

3rd Semi-Annual Report: The Early Action Compact for the San Antonio Region

June 2004

Prepared by the Alamo Area Council of Governments

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Abstract: Protocol for the Early Action Compact (EAC) stipulates that areas participating in the compact will assess and report their progress against milestones every six months. The Clean Air Plan for the San Antonio Metropolitan Statistical Area (MSA) is responsible for detailing and demonstrating the MSA's commitment to achieving and maintaining the 8-hour ozone standard through regional voluntary efforts. The implementation of the Clean Air Plan occurs through progress against prescribed milestones stipulated by the Environmental Protection Agency on a set timeline. Several milestones were accomplished from January 2004 to June 2004, such as the submittal of the Attainment Demonstration for the San Antonio Early Action Compact Region, updates to modeling analyses, selection of clean air strategies as required by the control strategy milestone, and on-going progress for the public involvement milestone. The progress against the milestones is discussed in the report.		
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Table of Contents

Chapter 1 – Introduction

- 1.1 Clean Air Plan
- 1.2 Planning Process
- 1.3 Biannual Report

Chapter 2 – Stakeholders: Roles and Responsibilities

2.1 Stakeholders

- 2.1.1 AIR Executive Committee
- 2.1.2 AIR Advisory Committee
- 2.1.3 AIR Technical Committee
- 2.1.4 AIR Public Education Committee
- 2.1.5 Public Meetings/Clean Air Plan Workshops
 - 2.1.5.1 February 3rd: Clean Air Plan Workshop

2.2 Stakeholder Roles

Chapter 3 – Early Action Compact Milestones

3.1 Control Strategy Development Milestones

- 3.1.1 Challenges to Local Clean Air Strategies
- 3.1.2 Base Case and Control Strategy: Photochemical Modeling Results
- 3.1.3 Additional Evidence

3.2 Public Involvement Milestones

- 3.2.1 Media
- 3.2.2 Other Outreach

3.3 Emissions Inventory Milestones

3.4 Maintenance for Growth Milestones

- 3.4.1 Methodologies: 2012 Projections
- 3.4.2 Comparison of 2007-2012 Emissions by Major Category
 - 3.4.2.1 Emissions Trend
- 3.4.3 Updating the Planning Process
 - 3.4.3.1 Modeling Updates and Modeling Assumption Verification
 - 3.4.3.2 Transportation Patterns
- 3.4.4 New Strategy Requirements

3.5 Modeling Milestones

- 3.5.1 Conceptual Model

Chapter 4 – Conclusion

Appendix A – Air Quality Outreach Efforts

Appendix B – Outreach Process Evaluation Summary

List of Tables

Chapter 1 – Introduction

None

Chapter 2 – Stakeholders: Roles and Responsibilities

Table 2-1 AIR Executive Member Agencies

Table 2-2 AIR Advisory Membership

Table 2-3 AIR Technical Member Agencies

Table 2-4 Date and Location of Clean Air Plan Workshop

Chapter 3 – Early Action Compact Milestones

Table 3-1 Comparison of 1999 and 2007 Base Cases and Adopted Control Strategies

Table 3-2 Anthropogenic Emissions within the San Antonio Early Action Compact Region

Table 3-3 2003 Ozone Exceedance Days and Possible Modeling Episodes

Table 3-4 Fourth Highest 8-Hour Ozone Values by Year and Design Values for the Conceptual Model

Table 3-5 Episode Comparison Chart 1999 Base Case + Potential Candidate Episodes

Table 3-6 San Antonio Peak Ozone and Meteorological Data (CAMS 23): May 23-31, 2003

Chapter 4 – Conclusion

None

List of Figures

Chapter 1 – Introduction
None

Chapter 2 – Stakeholders: Roles and Responsibilities
None

Chapter 3 – Early Action Compact Milestones

Figure 3-1 Trend of VOC and NOx Emissions in the SAER, 1996, 1999, 2007, 2012

Figure 3-2 Updated Daily 8-hour Ozone Maximum Comparisons for the Conceptual Model

Figure 3-3 Back Trajectory Percentage by Direction for All Ozone Exceedance Days, 1997 – 2003

Figure 3-4 CAMx APCA Analysis July 1995

Figure 3-5 CAMx APCA Analysis September 1999

Figure 3-6 Ozone Exceedance Peaks for the San Antonio Region from 1997 to 2003

Figure 3-7 High Ozone Readings by Two-week Period by Metropolitan Region to Demonstrate Seasonal Peaks

Chapter 4 – Conclusion
None

Chapter 1 – Introduction

During the ozone seasons of 2000 through 2002, local air quality monitors in the San Antonio region recorded ozone levels above the concentrations allowed under the 8-hour ozone National Ambient Air Quality Standard (NAAQS). Moreover, in June of 2002, area monitors recorded some of the highest 8-hour and 1-hour ozone values on record since 1998¹. Since US Environmental Protection Agency (EPA) guidance then suggested that the boundary of the Metropolitan Statistical Area be considered as the boundaries for new 8-hour ozone non-attainment areas, air quality planning has focused on Bexar, Comal, Guadalupe and Wilson Counties. These four counties are called "the San Antonio EAC region" in this document since they comprised the Metropolitan Statistical Area of San Antonio on December 9, 2002, the signing date of the Early Action Compact (EAC) for the San Antonio region. The local signatory governments to the EAC are within these four counties.

On April 15, 2004, the counties of Bexar, Comal, and Guadalupe were declared "nonattainment deferred" by the EPA. The designation occurred under the 8-hour average ozone NAAQS. The effective date of the nonattainment designation was deferred because the Clean Air Plan for the San Antonio region, developed under the EAC protocol, was effective and in force.

1.1 Clean Air Plan

The Early Action Compact protocol is designed to guide development and implementation of control strategies, including planning for near-term growth, in order to achieve and maintain the 8-hour ozone standard. This compact offers a more expeditious time line for achieving emission reductions than the EPA's draft 8-hour implementation rulemaking², while providing "fail-safe" provisions for the area to revert to the traditional State Implementation Plan (SIP) process if specific milestones are not met. In general, these early action plans will include all necessary elements of a comprehensive air quality plan, but are tailored to local needs and driven by local decisions. The EAC agreement signed by the EPA, the Texas Commission on Environmental Quality (TCEQ) and local elected officials is available online: <http://www.aacog.com/cap/>.

The Clean Air Plan embodies and documents the local planning created from the guidance provided by the EAC protocol. The Plan is a working document providing comprehensive planning for the ozone challenge before the four-county San Antonio

¹ On June 24, 2002, the CAMS 23 monitor, located near Marshall High School in San Antonio, recorded a 1-hour average ozone value of 126 parts per billion (ppb), an exceedance of the 1-hour ozone NAAQS. The most recent exceedance of the 1-hour standard prior to this date was 141 ppb recorded September 4, 1998 at CAMS 58 in Camp Bullis. Also on June 24, 2002, the CAMS 23 monitor recorded an 8-hour average ozone reading of 110 ppb, an exceedance of the 8-hour average ozone NAAQS. The most recent 8-hour reading prior to this date above 100 ppb was a reading of 110 ppb recorded September 4, 1998 at CAMS 58 in Camp Bullis.

² "Proposed Rule To Implement the 8-Hour Ozone National Ambient Air Quality Standard," June 2, 2003. Available online <http://www.epa.gov/fedrgstr/EPA-AIR/2003/June/Day-02/a13240.pdf>

EAC Region. Acceptance of the final Clean Air Plan requires the adoption of control strategies or methodologies for lowering ozone concentrations to acceptable levels. Proposed strategies undergo performance analyses in the photochemical model and are reviewed by staff from the Alamo Area Council of Governments (AACOG). Model results are then presented to, reviewed, and approved by the Air Improvement Resources (AIR) Committees of AACOG, the TCEQ, and the EPA.

1.2 Planning Process

The AIR Executive Committee of AACOG is the planning committee for air quality under the Early Action Compact for the San Antonio region and is charged with oversight and coordination of the development of the Clean Air Plan. The AIR Committees assess and report the region's progress at least every six months, with deliverables sent to TCEQ and the EPA. Public reporting of assessment and progress against milestone occurs at least once every six months during the regularly scheduled, meetings (scheduled on a monthly basis and open to the public) of the AIR Executive and AIR Advisory Committees of the AACOG.

The AIR Executive Committee's meetings satisfy the requirement in the EAC that planning meetings will be open to the public, with posted meeting times and locations. Every meeting of the AIR Executive and Advisory Committees is a public meeting, with notification of the meeting time and location as stipulated in the Texas Open Meetings Act. AACOG provides notice of each meeting to the Secretary of State for posting in the Texas Register, the County Clerk of Bexar County, and posts notice in AACOG's main administrative offices in a place readily accessible to the general public at all times for at least 72 hours before the scheduled time of the meeting. (Although the AIR Executive and the AIR Advisory Committees are separate committees, they typically hold joint committee meetings at least once a month. In each case, the notification process is as described above.)

The AIR Committee is pleased to engage with local citizens, the EPA and the TCEQ in the planning effort required to maintain the Clean Air Plan for the San Antonio EAC region. From the point of view of the AIR Committee, this Clean Air Plan is the continuation of years of effort and planning, which has been made possible through enabling funding provided by the Legislature of the State of Texas.

1.3 Semi-Annual Report

As required by EAC guidance, areas that are participating in early voluntary 8-hour air quality plans must assess and report their progress in achieving EAC milestones in a regular, public process every six months. This document will fulfill the requirement for the third semi-annual progress report written for the San Antonio EAC.

