

O₃ Flex Agreement for the Austin/San Marcos Metropolitan Statistical Area March 28, 2002

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1.0 Executive Summary

Local governments, community and business leaders, environmental groups, and concerned citizens in the Austin/San Marcos Metropolitan Statistical Area (A/SM MSA) want to implement programs to improve regional air quality. These groups want to take action now to assure continued attainment of the federal 1-hour standard for ground-level ozone. The O₃ Flex Agreement is the appropriate mechanism for achieving these goals and provides the flexibility to allow individual communities to pursue emission reduction strategies most appropriate to their circumstances. Therefore, local government signatories request that the U. S. Environmental Protection Agency (EPA) and the Texas Natural Resource Conservation Commission (TNRCC) agree to the terms set forth in this O₃ Flex Agreement and Memorandum of Agreement.

1.1 The O₃ Flex Agreement

EPA issued O₃ Flex Guidelines on June 21, 2001. The O₃ Flex Agreement is a voluntary local approach to encourage emission reductions that will keep an area in attainment of the 1-hour ozone standard, while also working toward the health benefits envisioned under the 8-hour ozone standard.

O₃ Flex is implemented through a Memorandum of Agreement (MOA) between EPA, the state environmental agency and local governments. By developing, signing, and maintaining the MOA, the local area will not be designated nonattainment for the 1-hour ozone standard for the term of the agreement, as long as the control measures are being implemented. EPA also plans to provide options for the 8-hour ozone standard, to the extent possible under provisions of the Clean Air Act, that recognize the efforts of areas that voluntarily achieve near-term emission reductions via the O₃ Flex Agreement.

A major advantage of the region's participation in an O₃ Flex Agreement is the flexibility afforded to the signatories in selecting emission reduction measures and programs which are best suited to local needs and circumstances. Recognizing the varied social and economic characteristics of Central Texas, not all measures can or should be implemented by every entity. Also, given constraints imposed by annual budget cycles, not all entities will be able to implement measures before the 2002 ozone season. Each of the signatory parties has reviewed the menu of programs described in Section 3.0 (Action Plan) and committed to implementing those strategies which are most appropriate and suitable given their individual capabilities and resources. A summary of selected programs and commitments is provided in Section 3.7.

It is the understanding of the signatories of the O₃ Flex Agreement that EPA is committed to doing all it can do within its authority to provide SIP credit for near-term, discretionary emission reduction measures to participants in the O₃ Flex Agreement. In Central Texas, these participants include local governments and area businesses. Examples of credits which may be applied include lowering the ozone concentration baseline used as a starting point in ozone attainment modeling, reducing the total amount of emission

reductions needed for attainment, or in providing emission reductions needed for a State Implementation Plan (SIP) attainment demonstration. It is also understood that emission reductions achieved through individual measures will be donated to the regional O₃ Flex efforts and will not be available for use in an emissions banking/trading program, with one exception. The City of Austin's electric utility (dba Austin Energy) intends to make additional NO_x emission reductions beyond all state and federal requirements. These additional reductions are expected to result in the utility's having excess allowances on a regular basis. While Austin Energy may eventually use these excess allowances in a banking/trading program, the utility will not sell the allowances within the five-county Central Texas region. The 2007 NO_x reduction resulting from Austin Energy's emission reduction program is, therefore, included in the total emission reductions to be achieved under this Agreement.

The signatories' intent in entering into the O₃ Flex Agreement is to proactively implement and sustain air quality improvement strategies that are tailored to local conditions and are effective, practical, and measurable in reducing ground-level ozone concentrations. The Agreement should in no way be construed as a strategy to avoid or to defer a nonattainment designation under the 8-hour ozone standard. However, signatories urge EPA to adopt a policy of quickly restoring attainment status to areas that come into expedited compliance with the 8-hour standard as a result of an O₃ Flex Agreement.

1.2 How O₃ Flex Applies to Central Texas

Participation in an O₃ Flex Agreement is available for areas that:

- currently are designated attainment and are monitoring attainment of the 1-hour ozone standard, and
- currently monitor either violations or attainment of the 8-hour ozone standard.

Implementation of the O₃ Flex Agreement is intended to reduce emissions which produce ozone, O₃. Ozone is a form of oxygen with three atoms, instead of the usual two atoms. It is a photochemical oxidant and, at ground-level, is the main component of smog. Ozone is not emitted directly into the air but is formed through chemical reactions between natural and man-made emissions of volatile organic compounds (VOCs) and nitrogen oxides (NO_x) in the presence of sunlight. High concentrations of ground-level ozone are damaging to human health and the environment. Reducing ozone levels requires reductions in ozone precursors, predominantly VOCs and NO_x.

The Clean Air Act directs EPA to develop and enforce standards for ambient air quality adequate to protect public health. Ground-level ozone, the pollutant of concern in Central Texas, is one of the pollutants for which standards have been promulgated. Under the 1-hour ozone standard, exceedance of the standard occurs when measured peak ozone levels for any 1-hour period is 125 parts per billion (ppb) or higher. The standard is violated when 1-hour peak levels are at or above 125 ppb more than 3 days over a 3-year period.

In 1997, EPA set a new standard for ground-level ozone in response to concerns that the 1-hour standard was inadequate to protect public health. EPA changed the standard to 85 ppb (the effective standard given rounding protocols) and introduced the “rolling 8-hour average” as the tool for measuring exceedances. The 8-hour average approach addressed the concern that longer periods of exposure were more of a health threat than exposures to 1-hour peak levels. Using the rolling average, EPA calculates the average reading over 8-hour blocks of time throughout a 24-hour time period to determine the highest 8-hour average for a given day. An exceedance of the standard occurs when this 8-hour average is 85 ppb or higher. The fourth highest 8-hour average for the year is averaged with the fourth highest readings for the previous two years. An area violates the 8-hour standard when the average for three consecutive years of these readings is 85 ppb or higher.

Central Texas is designated attainment for the 1-hour ozone standard and continues to monitor attainment of that standard. The region has not exceeded the 1-hour standard since 1985. However, Central Texas has experienced monitored violations of the 8-hour ozone standard in 1997-1999 and 1998-2000. As such, the region meets the criteria in EPA’s guidelines for participation in an O₃ Flex Agreement.

Because monitored violations indicate concentrations of ground-level ozone which are inconsistent with protecting public health and the environment, elected officials in the five-county Central Texas region (Bastrop, Caldwell, Hays, Travis, and Williamson counties) have agreed to consider entering into an O₃ Flex Agreement with EPA and TNRCC, with the intent of taking voluntary and prompt actions to improve air quality in the region. Resolutions to pursue development of an O₃ Flex Plan were unanimously approved by county commissioners courts in each of the five counties. City councils in Bastrop and Elgin (Bastrop County), Lockhart and Luling (Caldwell County), San Marcos (Hays County), Austin (Travis County), and Round Rock (Williamson County) also unanimously approved resolutions. A Letter of Intent, with these resolutions, was submitted to representatives from EPA Region VI and TNRCC on April 11, 2001.

