQS for the high production scenario. Figure 2.5 provides a comparison of 2018 design values by monitor for each of the Eagle Ford growth scenarios.

Figure 2-5: Change in San Antonio-New Braunfels MSA Eight-Hour Design Values, 2018

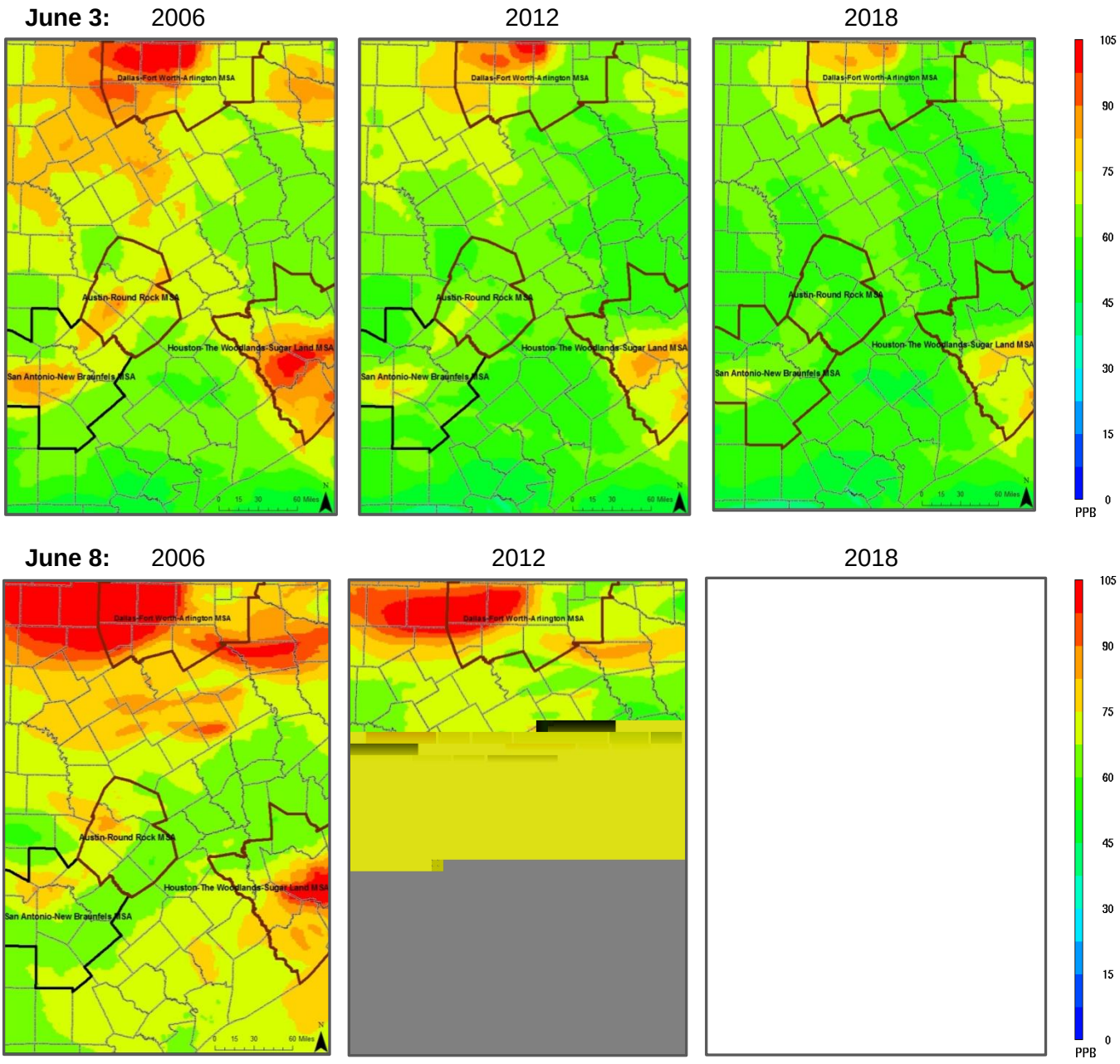


2.7 Predicted Ozone Concentration Comparisons: 2006, 2012, and 2018

Tile plots were developed from the photochemical modeling results for predicted daily maximum 8-hour ozone concentrations. These plots provide visual depictions of the expected spatial variations in ozone concentrations.

The plots show consistent reductions in ozone concentrations between 2006 and 2018 in the San Antonio-New Braunfels MSA for every exceedance day of the 2006 episode. Figure 2.6 provides tile plots for selected episode days. The outlined regions in the plots represent the four largest MSAs in the state: Houston-The Woodlands-Sugar Land, Dallas-Fort Worth-Arlington, San Antonio-New Braunfels, and Austin-Round Rock.

Figure 2-6: Predicted daily maximum 8-hour ozone concentrations in the 4-km subdomain for selected episode days, 2006, 2012 Eagle Ford, and 2018 Eagle Ford moderate scenario



Goals

- Increase awareness of vehicle idling and the program through press releases.
- Have at least two schools participate in the program and have at least two more schools actively pursuing the program for this year or early next school year.
- Continue to develop the program to make it more marketable to schools.

