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Alamo Area Metropolitan Planning Organization

Tel 210.227.8651
Fax 210.227.9321

825 S. St. Mary's Street
San Antonio, Texas 78205

www.alamoareampo.org
aampo@alamoareampo.org

ENVIRONMENTAL

MOVING PEOPLE
CONNECTING PLACES



Public involvement is one of the cornerstones of transportation planning. Engaging the people who are most affected or who stand to benefit from transportation projects is a big part of an MPO's role in the community. At AAMPO, our goal is to inform, involve, and engage with people in a two-way conversation about transportation needs, challenges, and most importantly – solutions. This chapter focuses on the outreach conducted as part of the long range planning process but it only captures a snapshot of totality of the MPO's public involvement efforts in the region.

Accomplishments Over the Past Five Years

Until July 18, 2018, San Antonio had been the largest city in the United States that was in compliance with federal ozone standards. On that date, the Environmental Protection Agency (EPA) designated Bexar County as marginal nonattainment for ozone. The effective date of designation is September 24, 2018. Bexar County has until September 24, 2021 to meet the ozone standard. Comal, Guadalupe and Kendall counties were previously designated attainment/unclassifiable under the October 2015 standard.

Over the years, the region has been actively implementing measures to stay in attainment. Some examples include implementing vehicle idling restrictions, conducting educational and public outreach campaigns, improving transit services including coverage and frequency, purchasing newer, alternatively fueled fleets, expanding the scope of the Alamo Area

Commute Solutions Program, and increasing the coverage of bicycle and pedestrian facilities and amenities.

Beginning with the Safe, Accountable, Flexible, Efficient, Transportation Equity Act - A Legacy for Users (SAFETEA-LU) and subsequently advanced with the Moving Ahead for Progress in the 21st century (MAP-21) these acts better defined environmental goals that include more integration of metropolitan and statewide planning with the National Environmental Policy Act (NEPA) activities. From 2013-2015, the San Antonio TxDOT District worked with regional stakeholders on two Planning and Environmental Linkages (PEL) studies. In September 2015, the AAMPO adopted resolutions supporting the work completed on the two PEL studies completed for sections of IH 35.

Over the past five years, the AAMPO staff has developed and refined its online iMap tool. iMap is a user-friendly mapping application that is available to the public on the AAMPO website at <http://www.alamoareampo.org/imap/>. iMap contains a wide variety of transportation, geographic and environmental data layers. By using iMap, users can assess traffic volumes, vehicle crashes, floodplains, Edwards Aquifer impacts, transit service, environmental justice impacts, and other important data elements for geographic areas or transportation projects.

Environmental issues in transportation planning continue to be a priority. This chapter discusses local environmental issues: Linking NEPA and Planning, environmental analyses, air quality, water availability and sustainability.

Linking Planning and NEPA

Planning and Environment Linkages or PEL is an umbrella term for the many environmental issues that should be considered and used in the planning process to improve the environment. PEL addresses many of the concerns addressed under NEPA, such as environmental effects, endangered species, wetlands, and cultural preservation. It also includes Linking Planning and NEPA activities and concepts regarding how to conduct transportation planning-level choices and analyses so they may be adopted or incorporated into the process required by NEPA. PEL pertains to a wider array of issues and topics, including planning-level interagency consultation and coordination.

The AAMPO utilizes PEL as an approach to transportation decision-making that considers environmental, community, and economic goals early in the planning stage, and carries them through project development, design, and construction. The AAMPO strives for a seamless decision-making process that minimizes duplication of effort, promotes environmental stewardship, and reduces delays in project implementation. In September 2015, the AAMPO adopted resolutions supporting the work completed on the two PEL studies completed for sections of IH 35.

AAMPO Project Assessment Tool: iMap

When considering a transportation project for funding, the AAMPO, agency partners, public and stakeholders, can take into general account potential impacts to the environment and community and consider, where appropriate and necessary, environmental mitigation activities. The AAMPO does this through its iMap online mapping application. AAMPO has developed iMap through publicly available datasets and geocoded data elements specific to the AAMPO. iMap does not include an exhaustive listing of factors however, and each project sponsor is still responsible for the relevant environmental clearance documentation to comply with NEPA or appropriate state level environmental clearance, where applicable. Additionally, factors such as air quality may be a regional concern and not specifically limited to individual travel corridors.