1.3 Central Texas’ O₃ Flex Proposal

Government, business, and community leaders in Central Texas are committed to initiating effective and sustainable programs that will significantly improve air quality and will assure that the region stays in attainment of the 1-hour ozone standard. The first phase in achieving these goals is the O₃ Flex Agreement with TNRCC and EPA. To the extent practicable, O₃ Flex Agreement programs will be launched for the 2002 ozone season, and, in any event, no later than the 2003 ozone season. Descriptions of these programs and identification of the entities utilizing the various strategies are detailed in Section 3.0.

The second phase of the region’s air quality improvement program includes a regional commitment to continued air quality monitoring, photochemical modeling, and technical analyses to facilitate design and implementation of additional strategies for future years. Since 1996, ambient air monitoring has been conducted and emission inventories have been compiled for the region. Photochemical modeling of a 1995 episode has also been

performed. Modeling and analyses of a 1999 high ozone episode are underway, with completed studies expected in early 2002. Results of this work are expected to enhance the region's ability to select the most effective emission reduction strategies. MOBILE5 has been used for this work; analysts will use MOBILE6¹ to evaluate mobile source emission reduction measures. Using the results of this additional technical work, interlocal agreements may be developed among the participants to carry out future programs and measures, or the signatories may choose to amend the existing O₃ Flex Agreement.

1.4 Geographic Coverage of the O₃ Flex Plan

The proposed O₃ Flex Plan applies to the five counties included in the Austin/San Antonio Metropolitan Statistical Area (A/SM MSA). These counties are Bastrop, Caldwell, Hays, Travis, and Williamson counties (Figure 1.1). The A/SM MSA is defined by the U.S. Office of Management and Budget (based on data generated by the U.S. Census Office) and is representative of the historical basis used by the EPA for defining nonattainment area boundaries. For Central Texas, using the defined MSA is a reasonable and suitable approach to setting the area's O₃ Flex Plan boundaries. The predominant sources of anthropogenic VOC and NO_x in the region are on-road, non-road, and area. The impacts of, and increases in, emissions from these sources are primarily related to the urban character of the region (e.g., population densities, urban/suburban growth, commuting patterns, etc.).

¹ MOBILE6 is the most recent version (released January 2002) of EPA's emission factor model for on-road mobile sources. Input to the model includes fuel, temperature, speed, driving behavior, and emission reduction control strategies. From this input, the model predicts emission factors expressed as a rate per unit of activity, typically rate per vehicle mile traveled.

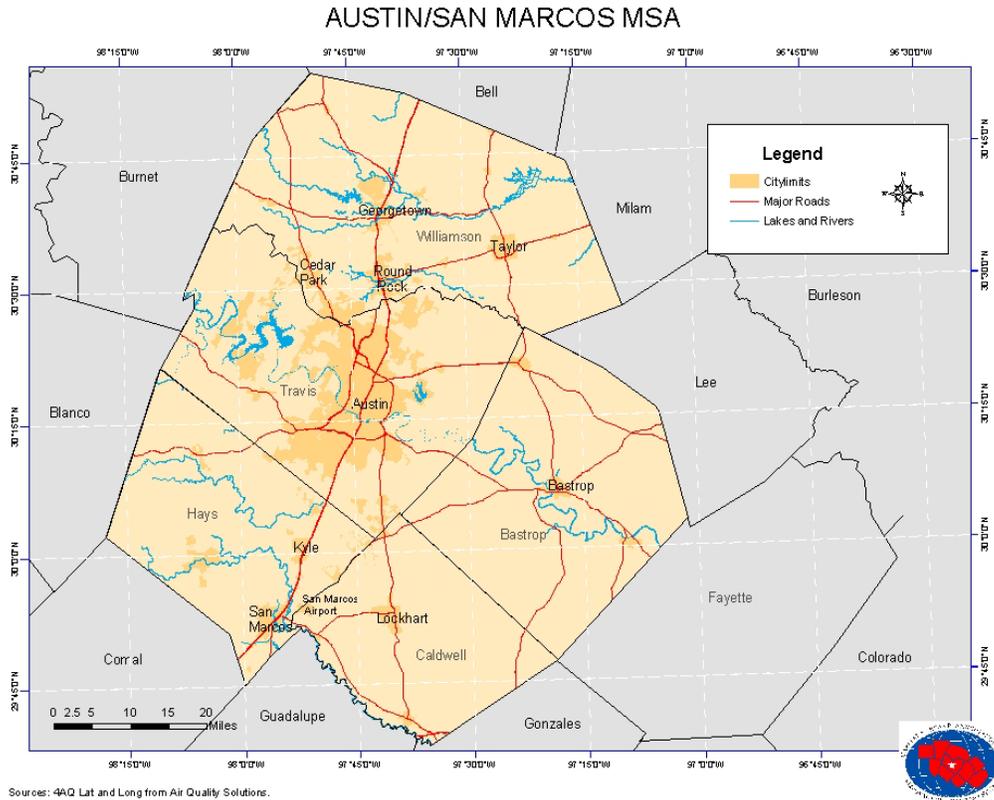


Figure 1.1

1.5 Signatory Government Entities

With EPA and TNRCC, the following local governments are signatories of the A/SM MSA O₃ Flex Plan Memorandum of Agreement (MOA):

- | | |
|--------------------|--------------------|
| City of Austin | City of San Marcos |
| City of Bastrop | Bastrop County |
| City of Elgin | Caldwell County |
| City of Lockhart | Hays County |
| City of Luling | Travis County |
| City of Round Rock | Williamson County |

It is anticipated that additional local government signatories will be added to the A/SM MSA O₃ Flex Agreement.

1.6 Participating Groups and Agencies

In addition to the government signatories, the following organizations also participated in the development of this O₃ Flex Agreement. Several of these participants, denoted by the asterisk, have also made commitments to implement control measures (See Section 3.7). Information on the groups listed below is provided in Appendix A.

*Capital Area Metropolitan Planning Organization (CAMPO)
*Capital Metropolitan Transportation Authority
*Capital Area Planning Council (CAPCO)
Central Texas CLEAN AIR Force
Clean Air Coalition of Central Texas
Clean Air Partners
Environmental Defense
Greater Austin Chamber of Commerce
*Lower Colorado River Authority
*Texas Department of Transportation (TxDOT), Austin District
*Texas Department of Transportation (TxDOT), Headquarters Office
*Texas Natural Resource Conservation Commission, Austin Headquarters Office
University of Texas at Austin

1.7 Intent, Objectives, and Commitments of the A/SM MSA O₃ Flex Agreement

It is the intent of the signatories that, through their participation in an O₃ Flex Agreement, effective and sustainable air quality improvement strategies will be implemented for the A/SM MSA. Through these strategies, the signatories intend that regional air quality will remain in attainment of the 1-hour ozone standard and have the additional health benefits envisioned under the 8-hour standard. The signatories recognize that the O₃ Flex Agreement does not preclude the A/SM MSA being designated as nonattainment under the 8-hour standard at some future point.