CleanAirDrive.com

Although the public may obtain information about AACOG's technical and educational air quality activities on the agency's web site, a second site is maintained by AACOG's Natural Resources staff that is devoted entirely to air quality outreach and education. The site, CleanAirDrive.com, provides basic information about ground-level ozone, its health effects, and measures everyone can adopt to help reduce the chemicals that form ozone. All materials distributed at outreach and educational events refer to this web site.

Fresh Air Friday

AACOG's air quality outreach staff conducts an ozone season kickoff at the beginning of April, referred to as "Fresh Air Friday." The event is conducted at lunchtime as an environmental fair on a plaza in the heart of San Antonio. Although open to the public, downtown employees are invited to bring a brown bag or carry out from a nearby restaurant instead of driving out to eat—which is emphasized as a way to help improve air quality. Photochemical models developed in the past by AACOG predicted that reduced vehicle trips during the late morning – early afternoon timeframe were associated with greater reductions in peak ozone concentrations than trip reductions in the early morning or late afternoon. Consequently, the event is used to emphasize alternative transportation choices for noon time activities.

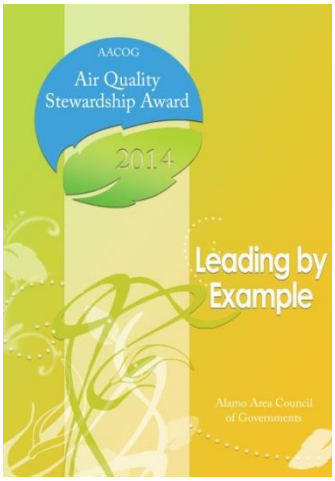
During Fresh Air Friday, approximately 25 partner organizations set up exhibits along with AACOG's clean air programs table, each displaying a sign that briefly describes a way in which their organization promotes or contributes to cleaner air. Typically 500 people attend. During 2015 AACOG's air quality has extended the Fresh Air Friday concept throughout the ozone season by asking the public, largely through social media, to collectively focus on one way to help keep the air clean each Friday, such as asking everyone to check their tire pressure that day, or to substitute a short vehicle trip – a mile or less – with walking or biking. If evaluated as successful, this Fresh Air Friday Ozone Actions campaign may be repeated in 2016.

Walk & Roll Challenge

For the past 10 years, AACOG's air quality staff has conducted the Walk & Roll Challenge, a month-long competition in which businesses, agencies, and other organizations vie with one another to see whose employees can record the most trips taken by walking, biking, carpooling, or busing, as well as trips saved through telecommuting and compressed work schedules, which are referred to as "smart" trips. Organizations with the most alternative trips recorded per employee are the winners. Regardless of whether their employers are officially participating, individuals can also participate in the Walk & Roll Challenge simply by recording the trips they take by alternative means at NuRide.com. This past September, 16 organizations and 1,848 individuals participated, recording 69,196 trips that month, reducing vehicle miles traveled by 786,917, and keeping over a ton of ozone precursors from the air. Instead of September, which is towards the end of the ozone season and typically extremely hot in San Antonio, this challenge will be held in May next year, with the hopes that, if held near the beginning of the ozone season, its effect on new transportation habits will last far into the season, and that the more moderate temperature will encourage more walking and biking. Its timing will also be concurrent with National Bike Month, for which staff plans to leverage the focus on biking activities with their clean air partners.

Air Quality Stewardship Awards

AACOG's Air Quality Stewardship Award annually recognizes businesses, agencies, schools, and other organizations that have made significant voluntary efforts to reduce air pollution. Eligible for an Air Quality Stewardship Award is any organization with a physical presence within San Antonio or one of its eight surrounding counties that has helped to improve air quality in at least one of the following categories; Commuter Assistance, Fleet Management, Energy Efficiency and Sustainable Building, Industrial Process Pollution Reduction, Landscaping and Air Quality Education.



The varying sizes, structures, and missions of nominated organizations are taken into consideration in the selection process. These awards provide an opportunity to acknowledge and showcase the efforts of air quality stewards in the Greater San Antonio area and to inspire others to greater action.

Chapter 4: New/Proposed Strategies

4.1 City of San Antonio

At the request of the City of San Antonio, TCEQ arranged a study that provided the municipality with a list of control strategies they may implement to reduce ozone precursor emissions originating from sources within the City's boundaries and extra territorial jurisdiction. The study provided an evaluation of potential controls including the estimated NOx and VOC emission reductions and cost per ton of reduction for each strategy. The results were provided to AACOG for use in photochemical model runs to determine their estimated impact on regional ambient ozone concentrations.

Timeline

The control strategy report was completed in early 2015. Based on the results of the study, COSA staff developed a draft air quality plan. The plan will be presented to their City Council in August of 2015 for adoption along with recommended air quality ordinances that address viable strategies identified in the study.

4.2 San Antonio Metropolitan Health District Air Quality Program Proposal

The San Antonio Metropolitan Health District (SAMHD) proposes to develop an air program that will require the registration of businesses that are sources of air pollution within the city. Registration will provide information that can be used in determining strategies to lower ozone levels. SAMHD would recommend changes to Chapter 26, "Pollution Control", Article II, of the City Code of the City of San Antonio, Texas pertaining to the regulation of air pollution which will update the references to state law in the current ordinance and require that facilities with sources of air pollution register with Metro Health. The City Council will consider the changes to Chapter 26 during FY15. One position in the program has been identified to address resident complaints and work with small businesses currently considered "minor point sources." This work will include outreach efforts to these small businesses to address reductions in air pollution emissions. It is believed that many of these small businesses are not aware of operational changes that could be made to improve their businesses and also air quality. There are many of these small businesses that individually are considered minor sources of air pollution but when added together they become a much larger source of air pollution.

