

Offsetting Emissions from Coal-Fired Power Plants

Sustainable Communities Training
Conference

March 10, 2009

Peter Bella, Natural Resource Dept.
Alamo Area Council Of Governments
San Antonio Region

Elephant in the Room

- Old business cost accounting paradigm (material, labor, production, shipping) doesn't fully reflect environmental costs which must be internalized, taken into account to create a truly sustainable business production cycle.
- Is leadership willing to embrace policies that incentivize or mandate sustainable growth?

Measures of Sustainability

- Largest US city in attainment, all NAAQS
- AACOG region supports large scale quarrying operations: large NOx points
- Municipally-owned power: management
- Low per-capita water consumption
- Explosive pop growth: 50%+ 2000-2030
 - 1,144,646 to 1,729,245 (Tex. Water Dev. B)

Offsetting Emissions from Coal-Fired Power Plants

- Strong Commitment in San Antonio Air Quality Planning Community to:
 - Analysis and Comment
 - Partnerships
 - Success and Recognition
 - Support for Innovation

Offsets in the region

Strong Commitment to Analysis and Comment

- Point source analysis
 - Photochemical model to determine impacts

Toyota Emissions Estimates

Two Phases of Construction and Operation

- VOC: $5 \text{ tons/day} * 250 \text{ days/yr} = 1250 \text{ TPY}$ (Dbl, Phase 2)
 - Emissions mainly from painting, cleaning, sealers, adhesives, & Natural Gas Combustion.
- NO_x: $0.34 \text{ tons/day} * 365 \text{ days/yr} = 125 \text{ TPY}$ (Dbl, Phase 2)
 - Emissions mainly from Nat. Gas (boilers/space heaters/misc. process heating); this is max. rate; will decrease in summer.
- SO₂: 1-2 TPY (Dbl for Phase 2) - see Nat. Gas sources
- CO: $0.2 \text{ tons/day} * 365 \text{ days/yr} = 73 \text{ TPY}$ (Dbl for Phase 2)
 - Emissions from same Nat. Gas sources listed above.
- PM: $0.16 \text{ tons/day} * 250 \text{ days/yr} = 40 \text{ TPY}$ (Dbl for Phase 2)
 - Emissions mainly from combustion, painting, and welding.
- Source: Toyota Motor Manufacturer North America, 11/18/02
 - "Please note that these emission rates are preliminary estimations only and may change depending on type of processes installed."

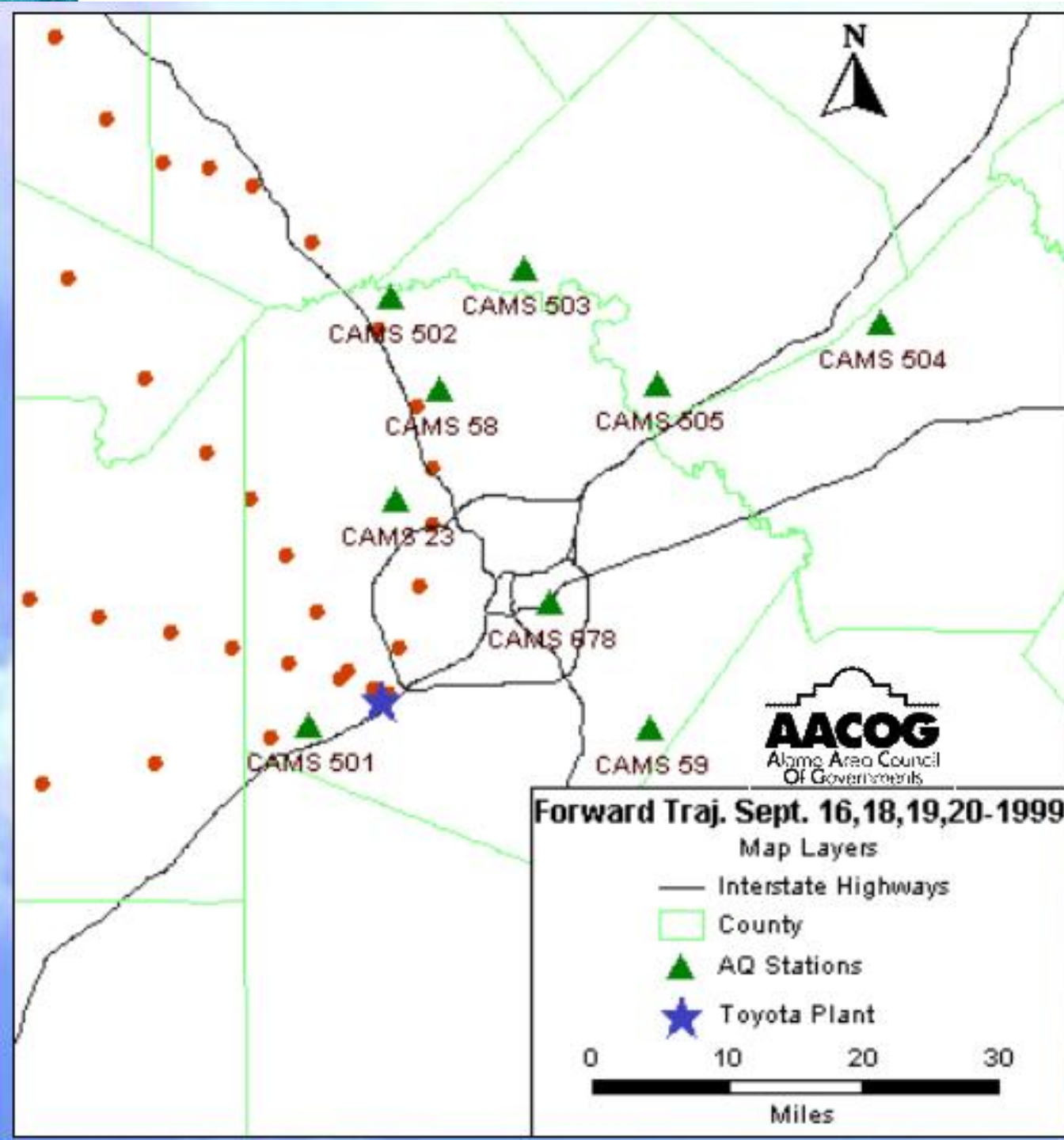
January 27, 2003 AACOG AIR Technical Co. Presentation