The specific objectives of the A/SM MSA O₃ Flex Plan are to:

- Provide long-term maintenance of the 1-hour ozone standard
- Provide health benefits envisioned under the 8-hour ozone standard

The signatories and participants of the A/SM MSA O₃ Flex Plan commit to:

- Implement, to the extent practicable, emission reduction measures for the 2002 ozone season and no later than the 2003 ozone season. These measures will reflect the circumstances and resources of the individual signatory entities and other participants.
- Continue to conduct air quality monitoring and air dispersion or photochemical modeling.
- Evaluate additional emission reduction measures based on updated photochemical modeling and technical analysis programs.
- Develop and update regularly the area's emissions inventories.

- Implement effective contingency measures if violations of the 1-hour ozone standard occur.

1.8 Expected Agreement Duration

The signature date of the MOA is the start date of the agreement's term. The agreement remains in effect until December 31, 2007.

1.9 Conditions for Modification or Early Termination

This agreement may be modified or terminated by mutual consent of all signatory parties. Any signatory party may withdraw from the agreement if provisions of the agreement are not carried out by the other signatory parties. This agreement may be modified at any time. It may also serve as the basis for further negotiations as needed to meet the Clean Air Act requirements under the 8-hour standard.

2.0 Background

TNRCC has provided funding since 1995 to allow the A/SM MSA to be very proactive in air quality planning activities. Funding has also been provided for these efforts by the Capital Area Metropolitan Planning Organization (CAMPO). Air quality planning activities have focused on monitoring, emission inventory development, and photochemical modeling. Sections 2.1 and 2.2 provide information on monitored ozone levels in the area. Section 2.3 describes the emissions inventory work, and Sections 2.4 and 2.5 summarize the modeling work and observed trends.

2.1 Air Quality Monitoring – Number and Location of Monitors

TNRCC has been monitoring air quality in Austin since the mid-1970's. The first Continuous Air Monitoring System (CAMS) in the area was located at Parmer Lane and MoPac (CAMS #25) in northwest Austin. A second monitor was added in 1993, also in northwest Austin at Murchison Junior High School, 3724 North Hills Drive (CAMS #3). In 1997, because of its proximity to a heavily-traveled highway intersection, the Parmer Lane monitor was re-located to a site in far northwest Travis County near Cedar Park (12200 Lime Creek Road, CAMS #38). Two additional monitoring stations were set up in Caldwell and Fayette counties in 1998 to assist in gathering information on area background ozone levels. These are CAMS #62 (Caldwell County, near the San Marcos Airport) and CAMS 601 (Fayette County). Figure 2.1 shows the location of ozone monitoring stations.

In 1996, air quality data were also gathered by using a specially-equipped van to transport monitoring equipment to areas around Georgetown (northern Williamson County), San Marcos, and Austin-Bergstrom International Airport (southeast Travis County). In addition to monitoring ozone concentrations, NO_x concentrations were monitored continuously along with wind speed and direction. Approximately 300 VOC samples were also collected during this period. This data collection effort found that, on ozone action days, highest levels of ozone were often registering outside Travis County and confirmed that on some, but not all ozone action days, air entering the region had high levels of ozone and ozone precursors. Additional data support the observation that the region's highest ozone levels are typically experienced when winds are out of the north/northeast or from the south/southeast.

Ozone Monitoring Stations

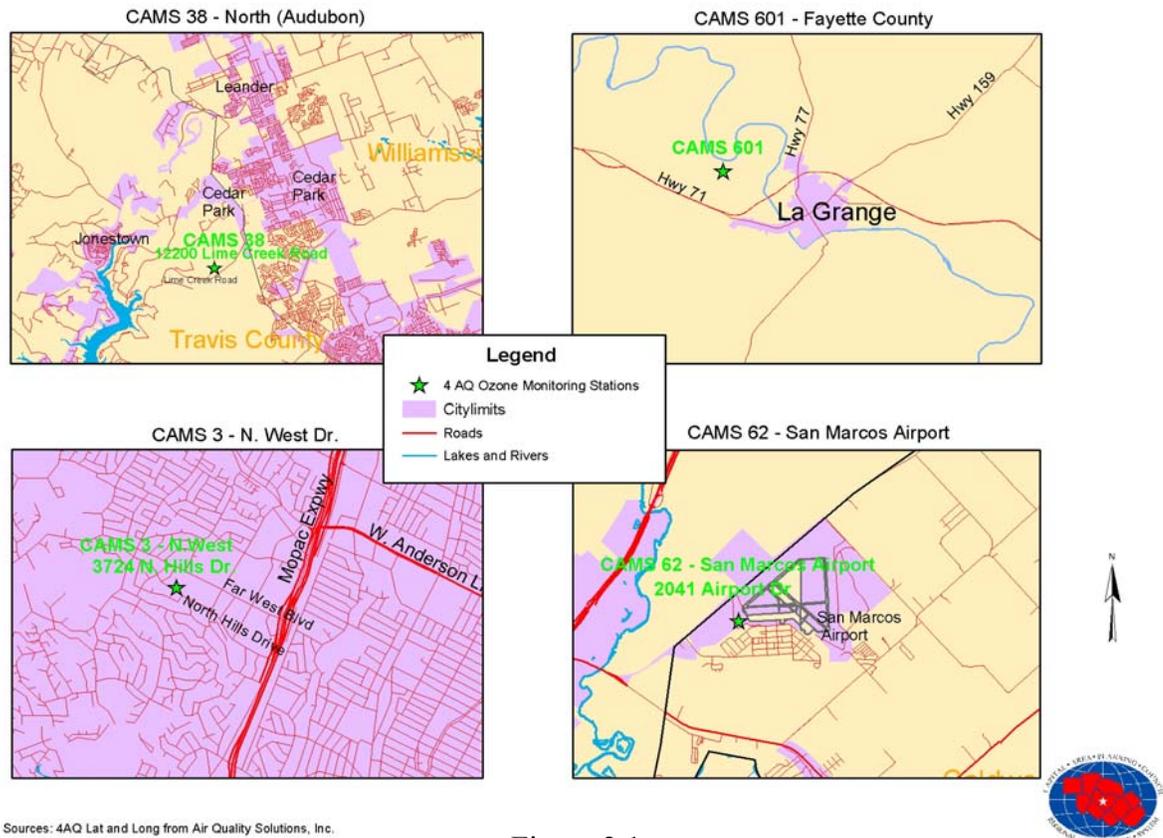


Figure 2.1

2.2 Indications of Status of Air Quality in Central Texas

The data indicate that measurements of ground-level ozone in the A/SM MSA over the past 26 years have, in some years, reached unacceptable levels. Figure 2.2 shows the area's highest 1-hour ozone levels for the period 1974 through 2001. The 1-hour ozone standard was exceeded in 1974, 1976, 1979, 1980, and 1985. The 1-hour ozone standard has not been exceeded in the A/SM MSA since 1985. Figure 2.3 illustrates 1-hour ozone design value trends since 1978.