The following are some of the environmental concerns that can be analyzed using iMap within the project development process:

- Environmental Justice
- Edwards Aquifer Impacts
- Floodplains
- Watershed areas
- Places of community interest
- Project locations and adjacent feature

As noted previously, it is still the responsibility of the sponsoring agency, in conducting the environmental analysis for proposed projects, to accurately and fully identify any impacts covering social, economic and environmental concerns, and proposed mitigation approaches, as applicable and warranted, to ensure compliance with relevant state and federal requirements.

Air Quality

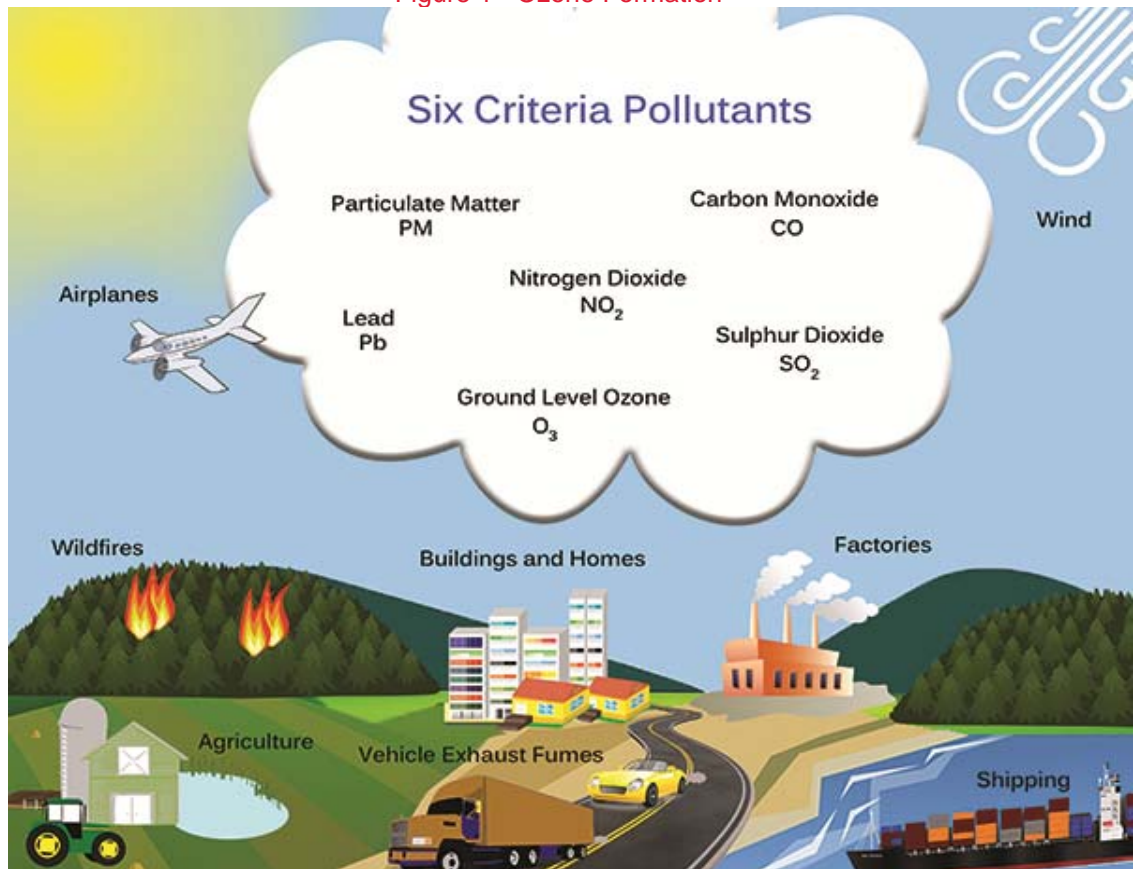
The ratification of the Clean Air Act of 1970 authorized the development of comprehensive federal and state regulations to limit emissions from both stationary (industrial) sources and mobile sources. Four major regulatory programs were initiated: the National Ambient Air Quality Standards (NAAQS) State Implementation Plans (SIPs), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAPs). The EPA was created on May 2, 1971 in order to implement the various requirements included in the Clean Air Act.