Ozone exceedance days, 1999 Modeling Episode

This episode characterized by winds from the east and southeast

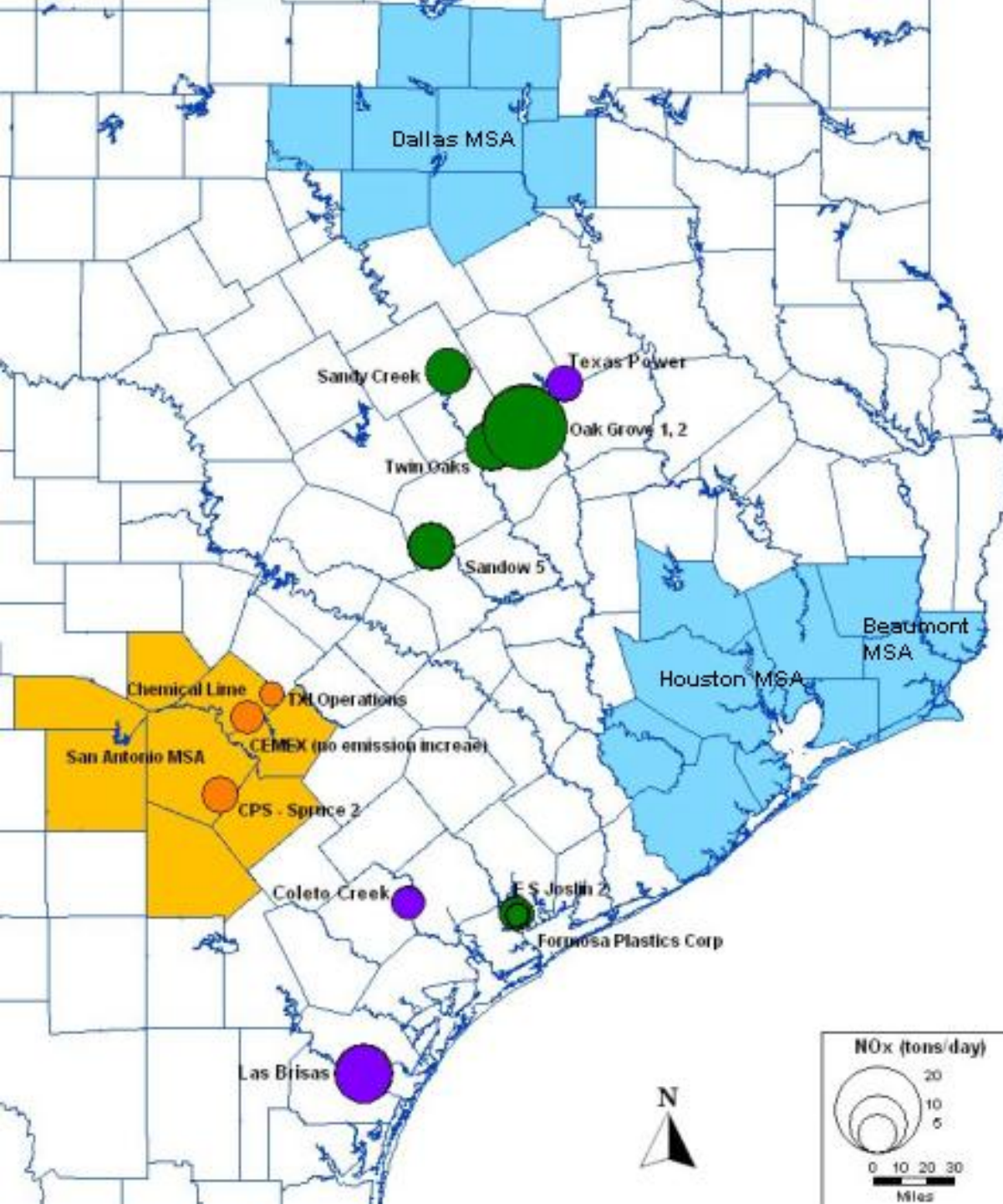
All current CAMS which monitor for ozone are shown

