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

2019 Update Approved on January 22, 2020
by the AACOG Air Quality Committee

Prepared by

AACOG
Alamo Area Council Of Governments

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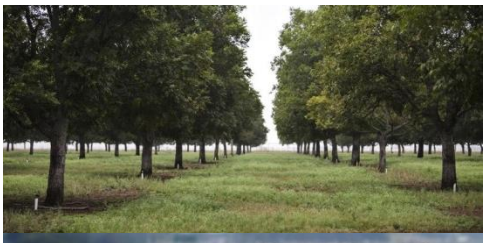
CHAPTER 1: Introduction



In common with other large metropolitan areas, the San Antonio region occasionally experiences episodes when air pollution reaches concentrations that are unhealthy for sensitive populations. In particular, the region struggles to meet federal standards for one of the most pervasive air pollutants in the nation: ground-level ozone.

Ozone pollution forms when specific chemicals react in the atmosphere in the presence of sunlight. These chemicals are released from a range of processes including the burning of gasoline, diesel, and other fuels, and the evaporation of paints and solvents. Meteorological conditions also influence the formation and dispersion of ozone and, as a consequence, impact the levels of ozone in the lower atmosphere. Atmospheric conditions that are conducive to the accumulation of ozone pollution include clear, sunny skies, and low wind speeds. These conditions are prevalent in the San Antonio area through much of the late spring through early fall months.

The U.S. Environmental Protection Agency (EPA) bears primary responsibility for protecting the nation's air quality and for implementing and enforcing many of the programs established by the Clean Air Act (CAA). This responsibility extends to setting National Ambient Air Quality Standards (NAAQS) for six common pollutants, including ground-level ozone, that are harmful to public health and the environment. Periodically, the NAAQS are reviewed and, if scientific evidence warrants it, the standards are revised to ensure adequate protection of human health, as well as animals, crops, vegetation, buildings, and visibility.

As a result of the periodic review requirement, the NAAQS for ozone has been changed several times since first established in the 1970s (Figure 1-1). The most recent change was implemented in 2015 when the attainment threshold was lowered from 75 parts per billion (ppb) to 70 ppb. This change placed the San Antonio region at risk of a

nonattainment designation. A nonattainment designation is the official declaration by the EPA of a NAAQS violation and triggers air quality planning activities and control strategy implementation involving state and local governments, as well as local industries. In September 2018, Bexar County was officially designated nonattainment of the ozone NAAQS, with a marginal classification.

To address ozone values that often skirt and exceed NAAQS thresholds (Figure 1-2), local governmental and industry leadership in the San Antonio region support programs that focus on air quality improvements. When EPA announced the Ozone Advance program in April 2012, area leaders and air quality planners readily approved submission of a participation letter. Ozone Advance planning updates have been submitted every year since in accordance with the program's requirements. The intent of the Ozone Advance program is to provide a structure for local emission reduction strategies, enhance an area's ability to meet the ozone NAAQS, and support state and local initiatives for air quality improvements.

	1971	1979	1993	1997	2008	2015
Final Ruling	36 FR 8181 30-Apr-71	44 FR 8202 8-Feb-79	58 FR 13008 9-Mar-93	62 FR 38856 18-Jul-97	73 FR 16483 27-Mar-08	80 FR 65292 26-Oct-15
Indicator	Total photochemical oxidants	O_3		O_3	O_3	O_3
Avg. Time	1 hour	1 hour		8 hours	8 hours	8 hours
Level	80 ppb	125 ppb		85 ppb	75 ppb	70 ppb
Form	Not to be exceeded more than one hour per year	Attainment is defined when the expected number of days per calendar year, with maximum hourly average concentration greater than 12 ppb, is equal to or less than 1	EPA decided that revisions to the standards were not needed at the time	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years

Figure 1-1: Historical Ozone NAAQS, 1971 - 2015[1]

[1] U.S. Environmental Protection Agency. (Mar 4, 2016). "Table of Historical Ozone National Ambient Air Quality Standards (NAAQS)," Available at https://www.epa.gov/ozone-pollution/table-historical-ozone-national-ambient-air-quality-standards-naaqs. Accessed Jan. 4, 2020.

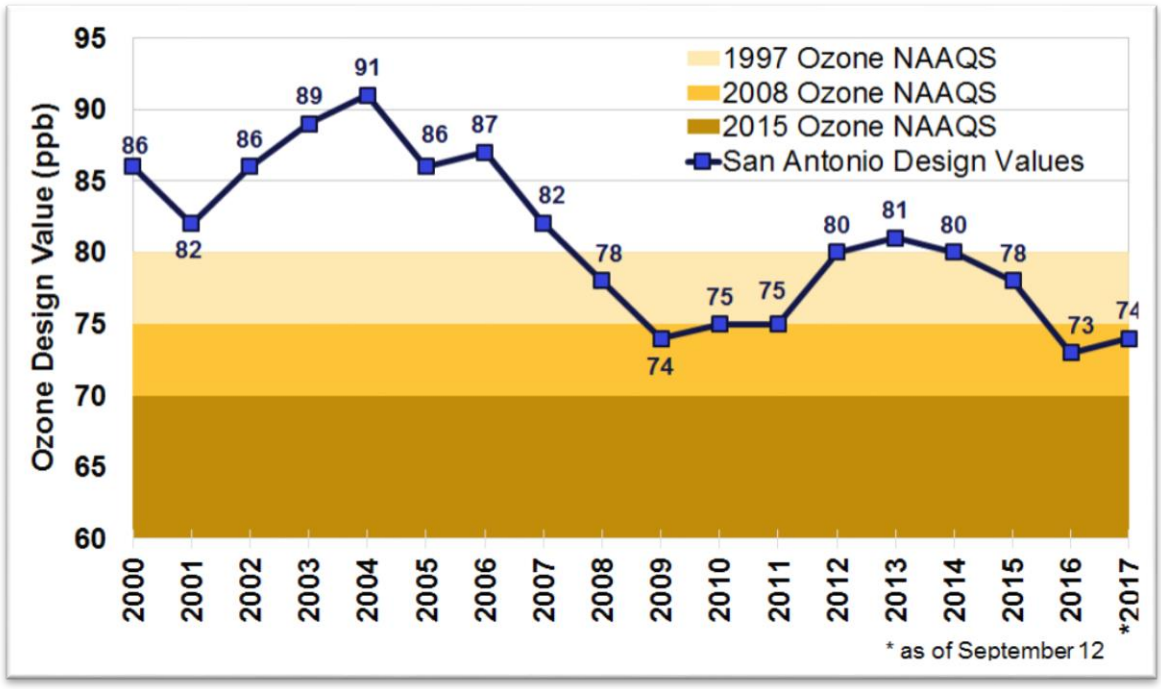


Figure 1-2: Annual design values (DV) for the San Antonio area relative to the thresholds established for the 1997, 2008, and 2015 ozone standards. The design values represent the 3-year average of the annual fourth-highest daily maximum 8-hour ozone average.

This document serves as the 2019 update to the Alamo Ozone Advance Plan and describes the region's *Path Forward* to program enhancements, and new and proposed strategies for improving air quality and community health in the San Antonio region. Differences between this and the previous Ozone Advance Updates include updated voluntary control measures in Chapter 4, education and outreach activities, and an update on Rider 7 Air Quality Planning funding.

Sources for photos from page 1-1: (1) San Antonio Skyline: City of San Antonio (2) Guadalupe River: Alamo City Title Company (3) Pumpjacks: Horizon Energy (4) Cattle Ranch: Karen Hightower (5) Pecan Orchard: The Texas Tribune (6) I-35 Corridor: San Marcos Mercury

CHAPTER 2: Background

2.1 Our Region

San Antonio, located in south-central Texas, is the second-largest city in the state and the seventh-largest in the nation. San Antonio is in Bexar County, which is centrally located in the 13-county AACOG region (Figure 2-1). The metropolitan statistical area (MSA) includes Bexar and seven surrounding counties. The second-largest city in the MSA is New Braunfels, located in adjacent Comal County.

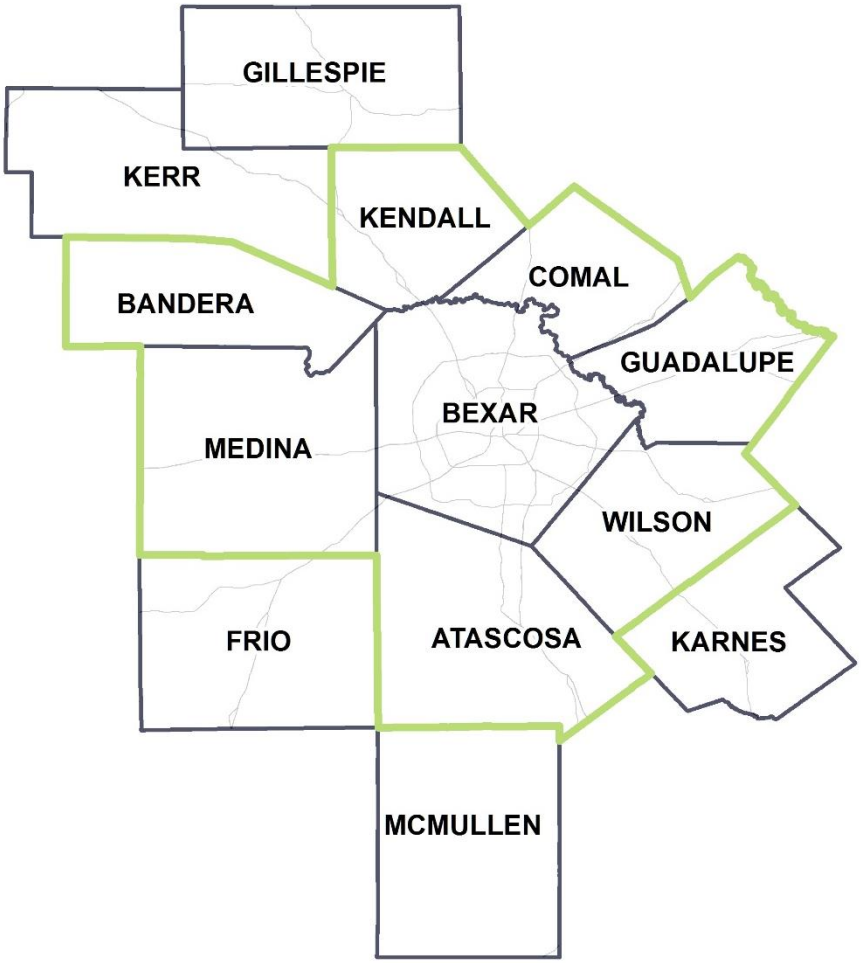


Figure 2-1: Map of the 13-county AACOG region and the 8-county San Antonio-New Braunfels MSA (heavy green outline)

This Path Forward plan covers the eight-county San Antonio-New Braunfels MSA, as this was the presumptive boundary for a nonattainment designation under the 2008 and prior ozone NAAQS. The seven outlying counties of the MSA are designated attainment/unclassifiable.

2.2 Population Growth

In 2016, the San Antonio-New Braunfels MSA represented about 9% of the population in Texas. Between 2000 and 2016, the region's population grew by over 40%, which exceeds the State's growth by more than 8% during the same period (Table 2-1).

Geographically, the San Antonio-New Braunfels MSA has grown significantly northward along the Interstate 35 corridor. The Austin-Round Rock MSA, which includes Travis, Williamson, Hays, Bastrop, and Caldwell counties, has also experienced significant growth along the Interstate 35 corridor. As a result, the gap between the populous areas in both regions is diminishing (Figure 2-2). The Interstate 10 corridor, including Bexar and Kendall Counties, has also seen significant growth during this period.

MSA County	2000 Population	2016 Population	% Change
Atascosa	38,628	48,797	26.3%
Bandera	17,645	21,776	23.4%
Bexar	1,392,931	1,928,680	38.5%
Comal	78,021	134,788	72.8%
Guadalupe	89,023	155,265	74.4%
Kendall	23,743	42,540	79.2%
Medina	39,304	49,283	25.4%
Wilson	32,408	48,480	49.6%
MSA Total	1,711,703	2,429,609	41.9%
Texas	20,851,820	27,862,596	33.6%

Table 2-1: Population growth in the San Antonio-New Braunfels MSA, 2000-2016[2]

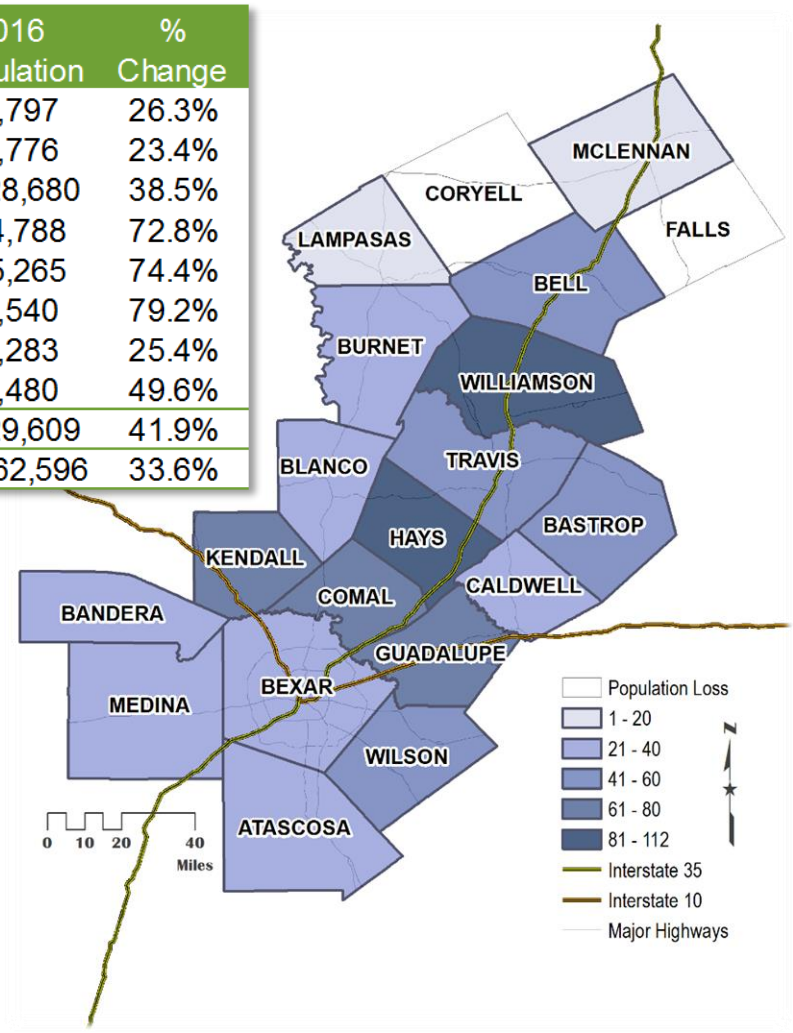


Figure 2-2: Percentage of population change between 2000 and 2016 in counties along Interstate 35

[2] U.S. Census Bureau. (2000). Decennial Census Data; U.S. Census Bureau (July 1, 2016). Population Estimates Program Data (PEP). **C1610**

2.3 Ozone Monitoring

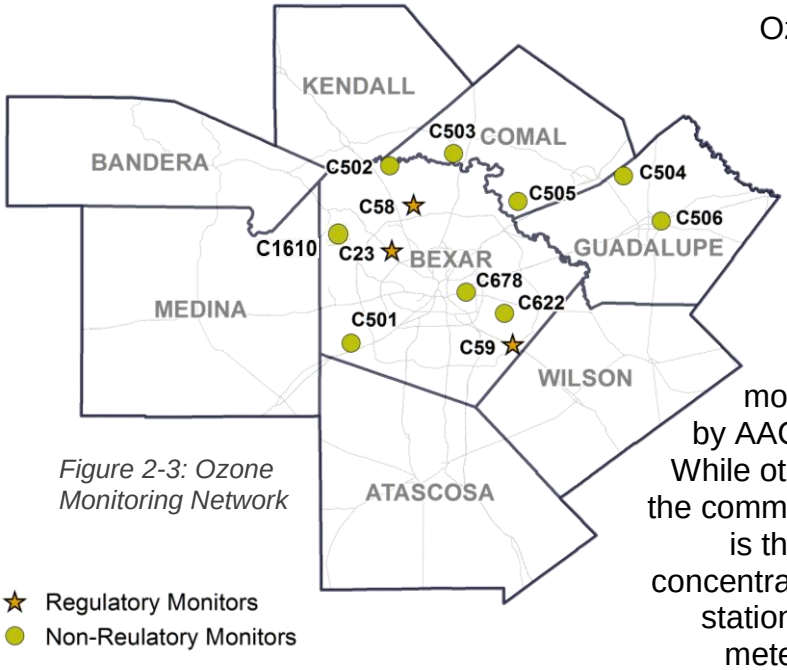


Figure 2-3: Ozone Monitoring Network

Ozone concentrations are measured by a network of continuous air monitoring stations in and surrounding Bexar County (Figure 2-3). TCEQ operates three regulatory monitors, AACOG owns seven non-regulatory monitors, and CPS Energy, the local energy utility in San Antonio, operates two non-regulatory monitors. The seven monitors owned by AACOG are operated by CPS Energy. 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 (Table 2-2).

Table 2-2: Ozone Monitors

	Designation / Site Name	Location	Data Measured	In Operation Since	Operated and Maintained By (Owner)
Regulatory Monitors	CAMS 23 San Antonio	San Antonio, Bexar County	NO_X, Ozone, Meteorology, $PM_{2.5}$	Jul 1981	SA Metro Health District (TCEQ)
	CAMS 58 Camp Bullis	San Antonio, Bexar County	VOC, NO_X, Ozone, Meteorology	Aug 1998	Orsat and Technical Monitoring Services Inc.
	CAMS 59 Calaveras Lake	San Antonio, Bexar County	SO2, NO_X, Ozone, Meteorology, $PM_{2.5}$	May 1998	SA Metro Health District (TCEQ)
Non-Regulatory Monitors	CAMS 501 Elm Creek	Atascosa, Bexar County	Ozone, Meteorology	Jun 2002	Weston thru CPS Energy (AACOG)
	CAMS 502 Fair Oaks Ranch	Fair Oaks Ranch, Bexar County	Ozone, Meteorology	Jun 2002	Weston thru CPS Energy (AACOG)
	CAMS 503 Bulverde Elementary	Bulverde, Comal County	Ozone	Aug 2002	Weston thru CPS Energy (AACOG)
	CAMS 504 New Braunfels Airport	New Braunfels, Guadalupe County	Ozone	Aug 2002	Weston thru CPS Energy (AACOG)
	CAMS 505 Garden Ridge	San Antonio, Bexar County	Ozone	Mar 2003	Weston thru CPS Energy (AACOG)
	CAMS 506 Seguin Outdoor Learn	Seguin, Guadalupe County	Ozone	Mar 2003	Weston thru CPS Energy (AACOG)
	CAMS 622 Heritage Middle	San Antonio, Bexar County	Ozone, Meteorology, $PM_{2.5}$	Jul 2004	Weston (CPS Energy)
	CAMS 678 CPS Pecan Valley	San Antonio, Bexar County	Ozone, Meteorology	Mar 1999	Weston (CPS Energy)
	CAMS 1610 Government Canyon	San Antonio, Bexar County	Ozone	Aug 2017	Weston thru CPS Energy (AACOG)

2.4 Ozone Trends

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 2-4, the rolling three-year averages of annual fourth highest 8-hour average ozone or design values, upon which attainment calculations are based, continue to be in exceedance of the 2015 ozone standard. Since coming out of a record drought in 2012, ozone levels have experienced a steady decline since 2014.

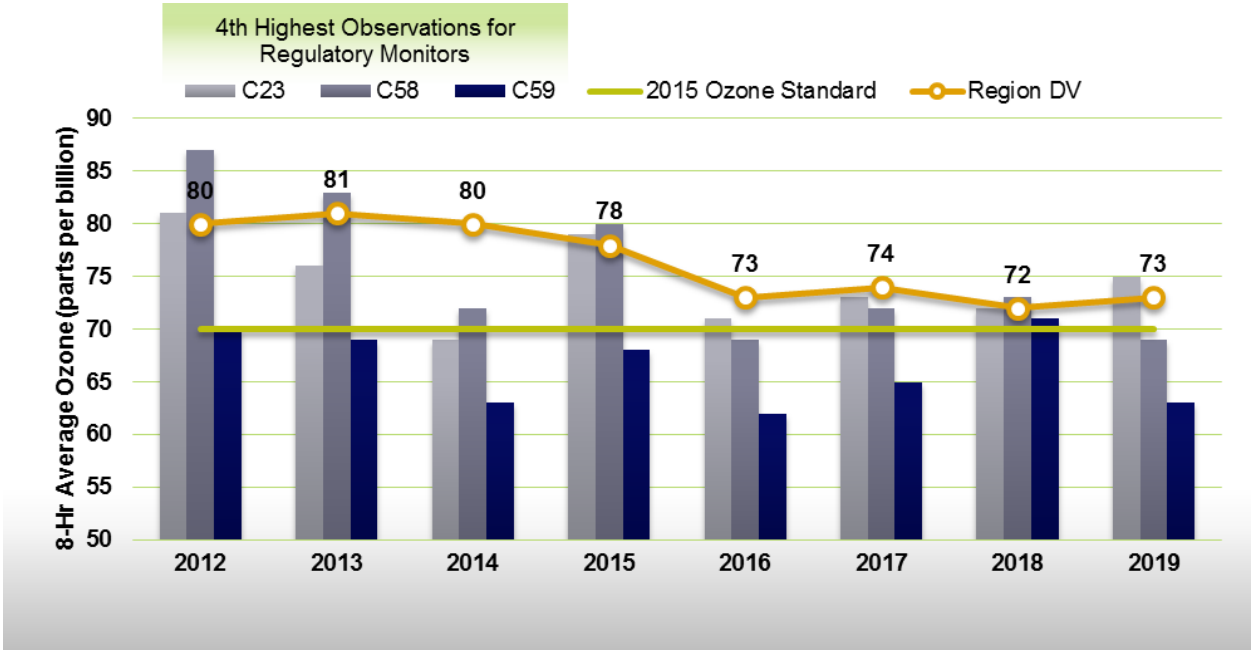


Figure 2-4: Annual 8-Hour Fourth Highest Ozone Observations and Design Values, 2012-2019

Table 2-3 lists design values for each regulatory monitor as of the end of 2017. 2018, and 2019, and the annual fourth highest 8-hour average ozone concentrations that comprise each design value. Also listed is the maximum fourth highest 8-hour average ozone concentration for 2020 that would yielded a 2020 design value of 70 ppb or less.

Monitors C23 and C58 in northwest Bexar County typically record the highest ozone concentrations of the three regulatory monitors, as these are often “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.

Station	2015 4th Highest	2016 4th Highest	2017 4th Highest	2017 Design Value	2018 4th Highest	2018 Design Value	2019 4th Highest	2019 Design Value	TARGET 2020 4th Highest
CAMS 23	**79**	**71**	**73**	**74**	**72**	**72**	**75**	**73**	65
CAMS 58	**80**	69	**72**	**73**	**73**	**71**	69	**71**	70
CAMS 59	68	62	65	65	**71**	66	63	66	78

Table 2-3: Design Values for 2017, 2018, and 2019, with Target 4th Highest Observations for 2020

2.5 Seasonality

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 San Antonio at regulatory monitors (Figure 2-5). This period represents the first high ozone seasonal peak that San Antonio typically experiences. By early July, the number of high ozone days declines. The next seasonal peak begins in August and ends in late October, during which the frequency of exceedances over 70 ppb is slightly higher than the spring period.

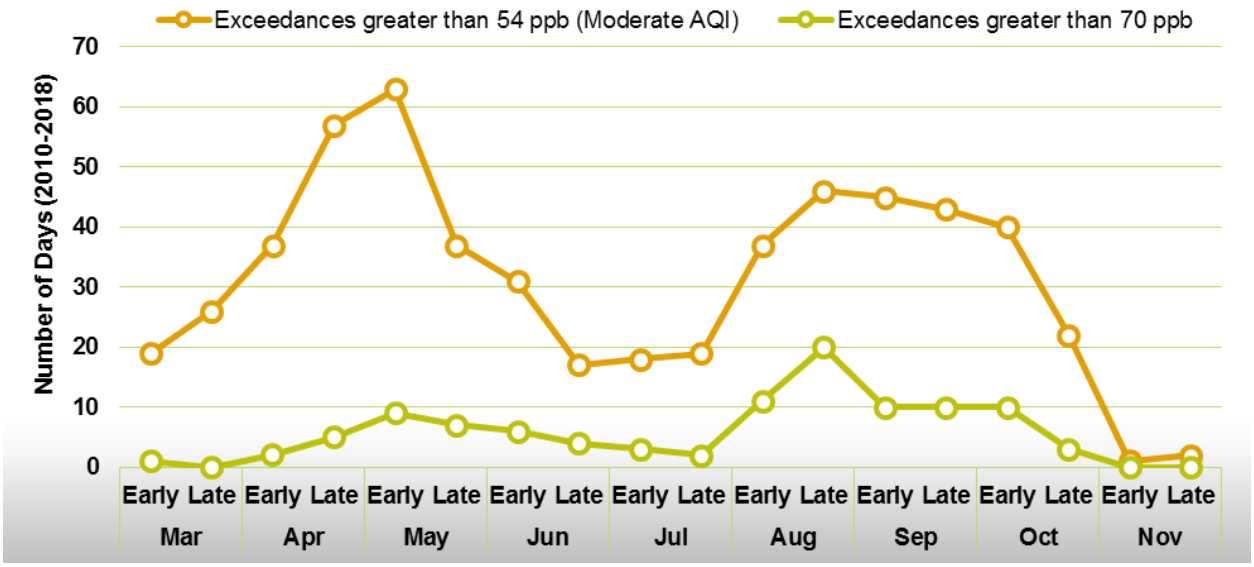


Figure 2-5: Number of days between 2010 and 2018 that the 8-hour average exceeded 54 and 70 parts per billion at any regulatory monitor

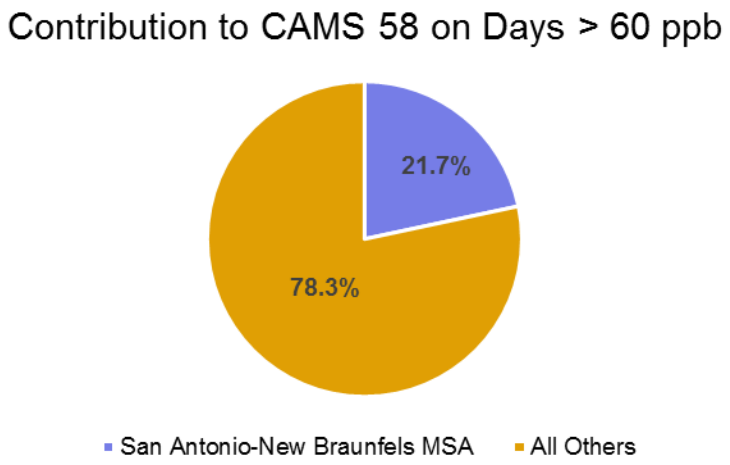


Figure 2-6: Local vs. Transported Ozone at CAMS 58 Camp Bullis, 2017

Ozone is both formed locally and transported in from other regions. Photochemical modeling projects have concluded that **while 21.7% of ozone is formed locally, 78.3% comes from outside the region** (Figure 2-6). Other areas that significantly contribute to ozone in San Antonio are other Texas cities, like Austin and Houston, other states, and as much as 34% of ozone at Camp Bullis (CAMS 58) originates from sources outside of the country.[3]

Ozone concentrations fluctuate by season depending on several factors including variations in transport, meteorology, chemical loss of ozone, and stratospheric ozone levels. Ozone transport can also be depicted by the minimum average 8-hour ozone in a given region, has experienced a general decline since 2010 as shown in Figure 2-7. This is likely attributable to precursor emissions reductions in surrounding regions that have resulted in an overall decline in surrounding ozone concentrations. Ozone transport can also be assessed on an intra-seasonal basis. 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. The seasonality of ozone transport in the San Antonio area can be seen in Figure 2-8.

