
*Voluntary measures
implemented or planned in
the service area of the Alamo
Area Council of Governments*

*CPS Energy's Save for
Tomorrow Energy Program*

*CPS Energy's Solar
Generation Program*

*City of San Antonio's Green
Initiatives*

*City of San Antonio's Solar
PV Installations, Energy
Efficiency Building Retrofits,
and Clean Transportation
Programs*

*Local Cement Industry's
Strategies*

*San Antonio Metropolitan
Health District's Air Quality
Program Proposal*

*VIA Metropolitan Transit's
Fleet Projects*

*San Antonio Water System's
Energy Efficiency Programs*

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 24th, 2013**



Air Improvement Resources Executive Committee

8700 Tesoro Drive, Suite 700 San Antonio, Texas 78217 (210) 362-5200 fax 225-5937

Hon. Jim Wolverton
Chair,
AIR Executive Committee
Guadalupe County
Commissioner

July 24, 2013

Hon. John Williams
Vice-Chair,
AIR Executive Committee
Greater Bexar County
Council of Cities
Universal City
Mayor

Ozone Advance
c/o Laura Bunte, Mail Code C304-01
109 T.W. Alexander Drive
Research Triangle Park, NC 27711

Dear Ms. Bunte,

Hon. Mick Fincke
AACOG Board of Directors
Kendall County
Commissioner

Please find attached the Ozone Advance Path Forward Letter for your consideration.

Hon. Rey Saldaña
City of San Antonio
Councilman

We look forward to continuing our work with the Texas Commission on Environmental Quality and the US Environmental Protection Agency as well as the citizens of the greater San Antonio-New Braunfels Metropolitan Statistical Area in our efforts to maintain clean air and compliance with federal air quality standards.

Hon. Marvin Quinney
Wilson County
Judge

Hon. George Antuna
San Antonio – Bexar
County MPO
City of Schertz
Councilman

Sincerely,

Hon. Diana J. Bautista
Atascosa County
Judge

Hon. Nelson Wolff
Bexar County
Judge

Hon. Bryan Miranda
City of New Braunfels
Councilman

Jim Wolverton
Chairman, Air Improvement
Resources Executive Committee
Commissioner, Guadalupe County

John Williams
Vice-Chairman, Air Improvement
Resources Executive Committee
Mayor, Universal City

Ozone Advance Program: Regional Sustainability Initiatives

Voluntary Measures for the AACOG Ozone Advance Path Forward Letter

Local agencies and stakeholders have taken actions which will remain ongoing into the future, and which will have a positive impact on ozone levels in the region. Their actions and willingness to list measures are key leadership efforts in the San Antonio / AACOG Ozone Advance effort.

CPS Energy

Programs: Save For Tomorrow Energy Program, Solar Generation

One important source of ozone precursors is power generation when fossil fuel is used. CPS Energy has created a series of consumer-based reduction programs, including:

- Residential and commercial energy conservation and solar rebate program to help avoid 771 MW of electric load-Save for Tomorrow Energy Program (STEP)
- Home Area Network (HAN) for customers to manage energy and provide peak load reductions
- Commercial demand response program to reduce peak load
- Installing LED street lights with the City of San Antonio to increase lighting energy efficiency
- 1500 MW of renewable energy capacity by 2020 (approx. 20% of generation capacity); 1,113 MW in commercial operation and a master agreement for an additional 400 MW of solar energy, with the first 41 MW scheduled for operation in summer 2013
- Reducing emissions by “rebalancing” generation portfolio with additional renewable energy, Summit Texas Clean Energy Project (IGCC technology and 90% carbon capture) and recent purchase of natural gas plant
- Invested over \$253 M in emission control technologies at its coal units since 1997, including Separated Over Fired Air (SOFA), bag houses, NOx combustion controls, Selective Catalytic Reduction (SCR) technology, and mercury controls. CPS Energy NOx emissions have been reduced over 70% from 1997 to 2012.
- Mow Down Smog Program to provide customers rebates for purchasing electric lawn equipment instead of gasoline.

Key among these is the STEP program for the reduction in emissions which accompanies the reduction in generation using fossil fuel power. In 2009-2010, with support funding provided by the Texas Commission on Environmental Quality, CPS Energy partnered with the Texas A&M Energy Systems Laboratory (ESL) and AACOG to provide an assessment of the ozone impacts derived from the STEP program. The final¹ report, delivered in October of 2010, showed that “according to the TCEQ/ESL, the total annual NOx emissions reductions estimated through 2009 energy savings were 114.03 ton/year.”