The Clean Air Act required areas to create plans to meet the air quality standards and set deadlines for achieving those standards. Using this authority, the EPA has promulgated air quality standards for six air pollutants: sulfur dioxide (SO₂), particulate matter (PM_{2.5} and PM₁₀), nitrogen dioxide (NO₂), carbon monoxide (CO), ozone, and lead. The Act required the EPA to review the scientific data upon which the standards are based, and revise the standards, if necessary, every five years, if deemed necessary to protect public health with “an adequate margin of safety”.

The 1990 Clean Air Act Amendments group nonattainment areas into classifications based on the extent to which the air quality standard is exceeded, and establish specific pollution controls and attainment dates for each classification. The classifications are as follows: Marginal, Moderate, Serious, Severe, and Extreme. Areas with more severe air pollution problems have a longer time to meet the standards, but also have more stringent control requirements placed on them.

Currently, air pollutants are monitored on a daily basis. These pollutants include ozone, nitrogen dioxide, carbon monoxide, and particulate matter. A community may be in attainment for one of these pollutants and non-attainment for another. As stated earlier, the issue in Bexar County with regard to air quality is ground level ozone. However, unlike the other pollutants, ozone is not directly emitted, but is formed by the interaction of volatile organic compounds (VOCs) and nitrogen oxides (NO_x) in the presence of sunlight as shown in Figure 1. Therefore, the control of ozone is based on regulating emissions of VOCs and NO_x.

Figure 1 - Ozone Formation



The Ozone Standard

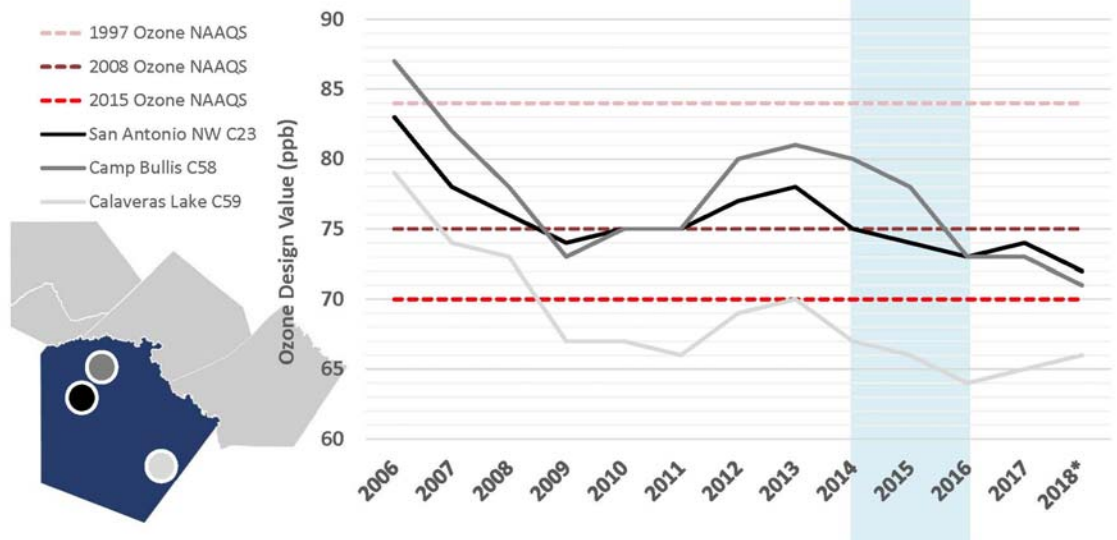
On October 1, 2015, the Environmental Protection Agency (EPA) strengthened the National Ambient Air Quality Standards (NAAQS) for ground-level ozone by lowering the standard from 75 parts per billion (ppb) to 70 ppb, based on scientific evidence about ozone's effects on public health and welfare. The updated standards will improve public health protection, particularly for at-risk groups including children, older adults, people of all ages who have lung diseases such as asthma, and people who are active outdoors. The San Antonio was not able to achieve the lower standard and was designated marginal nonattainment for ozone on July 18, 2018.