The milestones in this report which are described in the EAC are:

- Completion & updates of emissions inventories as outlined in section b), Emissions Inventory;
- Completion & updates of modeling as outlined in section c), Modeling;
- Post-attainment demonstration and plan updates as outlined in section e), Maintenance for Growth;

- Continuing public involvement in the planning process will be conducted as outlined in section f), Public Involvement. This is in addition to the public reporting conducted at least once every six months, as outlined above;
- Identification and description of local control strategies under current **consideration** for inclusion into the area's local clean air plan, including those analyzed in modeling.

In addition, Lydia Wegman, Director of Air Quality Strategies and Standards Division of the US Environmental Protection Agency, signed a memo providing guidance on the content required in the biannual reports due in June and December of 2003. Through this memo, the EPA requires certain elements be incorporated into the report.³ The reporting requirements given in both the EAC protocol and the Wegman memo have been organized in the following chapters of this report. These additional elements include:

- **Stakeholders: Roles and Responsibilities**
- **Evaluation and Selection of Emission Reduction Measures**
A list of control measures still under consideration for adoption by the local area as part of the March 2004 submission;
Likely implementation dates for the local control measures that are under consideration;
Current assessment of the amount of emissions reductions expected to be achieved through implementation of the local control measures; and
The geographical area in which each control measure is anticipated to apply.
- **Public Outreach Activities**
Continuing public involvement in the planning process will be conducted as outlined in section f), Public Involvement.
- **Update on Modeling and Technical Planning Activities**
Post-attainment demonstration and plan updates as outlined in section e), Maintenance for Growth

The March 2004 submission of the Attainment Demonstration for the San Antonio EAC region contained the finalized list of emission reduction measures and implementation dates agreed upon by the local EAC signatories. Updates to the other items noted above are contained in this report.

³ "Early Action Compacts (EACs): The June 16, 2003 Submission and Other Clarifications," Lydia N. Wegman, Director Air Quality Strategies and Standards Division, April 4, 2003. US Environmental Protection Agency, Research Triangle Park, NC 27711. Available online: http://www.epa.gov/ttn/naags/ozone/eac/6-16-2003_eac_milestone_memo.pdf

Chapter 2 –Stakeholders: Roles and Responsibilities

2.1 Stakeholders

Stakeholders for the Clean Air Plan include local governments, businesses, industries, schools and citizens within the San Antonio EAC region. The AIR Committee enables area governments and industrial groups to participate in addressing air quality concerns. The AIR Committee is comprised of the Executive/Advisory, Technical, and Public Education Committees.

2.1.1 AIR Executive Committee

The AIR Committee makes recommendations regarding actions and policy to the local governments represented by the AIR Executive Committee membership. The AIR Executive Committee is the planning committee for air quality planning under the Early Action Compact in the San Antonio region.

The AIR Executive membership represents the major government organizations within the San Antonio Metropolitan Statistical Area (SA/MSA) as the SA/MSA was defined at the time the EAC was signed, December 9, 2002. Membership has been extended to similar local governments brought into the San Antonio Metropolitan Statistical Area through US Census redesignations of the SA/MSA boundary in 2003.

The AIR Executive Committee comprises local elected officials and representatives of major government organizations from the four counties of Bexar, Comal, Guadalupe and Wilson. County governments are represented by elected County Judge or County Commissioner and municipal governments are represented by an elected official serving as Mayor or City Councilperson. Other entities serving on the AIR Executive, as designated by the bylaws, have one representative on the committee. The following table lists agencies for AIR Executive memberships.⁴

Table 2-1 AIR Executive Member Agencies

Air Improvement Resources Executive Member Agencies	
Bexar County	City of San Antonio
Comal County	City of New Braunfels
Guadalupe County	City of Seguin
Wilson County	City of Floresville
Greater Bexar County Council of Cities	Alamo Area Council Of Governments
San Antonio / Bexar County Metropolitan Planning Organization	

2.1.2 AIR Advisory Committee

The AIR Advisory Committee acts as a liaison between the AIR Executive Committee and public and private citizens. Membership of the AIR Advisory Committee includes the AIR Executive Committee. The committee is comprised of representatives from local governmental entities and industrial groups within the San Antonio MSA and includes representatives listed below.⁵

- Business representatives
- Environmental Groups
- Education agencies

⁴ Bylaws, Air Improvement Resources Committee of the Alamo Area Council of Governments, available Dec. 4, 2003 online as: [http://www.aacog.com/air/WhatWeDo/AIRCO Bylaws.htm](http://www.aacog.com/air/WhatWeDo/AIRCO%20Bylaws.htm)

⁵ Ibid

- Transportation organizations
- Utilities
- Industry representatives
- Chambers of Commerce
- Health Organizations
- Neighborhood Organizations
- Other elected officials
- Minority Organizations

The following table lists the business, industry, and other groups from which the current members to the AIR Advisory Committee are drawn.

Table 2-2 AIR Advisory Membership

Air Improvement Resources Advisory Member Agencies	
HEB	TxDOT
Kendall County	Zachry Construction
S.A. Manufacturers Association	Word Construction Company
VIA Metropolitan Transit	Lackland Independent School District
Holt Company	City Of San Antonio
Neighborhood Associations	SAWS
Martin Marietta	New Braunfels Chamber of Commerce
City of Seguin	Guadalupe County
Valero	Texas State Inspection Association
USAA	Toyota Manufacturing of North America
American Lung Association	Greater San Antonio Chamber of Commerce
Northside Independent School District	

2.1.3 AIR Technical Committee

The AIR Technical Committee provides recommendations and technical assistance on air quality technical issues to the AIR Executive Committee. The members of the committee are representatives of local planning agencies; those currently providing members to the committee are listed in the table provided.⁶

Table 2-3 AIR Technical Member Agencies

Air Improvement Resources Technical Committee Member Agencies	
Alamo Area Council of Governments	Metropolitan Planning Organization
Bexar County	City of New Braunfels
City Public Service	City of San Antonio
Comal County	City of Seguin
City of Floresville	Texas State Inspection Association (ex-officio)
Guadalupe County	TxDOT District Office
Metropolitan Health District	US Environmental Protection Agency (ex-officio)
VIA Metropolitan Transit	Wilson County
Texas Commission on Environmental Quality (ex-officio)	

⁶ Bylaws, Air Improvement Resources Committee of the Alamo Area Council of Governments, available Dec. 4, 2003 online as: [http://www.aacog.com/air/WhatWeDo/AIRCO Bylaws.htm](http://www.aacog.com/air/WhatWeDo/AIRCO%20Bylaws.htm)

2.1.4 AIR Public Education Committee

The AIR Public Education Committee provides stakeholders with the opportunity to participate monthly in the development of materials, advertisements, activities, and events aimed at educating the public about regional air quality issues and Clean Air Plan development.

2.1.5 Public Meetings/Clean Air Plan Workshops

In accordance with the EAC, the public will have opportunities to participate with the ongoing development of the Clean Air plan in order to familiarize themselves with the process and goals of the project. Although the regularly scheduled monthly meetings of the AIR Executive Committee, the planning committee for air quality planning under the Early Action Compact in the San Antonio region, are open to the public and always have a Citizens to Be Heard agenda item, additional exposure to the project is expressly provided to the public through these meetings. This is achieved through the hosting of Clean Air Plan Workshops. Information about the workshop held during the first half of 2004 is given here.

Goals:

- Education - The public meetings and workshops are designed to give the public background information and updates on topics such as air quality health issues, applicable federal and state law, current/historic ozone levels, the local response provided by the Early Action Compact. Other background may include an explanation of the EAC, the concept of control strategies, the current status of the plan, the role of local elected officials, of AACOG's committees, of the public, of the state and federal governments, timelines, deliverables under the EAC, etc.
- Communication of public opinion / feedback to the elected officials.

Table 2-4 Date and Location of Clean Air Plan Workshop

Date	Location
February 3, 2004	AACOG Board Room, 8700 Tesoro, San Antonio, TX 78217

2.1.5.1 February 3rd: Clean Air Plan Workshop

The workshop on February 3rd focused on presenting the selected clean air strategies that were to be incorporated into the Clean Air Plan to the public. Elected officials were present to provide answers to citizen questions during the course of the workshop.

2.2 Stakeholder Roles

Roles of the AIR Committee

The AIR Committee is composed of several committees: AIR Executive, AIR Advisory, AIR Technical, and AIR Public Education Committee. The mission of the AIR Committee is to facilitate the completion of the air quality studies, complete necessary planning activities, and develop a comprehensive emission reduction plan that will guide our region's actions to attain the 8-hour ozone NAAQS.

Roles of the Public

Public participation is an integral part of the Clean Air Plan, thus various avenues must be provided to enable citizens to have access to the development process. Every citizen in the region has three avenues they can partake 1) in AIR Committee public meetings, 2) in public meetings and upcoming Clean Air Plan Workshops, and 3) by responding through the AACOG website.

Chapter 3 – Early Action Compact Milestones

The Attainment Demonstration for the San Antonio Early Action Compact Region was submitted to the Texas Commission on Environmental Quality and the Environmental Protection Agency on March 31, 2004. The Demonstration addressed each of the required milestones as stipulated by the Early Action Compact and detailed the efforts and clean air strategies that were selected by EAC signatories as the strategies that would help attain the 8-hour NAAQS for ground-level ozone. The following sections will describe the milestones and progress completed through the months of January to June 2004.