100 m altitude



Additional New Point Sources by 2013

DRAFT



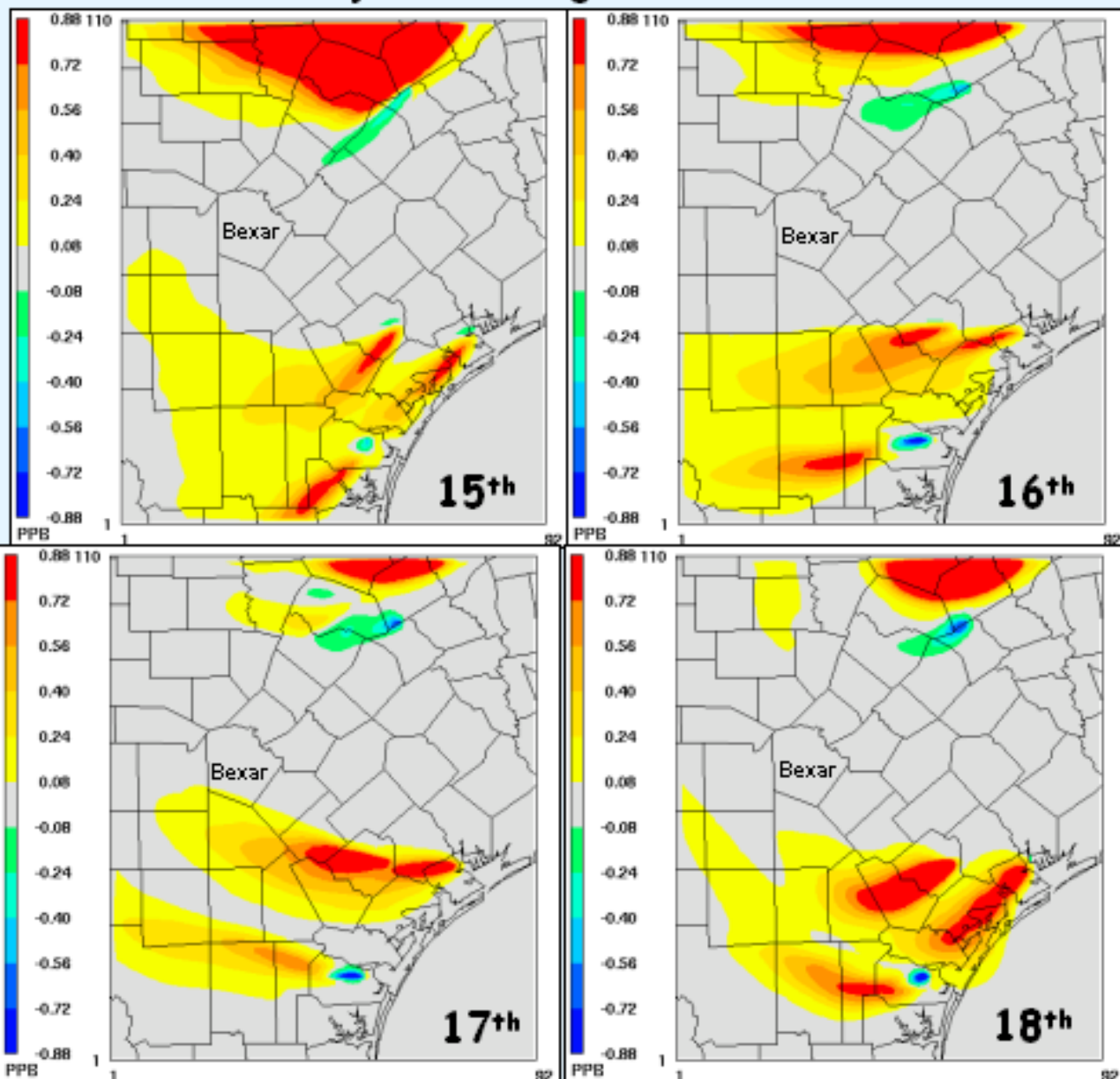
Name	MW	NOx tons/day	Start Date
CPS Spruce 2	800	4.8	Jan-09
TXI	N/A	2.6	Jan-09
CEMEX	N/A	0.0	Jan-09
Chemical Lime	N/A	4.0	Jan-09
Oak Grove 1	860	10.3	Mar-10
Oak Grove 2	860	10.3	Mar-10
Twin Oaks 3	680	5.6	Jan-11
Sandy Creek	860	6.9	May-10
Sandow 5	485	7.1	Mar-09
E.S. Joslin 2	303	2.2	Nov-09
Formosa	336	4.0	Mar-10
Texas Power	800	4.8	?
Coleta Creek	?	4.0	?
Las Brisas	1,200	10.3	Nov-12