Air Quality Conditions

The MPO study area currently has several Continuous Air Quality Monitoring Systems (CAMS), which record ozone levels daily. As shown in Figure 9.2, the regulatory ozone CAMS include the San Antonio Northwest (C23), Camp Bullis (C58), Calaveras Lake (C59), Pecan Valley (C678) and the CPS Heritage Middle School (C622). In addition, the Alamo Area Council of Governments (AACOG) operates non-regulatory ozone monitoring sites across the region during the ozone season.

As shown in Figure 2 illustrates, monitor readings have been trending downward over time; however, it is not sufficient to meet the new 70 ppb standard.

Figure 2 -San Antonio Eight-Hour Design Value Trends by Monitor Site 2006 - 2018



(Source: April 2014 Air Tech AACOG presentation)

Transportation Conformity

Now that Bexar County has been designated nonattainment for ozone, the AAMPO is responsible for Transportation Conformity. Transportation Conformity addresses air pollution from on-road mobile sources. The Transportation Conformity requirements ensure that transportation projects do not cause new air quality violations, exacerbate existing ones, or delay attainment of the air quality standards.

In order to conform, the AAMPO’s adopted MTP and Transportation Improvement Program (TIP) must include an analysis showing that projects do not negatively affect the air quality. To be in conformity, an area’s MTP and TIP must be found to result in emissions that are less than the baseline emissions,

Final determinations of conformity for MTPs and TIPs are made by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). The transportation conformity process relies heavily on the interagency Consultation Procedures as outlined in the Code of Federal Regulations and the Texas Administrative Code. The AAMPO and TCEQ are responsible to meet legal public consultation requirements, and the AAMPO has principal responsibility for demonstrating transportation conformity. FHWA and FTA are responsible for issuing a final conformity determination.

If conformity is not demonstrated, federal funds for highway and transit improvements can be delayed. Only certain types of projects can move forward in a lapse. These include safety

projects, rehabilitation projects and those projects that do not have a negative impact on air quality.

The MPO has one year from the effective designation date (September 24, 2018) to complete the transportation conformity process. A conformity determination is required, at a minimum, every time a new or amended long range plan (MTP) or short range plan (TIP) is adopted (unless only adding exempted projects).

Air Quality Mitigation Efforts

In the Alamo Area, on-road vehicles are the largest single source of all ozone precursors. Fortunately, improvements in technology have had a considerable effect on the reduction of air pollution (emissions from new vehicles have declined over time as emission controls and fuel efficiency have improved). In order to reduce criteria pollutants, even though cleaner vehicles are in operation, vehicle miles of travel should be reduced. A downward trend in VMT is of the greatest benefits in reducing mobile source emissions. Reduction in the growth of vehicle miles of travel requires behavioral changes rather than solely relying on improvements in technology. The challenge is to reduce the length of most trips and to identify and implement strategies to encourage walking, bicycling and transit use.

Vehicles are not the only source however, according to the AACOG Emissions Trend Analysis for the San Antonio-New Braunfels Metropolitan Statistical Area (MSA) of ozone forming pollutants, there are 275.36 tons of VOCs and 240.26 tons of NOx emitted daily in from all man-made sources (power generation, vehicles, aircraft, etc.) in 2012. See Table 1 - 2012 Human-Made Emission Sources Ozone Season Weekday Anthropogenic VOC and NOx emissions for the San Antonio-New Braunfels MSA, 2012..