3.1 Control Strategy Development Milestones

The AIR Committee recommended three Clean Air Strategies for inclusion in the Clean Air Plan to local Early Action Compact signatory governments for their final approval. The strategies were:

- Reid Vapor Pressure lowered to 7.2 pounds per square inch during the ozone season for the San Antonio region;
- Degreasing Equipment Operation Controls, described in TAC, Title 30, Ch. 115; and
- Stage I Vapor Recovery required of service stations of 25,000 gallons throughput of gasoline or more per month.

The eight local governments which are signatories to the Early Action Compact for the San Antonio region deliberated these strategies during regularly scheduled meetings of their representatives (i.e., during City Council meetings or during Commissioners' Court sessions). All eight local governments voted to endorse the three Clean Air Strategies above and to support this planning process. The San Antonio EAC Region, acting through the AIR Committee, has incorporated these three strategies into the Clean Air Plan and requests that the Texas Commission on Environmental Quality take the necessary actions, including development of enforcement provisions, to implement these clean air strategies. The following list details the dates the signatory governments met and approved the proposed clean air strategies.

- February 3, 2004: City of Seguin
- February 5, 2004: Comal County Commissioner's Court
- February 9, 2004: Wilson County Commissioner's Court
- February 10, 2004: Bexar County Commissioner's Court
- February 12, 2004: City of San Antonio
- February 12, 2004: City of Floresville
- February 23, 2004: City of New Braunfels
- February 24, 2004: Guadalupe County Commissioner's Court

Copies of the resolutions signed by each of the governments are available as Appendix N: Resolutions from Early Action Compact Signatory Local Governments in Support of the Proposed Local Revisions to the State Implementation Plan and the Local Clean Air Strategies of the Proposed Local Revisions to the State Implementation Plan. This document set is available online: <http://www.aacog.com/sip>.

3.1.1 Challenges to Local Clean Air Strategies

During the Clean Air Strategy ratification phase, TCEQ and EPA notified AACOG staff of possible “challenges” to several of the clean air strategies that were under consideration by the EAC signatory governments. The challenges concerned the Clean Air Strategies requesting seasonal RVP 7.2 gasoline as well as the strategy requiring degreasing equipment controls. The proceeding bulleted list details the timeline of which the notifications, endorsements, and resolutions occurred during the strategy ratification process for each locally selected strategy.

RVP 7.2 Gasoline

- January 27, 2004: AACOG received communication from EPA’s Region 6 Office regarding the request for gasoline with an RVP of 7.2 and Section 211 of the Clean Air Act. EPA expressed concern on whether Section 211 would apply to a lower RVP request by a region acting under the Early Action Compact. This was the first notification to AACOG that there might perhaps be existing law affecting some conditions of the request by the San Antonio area for lower RVP.
- January 28, 2004: During a regularly scheduled meeting of the AIR Executive/Advisory Committees, lower RVP received the formal endorsement by the committee as a strategy selected for ratification by the local EAC signatory governments.
- Between February 3- February 12, 2004, six of the eight local Early Action Compact signatory governments took up the formal endorsement of RVP as one of three Clean Air Strategies for their approval.
- February 13, 2004: TCEQ provided AACOG some clarification⁷ regarding the circumstances allowing such a measure to be implemented in the local EAC SIP. According to EPA and TCEQ preliminary investigations, Section 211(c)(4)(A) of the federal CAA prohibits state and federal governments from enforcing RVP as it was being requested. Such a measure can only be implemented in an EAC SIP if there are special circumstances.
- February 17, 2004: an EPA Working Group confirmed their earlier interpretation of this provision, supporting TCEQ's opinion.
- The remaining two of the eight local Early Action Compact signatory governments took up formal endorsement of RVP as one of the three Clean Air Strategies for their approval.
 - February 23, 2004: City of New Braunfels approved RVP
 - February 24, 2004: Guadalupe County Commissioner’s Court approved RVP

Given the formal approval of the EAC signatory governments, the San Antonio EAC Region committed to request the state to implement a 4-county EAC regional rule requiring gasoline stations to dispense gasoline with an RVP 7.2 during the months of March to October. Due to the apparent enforcement prohibitions described above, the emissions reduction credits which would be expected through such a rule are not

⁷ Email from Candy Garrett, dated February 13, 2004 to Peter Bella of AACOG. Ms. Garrett is Director, Environmental Planning and Implementation for TCEQ.

considered SIP-creditable and are not modeled in the Attainment Demonstration model. If a resolution is reached such that lower RVP is supplied to the San Antonio region as approved by local governments on a permanent, enforceable basis, appropriate SIP credit will be taken for the measure as a successful local Clean Air Strategy.

Degreasing Equipment Controls

- January 28, 2004: During a regularly scheduled meeting of the AIR Executive/Advisory Committees, degreasing equipment controls received the formal endorsement by the committee as a strategy selected for ratification by the local EAC signatory governments.
- Early February 2004: TCEQ staff from the Region 13 office informed AACOG staff that Chapter 106 of the TAC contained a requirement to implement Chapter 115-compliant degreasing controls statewide. Subsequent investigations revealed that subchapter T of Chapter 106 requires Permit By Rule degreasing units, regardless of the county in which they are located, to meet the requirements of §115.412 and §115.415. Following the realization that much of the credit previously calculated for degreasing controls as a voluntary Clean Air Strategy might no longer be available due to Chapter 106, AACOG staff proceeded to analyze Chapter 106 and Chapter 115 and assess how emission reductions should be properly determined and allocated.
- The eight local Early Action Compact signatory governments took up the formal endorsement of degreasing equipment controls as one of three Clean Air Strategies for their approval during February 2004.

Due to the effectiveness of Chapter 106 as an existing degreasing emission control, effective through existing state rule, an additional 5.1 tons per day VOC reduction credit was taken in the 2007 base case. However, no credit for degreasing emission controls was allowed as additional Clean Air Strategy reduction credits in the Attainment Demonstration.

The sole emission reduction credits entered into the Attainment Demonstration through enactment of local clean air strategies are those given by Stage I Vapor Recovery. The "SIP credited" reduction was in the amount of 5.81 tons per day of VOC, which lowered ozone levels as shown in the "Control Strategies Included" row of Table 3-1 below.

With the resulting support and approval by the EAC signatory governments of the recommended clear air measures, the Attainment Demonstration of the San Antonio Early Action Compact Region requested the implementation of the three strategies. The Attainment Demonstration was submitted to the TCEQ and EPA by the March 31, 2004 deadline.

3.1.2 Base Case and Control Strategy: Photochemical Modeling Results

According to the photochemical modeling analysis performed by staff, the region will again achieve attainment by the year 2007. Table 3-1 shows design values for the 1999 base case, the 2007 base case, and the impacts of adopted control strategies on design values for CAMS 23, 59, 678, and 58 where ozone levels are being recorded.

Table 3-1 Comparison of 1999 and 2007 Base Cases & Adopted Control Strategies

Model Run	Design Value at CAMS 23	Design Value at CAMS 58	Design Value at CAMS 59	Design Value at CAMS 678
1999 Base Case	89	87	79	77
2007 Base case	84.55	82.14	74.48	74.46
Control Strategies Included	84.43	82.05	74.44	74.39

3.1.3 Additional Evidence

This section introduces further local projects as well as additional studies and indicators supporting the likelihood of the attainment predicted by the SAER's 2007 photochemical model.

- ***Degreasing Emissions***

Degreasers in the SAER are subject to adherence of Chapter 115 controls through reference in Chapter 106. Information provided by the TCEQ indicates that at least 50% of the San Antonio market are Chapter 106 compliant. Hence, the 85% reduction effective through Chapter 106/115 should act as a first approximation correction to 50% of the degreasing emissions in the 1999 EI.

- ***Pollution Transport***

Using the graphic capabilities of the CAMx model and applying some post processing techniques, attempts have shown the impacts of removing the anthropogenic emissions on the design value of the modeled episode at various CAMS. Although emissions in the San Antonio region is predicted to increase in 2007, the region's contribution to its design value for the September 1999 episode will remain as 25% of the total design value, or 21.86 parts per billion of ozone.⁸ (AACOG, 2003a)

- ***Alternative Fuel Vehicles***

The results of an alternative fuel survey conducted in the San Antonio region in 2001 indicated that there were 2,050 AFVs in the San Antonio region, and this number is expected to increase to 2,442 AFVs by 2006. Of the reported fleet, 1,755 vehicles were modeled as the September 2001 fleet and 2,147 vehicles for the September 2007 fleet. These fleets provided emission reductions of 62 lbs./day of VOC, 45 lbs./day of CO, and 689 lbs./day of NOx and emissions reductions of 72 lbs./day of VOCs, 45 lbs./day of CO, and 858 lbs./day of NOx for the year 2007, respectively.

- ***Energy Efficiency / Renewable Energy Projects***

The TCEQ provided a protocol for implementing and calculating emission reductions from energy saving resulting from Senate Bill 5 (SB5) and Senate Bill 7 (SB7) measures. Since passing the bills, efforts have been underway both to implement the energy reductions required by the state and to quantify the associated ozone precursor reductions. Air quality planners in the San Antonio region currently benefit from a partnership created by the TCEQ between AACOG, the Energy Systems

⁸ Alamo Area Council of Governments (AACOG), 2003. Conceptual Model for Ozone Analysis of the San Antonio Region, San Antonio, TX.

Laboratory (ESL) of Texas A&M University, the local Metropolitan Partnership for Energy, and the Brooks Energy Sustainability Laboratory (BESL) of the Texas Engineering Experiment Station.