4.3 Local Oil & Gas Industry: Eagle Ford Shale

Multiple companies in the oil and gas industry proactively seek measures that will help reduce emissions from their activities and operations. While the number of participants is unknown, the following example describes one such project by a company operating in the Eagle Ford Shale (EFS).

Background

The company's Eagle Ford Shale (EFS) asset team analyzed and improved the standard industry practice of using natural gas in back pressure dump valves on production separators, resulting in significant emissions reductions.

Point of Delivery (POD) locations in EFS have production separators which separate the gas, oil and water into their appropriate flow lines. Both the oil and water are automated with dump valves on their outlet legs. The water leg utilizes a snap-acting dump valve while the oil uses a throttle dump valve; both are intermittent bleed valves. Industry practice is to use natural gas as the medium to hold back pressure on these valves.

Problem:

Each time the separator dumps liquid, some portion of the back pressure gas is vented to the atmosphere. Economically feasible solutions were sought to reduce or eliminate air emissions released during this process.

Activity:

A pilot project was conducted to test the effectiveness of implementing compressed air as a supply fluid to control the dump valves. The initial installation and operation proved successful, as all natural gas emissions were eliminated from the dump valves at the POD, and production was unaffected by the change. Because of this, a decision was made to switch over as many PODs as economically feasible.

Timeline:

By the end of 2014, convert 16 PODs (170 compressors) to use compressed instrument air instead of natural gas. This is equal to 34% of the total separators in the EFS.

Emission Reductions:

Using natural gas to control the dump valves, on average, 0.72 mcf was believed to have been potentially emitted per dump, per day on a separator. By utilizing instrument air instead of natural gas, separator dump valve emissions will likely be reduced by approximately 30% in 2014.

No additional emissions will be created in order to eliminate these current emissions, as an electric powered compressor will be used.

Chapter 5: Public/Stakeholder Involvement

$ $ & 2 * ¶Community Survey

AACOG encourages public and stakeholder involvement at the various AIR Committee meetings, as described in earlier sections. Public opinion is obtained by other methods as well, such as through periodic surveys. While AACOG's Natural Resources staff conducts public surveys on air quality topics at least annually, these surveys represent a very small sample size and limited geographic scope. Neither are the surveys diverse from a demographic standpoint, as the surveys tend to be distributed at similar types of events, typically with a health or environmental focus. AACOG is in the process of developing a community project that proposes to survey a representative sample of those registered to vote in the SA-NB MSA regarding some of their underlying assumptions about air quality, their support for selected ozone emissions strategies, and their willingness to take individual action to help improve air quality, with the ultimate goals of:

- building community awareness and knowledge of air quality issues in the Greater San Antonio area,
- providing a channel for public input that may lead to a greater sense of ownership of air quality issues and the desire to help work toward possible solutions,
- gathering knowledge of public sentiments that may influence community leaders to select, support, and act upon particular strategies to reduce emissions; and
- Avoiding public resistance that has put other local plans, such as transportation projects, on indefinite hold, and allowing the region to collectively move forward in confidence to effectively reduce ozone pollution.

Timeline

The survey design was completed by the end of 2014. AACOG is seeking funding to conduct the study during FY 2016.

APPENDIX A
MAJOR STATIONARY SOURCES IN THE SA-NB MSA, 2012
SOURCE: TEXAS COMMISSION ON ENVIRONMENTAL QUALITY[9]

COMPANY	COUNTY	SIC	SIC DESCRIPTION	NOX TPY	VOC TPY
SAN MIGUEL ELECTRIC COOPERATIVE INC	ATASCOSA	4911	ELECTRIC SERVICES	3105.96	71.886
REGENCY FIELD SERVIC LLC	ATASCOSA	1321	NATURAL GAS LIQUI	50.8434	26.9658
ENTERPRISE PRODUCTS OPERATING LLC	BANDERA	4922	NATURAL GAS TRANSMISSION	101.4697	14.8674
CAPITOL AGGREGATES I	BEXAR	3241	CEMENT, HYDRAULI	912.9059	102.8847
CITY PUBLIC SERVICE	BEXAR	4911	ELECTRIC SERVICES	5671.0434	73.3517
CITY PUBLIC SERVICE	BEXAR	4911	ELECTRIC SERVICES	12.575	0.6167
NUSTAR LOGISTICS LP	BEXAR	5171	PETROLEUM BULK STATIONS & TERMINALS	2.2873	32.2909
ENTERPRISE HYDROCARBONS LP	BEXAR	1321	NATURAL GAS LIQUI	47.1849	19.5464
900 GLOBAL LLC	BEXAR	3949	SPORTING & ATHLET GOODS NEC	0	0.5622
US DEPT OF AIR FORCE	BEXAR	9711	NATIONAL SECURITY	259.768	37.0018
EXXONMOBIL CORP	BEXAR	5171	PETROLEUM BULK STATIONS & TERMINALS	0	21.4334
CITGO PETROLEUM COR	BEXAR	5171	PETROLEUM BULK STATIONS & TERMINALS	0	19.5859
CALUMET SAN ANTONIO REFINING LLC	BEXAR	2911	PETROLEUM REFINI	27.9787	164.4827
US DEPT OF AIR FORCE	BEXAR	9711	NATIONAL SECURITY	7.4001	13.5123
CITY PUBLIC SERVICE	BEXAR	4911	ELECTRIC SERVICES	760.6428	48.8261
MOTIVA ENTERPRISES L	BEXAR	5171	PETROLEUM BULK STATIONS & TERMINALS	3.4615	37.001
AGGREGATE PLANT PRODUCTS CO	BEXAR	3444	SHEET METAL WORK	0.3526	0.8274
NUSTAR LOGISTICS LP	BEXAR	5171	PETROLEUM BULK STATIONS & TERMINALS	4.8957	29.1862
ALAMO CEMENT COMPAI II LTD	BEXAR	3241	CEMENT, HYDRAULI	2179.3	35.0576