Table 1 - 2012 Human-Made Emission Sources Ozone Season Weekday Anthropogenic VOC and NOx emissions for the San Antonio-New Braunfels MSA, 2012. – NEED TO UPDATE

Source Type	VOC (tons/weekday)		NOx (tons/weekday)	
	Tons/Weekday	Percentage	Tons/Weekday	Percentage
Other	3.07	1.4%	3.85	2.0%
Non-Road	27.10	12.1%	19.59	10.3%
Off-Road	3.26	1.5%	8.13	4.3%
Area	151.25	67.6%	15.61	8.2%
Point	6.11	2.7%	66.35	34.9%
On-Road	32.93	14.7%	76.71	40.3%
Total	223.70	100.0%	190.24	100.0%

Source: AACOG, Oct. 2013. "Emissions Trend Analysis for the San Antonio-New Braunfels MSA: 1999, 2002, 2006, 2012, 2018, and 2023"

Water Availability

There is a continued interest in the protection of natural resources, especially water. Due to the development and expansion in the recharge zone of the Edwards Aquifer area and recent weather conditions including drought, concerns regarding the importance of looking after and

preserving the water resources in the Alamo Area region continues. The Edwards Aquifer is the primary source of drinking water for the area. It is important for governmental entities, private corporations and citizens to work together to address urban development that impacts the aquifer. Plans such as the Edwards Aquifer Sustainability Initiative specify preferred restrictions on impervious cover percentages that will sustain existing water quality, as well as other measures that will assist in protecting the aquifer.

The Edwards Aquifer is one of the major groundwater systems in Texas. It has been a source of water for people in south central Texas for more than 12,000 years. Today, it is the primary source of water for approximately 1.7 million people. Geographically, the Aquifer extends through parts of Kinney, Uvalde, Zavala, Medina, Frio, Atascosa, Bexar, Comal, Guadalupe, and Hays counties and covers an area approximately 180 miles long and five to 40 miles wide. The total surface area overlying the Aquifer is approximately 3,600 square miles. The Aquifer is the primary water source for much of this area, including the City of San Antonio and its surrounding communities.

Historically, the cities of Uvalde, San Antonio, New Braunfels, and San Marcos were founded around large springs that discharged from the Aquifer. As the region grew, wells were drilled into the Aquifer in order to supplement the water supplied by those springs. The Aquifer also serves as the principal source of water for the region's agricultural and industrial activities and provides necessary spring flow for endangered species habitat, as well as recreational purposes and downstream uses in the Guadalupe, Nueces, and San Antonio river basins. During the 1970s and 1980s, residential development in the San Antonio Metropolitan Area occurred predominantly in the northern part of the region. Because of the concern of continued development over the Recharge Zone, construction in the 1990s occurred in the western and northeastern areas of the County, slightly curbing the expansion to the north.

As the metropolitan area continues to grow, the needed transportation projects will impact surface water flow and infiltration, especially during storm or flood conditions. The Aquifer is divided into three main zones: the contributing zone, the recharge zone, and the artesian zone. The contributing zone is also called the drainage area or the catchment area. Here the land surface "catches" water from rainfall that averages about 30" per year, and water runs off into streams or infiltrates into the water table aquifer of the plateau. Runoff from the land surface and water table springs then both feed streams that flow over relatively impermeable limestone until they reach the recharge zone. Because transportation facilities generally cause an increase in the impermeable surface area, roadways can result in increasing local surface runoff and reducing water infiltration into the soil. Roadway construction projects can also cause the altering of drainage patterns at stream crossings, by changing the speed, direction and amount of storm water flow.

Aquifer Mitigation Efforts

There are several mitigation strategies that could be used to reduce storm water runoff and degradation of the Edwards Aquifer by minimizing the impact of transportation improvements. Most of these can be directly incorporated into the design of the transportation facility. Engineering on new projects, and redesign and retrofit of existing facilities could include:

- erosion control measures and runoff management techniques used to prevent pollution of adjacent waterways and the Edwards Aquifer
- adjustments to the alignments of transportation facilities used to avoid flood hazards
- greater use of permeable surfaces employed to reduce impacts on ground water recharge
- cost/pricing strategies to reduce demand for paved parking or increasing fines for intentional discharge

Other mitigation strategies could include compliance with federal, state and local policies, standards and land use strategies that address water resources.

Conclusion

With increased population and vehicle miles traveled projected, it is important the region be proactive on regulations concerning water quality and air quality. The area will need to be proactive in its protective measures and getting information out to the general public in order to help reduce potential negative impacts to both sensitivities and in order to stay in compliance with the NAAQS in the future.