- ***Lawnmower Recycling Program***

City Public Service (CPS) initiated the "buy back" lawnmower program in 1998. The City of San Antonio and the Alamo Area Council of Governments later partnered in promoting CPS' "buy back" events. Since its inception, CPS's "Mow Down Smog" lawn mower rebate program has removed over 3,200 pieces of operating gasoline-powered lawn equipment and replaced them with virtually pollution-free electric lawn equipment.

- ***Lower Reid Vapor Pressure***

Gasoline with an RVP of 7.2 was proposed for the San Antonio region after in depth modeling, cost-benefit analysis, and consideration of sentiments of the local communities and their elected officials. If allowed, adoption of this fuel during the ozone season is expected to help reduce emissions of VOCs and NO_x by 2.1 and 0.05 tons/day respectively. The requirement for gasoline refineries to provide such gasoline will only be during the months of March through October, which is usually the time of the year ozone levels exceed the national standard in San Antonio region.

- ***Windshield Wiper Fluid***

Prior to EPA's issuance of a national rule addressing VOC emission standards for windshield wiper fluid to 35 weight-%VOC, Texas adopted a consumer products rule that limits automotive windshield washer fluid to 23.5 weight-% VOC. Due to the difference between EPA's 35% requirement, the EPA allows Texas to take credit for the difference

- ***Gas-fired Water Heaters, Small Boilers, and Process Heaters***

This statewide rule would reduce NO_x emissions from new natural gas-fired water heaters, small boilers, and process heaters sold and installed in Texas beginning in 2002. It is estimated that this rule would help reduce area source NO_x emissions by 5% to 10%. The rules would apply to each new water heater, boiler, or process heater with a maximum rated capacity of up to 2.0 MMBtu/hr. (TCEQ, 2004)

- ***Transportation Demand Management***

Transportation Demand Management (TDM) projects are transportation-related projects that attempt to reduce vehicle use, change traffic flow, or reduce congestion conditions. Transportation Emission Reduction Measures (TERMs) are examples of TDMs. The following sections are examples of TDMs exercised in the area.

Transportation Emission Reduction Measures

Transportation Emission Reduction Measures (TERMs) are strategies or actions that can be employed to offset increases in nitrogen oxide (NO_x) and volatile organic compound emissions from mobile sources by reducing either the number of vehicle trips, vehicle miles traveled, or both. Many of projects in the San Antonio-Bexar County Metropolitan Planning Organization (SA-BC MPO) Transportation

Improvement Programs (TIP)⁹ can be quantified as creditable reductions. Local air quality planners are currently researching measures to make the appropriate TERMS enforceable. The region is intent on making them enforceable and calculating SIP credit for them in coordination with the state and the SA-BC MPO. Even if credit is not taken here for the TERMS projects in the region, the benefits of the reductions accrue as Additional Evidence that the San Antonio region will reach attainment.

Intersection Improvement and Signalization

Traffic signalization projects can reduce carbon monoxide (CO) and hydrocarbon (HC) by reducing the number of vehicular stops and idling, which would reduce travel times and traffic delays. Reductions in fuel consumption have also been observed through traffic signal re-timing. Traffic flow at intersections can be improved in interconnection and coordination of signals.

- ***TransGuide***

ITS have a significant impact on reducing the delays due to accidents and congestion on freeway systems in metropolitan areas. (Henk, R., et.al., 1996), (Carter, M., et.al., 2000) For the particular corridor modeled during this study, optimum implementation of the integrated VMS and incident management result in a 5.7% decrease in delay, a 2.8% decrease in crashes, and a 1.2% decrease in fuel consumption annually. Integrated use of incident management, VMS and arterial traffic control can achieve an annual benefit of a 5.9% reduction in delay, a 2.0% decrease in crashes, and a 1.4% decrease in fuel consumption for travelers in the corridor.

- ***Public Education***

The concept of public education is to familiarize the public with actions they can take to improve the air quality. There has been no attempt to quantify the air quality impacts of these public outreach projects.

- ***Voluntary Measures by Governmental and Industrial Entities***

Various measures which benefit the area's ambient air quality are currently implemented by local municipalities and companies. The implementation of the strategies by the various entities are voluntary efforts that benefit the air quality as well as the community they serve. Here are a few examples of the committed and voluntary strategies that are currently in effect.

- Bexar County committed to use Texas Ultra Low Sulfur Diesel Fuel in the county's diesel fleet vehicles as well as voluntarily post signs at facilities promoting ozone reduction measures
- City Public Service (CPS) is committed to fulfill their Emission Reduction Program by including combustion tuning and installation of advanced technology. CPS also voluntarily allows flextime or telecommuting for CPS employees for which this option is feasible and allowed by the management of that area.
- Lackland Independent School District commits to not use gas powered lawn equipment when an Air Quality Health Alert is issued but rather assign grounds personnel alternative tasks. The school district will also voluntarily research and consider the feasibility of alternative fuels for the district's vehicle fleets

⁹ Available online: <http://www.co.bexar.tx.us/mpo/pages/futureprojects/short/main.html>

3.2 Public Involvement Milestones

Educating the public about the importance of the region's air quality continues to be a crucial effort for this Clean Air Plan. Outreach and education efforts continue within the MSA, often through partnerships with other governmental entities and industrial leaders in the area. As the Clean Air Plan is developed, citizens and citizen groups are given the opportunity to be involved in the Clean Air Plan development process.

3.2.1 Media

Local media efforts have played an important role in notifying the public about the development of the Clean Air Plan as well as in educating the public on the state of the region's air quality and how air quality affects respiratory health. Television, radio, newspapers, and websites have been avenues through which information about the Clean Air Plan and the four county's air quality has been dispersed. Press releases and public service announcements have been and will continue to be utilized to educate the public. Between January and May 2004, there were 18 television pieces, 18 radio pieces, and 32 newspaper pieces regarding the Clean Air Plan and air quality issues. During this time, public service announcements are confirmed to have aired on four television stations (WOAI, KABB, KRRT, and News9 San Antonio) and nine radio stations (KISS, KSMG, KKYX/KCYY, WOAI, KAJA, KXTN, KROM, and KONO)

3.2.2 Other Outreach Efforts

Non-media related outreach efforts continue. Between January and May 2004, 13 governmental, business, and/or civic group presentations have been provided. In the same time period, AACOG staff provided presentations to five area schools, reaching approximately 80 students. Whenever possible, AACOG coordinates and/or participates in public events; such events allow AACOG staff to educate citizens on how everyday actions contribute to air pollution and that alternate methods of doing the same tasks can help reduce emissions. During this time period, AACOG participated in 17 events. Additionally, AACOG maintains an air quality website, which is updated weekly and provides a wealth of information on air quality issues.

On March 27, 2004, AACOG along with the AIR Public Education Committee hosted Ozone Season Kickoff to promote awareness among the public about health concerns caused by ozone exposure as well as alternative activities that can be done to reduce ozone pollution. Approximately 500 people attended Ozone Season Kickoff and were given the opportunity to have emission tests performed on their vehicle, receive advice regarding proper car maintenance by certified mechanics, and examine hybrid vehicles as well as alternative fuel vehicles. Various city, county, state, and public entities participated in the event promoting various environmentally friendly actions as well as the services they provide.

AACOG is involved with the promotion and coordination of the Adopt-A-Schoolbus program, which is a cooperative partnership established to aid non-attainment area school districts in replacing their aging diesel school buses with new "clean fuel" buses. This goal will be achieved by educating school districts and corporations about the benefits of replacing older diesel buses with lower emission "clean fuel" buses. Approximately 275 school buses in the San Antonio area are projected to be converted to "clean fuel" buses over the course of three school fiscal years, which could result in a reduction of approximately 110 tons/year of NO_x and 11 tons/year of PM. Efforts at reducing the emission capacity of school buses could involve the combination of

replacing and retrofitting buses with new technology to achieve NO_x and PM reductions and the possible use of low-sulfur fuel.

In addition, the AACOG staff is vigorously promoting the Texas Emissions Reduction Plan (TERP) created in 2001 by Texas Senate Bill 5. With the partnership of the Texas Commission on Environmental Quality and a number of stakeholders, AACOG hosted a TERP workshop on January 21, 2004. Attendees received direct, hands-on guidance in filling out the grant application forms for TERP projects.¹⁰ AACOG has also hosted a series of workshops for local governments, citizens, and homebuilders on the energy efficiency aspects of Senate Bill 5 as well.

3.3 Emissions Inventory Milestones

Emissions for the 2012 projection were analyzed and verified for quality assurance. These efforts were necessary for incorporation of the emissions into the Maintenance for Growth chapter of the Attainment Demonstration as well as compliance when analyzing emission trends. Emission trend analysis is an ongoing effort and will be helpful when developing the Emission Trend Analysis as required by the EAC in September 2005.

3.4 Maintenance for Growth Milestones

The maintenance for growth will demonstrate maintenance of the 8-hour ozone standard through the year 2012 while accounting for projected population growth. Chapter 6 and Appendix L of the Attainment Demonstration for the San Antonio Early Action Compact Region describes in detail the region's planning for five years beyond the 2007 attainment date.

The Maintenance for Growth section analyzes the emissions inventories from 1996 and 1999 and projects emissions to 2007 and 2012. These future year projections encompass all relevant changes affecting future emissions, including revised or new federal, state, and local rules and any new practices that would result in changes to future year emissions inventories.

3.4.1 Methodologies: 2012 projections

The 2012 emission projections were developed using the same methodologies in the development of 2007 emissions. However, there are some components in the methodologies, such as emission factors, that were altered to reflect predicted changes for 2012 different from 2007. New emission sources that came into existence after 2007 but before 2012 were accounted for as well.