Figure 2.4 shows the four highest ozone measurements using 8-hour averaging for 1998, 1999, 2000, and 2001. Based on a rolling 3-year average of the fourth highest readings, the A/SM MSA violated EPA's 8-hour standard in 1999, 2000, and 2001. Eight-hour design value trends since 1980 are shown in Figure 2.5.

Figure 2.2

Highest 1-Hour Ozone Level by Year in the Austin Area: 1974-2001

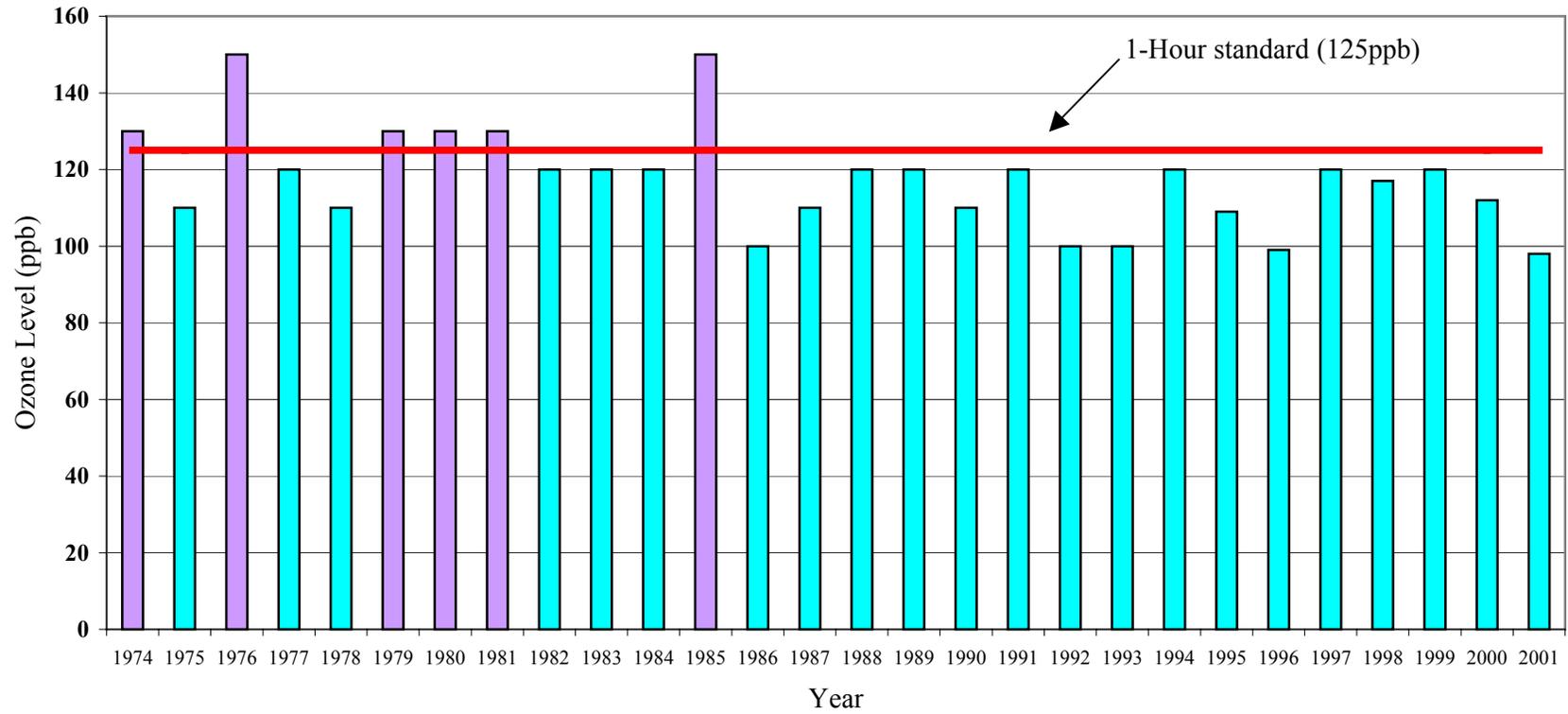


Figure 2.3

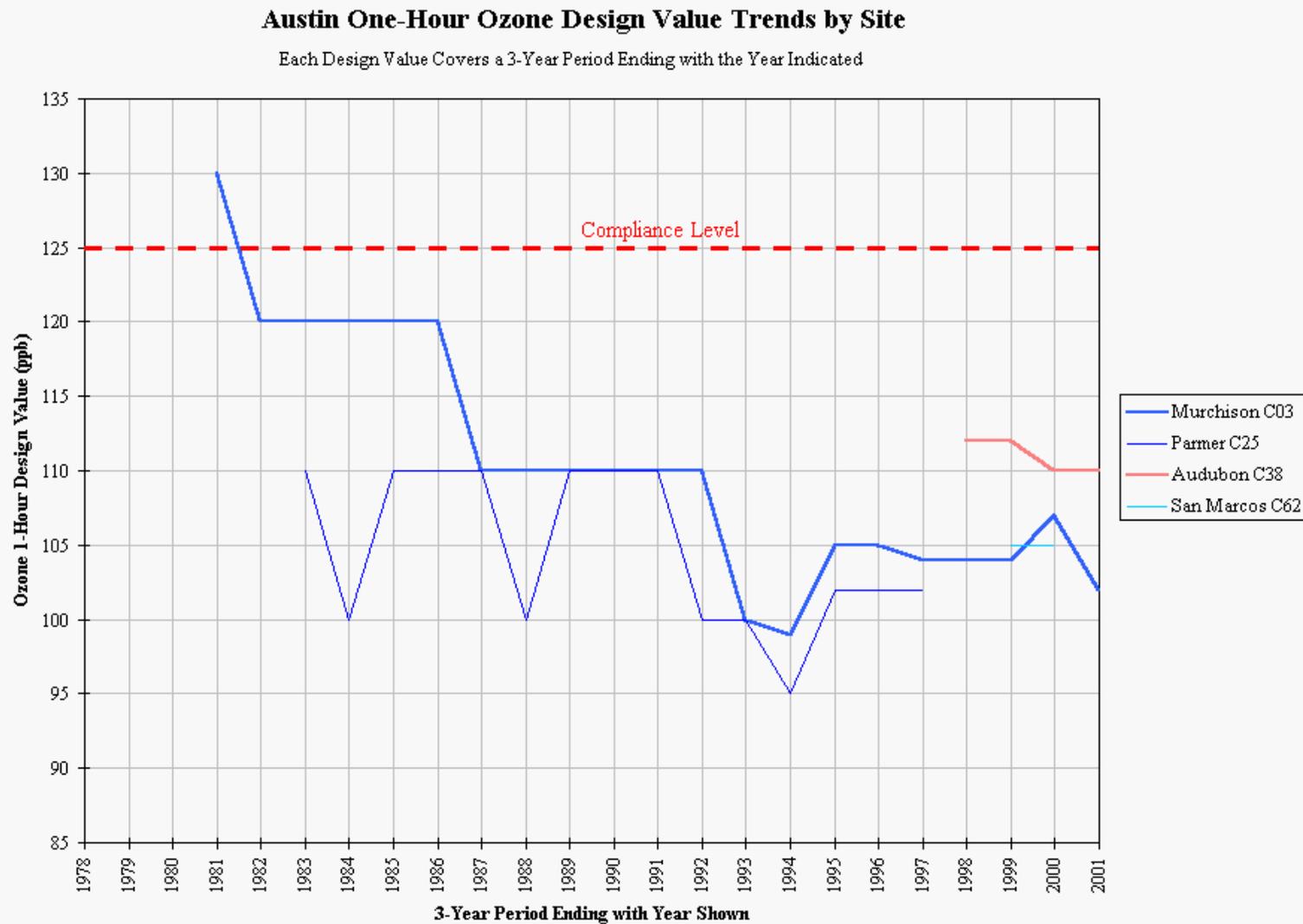
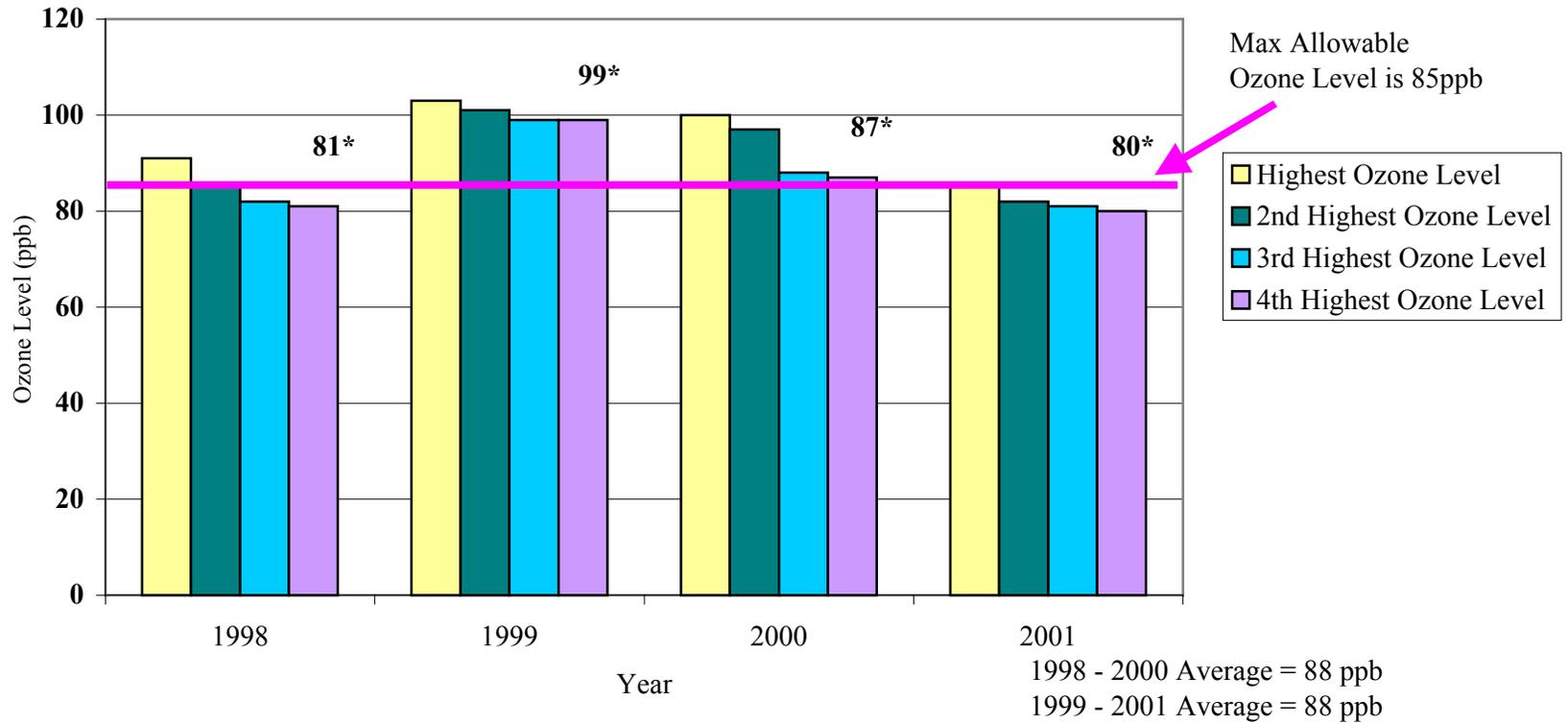