Plot Date: July 1, 2008
 Map Compilation: May 19, 2008
 Source: TCEQ, Permit Database



Analysis: Transport due to new Point Sources, 2013

Maximum daily 8-hr Average Ozone Concentration difference by Episode Day (ppb)

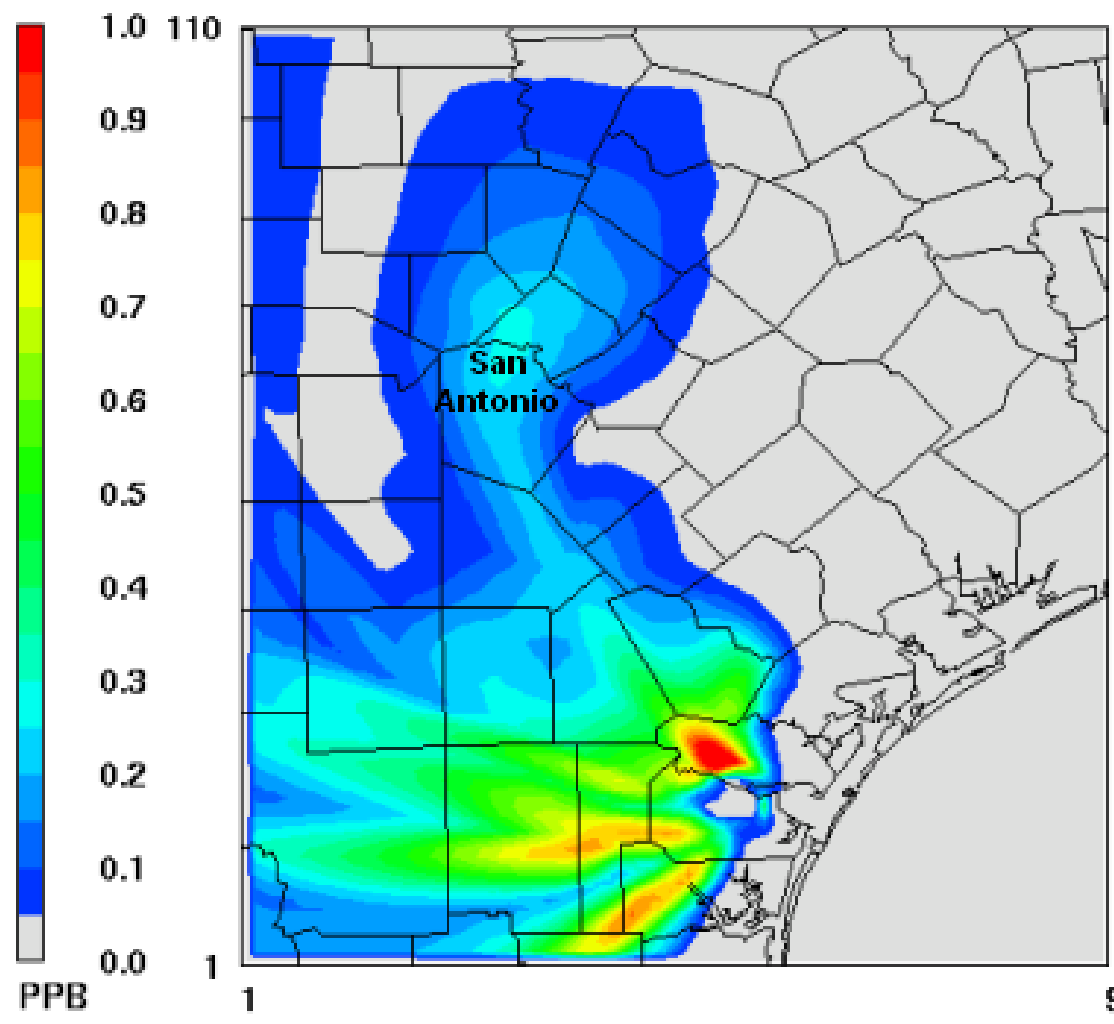


Name	MW	NO _x TPD
Oak Grove 1	860	10.3
Oak Grove 2	860	10.3
Twin Oaks 3	680	5.6
Sandy Creek	860	6.9
Sadow 5	485	7.1
E. S. Joslin 2	303	2.2
Formosa	336	4.0
Texas Power	800	4.8
Coletto Creek	?	4.0
Las Brisas	1200	10.3