When projecting 2012 point source emissions, point sources that are expected to come into existence between 2007 to 2012 were accounted for. These new point sources include the Guadalupe County Power Plants, the Tessman Road Landfill Gas Power Station, the new City Public Service Power Plant, and the Toyota Manufacturing Plant. VOC emissions are projected to increase due to the contribution of the Toyota Manufacturing Plant. The remaining new point source projects such as the CPS power plant, the Tessman LFG Power Station, and the Guadalupe Power Plant are not

¹⁰ Visit <http://www.tnrcc.state.tx.us/oprd/sips/terp.html> for more information on the TCEQ's TERP program. For more information on AACOG's TERP workshops, please visit <http://www.aacog.com/terp/>.

expected to contribute as significant amount of VOC emissions as the Toyota Manufacturing Plant. NOx emissions are projected to decrease in the 2007 and 2012 projections.

3.4.2 Comparison of 2007-2012 Emissions by Major Category

Emissions in each category for 2007 and 2012 were compared and analyzed in order to ensure attainment. VOC emissions from point source are estimated to increase approximately 38.5% from 2007 to 2012. The rise is attributed to the emergence of new point sources within the region, such as the Toyota Manufacturing Plant. Point source NOx emissions are expected to decrease by 13.6%. The drop in NOx is anticipated due to use of improved emission reducing technologies employed at the City Public Service power production facilities. In non-road sources, a 17.6% drop in VOC and a 8.2% drop in NOx emissions is anticipated across the four counties between 2007 and 2012. The emission reductions are due to various state and federal control strategies. Area source VOC emissions are projected to increase 3.2% and NOx emissions by 5.6%. This can be attributed to various growth assumptions, such as population growth. On-road VOCs decreased by 25.5% and NOx emissions dropped by 40% from 2007 to 2012. State and federal on-road control strategies that will be implemented by 2007 are reasons for the decrease in both ozone precursors. Airport/Military emissions were not projected due to the uncertainty of future of airport and military base activities in the region. Biogenic emissions emissions were unchanged from 1999 for 2012. Table 3-2 details the emissions from 1996, 1999, 2007, and 2012.

Table 3-2 Anthropogenic Emissions within the San Antonio Early Action Compact Region

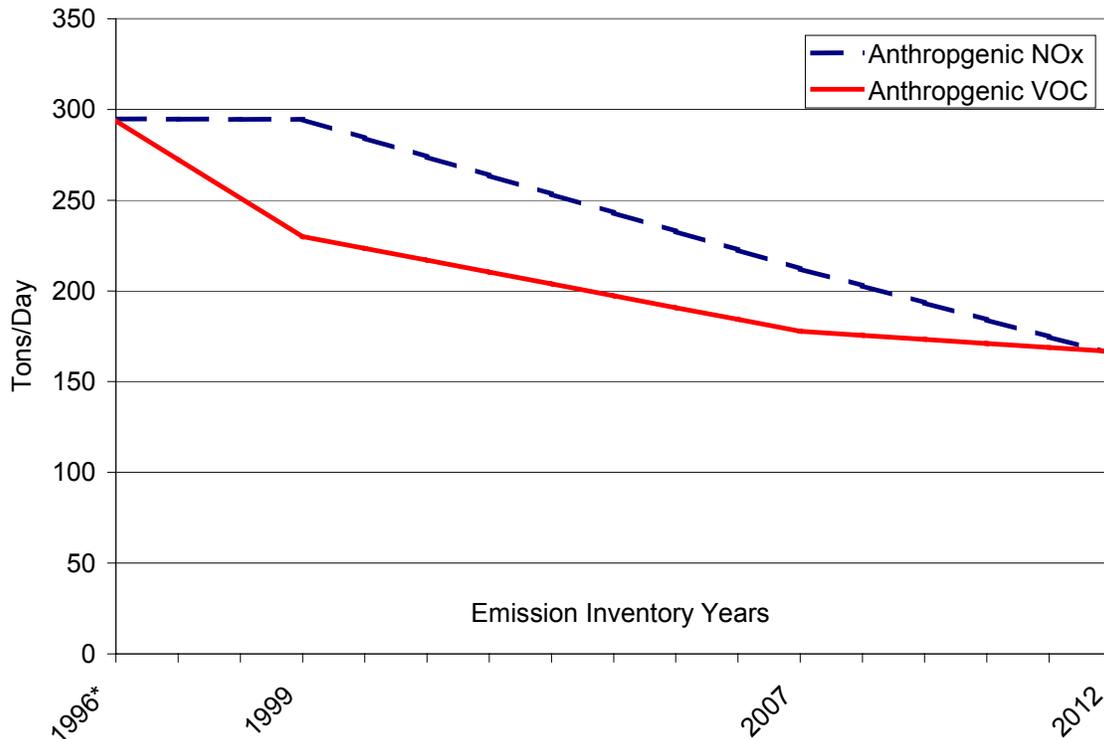
San Antonio Early Action Compact Region		Tons per Day Emission							
		1996*		1999		2007		2012	
		VOC	NOx	VOC	NOx	VOC	NOx	VOC	NOx
Area Sources	Bexar	78.3	2.4	73.4	4.7	69.2	5.0	71.4	5.2
	Comal	4.4	0.1	3.7	0.3	3.4	0.5	3.6	0.5
	Guadalupe	6.1	0.3	5.4	0.9	5.2	1.7	5.4	1.8
	Wilson	2.6	0.4	2.7	0.9	2.7	1.8	2.7	2.0
	Total	91.4	3.3	85.2	6.8	80.5	9.0	83.1	9.5
Point Sources	Bexar	7.0	64.3	6.3	83.9	11.8	53.2	17.0	43.0
	Comal	0.4	8.2	0.5	12.2	0.5	13.8	0.5	13.8
	Guadalupe	0.4	0.3	0.5	0.5	1.1	8.1	1.1	8.1
	Wilson	0.0	0.0	0.01	0.004	0.1	0.004	0.1	0.004
	Total	7.8	72.8	7.3	96.6	13.5	75.1	18.7	64.9
On Road Sources	Bexar	106.6	122.39	82.1	121.87	45.5	69.1	33.7	41.4
	Comal	6.8	10.4	6.2	11.7	3.9	7.1	3	4.3
	Guadalupe	6.6	10	5.6	10.5	3.4	6.5	2.6	3.9
	Wilson	1.9	1.9	1.6	1.9	1	1.3	0.8	0.8
	Total	121.9	144.69	95.5	145.97	53.8	84	40.1	50.4
Non Road Sources	Bexar	54.3	55.2	36.3	36.4	25.6	36.3	21.0	32.9
	Comal	9.8	3.5	3.4	2.6	2.1	3.4	1.8	3.3
	Guadalupe	4.3	4.4	4.1	2.3	1.7	3.3	1.4	3.3
	Wilson	1.4	4.1	1.0	0.7	0.6	1.0	0.5	0.9
	Total	69.9	67.2	45.7	42.0	30.0	44.0	24.7	40.4

*note 1996 estimates includes version two of the 1995 Mobile6 inventory

3.4.2.1 Emissions Trend

Figure 3-1 illustrates the predicted emission trend from 1996 to 2012. This illustration further supports the SAER's projected maintenance of attainment of the NAAQS 8-hour ozone standard. Between 1999 and 2007, an overall reduction of 28% of NOx emissions and a 23% reduction in VOC emissions are predicted. Between 2007 and 2012, an additional 22% reduction in NOx emissions and 7% reduction in VOC emissions can be expected. These reductions are a result of the positive actions enforced by the USEPA and TCEQ and indicate improved air quality is in the future of the San Antonio EAC region.

Figure 3-1 Trend of VOC and NOx Emissions in the SAER, 1996, 1999, 2007, 2012



3.4.3 Updating the Planning Process

Various stages of planning and verification must be performed on a continual basis to ensure timely emission reductions for the region to maintain air quality standards. The impacts of new point source related emissions, economic and population growth, and the implementation of new control strategies are evaluated during the air quality modeling process. In the development of the State Implementation Plan for the San Antonio Early Action Compact Region, projected growth of emission sources in the area was integral in the air quality planning process. This preliminary trend analysis indicated that emissions for some sources were projected to increase while other sources would have a decrease in emissions. Model analysis of their effect on ambient ozone levels will be essential in ensuring the maintenance of attainment.

3.4.3.1 Modeling Updates and Modeling Assumption Verification

AACOG staff will analyze air quality and related data and perform necessary modeling updates and modeling assumption verification annually. In the event that updated

emission inventories, updates in any photochemical model inputs, or corrections to earlier modeling assumptions are created and available, the modeling scenarios used to demonstrate attainment for the SAER will be brought up to date. Modeling updates will be performed in accordance with state and federal guidelines.

Ongoing Updates

Gathering, updating, and verifying data is part of an ongoing process between the Texas Commission on Environmental Quality, the US Environmental Protection Agency, and the Alamo Area Council of Governments. The updating and verification process will continue to occur in the context of the Joint Near Nonattainment Area meetings held by air quality planning technical staff representing TCEQ, and the San Antonio, Victoria, Corpus Christi, Austin and the Tyler-Longview areas, or other appropriate venue (technical meetings with TCEQ and / or EPA, etc.). AACOG frequently attends other technical modeling meetings hosted by the TCEQ, EPA as well as regularly scheduled monthly technical meetings of the local San Antonio / Bexar County Metropolitan Planning Organization (MPO). All local transportation planning updates to the modeling inputs will be incorporated as they occur, and their impacts analyzed.

Reporting of modeling updates and modeling assumption verification will be reported in the Semi-Annual Reports written by the AACOG. These reports are due on an ongoing six-month cycle ending December 31 and June 30 of each year of the Early Action Compact, ending December 31, 2007.