However, since that time, the STEP program has continued and CPS Energy has also established a series of solar photovoltaic facilities. Solar PV installations represent a

¹ "NOx Emissions Reduction from CPS Energy's 'Save For Tomorrow Energy Plan' Within the Alamo Area Council of Governments Report to the Texas Commission on Environmental Quality," Energy Systems Laboratory at the Texas Engineering Experiment Station, Texas A&M University System; October 2010; available online: <http://repository.tamu.edu/bitstream/handle/1969.1/93369/ESL-TR-10-10-01.pdf>

reduction in NOx emissions produced by traditional fossil-fuel power generation. In addition, they have announced a proposal to take the two Deely coal-fired power plants offline in 2018, with replacement generation capacity basically provided by the natural gas fired power generation facilities at Rio Nogales near Seguin and increased generation capacity using renewable energy.

Completed with the support of the Texas Commission on Environmental Quality, please find included with this Path Forward Letter the July 15, 2013 update from the Energy Systems Laboratory. The reductions in oxides of nitrogen (NOx) resulting from this outstanding effort have been documented for 2011 and estimated for 2020, the target year for the STEP goals of 771 MW reduction in power consumption through the energy efficiency measures in the program.

Perhaps more critically, the energy savings which might be achieved through the voluntary, cost-efficient program can grow to become 35 times greater by 2020 than the energy savings reductions achieved in 2011, according to the analysis for growth potential noted in the report. This potential represents a tremendous path for involvement by the citizens of the region who are CPS Energy customers. The willingness of the residential, commercial, and industrial sectors to participate and grow the success of the STEP program is targeted for strong support by the AIR Committee.

City of San Antonio

According to the May 22, 2013, Volume 1, Issue 10 of Noticias Verdes² published by the Office of Sustainability³ of the City of San Antonio:

San Antonio is emerging as one of the “greenest” large American cities. In addition to its already famous reputation for hospitality, San Antonio now has:

- The largest solar power capacity of any city in Texas (in partnership with CPS Energy).
- The largest wind power portfolio of any municipal utility in the U.S. (in partnership with CPS Energy)
- The B-Cycle convenient and affordable bike share system has 35 stations and growing to 50.
- A Hertz On Demand 24/7 carshare system which includes an all-electric vehicle.
- A fleet of hybrid taxicabs.
- Free downtown on-street parking for hybrid and electric vehicles.
- An expanded River Walk known for its pedestrian friendliness — now incorporating high-efficiency induction lighting.
- A network of over 130 electric vehicle charging stations, many with multiple chargers.
- The nation’s first “solar cap” - landfill cover with solar panels.
- The first public utility to purchase power (200 MW) from the Texas Clean Energy Project with 99% carbon dioxide capture.
- An adopted City goal of meeting the 2030 Challenge of zero net carbon buildings.
- Organic recycling with the goal of 60% recycling of all waste by 2025.
- Support the San Antonio River Authority’s urban river restoration, largest in the U.S.
- The State’s largest fleet of CNG-powered refuse trucks.
- Single stream recycling.
- Traditionally has met all Clean Air Standards—the largest metro area to do so.

² <http://www.sanantonio.gov/Portals/0/Files/Sustainability/News/NoticiasVerdes.pdf>

³ <http://www.sanantonio.gov/Sustainability>

- All electric, new 11,500 gross vehicle weight delivery trucks—one of only three cities in the State.
- The first National Park with an electric vehicle charger for public use.
- Caused dramatic water quality improvements with the Mission Reach Ecosystem Restoration and Recreation Project. As a result, the San Antonio River Authority was invited by the World Bank to meet with government officials in India to offer assistance to the Indian government in cleaning up its rivers.

For the purposes of the Ozone Advance partnership, the City of San Antonio provides a series of programs which benefit the region’s clean air planning process.

Programs: Solar PV Installations, Energy Efficiency Building Retrofits, Clean Transportation

The City of San Antonio has created a series of programs⁴ which result either in reduced power consumption, reduced vehicular travel and congestion, or enabling installation of solar photovoltaic power generation, including:

- Municipal Retrofits:

Recent Past* Energy Efficiency Projects	Avoided Elec. (kWh)
EECBG - Municipal Facility Retrofit Program	6,443,000
EECBG - 3 parking garage lighting retrofits	888,000
EECBG - 24 facilities lighting retrofits	874,000
Alamodome & Convention Center PC	11,987,000
Airport PC	5,100,000
Phase 6 Exterior Lighting	1,408,000
Retrocommissioning of 5 large facilities	2,544,617
Total	29,244,617
Energy Efficiency Projects Completed 2014	Est. Avoided Elec. (kWh)
CPSE LED street lighting retrofit (25,000 fixtures)	21,698,000
Computer Energy Management	4,668,000
Pool Pump Retrofits	545,000
Phase 7 Exterior Lighting	700,000
Total	27,611,000

* Completed June 2011 - Sept. 2013

- The Airport Solar Installation provides 235 kilowatts of power supplementation to the garage operations and FAA Administration Building. Since October 2012, system has produced approximately 523 Megawatt/hours of energy, equivalent to annual energy consumption of 37 households.
- Revolving Energy Efficiency Fund: Rebates and energy savings from Municipal Retrofits are being allocated into a revolving Energy Efficiency Fund, which will provide 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.