[9]Available at: http://www.tceq.state.tx.us/assets/public/implementation/air/ie/pseisums/2012statesum.xlsx

SOUTHWEST RESEARCH INSTITUTE	BEXAR	8733	NONCOMMERCIAL RESEARCH ORGANANIZATIONS	169.4039	55.8284
CARDELL CABINETS INC	BEXAR	2434	WOOD KITCHEN CABINETS	6.896	122.03
MAXIM INTEGRATED PRODUCTS INC	BEXAR	3674	SEMICONDUCTORS AND RELATED DEVIC	13.6638	23.3646
FLINT HILLS RESOURCES CORPUS CHRISTI LLC	BEXAR	5171	PETROLEUM BULK STATIONS & TERMINALS	0.9752	22.4647
INTERTEK AUTOMOTIVE RESEARCH	BEXAR	8734	TESTING LABORATORIES	28.6252	5.3795
ALCOA INC	BEXAR	3353	ALUMINUM SHEET PLATE & FOIL	31.4252	2.0955
CARDELL CABINETRY LL	BEXAR	2434	WOOD KITCHEN CABINETS	0.13	32.259
WIN SAM INC	BEXAR	4939	COMBINATION UTILI NEC	13.5871	0.8423
BFIWASTE SYSTEMS OF NORTH AMERICA LLC	BEXAR	4953	REFUSE SYSTEMS	3.87	26.4
FLOWERS BAKING CO OF SAN ANTONIO LLC	BEXAR	2051	BREAD, CAKE AND RELATED PRODUCT	5.1914	9.266
WASTE MANAGEMENT O TEXAS INC	BEXAR	4953	REFUSE SYSTEMS	12.9857	15.5207
SAN ANTONIOSHOE INC	BEXAR	3143	MEN'S FOOTWEAR, EXCEPT ATHLETIC	0	8.8196
BOEING COMPANY	BEXAR	3721	AIRCRAFT	1.3685	47.3023
KELLY AVIATION CENTER	BEXAR	3724	AIRCRAFT ENGINES ENGINE PARTS	36.2677	12.174
ZEE MANUFACTURING LT	BEXAR	2434	WOOD KITCHEN CABINETS	0.1996	9.5775
BIO ENERGY AUSTIN LLC	BEXAR	4911	ELECTRIC SERVICES	79.12	11.644
UNITED SERVICES AUTOMOBILE ASSOC	BEXAR	6399	INSURANCE CARRIE NEC	14.0567	2.904
BIO ENERGY TEXAS LLC	BEXAR	4911	ELECTRIC SERVICES	40.23	17.3586
TOYOTA MOTOR MFG TEXAS INC	BEXAR	3711	MOTOR VEHICLES A CAR BODIES	19.1222	388.189
TXI OPERATIONS LP	COMAL	3241	CEMENT, HYDRAULI	609.1731	4.7464
CHEMICAL LIME LTD	COMAL	3274	LIME	433.18	23.159
CEMEX CONSTRUCTION MATERIALS SOUTH LLC	COMAL	3241	CEMENT, HYDRAULI	2568.3737	3.1398
SYMONS BY DAYTON SUPERIOR	COMAL	3444	SHEET METAL WORK	0	3.9893

WASTE MANAGEMENT O TEXAS INC	COMAL	4953	REFUSE SYSTEMS	24.3873	66.0574
LEISURE POOLS USA TRADING INC	COMAL	3082	UNSUPPORTED PLASTICS PROFILE SHAPE	0	
ACME BRICK CO	GUADALUP	3251	BRICK AND STRUCTURAL CLAY	0	0
STRUCTURAL METALS IN	GUADALUP	3312	BLAST FURNACES A STEEL MILLS	125.0553	36.6259
TIN INC DBA TEMPLE INLAND	GUADALUP	3275	GYPSUM PRODUCTS	15.3991	16.1302
XERXES CORP	GUADALUP	3089	PLASTICS PRODUCT NEC	0.0999	80.4377
GUADALUPE POWER PARTNERS LP	GUADALUP	4911	ELECTRIC SERVICES	277.5859	7.6751
REPUBLIC PLASTICS SERVICES LTD	GUADALUP	3086	PLASTICS, FOAM PRODUCTS	0	213.1
CITY PUBLIC SERVICE	GUADALUP	4911	ELECTRIC SERVICES	268.462	3.022
LONESTAR FIBERGLASS POOLS LLC	GUADALUP	3089	PLASTICS PRODUCT NEC	0	6.5224
ARMORTEX INC	GUADALUP	2295	COATED FABRICS, N RUBBERIZED	0	3.6
CATERPILLAR INC	GUADALUP	3519	INTERNAL COMBUSTION ENGINES	83.051	5.9257
OASIS PIPELINE COMPAN TEXAS LP	KENDALL	4922	NATURAL GAS TRANSMISSION	0	0
WATCO TANKS INC	WILSON	3444	SHEET METAL WORK	0	13.9618
HUNT OIL COMPANY	WILSON	1311	CRUDE PETROLEUM NATURAL GAS	3.2006	18.4402
HUNT OIL COMPANY	WILSON	1311	CRUDE PETROLEUM NATURAL GAS	7.982	18.351
LAZARUS ENERGY LLC	WILSON	2911	PETROLEUM REFINI	21.1607	111.6088