September 15-18, 2013

Pave by MCNC

Maximum impact on 8-hour Ozone from Las Brisas, 2013



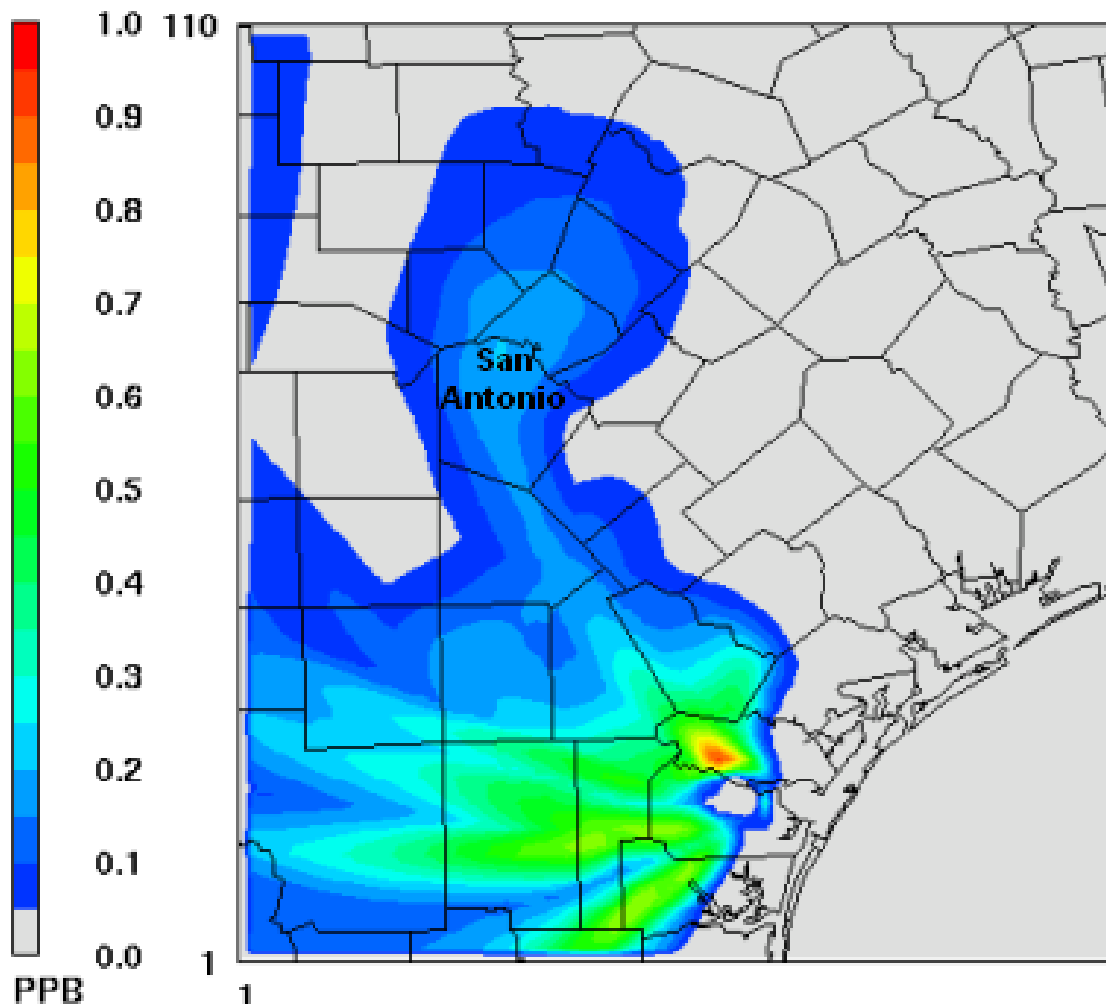
0.07 lb/MMBtu

San Antonio is in violation of the 75 ppb 8-hour ozone standard

Based on the Sept. 1999 Photochemical Modeling episode with the latest emission inventory projected to 2013

Min= 0.0 at (1,1), Max= 1.2 at (51,24)

Maximum impact on 8-hour Ozone from Las Brisas with SCR, 2013



0.05 lb/MMBtu

San Antonio is in violation of the 75 ppb 8-hour ozone standard

Based on the Sept. 1999 Photochemical Modeling episode with the latest emission inventory projected to 2013

PAVE by MNC

Offsets in the region

Concern noted to TCEQ

March 16, 2006

Name of commenting agency: Alamo Area Council of Governments

Applicant's Name: TXI Operations LP / Regulated Entity Number: RN100212067

Permit Number for Prevention of Significant Deterioration Permit: P63M3

Permit Numbers for Construction Permits: 5933A, 5933, 5933D

Comment 1: The TXI Hunter plant in Comal County lies within the San Antonio Area Early Action Compact planning region, a region designated by the US Environmental Protection Agency as "nonattainment/deferred" under the eight-hour average ozone National Ambient Air Quality Standards. AACOG is concerned with the additional oxides of nitrogen (NOx) emissions coming from this facility and their impacts on the attainment of the region. AACOG would like the facility and/or TCEQ to assess or consider the impact of this facility's increased emissions on the region's air quality, assuming the emission levels described in the permit.