3.4.3.2 Transportation Patterns

The development of transportation patterns is influenced by many factors such as land use and urban planning. Transportation patterns directly effect emissions originating from on-road sources, therefore they must be evaluated for their impact on ozone levels. Throughout the continuing planning process, the air quality impact on the region's ozone levels imposed by transportation patterns will be evaluated and assessed by technical staff of various local, regional, state, and federal offices. As specified in 3.4.3.1, the ongoing technical collaboration between AACOG and the local MPO is the central conduit such that updated transportation planning becomes integrated in air quality planning. These cooperative relations will assist in maintaining the 8-hour ozone standard by the technical assistance provided by each agency and in the event additional planning is necessary.

3.4.4 New Strategy Requirements

The annual reviews of growth, including the updates and the continuing planning processes reported in the Semi-Annual Updates will provide air quality planners the insight necessary to ensure attainment of the 8-hour standard up to 2012. The extensive clean air strategy modeling performed by AACOG staff will facilitate the planning if the continuous review process indicates additional measures should be considered.

If at any time the review of growth demonstrates that adopted control measures are inadequate to address growth in emissions, additional measures will be added to the plan. If additional control measures for 2007 attainment are suggested as being necessary through a review of growth, they will be verified using the current attainment demonstration photochemical model and adopted according to the public review process overseen by the Air Improvement Resources Committee. If additional control measures for 2012 attainment are suggested as being necessary through a review of growth,

AACOG staff will work with the TCEQ and EPA to analyze control strategies based on then-currently available photochemical models. Appropriate control strategies will be adopted according to the public review process overseen by the Air Improvement Resources Committee.

3.5 Modeling Milestones

Performing on-going modeling activities ensures the quality of modeling products required for air quality planning activities. The ongoing analysis of the ambient air situation in the San Antonio Early Action Compact Region requires continuous updates to provide air quality planners the comprehension of the air quality situation in the region.

3.5.1 Conceptual Model

A conceptual model profiles or typifies the conditions in which high ozone levels occur for a region through the study of the meteorology, seasonal variables, and regional influences, accompanying high levels of ozone. From this data, episodes are designated as possible modeling candidates. Thus, a conceptual model is a tool a tool to compare possible episodes that could be incorporated into a photochemical model for control strategy evaluation.

The conceptual model developed and referenced in the 1st Biannual Report submitted in June of 2003 analyzed various data up to 2002. Updates were recently performed on the conceptual model and included obtaining ozone data, meteorological data sets, information on transport, wind direction, and back trajectories from 2003. Ozone levels were recorded for the nonattainment and near nonattainment areas in Texas. Selection of a possible “episode” occurs when the comparison of ozone levels from each area allows the identification of a timeframe in which all the areas experienced high ozone levels at the same time. The following table lists all eight-hour ozone exceedance days recorded in San Antonio for the 2003 ozone season. This list was added to a list of candidate episode dates from 1995-2002 that was originally included in the Conceptual Model report. After compiling a list of ozone exceedance days – using eight-hour definitions for exceedance -- from TCEQ archives, the task of identifying patterns in the data begins.

Table 3-3 2003 Ozone Exceedance Days and Possible Modeling Episodes

Date	8 Hour	Multiple Exceedance Days	Notes	Additional Notes
5/23/03	88	May 23-24	Weak candidate: fewer than 3 exceedance days	Could be modeled together as one episode with 4 exceedance days.
5/24/03	85			
5/28/03	96	May 28-29	Weak candidate: fewer than 3 exceedance days	
5/29/03	87			
6/7/03	86			
6/20/03	87			
9/6/03	91	September 6-7	Weak candidate: fewer than 3 exceedance days	
9/7/03	87			

Of the ozone data gathered during the update process, a design value for 2001-2003 was recalculated for an average of 89.3. This average is still in violation of the 8-hour ozone NAAQS. Table 3-4 lists the fourth highest ozone values for 2001-2003 and the design value for CAMS 23.

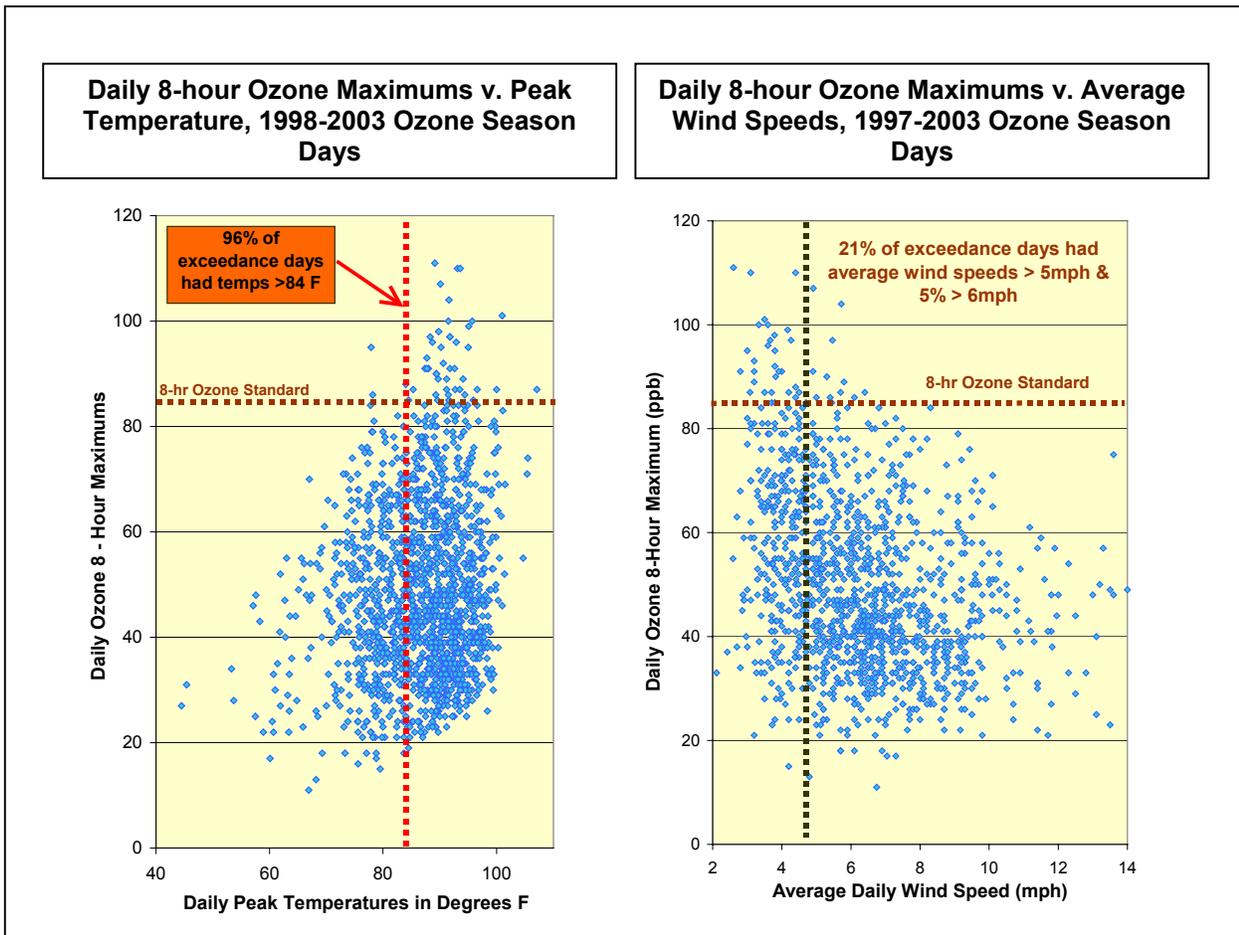
Table 3-4 Fourth Highest 8-Hour Ozone Values by Year and Design Values for the Conceptual Model (ppb)

Site	2001	2002	2003	Design Value
CAMS 23	78	104	86	89.3
CAMS 58	81	95	85	87.0

In addition to the design value at CAMS 23, the design value at CAMS 58 was 87.0, which is also in violation of the 8-hour ozone standard. The San Antonio EAC Region has two monitors in violation of the NAAQS.

Analyses were performed with these new data sets and involved observing the effect of some meteorological variables (temperature, precipitation, wind speed and direction), particulate matter (PM 2.5), solar radiation, and atmospheric stability. Figure 3-2 details the new analyses that were performed incorporating the 2003 data.