[3] Alamo Area Council of Governments, 2019. "Ozone Analysis of the 2012 Ozone Season Photochemical Modeling Episode." p. 9-5.

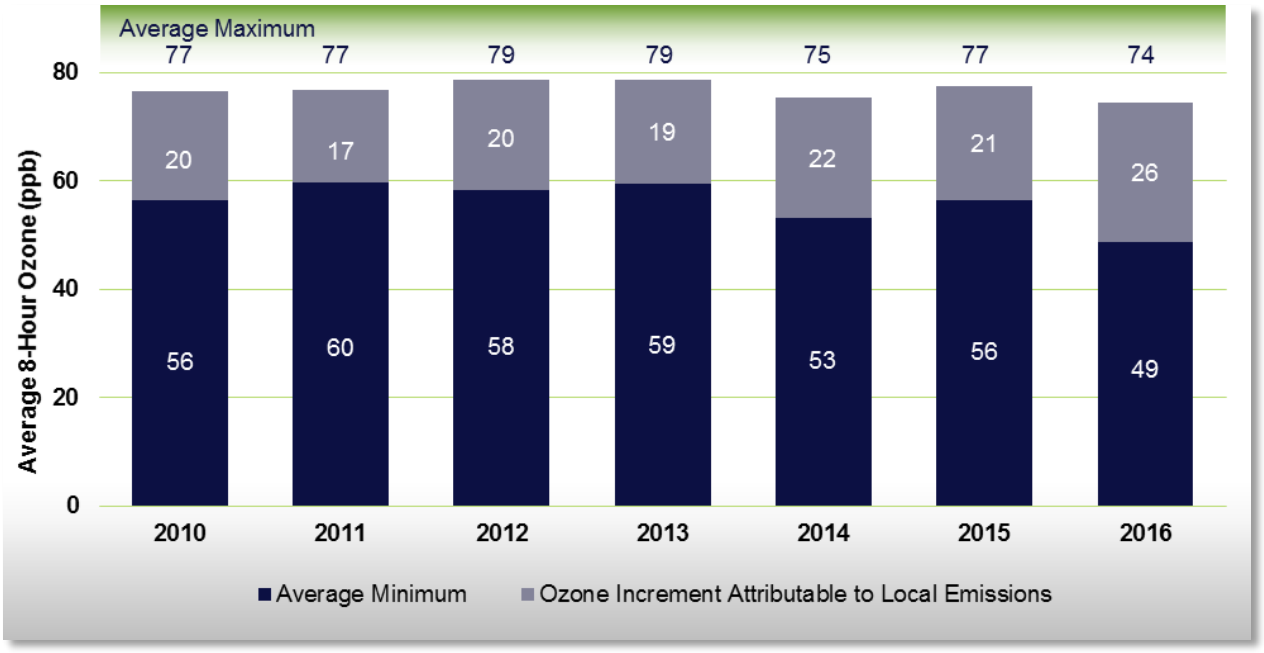


Figure 2-7: Annual Ozone Attributable to Local Emissions, average maximums and minimums derived using data from the monitor with the highest and lowest 8-hour average recorded in the region each day between 2006 and 2015 on days where ozone > 70 ppb.

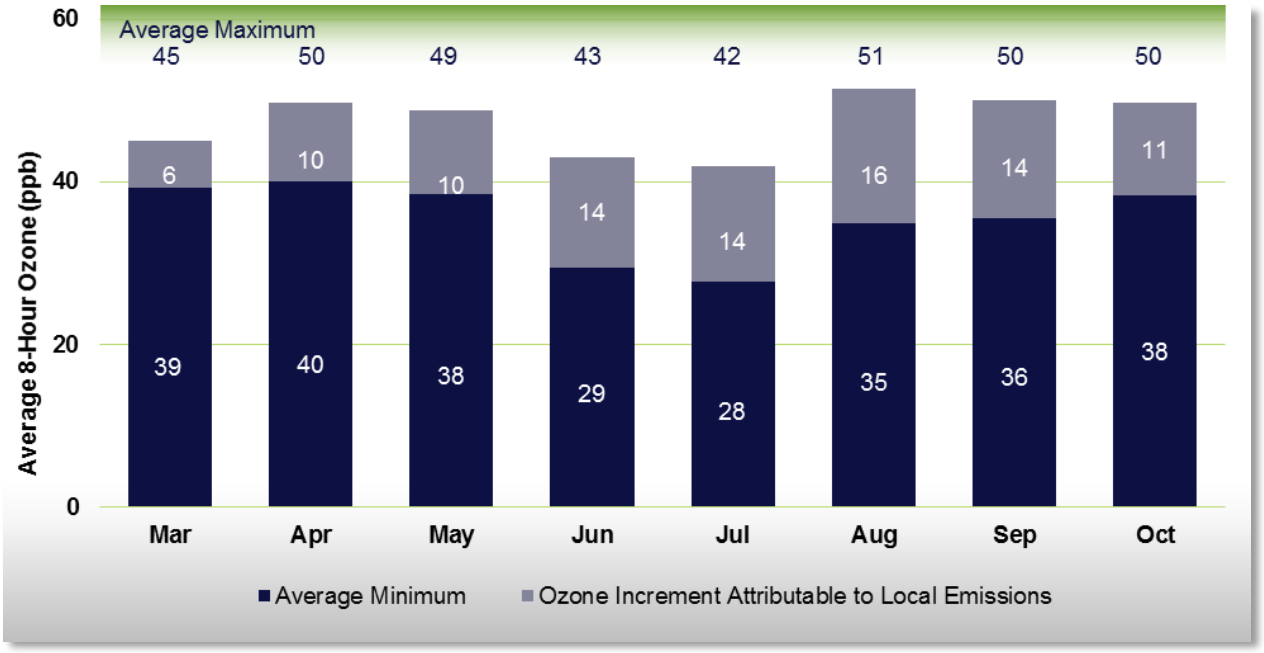


Figure 2-8: Annual Ozone Attributable to Local Emissions by Month, 2010-2016 Averages

2.6 Meteorology

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:

- **High ozone events often occur within days after the passage of a frontal boundary. Northerly winds behind the front transport relatively unclean continental air into the region, which elevates ozone to moderate levels. As winds begin to shift back to the southeast, there is often a double-dose of ozone and precursor emissions, which often results in an ozone exceedance (> 70 ppb).**

- **High ozone days are typically absent of strong synoptic weather systems.**

- Wind vectors on high ozone days are more stagnated and often originate from the east and northeast. Back trajectories (Figure 2-9) and wind roses (Figure 2-10, Figure 2-11, and Figure 2-12) are some of the tools used to determine prevailing wind directions on high ozone days.

- 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 heights 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.

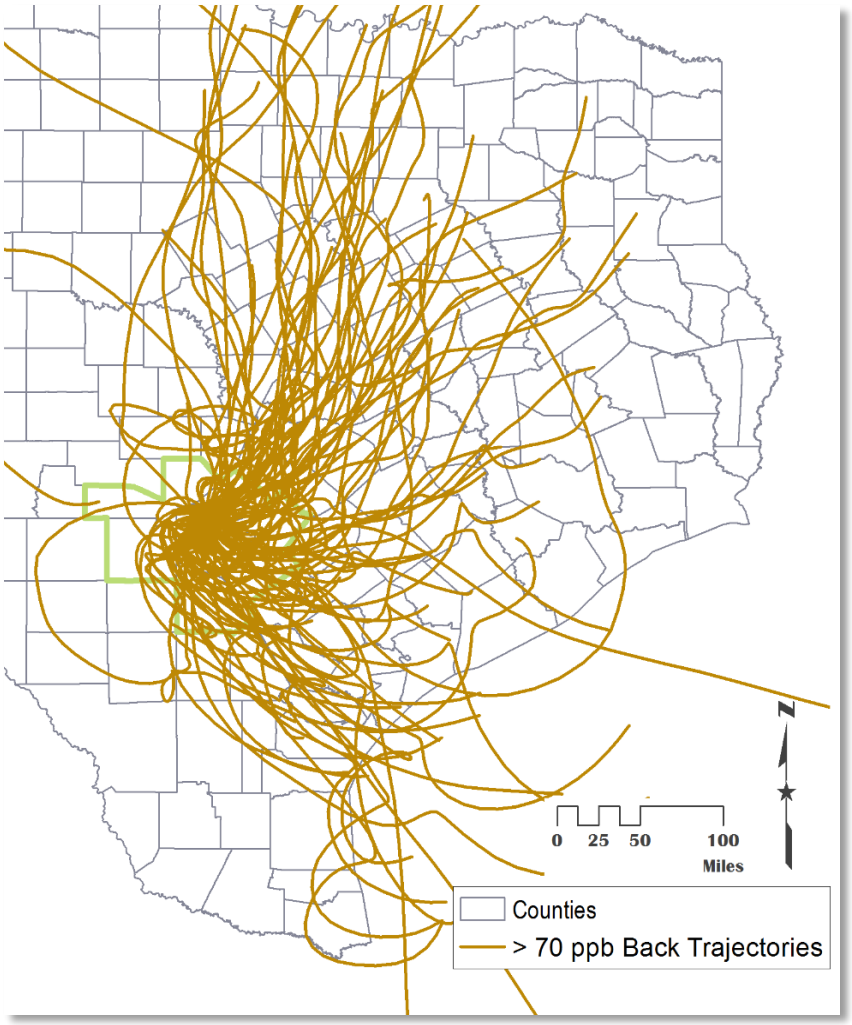


Figure 2-9: 48-Hour HYSPLIT Back Trajectories on Days with 8-Hour Ozone > 70 ppb, 2010-2016

Synoptic conditions typical of high ozone days include calm winds associated with a high pressure system over Texas, which often corresponds to lower humidity levels and therefore a wider diurnal temperature swing. It is also common for the passage of frontal boundaries to trigger high ozone events. These fronts have the potential to move through the San Antonio area at any time of year, although they may not always bring cooler temperatures, but rather, drier air as high pressure builds in behind them. Research from the Ozone Conceptual Model for the Austin area suggests that as these fronts move through, northerly and northwesterly winds transport relatively "unclean" continental air from interior parts of the country.[4] This corresponds to an increase in background ozone levels that then move into the San Antonio region.

[4] Capital Area Council of Governments, 2015. "Conceptual Model for Ozone in the Austin-Round Rock Metropolitan Statistical Area." Austin, Texas. p. 133.

A review of data between 2010 and 2016 revealed a common wind flow characteristic at C58. On high ozone days, there is a reversal of winds from the morning into the afternoon. The wind rose graphs in Figure 2-10 show the contrast between morning (6 a.m. to 9 a.m. local time) and afternoon (12 p.m. to 3 p.m. local time) resultant wind directions and speeds for high ozone days at C58. This monitor is the only one in the region to show such a marked difference between morning and afternoon wind directions. In the morning at C58, approximately 70% of high ozone days had resultant wind vectors from the WNW, NW, or NNW, whereas in the afternoon on high ozone days, nearly 60% had resultant wind vectors from the ESE, SE, and SSE. In addition, relatively calm winds were more likely to be observed in the morning hours than in the afternoon. The wind roses from C58 suggest that there is a **recirculation of emissions** over the monitor as winds switch from NW to SE during the day, which might explain why ozone concentrations are often highest at this location on high ozone days.

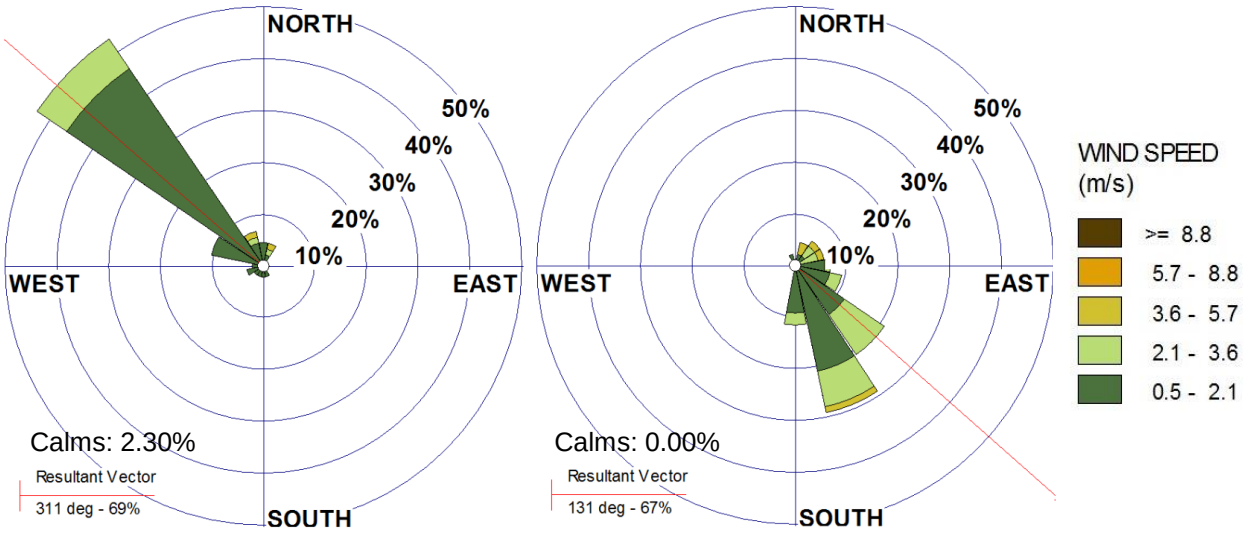


Figure 2-10: C58 AM (6 a.m. to 9 a.m.) and PM (12 p.m. to 3 p.m.) Wind Roses, 2010-2016

Figure 2-11 and Figure 2-12 provide morning and afternoon wind rose graphs for the region's other two regulatory ozone monitors, C23 and C59, on high ozone days. The wind roses from C23 suggest a directional wind shift from morning to afternoon, but the morning wind rose is more evenly distributed among each direction compared to C58. The morning and afternoon wind roses for C59 do not show an appreciable shift in wind direction on high ozone days. Just over 46% of high ozone days were characterized by morning winds out of the NNE, NE, or ENE. Afternoon wind directions on high ozone days tend to be split between generally northeast and generally southeast. N, NNE, and NE afternoon wind directions accounted for 38.6% of high ozone days, while ESE, SE, and SSE afternoon wind directions at C59 accounted for 38.6% of high ozone days.

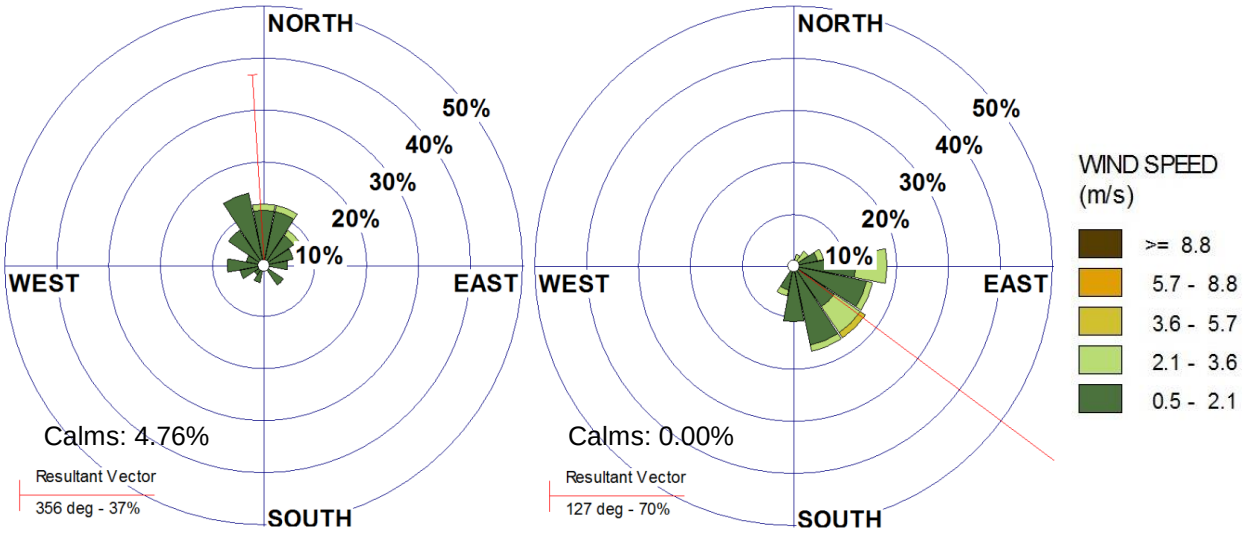


Figure 2-11: C23 AM (6 a.m. to 8 a.m.) and PM (12 p.m. to 2 p.m.) Wind Roses, 2005-2015

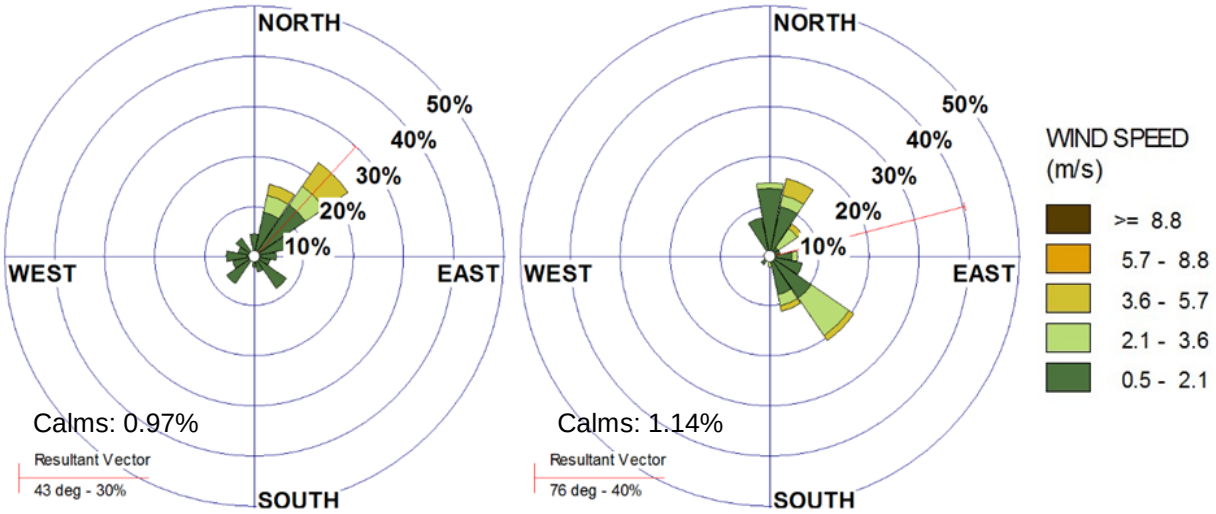


Figure 2-12: C59 AM (6 a.m. to 8 a.m.) and PM (12 p.m. to 2 p.m.) Wind Roses, 2005-2015

2.7 Emissions Sources

Projected Trends. AACOG develops periodic emissions inventories of non-road, off-road, oil and gas, and area sources in the region. Combining AACOG data with point source emissions from TCEQ and on-road emissions estimates calculated by the EPA's MOVES2014a model provides an indication of the ozone season weekday anthropogenic NO_X and VOC emissions generated in the region by sector.

Despite a consistently increasing population in the region, analyses of emissions trends indicated that regionally-generated NO_X emissions will continue a downward trend, largely due to improvements in vehicle emission standards and point source emission

reductions. Local overall VOC emissions are expected to slowly decline too from 2012 to 2017 (Figure 2-13).

Weekday NO_X emissions for 2017 from point sources in the SA-NB MSA were estimated at 61 tons per day, followed by on-road sources at 44 tons per day. In terms of anthropogenic emissions, most VOCs generated in the SA-NB MSA originate from the facilities and activities collectively categorized as area and oil and gas sources. This trend is expected to continue through 2023, the last date for which emissions have been estimated.

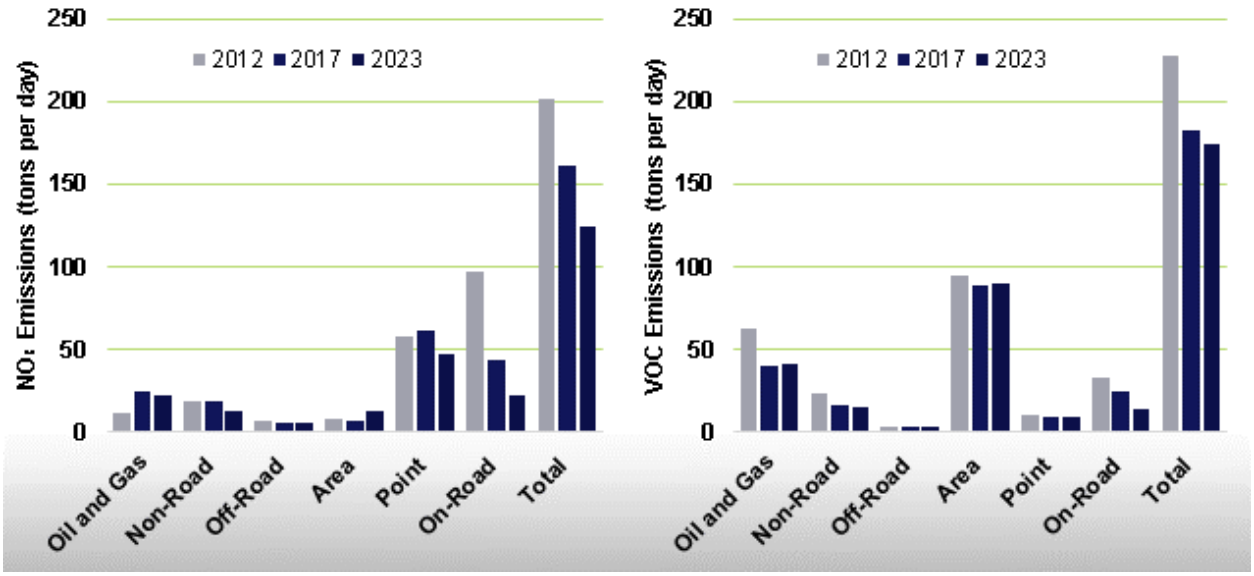


Figure 2-13: NO_X and VOC Emissions Estimates by Source in the San Antonio-New Braunfels MSA, 2012, 2017, and 2023

Table 2-4 lists total 2017 emissions by county, which include point, area, on-road, non-road, and biogenic sources. Emissions estimates are from the latest projections in the region photochemical model.

County	NO_X (tpd)	VOC (tpd)
Atascosa	23.2	30.9
Bandera	1.2	3.0
Bexar	89.1	103.8
Comal	20.5	10.7
Guadalupe	12.9	12.6
Kendall	1.6	3.6
Medina	7.5	6.3
Wilson	4.8	9.7

Table 2-4: Total NO_X and VOC Emissions Estimates by County

On-road Sources. On-road vehicles have traditionally represented the significant source of NO_X in the region. San Antonio is transected by a number of major highways, including Interstate 10, Interstate 35, Interstate 37, and US Highway 281 and its proximity to multiple land and ocean ports guarantees an abundance of heavy-duty vehicle traffic. Table 2-5 lists 2017 on-road emissions by county.

County	NO_X (tpd)	VOC (tpd)
Atascosa	2.4	0.7
Bandera	0.4	0.3
Bexar	30.3	18.5
Comal	3.8	1.8
Guadalupe	3.4	1.6
Kendall	1.1	0.6
Medina	1.5	0.6
Wilson	1.0	0.6

Table 2-5: On-road NO_X and VOC Emissions Estimates by County, 2017

Point Sources. The largest point sources for NO_X emissions in South Central Texas are coal-fired power plants and cement plants. Other point sources include research facilities and manufacturing operations (Table 2-6). This table is not an exhaustive list of large sources in the region, but solely lists those that emit more than 100 tons per year (tpy) of NO_X or VOCs.

County	Point Source Name	NOx (tpy)	VOC (tpy)
Atascosa	San Miguel Electric Plant	2083	59
Bandera	Bandera Compressor Station	295	22
Bexar	CPS Calaveras Power Plant	4342	47
Bexar	Alamo Cement 1604 Plant	2449	28
Bexar	Capitol Aggregates	581	93
Bexar	CPS Braunig Power Plant	572	46
Bexar	Southwest Research Institute	248	59
Bexar	Toyota Vehicle Assembly Plant	20	430
Caldwell	Oasis Pipeline Compressor Station	140	24
Comal	Cemex Balcones Plant	2334	22
Comal	TXI Hunter Cement Plant	1411	76
Comal	Lhoist Lime Plant	558	5
Guadalupe	Guadalupe Generating Station	738	10
Guadalupe	CPS Rio Nogales Power Plant	359	5
Guadalupe	Structural Metals Steel Mill	106	33
Guadalupe	Republic Plastics Foam Plant	0	162
Hays	Texas Lehigh Cement Plant	2301	180
Hays	Hays Energy Power Plant	211	127
Karnes	Burda Golden Production Facility	170	200
Karnes	Gramm Production Facility	153	230
Karnes	Patton Trust N Production Facility	129	203
Karnes	Patton Trust S Production Facility	125	245
Karnes	McAlister Production Facility	123	236
Karnes	Love Crews Production Facility	123	173
Karnes	ETC Texas Pipeline Kenedy Plant	119	54
Karnes	Dickson Allen Production Facility	119	223
La Salle	Plains Pipeline North Terminal	0	252
Live Oak	Three Rivers Refinery	360	431
Live Oak	Live Oak Compressor Station	56	4315
Zavala	Paradigm Energy KM East	40	154

Table 2-6: Total Point Source NO_X and VOC Emissions for the SA-NB MSA and Outlying Counties, 2015

The TCEQ maintains a database of major point sources across the state that is updated every year. The latest update to this Point Source Emissions Inventory was for 2017. Any point source of NO_X or VOCs in the SA-NB MSA was located using Google Earth and TCEQ permits. Figure 2-14 and Figure 2-15 show the locations of point sources of NO_X and VOCs, respectively. Also displayed is the amount of NO_X or VOC emissions that each point source generates. It is useful to geographically represent these major point sources so that, in conjunction with trajectory analyses, the transport of these emissions can be better understood.