APPENDIX B
POTENTIAL CONTROL STRATEGIES LIST

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Local Governments Procurement Policy	Buy Bin 4 or better Light-Duty vehicles	On-road	Low	Fast	Medium	Austin Area Ozone Advance Program, 2012	EPA Tier 2 Bin 4 vehicles have lower than fleet average (Bin 5) NO_X emissions.	All fleet owners
Local Governments Procurement Policy	Buy CARB-Certified Low-NO_X Idle HDV	On-road	Low	Fast	Medium	Austin Area Ozone Advance Program, 2012	Purchase any new heavy duty vehicle that meets California Air Resource Board's low NO_X idle standard of 30 grams per hour.	All fleet owners
Local Governments Procurement Policy	Clean Contracting policies; landscaping & construction contracts	Non-road	Medium	Medium	Low	Austin Area Ozone Advance Program, 2012	Require the use of cleaner equipment, as well as operational practices, such as time of day equipment will be operated, idling, and ozone action responses. Clean landscaping contracting to encourage the use of low-emission equipment and practices in landscaping contracts.	Government agencies and large companies
Local Governments Procurement Policy	Clean Fuel Specifications in Contracts	On-road, Non-road	Low	Fast	Low	Austin Area Ozone Advance Program, 2012	Ensure that any biodiesel or other alternative fuels purchased achieves equivalent emission reductions as TxLED.	Government agencies and large companies
Local Governments Procurement Policy	Local Sourcing of Materials	On-road	Medium	Medium	Medium	Austin Area Ozone Advance Program, 2012	Ensures elimination of long distance trips and trucking.	Government agencies and large companies
Fleet Management	On-Board Idle Reduction Technologies for HDV	On-road, Non-road	Medium	Fast	Low	Austin Area Ozone Advance Program, 2012	Onboard equipment options such as auxiliary power units (APUs), heaters, and coolers can be installed on heavy-duty trucks to reduce idle time at truck stops, roadsides, ports, terminals, and delivery sites	All fleet owners
Fleet Management	Texas Emissions Reduction Plan (TERP)	Non-road	High	Fast	Medium	Austin Area Ozone Advance Program, 2012	Use of TERP funding for upgrade or replacement of older vehicles and equipment with Tire 4 equipment.	All fleet owners, small and large companies
Fleet Management	Retrofit Older Vehicles & Equipment	On-road, Non-road	High	Medium	High	Austin Area Ozone Advance Program, 2012	Targets trucks, trains, Non-road equipment, and backup diesel generators. TERP and other State's funding can be applied for to fund these projects.	All fleet owners, small and large companies

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Fleet Management	Repower Older Vehicles & Equipment	On-road, Non-road	High	Medium	High	Austin Area Ozone Advance Program, 2012	Replacing or repowering older diesel vehicles and equipment with Tier 4 engines. Applicable to all pre-2010 vehicles, TERP and other State's funding can be used.	All fleet owners, small and large companies
Fleet Management	Replace Older Vehicles & Equipment	On-road, Non-road	High	Medium	High	Austin Area Ozone Advance Program, 2012	Replacing or repowering older diesel vehicles and equipment with Tier 4 engines. Applicable to all pre-2010 vehicles, TERP and other State's funding can be used.	All fleet owners, small and large companies
Fleet Management	Business Evaluation and Rightsizing of Fleet Usage	On-road, Non-road	Low	Medium	Low	Austin Area Ozone Advance Program, 2012	Determine suitable fleet size and composition in terms of both overall number of vehicles and vehicle type; "rightsizing" evaluation, locates underutilized vehicles for reassignment or disposal.	All fleet owners, small and large companies
Regulation & Enforcement	Drive-Thru Service Restrictions	On-road	Low	Fast	Low	DFW List of Controls	Prohibit use of drive through lanes during the ozone season or high ozone alert days; encourage parking instead.	All
Regulation & Enforcement	Vehicle Idling Enforcement & Restriction	On-road	High	Fast	Low	Austin Area Ozone Advance Program, 2012	Limitation on idling by all vehicle types in certain parts of cities.	Cities
Regulation & Enforcement	Regulating Use of Unpermitted Combustion Equipment	Non-road, Area	Medium	Medium	Low	Austin Area Ozone Advance Program, 2012	Cities can pass ordinances that restrict the use of Non-road equipment by private businesses, such as restricting idling, limiting the time of day certain equipment is used, or even simply requiring registration and reporting. Such restrictions can be placed on backup generators, to avoid testing generators during high ozone days.	Cities
Regulation & Enforcement	Open Burning Restrictions	Area	Low	Fast	Low	Austin Area Ozone Advance Program, 2012	Burning construction and demolition debris, yard wastes, and other natural vegetation releases smoke and NO_X into the air.	Local Governments