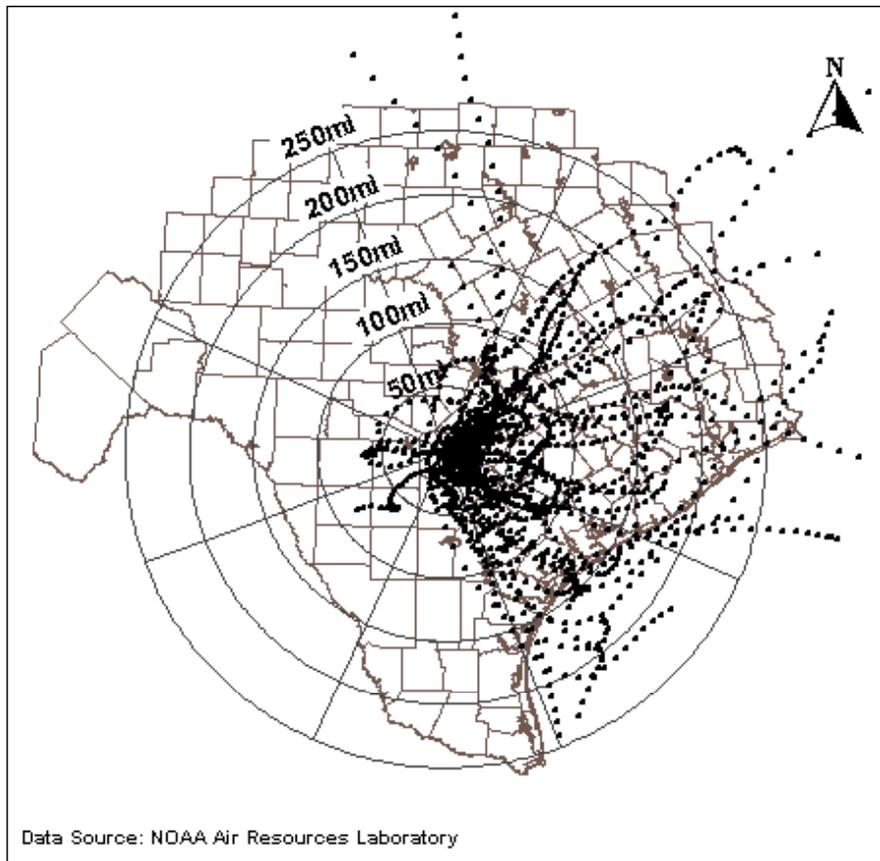
Figure 3-2 Updated Daily 8-hour Ozone Maximum Comparisons for the Conceptual Model



Air Parcel Paths

Studying air parcel paths can assist in the comprehension of “air pollution behavior.” Back trajectories allow the movement of air parcels to be analyzed and recognize the path followed by the parcel before reaching its destination. The HYSPLIT model is used to develop back trajectories, as recommended by TCEQ.¹¹ By utilizing the HYSPLIT model for the forty-two exceedance days in the San Antonio area, spatial patterns were observed for the exceedance days. Figure 3-3 illustrates air parcel paths.

Figure 3-3 Back Trajectory Percentage by Direction for All Ozone Exceedance Days, 1997 – 2003



Analysis of wind directions is another component of the episode selection process. Table 3-5 the base case and composite (base case and candidate episode) percentages of air parcels by directional octant. Following table 3-5 is table 3-6, which provides an overall comparison of ozone and meteorological conditions for the extended May 2003 candidate episode. The table compares some of the meteorological characteristics analyzed when identifying a potential episode.

¹¹ TCEQ, Air Monitoring, “Where did the Air Come from and Where is It Going?” Available on-line: <http://www.tnrc.state.tx.us/updated/air/monops/data/trajectories/maintraj.html>

Table 3-5 Episode Comparison Chart 1999 Base Case + Potential Candidate Episodes

Octant	All Exceedances 1997-2003	San Antonio Base Case: Sept. 16 & 18-20, 1999	Base Case + May 28-29, 2003	Base Case + May 28-29, 2003	Base Case + May 23-24 & 28-29, 2003	Base Case + Sept. 6-7, 2003
N	3%	0%	0%	5%	4%	0%
NE	23%	18%	12%	27%	20%	13%
E	27%	16%	12%	12%	10%	37%
SE	34%	47%	54%	33%	42%	37%
S	7%	14%	18%	9%	14%	9%
SW	3%	3%	2%	2%	2%	2%
W	3%	3%	2%	10%	7%	2%
NW	1%	0%	0%	2%	1%	0%

Table 3-6 San Antonio Peak Ozone and Meteorological Data (CAM5 23): May 23-31, 2003

Date	Max 8-hr. Ozone (ppb)	Peak Temperature (F)	Windspeed 6 a.m.-2 p.m. Average (mph)	Morning/Afternoon Wind Direction
5/23/2003	88	88	4.5	NE / SE
5/24/2003	85	91	6.0	SE / SE
5/25/2003	57	89	6.1	SE/ SE
5/26/2003	55	83	4.0	SE to NW / NE
5/27/2003	61	81	8.2	NE / NE
5/28/2003	87	89	5.2	NE / NW to SE
5/29/2003	95	93	4.3	W to N / SE to S
5/30/2003	78	96	5.7	SW / S
5/31/2003	81	94	4.9	S / SE

Stagnant vs. Transport

The Anthropogenic Precursor Culpability Assessment (APCA) was used to analyze the concentration of ozone in the San Antonio area and quantify the ozone contribution due to transport from neighboring areas and to source type. Figures 3-4 and 3-5 graphically depict the apportionment of ozone to its contributing sources and provide insight to the behavior and contributing trends of meteorological patterns to cause the high ozone levels in the San Antonio area.

Figure 3-4 presents a high ozone episode for the San Antonio region in July of 1995 and analysis of the episode indicates a stagnant air situation. As time elapsed, ozone levels from the initial conditions, boundary conditions, and San Antonio sources remained at significant levels. Initial condition ozone decreased at a slow rate, while boundary condition ozone slowly increased and San Antonio source levels remained constant. Ozone contributed from neighboring areas were not significant therefore not indicative of a transport issue.

Figure 3-4 CAMx APCA Analysis July 1995

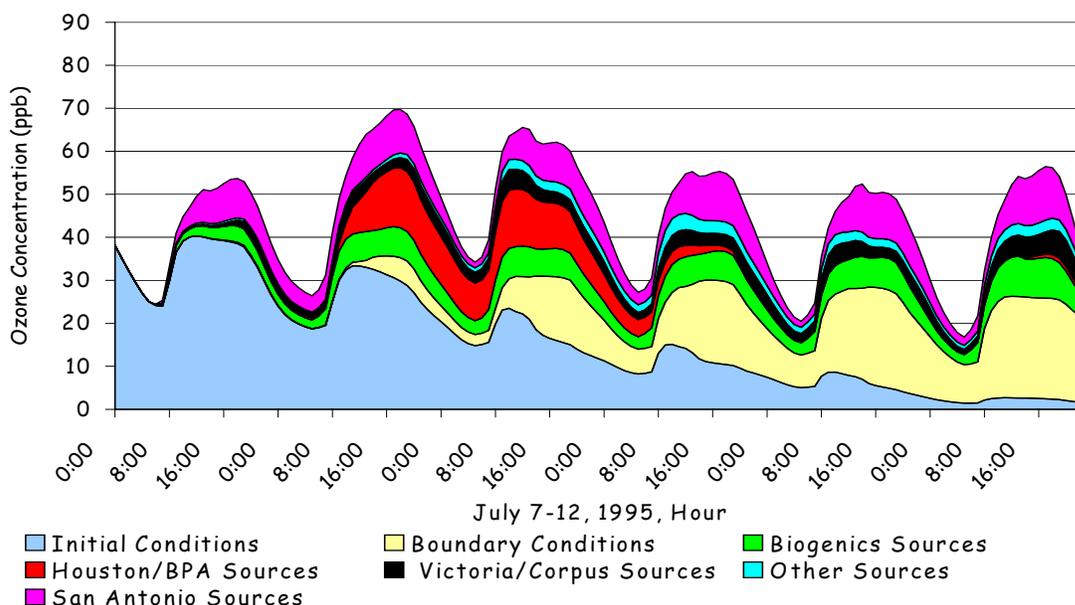
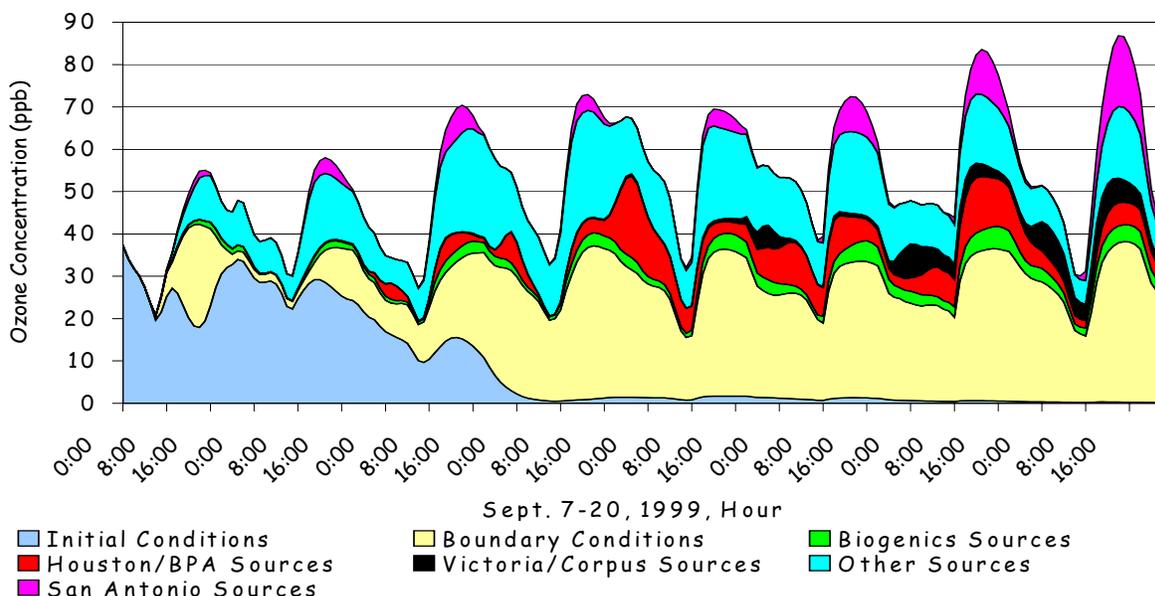


Figure 3-5 depicts a high ozone episode in September 1999. This episode differs from the July 1995 episode in the fact that ozone from boundary sources and other sources were significant to the measured ozone levels. Initial condition ozone decreased significantly while ozone from the other source categories increased and remained at constant high levels. A fairly constant contribution of ozone levels from Houston/BPA and Victoria/Corpus Sources can be observed as well. With this contributing factors, this episode is indicative of a transport episode. Significant transport of ozone from sources other than San Antonio resulted in high ozone readings in the San Antonio area.