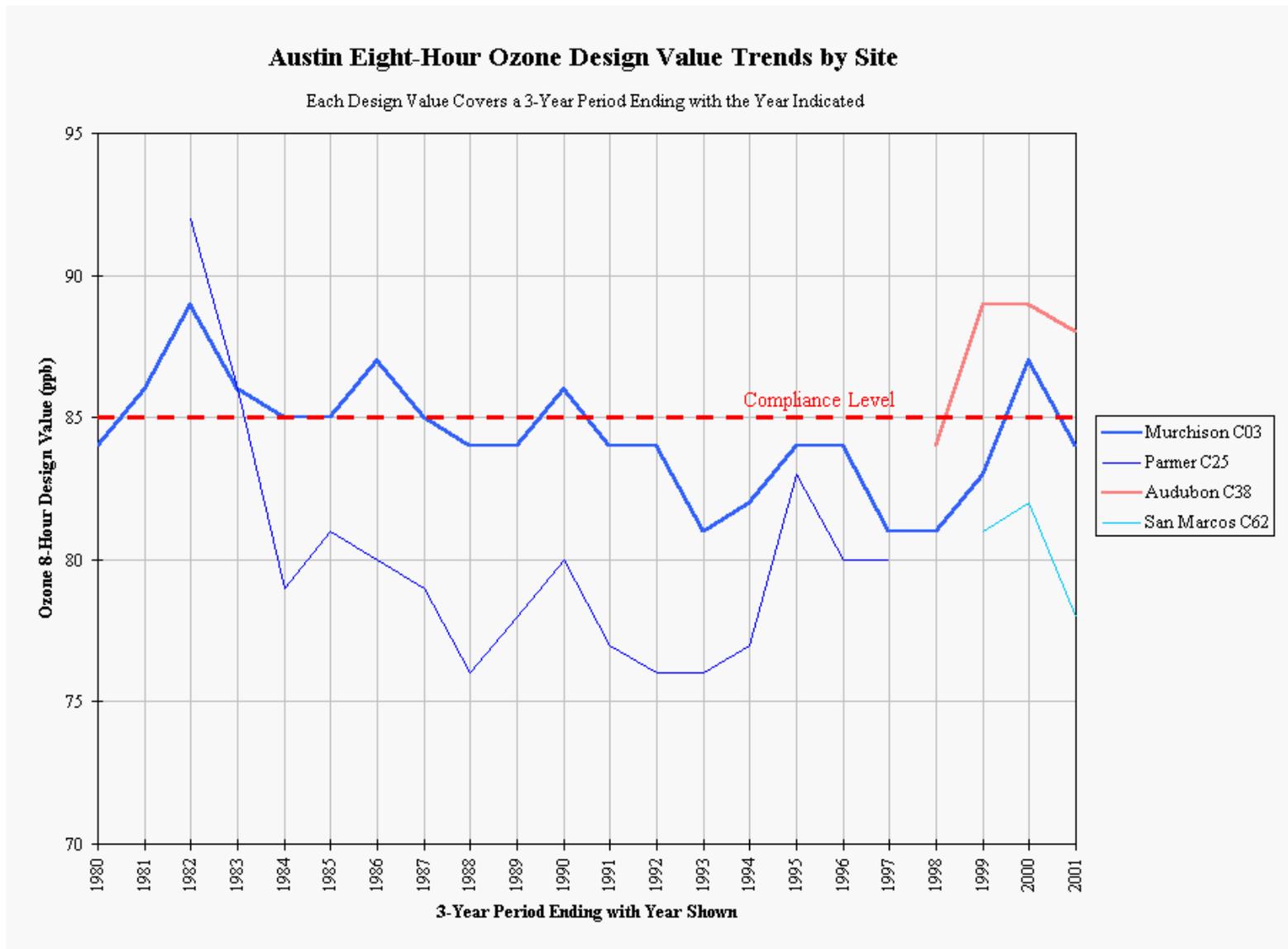
Figure 2.4

4 Highest 8-Hour Ozone Levels in the Austin Area
Audubon Monitor (1998 - 2001)
(number above the bar is 4th highest reading, in parts per billion)



*4th Highest Ozone Reading for the year

Figure 2.5



The number of high ozone days (1-hour and 8-hour) since 1994 is provided in Table 2.1. Although the A/SM MSA has not exceeded the 1-hour ozone standard since 1985, there have been exceedances of the 8-hour ozone standard. Table 2.2 lists the dates and ozone levels for these exceedance days for the 1994 through 2001 ozone seasons.

Table 2.1. Central Texas – Number of High Ozone Days

	1-hour Maximum		8-hour Average
	≥ 95 ppb	≥ 105 ppb	≥ 75 ppb
1994	5	1	12
1995	21	4	33
1996	3	0	6
1997	8	4	23
1998	8	4	15
1999	18	8	34
2000	13	3	20
2001	2	0	14

Source: TNRCC

Table 2.2
8-hour Exceedances – 1994 through August 31, 2001

Year	Date	Reading in ppb
1994	August 12	88
	August 16	88
	September 19	88
	October 1	89
1995	June 14	89
	June 21	97
	June 22	89
	July 10	89
	July 11	89
	August 4	88
	September 2	90
	September 3	90
	September 4	91
	September 8	85
	September 9	85
September 11	88	
1996		-0-
1997	April 17	86
	June 2	87
	June 3	91
	August 26	97
	September 29	85

	October 2	95
1998	May 8	85
	June 15	86
	August 29	88
	August 30	92
	September 3	92
	September 4	95
1999	August 5	103
	August 6	97
	August 7	89
	August 16	96
	August 20	92
	August 21	97
	August 30	94
	August 31	93
	September 1	92
	September 2	88
	September 16	85
	September 17	99
	September 18	99
	September 19	101
	September 20	87
	September 24	88
	October 1	97
October 13	87	
2000	April 26	85
	July 24	86
	August 1	85
	August 2	86
	August 13	88
	September 1	88
	September 2	89
	September 3	87
	September 5	97
	September 18	100
	September 30	86
2001	May 23	85

Source: TNRCC

2.3 Emission Inventories - Suspected or Confirmed Sources of Pollutants Contributing to Ozone Formation

In 1995, City of Austin Air Quality staff, with funding provided by the Capital Area Metropolitan Planning Organization (CAMPO), compiled an emissions inventory for the

area based on 1992 data. This inventory indicated combined NO_x and VOC emissions could be attributed as follows:

On-Road Motor Vehicles	43%
Off-Road Motor Vehicles	33%
Area Sources	18%
Point Sources	6%

In 1998 an updated 1996 Emissions Inventory was developed using EPA-approved methodologies (e.g., EPA's NON-ROAD Model and BEIS 2.3) and incorporating area VMT and population growth projections for the on-road and area source categories. Point sources were inventoried using the TNRCC Point Source database. In early 2001, the 1996 Emissions Inventory was projected to 2007 based on the July 1995 episode. A draft Inventory for 1999 was also prepared in 2001 (Appendix B). Tables 2.3 and 2.4 summarize the estimated emission percentages by category in the 5-county A/SM MSA.

Table 2.3
NO_x Emissions in 5-County A/SM MSA
(Average Ozone Season Weekday)

Source Category	1999 EI	tons per day (tpd)
On-Road	39%	83.5
Non-Road	23%	48.9
Point	23%	47.5
Area	3%	5.9
Biogenics	12%	24.9
Total	100%	210.7

Table 2.4
VOC Emissions in 5-County A/SM MSA
(Average Ozone Season Weekday)

Source Category	1999 EI	tons per day (tpd)
On-Road	9%	48.2
Non-Road	5%	29.9
Point	1%	3.7
Area	15%	86.6
Biogenics	70%	394.1
Total	100%	562.5

2.4 Data Analysis and Modeling

In 1995, the Texas Legislature approved funding, through the TNRCC, to assist the state's near nonattainment areas in implementing technical studies and designing

strategies to improve air quality. In addition to operating and maintaining the monitoring network, these funds were used to initiate photochemical modeling analyses for the A/SM MSA. In consultation with TNRCC and based on EPA criteria, a July 9-12, 1995 ozone episode was chosen for detailed analysis and modeling. This episode is characterized by high 1-hour ozone levels (>100 ppb) and light winds (< 3 mp) out of the south-southeast in both Austin and San Antonio. Photochemical grid modeling for the Austin/San Antonio area and this episode was developed by Environ Corporation and the University of Texas at Austin, Center for Energy and Environmental Resources (UT) using the Urban Airshed Model (UAM-IV) and data from a 1992 Austin-area Emissions Inventory.

UAM-IV and the July 9-12, 1995 episode were used in 1998 to conduct a series of sensitivity analyses with the 1995 base case inventory gauging the effect of various NO_x- and VOC-reduction scenarios on ozone levels (“Urban Airshed Modeling for Central Texas,” University of Texas at Austin, Center for Energy and Environmental Resources and the Austin Transportation Study, November 1998). The analyses examined ozone reductions under both the 1-hour and 8-hour ozone standards. This preliminary modeling indicated that reductions in both NO_x and VOCs would produce reductions in ozone levels and that these pollutant reductions needed to be in the 25%-30% range to produce a 5-10 ppb reduction in peak ozone concentrations.