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Regulation & Enforcement	Special Event Policies	On-road, Non-road, Area	Varies	Fast	Low	Austin Area Ozone Advance Program, 2012	According to EPA's definition, these are "Special plans to manage travel demand in effect during special events, defined as destinations for a large number of vehicle trips which occur on a one-time, infrequent, or scheduled basis (such as athletic events, festivals, fairs, political rallies, and major entertainment performances)." e.g. remote parking, shuttle service, parking management, highway improvement.	Local Governments
Regulation & Enforcement	Require Trip Reduction Plans for Large Employer	On-road	Low-Medium	Medium	Low	Austin Area Ozone Advance Program, 2012	Reduce employee commute vehicle trips through implementation of rideshare, telecommuting, and flexible work-hour programs, transit pass subsidies, bicycling, and similar strategies.	Local Governments
Transportation Emission Reduction Measures	Roadway Improvement	On-road	High	Slow	High	Austin Area Ozone Advance Program, 2012	Added capacity and removal of existing bottlenecks on the freeway system, e.g. update of ramps@ 410/I-35 North	State & Local Governments
Transportation Emission Reduction Measures	Expanded and Improved Transit System	On-road,	High	Medium	High	Austin Area Ozone Advance Program, 2012	Strategies such as making transit more convenient and reliable through additional light rail and commuter rail lines, exclusive bus lanes, easily understood fare structures and transfers, and subsidized transit service. In addition, strategies to improve transit amenities such as business class service, more comfortable and attractive bus and rail stops, increased security can be used to make travel more pleasant and convenient.	Governmental entities

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Transportation Emission Reduction Measures	Commuter Trip Reduction Programs (vanpool, carpool)	On-road	Medium	Fast	Low	Austin Area Ozone Advance Program, 2012	Targets employees commuting to the work place. This includes: a) provision of alternative commute infrastructure such as bike racks, showers, preferential carpool/vanpool parking; b) carpool or alternative transportation programs, including a dedicated parking cash-out program, subsidized transit passes, or other incentives (such as administrative leave or regular prize drawings) for employees to take alternative commutes; c) compressed work weeks in which an employee does not have to travel to work at least one day every two weeks; d) flexible work schedules; and e) teleworking; among others.	Governmental entities & Large Employers
Transportation Emission Reduction Measures	Improved Non-Motorized Travel (Pedestrian/Bike)	On-road	Low-Medium	Medium	Medium	Austin Area Ozone Advance Program, 2012	Implementation of bicycle and pedestrian projects with supporting programs.	State & Local Governments
Transportation Emission Reduction Measures	AirCheck Texas Incentives for Old Vehicles Replacement	On-road	High	Fast	Medium	Houston's list of control strategies	Emission reductions through the AirCheck Texas Low-Income Vehicle Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP) to repair or replace high emitting vehicles	Local Governments & Agencies
Transportation Emission Reduction Measures	HOV Implementation	On-road	Medium-High	Medium	High	TCEQ (Rider 8 List)	Promoting higher vehicle occupancy by implementing HOV lanes.	State & Local Governments
Transportation Emission Reduction Measures	Traffic Signal Improvement	On-road	Low-Medium	Medium	Medium	Houston's list of control strategies	Regional Computerized Traffic Signal System	State & Local Governments
Transportation Emission Reduction Measures	Transit Fare Free on High Ozone Days	On-road	Low-Medium	Fast	Medium	TCEQ (Rider 8 List)	Would require sponsorship and /or commitment of significant public funds. This policy should by itself generate long-term increases in ridership. To be effective, this would require expanded transit fleet and possibly support facilities.	State & Local Governments

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Transportation Emission Reduction Measures	Transit Off-Peak Pass	On-road	Medium	Fast	Low	TCEQ (Rider 8 List)	Transit incentive	State & Local Governments, Large Employers
Transportation Emission Reduction Measures	Congestion pricing / Toll Roads	On-road	Medium	Fast	Medium	TCEQ (Rider 8 List)	The goal of congestion pricing policies is to mitigate congestion and improve air quality	State & Local Governments
Transportation Emission Reduction Measures	Expansion of TransGuide	On-road	Medium	Fast	Medium	Local	Expansion of TransGuide.	State & Local Governments
Development Measures	Development Measures to Encourage Reduction in VMT	On-road	Medium-high	Slow	Low	Local	Land use planning incentives for mixed-use, transit-oriented projects	Local Governments
Development Measures	Reduce Electricity Consumption	Point and Area	High	Slow	Low	Austin Area Ozone Advance Program, 2012	Commitments by local governments to reduce electricity consumption at places such as waste water treatment facilities by update of pumping or lighting equipment or by use of energy efficient equipment.	Local Governments
Development Measures	Measures to Shade or Cool Urban Areas	All	unknown	Slow	Medium	Austin Area Ozone Advance Program, 2012	Measures to shade or cool developed areas (e.g. tree planting, cool roofs)	State & Local Governments
Outreach & Awareness	Ozone Action Day Programs	All	Medium	Medium	Low	Austin Area Ozone Advance Program, 2012	This can include any set of commitments that would reduce emissions on ozone action days, such as allowing employees to come to work at 10 am, rescheduling backup generator testing, or delaying construction and landscaping projects.	Governmental Entities & Large Employers
Outreach & Awareness	Contracts to Ban Construction Activity on Ozone Action Days	All	Medium	Fast	Low	Local	Incentives in construction projects to not work on air quality health alert days. Could be required when contracts are made with construction companies.	Construction Companies and Local Governments
Outreach & Awareness	Multimedia Public Education Program	All	low	Fast	Medium	Austin Area Ozone Advance Program, 2012	Use of TV weather forecasts, radio, Internet, TransGuide signs to inform public of high ozone days and Clean Air Plan and ask for "Do your share for cleaner air".	Local Governments and Agencies
Outreach & Awareness	School Curricula & Education Program	All	low	Medium	Low	Austin Area Ozone Advance Program, 2012	Develop school curricula for school students for early introduction of air quality issues in the region to them.	ISD's and local agencies