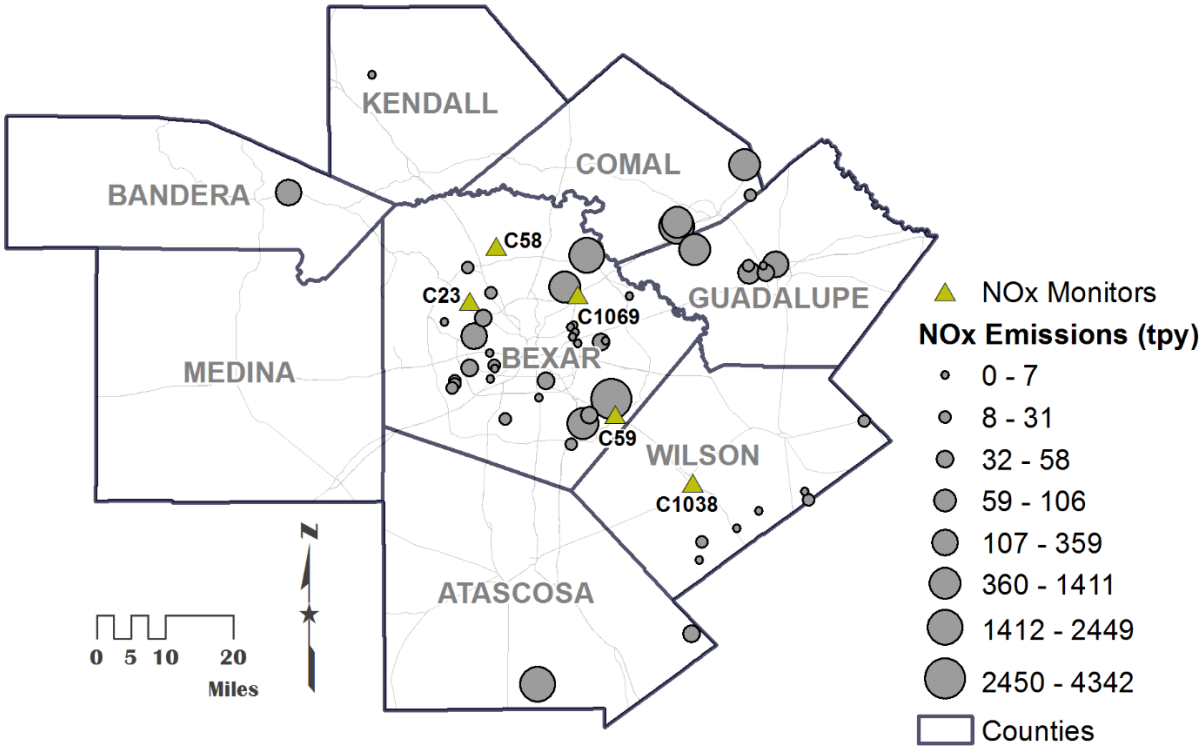


Figure 2-14: Major Point Sources of NO_X in the SA-NB MSA (2015)

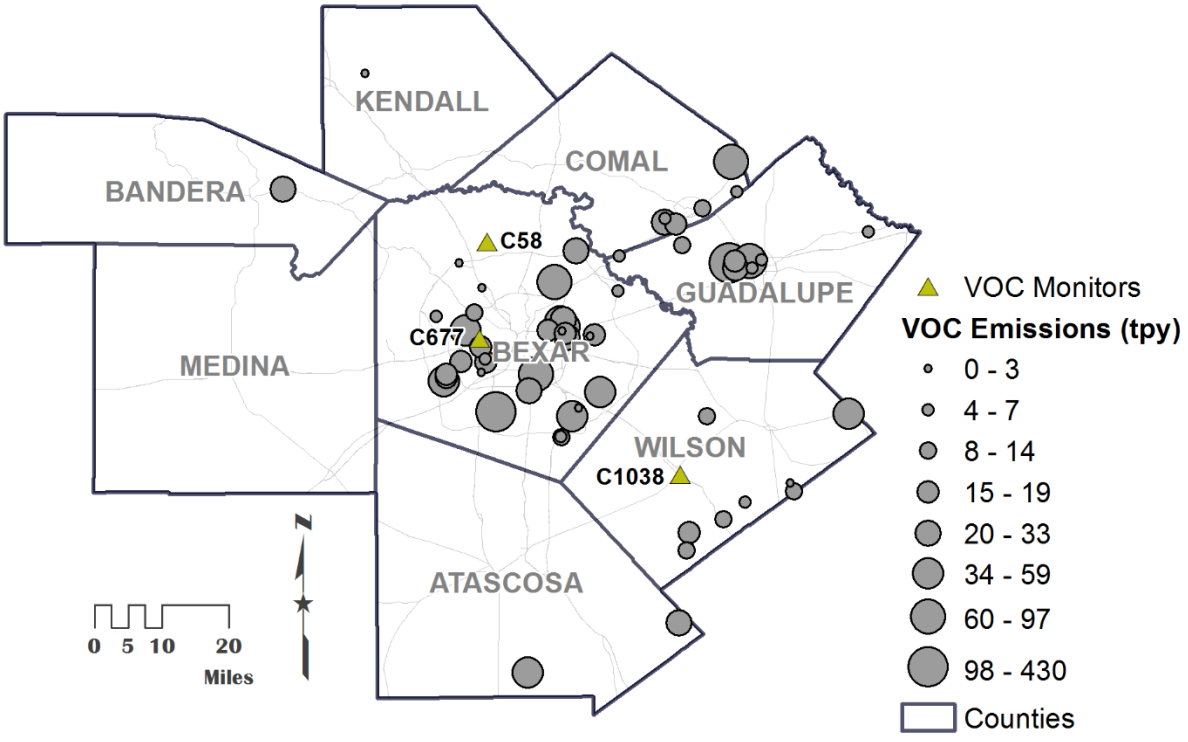


Figure 2-15: Major Point Sources of VOCs in the SA-NB MSA (2015)

2.8 Photochemical Modeling

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[5] was based on a May through September 2012 episode provided by TCEQ and refined by AACOG with regional emissions inputs.[6] The 2012 model was projected to 2018 using forecasted changes in anthropogenic emissions.

Incremental Emission Reductions Analysis. Increments of NO_X and VOC precursor emissions were removed from the 2018 projection to determine the percentage of reduction required for the MSA to meet attainment standards. Nine scenarios were analyzed at several ozone monitoring sites. The scenarios included reductions in NO_X and VOC at increments of 25%, 50%, and 75%. Results from C58, which is the regulatory monitor that typically records the highest ozone, are depicted in Figure 2-16.

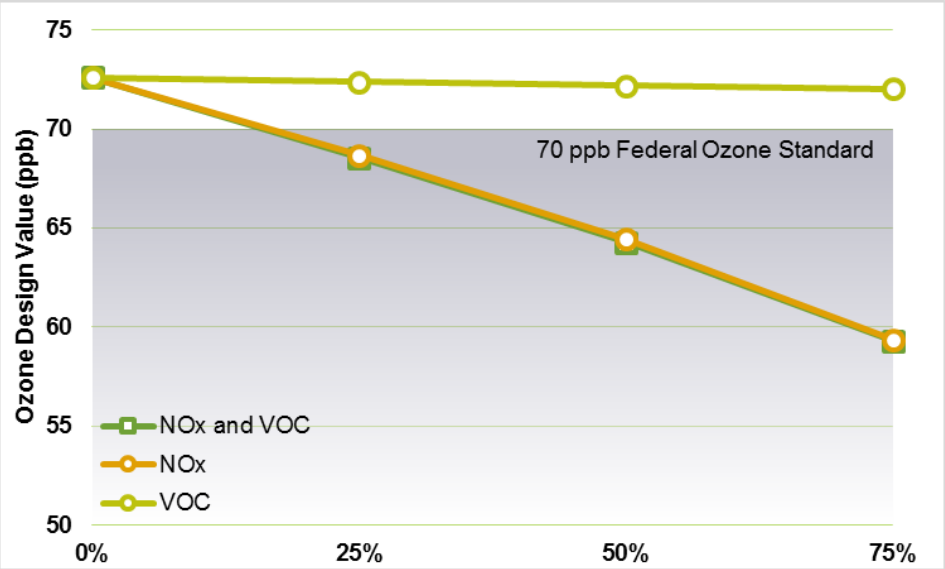


Figure 2-16: Predicted Ozone Design Value at C58 after Removing Local NO_X and VOC Emissions, 2018

[5] Alamo Area Metropolitan Planning Organization. (October 2015). "Ozone Analysis June 2006 Photochemical Modeling Episode Technical Report," prepared by AACOG.

[6] 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.

Overall results from the other regulatory ozone monitors in the region were similar to C58, indicating that the model was significantly more sensitive to changes in NO_X emissions reductions (verses VOC), which means that strategic controls that are designed to reduce NO_X emissions would likely be more effective at reducing ozone. Results also indicate that in order to meet the 70 part per billion (ppb) threshold established by the 2015 ozone NAAQS, the region would have to reduce NO_X emissions by approximately 25%.

Transport Analysis. AACOG also conducted an Anthropogenic Precursor Culpability Assessment (APCA) to determine sources of emissions transport. One of the categories AACOG reviewed was emissions source groupings for all regions in the modeling domain (Figure 2-17) to determine their impact at the regulatory monitors in the San Antonio-New Braunfels MSA. At 32 percent, the largest emission source contributor to ozone readings at C58 on days > 70 ppb was point sources. As Figure 2-18 shows, the second largest source contributor was boundary conditions at 28%, followed by on-road emissions at 17% and non-road/off-road equipment at 12%.

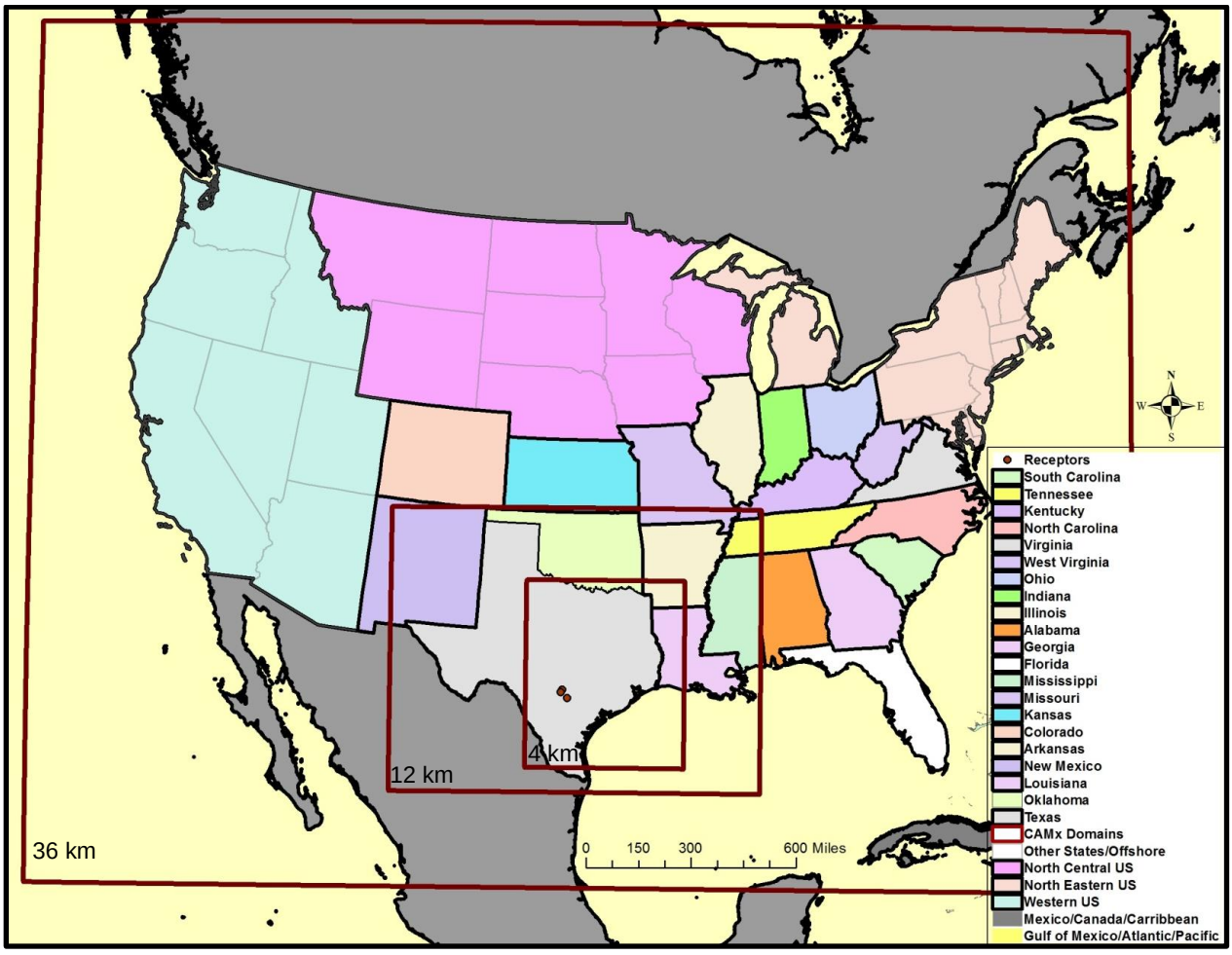


Figure 2-17: APCA modeling domain at 36 km, 12 km, and 4 km grid levels

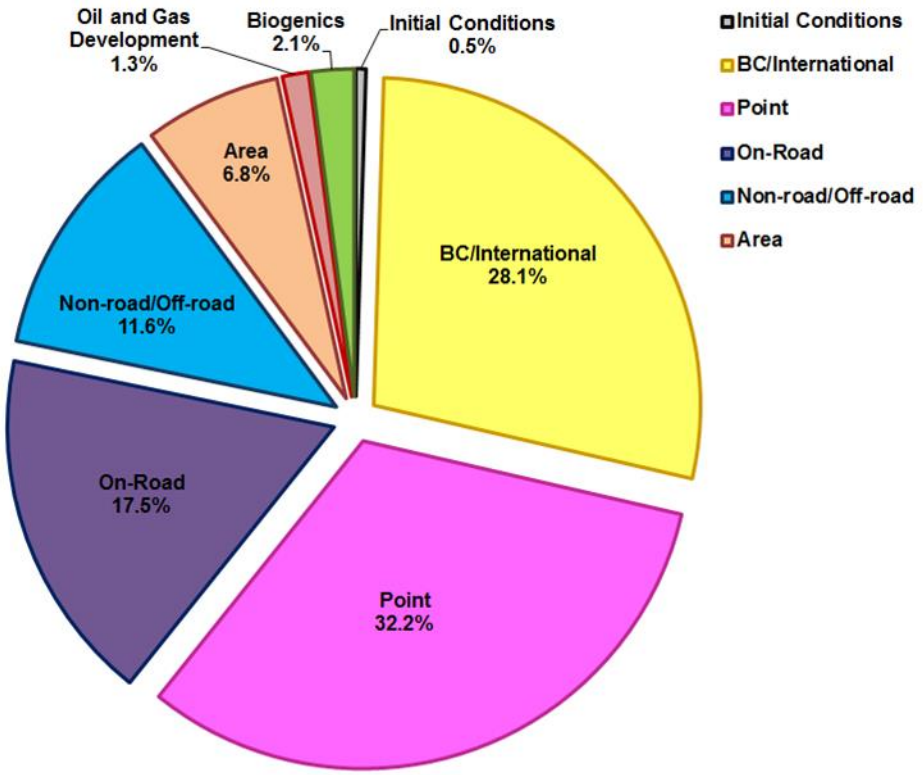


Figure 2-18: All Emissions Sources for Average Peak 1-Hour Ozone on Days > 70 ppb at C58, 2018

For runs conducted to determine the geographic regions with the greatest impact on ozone concentrations in the San Antonio area, results indicated that Texas was the largest contributor, ranging from 52% to 62% of peak hourly ozone on design value days at the regulatory monitors. When looking at other-than-Texas sources, the Gulf of Mexico, Atlantic, and Pacific Ocean regions contributed 25%-27%, and Louisiana contributed 17%-21% (Figure 2-19). Other larger contributors included the western portion of the U.S., Oklahoma, North Central U.S., and Kansas. Refer to Figure 2-16 for geographic representation of the various regions and states. **It is important to note the large share of ozone that comes from international sources.**

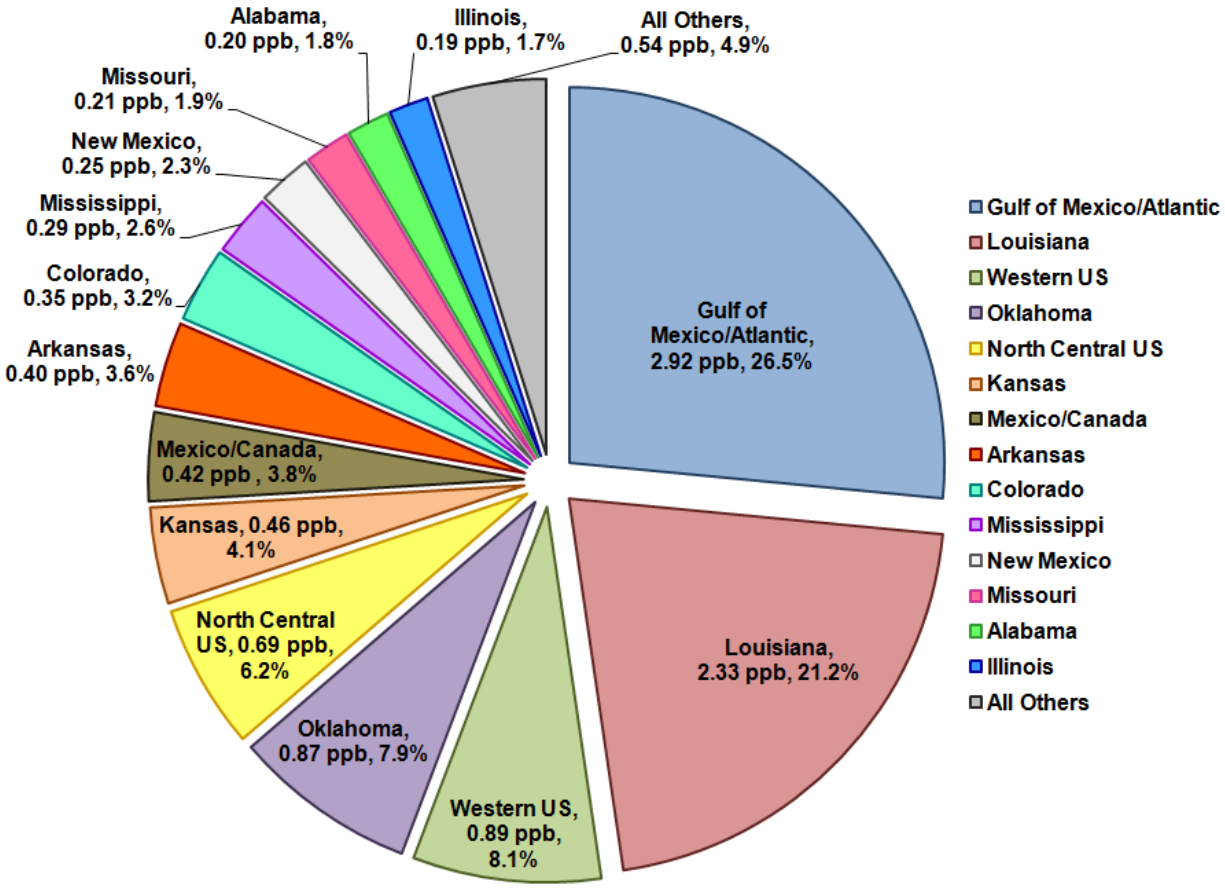


Figure 2-19: States/Other Regions besides Texas Sources for Average Peak 1-Hour Ozone on Days > 70 ppb, 2018

CHAPTER 3: Regional Planning

3.1 Formation of the Air Improvement Resources (AIR) Committee

Tthe San Antonio region has a history of air quality planning and voluntary control implementation aimed at keeping the region's air quality within the thresholds established by the 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. One of the accomplishments of the AQTF was the establishment of an Ozone Action Day program in the region.

In response to EPA's proposed eight-hour ozone NAAQS in the summer of 1996, the AQTF shifted its focus to providing comments and guidance on the impact of the new eight-hour ozone NAAQS. Data collected at regional monitors indicated that on high ozone level days, background levels arriving in the area 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 Natural Resource Conservation Commission (TNRCC), precursor to the TCEQ. 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-NB MSA from slipping into nonattainment of the ozone standard.

3.2 Early Action Compact

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 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 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.

3.3 Ozone Advance Program

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, 2014, and 2015 the Committee submitted Path Forward plans for the region that described activities implemented by multiple regional government agencies, industries, and organizations to reduce NOx and VOC emissions.

3.4 Strategic Plan

On September 30, 2015, the AIR Executive Committee formally adopted the Air Quality Strategic Plan for the Alamo Region, which outlines specific steps the region will implement to reduce ground-level ozone. This plan supports the work of the AIR Committees and complements the Ozone Advance by establishing planning and outreach goals and describing specific actions necessary to address local ozone issues. In addition, the strategic plan is considered a perpetual document and will continue to guide local efforts in the event EPA concludes the Ozone Advance program or the region's eligibility changes. The Alamo Region's Strategic Plan describes four focus areas that represent key local actions for improving air quality and enhancing public health. These key actions include:

- Defining the ozone challenge by identifying the factors that contribute to local elevated ozone concentrations and developing a list of appropriate strategies based on this comprehensive evaluation.

- Building support among local leaders and influencers for the regional air quality planning process by encouraging greater participation from governments,

businesses, and industries in our AIR Committees and increased coverage of ozone issues by the media.

- Developing an effective outreach and education campaign by partnering with local governments, schools, organizations, media, and businesses to expand available resources and build an informed populace.

- Implementing a program to encourage adoption of appropriate control strategies by businesses, governments, industries, schools and individuals.

The AIR Committees have been updated on the status of plan elements and progress towards the goals of the plan. The following examples demonstrate the range of measures AACOG, local governments, and other stakeholders have implemented to meet the goals of the strategic plan since its implementation in September 2015.

3.5 Ozone Assessment Focus

Define the region's ozone challenge in order to identify the most effective voluntary strategies for the region.

With financial support from the State, AACOG staff developed an updated Conceptual Model in 2017. This regional model identifies and characterizes meteorological and atmospheric conditions associated with high ozone concentrations, using data through 2016. The model is frequently updated with new data to facilitate analysis of the relationships between ozone concentrations (e.g., upwind and downwind measurements and seasonal variations), and wind speed, humidity, diurnal temperature changes, solar radiation levels, back trajectories, precursor emissions, and many other variables. An executive summary of the conceptual model is attached as Appendix B. With the removal of Rider 7 funding, money has not been available to update the Conceptual Model with more recent data.

The strategic location of ozone monitors provides a better understanding of the spatial extent of San Antonio's ozone problem. An ozone monitoring network assessment was completed early in 2017, which identified areas where additional ozone monitors were needed within Bexar County. Results from the study concluded that a new ozone monitor was needed in northwestern Bexar County. In response to this need, our regional utility, CPS Energy, acquired a monitor for the Government Canyon State Natural Area, which was selected as the site to meet this need. This monitor commenced operation in late August 2017. In light of the Rider 7 veto, AACOG is grateful to CPS Energy for assuming the responsibility and cost of operating and maintaining all AACOG-owned monitors.

Cost of Nonattainment Study

At the direction of the AIR Executive Committee, AACOG contracted for a 2016 study of the potential cost of nonattainment to our region once a designation has been issued. The report summarized the potential costs to the metropolitan economy that could be anticipated under a marginal or moderate nonattainment determination. In sum, the report concluded that the metropolitan economy could experience losses of up to $1 billion per year upon official designation by the EPA. As mentioned in the report, much

of the impact would be attributed to economic opportunity costs as businesses choose to expand or relocate to regions deemed as being in attainment. However, the losses would also result from a variety of costs, including:

- Lost Manufacturing Company Expansion/Relocation
- Cost of Additional Permitting
- Cost of Project Delays
- Costs of Mandated Program Operations
    - Texas Emission Reduction Plan (TERP)
    - Commute Solutions
- GRP Losses Due to Additional Inspection Fees
- GRP Losses Due to Road Construction Delays
- Costs to Reduce Point Source NOx Emissions

Further, the costs are expected to impact the eight-county region according to economic productivity. Bexar, Comal, and Guadalupe Counties would experience the brunt of these costs. The impacts to the average residents of the region would be primarily attributed to delays in transportation projects which would need to adhere to conformity requirements mandated by a nonattainment designation. Conformity requirements ensure that projects will not exacerbate current air quality levels. These determinations would result in delays for transportation projects until conformity requirements are met. At higher levels of nonattainment, industry offsets would be mandated, which essentially cap emissions and disallow any significant added emissions from new business or manufacturing processes.

While the 2016 nonattainment study did not incorporate region-wide health impacts, data collected for our region indicate that NOx emissions have been trending downward despite significant population growth. One consideration is that costs in complying with nonattainment regulations may indirectly affect funding available to address public health needs arising from higher ozone levels.

Identify key local sources of precursor emissions that contribute to elevated ozone concentrations.

In 2019, two photochemical modeling projects for the City of San Antonio and Bexar County and the Alamo Area MPO were conducted. This project includes important emissions inventories, which are critical inputs to the model. Results from the photochemical model help estimate ozone reductions associated with the implementation of various local control strategies. Also included in the photochemical modeling results were Anthropogenic Precursor Culpability Assessment (APCA) runs, which identify contributions to San Antonio's ozone from multiple source areas[7],

[7] Multiple source areas include counties within the San Antonio-New Braunfels MSA, other large urban areas in Texas, and other states.

categories, and pollutant types. The contributors include on-road, point, non-road, off-road, oil and gas, and area emission sources.