In 1999, the UAM-IV and July 9-12, 1995 data base were incorporated into CAMx (Comprehensive Air Quality Model, with extensions) and an updated (1996) area Emissions Inventory was published. Data from a Dallas/Ft. Worth episode (June 19-21, 1995) were also adapted in CAMx for the Austin area. A model performance evaluation revealed that the July 1995 episode does meet EPA model performance criteria, while the June 1995 episode did not. As a result, the July 1995 episode has been the basis of subsequent 2007 future case modeling and sensitivity analyses as data for a 1999 episode is being developed.

In 2000, again with funding provided by the Texas Legislature for the state near nonattainment areas, the Capital Area Planning Council (CAPCO) contracted with Environ and UT to conduct additional photochemical modeling. The work included development of a 2007 future case emissions inventory for the A/SM MSA which incorporates growth factors and implementation of state and federal controls. CAPCO also contracted with the Alamo Area Council of Governments (AACOG) to prepare a 1999 Emissions Inventory. Four of the near nonattainment areas receiving funding (Austin, Corpus Christi, San Antonio, and Victoria) are pooling their state funds to develop and evaluate a September 1999 episode. Environ has developed the base case for this episode.

The photochemical modeling for the July 1995 episode has been performed using meteorological data from a previous study developed for the Ozone Transport Assessment Group study and the meteorological model results have not been refined for the area. The emissions inventory for this modeling was based on existing data and generic estimates instead of A/SM MSA specific surveys. Model performance is

adequate, but this evaluation was based on a very limited set of monitoring data. Furthermore, the conceptual model developed for the A/SM MSA indicates that there are additional meteorological conditions that should be modeled for the Austin area in order to cover the conditions that are most often correlated with high ozone in the area. Specific recommendations may be found on pages ES-12 and ES-13 of the attached report on modeling (Appendix C)

Emission levels have been projected from 1995 to 2007 and modeled. From 1995 to 2007 the 1-hour and 8-hour predicted concentrations increase as shown in Table 2.5. The modeling results shown here do not include effects of potential local emission reduction measures. University of Texas staff are in the process of developing the 2007 future case from the September 1999 base case episode which will account for local emission reductions, as well as additional state and federal measures, if applicable.

Table 2.5
1-Hour and 8-Hour Predicted Ozone Concentrations – 2007

	max 1-hour 1995 base case (ppb)	max 1-hour 2007 base (ppb)	max 8-hour 1995 base case (ppb)	max 8-hour 2007 base (ppb)
July 9	115.1	123.8	92.3	96.1
July 10	117.7	119.9	96.0	96.5
July 11	107.9	115.1	87.6	87.7
July 12	124.0	125.0	n/a	92.0

125 ppb is the 1-hour concentration used for comparison to the 1-hour standard.

85 ppb is the 8-hour concentration used for comparison to the proposed 8-hour standard.

n/a =not available

Environ has completed development of the 1999 episode base case. Staff are working on refinements to the 1999 emissions inventory and plan to have this work complete by May 2002. During the summer, the mobile source inventory will be updated using MOBILE6. The model will be performance-tested again in the fall.

2.5 Observations and Trends

Air quality monitoring, emission inventory preparation, and photochemical modeling for the A/SM MSA have provided considerable insight into the nature of the region's air quality situation. NO_x emissions in the region are predominately from On-Road and Non-Road sources. Biogenics comprise the largest source of VOCs in the five-county area as a whole, but anthropogenic sources of VOCs dominate the urban areas where highest ozone concentrations occur. Studies also show that biogenic sources of VOCs in

rural area do not contribute significantly (~1 ppb) to ozone formation unless high levels of NO_x (either through transport or from rural sources) are also present.²

Highest ozone levels occur in August and September with wind patterns typically southwesterly to northerly in the morning or northeasterly to southeasterly in the afternoon. While elevated background levels from ozone transport contribute to ozone concentrations in the area, local sources make a significant enough contribution to produce high ozone levels and exceedances of the 8-hour standard in the A/SM MSA.

Sensitivity modeling on the July 1995 episode with the 1995 base case inventory shows that ozone concentrations in the area around the Murchison monitor (CAMS 3) increase as NO_x reductions are made until large amounts of NO_x are reduced, while VOC reductions do reduce ozone concentrations in this area. The reverse is true at the Audubon monitor (CAMS 38) where NO_x reductions are more effective than VOC reductions in lowering ozone levels.

Precursor response studies with the 1995 base case inventory were conducted by UT Austin in February 2001 to determine how reductions in anthropogenic NO_x emissions, VOC emissions, and a combination of NO_x and VOC reductions affected peak ozone concentrations predicted by the photochemical model. The studies indicate that a combination of NO_x and VOC reductions were more effective than NO_x or VOC reductions applied separately.

Additional precursor response studies were conducted using the projected 2007 future case from the July, 1995 episode. These studies reduced NO_x and VOC emissions from point sources, area/non-road sources, and on-road sources by 22.5 tons per year each. Reductions in mobile (on-road and non-road) sources with reductions in area source emissions appear to be more effective than reductions in point sources. In addition, on all days of the episode, NO_x and NO_x/VOC reductions between 25% and 35% produced peak predicted 8-hour average ozone concentrations below 85 ppb.

² “Measurement and Analysis of Atmospheric Concentrations of Isoprene and Its Reaction Products in Central Texas,” Christine Wiedinmyer, et al., Department of Chemical Engineering, University of Texas at Austin, August 2000.

3.0 Action Plan – Emission Reduction Strategies and Resources

The objective of the O₃ Flex Agreement is to keep the A/SM MSA in attainment of the 1-hour ozone standard. The A/SM MSA is also committed to achieving the health benefits envisioned under the federal 8-hour ozone standard. Although preliminary modeling indicates that the region is likely to stay in attainment of the 1-hour standard through 2007, the following strategies will be implemented to ensure compliance with that standard. To the extent practicable these strategies will be implemented for the 2002 ozone season, but in any event, these strategies will be in place for the 2003 ozone season and will reduce emissions through 2007. Not all of the strategies can be implemented by all of the signatory agencies or other participants, and parties responsible for implementation have selected programs that are consistent with reaching the participants' common air quality improvement goals, given varying levels of resources and capabilities.