⁴ Text from City of San Antonio's "San Antonio ARRA Grants – Project Highlights," online as <http://www.sanantonio.gov/oep/pdf/Energy%20and%20Sustainability%20Project%20Highlights.pdf>

- Transportation Enhancements: San Antonio's B-Cycle provides opportunities to enhance personal health and gives active transportation choices to residents and visitors. According to program data, riders logged over 90,000 B-Cycle trips - burning 15 million calories and offsetting over 370,000 pounds of carbon in just the first two years.
- Weatherization Assistance Program: The average household served will save \$600 and 5,200 kWh per year for 15 years. 3,320 low-income households were weatherized under the program, reaching 7,775 citizens during the 2.5 year EECBG grant period. As grant funds are now exhausted, the program is remains sustained through CPS Energy STEP funds.

Local Cement Industry

Programs: in the past, AACOG worked with industrial consultants to gauge effectiveness and reduction totals achievable through implementation of reduction technologies. Strategies implemented voluntarily in 2007 lowered NOx pollution by about 4.5 tons/day, and are likely to have been one of the reasons for our recent history of success.

The cement manufacturing industry in the San Antonio / New Braunfels Metropolitan Statistical Area consists of four facilities: Alamo Cement, Capitol Aggregates, Inc./Capitol Cement, Cemex Construction Materials South LLC and TXI Hunter Cement. To date these facilities have made significant investments in technology and modifications to operational practices which have resulted in emissions reductions.

Nitrogen Oxide (NOX) 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. As mentioned above, the addition of SNCR represents a significant capital and operational investment for these facilities, which will cumulatively approach \$9.5 million in the next 12 months.

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-Precaliner. In addition, equipment used in the process includes modern low-NOX firing systems as well as use of feed materials that require significantly lower energy amounts to process. According to the U.S. Portland Cement Association, since 1972 energy consumption has been reduced industry-wide by 37.5% per unit produced, and the producers in the San Antonio/New Braunfels MSA region also reflect this continued improvement, which ultimately results in lowered emissions and improvements to ground level ozone.

Upgrades to Mobile Fleets: Upgrades have been ongoing at all facilities to incorporate use of lower-emitting engines for mobile equipment at the plants. Some facilities have worked through the Texas Emissions Reduction Program (TERP) while others have voluntarily upgraded fleets to further enhance efficiency.

Local Oil & Gas Industry: Eagle Ford Shale

Programs: the growing development of the Eagle Ford shale play represents an important economic generator in south central Texas, as well as a potentially large source of emissions. Staff is working to address these emissions concerns in three programs.

- 1) Because the rate of ozone precursors from the Eagle Ford shale play development is very poorly understood, with the support of the Texas Commission on Environmental Quality, AACOG staff and many important stakeholders in the Eagle Ford development have partnered to create an ozone precursor emissions inventory of the development. This is a critical component to understanding the ozone impacts from the development by including them in AACOG's photochemical modeling analysis.
- 2) AACOG and the Alamo Area Development Corporation⁵ have supported the creation of the South Central Texas Natural Gas Vehicle Consortium.
 - The purpose of the South Central Texas Natural Gas Vehicle Consortium is to focus on expanding natural gas transportation markets and refueling infrastructure in the Central and South Texas regions (Austin, Corpus Christi, Laredo, San Antonio, and surrounding counties). The Consortium plays a role in addressing emissions from the Eagle Ford shale development since every older diesel-powered vehicle or engine that can be replaced with a cleaner Compressed Natural Gas, Liquefied Natural Gas, or clean diesel vehicle or engine represents an advance in air quality.
 - In addition, Ryder, known for transportation and supply chain management products and its fleet of rental trucks, is now integrating natural gas into their 160,000 truck fleet. They are joining the effort in Texas to increase natural gas fueled transportation by promoting natural gas vehicles, building more fueling stations, and adding maintenance capabilities for natural gas vehicles.
- 3) Established in 2001 by the state of Texas, the Texas Emissions Reduction Plan (TERP) provides a series of programs to reduce NOx and monitor the reductions, including grants to upgrade or replace on-road vehicles, non-road equipment and other mobile sources in the Emissions Reduction Incentive Grants (ERIG) program (see <http://www.terpgrants.org/>). The 83rd Regular Session of the Texas Legislature concluded in late May 2013 and provided SB 1727, modifying ERIG to allow the Texas Commission on Environmental Quality (TCEQ) to place a priority on programs that include the
"reduction of emissions from the operation of drilling, production, completions, and related heavy-duty on-road vehicles or non-road equipment in oil and gas production fields where the commission determines that the programs can help prevent that area or an adjacent area from being in violation of national ambient air quality standards."
This provides another avenue of support for making reductions in the nearby Eagle Ford shale play. AACOG staff is pursuing this possibility by working with industry to understand how this program might best be used.