AACOG maintains a list of the largest NOx and VOC sources in the region through the State's permit database. In 2015, the San Antonio city council adopted an ordinance which will enhance this information by requiring business facilities with air pollution emissions to register with the San Antonio Metropolitan Health District (SAMHD), the public health agency charged with the responsibility for providing public health programs in San Antonio and unincorporated areas of Bexar County. The intent of registering these facilities is to identify local ozone sources and develop steps to mitigate emissions. During 2017, more than 1,000 business facilities registered with the program. Education was provided on the City's idling restrictions, prohibited use of coal based tar sealant products, emission reduction and the registration program during each site visit. These efforts should enable development of a database of emissions sources and emission rates that can be compared with local NOx and VOC emission inventories and assist in determining the impact of these emissions on ambient ozone levels.

Additionally in 2017, the City of San Antonio developed and implemented an air quality outreach campaign called, "Breathe Today. SA Tomorrow." This campaign focused on the economic and public health costs of the city potentially being designated as nonattainment according to NAAQS standards. This effort included paid radio and television spots as well as digital media ads promoting campaign.

3.6 Control Strategy Focus

Assist local governments with policy implementation and outreach.

Between March and June 2016, three local governments in the AACOG region implemented anti-idling ordinances: City of Leon Valley, Bexar County and the City of San Antonio. The anti-idling policies limit heavy-duty vehicles (>14,000 tons gvw) from idling for more than five minutes. Exemptions exist for certain applications, such as emergency vehicles, vehicles that must be run in order to perform work, and those required to idle per manufacturer's operational guidelines. More information about these and other local voluntary controls are provided in Chapter 4.

Encourage voluntary adoption of ozone control strategies among the region's local governments, businesses, industries, schools, and other organizations.

Commute Solutions and Clean Cities coordinated efforts to encourage businesses to support sustainable transportation programs, including carpool, subsidized bus passes and green fleets. Commute Solutions staff presented to area chambers of commerce, including the Northside Chamber, Southside Chamber, Greater San Antonio Chamber and regional chambers, such as the New Braunfels Chamber, Seguin Chamber, and Bulverde Spring Branch Chamber. Clean Cities staff met with multiple fleet managers at school districts and municipalities to consult on alternative fuel vehicles and provide information regarding funding from the Volkswagen Environmental Mitigation Trust settlement.

In 2015, AIR Executive Committee Chairman Ron Nirenberg launched a series of roundtable meetings with industries and local agencies to gather their input on appropriate voluntary ozone strategies for the San Antonio region and to identify barriers to strategy adoption. The effort resulted in a list of widely applicable voluntary measures that may be implemented by virtually any employer and corresponding commitments to them. In 2016, AACOG continued to promote voluntary commitments to these measures.

Table 3-1 indicates the commitments made by each of these participants.

Table 3-1: Commitments to Air Quality by Local Stakeholders

	Bexar County	CPS	Garden Ridge	Hill Country Village	Leon Valley	Live Oak	Marion	San Antonio	SWRI	STEER	TxDOT SA District	Universal City	VIA	AACOG
Fleet Operations, Maintenance, and Vehicle Options														
Provide regular maintenance on fleet vehicles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ensure tires on fleet vehicles are properly inflated	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ensure no extra weight is carried in fleet vehicles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Right-size fleet vehicles for appropriate tasks	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Implement company no-idle policy for fleet vehicles	✓	✓	✓		✓	✓	✓	✓	✓				✓	
Incoproate EV or high MPG vehicles into fleet	✓	✓	✓		✓			✓	✓	✓	✓		✓	
Provide EV charging for employees and guests	✓	✓						✓	✓	✓				✓[1]
Energy Efficiency and Resource Conservation														
Purchase environmentally friendly equipment (Energy Star) and vehicles	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Provide recycling options for employees	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Install programmable thermostats in workplace	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	
Adopt alternative energy (solar panels, Windtricity, Solar Choice Program)	✓	✓	✓		✓			✓		✓		✓	✓	
Install motion sensing light fixtures/switches	✓	✓			✓		✓	✓	✓	✓			✓	
Install water-saving faucets, showerheads, toilets and sprinklers	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	
Employee Commuter Benefits														
Provide space for employees to store food and eat at work	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Participate in a carpool subsidy program for employees								✓					✓	
Participate in a bicycle subsidy program for employees								✓						
Implement a telework program								✓	✓	✓	✓[2]		✓	✓
Offer compressed and alternative work schedules	✓	✓		✓	✓			✓		✓	✓		✓	✓
Offer pre-tax benefits to employees		✓							✓		✓[3]			
Provide preferred parking space for carpool vehicles	✓		✓					✓	✓				✓	
Promote employer-specific carpool matching service (NuRide.com)		✓			✓			✓	✓		✓		✓	✓
Participate in the guaranteed ride home program (AACOG's C.A.R.E.)	✓	✓						✓	✓		✓		✓	✓
Provide secure, on-site bicycle parking	✓		✓		✓	✓		✓	✓	✓			✓	
Provide showers and lockers for employees who bike or walk	✓	✓	✓	✓	✓	✓		✓		✓	✓		✓	
Participate in commuting awards program (AACOG's Walk & Roll Challenge)	✓	✓						✓	✓		✓[4]		✓	✓
Provide lunchtime shuttle options									✓[5]				✓	
Provide transit subsidy (VIA bus passes)	✓	✓						✓	✓				✓	✓
Install a public traffic notification system	✓							✓	✓		✓			
Other														
Communicate Ozone Action Day notices to employees	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

NOTES
1 AACOG obtained information on charging stations and has requested building manager consider installing the charging equipment
2 TxDOT conducted a pilot program in Austin, which is under review for possible state-wide adoption
3 TxDOT employees are eligible for commuter benefit spending accounts (tax free account), however there is no subsidy program with the State
4 TxDOT maintains a CAP program which allows employees to earn points for 2, 4 or 8 hours off for logging clean commute habits
5 SWRI maintains an employee cafeteria on site

3.7 Inter-Regional Collaboration

Joint air quality planning efforts between AACOG's Air Improvement Resources (AIR) Executive Committee and the Capital Area Planning Council of Governments' Clean Air Coalition (CAC) continued with meetings in November 2016 and March 2017. For these

meetings, the CAC was chaired by Travis County Judge Sarah Eckhardt and the AIR Executive Committee was chaired by Councilman Ron Nirenberg[8]. The CAC represents local governments in the Austin-Round Rock MSA. Key agenda items from these meetings included a joint resolution outlining air quality priorities for the 85th Texas Legislature; a policy position letter on active state legislation; the creation of a joint CAC-AIR Executive Committee Legislative Action and Policy Subcommittee; and a review and recommendations resulting from a regional air quality public opinion survey. Although the committees have mutually agreed to continue holding joint meetings in order to identify opportunities for collaboration on a larger regional scale, the elimination of air quality planning funding from the Rider 7 program will result in the discontinuation of these meetings until new sources of funding can be identified.

3.8 Regional Impacts of Statewide Funding Elimination for Air Quality Planning

In an unanticipated action at the end of the 85th Texas legislative session, Governor Greg Abbott vetoed 2018-19 biennial funding from what has been known as the Rider 7 Air Quality Planning Program. The veto statement is attached as Appendix A. This long-standing program originated in 1995 for the specific purpose of assisting near nonattainment areas across the state with air quality planning, including the Alamo Area region. The governor's action in June 2017 impacts ten near-nonattainment regions across Texas by removing $6 million in statewide funding. Among the regions affected by this action, the Alamo region is the largest by population and funding. The resulting loss of $1.4 million over the 2018-19 biennium for air quality programming in the region represents an estimated reduction of 70 percent of AACOG's Natural Resources Department funding. In addition to program revisions, the funding impact will require a modification to our community's strategic plan in order to continue the coordination of regional efforts for air quality planning.

Reorganization of the AIR Committees

With the veto of Rider 7 Air Quality Planning funding, AACOG suspended many of its functions, including hosting the AIR Technical, Advisory, and Public Education Committees. Thanks to a contract extension granted by the TCEQ, funding from Rider 7 remained through June 2018, when the final meeting of the AIR Executive Committee was held.

In April 2018, the AACOG Board of Directors voted to assume the responsibilities and duties previously performed by the Air Executive Committee and that the Board Chair appoint a subcommittee to advise the Board of Directors on policymaking. The structure of the Committee was adopted at the June 2018 Board of Directors meeting, which consists of Board members representing each of the eight SA-NB MSA counties, the City of San Antonio, the Greater Bexar County Council of Cities (GBCCC), Joint Base San Antonio (JBSA) and CPS Energy. The Air Quality Committee meets as needed to discuss and act upon policies affecting air quality in the Alamo Area.

[8]Councilman Ron Nirenberg was elected Mayor of San Antonio in June 2017.

AACOG Program Transition

In response to this action, TCEQ recommended that all affected areas submit requests to revise current 2016-17 work plans to focus on the most critical activities, including extensions of time through no longer than June 2018. AACOG staff developed a revised work plan which adhered to the following principles:

- Complete work on deliverables with significant completion
- Preserve sufficient funding to continue essential activities through June 2018
- Prioritize technical activities related to photochemical modeling
- Discontinue development of a 2018-19 TCEQ work plan
- Discontinue work on deliverables which have not achieved significant completion

While AACOG had successfully completed many committed deliverables, a number of activities will be discontinued, including:

- Ambient Air Monitoring
- Additional Monitor Purchases
- Industrial, Truck Idling, and Construction Equipment Emissions Inventories
- Development of Voluntary Control Measures
- Public Education and Outreach Activities
- Clean School Bus Program
- AIR Committee Support (except AIR Executive Committee)

The discontinued activities and prioritized continuation of technical activities resulted in the immediate elimination of 4 positions.

Activities that are prioritized and recommended for continuation with remaining TCEQ funding include:

- Development of the Conceptual Model
- Eagle Ford Shale, Commercial, Residential Emissions Inventories
- Photochemical Modeling
- Data Inputs
- Local Control Strategies

These recommendations have been submitted to TCEQ for approval.

Stakeholder Support

Once the impacts to our region were assessed, the AIR Executive Committee and the AACOG Board of Directors supported efforts by Executive Director, Diane Rath, to work with community air quality stakeholders to identify funding opportunities to continue essential technical activities. As a result of these efforts, a significant portion of funding and in-kind services have been identified to extend technical activities which were originally slated for discontinuation.

Our sincere appreciation is offered to the following entities for their contributions and commitment toward air quality planning activities:

Table 3.2: Stakeholder Contributions

Entity	Activity	Commitment
CPS Energy	Ambient Air Quality Monitoring	To continuing management of 6 AACOG-owned air quality monitors to continue the collection of air quality data for the foreseeable future as well as the addition of a new monitor at Government Canyon Natural Area
City of San Antonio (COSA)	Photochemical modeling, emissions inventory, local control strategy	$125,000 to continue technical air quality planning activities through 2018
Bexar County	Photochemical modeling, emissions inventory, local control strategy	$125,000 to continue technical air quality planning activities through 2018

In addition, the following organizations representing the oil/gas and cement industries committed a total of $57,500 in funding to continue air quality planning activities through 2018.

- South Texas Energy and Economic Roundtable (STEER)
- Texas Aggregates and Concrete Association (TACA)
- Capitol Aggregates
- Martin Marietta
- Cemex
- Alamo Cement

3.9 Restoration of Rider 7 Air Quality Planning Funding

At the end of the 86th Texas legislative session, Governor Abbott signed into law the appropriations bill, which included a provision restoring air quality planning funding (formerly Rider 7) to areas deemed “near-nonattainment”. Since Bexar County is now designated nonattainment, it is no longer eligible for this funding, but the outlying seven rural counties (Atascosa, Bandera, Comal, Guadalupe, Kendall, Medina, and Wilson Counties) each received $281,250 to engage in monitoring activities and emissions inventory improvements. This funding is more restrictive than the previous Rider 7, with outreach and education campaigns prohibited from being conducted. As of the time of this writing, a contract between AACOG and the TCEQ that would signal the start of these activities has not yet been executed.

CHAPTER 4: Voluntary Strategies

The following is a summary of voluntary ozone reduction strategies carried out by AACOG's air quality partners. Updates and additions were provided in 2019 by CPS Energy, San Antonio Water System, Bexar County, the City of San Antonio Metropolitan Health District, Texas Department of Transportation, the Alamo Area Metropolitan Planning Organization, the Oil and Gas Industry (STEER), the SA 2030 District, and Joint Base San Antonio.

4.1 CPS Energy

CPS Energy is owned by the City of San Antonio and provides energy services to the City and the surrounding areas using multiple energy sources, including natural gas, coal, nuclear, solar, wind, and landfill gas.

Ongoing Strategies

- 1,600 megawatts of wind and solar power have been added to CPS Energy's generation portfolio. San Antonio is one of the largest producers of solar energy in the state and number seven in the nation and number one for wind production in Texas.
- CPS Energy shut down the Deely coal units at the end of December 2018, reducing annual emissions by approximately 6 million tons of carbon dioxide, 3,000 tons of nitrogen oxide, and over 16,000 tons of sulfur dioxide.
- CPS Energy has a company-wide policy that minimizes the amount of idling and requires vehicles in our fleet to be shut off when not being actively used for transportation or other job functions.
- We truly believe that we are all in this together and our CPS Energy team takes its local role in protecting the environment very seriously.

Save for Tomorrow Energy Plan (STEP). The STEP aims at reducing the growth in the community's demand for electricity by 771 megawatts (MW) of electricity between 2009 and 2020, which is equivalent to the capacity of a large power plant. CPS Energy has achieved the 771 MW reduction a year ahead of schedule. CPS Energy has achieved this community goal by creating a series of consumer oriented/targeted reduction programs:

- Solar Photovoltaic (PV) Rebates are provided to residential and commercial customers. 18,500 customers have installed their own solar system with a capacity of about 140 MW-AC.

- My Thermostat Rewards offers customers programmable thermostats that help customers to conserve energy during periods of high energy demand. 150,000 customers participated in the My Thermostat Rewards.

- Commercial and Industrial Demand Response program offers rewards to commercial and industrial customers for reducing energy use on peak demand days. Customers are notified two hours before initiating energy reductions or they may receive a signal that automatically triggers load-shedding measures. The automated option opens the door for smaller commercial customers to participate in the program. 745 large businesses participated in summer 2019 and contributed about 116 MW of peak reduction is achievable.

- LED Street Light Installations in San Antonio have increased lighting energy efficiency. On average, LED streetlights are 42% more energy efficient than traditional high-pressure sodium (HPS) lighting. CPS Energy has standardized LED streetlights for all new installations and replacements. Currently, there are approximately 71,000 LED streetlights in service (57% of streetlights in the San Antonio metropolitan area). CPS Energy is working with CoSA to convert 30,000 high pressure sodium streetlights to LEDs by 2019.

- Weatherization. A weatherization program helps income-qualifying homeowners and renters reduce energy loss and costs with free energy efficiency improvements. Under the weatherization program, about 28,000 homes are completed. This resulted in an average customer savings of $400 annually per home.

Reduce My Use engages 300,000 residential customers by asking them to reduce energy use on peak days using gamification. On peak days, customers will receive an email and/or phone call with tips on how to trim energy use. The next day, customers will receive feedback on how well they did. The program results in 19 MW of load reduction in total and survey shows 75% of contacted customers took an action to reduce energy use.

Simply Solar. In addition to the rebate for homeowners who purchase solar panels, CPS Energy has initiated two new programs to help drive the adoption of clean energy since the last update. The first is Roofless Solar, a community solar project, and the second is SolarHostSA, a program where the CPS Energy customer hosts panels on their roof at no cost. Together, these two programs are trademarked as Simply Solar, and are designed to increase access to solar power to a greater number of customers.

SolarHostSA allows CPS energy customers to rent their roof space to a developer who installs and maintains the solar system at no cost to the consumer. CPS Energy buys the power produced and the customer receives a credit on their utility bill for the use of their rooftop. The pilot program is capped at 5 MW of additional capacity, or about 600 customers.

The Roofless Solar community solar project allows those unable (or unwilling) to install solar on their own home to participate in CPS Energy's renewable energy programs, including renters. The first Roofless Solar project in San Antonio, is a 1.2MW farm

developed by Clean Energy Collective. This pilot allows residential, commercial, and non-profit customers within the CPS Energy service area to buy solar panels located in the solar farm and have their bill credited with the energy created from those panels. The solar farm began commercial operation in 2016. CPS Energy added a second community solar project in 2019. This second project is a partnership with Go Smart Solar, a local technology company. Go Smart Solar is installing solar on parking structures at commercial office buildings across the city. The solar parking structures provide shaded parking to tenants (for a fee), with the proceeds going to help offset the cost of the project. The end result is a very attractive price of solar for customers who elect to purchase panels in the project. The goal is to install 5 MW of solar in this second phase.

Community Solar (Phase 1)

- 1 MW system located at Loop 1604 and Highway 87
- 240 Customers purchased the entire project, average customers purchased 45 panels

Community Solar (Phase 2)

- 5 MW being installed on parking structures across city
- Aiming to serve additional 600-800 customers

Figure 4-1: CPS Energy customers contribute 80 MW of rooftop solar capacity. Simply Solar programs offer greater opportunities for customers to take advantage of renewable energy

Battery Storage. CPS Energy was awarded a $3 million New Technology Implementation Grant (NTIG) by the TCEQ. CPS Energy is using the grant to help fund a Solar+Energy Storage System project. The project will help achieve a cleaner energy portfolio by implementing technology to reduce the emission of pollutants, consistent with the objectives of the NTIG program. The project combines a 5 MW Solar Energy Plant with a 10 MW – 1MWh battery which will be used to shift clean energy to peak demand periods and also provide ancillary services in the Electric Reliability Council of Texas (ERCOT) market.

***Flexible* Path for Generation.** Our core business initiative is to responsibly manage a diverse and dynamic power generation portfolio. Over the years, as new technologies have emerged, we have positioned ourselves and our community to benefit from those new technologies while providing our customers with reliable, safe, secure, resilient, affordable, and environmentally responsible energy solutions. As we build our path for the future, we understand that we need to stay flexible to continuously meet the needs of our community.

Our goals include:

- Close two older coal plants (Deely) in 2018 - GOAL ACCOMPLISHED
- Position ourselves to integrate new and emerging technologies like battery storage, electric vehicles, and others that are yet to be found
- Continue to expand our solar and wind resources
- Add more programs and services like energy efficiency and demand response

Years ago, we started the process to reduce our emissions and increase our renewables. By 2040, we are predicting even larger decreases in older technologies and exponentially larger increases in newer and cleaner technologies.

INCREASES IN RENEWABLES GENERATION AND DECREASES IN COAL AND GAS

Our generation mix has changed considerably since 2010. The positive trends will accelerate with our Flexible Path into 2040.

- Renewables increased 69% from 2010 to 2018 and will increase an additional 127% under our ***Flexible* Path**
- Natural Gas increased 18% from 2010 to 2018 and will decrease 72% under ***Flexible* Path**
- Coal decreased 44% from 2010 to 2018 and will decrease another 61% under Flexible Path

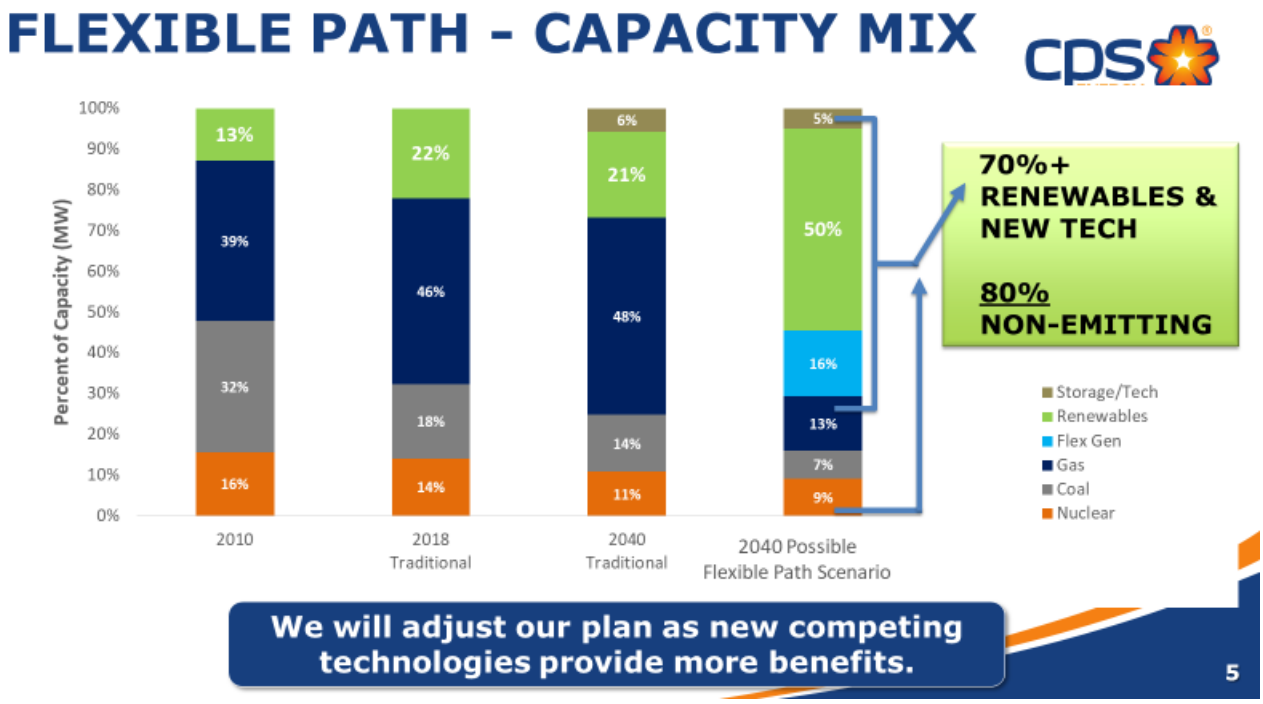
FLEXIBLE & ADAPTABLE PATH TO A BRIGHTER, CLEANER FUTURE

Our ***Flexible* Path** will update as technology and solutions emerge. Under this ***Flexible* Path** we want to make sure that we:

- Are flexible and adaptable
- Incorporate stakeholder feedback
- Provide cost-effective energy options to our customers
- Deliver value
- Are committed to a healthy community

Strategic and operational flexibility will allow us to remain successful as we move forward.

- A diverse generation portfolio provides value and reliability to our customers
- Our focus on the environment and improving air quality for our community is a top priority
- Our traditional generation assets continue to be an important bridge to the future to ensure value and reliability to our customers
- This flexible path strategy positions us with the ability to embrace the rapidly changing utility landscape
- We continue to invest in smart grid technology to support reliability, efficiency and energy management tools for our customers



CPS Energy is further reducing emissions through technology improvements and through the management and expansion of a diverse energy generation portfolio.

- Renewable Energy. CPS Energy's goal was to achieve 1,500 MW of renewable

energy capacity by 2020 – approximately 20% of generation capacity. As of January 1, 2018, CPS Energy had achieved this goa. CPS Energy currently has 1,600 MW of renewable-generated electricity in commercial operation, which includes wind, utility-scale solar and rooftop solar, and landfill gas. This equates to approximately 22%, including energy efficiency and demand response.

- Emissions Control Technology for Coal Units. CPS Energy has invested more than $253 million in emission control technologies at its coal units since 1997, including the installation of several NOx reduction technologies such as a Separated OverFire Air (SOFA) system, NOX combustion controls such as low NOx burners, and selective catalytic reduction (SCR) technology.

- Shut down of J.T. Deely Coal-Powered Plant. CPS Energy shut down Deely Units 1 & 2 at the end of 2018. There has been be an additional 30% reduction of nitrogen oxide emissions from the year 2014 after the units stopped running.
- Through 2018, CPS Energy reduced Nitrous Oxide (NOx) emission by over 65% since 1997 and is approximately 78% through 2019. Sulfur dioxide (SO2) emissions are reduced by approximately 96% since 1997 through 2019, primarily due to the shutdown of the J.T. Deely Units.

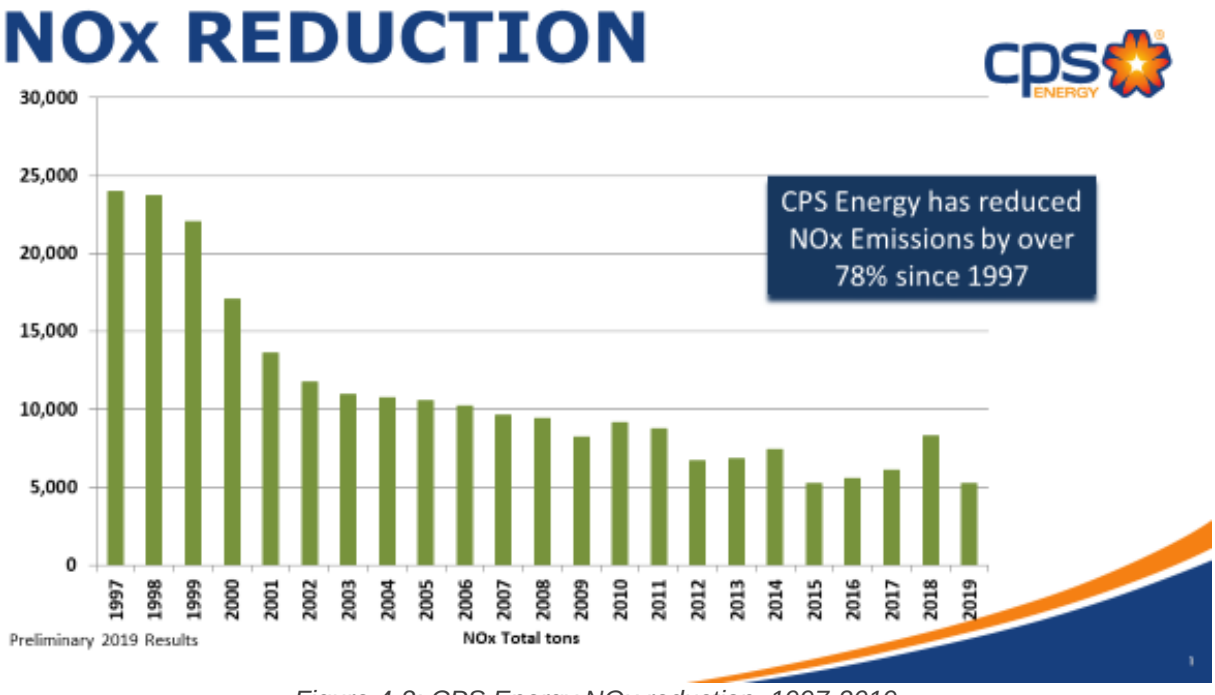


Figure 4-2: CPS Energy NOx reduction, 1997-2019

Other Programs

- Mow Down Smog Rebates program provides customer rebates for purchasing electric and battery-operated lawn equipment instead of gasoline-powered lawn equipment for improving air quality. Each year the program runs from March 1 to Aug 31. 591 Mow Down Smog rebates were issued to customers in 2019, totaling $29,175 in credits. The rebates include: $60 for cordless mowers and push reel mowers, $30 for corded mowers, and $15 for string/hedge trimmers, blowers, and edgers. Customers may receive a rebate for only one item per year, but can buy something new each year. Since the program began in 1998, over 11,600 rebates and $436,000 in credits have been distributed to customers.