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Outreach & Awareness	Business Outreach Program	All	Medium-high	Medium	Medium	Austin Area Ozone Advance Program, 2012	Encourage local businesses to implement emission reduction measures and participate in adopting regional measures.	Local Governments and Agencies
Regulation & Enforcement	Cold Cleaning Regulations	Non-road	N/A (Only VOC Reductions)	Fast	Low	DFW List of Controls	Require low VOC solvent	Local Governments and small business
Regulation & Enforcement	Airport Measures	Non-road	Low	Fast	Low	DFW List of Controls	Replace older combustion ground support equipment and APUs with newer engines or with electrified equipment. TERP and DERA funding may be available for some of these projects.	City Aviation Departments, Airlines
Outreach & Awareness	Promoting the Use of Commute Solutions Rideshare Program	On-road	High	Fast	Low	Austin Area Ozone Advance Program, 2012	Commute Solutions is a program administrated by AACOG's Natural Resources Department and offers people viable alternatives to driving a single occupant vehicle. Those who commute to work or school may help reduce traffic and save fuel costs through AACOG's rideshare program.	Local Governments and Agencies
Reporting & Planning	Small Emission Source Reporting Requirements	Area	NA	Fast	Low	Austin Area Ozone Advance Program, 2012	This measure doesn't entail reducing emissions per se, but provides data on small stationary sources of NO_X, such as industrial, commercial, or institutional facilities or oil and gas facilities that fall under TCEQ emission inventory reporting requirements individually, but collectively can make up a significant amount of NO_X emissions. Reporting could involve listing of all combustion equipment on the premises, and the quantities of fuel consumed, to allow AACOG staff to calculate emissions.	Local Governments and Agencies

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Stationary Source	Encourage use of NO_X Control SNCR/SCR on all Cement kilns	Point	High	Medium	High	Austin Area Ozone Advance Program, 2012	Installation of pollution control systems at existing power plants and cement companies. These can include low- NO_X burners (LNB), combustion optimization, natural gas reburn (NGR), steam injection, water injection, selective catalytic reduction (SCR), and selective Non-catalytic reduction, depending on plant configuration. These controls can achieve 50-80% reductions in NO_X from existing sources. Many plants and units already of some of these controls installed, but there are still opportunities to reduce emissions from many of these facilities. These can be multi-million dollar projects, but on cost-per ton basis are very efficient.	Industry
Stationary Source	Early Retirement of Coal Burning Power Plants; e.g. Deely	Point	High	Medium	High	Austin Area Ozone Advance Program, 2012	Replacing older, higher-emitting plants with newer, lower-emitting fossil fuel plants equipped with technologies such as integrated combined cycle turbines with advanced NO_X controls such as SCR.	Power Plants
Stationary Source	Replacing Older Gas-Fueled Power Plants	Point	High	Slow	High	Austin Area Ozone Advance Program, 2012	Replacing older, higher-emitting plants with newer, lower-emitting fossil fuel plants equipped with technologies such as integrated combined cycle turbines with advanced NO_X controls such as SCR.	Power Plants
Stationary Source	Other Stationary Source Controls (steel mills, smelters, refineries)	Point, Area	High	Medium	High	Austin Area Ozone Advance Program, 2012	Installation of pollution control systems at point sources other than power plants within or near the San Antonio- New Braunfels MSA	Industry
Stationary Source	Alternate Source of Fuel for Electricity Generation	Point	High	Slow	High/Medium	DFW List of Controls	Geothermal and Solar thermal electricity generation. Geothermal power is considered to be sustainable because the heat extraction is small compared with the Earth's heat content. New plant designs require water temperature of only 57 C. The 377 MW Ivanpah Solar Power Facility is the largest solar power plant in the world, located in the Mojave Desert of California.	Power Plants