Comment 2: NOx control technology (SNCR) was mentioned in the permit application. The reductions associated with this technology do not seem to be reflected in the permit allowables. If this is the case, we would like to know why the applicant is not reflecting the reductions associated with this technology.

Regionally yours,



Al Notzon, III
Executive Director

Offsets in the region

Strong Commitment to Analysis and Comment

- Point source analysis
 - Photochemical model to determine impacts
- AIR Co. 81st Legislature Resolution:
 - Evaluate downwind air quality impacts in the state air permitting process
 - Support legislation that requires photochemical modeling analysis of air quality impacts relevant to downwind areas as part of the TCEQ's air permit application evaluation. Such analysis and evaluation would include an assessment of cumulative impacts from all permitted facilities, and would require balancing mitigation measures to ensure no adverse air quality impacts to downwind air quality attainment goals in the state.

Strong Commitment to Partnerships

- TXI Hunter and Capitol Cement
 - AACOG worked w/ industrial consultants to gauge effectiveness/reduction totals
 - TXI vol. lowered permitted lbs NOx/ton clinker for the existing/new kilns from 2.87/2.45 average (2004) to 1.95 cap
 - Capitol shut down wet kiln on Dec. 15th, 2006, ozone season SNCR on dry kiln, April 2008
 - 1.19 ppb. maximum 8-hour decrease, Capitol
- AACOG completing SEP application

Strong Commitment to Success and Recognition



Photo:
Forrest
Mims
III

June 13, 2007: Hon. Jay Millikin presents recognition award to Tom Spaits of Capitol Cement for SNCR implementation

Strong Commitment to Success and Recognition

- CPS Energy: Municipally owned utility
- In 1998 CPS committed to reduce NOx emissions by 15 – 20%.
- In 1999 SB 7 and Chapter 117 required electric utilities to reduce NOx by 50% from 1997 levels by May 2005.



Environmental Enhancements

Total Estimated Cost: \$540 - \$760 Million

Item	Date	Cost
System NOx Reductions	1999 - 2004	\$55 million
Enhanced Monitoring Program	2003 - 2009	\$3 million
Coal Yard Dust Controls	2003 - 2004	\$4.0 million
Gas Startup at JTD	2005 - 2006	\$5.0 million
Baghouse Retrofit at JTD	2005 - 2007	\$87 million
Additional Coal NOx Combustion Controls	2005 - 2007	\$15 million
JKS1 Scrubber Upgrades	2008 - 2009	\$9 million
Mercury Monitors at JKS1 and JTD	2008	\$3 million
SCR - JTD 2	2010-2011	\$60 - 80 million
Scrubber Retrofits at JTD	2009-2013	\$300 - \$500 million
SCR - Additional Gas and Coal Units	TBD	TBD
Mercury Control Technology	TBD	TBD

Green - Completed

Blue - In Progress

Red - Estimated

Strong Commitment to Success and Recognition

**NOW, THEREFORE, BE IT RESOLVED BY THE AIR IMPROVEMENT RESOURCES
COMMITTEE OF THE ALAMO AREA COUNCIL OF GOVERNMENTS:**

The Air Improvement Resources Committee of AACOG recognizes and supports the clean air goals and actions undertaken by the above named parties.

By supporting these actions and also through the continuing air quality planning process in the San Antonio EAC region, the Air Improvement Resources Committee reaffirms its commitment to achieving and maintaining clean air for the citizens of the region.

BE IT FURTHER RESOLVED:

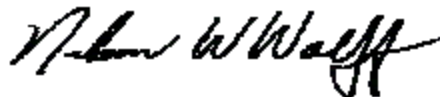
The Air Improvement Resources Committee of AACOG recognizes and commends the commitment of CPS Energy to implement clean air processes on an accelerated timeline to achieve reductions of both ozone precursors and particulate matter, and the commitment of TXI to install cleaner technology on the existing kiln of their Hunter cement operations plant in Comal County, as well as on their proposed kiln at the same location. These actions symbolize the level of commitment and action required of the citizens of the entire region in order that the region might attain federal air quality standards.

PASSED AND APPROVED THIS 23rd DAY OF AUGUST, 2006.