- Green Shade Tree Rebates are provided to customers to create shade, which keeps homes cooler and reduces energy use. There's a $50 rebate per tree, with a minimum size of 5 gallons, for up to 5 native species trees. From October 2018 to December 2019, 658 tree rebates were issued to customers, totaling $32,900 in credits. As of December 2019, over 11,319 trees have been planted through this program since 2010. With funding of $50,000, CPS Energy continues to partner with the City of San Antonio for the Green Shade Tree Rebates. In addition, over 1,200 trees are distributed to customers each year at various community events. An additional 100 trees are planted at Habitat for Humanity homes each year. Over the past 10 yrs., more than 20,000 trees have been provided to customers through rebates and at community events, which create shade, resulting in cooler homes and lower energy usage.

- **Plug-In Hybrid Electric Ford F-150s**. In 2018, CPS Energy purchased 34 XLP plug-in hybrid electric Ford F-150 pickup trucks, making CPS Energy one of the first in Texas to use the vehicles, and in 2019 purchased 10 Ford XL F-150 hybrid pickup trucks and 15 Ford F-250 non-plug-in hybrid pickup trucks. The new vehicles replaced a less efficient fleet of vehicles by offering more than 50% better fuel economy, resulting in emission reductions – about 7.75 tons of nitrogen oxides (NOx) and 58.7 tons of carbon dioxide (CO2). In 2019, 14 hybrid Volts were replaced with electric vehicle sedans. The enterprise fleet also includes 5 hybrid boom trucks that were put into service in 2019. Ethanol (an alternative fuel) is also used in 278 fleet vehicles.

- **Public EV Stations.** CPS Energy maintains a network of 150 Level 2 charging ports around San Antonio, and overall the city has about 240 charging ports. In April, Electrify America opened San Antonio's first EV Fast Charging Station.

4.2 San Antonio Water System (SAWS)

The San Antonio Water System (SAWS) is a public utility owned by the City of San Antonio that is responsible for water, wastewater, storm water and reuse in Bexar County. SAWS has implemented numerous activities that impact air quality through water conservation, which reduces the energy needed to pump and deliver water for daily use, and has implemented other strategies that reduce energy use, such as participating in energy-demand programs and building and managing their facilities responsibly.

Ongoing Strategies – Updated since 2016 Update

Commercial and Residential Water Conservation Programs

- Total annual water savings of approximately 3,515 acre-feet with 2,314 acre-feet of peak savings achieved through:
  - 5 commercial custom rebate projects for business customers
  - 466 commercial and residential irrigation and landscape rebate projects
  - 694 low-income plumbing assistance visits
  - 1,886 WaterSaver Patio and Landscape Coupons Redeemed
  - 377,200 sq/ft of turf grass converted
- Provided 3,055 consultations for commercial and residential customers
- 2017 Drought regulations:
  - Savings associated with water waste citations and warnings added 23.82 acre-feet of savings

Reuse and Water Management

- The nation's largest (130 miles) direct recycled water delivery system for use by golf courses, parks, commercial and industrial customers, as well as San Antonio's famous River Walk
- The nation's second largest aquifer storage and recovery facility
- The only U.S. city in which all three products of wastewater treatment (gas, solids and water) are commercially sold or recycled

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Energy Management

- Energy Conservation Measures (ECMs): Through participation in CPS Energy's Commercial Energy Efficiency Program, SAWS has implemented multiple ECMs including lighting, HVAC, building envelope, chiller, water, and wastewater process upgrades, among others. Below is a list of some completed ECMs:
  - Stephen Clouse Water Recycling Center LED Lighting Retrofits
  - Leon Creek Water Recycling Center Blower & Aeration Controls Upgrade
  - Leon Creek Water Recycling Center LED Lighting Retrofit
  - Central Chilled Water Plant LED Lighting Retrofit
  - Stephen Clouse Water Recycling Center High Efficiency Chiller Upgrades
  - Stephen Clouse Water Recycling Center Variable Refrigerant Flow (VRF) System Integration
  - Stephen Clouse Water Recycling Center Roof Insulation Upgrade

    - SAWS Headquarter Towers High Efficiency Chiller Upgrades
    - SAWS Headquarter Towers High Efficiency Uninterruptable Power System (UPS) Upgrades
    - Chilled Water Plant High Efficiency Chiller Upgrades
    - Chilled Water Plant VFD Control Additions
- Demand Response: CPS Energy's Demand Response program is a voluntary load curtailment program for its commercial and industrial customers. The program is designed to reduce CPS Energy's peak load growth by incentivizing customers to shed electrical loads on peak summer days
    - To date, SAWS participation has yielded energy demand reductions of over 400MW
- Biogas: SAWS is partnered with Ameresco, Inc. to treat, transfer, and sell biogas which is a byproduct of the wastewater treatment process
    - Harnessing these byproducts is beneficial to the environment because it allows biogas to be converted and used rather than "flared" and released into the air
    - Over 900,000 cubic feet of gas per day is treated
- Solar Energy: The Stephen M. Clouse Water Recycling Center is home to a large solar farm which provides clean renewable energy to CPS
- All new infrastructure is designed and built with energy efficiency as a key component

Facility Management

- North Side and the West Side Service Centers have been placed in strategic locations to accommodate SAWS' shifting geographical customer base, reducing drive times and mileage on SAWS fleet
- Most SAWS facilities with HVAC are controlled by a Building Automation System (BAS) which ensures efficient use and control of the building's heating and cooling needs
- Service Center Administrative Facilities are being built to LEED Silver equivalency

New/Proposed Strategies

Energy Management

- Energy Plan: SAWS' Office of Energy Management is developing an energy plan which will further solidify SAWS commitment to energy efficiency and provide a road map for energy management moving forward. Key plan components include:
    - Benchmarking and Goal Setting
    - Development of an Energy Committee
    - ECM Implementation
    - Renewable Energy
    - Track Progress & Publish Results

- Energy Tracking Tool: Energy Management is working to further improve energy benchmarking by developing a comprehensive data management tool that allows staff to easily compare energy and water data together to better understand operational energy efficiency and identify opportunities
- Energy Assessments: Energy Management will work with engineering consultants to perform energy audits and identify ECMs
    - Energy Management is identifying various infrastructure, operations, etc. that have high energy savings potentials and are good candidates for energy assessments
    - From the findings in these assessments, SAWS will develop and implement the ECMs in order of impact, practicality, etc.
- Peak Demand Reduction Program: Energy Management is working to develop a program and plan that will help SAWS reduce its peak demand energy use throughout the year
- Renewable/Alternative Energy: Energy Management is reviewing and studying potential renewable energy opportunities such as additional solar, hydropower, and other renewable energy sources
- City of San Antonio Benchmarking Advisory Committee: SAWS Energy Management is on the City's Benchmarking Advisory Committee which aims to implement a commercial benchmarking program to help improve building energy performance throughout San Antonio

Fleet & Facility Management

- East Side Service Center Retrofit: Demolish a portion of the existing east side service center and construct a new service center to meet LEED Silver equivalent standards
- Electric Vehicles: SAWS is discussing how to begin incorporating electric vehicles into its fleet. Currently, electric vehicle charging infrastructure is a key challenge that is being evaluated and studied
- Future Service Center Administrative Facilities will be built to LEED Silver equivalency

4.3 Bexar County

Bexar County is the fourth largest County in Texas and the 17th largest County nationally. Bexar's population is rapidly approaching two million.

Ongoing Strategies

Vehicle Idling Limitations. Bexar County has regularly participated in AACOG's air quality activities. On May 3, 2016, the county's leaders increased its air quality planning a step further by adopting court order for Vehicle Idling Limitations, a state rule enforceable by local governments through a memorandum of agreement with the TCEQ. The anti-idling rule restricts heavy-duty vehicles with a gross vehicle weight of greater than 14,000 pounds from idling for more than five minutes within Bexar County.

Bexar County's outreach efforts related to the anti-idling rule have targeted trucking companies, truck maintenance facilities, and truck stops. Their strategy began with distributing informational flyers, providing consultations, and encouraging compliance with the anti-idling court order. In the past year, routine scans of local truck stops have been implemented to educate people (mostly truck drivers) about idling. Informational signage has been put up in several local truck parking areas as an additional effort to educate our truck driving population.

While efforts are constrained due to staffing limitations, Bexar County plans to expand resources for these efforts by 2018. In full support of the City of San Antonio's air quality programs, Bexar County intends to partner with the City and conduct similar public outreach activities corresponding to San Antonio's recently enacted anti-idling ordinance. Bexar County continues to work with the City of San Antonio on anti-idling and education of construction works on the need to shut down construction equipment while not in use, passing out incentives (cooling scarfs, lunch boxes, etc.) to contractors who do not idle.

New/Proposed Strategies

Bexar County has formally made Air Quality part of the Storm Water Quality program and, along with the City of San Antonio anticipates assisting AACOG to address its air quality funding gap for activities that have been discontinued as a result of the Rider 7 Air Quality Planning veto.

Since the elimination of air quality planning funds also impacted AACOG's ability to administer the region's air quality stakeholder committees (Air Technical, Air Advisory, and AIR Public Education), the County and City are working together with local citizens and citizens' groups to establish complementary stakeholder committee/advisory groups to assist the Air Executive Committee in its decisions.

Bexar County is also exploring other control strategies, such as vehicle use policies aimed at further reducing emissions. The County is also assessing the feasibility of instituting a county-wide burn ban on high ozone days.

4.4 City of San Antonio (CoSA)

Ongoing Strategies – Updated since 2016 Update

4.4.1 Operations

Emissions Testing. The Building Services and Equipment Department implemented a modified Inspection and maintenance (I/M) program. All City vehicles are tested using a four-gas emissions analyzer during an annual safety inspection. Any identified problems are corrected and the vehicle is re-tested.

Ozone Action Day Plan. CoSA updated its Ozone Action Day Plan, which establishes operating guidelines and procedures for reducing emissions of ozone-forming compounds into the atmosphere on Ozone Action Days and throughout the ozone season.

Solar Trash Compactors. CoSA has installed 25 solar trash compactors in city parks to reduce the number of driving trips needed to empty the trash bins.

Solar Energy. The City operates 363,072 kWhs of photovoltaic panels affixed to municipally-owned building rooftops and to solar shades in parking facilities. An additional 293 kilowatts will be installed on four city facilities on December 31, 2017 through the CPS Energy SolarHost SA Program.

City Fleet Alternative Fuel Composition. The City's fleet includes 14 CNG refuse trucks, 77 light-duty pickups and vans, and 456 light-duty hybrid electric sedans.

River Barges. In 2018, San Antonio turns 300. To celebrate its Tricentennial and commitment to a sustainable future, the city is reimagining its fleet of water taxi, tour and charter barges that service its world-famous River Walk. Each of the 43 boats will be powered by quiet, emission-free Torqeedo Cruise 10.0 motors and high-capacity lithium batteries, the most advanced, fully electric propulsion system available. They'll provide passengers and those shoreside a clean, enjoyable experience that's odor-free and environmentally friendly.

4.4.2 Facility Improvements

Revolving Energy Efficiency Fund. Rebates and energy savings from Municipal Retrofits are being allocated into a revolving Energy Efficiency Fund, which provides a mechanism to finance future energy efficiency projects. This resulted in the creation of a permanent Energy Management program to continue targeting efficiency opportunities throughout City facilities as an alternative to relying on performance contracts. COSA remains the only major municipality in the State of Texas with this type of dedicated revolving energy fund.

Energy Efficiency Projects. Energy efficiency facility projects between 2011 and 2016 have resulted in estimated 37.3 million kWh of electricity savings per year (Table 4-2).

Table 4-2: Energy Efficiency Projects, 2011-2016

Project	Annual Avoided Electricity Use (kWh)
Interior Lighting Retrofits*	5,716,834
Exterior Lighting Retrofits*	2,727,513
Interior/Exterior Retrofits*	1,340,984
Retrocommissioning/Re-Commissioning*	1,528,374
Chiller System Replacement*	1,212,499

HVAC Replacement*	776,455
Solar Window Film Installation*	871,633
Pool Pump Retrofits*	737,143
Programmable Thermostats*	212,998
Roof Top Unit VFD's*	262,772
Circulation Fan and Programmable Thermostats*	181,698
Chiller Control Upgrades*	8,732
High Efficiency Washing Machine Retrofits*	468
CPS Energy LED Street Lighting Retrofit for 25,000 Street Lights**	21,698,000
Total	**37,276,103**

*Projects funded from Energy Efficiency and Conservation Block Grant (EECBG) Programs

**From a separate funding mechanism

Facility Design Guidelines & Standards for new city projects was published in March 2017. This interdepartmental collaboration, led by the Transportation and Capital Improvements Department in collaboration with Building and Equipment Services and the Office of Sustainability, includes SA Tomorrow Sustainability Plan Goals and includes a Sustainability Checklist that will be required to be filled out as part of the project development process. The purpose of the City of San Antonio (COSA) Facilities Design Guidelines & Standards (FDGS) is to provide guidance to architects and engineers designing new and renovated facilities for the City of San Antonio. It is intended to summarize information on what is minimally expected by the City. The Guidelines state that the energy performance of a building should strive to exceed code requirements, with a goal to meet the CPS Energy's new construction prescriptive or performance incentive where feasible, based on building type. For projects with a construction budget over $3 million dollars, energy efficiency will be determined through the use of an energy model. A review of possible on-site renewable energy systems including solar PV, solar thermal, wind power, fuel cells, or other sources is encouraged.

Energy Star Certified Buildings. Energy Star Certifications were awarded in 2014 to the Municipal Plaza Building, built in 1925, and the Public Safety Headquarters, built in 2012.

4.4.3 Planning and Development

The 2030 Challenge Adoption. CoSA adopted a Sustainable Buildings Ordinance in March of 2009, which set a goal to achieve net-zero carbon for all new construction by 2030 and established interim incentives and minimum building energy codes to help achieve this target.

Tree Ordinance. On May 6, 2010, San Antonio's City Council amended Chapter 35 of CoSA's Unified Development Code relating to tree preservation and adequate canopy

coverage (Ordinance 2010-05-06-0376). The goal of the ordinance is to increase the canopy coverage of the City and its ETJ within residential and commercial development.

Tree Canopy Preservation. The City's Development Services, Parks and Recreation, and Transportation and Capital Improvements departments have an annual estimated combined budget of $3.4 million dedicated to the preservation and maintenance of trees in the city. This investment by the city includes community outreach programs to raise public awareness about the value and benefits provided by a healthy and diverse tree canopy.

In April 2016, San Antonio officially became a Tree City USA. This program offers direction, assistance and national recognition for our community and a framework for sustainable tree programs, initiatives, and ordinances. Recognition as a Tree City USA provides San Antonio with a great opportunity to celebrate the importance of having a healthy and well maintained tree canopy throughout our community.

Increase Tree Canopy. CoSA and CPS Energy are partnering to encourage tree planting to save on cooling costs. Each year from October to April, CPS Energy customers can get up to five rebates by planting trees on their property. Customers can earn up to a $50 rebate on their utility bills for each tree purchased and planted, for a maximum of $250 with five trees.

Trees planted on the west, south and east sides of a home or business provide shade from the sun during the hottest times of the day. According to the U.S. Department of Energy, carefully positioned trees can potentially reduce a household's energy consumption for heating and cooling by 25 percent. Beautiful and shaded landscaping also can add to the property value.

4.4.4 Transportation Planning

Bicycle and Trail Network. The Howard W. Peak Greenway trails is an ever growing network of multi-use trails that wind through natural landscapes along San Antonio creeks. Currently 65 miles of developed greenway trails are open for use. These linear parks consist of approximately 1,400 acres of creek-side open space. The Linear Creekway Parks Development Program, which provides sales tax funding for the land purchases and trails development, was approved by voters in 2000, 2005, 2010 and 2015. Trails are now either built or planned for many of San Antonio's creeks, including the Salado, Leon, Huebner, Huesta, Culebra, Alazan, Apache, Martinez, San Pedro and Medina River.

Bike Share Program. San Antonio's B-Cycle bike share program, with a total of 59 locations, provides opportunities to enhance personal health and provides active transportation choices to residents and visitors. According to program data, riders logged over 500,000 B-Cycle trips, burning over 60 million calories and offsetting over 1,530,000 pounds of carbon since the program launched in 2011.

Congestion Mitigation. CoSA has allocated funds through its City Wide Bond Program from 2012-2017 to complete approximately $337M in congestion mitigation measures for streets, bridges and sidewalks. The 41 projects include improved access management and traffic signalization along with the addition of bike lanes and sidewalks. On May 6, 2017, voters passed an $850 million General Obligation Bond Program. The City of San Antonio is authorized to issue $445M in to make permanent public improvements to reduce improve traffic flow thereby reducing vehicle congestion. Streets, bridges and sidewalks, as well as other improvements necessary or related to the following, including, but not limited to: bicycle lanes, landscaping, relocation of utilities, street lighting, technology improvements and signage. This proposition will also provide acquisition of lands and rights-of-way necessary for such purposes.

4.4.5 Employee Programs

Bus Passes. CoSA's Employee Bus Pass Program encourages employees to ride the bus, the City participates in VIA Metro's EZ Ride Program. City employees have access through the City's intranet system to conveniently click for VIA rider tools to plan their trips.

NuRide Program. City employees are encouraged to participate in the NuRide to track their alternative commute miles and reap rewards from local retailers and restaurants.

B-Cycle Membership Subsidies. City employees are offered a sixty percent subsidy to purchase a B-Cycle Annual Membership during the ozone season. All city employees who participate in the subsidy program are highly encouraged to track their miles through Alamo Commutes.

Anti-Idling Administrative Directive. This anti-idling directive for city employees was approved by the City Manager on August 16, 2016. The purpose of the directive is to provide uniform and consistent direction regarding idling to City departments and personnel on operating all city-owned vehicles and equipment in a safe and economical manner while supporting the City's clean air initiatives.

4.4.6 Policies and Ordinances

Anti-Idling Administrative Directive. In June of 2015, the San Antonio City Council unanimously voted to enact an anti-idling ordinance. The anti-idling ordinance restricts heavy-duty vehicles with a gross vehicle weight of > 14,000 pounds from idling for more than five minutes within the City of San Antonio and Bexar County. While certain vehicles are excluded regardless of weight (such as emergency vehicles), most vehicle operators will need to adhere to idling restrictions. The ordinance went into effect on January 1, 2017. To date, City staff has responded to three complaints resulting in one warning issued with zero citations.

Air Pollution Registration Program. In 2015 the San Antonio City Council passed ordinance #2015-11-19-0967 requiring business facilities with air pollution emissions to register with Metro Health and pay an annual registration fee of $200.00 per facility.

This registration process will help identify local sources of ozone components and develop steps to lower emissions and improve air quality for residents. During fiscal year 2017 1,000 businesses registered with the program.

Coal Tar Sealant Ban. In June of 2016, San Antonio became the largest city in the country to ban coal tar sealants. The San Antonio City Council voted 9-2 in favor of a ban on the application of coal tar sealants. CoSA identifies coal tar pavement sealant products used in the construction of paved commercial lots as emitting specific environmental/health-hazardous chemical components whose long-term exposure via storm water runoff conveyance has been scientifically linked to increased incidence of certain adverse health impacts in human beings and aquatic invertebrates. Invertebrates are an important part to the food chain and are often monitored as indicators of stream quality. Pavement construction product retailers, applicators and paved property owners are strongly urged to learn more about the use and environmental/health impacts of these products in order to make conscious decisions to help reduce and prevent their application during construction of new or rehabilitated paved lots. The ordinance went into effect on January 1, 2017. City staff has responded to two complaints resulting in zero violations issued.

San Antonio Bikes Program. The San Antonio Bikes program continues to provide community outreach on bike safety relating to the proper use of bike lights and helmets, and it distributed over 700 helmets this year. It also coordinated a “Street Skills” program with the Alamo Area Metropolitan Planning Organization to educate the bicycling public on their rights and responsibilities as road users. Administration of the “Street Skills” bicycle education curriculum is intended to educate adults and mature teens who are interested in bicycling and understanding rules of the road as they apply to bicyclists and motorists. CoSA provides the Alamo Area Metropolitan Planning Organization (AAMPO) annual funding for the purchase of safety equipment including bike helmets and bike lights as part of the course curriculum. Accordingly, the AAMPO agrees to offer the classroom services and safety equipment free for a minimum of 400 participants each year the office has funded the program (participants must attend the class and receive instruction before receiving safety equipment). San Antonio Bikes additionally supplies the area’s Regional Bike Maps, as well as a variety of educational guides related to bicycling safety, to all of San Antonio’s libraries, police stations, and the San Antonio Airport.

- **60,000 regional bike maps** have been printed through grant funding and continue to be disseminated throughout the community
- **20,000 Greenway Trail Companion Guides** (focused on trail safety and etiquette) continue to be distributed with Parks and Recreation

New/Proposed Strategies

Public Health Cost of Nonattainment Study. CoSA's Office of Sustainability and the Health department collaborated on an air quality public health study to assess the public health impact of ozone non-attainment. The goal of this work is to estimate the health impacts of ambient ozone pollution to Bexar County residents and to estimate the direct and indirect costs of asthma and other ozone-related illnesses on the general public. The study has just completed the peer-review process and is in the final draft stages. A final draft will be issued to the public in fall 2017.

Air Quality Regional Community Education and Outreach for Nonattainment of Air Quality Standards The "Breathe Today. SA Tomorrow" campaign, initiated in May 2017, works to create community awareness and educate the business community and the general public about the need for clean air, and how to help San Antonio to continue to be the largest "Clean Air City" in the nation. The long-term goal is to make San Antonians as literate on air quality as they are about water conservation. The program will focus on social and print media, public meetings, and industry roundtables. On March 30, 2016, City Council approved a contract award to minority woman owned aMAEzing Marketing Group. aMAEzing secured a campaign spokesperson Missions Baseball pitcher, Brett Kennedy. The campaign has focused on stakeholder roundtables, air quality messaging to residents and businesses via television, radio, print, social media and online blogs, and has yielded over 2.3M impressions to date. City Council members have been involved in the campaign by taking part in our "Breathe Today.SA Tomorrow" Blog Talk Radio Campaign to discuss why air quality is important to them and to share their vision for San Antonio's air quality future.

San Antonio Mayor Nirenberg provided his support for the campaign. In the public service announcement, Mayor Nirenberg is seen boarding a VIA bus and asks the community to "keep San Antonio the largest, clean air city in the nation," while Brett Kennedy is shown with Kaitlyn Muñoz, "Daytime@Nine" correspondent and CW Crew spokesperson, at Missions Stadium, where he reminds individuals that "it's all about keeping San Antonio's air quality as clean as we can." "Air quality is among the biggest challenges facing our region — impacting our economy, our health, and the quality of life of our residents," Mayor Nirenberg said. "This campaign helps us remind residents about ways that they can contribute to cleaner air."

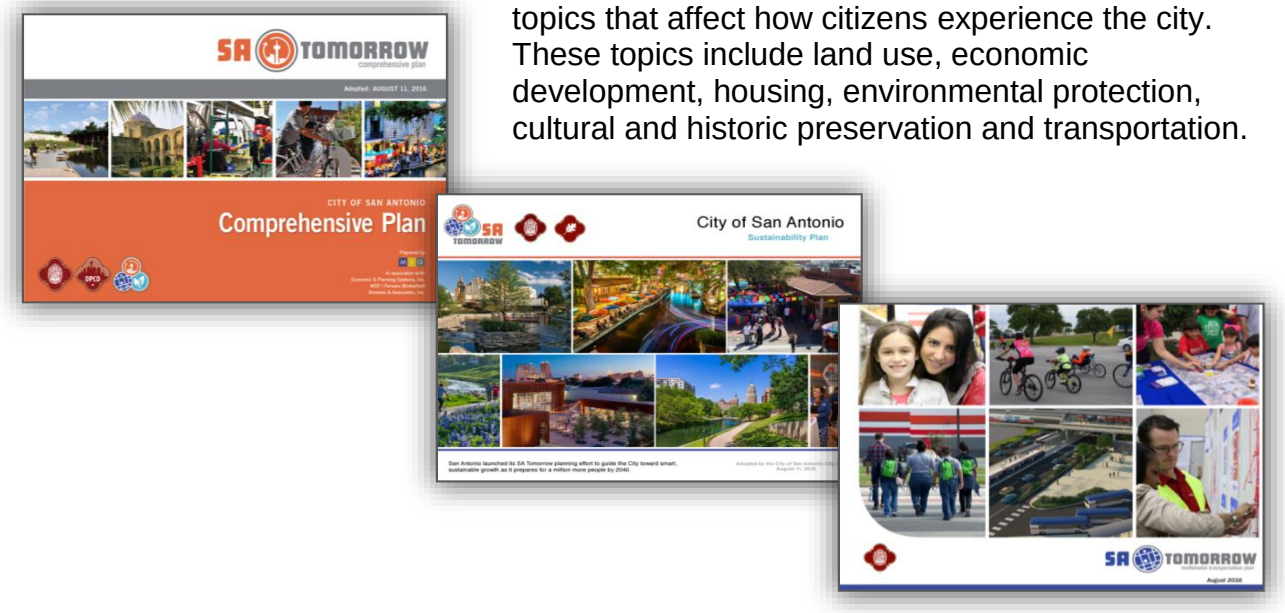
The San Antonio Business Journal has extended their support for the campaign by sponsoring an "Air Quality Summit" on October 6, 2017 to address the potential impacts of non-attainment on business and the San Antonio community. San Antonio Mayor, Ron Nirenberg will share the City of San Antonio's vision on air quality and the role of the business community. Small to midsize business leaders are encouraged to attend so they can learn how they can play a role in helping to improve San Antonio's air quality.

The campaign will extend through October 2017.