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Stationary Source	Replace Boilers & Heaters	Point, Area	Medium	Fast	Medium	DFW List of Controls	NO_X emission limits on small-scale residential and industrial boilers, process heaters, and water heaters	Oil & Gas Production
Stationary Source	Glycol Dehydrators Control or Recycle Vented VOC	Point, Area	N/A (Only VOC Reductions)	Fast	High	DFW List of Controls	Optimizing Glycol circulation and installing flash tank separators on glycol dehydrators reduce methane, VOC, and HAP emissions. Recovered gas can be recycled to the compressor suction and/or used as a fuel for the TEG reboiler and compressor engine.	Oil & Gas Production
Stationary Source	Better identify and repair leaking components	Point, Area	N/A (Only VOC Reductions)	Fast	Low	DFW List of Controls	Oil and Gas industry should have procedures in place to continually look for leaks and repair them.	Oil & Gas Production
Transportation Emission Reduction Measures	Commuter and Light Rail	On-road	Medium	Slow	High	Judge Wolff's AQ Strategies	Commuter Rail from San Antonio to Austin, light projects.	State and Local Governments
Transportation Emission Reduction Measures	Transit Multimodal Park & Ride Facilities	On-road	Medium	Fast	Medium	Judge Wolff's AQ Strategies	Additional bus multimodal sites such as VIA's Westside Multimodal Facility	State and Local Governments
Transportation Emission Reduction Measures	Texas Rail Relocation	On-road	Medium	Medium	Medium	Judge Wolff's AQ Strategies	Legislative initiatives to fund the Texas Rail Relocation Fund (created 79th Legislative Session)	State and Local Governments
Transportation Emission Reduction Measures	Freight Rail Relocation	On-road	Medium	Medium	Medium	Judge Wolff's AQ Strategies	Freight rail relocation outside populated areas and adaptive reuse of tracks for commuter rail	State and Local Governments; Rail Companies
Transportation Emission Reduction Measures	Rail Multimodal Facilities	On-road	Medium	Medium	Medium	Judge Wolff's AQ Strategies	Addition multimodal facilities such as the Union Pacific site - Old Pearsall Road to encourage the transport of freight by rail instead of trucks.	State and Local Governments; Rail Companies
Transportation Emission Reduction Measures	Advanced Transportation District	On-road	Low	Fast	Low	Judge Wolff's AQ Strategies	Expand boundaries of the Advanced Transportation District to include all of Bexar County	Local Governments

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Development Measures	Mission Verde Sustainability Plan	Point, Area, On-road	High	Fast	Low	COSA	The Mission Verde Sustainability plan is an economic approach to sustainability with a focus on energy conservation. The plan calls for diversification of energy sources, updates to the transportation system, creation of green jobs, and reuse and revitalization of San Antonio's resources	Local Governments
Development Measures	Save for Tomorrow Energy Plan (STEP)	Point, Area	High	Fast	Low	COSA	The energy conservation measures providing financial incentives to residential and commercial customers to improve heating, ventilation, insulation, and air conditioning systems as well as to increase the use of energy efficient lamps and programmable thermostats, expand lighting retrofits, replacement of existing household appliances with energy efficient appliances, and other commercial programs.	Local Governments and Business Owners
Development Measures	Green Building Code	Point, Area	Medium-High	Fast	Low	Judge Wolff's AQ Strategies	Require building codes that encourage energy efficiency and design with the nature principals	Local Governments and Building Companies
Development Measures	Advance construction	Non-road	Low-Medium	Fast	Low-Medium	Judge Wolff's AQ Strategies	Pass-Thru Financing Projects financed by local governments to advance construction	Local Governments
Transportation Emission Reduction Measures	San Antonio B-Cycle Municipal Bike Share System	On-road	Low	Fast	Low	COSA	Continue funding and support for bike share alternative transportation system in and around downtown	State and Local Governments
Development Measures	Solar Energy Projects	Point, Area	High	Fast	Low	COSA	Promote electricity generation and the use of Solar Power	State and Local Governments
Development Measures	Installation of LED Streetlights	Point, Area	Medium	Fast	Low	COSA	Reduction of energy consumption	Local Governments and Business Owners
Outreach & Awareness	Lawn Mower Replacement Program	Non-road	Medium-High	Fast	Low	CPS/COSA	Replacement or exchange of residential mowers with electric or Tier 4 mowers	Home Owners
Outreach & Awareness	Pay-As-You-Drive	On-road	Medium	Fast	Low	DFW List of Controls	Mileage based auto insurance may encourage less driving.	Vehicle Owners

Category	Strategy	Emission Source	NO_X Benefit	Time Frame	Cost	Source for Suggested Strategy	Description	Likely Stakeholders
Outreach & Awareness	Parking Cash-Out	On-road	Low	Fast	Low	DFW List of Controls	Parking cash-out is a program where certain employers who provide subsidized parking for their employees can offer cash allowance in lieu of a free or subsidized parking space. Cash-out for 10% of area employees	Employers
Outreach & Awareness	Best Workplaces Program	On-road	Low	Fast	Low	DFW List of Controls	The program is designed to reduce employee commute vehicle trips through implementation of rideshare, telecommuting, and flexible work-hour programs, transit pass subsidies, bicycling, and similar strategies.	Employers
Regulation & Enforcement	Warm Mix Asphalt	Non-road, Area	N/A (Only VOC Reductions)	Fast	Low	COSA	Warm mix asphalt is produced at105^{o} to 135^{o} C (220^{o} to 275^{o}F) compared to hot-mix asphalt (284^{o} to 338^{o}F). By reducing the temperature at which the asphalt is produced, benefits of reduced fumes, emissions, reduced energy consumption can be realized, as well as better compaction, paving in cold weather, and possibly better cracking resistance.	Local Governments and Construction Companies