Signed,



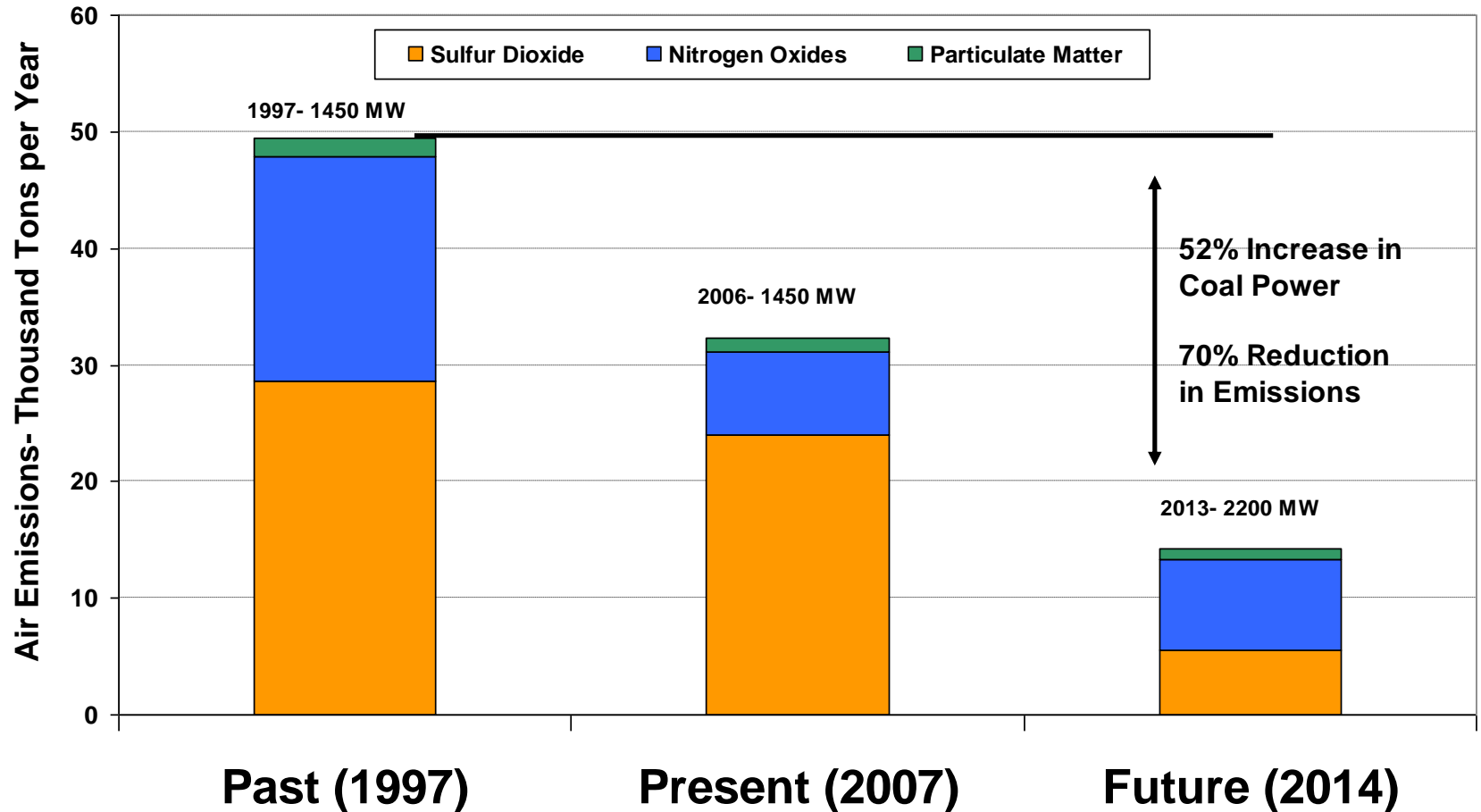
Chair, AIR Executive Committee



Vice-Chair, AIR Executive Committee

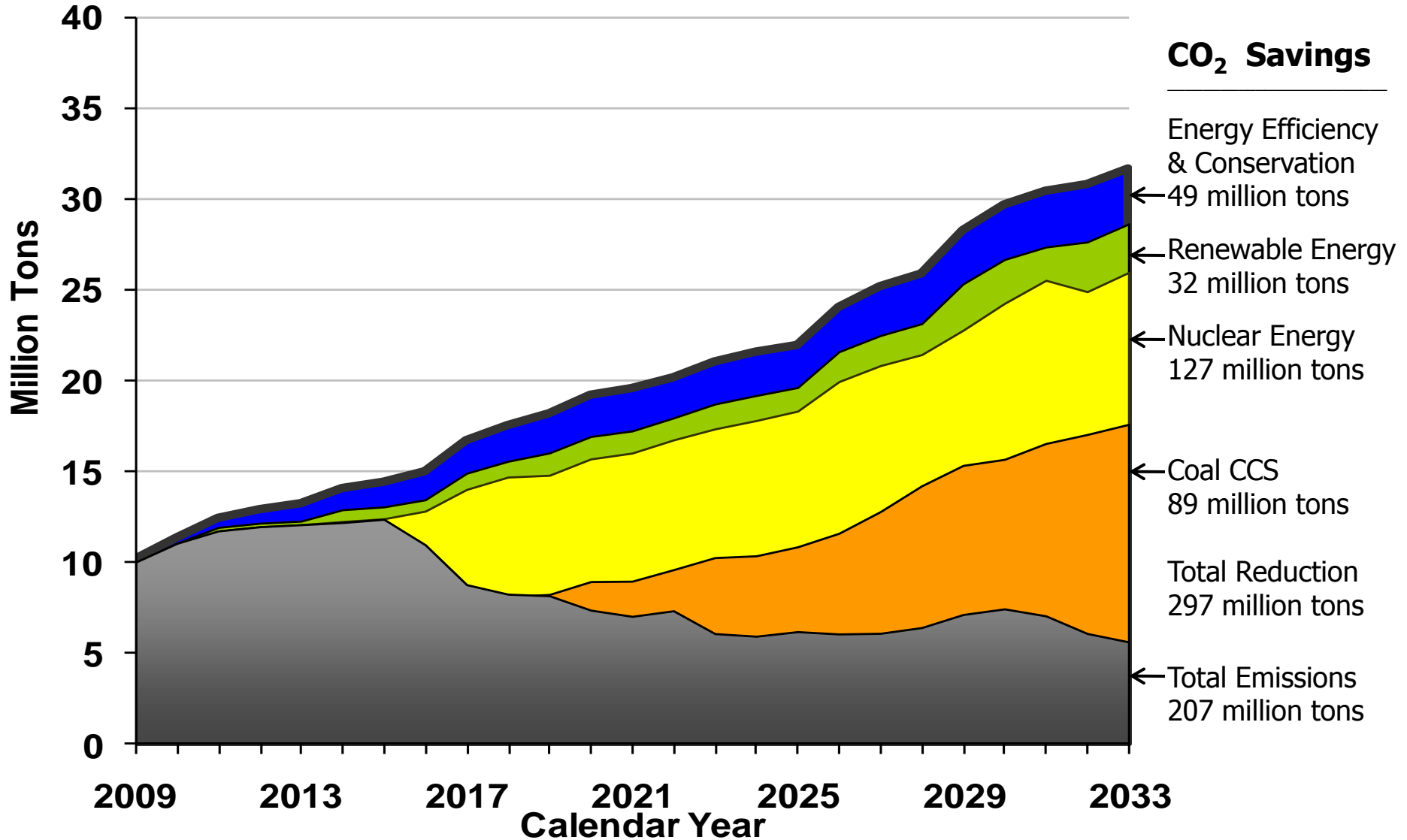


CPS Energy Air Emissions from Coal Past, Present and Future





Long-Term CO₂ Emissions Reduction Plan



Strong Commitment to Support for Innovation

- Early Action Compact
 - Signed in 2002
 - Voluntary strategy implementation ↔ deferred effective date
 - SA region is now in attainment, all CAA
- Mission Verde + Transportation Task Force: City of San Antonio & Bexar County

Strong Commitment to Support for Innovation

Solar distributed generation	9 jobs per MW, PV panels on 50,000 homes (3kW) and 6,000 businesses (16kW) create 250MW capacity
Residential Green Retrofit	Benefits calculated for 2015 for 30% of San Antonio homes retrofit, 15% average household energy savings
City Facility Green Retrofit	All city facilities retrofit by 2015, 12% average facility energy savings
CPS energy efficiency goals	Achieve 2020 demand reduction potential of the “aggressive incentive scenario” in Nexant's study
Task Force on Sustainable Buildings, 15% energy reduction mandate by 2010	Benefits calculated for 2015, the 5th year of the new codes
Task Force on Sustainable Buildings, 30% energy reduction goal	Benefits calculated for 5th year of achieving 30% energy reductions

Strong Commitment to Support for Innovation

Initiative	Annual energy savings/generation			Local Job Creation	