Campaign Objectives:

- To take action now and not waiting for federal regulation, as the health of the community is what is important
- To inform the community of simple steps they can take, including:
- Choose a cleaner commute — car pool, use public transportation, bike or walk when possible
- Make sure vehicle's tires are inflated properly
- Refrain from unnecessarily vehicle idling
- Participate in CPS Energy's energy conservation and rebate programs. Look for the ENERGY STAR label when buying home or office equipment
- Consider a push, electric or energy efficient gas mower
- Refuel vehicle in the early morning or evening during ozone action days

SA Tomorrow Initiative. On August 16, 2016, City Council approved three plans, the Comprehensive Plan, Multi-Modal Plan and Sustainability Plan. "SA Tomorrow Initiative" is a tri-plan is a 25-year framework that guides future growth and development. These plans address a wide range of topics that affect how citizens experience the city. These topics include land use, economic development, housing, environmental protection, cultural and historic preservation and transportation.



Bexar County is expected to add up to 1.1 million new residents, with 500,000 new jobs, and 500,000 new dwelling units by 2040. If not properly prepared for this growth, the impacts could have significant consequences. For example, traffic congestion and commute times could increase which would in turn affect our air quality and overall quality of life.

To ensure that the identified strategies of SA Tomorrow are specific to the needs of San Antonio, five cross cutting themes were identified through the Sustainability Plan process that address high priority issues for the community. The cross cutting themes are important to every aspect of the SA Tomorrow planning efforts, including each of the Plan's major components and elements. The cross cutting themes include economic vitality, equity, resilience, water resources and air quality. Continuously finding opportunities to improve air quality is a priority for CoSA, as air quality impacts health and the local economy.

The City of San Antonio is cognizant that it will require a shift in the way things are done now, and the public and private investments necessary to accommodate 1.1 million additional residents can be leveraged to improve livability, sustainability and inclusivity across the entire community. The building blocks within the City's Comprehensive Plan are: complete neighborhoods, safe and attractive multimodal corridors, compact and walkable urban centers, and the growth of its 13 existing mixed-use regional centers.

Under One Roof Program. The "One Roof" program replaces worn and damaged roofs and installs a light colored shingle along with a radiant barrier underlayment to obtain a Solar Reflectance Index (SRI) of .65. The installation of light colored roofs is provided at no cost to the homeowner. The Program maintains home's structure and stability, improves indoor comfort, reduces overall attic temperature, decreases roof maintenance, and yields potential energy savings for the homeowner.

The City's Department of Planning and Community Development (DPCD) has contracted with the University of Texas at San Antonio (UTSA) to conduct the monitoring and evaluations of the light colored roofs. The impact of new light colored roofs will be monitored for a one-year period to test the benefits of this technology. UTSA will conduct pre and post onsite visits to each home and confirm eligibility of each home. UTSA staff will also document existing conditions of each home, obtain twelve-month utility data for pre and post retrofit (electricity and natural gas) from CPS Energy. The attic and roof temperature also will be collected pre and post retrofit for each home through the installation of a temperature logger monitor by UTSA. UTSA has installed data loggers in 27 out of 28 homes completed. These 27 homes comprise the 11 homes completed as part of the FY2016 Program and 16 homes completed to date as part of the FY2017 Program.

The roof repair and replacement work for the eight homes began on November 16, 2016 and was completed by on December 22, 2016. Construction resumed for the second quarter on January 4, 2017 and 9 additional homes were completed, resulting in a total of 17 homes completed to date. The City utilized a private sector construction contractor to repair and install the new roofs. DPCD staff is working to qualify 8 additional homeowners and anticipates all 25 roofs to be completed no later than summer 2017.

Other Planned Initiatives. As air quality continues to be a priority and as CoSA further develops its plan to reduce ozone emissions, it recognizes the importance of evaluating its shift to a more supportive electric vehicle environment. CoSA and CPS Energy will collaborate on a study to evaluate the cost-benefit of electrifying the city's light-duty fleet and what infrastructure will be needed to support it. The study will also evaluate the community's electric vehicle potential and where and what type of vehicle charging infrastructure will be needed.

COSA's FY18 air quality work plan will identify current and planned projects that have air quality impact, as well as identify new pilot projects and evaluate potential policies, such as a commuter benefits program, that would require or incentivize employers to provide their employees with more efficient commuting options. City staff is continuing to examine programs and policies to foster commuters to utilize alternative transportation by establishing a carshare program and a commuter benefits ordinance. City staff is evaluating a commuter benefits policy to require employers of a certain size to offer employees benefits to encourage alternative commuting.

In addition, CoSA will be targeting 26 city facilities for Energy Efficiency projects to include LED lighting retrofits, Efficient HVAC System upgrades, and Retro-commissioning, which is fine-tuning buildings to make sure they are operating at maximum efficiency. Included in that process will be the development of a formal CoSA Energy Policy that outlines specific requirements related to city-owned facilities, such as thermostat set points and a personal electrical equipment usage policy.

4.5 San Antonio Metro Health (Metro Health)

San Antonio Metropolitan Health District (Metro Health) is concerned with the adverse public health effects (including high rates of asthma) due to high levels of ozone and other air pollutants. Metro Health is utilizing several strategies to reduce ground-level ozone and improve air quality.

Ongoing Strategies

Air Pollution Control Registration Program. City of San Antonio City Council passed Ordinance 2015-11-10-0967 that updated the language of Chapter 26, "Pollution Control," Article II "Air Pollution," by revising the state law references and requiring that businesses that are a source of air pollution register with Metro Health. Registration provides information that Metro Health will use in determining strategies to lower ozone levels and other air pollutants so that it can continue to develop its air pollution program and work with businesses in San Antonio to lower emissions and take innovative and proactive steps to lower ozone levels.

The program works with businesses to create a list of air emission "point sources" located within the city limits of San Antonio. The Air Pollution Control Program has educated businesses about new ordinances that have been passed by the City of San Antonio to improve air quality. The program checks for proper Certificate of Occupancy, waste storage and disposal and proper operation of air control equipment. Metro Health also responds to air quality related complaints and visits facilities to determine source(s) and type of emissions as well as need for registration.

Ozone Attainment Master Plan. Metro Health, with business and community stakeholders, developed an Ozone Attainment Master Plan to deal specifically with the issue of ozone attainment and to coordinate the various strategies being utilized to reduce ozone precursor emissions. Metro Health received approval from the San Antonio City Council on June 13, 2019 to proceed with the following six focus areas; (1) Communications and Marketing (2) Volkswagen (VW) Beneficiary Mitigation (3) Ozone Best Practices (4) Identification of Point Sources and Mitigation (5) Business Community (6) Policy, Advocacy, and Funding.

Ozone Technical and Ozone Advisory Committees. Metro Health has identified individuals for an Ozone Technical Committee and an Ozone Advisory Committee to provide guidance on the implementation of the Ozone Attainment Master Plan. The Ozone Technical Committee will enhance the City of San Antonio's best practices by identifying evidence-based solutions to support ozone control strategies that will reduce ozone levels to the EPA standard in Bexar County by December 2020. The Ozone Advisory Committee will work on communications to business groups, the public and civic organizations on the implementation of the Ozone Attainment Master Plan. The committee will review and make recommendations to improve education and communication activities.

Community Education and Outreach Campaign. Metro Health plans to continue a campaign on community education and outreach. The campaign will focus on public education and actions the public can take to help reduce ozone precursor emissions. The education component of the campaign runs continually throughout the year while the public outreach component of the campaign will concentrate its efforts during San Antonio's yearly ozone season which is from April 1st to October 31st.

Air Quality Studies. Metro Health has entered into agreements with consultants to conduct air quality analyses and to provide air quality improvement recommendations. The goals of the various studies include improving understanding of conditions that create high ozone levels, identifying point sources of ozone precursor emissions, and developing strategies to mitigate ozone precursor emissions.

Diesel Construction Equipment Anti-idling Initiative. Metro Health has partnered with Bexar County on an initiative to educate diesel construction equipment operators about the air quality benefits of idle reduction. Metro Health and Bexar County have created educational materials and have started providing awareness and education to diesel construction equipment operators.

Gas Cap Replacement Program. Metro Health has partnered with the City of San Antonio's Office of Sustainability and Transportation & Capital Improvement departments in applying for a Congestion Mitigation and Air Quality Improvement (CMAQ) grant from the Federal Highway Administration (FHWA) for a Gas Cap Replacement Program. This grant will be overseen and administered by the Texas Department of Transportation (TxDOT). The primary objective of the Gas Cap Replacement Program is to test for faulty gas caps in San Antonio and to replace those gas caps at no cost to the public. A secondary objective is to provide air quality awareness to the public through educational materials. An Advance Funding Agreement for this grant is currently being drafted. The Gas Cap Replacement Program should begin in mid to late 2020.

4.6 City of Leon Valley

The City of Leon Valley is surrounded by San Antonio's northwest quadrant. It is home to more than 11,000 residents.

Ongoing Strategies –Updated since 2016 Update

Leon Valley is committed to improving air quality by:

- Participating in the regional NuRide program, which incentivizes pollution reduction by offering rewards for carpooling, biking, busing, and telecommuting.
- Taking the Monarch Butterfly Pledge, which reduces air contamination by minimizing the use of harmful pesticides.
- Planting trees or giving away trees, which helps to filter pollutants and particulates from the air. In 2017, the Tree Advisory Board gave away 650 trees.
- Using water based (non-pollutant type) fire extinguishers.

- Reducing the use of fuel in the City's fleet vehicles, such as purchasing eco-friendly hybrid vehicles, providing electric charging stations, regular fleet maintenance, proper tire inflation, and reducing excess weight in fleet vehicles.

- Encouraging employees to reduce the use of fuel, such as providing places to store food and eat at work, facilitating showers and lockers for employees who bike or walk to work, and allowing compressed or alternate work schedules and telecommuting.

- Minimizing the use of electricity by installing programmable thermostats and setting them to cool primarily during work hours and by using motion sensor light fixtures. In addition, the City of Leon Valley has a recycling program and has installed water-saving faucets.

- Enacting vehicle idling limitations. In concert with Bexar County and San Antonio, Leon Valley passed an ordinance for Vehicle Idling Limitations on April 5, 2016. The Vehicle Idling Limitation is a state rule enforceable by local governments through a memorandum of agreement with the TCEQ. The anti-idling rule restricts heavy-duty vehicles with a gross vehicle weight of greater than 14,000 pounds from idling for more than five minutes within Leon Valley.

New/Proposed Strategies

Vehicle Idling Limitations. In concert with Bexar County and San Antonio, Leon Valley passed an ordinance for Vehicle Idling Limitations on April 5, 2016. The Vehicle Idling Limitation is a state rule enforceable by local governments through a memorandum of agreement with the TCEQ. The anti-idling rule restricts heavy-duty vehicles with a gross vehicle weight of greater than 14,000 pounds from idling for more than five minutes within Leon Valley.

Solar Panels. The City of Leon Valley recently installed solar panels on City Hall and the Fire Station, and has scheduled solar panels to be installed on our library. Solar panels had already been installed on its Community Center.

Land Acquisition. The City recently acquired over 8 acres of vacant land in various neighborhoods to be developed as pocket parks. These parks were planned to not have parking spaces, other than those for ADA accessibility, but will have bicycle racks and walking paths. By locating parks inside the neighborhoods, city residents do not have to take a car to get to recreational facilities. The City of Leon Valley will be purchasing two more large parcels of land contiguous to a large central park, which will be developed as additional park space. This will not only help to preserve existing tree canopy, but also further encourages citizens to walk and not drive, reducing vehicle emissions and air pollution.

Sidewalk Rehabilitation Program. The City actively rehabilitates dilapidated and broken sidewalks, and has been programming $20,000 per year for this purpose and to install sidewalks where there are gaps in older neighborhoods sidewalk systems. Over

the past three years, the City programmed an additional $150,000 per year to completely rehabilitate the sidewalks along one of the major arterial streets that connects several large neighborhoods to the central park, library, community and conference centers, and a school. This will improve connectivity, provide ADA accessibility, and encourage people to walk, which will reduce air pollution from vehicle emissions.

4.7 Texas Department of Transportation (San Antonio District)

Ongoing Strategies

Since 2005, TxDOT has sponsored an agency-wide Clean Air Program that encourages employees to practice commute reduction activities such as ridesharing, biking, walking, public transportation, as well as reducing other trips during the work day by encouraging employees to brown-bag their lunches. Employees are reminded and encouraged to perform regular maintenance on their vehicles to help reduce vehicle emissions. Employees earn points for participating in these activities from May through September and leave time is granted once enough points are earned, up to 8 hours.

To the extent practical, the district office uses clean business practices such as:

- Using low-emission diesel fuel
- Avoiding refueling between the hours of 6-10 am
- Limiting the idling of vehicles
- Sending ozone action day notifications to district employees
- Avoid mowing on TxDOT properties on Ozone Action Days
- Encouraging contractors to use efficient equipment as well as properly maintaining equipment to mow right-of-ways
- Continuing to purchase solar-powered light and sign boards
- Continuing to install LED signal bulb;
- Purchasing Energy Star products
- Encouraging contractors to apply for grants such as TERP for highway equipment
- Continuing to allow flexible work schedules and compressed work schedules

These are the emission reduction strategies that the Texas Department of Transportation (TxDOT) has been engaged in since the previous Ozone Advance update:

- TxDOT has partnered with VIA for “My Link” which provides connectivity within State right of way to bus stops throughout the District.
- TxDOT is working on a statewide Sidewalk and bicycle lane inventory/plan to know where to gaps exist for active transportation access.
- TxDOT San Antonio District is working on a Pedestrian and Bicycle Accommodations guidance to reference during planning. The guidance utilizes

Level of Traffic Stress (LTS), a rating given to a road segment or crossing indicating the traffic stress it imposes on bicyclists, as the foundation for decisions related to the recommended bicycle facility.

- Clean Air Program update (Table 2-1):
  - 27% participation in 2019 (156 out of 575 employees)
  - 123 of the employees earned PTO
  - Program encourages night work for road crews and contractors

Table 4-1: 2019 TxDOT Clean Air Program Participation Statistics

Employees	156
Total Points Earned	21,412.0
Carpool Trips	1835
Vanpool Trips	19
Walking Trips	325
Biking Trips	113
Motorcycle Trips	290
Personal Hybrid Trips	738
Public Transit Trips	2
Telecommute Days	43
Days Dropped Off	0
Total Clean Lunch Commutes	10,015
Routine Maintenance Events	651
Total Compressed Week	127

TxDOT continues to design and construct projects that improve congestion; thereby improving air quality. U.S. Highway 281 and IH-10 are under construction to add the first High Occupancy Vehicle Lanes; this will increase the number of persons per vehicle, and preserve the person –movement capacity of the roadway, and reduce congestion and enhance bus operations thereby improving air quality. In a majority of our added capacity projects we are also incorporating bicycle and pedestrian accommodations which provide clean air options to the traveling public; making connections to buses more accessible and improving ridership.

4.8 Alamo Area Metropolitan Planning Organization (AAMPO)

Ongoing Strategies – Updated since 2016 Update

As the region's multi-modal transportation planning agency, the Alamo Area Metropolitan Planning Organization (AAMPO) is responsible for leading a cooperative, comprehensive and continuous planning process for Bexar, Comal, Guadalupe and a portion of Kendall Counties. When the region was designated non-attainment for ozone in 2018, AAMPO took on new responsibilities to ensure the area meets regional transportation conformity requirements for its planning and programming of projects.

AAMPO received a joint determination of conformity from FHWA and FTA by its first deadline of September 24, 2019, and is in the process of conducting a subsequent conformity analysis on its FY 2021-2024 Transportation Improvement Program (TIP).

AAMPO promotes the use of alternative transportation among targeted employers and the general public under its Alamo Commutes and Walkable Community Programs. In 2019, the region's Commutes Solutions program moved to AAMPO and was re-branded as Alamo Commutes. The program serves a Travel Demand Management (TDM) purpose, focusing on reducing personal trips that will in turn improve regional air quality. Alamo Commutes works with employers and the community to provide the tools, resources and information needed to encourage smart commuting habits. These include a carpool-matching and trip-tracking mobile app, Emergency Ride Home and consultations with area employers. In early 2019, Alamo Commutes staff began working with five area employers on assessments and tailored reports to facilitate travel demand management among their employees. Internally, AAMPO promotes alternative modes of transportation among its staff and, in 2018, was recognized as one of the Best Workplaces for Commuters. AAMPO employees have flexible scheduling and telecommuting options and can ride public transportation for free using their employee ID.

The MPO produces regular informational newsletters, brochures, and maps that share transportation news and options and leads robust educational programs to explain the benefits of walkable communities and alternative commute modes under its Walkable Community Program. As part of this program, and in partnership with the City of San Antonio Transportation & Capital Improvements Department, AAMPO hosts free "Street Skills" classes to teach the rules of the road for people on bikes, convey helpful safety information, and distribute bicycle helmets and bike lights (Figure 4-3). Since beginning Street Skills classes in 2015, over 1,000 people have attended these classes and left feeling more confident using their bike as a form of transportation.

Figure 4-3: Street Skills Class

AAMPO champions National Bike Month for the region and has transformed its Annual Walk & Roll Rally into a multi-location event in support of National Bike to Work Day (BTWD). Between the first and second years of hosting BTWD, participation expanded from two to 10 stations region-wide. In 2015, the League of American Bicyclists named AAMPO a Bicycle Friendly Business, recognizing its internal and external efforts to make bicycling a comfortable transportation option. AAMPO is currently renewing its Bicycle Friendly Business status for 2020.

Figure 4-4: 2nd Annual Bike to Work Day – the AAMPO Energizer Station was one of 10 locations cyclists could stop by around the region on the morning of May 17, 2019

In addition to the short-range Transportation Improvement Program (TIP) and the long-range Metropolitan Transportation Plan (MTP), AAMPO produces other plans in conjunction with its transportation partners to inform and guide transportation policy. AAMPO kicked off a Transit Feasibility Study in 2019 to look into options for fixed route bus system in New Braunfels, TX. Also in 2019, AAMPO completed a Bike Share Master Plan Study in early 2019 that recommended where and how San Antonio B-cycle could expand and assessed the feasibility of bike share in other parts of the region. Previously, AAMPO has produced a Regional Bicycle & Pedestrian Planning Study (2016) and a Pedestrian Safety Action Plan (2012).

Figure 4-5: AAMPO's 2019 Fiesta medal encouraged people to replace a car trip with the bus, a bike or a walk

AAMPO issued a call for $60 million in Congestion Mitigation and Air Quality Improvement Program (CMAQ) funding in 2018 and awarded 12 projects funding. Implementation will begin in FY 2020. Projects were technically scored based on a variety of factors, including the potential to reduce NO_X and VOCs and costs associated with the estimated benefit.

In 2019, AAMPO centered its outreach during San Antonio's multi-day Fiesta on clean air education (Figure 4-5). AAMPO distributed over 700 medals to the public along with messaging around clean transportation options.

4.9 VIA Metropolitan Transit

Ongoing Strategies –Updated since 2016 Update

VIA has implemented a series of projects that contribute to a significant reduction in emissions. These projects include:

- Implementation of an automated idle limitation program for buses
- Implementation of an ISO 14001:2004-certified Environmental Management System
- 100 percent participation in the CPS Energy Windtricity program
- Installation of solar panels at bus shelters and transit facilities

In 2017, VIA began to replace the agency's fleet of clean-diesel-powered buses with vehicles that are fueled by Compressed Natural Gas (CNG). At least half of the fleet will be replaced with the lower-emission vehicles by the end of 2017, with the entire fleet converted by 2020. VIA has diversified its fleet further by integrating new, alternative power sources such as propane, electricity, and hybrid technology. VIA continues to monitor fuel and propulsion technologies that help reduce local air pollution.

VIA's fleet of alternative-fueled vehicles currently includes:

- 308 CNG buses (as of 9/30/17)
- 124 propane-powered paratransit vans

- 14 propane-powered streetcar buses
- 30 diesel-electric hybrid buses
- 3 fully electric buses (purchasing 8 more in 2018)

New/Proposed Strategies

To facilitate the transition to an entire fleet of CNG buses numbering 474 by 2020, VIA contracted with Trillium CNG in July 2016 to build a 10-lane CNG fueling station at its vehicle maintenance facility. CPS Energy is supplying the natural gas to the station, which became operational in May 2017. **VIA's CNG fueling station is the largest in the United States.**

4.10 SA Manufacturers Association

The San Antonio Manufacturers Association Environmental Advisory Committee exists to empower the San Antonio manufacturing community by improving its environmental performance and provide input into the local, state and federal environmental rulemaking process from the perspective of the San Antonio manufacturing community. The Environmental Advisory Committee meets once-monthly and is updated on air, water, and energy matters by the Air, Water, and Energy Subcommittees. The president of the San Antonio Manufacturers Association has a seat on the AIR Advisory Committee. The Environmental Advisory Committee was crucial in providing industry feedback on proposed air quality mitigation steps. AACOG's Clean Cities Coordinator is a member on the San Antonio Manufacturers Association Environmental Advisory Committee and the Air Subcommittee, and updates the committee with pertinent air quality information.

4.11 Local Cement Industry

The cement manufacturing industry in the San Antonio-New Braunfels Metropolitan Statistical Area (SA-NB MSA) consists of four facilities. Alamo Cement, Capitol Aggregates, Inc./Capitol Cement, CEMEX Construction Materials South LLC and Martin Marietta Hunter Cement. To date these facilities have made significant investments in technology and modifications to operational practices which have resulted in emissions reductions.

This group continues to be committed to working proactively to solve the challenges facing this region with regard to air quality and ground level ozone, and has demonstrated this commitment through their actions. Over the past several years, these facilities have invested multiple millions of dollars in emission control technology and process and equipment upgrades which benefit the region's air quality.

Nitrogen Oxide (NO_X) Control – Selective Non-Catalytic Reduction. Each of the facilities has installed SNCR, which represents the most modern and efficient control technology available for the cement industry for this ozone precursor. Typical reductions can range widely, between 10-50%, based on a variety of test data, but site-specific factors at each plant must be considered. The addition of SNCR represents a significant capital and operational investment for these facilities, which cumulatively has exceeded $9.5 million with significant ongoing operational costs. .

Improvements to Efficiency in Manufacturing Processes. Each of the facilities has made improvements to manufacturing technology to lower emissions and reduce energy consumption in recent years. These plants utilize the most modern dry-process technology available for manufacture of cement, referred to as preheater-precalciner pyroprocessing systems. In addition, equipment used in the process includes modern low-NO_X firing systems and the use of feed materials that require significantly lower energy requirements to process. According to the U.S. Portland Cement Association (SOURCE: PCA 2015 U.S. Labor-Energy Input Survey, Portland Cement Association Market Research, Skokie, IL 2016), between 1972 and 2015 energy consumption has been reduced industry-wide by 42.3%per unit produced. The producers in the SA-NB MSA region reflect this continued improvement, which ultimately results in lowered emissions and improvements to ground level ozone. The facilities continue to work on establishing optimum combustion in the kiln and precalciner firing systems to improve fuel efficiency. They take care in maintaining key equipment during the major kiln outage to ensure reliability of the equipment and providing stable kiln operations which also helps in lowering emissions. Ongoing projects, such as equipment upgrades to reduce electricity consumption, are evaluated by each of these facilities on a regular basis. In addition, some operators shift processing loads to use electricity during non-peak times, which improves energy efficiency in the region and lowers overall emissions.

Upgrades to Mobile Fleets. Upgrades have been ongoing at all facilities to incorporate use of lower-emitting engines (including Tier 4) for mobile equipment at the plants. Some facilities have applied for grants under the Texas Emissions Reduction Program (TERP) to improve their fleets while others have voluntarily upgraded fleets to further enhance efficiency. Changes include the replacement the smaller plant vehicles with a fleet of electric vehicles. Cement manufactures in this region have invested over $8 million in upgrades to mobile equipment.

General Operating Practices. Local cement producers utilize a variety of other voluntary methods to assist in lowering emissions that impact ground level ozone formation, especially during ozone season. Examples of these practices include managing quarrying operations and material deliveries, notifying employees of ozone action days, and curtailing other activities, such as painting, parts cleaning, refueling, and mowing. Some companies provide education and information to employees to make them aware of activities that contribute to ozone formation.

4.12 Oil and Gas Industry

Ongoing Strategies

EcoVapor has developed patented technology in the upstream production area of the oil and gas industry. Help clients manage emissions management, specifically vapor generated from storage tanks in upstream production or central processing facilities. Enables operator to capture 100% of vapor from these tanks. Typically 60-75% of total emissions generated from these sites come from storage tanks. This results in much improved emission profiles; in fact, some of their clients are zero emissions facilities. In 2019, EcoVapor won STEER's Environmental Stewardship Award for fewer than 250 employees

As the oil and gas industry in the Eagle Ford continues to mature, improvements in infrastructure, operations, and technology benefit regional air quality. These improvements occur through the following practices:

Pad Drilling. Companies are moving to a "pad drilling model" wherein multiple wells are drilled and completed sequentially from a single pad at a single time, eliminating the emissions associated with multiple rig up/rig down activities and the transportation between those events.

Efficiency through Technology. As technology improves and knowledge of the characteristics of the resource increases, well drilling efficiencies are realized. In general, longer laterals are being drilled in 2/3 the time and with less energy required of an Eagle Ford well just two years previously.

Gas Capture. Industry continues to focus on long-term advanced planning to ensure timely construction of the required infrastructure, such as processing facilities for initial separation of water, oil, and gas before sending it to pipelines. They rely heavily on pipeline infrastructure as part of the development of this asset, which keeps the product in the pipeline and reduces the volume of gas flared. To date, almost $1 billion has been invested in approximately 1,000 miles of pipeline infrastructure to ensure gas is captured and transported to market. The industry continues to increase this investment to further minimize the incidents of flaring in the Eagle Ford shale play.

Supply-Chain Coordination. Industry contracts and coordinates with third party midstream (transportation) companies to ensure downstream assets are in place and operational to support production without flaring. Oil and gas production companies depend on pipeline and terminal companies to receive their product and transport to market.

Central Processing. As the play matures, more and more operators in the Eagle Ford are choosing to utilize a central processing facility concept, which enables products from numerous wells to be routed to one facility for processing. This minimizes flaring by ensuring equipment is in place to handle multi-well oil and gas production as opposed to the need for processing equipment at every wellhead. At gas gathering facilities, atmospheric storage tanks are being replaced with pressurized tanks to reduce gas flashing of volatile liquids, thereby eliminating the need for flaring. Additionally, vapor recovery units are being installed at central processing facilities at the last stage of separation to maximize the recovery of gas and direct it to sales, as opposed to flaring the last stage low pressure gas.

Condensate Pipelines. Companies are improving engineering design and operation to allow production directly from the facility separation equipment to gas (high and low pressure) and liquid pipelines. This improvement reduces the air emissions associated with the storage of condensate in tanks, the use of flares as a control device, and the loading of trucks and subsequent transportation on roadways. The storage tanks, flares, and truck loading are only used during times of maintenance or downtime on the production collection equipment or pipelines.