SAMHD Air Quality Program Proposal

Programs: SAMHD and AACOG staff will meet in late July 2013 with TCEQ Small Business Section to discuss types of small businesses with ozone precursor air emissions. This might assist AACOG technical staff in assessing the impacts of small businesses currently considered "minor point sources" and could include an outreach effort with combined staff work to address reductions achievable for the Ozone Advance program.

VIA Metropolitan Transit

⁵ <http://www.aacog.com/index.aspx?nid=404>

VIA staff has implemented a series of transportation fleet projects which include:

- Diesel repower project provided a 30% certified NOx reduction for some vehicles;
- A series of replacements of vehicles averaging 4 gr NOx/horsepower-hour down to 0.15 gr NOx/hp-hr;
- 100% electric buses;
- Repowers of buses under grant opportunities; and
- Gasoline powered buses that were replaced by propane and compressed natural gas powered buses.
- Planning for fixed rail streetcar opening late 2017
- A Bus Rapid Transit line powered with compressed natural gas (CNG) articulated vehicles.
- 100% electric battery buses in the downtown area.

San Antonio Water System

The San Antonio Water System has implemented energy efficiency measures. These measures include:

On-going

- Sponsorship of VIA Bus Pass Program for SAWS employees
- Commercial and Residential Water Conservation Programs
- Medio Mixer Project
- Biogas Reuse at Dos Rios
- An international reputation in water conservation accommodating a 67% increase in population over the last 25 years without an increase in overall water consumption.
 - In 2012, SAWS indoor and outdoor conservation rebate programs saved 735 million gallons of water, equivalent to 2,254 acre-feet.
- The nation's largest (110 miles) direct recycled water delivery system in the nation 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.

New and Upcoming

- In-Conduit Hydropower generation
- Compressed Natural Gas vehicle pilot project

Alamo Area Council of Government's Commute Solutions Program

The Commute Solutions program in AACOG has as a goal to educate people about the connection between air quality and transportation, to inform them of what they could do differently to use less gas, and to offer them viable alternatives to driving as a single occupant in a vehicle. One of the key projects within the program is the online ridesharing service at NuRide.com.

This table shows the vehicle miles traveled (VMTs) saved by people in the AACOG Region because they have chosen carpool/vanpool, bus, bike, and foot, or have used telecommuting or worked a compressed work week instead of driving their cars. As a way to impact traffic congestion, air pollution, and energy consumption, AACOG has actively

promoted NuRide.com since 2011. By continuing to reduce miles driven alone in cars, the program reduces pollution leading to ozone.

Year	Vanpool	Carpool	Transit Bus	Walk	Bike	Compr. Week	Telecom.	Annual VMT Saving
2009	719,898	2,751,377	192,214	1,389	36,273	0	132,052	3,833,202
2010	1,238,416	3,185,659	410,135	13,119	53,300	2,441	289,149	5,192,219
2011	3,308,314	6,393,821	2,328,839	106,413	191,910	15,744	733,235	13,078,276
2012	4,668,769	6,468,521	3,302,768	55,268	199,156	33,652	645,923	15,374,057
2013*	3,027,207	3,169,471	1,606,914	29,192	96,724	18,435	329,315	8,277,257

Year	2009		2010		2011		2012		2013*	
Emissions	NO _x	VOC								
Reductions (tons/yr)	4.8	3.45	5.6	4.19	12.46	9.53	14.73	10.8	4.8	4.49

*as of June, 2013.

Much as CPS Energy's Save for Tomorrow Energy Plan (STEP) does, the NuRide.com project provides a path for participation by everyone in the community in making reductions in pollution in the region.