	Megawatthours (MWh) per year	Equal to powering how many San Antonio homes?	Direct financial impact of energy savings	Permanent local jobs	Total annual salaries
Solar distributed generation	400,000	30,000	\$30M	1,000	\$40M
Residential Green Retrofit	300,000	20,000	\$25M	300	\$10M
City Facility Green Retrofit	30,000	1,500	\$2M	20	\$0.5M
CPS energy efficiency goals	250,000	15,000	\$20M	5,500 jobs; local and non-local	Uncertain
Task Force on Sustainable Buildings, 15% energy reduction mandate by 2010	250,000	15,000	\$20M	-	-
Task Force on Sustainable Buildings, 30% energy reduction goal	450,000	35,000	\$35M	-	-

Strong Commitment to Support for Innovation

Initiative	Annual GHG reductions		Annual ozone	
	Metric Tons of CO ₂ e (2005) per year	Equal to taking how many cars off the road?	Tons of NOx (2012) per year	Tons of VOC (2012) per year
Solar distributed generation	241,516	38,028	107	2
Residential Green Retrofit	181,137	28,521	80	2
City Facility Green Retrofit	18,114	2,852	8	0
CPS energy efficiency goals	150,948	23,768	67	1
Task Force on Sustainable Buildings, 15% energy reduction mandate by 2010	150,948	23,768	67	1
Task Force on Sustainable Buildings, 30% energy reduction goal	271,706	42,782	120	3

Offsetting Emissions from Coal-Fired Power Plants

- Strong Commitment in to:
 - Analysis and Comment on existing sources or planned expansions
 - Partnerships with major industrial sources and dialogue on reductions
 - Success through dialogue and Recognition of success
 - Support for Innovation in the planning process; embrace positive change