Multi-stage Separation Technology. The use of multi stage separation technology (i.e., HLP separators or VRTs) helps to reduce the amount of potential flash gas at the tanks, which in turn reduces the amount of gas flared.

4.13 Build San Antonio Green

Ongoing Strategies – Updated since 2016 Update

Build San Antonio Green (BSAG) is San Antonio's official green building program. As a voluntary, third party certification program, BSAG works with the building community to help create buildings and single family homes with increased efficiency, comfort, and

durability. Since its inception in 2001, the program has certified 6,081 single-family new construction homes, 58 retrofitted homes, and 13 multifamily projects.

These certifications have resulted in 10 MW of peak demand reduction. This results in over 132 million lbs. CO2 and 100,357 lbs. of NOX being prevented. Annually, the energy saving is equivalent to powering 8,317 homes for one year, and the emissions reduced are equivalent to 10,876 cars being removed from the road for one year. Through their work in the solar space they have helped to facilitate the addition of 77 MW (AC) of renewable solar energy in the Greater San Antonio area.

4.14 SA 2030 District

Ongoing Strategies

SA2030 is a private-sector-led initiative intended to transform San Antonio's urban core by supporting building owners and occupants in their efforts to reduce waste and increase building performance. SA2030 had previously been fiscally sponsored by the non-profit organization South-Central Partnership for Energy Efficiency as a Resource (SPEER), but in 2018 elected a Board of Governors, who voted for SA2030 to become a stand-alone 501(c)3 non-profit. By making a no-nonsense business case for efficient operations, the district is driving innovation through collaboration, leveraged financing, and shared resources. The district model includes a non-competitive collaborative environment where building owners, community organizations and industry professionals come together to share best practices, and drive innovation in San Antonio's built environment.

High efficiency buildings have proven track records of simultaneously increasing business and property profitability, reducing environmental impacts, and improving occupant health. This groundbreaking project will keep San Antonio competitive and ensure a healthy and livable city in 2030. SA2030 does this by providing a roadmap that will assist owners and managers in meeting aggressive goals that are based on an existing building's operational costs and maintenance needs. This support includes training sessions regarding best practices for increasing building performance, networking events with industry leaders, as well as various member benefit programs. Property owners and managers are voluntarily committing their properties to SA2030 goals; which is achieved through collaboration and group effort. This commitment represents a significant investment in San Antonio's future and reflects the collaborative nature of the region.

Since the previous update, SA2030 has expanded its boundary to cover more of the inner core of San Antonio (Figure 4-6). In addition, SA2030 expanded from 73 member buildings in 2016 to 88 member buildings in 2017. This represents an aerial expansion from 8 million to 10.6 million square feet. These buildings are committed to a 50 percent reduction in energy consumption, using energy use intensity (EUI) as the performance metric. Each building member is responsible for inputting and maintaining

their monthly energy use data using the EPA's Energy Star® Portfolio Manager. Of the 44 properties (4.4. million square feet) that shared their energy use statistics in 2018, SA2030 benchmarked buildings saved 13.9% in energy use compared to the baseline, reducing 4,824 metric tons of CO_{2e}.

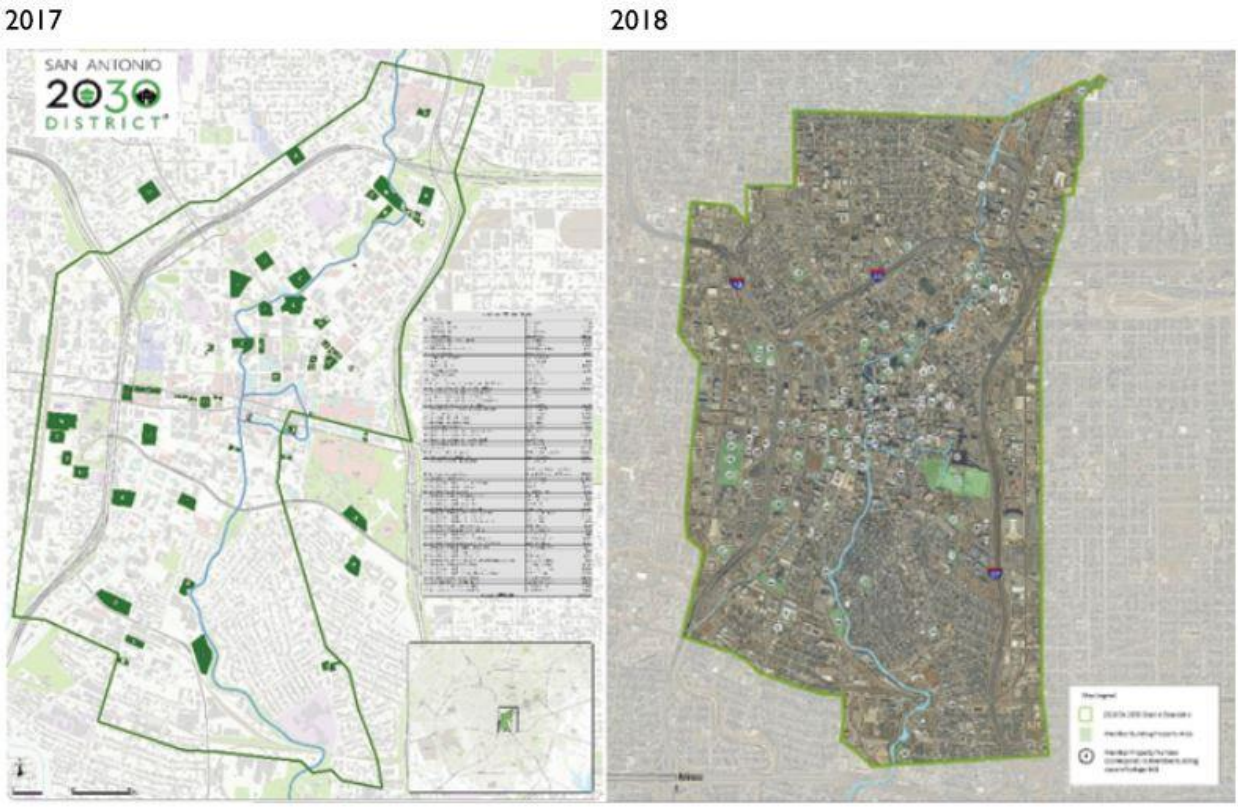


Figure 4-6: SA2030 Boundary Comparison, 2017-2018

SA2030 is working with representatives from the Alamo Area MPO, VIA Metropolitan Transit, and UTSA to develop a transportation emissions baseline and metrics by the end of 2019.

Several new members new added during the past year and now include Alamo Architects, Alterniverst, AREA Real Estate, Bexar County, Briscoe Western Art Museum, City of San Antonio, Cleary Zimmerman, Credit Human, Crockett Urban Ventures, EPICenter, General Services Administration, Go Smart Solar, Lake|Flato Architects, LPA, Inc., MWM & Associates, Overland Partners, Patrinely Group, San Antonio Housing Authority, San Antonio Museum of Art, San Antonio River Authority, The Brooklynite, The DoSeum, The Historic Pearl Brewery, The Lifshutz Companies, University of Texas San Antonio, The Witte Museum, Tobin Center for the Performing Arts, University Health System, USAA Real Estate Company, Weston Properties, LC, Weston Urban, and Zurich International Properties.

4.15 Joint Base San Antonio

Throughout 2018 and 2019, Tetra Tech developed for Joint Base San Antonio (JBSA) its draft Environmental Assessment for Energy Savings Performance at Joint Base San Antonio, Texas. In this document, three proposed Energy Conservation Measures were assessed for their environmental impact in accordance with the National Environmental Policy Act (NEPA).

- Thermal Energy Storage Tanks. Install up to five thermal energy storage tanks at JBSA-Lackland. Each tank would be located in proximity to one of JBSA-Lackland's five existing Central Energy Plants

- Renewable Power Generation. Install up to 71 rooftop photovoltaic (PV) solar array systems on up to 58 buildings at JBSA-Lackland and up to 13 buildings at JBSA-Fort Sam Houston. In addition, a carport PV canopy would be installed at the Civil Engineering building.

- Power Generation. Install up to four combined heat and power microturbines at JBSA-Lackland and five at JBSA-Fort Sam Houston. Install a battery energy storage system, two peaking units, and a microgrid control system at JBSA-Lackland.

4.16 Alamo Area Council of Governments

The Alamo Area Council of Governments (AACOG) operates Alamo Regional Transit (ART), an on-demand public transportation bus service covering the twelve counties in the AACOG region surrounding Bexar County (Atascosa, Bandera, Comal, Frio, Gillespie, Guadalupe, Karnes, Kerr, Kendall, Medina, McMullen, and Wilson Counties). Service to and from Bexar County and San Antonio is also provided. ART provides demand response, curb-to-curb transportation service. Door-to-door service may be requested for those customers needing additional mobility assistance. ART operates Monday-Friday from 7:00 AM to 6:00 PM. The following are types of transportation services provided:

- Adult day care - Nutrition
- Medical
- Shopping
- Work
- School

ART also operates Connect Seguin, a deviated fixed route system serving the City of Seguin in Guadalupe County. Planning is underway for a similar system to operate in the City of New Braunfels in Comal County.

There are a number of vehicles in ART's fleet that are nearing their end of life and must be replaced. ART is planning on replacing its aging bus fleet with propane-fueled buses. Propane is designated an alternative fuel by the U.S. Department of Energy.

In 2018, AACOG had installed at its headquarters a level 2 electric vehicle charging station, expanding the workplace charging network for San Antonio. This charging station was financed in part through a grant from the TCEQ's Alternative Fueling Facilities Program. In addition, two of AACOG's parking spaces closest to the entrance were designated "carpool-only" parking, in an effort to incentivize ridesharing and reduced single occupancy vehicle use.

Throughout 2019, AACOG has been engaged in outreach to member governments in support of the Property Assessed Clean Energy (PACE) program. PACE enables commercial building owners to lower their operating costs and use the savings to pay for eligible water conservation, energy efficiency, resiliency, and distributed generation projects. Owners of commercial, industrial, agricultural, nonprofit, and multifamily facilities may qualify for this innovative financing mechanism to pay for property improvements. Until 2019, the San Antonio-New Braunfels MSA was the largest urban area without a PACE program. In August, Comal County was the first local government to adopt PACE, and others have quickly followed suit, including Medina County and the Cities of Hondo and Leon Valley.

CHAPTER 5: Outreach and Education

5.1 Commute Solutions

With the adoption of the FY 2019-2022 Transportation Improvement Program in April 2018, the Alamo Area Commute Solutions Program was moved to the Alamo Area MPO. The MPO proposed that partial funding be granted to AACOG to continue maintaining and monitoring the NuRide program through June 2019. Under the control of the MPO, the Commute Solutions program has been rebranded as Alamo Commutes.

The following Commute Solutions outreach initiatives have been discontinued, downsized, or transferred to the Alamo Area MPO:

Fresh Air Friday (discontinued)

Walk & Roll Challenge (transferred, rebranded)

Air Quality Stewardship Awards (discontinued)

Ozone Action Day Alert Program (downsized)

NuRide Carpool Matching and Emissions Reduction Tracking System (transferred/rebranded)

Certified Auto Ride in case of Emergency (CARE) Program (discontinued)

Ongoing Strategy

AACOG actively recruits and maintains a list of businesses, schools, agencies, media representatives, and individuals who would like to be notified when there is an Ozone Action Day. When an Ozone Action Alert has been issued by the TCEQ, AACOG's Air Quality staff sends an email or a text message to those who are registered for this service. The message announces the alert, what it means, and recommendations on how to best respond to avoid associated health risks and reduce the likelihood that an exceedance will actually occur. Ozone action day alert registrations increased from 2,223 in 2017 to 2,340 in 2019.

As a result of the loss of statewide air quality planning funds from the Rider 7 program, AACOG will no longer offer a banners for area schools who wish to display them on ozone action days.

5.2 Alamo Area Clean Cities Coalition

Ongoing Strategies

5.2.1 Background

As an effort to improve air quality in the Alamo Area region, AACOG established the Alamo Area Clean Cities Coalition (AACCC) within the agency. On November 10, 1999, AACCC was officially designated by the U.S. Department of Energy (DOE), making San Antonio the 77th Clean City Coalition in the country. Clean Cities is a DOE program that focuses on measures to reduce reliance on petroleum-based fuels. In June 2016, the AACCC was approved for redesignation for three more years.

The mission of the AACCC is to displace petroleum use by developing public and private partnerships that promote national Clean Cities initiatives aimed at securing national economic, environmental, and energy security. The Coalition provides support for local decisions to adopt practices that contribute to the reduction of petroleum consumption by promoting alternative fuels and vehicles, fuel blends, fuel economy, hybrid vehicles, commuting options, and idle reduction.

At full development, the AACCC is the South Texas resource for education, technical assistance, access to grant funds and other services aimed at reducing petroleum use in transportation. The AACCC provides technical support to public and private fleet operators that are interested in replacing gasoline- or diesel-powered vehicles and equipment with domestically produced fuels including natural gas, propane, electricity, hydrogen, biofuels, and biogas. In 2019, the coalition focused on strengthening its relationships with the public, outreach to educational institutions and encouraging more fleet conversions to alternative fuels.

On September 21, 2019, the AACCC held Drive Electric Day – San Antonio at Wonderland of the Americas mall. The purpose of the event is to provide information, education, and promotion for electric plug-in vehicles. Electric vehicle (EV) owners volunteer personal vehicles for ride-alongs, including the Tesla Model X and electric motorcycles. Attendees were educated on the advantages of driving electric and given information about the various makes and models available. The event received media attention from multiple outlets and led to follow-up stories that increased attention on electric vehicles and charging stations within the San Antonio area.

Tesla Model X at Drive Electric Day

The AACCC and AACOG hosted multiple workshops in 2019, conducted by the TCEQ, including grant application workshops for several Texas Emission Reduction Plan (TERP) programs, including the Light-Duty Vehicle Purchase and Lease Incentive Program, the Texas Natural Gas Vehicle Grant Program, and the Alternative Fueling

Facilities Program. In addition, three grant application workshops in support of the Texas Volkswagen Environmental Mitigation Program (TxVEMP) were held. These were the school, transit, and shuttle bus grant, the refuse vehicle grant, and the class 4-8 freight vehicle grant.

Under TxVEMP, Bexar, Comal, Guadalupe, and Wilson Counties together were allocated over $61.5 million for activities to replace or repower different types of old diesel-powered vehicles and equipment. Of the $61.5 million, over $21.5 million of that was allocated to the school, transit, and shuttle bus grant. Between May 2019, when that grant round opened, and the end of the year, the entire allocation had been awarded to 17 school districts and one transit agency (Table 5-1), thanks in part to outreach efforts from the AACCC and AACOG.

*Table 5-1: TxVEMP School, Transit, and Shuttle Bus Grant Recipients in San Antonio Area**

Entity	**# Vehicles**	**Award**
VIA Metropolitan Transit	*39*	*$9,818,484*
East Central ISD	26	$1,241,626
Harlandale ISD	17	$1,254,600
Randolph Field ISD	7	$516,600
Southside ISD	*10*	*$842,385*
Judson ISD	18	$758,448
Navarro ISD	8	$337,088
San Antonio ISD	*20*	*$723,200*
Stockdale ISD	3	$126,408
Comal ISD	20	$842,720
Poth ISD	5	$256,953
Schertz-Cibolo-Universal City ISD	10	$738,000
La Vernia ISD	4	$295,200
Northside ISD	*14*	*$1,170,036*
Southwest ISD	20	$1,476,000
Somerset ISD	10	$706,336
South San Antonio ISD	6	$379,472
Marion ISD	1	$71,374

* Italics denote alternative fuel vehicle purchases

5.2.2 Alternative Fuel and Advanced Vehicle Technology Market Analysis

Natural Gas. As of 2019, there are six public CNG fueling stations in the San Antonio area and two private, owned by the City of San Antonio and VIA Metropolitan Transit. The addition of this natural gas infrastructure has already given fleets additional confidence to convert their vehicles.

Electric Vehicles. Data from the Alternative Fuels Data Center indicates that San Antonio has nearly 100 public EV charging stations (level 2). Most of these are owned and operated by CPS Energy, the Alamo region's primary electric utility. In 2019, the

first public (non-Tesla Supercharger) DC Fast Chargers in San Antonio were installed at Walmart on the northeast side.

Propane. There are over twenty propane autogas filling stations in Bexar County – four private and nineteen public. As of 2019, there are approximately thirteen public propane filling stations in San Antonio, many of which are owned and operated by U-Haul.

E85. The number of E85 stations in the AACOG region has grown to 22. However, fleet managers don't necessarily have accurate records of the use of E85 because drivers may fill Flex Fuel vehicle tanks with E85 or E10. Consequently, many fleet managers may report low use of E85 fuel.

Major fleets and fuel/advanced technology users in our area include:

- City of San Antonio - 30 Compressed Natural Gas (CNG) refuse trucks, 700 Light Duty flex-fuel vehicles, 35 Neighborhood Electric Vehicles (NEVs), 40 Heavy Duty Liquefied Petroleum Gas (LPG) Vehicles, 75 Light Duty LPG Vehicles, 379 Hybrid Electric Vehicles (HEVs), 5 Plug-in Hybrid Electric Vehicles (PHEVs), 1 all Electric-Vehicle (EV) owned
- Central Freight – 38 CNG fleet vehicles
- CPS Energy - 4 CNG vehicles, 14 light duty EVs, 2 HEV's, 199 E85 light duty vehicles, 33 LPG forklifts
- Matera Paper Company – 23 CNG fleet vehicles
- National Park Service - 3 hybrid SUVs, 1 electric vehicle, 1 propane truck, 1 electric truck, 2 propane forklifts, 3 electric utility carts, 4 LPG mowers
- Northside ISD - 430 LPG buses and an anti-idling policy
- San Antonio Water System - 29 light duty LPG vehicles, 65 E85 light-duty vehicles, 12 EV light duty vehicles, 45 HEV light duty vehicles, 13 LPG forklifts, 4 electric ATVs
- Sea World - 25 NEVs, 3 propane forklifts, 1 propane vehicle
- Seguin ISD - 28 LPG buses and an anti-idling policy
- Southwest ISD - 26 LPG buses and an anti-idling policy
- USAA - 9 HEVs
- VIA Metropolitan Transit - 30 New Flyer diesel-electric hybrid buses, 3 Proterra electric buses, 400+ CNG buses, 20 LPG trucks, 138 LPG shuttle buses

APPENDIX A: Governor Abbott's Budget and Line Item Veto of Funding for 2018-19 Air Quality Planning

GOVERNOR GREG ABBOTT

June 12, 2017

FILED IN THE OFFICE OF THE
SECRETARY OF STATE
2:15 PM O'CLOCK
JUN 12 2017
Secretary of State

The Honorable Rolando B. Pablos
Secretary of State
State Capitol Room 1E.8
Austin, Texas 78701

Dear Mr. Secretary:

Pursuant to his constitutional powers as governor and chief executive officer of the State of Texas, Governor Greg Abbott, has reviewed the following legislation from the 85th Texas Legislature. Accordingly, under Article IV, Section 14 of the Texas Constitution, the governor has signed the following legislation while disapproving certain sections which have been marked and struck in the original:

Senate Bill No. 1 by Nelson which is effective immediately in part.

Since the 85th Legislature by its adjournment of the Regular Session has prevented the return of this bill, I am filing this bill and the governor's objections in your office and giving notice thereof by this public proclamation according to the aforementioned constitutional provision.

The original enrolled copy of the legislation referenced above is attached to this letter of transmittal.

Respectfully submitted,

Gregory S. Davidson
Executive Clerk to the Governor

GSD/gsd
Attachments

POST OFFICE BOX 12428 AUSTIN, TEXAS 78711 512-463-2000 (VOICE) DIAL 7-1-1 FOR RELAY SERVICES

PROCLAMATION

BY THE

Governor of the State of Texas

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Senate Bill No. 1, the General Appropriations Act, having been duly certified by the Comptroller of Public Accounts pursuant to Article III, Section 49a of the Texas Constitution, has been presented to me for action.

I am once again signing a budget that addresses the most pressing challenges faced by our state. This budget funds a life-saving overhaul of Child Protective Services, ensuring children in Texas' foster care receive the protection they deserve.

Even in a tight budget climate, this budget prioritizes the safety and well-being of all Texans. It continues to fund our state's role in securing the border, adding an additional 250 troopers to keep our communities safe. It funds the state's natural disaster response costs to provide state resources when disaster strikes. And it better protects our law enforcement officers across the state by funding grants for bulletproof vests.

This budget ensures the workforce of today and tomorrow have the resources they need to keep Texas' economy growing and thriving. Under Senate Bill No. 1, all eligible prekindergarten students will receive a high-quality education by increasing standards statewide. And the state will remain competitive on the job creation front with funds to help Texas remain the best state in the nation for doing business.

This budget achieves all of these goals while restraining state-controlled spending below the growth in the state's estimated population and inflation. During the upcoming special session of the 85th Legislature, passage of legislation or a constitutional amendment to ensure the state continues to budget within responsible spending limitations will remain a top priority.

In order to further restrain the growth of government and reduce the expenditure of taxpayer funds, this veto proclamation includes approximately $120 million in reductions. I hereby object to and veto the following items from Senate Bill No. 1 and include a statement of my objections to each of those items.

Article I - General Government

Secretary of State

	2018	2019
C. 1.2. Strategy: ~~Colonias Initiatives~~	~~$ 429,856~~	~~$ 429,235~~

Services to help improve the lives of Texans living in colonias are funded across numerous other state agencies, including the Office of the Attorney General, the Department of State Health Services, the Health and Human Services Commission, the Department of Housing and Community Affairs, and the Department of Transportation. Each of these agencies provides direct client services to Texans living in colonias, while the Secretary of State primarily serves in a liaison and reporting role. I therefore object to and disapprove of this appropriation.

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2:15 PM O'CLOCK
JUN 12 2017

Article III – Education
Texas Education Agency

70. Collaborative Dual Credit Program Evaluation. ~~Out of funds appropriated above in Strategy B.3.2, Agency Operations, $72,131 in each fiscal year of the biennium in General Revenue shall be used to dedicate one Full-Time Equivalent (FTE) to collaboratively, along with the Texas Higher Education Coordinating Board:~~

~~a. identify existing capabilities, limitations, and costs to comprehensively evaluate dual credit opportunities, including an assessment of the adequacy of information on dual credit costs and local funding structures and the ability to identify ineffective and inefficient dual credit programs;~~

~~b. develop a plan to create a cross agency, statewide dual credit student outcome reporting and evaluation tool to measure acceleration, tuition saved, and efficient and effective practices for offering dual credit. The agencies shall consider the role both Preschool to Grade 16 (P 16) Councils and Education Research Centers could have in this evaluation strategy;~~

~~c. report their joint findings regarding the comprehensive evaluation of dual credit to the Governor, Legislative Budget Board, and Legislative committees responsible for oversight of public and higher education no later than August 31, 2018; and~~

~~d. issue guidance, using existing data on all dual credit programs, regarding the best and most effective practices for school districts and dual credit partners to continue or initiate dual credit offerings.~~

Neither participating state agency requested funding for this item in their 2018–19 Legislative Appropriations Request. This new rider is duplicative of an existing dual credit study currently being commissioned by the Texas Higher Education Coordinating Board. To keep Texas fiscally strong, we must limit unnecessary state spending. I therefore object to and disapprove of this appropriation.

Higher Education Coordinating Board

55. Collaborative Dual Credit Program Evaluation. ~~Out of funds appropriated above in Strategy B.1.1, Central Administration, $72,131 in each fiscal year of the biennium in General Revenue shall be used to dedicate one Full-Time Employee (FTE) to collaboratively, along with the Texas Education Agency:~~

~~a) identify existing capabilities, limitations, and costs to comprehensively evaluate dual credit opportunities, including an assessment of the adequacy of information on dual credit costs and local funding structures and the ability to identify ineffective and inefficient dual credit programs;~~

~~b) develop a plan to create a cross agency, statewide dual credit student outcome reporting and evaluation tool to measure acceleration, tuition saved, and efficient and effective practices for offering dual credit. The agencies shall consider the role both Preschool to Grade 16 (P 16) Councils and Education Research Centers could have in this evaluation strategy;~~

~~c) report their joint findings regarding the comprehensive evaluation of dual credit to the Governor, Legislative Budget Board, and Legislative~~

committees responsible for oversight of public and higher education no later than August 31, 2018; and

d) issue guidance, using existing data on all dual credit programs, regarding the best and most effective practices for school districts and dual credit partners to continue or initiate dual credit offerings.

Neither participating state agency requested funding for this item in their 2018–19 Legislative Appropriations Request. This new rider is duplicative of an existing dual credit study currently being commissioned by the Texas Higher Education Coordinating Board. To keep Texas fiscally strong, we must limit unnecessary state spending. I therefore object to and disapprove of this appropriation.

UT Austin

5. Legislative Law Clinic. Out of the funds appropriated above, up to $75,000 in each year of the biennium shall be used for the continuation of the Legislative Lawyering Clinic in the School of Law. These funds shall be used to pay for clinic academic and administrative personnel, research, surveys, and other expenses associated with the clinic

The University of Texas at Austin did not request funding for this item in its 2018–19 Legislative Appropriation Request. If the Legislative Law Clinic is a priority, the University may continue to use other resources to maintain this program. I therefore object to and disapprove of this appropriation.

Article IV – The Judiciary

Office of Court Administration, Texas Judicial Council

15. Guardianship Compliance Project. Amounts appropriated above from the General Revenue Fund include $2,407,967 in each fiscal year in Strategy A.1.1, Court Administration, and $140,650 in fiscal year 2018 and $60,150 in fiscal year 2019 in Strategy A.1.2, Information Technology, as well as 31.0 FTEs each fiscal year, for the Guardianship Compliance Project.

This rider creates a new state level compliance structure for guardians. This would result in a permanent increase both in government spending and employment. While I signed multiple bills to reform the guardianship process, a new state compliance and reporting structure for guardians is unnecessary bureaucracy and unnecessary spending. That is why I will veto Senate Bill 667. I therefore object to and disapprove of this appropriation.

Article V – Public Safety and Criminal Justice

Department of Public Safety

		2018	2019
F. 1.2. Strategy:	Safety Education	$ 4,741,451	$ 4,741,451

This appropriation exceeds the amount requested by the Department of Public Safety to fund this new strategy. If it is determined by the Department of Public Safety that improving the safety on our roads is contingent on an increased appropriation of tax funds for this campaign effort, then the Department of Public Safety can identify those needs and present them to the legislature at that time. Until that time, I object to and disapprove of one year of this appropriation.