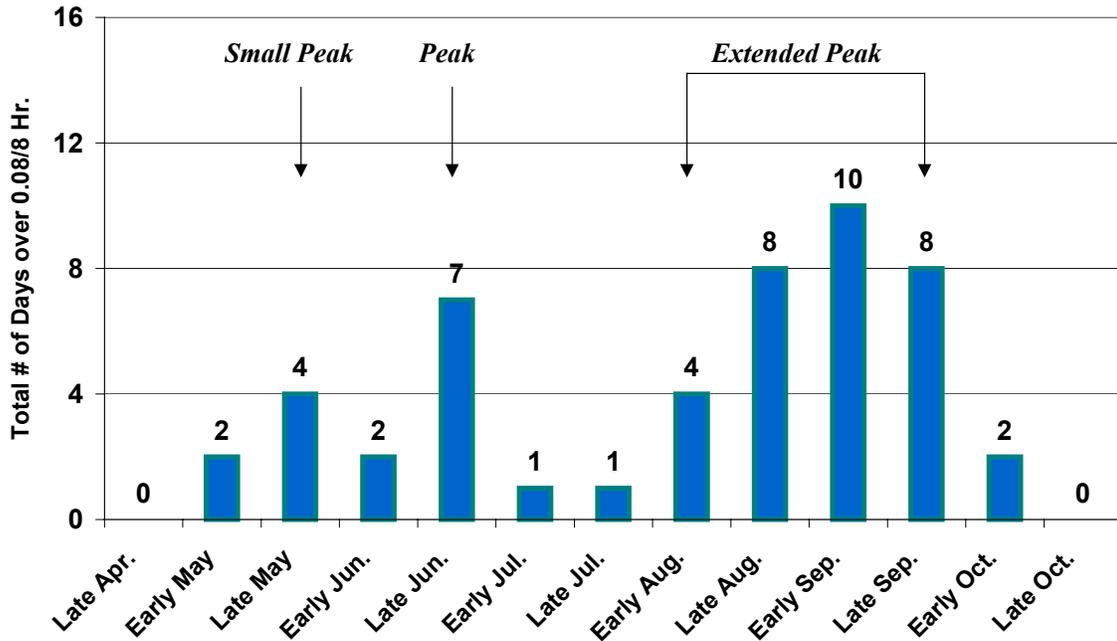
Figure 3-5 CAMx APCA Analysis September 1999



Ozone Seasonal Peaks in the Region

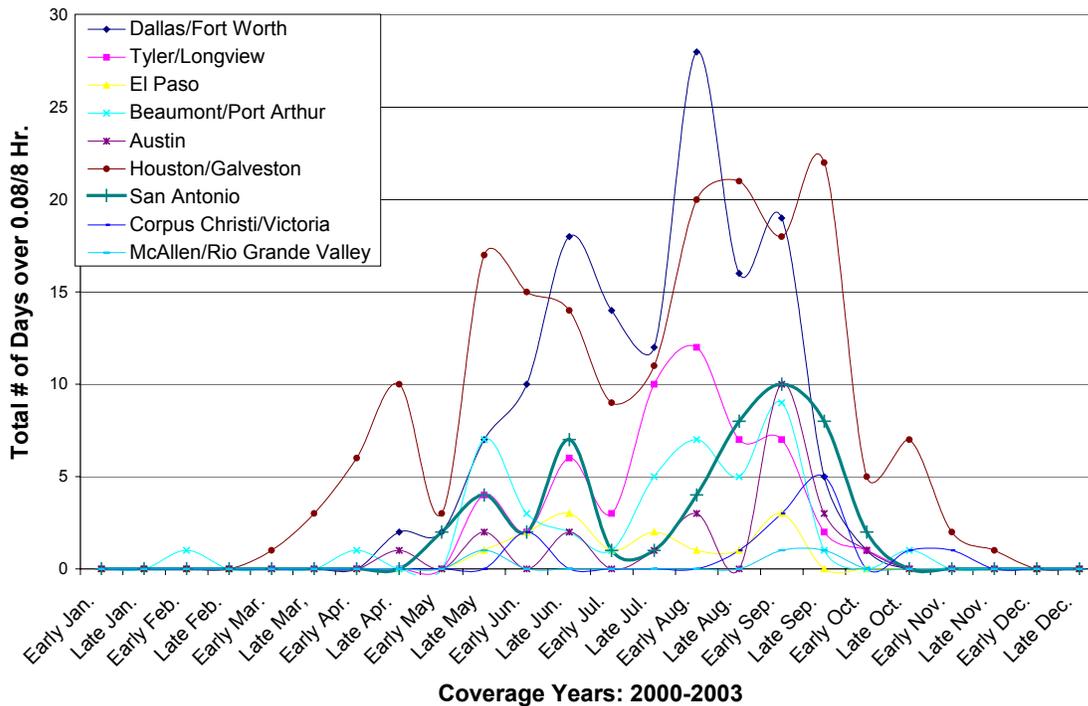
San Antonio's ozone season, April-October, was analyzed by two-week periods for the years of 1997 through 2003 to determine if and when seasonal peaks occur. Figure 3-6 illustrates the number of days the ozone levels exceeded the 85 parts per billion standard during the indicated 2-week period.

Figure 3-6 Ozone Exceedance Peaks for the San Antonio Region from 1997 to 2003



The identified peaks are periods of time where ozone exceedances commonly occur. The higher the bar on the bar graph, the greater the peak thus the more days the ozone level was over the 85 ppb threshold for the 8-hour average, during that 2-week period. Figure 3-7 shows the total number of exceedance days by two week periods from 2000-2003 for the near nonattainment and nonattainment regions of Texas. Comparing the peak trends of the various areas helps identify any local or regional events. The figure shows the first seasonal peak occurring in May, with all four exceedance days occurring in 2003. The next peak occurs in late June. The largest peak occurs from August to late September, represented by a hump. It should be noted that the "peaking" bars of Figure 3-6 coincide with the "peaking" curves of Figure 3-7 for the San Antonio area.

Figure 3-7 High Ozone Readings by Two-week Period by Metropolitan Region to Demonstrate Seasonal Peaks



Once these various analyses are completed, the modeling scenarios can be compared to the air quality scenarios from other near nonattainment areas. This will provide air quality planners with the best candidate episodes for selection to develop a new photochemical model. The following episodes from 2003 are deemed as possible candidate additions for the San Antonio region:

May 23-29, 2003

- 4 exceedance days in episode
- Back trajectory on the 29th is from the W, NW, & N, which is not typical of a high ozone day in the San Antonio region
- Could be modeled with other regions to reduce costs
- Maybe suitable to represent a stagnate air situation: max hourly average wind speeds were of 4.5, 6.0, 5.2, & 4.3 mph (1999 episode had speeds of 8.1, 6.0, 5.0 & 5.6 mph)

September 6-7, 2003

- Has only 2 exceedance days in the episode
- Could be modeled with other regions to reduce costs (although Austin had only one exceedance that coincides)
- PM 2.5 had an unusually high reading (for San Antonio) on the 7th- 30.82
- Max hourly average wind speeds were 4.9 mph & 5.9 mph respectively

3.5.2 Future Photochemical Modeling Episodes

The eventual selection of a candidate episode ultimately leads to the development of a photochemical model which allows air quality planners to further understand the mechanics of ozone exceedance days and the conditions that typify the occurrence.

The update of the conceptual model with data from 2003 offers two potential episodes in 2003, May 2003 and September 2003. Aside from analysis and comparison of meteorological conditions, air quality planning tools such as the APCA enable a better comprehension of air quality scenarios thus allowing the selection of a transport or a local condition episode.

A comprehensive TexAQS study is going to be conducted in 2004 and 2005 which would provide additional information but also possible new insights of various influences on air quality situations. In the event the San Antonio EAC fails or San Antonio is declared effective nonattainment in 2008, the development of a new photochemical modeling episode would be essential in additional air quality analyses. The September 1999 episode, which was used in the development of the Clean Air Plan, will be out of date in 2008. The episode also only provides control strategy analysis for one type of high ozone event, that event being one of transport.

Chapter 4 – Conclusion

The San Antonio EAC region has successfully maintained steady progress in accomplishing EAC milestones and ensuring proper development of the Clean Air Plan. The Attainment Demonstration for the San Antonio Early Action Compact Regions was successfully developed and submitted to the TCEQ and EPA on March 31, 2004. Successful completion of the milestones included appropriate participation of stakeholders in the air quality planning process, ongoing development and research of potential control strategies, provide for public participation in the development of the Clean Air Plan, and continue technical activities in developing and testing model performance. Accomplishing these milestones allowed efficient development of the Attainment Demonstration with assurances in the validity of its technical data.

The San Antonio EAC region remains compliant with the prescribed milestones as given by the *Protocol for Early Action Compacts Designed to Achieve and Maintain the 8-Hour Ozone Standard*.¹² The region will continue to comply to the milestones as required.

¹² The "Protocol for Early Action Compacts Designed to Achieve and Maintain the 8-Hour Ozone Standard" is available online as http://www.epa.gov/ttn/naags/ozone/eac/20020619_eac_protocol.pdf