Ozone Advance Program: Current List of Submitted Projects

<p><u>CPS Energy</u> <u>Programs:</u> Save For Tomorrow Energy Program, Solar Generation, Portfolio Balancing, Emissions Retrofits, Coal-Fired Plant Shutdown</p>
<p>One important source of ozone precursors is power generation when fossil fuel is used. CPS Energy operates a series of demand side management (DSM) programs, including:</p>
<ul style="list-style-type: none"> • Residential and commercial energy conservation and solar rebate program to help avoid 771 MW of electric load-Save for Tomorrow Energy Program (STEP)
<ul style="list-style-type: none"> • 1500 MW of renewable energy capacity by 2020 (approx. 20% of generation capacity); 1,116 MW under contract and MOU for an additional 400 MW of solar energy
<p>These demand side management reduction programs provided:</p> <ul style="list-style-type: none"> ✓ Energy savings in 2011: 73.7 GWh/yr, which equates to ✓ 26.9 tons NOx/yr (based on 2010 eGrid estimations) with ✓ Peak-day NOx reductions of 0.074 tons NOx/day (based on 2010 eGrid).
<p>Total cumulative achievable savings of CPS Energy's DSM program potential through 2020 is expected to be 2,543 GWh/year of electricity savings, based on the aggressive incentive scenario and exception of industrial sector. These include:</p> <ul style="list-style-type: none"> ✓ Residential programs: 1,424,499 MWh/year equivalent to <ul style="list-style-type: none"> ○ 520 tons NOx reductions in 2020 (based on 2010 eGrid estimations) ✓ Commercial programs: 1,118,773 MWh/year equivalent to <ul style="list-style-type: none"> ○ 409 tons NOx reductions in 2020 (based on 2010 eGrid estimations) ✓ Total STEP NOx reductions achievable in 2020: 929 tons/year <p>Achieving this aggressive case has become an ozone reduction goal in the region.</p>
<ul style="list-style-type: none"> • Invested over \$253 M in emission control technologies at its coal units since 1997, including Separated Over Fired Air (SOFA), bag houses, NOx combustion controls, Selective Catalytic Reduction (SCR) technology, and mercury controls. CPS Energy NOx emissions have been reduced over 70% from 1997 to 2012.

<p><u>City of San Antonio</u> <u>Programs:</u> Energy Efficiency Building Retrofits, Installations</p>
<p>The City of San Antonio has created a series of programs⁶ which result either in reduced power consumption, reduced vehicular travel and congestion, or enabling installation of solar photovoltaic power generation, including:</p>
<p>Energy Efficiency Projects which will be implemented in programs ending in 2014 showing an Avoided Electricity Consumption estimate:</p> <ul style="list-style-type: none"> ✓ Computer Energy Management: 4,668,000 kWh ✓ Pool Pump Retrofits: 545,000 kWh ✓ Phase 7 Exterior Lighting: 700,000 kWh

⁶ Text from City of San Antonio's "San Antonio ARRA Grants – Project Highlights," online as <http://www.sanantonio.gov/oeppdf/Energy%20and%20Sustainability%20Project%20Highlights.pdf>

<p>CPS Energy + City of San Antonio</p> <p>Programs: Energy Efficiency Building Retrofits, Installations</p>
<ul style="list-style-type: none"> • Installing LED street lights with the City of San Antonio to increase lighting energy efficiency with an estimated Avoided Electricity Consumption of 21,698,000 kWh
<ul style="list-style-type: none"> • <u>Better Buildings Retrofit Program</u> in partnership with CPS Energy: Funding support for energy efficiency through retrofitting of residential, commercial and municipal buildings. <ul style="list-style-type: none"> ○ Residential Program: In partnership with CPS Energy through the CPS Energy Savers program, the City has incentivized over 600 homes to achieve 15% or greater energy savings. ○ Commercial Program: The City, in partnership with CPS Energy, audited 9.1 million square feet of commercial space and retrofitted 2.3 million square feet in FY2012. Over 4 million square feet of space is scheduled for retrofit in FY2013.
<ul style="list-style-type: none"> • <u>HVAC Retrofits</u>: 32 facilities received new heating, ventilation and cooling equipment for a total of 639 tons installed. Programmable thermostats were also installed in conjunction with HVAC units to allow for the more efficient operation of new equipment. Expected savings of 730,000 kWh and \$60,600 should be realized annually.
<ul style="list-style-type: none"> • <u>Weatherization Assistance Program</u>: The average household served will save \$600 and 5,200 kWh per year for 15 years. 3,320 low-income households were weatherized under the program, reaching 7,775 citizens during the 2.5 year EECSBG grant period.