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2:15 pm O'CLOCK
JUN 12 2017

56. Public Safety Grant for the Greater Houston Area. ~~Out of General Revenue Funds appropriated above in Strategy C.2.1, Public Safety Communications, the Department of Public Safety shall grant $4,000,000 in fiscal year 2018 to a non-profit entity in Houston that is dedicated to preventing and solving crime in the Greater Houston Area through programs emphasizing crime information reporting, student and parent education, and community empowerment.~~

The Department of Public Safety's core mission is to serve and protect citizens of Texas as the state's primary law enforcement agency. Over recent years, efforts have been made to help the agency concentrate on its core mission and to transfer grant-making activities to other state agencies. This appropriation, for which the Department did not request funding in its 2018-19 Legislative Appropriation Request, would return the Department to being a grant-making entity. This veto will not prevent Houston Crime Stoppers from being able to receive grant funding from the Office of the Governor's Criminal Justice Division—or encumber Houston Crime Stoppers' ability to provide awards to appropriate recipients. I therefore object to and disapprove of this appropriation.

Article VI – Natural Resources

Texas Commission on Environmental Quality

7. Air Quality Planning. ~~Amounts appropriated above include $6,000,500 for the biennium out of the Clean Air Account No. 151 in Strategy A.1.1, Air Quality Assessment and Planning, for air quality planning activities to reduce ozone in areas not designated as nonattainment areas during the 2016-17 biennium and as approved by the Texas Commission on Environmental Quality (TCEQ). These areas may include Waco, El Paso, Beaumont, Austin, Corpus Christi, Granbury, Killeen-Temple, Longview-Tyler-Marshall, San Antonio, and Victoria. These activities may be carried out through interlocal agreements and may include: identifying, inventorying, and monitoring of pollution levels; modeling pollution levels; and the identification, quantification, implementation of appropriate locally enforceable pollution reduction controls; and the submission of work plans to be submitted to the TCEQ. The TCEQ shall allocate $350,000 to each area and the remaining funds to each area based on population in excess of 350,000. The grant recipients shall channel the funds to those projects most useful for the State Implementation Plan (SIP).~~

This program funds, among other items, bicycle use programs, carpooling awareness, environmental awareness campaigns, and locally enforceable pollution reduction programs in near non-attainment areas, which can be funded at the local government level. Resources in the Clean Air Account should be prioritized to directly address problems in our non-attainment areas of the state so that we are better positioned to combat the business-stifling regulations imposed on these areas by the Environmental Protection Agency. I therefore object to and disapprove of this appropriation.

24. Low-Income Vehicle Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP). ~~Amounts appropriated above out of the Clean Air Account No. 151 in Strategy A.1.1, Air Quality Assessment and Planning, include $43,468,055 in each fiscal year of the 2018-19 biennium in estimated fee revenues from vehicle inspection and maintenance fees generated pursuant to Health and Safety Code, §§382.202 and 382.302, to fund the Low-income Vehicle Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP). Out of these amounts, not more than $253,893 in each fiscal year shall~~

~~be used by the Texas Commission on Environmental Quality (TCEQ) for costs associated with administering the LIRAP as authorized in Health and Safety Code, §382.202, and all remaining funds shall be used as LIRAP grants to local governments.~~

~~Amounts appropriated above in Strategy A.1.1, Air Quality Assessment and Planning, also include $4,829,673 in each fiscal year of the 2018-19 biennium out of the Clean Air Account No. 151 to be used only for purposes authorized in Chapter 382 of the Health and Safety Code for county implemented local initiatives projects to reduce air emissions.~~

~~Amounts appropriated above for LIRAP grants and local initiative projects also include an estimated $1,196,172 each fiscal year in estimated fee revenue generated from Travis County and $483,736 each fiscal year in estimated LIRAP fee revenue generated from Williamson County. The TCEQ shall allocate, at a minimum, the estimated revenue amounts collected in each of the counties during the 2018-19 biennium to provide LIRAP grants and local initiatives projects in those counties.~~

~~In addition to the amounts appropriated above, any additional revenues from vehicle inspection and maintenance fees generated from additional counties participating in the LIRAP beginning on or after September 1, 2017 are appropriated to the TCEQ for the biennium. Such funds shall be used to provide grants to local governments and to cover administrative costs of the TCEQ in administering the LIRAP.~~

The Low-Income Vehicle Repair Assistance Program (LIRAP) has done little to provide measureable improvements to air quality in our state's non-attainment areas. Additionally, previously approved appropriations for this program have yet to be fully spent by the local entities who administer this program. The LIRAP program is similar to the ill-conceived and dubious Cash for Clunkers program and should be abolished. A veto of this appropriation will not only allow local entities to spend previously approved allocations, but will also allow counties an opportunity to reassess if they should continue to charge an optional local fee for this program. I therefore object to and disapprove of this appropriation.

Soil and Water Conservation Board

7. **Water Supply Enhancement.** Included in amounts appropriated above in Strategy C.1.1, Water Conservation and Enhancement, is $2,495,575 in fiscal year 2018 ~~and $2,495,575 in fiscal year 2019~~ out of the General Revenue Fund for the water supply enhancement program. These funds shall be used for supporting existing and implementing new water supply enhancement projects designated by the Soil and Water Conservation Board. Any unobligated and unexpended balances from this appropriation as of August 31, 2018 are appropriated for the same purpose for the fiscal year beginning September 1, 2018.

This program primarily funds efforts to remove brush from private land. Texas landowners have a rich history of improving the value of their land through various self-funded measures. As a general concept, government should abstain as much as possible from inserting itself into private property matters unless a greater public need commands otherwise. For transition purposes, the first year of the program will be funded in the amount of $2.495 million. Any amount of funding for this program can be carried forward as unexpended balances to the second year. Except for any potential unexpended balance, I therefore object to and disapprove of the second year of this appropriation.

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JUN 12 2017

Water Development Board

26. Appropriation: Study of Aquifers and Brackish Groundwater. ~~Amounts appropriated above in Strategy A.2.2, Water Resources Planning, include $1,849,233 in fiscal year 2018 and $150,767 in fiscal year 2019 out of the General Revenue Fund for contract costs for studies related to designating priority zones for the production of brackish groundwater in aquifers throughout the state as identified. The amounts of $167,787 in fiscal year 2018 and $150,767 in fiscal year 2019 shall be used for administrative costs in implementing the studies. The Board shall report to the Legislature on its progress relating to the studies not later than December 1 of each year.~~

The Texas Water Development Board has already completed several studies on brackish groundwater in various regions of the state. I therefore object to and disapprove of this appropriation.

Article VII – Business and Economic Development

Texas Lottery Commission

		2018	2019
A. 1.11. Strategy:	Retailer Bonus	$ 4,200,000	~~$ 4,200,000~~

Lottery retailers already receive a commission based on the volume of tickets sold at that location. This bonus, which is in addition to the commission, is intended to be an incentive for retailers to sell lottery tickets. The bonus was created in 1993 to help jumpstart the rollout of the lottery, but the lottery is now well established in the state. I therefore object to and disapprove of one year of this appropriation.

Article X – The Legislature

House of Representatives

5. Unexpended Balances: Legislative Budget Board.

~~a. Any unobligated and unexpended balances remaining as of August 31, 2017, from appropriations made to the Legislative Budget Board are appropriated to the Legislative Budget Board for the biennium beginning September 1, 2017.~~

b. Any unobligated and unexpended balances remaining as of August 31, 2018, from appropriations made to the Legislative Budget Board are appropriated for the same purposes for the fiscal year beginning September 1, 2018.

Since the 1996–1997 biennium, direct appropriations to the Legislative Budget Board (LBB) have skyrocketed by more than 700 percent compared to just 171 percent for the entire state. This growth has corresponded with greater government authority being delegated to unelected bureaucrats rather than being undertaken by elected officials directly accountable to the voters. To begin the process of restoring the LBB to its intended limited purpose, I therefore object to and disapprove of this appropriation.

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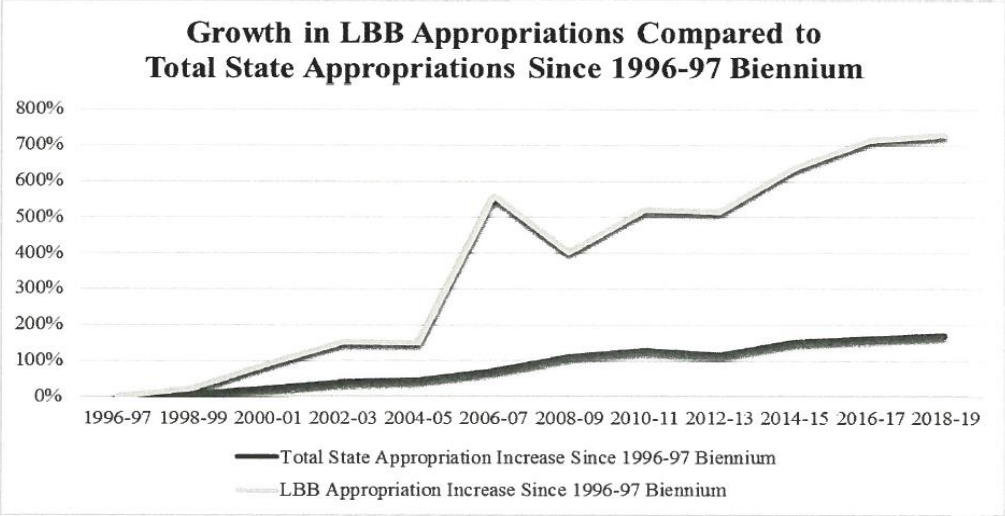
2:15 PM O'CLOCK
JUN 12 2017



I have signed Senate Bill No. 1 together with this proclamation stating my objections in accordance with Article IV, Section 14 of the Texas Constitution.

Since this Legislature by its adjournment of the Regular Session has prevented the return of this bill, I am filing this bill and these objections in the office of the Secretary of State and giving notice thereof by this public proclamation according to the aforementioned constitutional provision.

IN TESTIMONY WHEREOF, I have signed my name officially and caused the Seal of the State to be affixed hereto at Austin, this 12th day of June, 2017.

GREG ABBOTT
Governor of Texas

ATTESTED BY:

ROLANDO B. PABLOS
Secretary of State

FILED IN THE OFFICE OF THE SECRETARY OF STATE
2:15 pm O'CLOCK
JUN 12 2017

S.B. No. 1

President of the Senate

Speaker of the House

I hereby certify that S.B. No. 1 passed the Senate on March 28, 2017, by the following vote: Yeas 31, Nays 0; April 18, 2017, Senate refused to concur in House amendments and requested appointment of Conference Committee; April 20, 2017, House granted request of the Senate; May 27, 2017, Senate adopted Conference Committee Report by the following vote: Yeas 30, Nays 1; passed subject to the provisions of Article III, Section 49a, of the Constitution of Texas.

Secretary of the Senate

I hereby certify that S.B. No. 1 passed the House, with amendments, on April 6, 2017, by the following vote: Yeas 131, Nays 16, zero present not voting; April 20, 2017, House granted request of the Senate for appointment of Conference Committee; May 27, 2017, House adopted Conference Committee Report by the following vote: Yeas 135, Nays 14, zero present not voting; passed subject to the provisions of Article III, Section 49a, of the Constitution of Texas.

Chief Clerk of the House

Approved:

6-12-2017

Date

Governor

I, Glenn Hegar, Comptroller of Public Accounts, do hereby certify that the amounts appropriated in the herein S.B. No. 1, Regular Session, 85th Legislature, are within the amount estimated to be available in the affected fund.

Certified June 1, 2017.

Comptroller of Public Accounts

FILED IN THE OFFICE OF THE SECRETARY OF STATE
2:15 PM O'CLOCK
JUN 12 2017
Secretary of State

APPENDIX B: Executive Summary of Conceptual Model

EXECUTIVE SUMMARY

The ozone conceptual model presented in this report builds on the previous conceptual model for San Antonio in 2014 and incorporates data collected for the years 2015 and 2016. This conceptual model documents the temporal and spatial variability of high ozone concentrations and includes a description of the regional weather patterns and associated local meteorological conditions typically experienced during high ozone episodes in the San Antonio – New Braunfels Metropolitan Statistical Area (MSA) 8-county area, in particular, those episodes that are used to set the design values for the region. The conceptual model attempts to detect the sources of the region's transported ozone and estimates locally-formed ozone using available monitoring data. The analysis helps identify most suitable high ozone events to evaluate the effects of ozone control measures within the photochemical modeling process.

San Antonio Air Quality Status

The Texas Commission on Environmental Quality (TCEQ) operates three regulatory ozone monitors in the San Antonio area: CAMS 23, CAMS 58, and CAMS 59. A region is in violation of the 2015 ozone National Ambient Air Quality Standards (NAAQS) when the design value, which is the average of three consecutive years' fourth-highest monitored ozone data for any given regulatory monitor, exceeds 70 parts per billion (ppb). Table ES-1 indicates two regulatory monitors measuring ozone concentrations in violation of the 2015 ozone NAAQS in the San Antonio region: CAMS 23 and CAMS 58. It also shows that in recent years, the annual fourth-highest eight-hour average ozone concentrations have fallen from 87 ppb in 2012 to 69 ppb in 2016 at CAMS 58. However, this trend has not been continuous, with 2015 seeing an increase in the fourth-highest eight-hour ozone levels at each regulatory monitor. Only the Calaveras Lake monitor, CAMS 59, falls within the NAAQS.

Table ES-1: Compliance with 2015 ozone NAAQS, 2012 – 2016 (Red represents an exceedance of the NAAQS)

CAMS	2012 4th-Highest (ppb)	2013 4th-Highest (ppb)	2014 4th-Highest (ppb)	2015 4th-Highest (ppb)	2016 4th-Highest (ppb)	2014-2016 Design Value
San Antonio Northwest CAMS 23	**81**	**76**	69	**79**	**71**	**73**
Camp Bullis CAMS 58	**87**	**83**	**72**	**80**	69	**73**
Calaveras Lake CAMS 59	70	69	63	68	62	64

Annual Frequency of High Ozone Days

Figure ES-1 depicts the total number of high ozone days recorded at regulatory monitors for ozone thresholds of 60, 65, 70, and 75 ppb. According to the historical data, the area has experienced a slightly decreasing ozone trend from 2010 through 2016, with some fluctuation year-to-year based on meteorology.

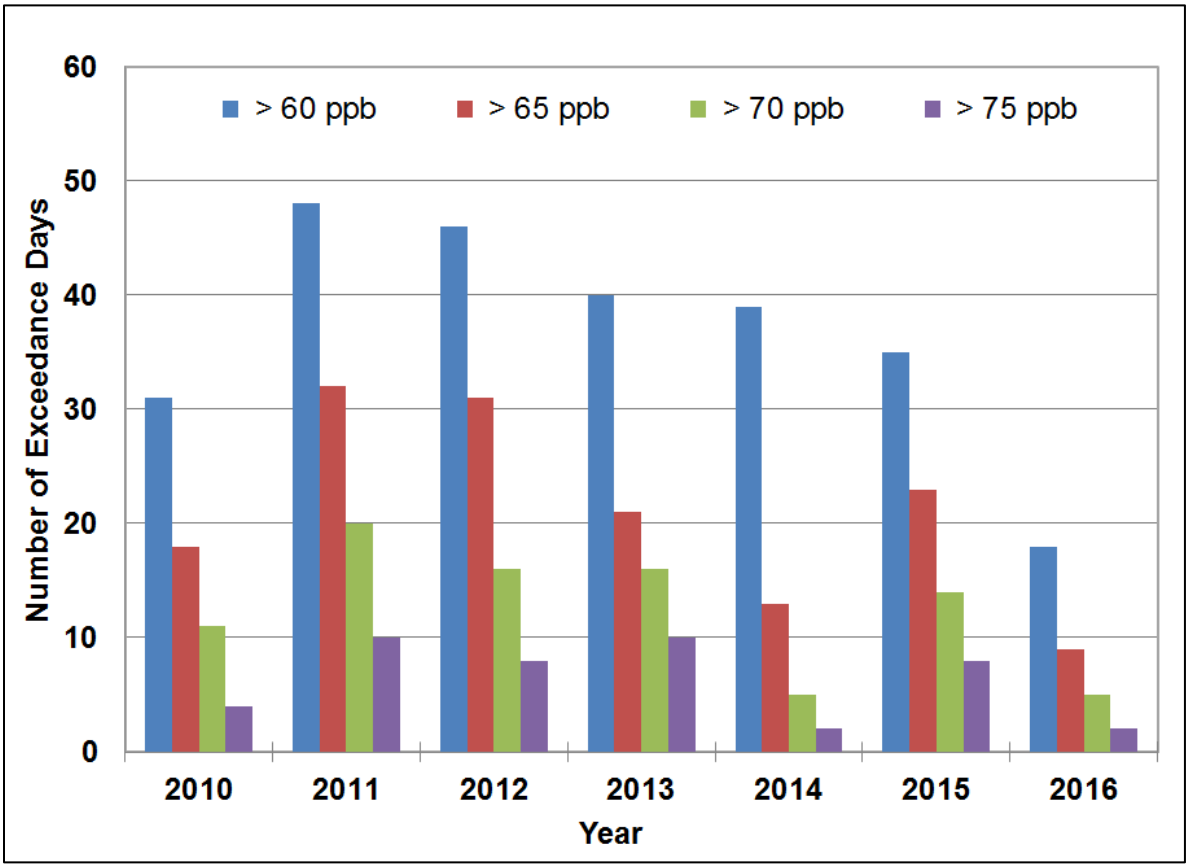


Figure ES-5-1: Total Number of High Ozone Days at San Antonio Area Regulatory Monitors

Extensive data sets were analyzed to develop an updated conceptual model for the San Antonio region including meteorology, emissions, ozone, and spatial observations. Chapter 1 defines the elements and usage of a conceptual model. This chapter describes the determining criteria desirable for modeling high ozone events as outlined in EPA's modeling guidelines.[9] Chapter 2 contains the analysis of air quality trends in San Antonio. The 2014 – 2016 design values at all

[9] U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Air Quality Analysis Division Air Quality Modeling Group, October 2005. "Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-hour Ozone NAAQS", Research Triangle Park, North Carolina. EPA-454/R-05-002. p. 46. Available online: http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf. Accessed 02/16/2017.

regulatory-sited monitors are above the 2015 ozone NAAQS, but lower than they were in 2010, and have been declining since 2011, as have the number of exceedance days.

Estimates of Background and Locally-Formed Ozone

Chapter 3 assesses typical local meteorological conditions that are conducive to ozone formation including days with stagnant air or variable wind directions, no precipitation, low atmospheric moisture content in the afternoon, a large diurnal temperature change, and clear skies. 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. Timing, location, and intensity of ozone events are influenced by the interaction between local and regional wind patterns. At CAMS 23, winds slowly change direction at the monitor anti-cyclonically from north to east during the day. The directions of the wind vectors indicate that transported emissions from the north and northeast on high ozone days combine with local emissions to produce elevated ozone conditions. CAMS 58 wind vectors show there is a reversal of winds arriving at the monitors from the northwest in the morning before 7:00 a.m. These winds can re-circulate local ozone precursor emissions and ozone from the previous day, which combine with local and transported emissions resulting in elevated ozone levels.

The impact of background ozone and ozone-precursor transport is considered in Chapter 5. There are currently six active NO_X monitors in the AACOG region, all of which typically indicate low NO_X levels with the exception of CAMS 1069, which often records moderate NO_X concentrations due to its proximity to Interstate-35 as a near-road NO_X monitor. Although CAMS 1069 has the highest recorded NO_X in the region, it only began operation in January 2014. Annual hourly maximum NO_X concentrations at CAMS 678 have significantly decreased since 2010, but the monitor ceased operation in April 2016. Decreases in recorded NO_X are attributed to controls put on major NO_X sources including power plants and cement kilns, and significant reductions of NO_X emissions from on-road and off-road vehicles. Local NO_X emissions should continue a downward trend, in large part due to improvements in vehicle emission standards, while local VOC emissions are expected to remain steady. CAMS 59 is an upwind monitor site on most high ozone days and NO_X measurements from 2010 to 2016 were low at that monitor, indicating there was not a significant amount of NO_X being transported into San Antonio from the southeast.

Large-Scale Weather Patterns and Transport Conditions during High Ozone Events

Since the majority of ozone recorded at local monitors is the result of transport from other areas, it is difficult for the San Antonio region to demonstrate attainment with only local emission controls. Months with higher ozone levels typically have small shares of

ambient ozone that are the result of local processes. Easterly to northeasterly winds bring high levels of background ozone into San Antonio from the Midwest U.S, Dallas, Austin and other regions. Sampling of industrial point sources and urban ozone plumes by aircraft increases the knowledge of regional ozone development.

Variations in both local ozone levels and transported ozone throughout the ozone season are addressed in Chapter 5, as it has become more apparent that seasonal meteorological trends have an important role in monitored ozone readings in San Antonio. In May and June, there is a seasonal peak in the frequency of high ozone days in most Texas cities. This period represents the first high ozone seasonal peak that San Antonio typically experiences, and corresponds to the yearly beginning of intermittent high pressure systems which result in the light winds, clear skies, and high solar radiation that drive high ozone production.

A significant amount of transport occurs during the spring and fall ozone season peaks. A combination of greater tropospheric-stratospheric air exchange combined with higher North American upper troposphere/stratospheric ozone levels during the early months of the ozone season are contributing factors. Likewise, the lack of frontal movements moving through the region transporting air from the northeast could explain the decrease in ground level ozone in July. The second seasonal peak covers a period from August through October. Resulting wind vectors during the May – June ozone season peak tend to be from the east and southeast on high ozone days, while the late August to early October ozone season peak wind vectors are dominated by winds from the northeast.

APPENDIX C: Executive Summary, 2017 Ozone Action Public Input Survey

Contract 582-16-60180,
PGA 582-16-60849-01
Task 6.7

EXECUTIVE SUMMARY

Ozone Action Public Input Survey

Submitted to the

Alamo Area Council of Governments

Submitted by

ETC Institute

November 14, 2016

PREPARED UNDER A GRANT FROM THE TEXAS COMMISSION ON ENVIROMENTAL QUALITY

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

EXECUTIVE SUMMARY

Overview

During the summer of 2016, the Alamo Area Council of Governments (AACOG) conducted an Ozone Action Public Input Survey of residents in the eight-county Greater San Antonio Area. The objective of the survey was to ascertain, from a representative sample of residents living in the San Antonio-New Braunfels Metropolitan Statistical Area (SA-NB MSA), underlying assumptions about air quality, support for selected ozone precursor reduction strategies, and willingness to take individual actions to help improve air quality.

To accomplish this objective, the survey was administered to randomly sampled residents of the San Antonio metropolitan area. The project goal was to obtain a minimum goal of 800 complete and usable surveys from residents age 18 or older. This goal was met, with 866 surveys having been completed. Data collection was completed in seven weeks, from late July through mid-September 2016. The survey was conducted in English and Spanish, with data collection goals focused on the number of completed surveys by county. The survey was administered using a combination of mail, email, and telephone to maximize participation rates.

NOTE: All percentages given throughout this report, excluding Appendix B, are based on weighted data. Details regarding weighting procedures are provided on page 7.

Major Findings

- Eighty-one percent (81%) of the residents surveyed were either “very concerned” or “somewhat concerned” about air pollution in the Greater San Antonio area. When comparing urban and rural areas, 48% of urban and 33% of rural respondents were “very concerned” about air pollution in the area.

- More than one-third (37%) of the residents surveyed indicated they or someone in their household has a breathing or respiratory problem. Thirty-nine percent (39%) of urban and 34% of rural respondents indicated they or someone in their household has a breathing or respiratory problem.

- Sixty-nine percent (69%) of the residents surveyed believe air pollution in the Greater San Antonio area is either “getting somewhat worse” or “getting much worse.” Just over one- fourth (26%) believe air pollution in the area is “staying the same.” Nineteen percent (19%) of urban and 18% of rural residents believe air pollution in the Greater San Antonio area is “getting much worse.”

- Just over half (57%) of the residents surveyed remembered hearing about any "Ozone Action Days" during the past year. Fifty-seven percent (57%) of urban and 54% of rural respondents remembered hearing about "Ozone Action Days" during the past year.

- When residents were asked, "What do you think an "Ozone Action Day" means?" top three responses given were: 1) the air is dirty/polluted, 2) people should drive less, and 3) there is a high amount of ozone in the air (multiple responses could be made to this question). Eleven percent (11%) responded, "I don't know what "Ozone Action Day" means."

- Thirty-seven percent (37%) of residents surveyed indicated they prefer to receive information about air quality through TV news/weather. Other preferred sources included email (18%) and Internet (15%) (multiple responses could be made to this question).

- When residents were asked, *"To what degree would you support or oppose the adoption of the following vehicle emissions reduction measures to improve air quality?"* 81% indicated they would "strongly support" or "somewhat support" streets that allow safer travel for cyclists, pedestrians, and transit users as well as motorists. Additionally, 80% would "strongly support" or "somewhat support" the improvement of public transportation options. The measure residents would support the least is the lowering of highway and expressway speed limits (31% would "strongly oppose").

- Most residents (88%) would "strongly support" or "somewhat support" greater use of clean energy from renewable sources such as wind and sun as a way to improve air quality. Eighty-one percent (81%) of residents would "strongly support" or "somewhat support" standards that require homes and buildings to be more energy efficient.

- When asked for their level of agreement with various statements regarding air quality, 91% of residents "strongly agreed" or "somewhat agreed" that improving air quality in the Greater San Antonio Area is the responsibility of every citizen living in the area. Eighty-seven percent (87%) of residents "strongly agreed" or "somewhat agreed" that improving air quality in the region is the responsibility of those businesses that are the greatest polluters.

- Ninety-two percent (92%) of residents surveyed indicated they drive a vehicle at least twice per week. When comparing urban and rural areas, 91% of urban and 97% of rural respondents drive a vehicle at least twice a week. Of all residents who do drive a vehicle at least twice a week, 76% currently drive the speed limit or below or are willing to do so. Two-thirds (67%) of residents currently avoid or are willing to avoid using drive-through lanes at businesses in favor of parking and going inside, especially on Ozone Action Days. The activity residents are least willing to do to

improve air quality is taking public transportation, especially on Ozone Action Days (34% are not willing).

Nearly three-fourths (74%) of residents who use gasoline-powered mowers or blowers indicated they currently or are willing to postpone using them on Ozone Action Days. Nearly two-thirds (65%) of residents surveyed indicated they currently or are willing to set the thermostat higher or use less electricity on Ozone Action Days (8% are not willing).