Emission reductions provided in this document are based on the control measure commitments of the signatories and participating agencies only (see Appendix E for programs specifics for each of the signatories and participating agencies). Section 3.1 describes the commitments by employers in the region to take voluntary actions to reduce NO_x and VOC emissions with an emphasis on reducing commuter vehicle miles traveled. Projects designed to reduce emissions associated with the region's transportation system are described in Section 3.2. Section 3.3 provides information on the region's clean fuels and equipment programs. Local government initiatives (e.g., airport operations, power plants, etc.) are described in Section 3.4. Signatories and participants in the O₃ Flex Agreement recognize the importance of providing the general public with the information needed to take individual air quality improvement actions and have committed to strong educational and public outreach strategies. These efforts are included as Section 3.5. In addition to the emission reduction strategies, the A/SM MSA has several programs in place which will serve as valuable technical and logistical resources for implementing the strategies. Section 3.6 provides information on these programs. Sections 3.7 and 3.8 contain tables summarizing the strategy commitments of the various O₃ Flex Agreement participants.

The emissions reductions from the O₃ Flex commitments have, in general, been quantified for the period 1999 through 2007. Many strategies were quantified for 2002 as well. In all cases where the program commitments were quantified, conservative assumptions were used. For example, employee VMT reductions were calculated at a conservative home-to-work round-trip of 22.6 miles. Some strategies, although directionally sound, have not been quantified because of insufficient data or lack of methodologies. Some strategies were initiated prior to 1999 (e.g., vanpools, telework, compressed work week) and will continue at or above pre-1999 levels. For these pre-1999 programs, a second set of emission reduction numbers are provided and labeled "Total Emission Reductions" to reflect the inclusion of reductions since the programs' introduction. However, only the emission reductions quantified for the 1999-2007 period are being claimed as part of this O₃ Flex Agreement. Emission reductions in 2007 to be

	2002	2007
VOC	208.6	195.5
NOx	175.5	175.6

FLEXIBLE WORK SCHEDULES
Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)

	2002	2007
VOC	9.4	12.9
NOx	-0.5	-0.7

Total Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)
(includes pre-1999 implementation)

	2002	2007
VOC	61.9	60.1
NOx	-3.1	-3.3

3.1.1 Clean Air Partners Program

During the summer of 1999, volunteer members of the CLEAN AIR Force (a non-profit organization representing area governments, businesses, and community interests working on air quality issues) began actively recruiting major employers in the area to implement corporate air quality improvement programs. As emissions from on-road vehicles are the single largest sources of NOx and CO emissions in the region, efforts to encourage alternatives to the single-occupant vehicle commute were a major focus of the commitments sought from employers. In the fall of 2000, six corporations agreed to join the Clean Air Partners program, developed a menu of strategies, and signed Memoranda of Understanding with the CLEAN AIR Force to reduce, over a three-year period, employee VMT (or emission reduction equivalents) by 10%. These charter members are:

Advanced Micro Devices	Samsung
Intel	Solectron
Motorola	Vignette

An on-line reporting system has been developed to allow participants in the program to report regularly on their VMT reduction progress. This on-line reporting process will also make broad regional participation in the program possible.

Many other area businesses and entities are designing air quality improvement initiatives and have expressed interest in becoming Clean Air Partners. The Greater Austin Chamber of Commerce Clean Air Task force has committed to enroll 10% (approximately 250 employers) of its membership in the Clean Air Partners Program by the summer of 2002. The University of Texas, with Capital Metro, has launched a program to increase transit ridership and vanpooling among faculty and staff. Faculty and staff will be able to ride any Capital Metro bus at no charge by showing UT identification. Free parking for carpools and vanpools is also being made available as part of the Capital Metro/UT program.

The Clean Air Partners program is being expanded to include an array of additional air quality improvement measures which achieve emission reductions comparable to the percentage in employee VMT reduction. These measures include restrictions on engine idling by vendors and delivery services, accelerated replacement of company fleet vehicles with electric or other LEVs, voluntarily switching to low-emission fuels, and establishing flexible work hours to reduce traffic congestion. Commitments to implementation will be formalized in written MOUs between the Partners and the CLEAN AIR Force. A new category—Clean Air Advocate—has been added for employers who devote significant time and resources to support the program, but, because of size or other factors, may be unable to make commitments to implementing control measures. As a result of this expanded program, eight new employers have joined the charter partners:

Emerson Process Management	Greater Austin Chamber of Commerce
Turner Collie & Braden	The Austin Idea Network
Transportation Management Group	Zilliant
URS Corporation	Hangers Cleaners

Emission Reductions: Members of the Clean Air Partners program are in the process of quantifying their emission baselines. Once these baselines are established, Partners will select their program commitments from the array of emission reduction strategies and calculate their respective emission reductions. Emission reductions achieved will be included in the biannual reporting to EPA and TNRCC pursuant to this agreement.

3.1.2 State Telework Program

The State Energy Conservation Office (SECO), a division of the Texas Comptroller of Public Accounts, oversees an extensive and comprehensive effort to establish telework programs for state agencies and other area employers. SECO provides a full range of services to assist employers—training for managers and teleworkers, sample telework policies and reporting forms, program workbooks and manuals, and technology security assistance. A video describing telework and its advantages is also available through SECO. SECO also monitors the success of telework programs. In a recent report to the state legislature, SECO documented supervisor-assessed increases in productivity for teleworkers of as much as 30%. This type of success has contributed to the increased acceptance of telework programs among managers in both the public and private sectors.

Twenty-seven Texas state agencies have active teleworking programs. The State Auditor's report to the Legislature shows that, between September 1997 and February 1999, 1,182 state employees teleworked for at least one day a week and some employees (e.g., Protective and Regulatory Services case workers) worked full-time from their homes, saving the state several thousands a year in office space costs. Statewide, estimated pollution reductions between 1997 and 1999 from the state teleworking program are estimated as:

2.8 tons of hydrocarbons
 21.4 tons of carbon monoxide
 1.5 tons of nitrogen oxide
 352.8 tons of carbon dioxide

In Central Texas, approximately 1,500 state employees are currently teleworking one or more days per week. As technological and security issues are rapidly being resolved, the interest in setting up telework programs has increased and is expected to continue to grow. The TNRCC has set a goal of increasing its teleworkforce from the current 4% to 15% by 2004, bring the statewide TNRCC total to 450.

TELEWORKING

Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)

	2002	2007
VOC	0.7	1.6
NO_x	0.7	1.7

**Total Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)
 (Includes pre-1999 implementation)**

	2002	2007
VOC	4.2	4.6
NO_x	4.2	4.9

3.1.3 Capital Metro Vanpool Program

In 1999, the Capital Metro Board of Directors revised its vanpool policy to allow vanpool operations outside its service area. Commuters are eligible to join or form vanpools as long as one leg of the commute begins or ends in the service area. The in-service area fare for the vanpooler is \$25 per month. The fare covers fuel, insurance, van maintenance, and free access to bus routes. Guaranteed-ride-home service is provided at an additional \$5 per year. Awareness of the benefits of vanpooling has generated considerable interest, to the extent that Capital Metro has initiated an emergency purchase of additional vans to accommodate requests, 10 new vans in 2001 and an

additional 15 in 2002. During 2000, Capital Metro, with the support of the Commute Solutions Partners, through presentations, working directly with corporate management, and hosting of over 50 employer-based transportation fairs, increased the number of vanpools (5-15 passengers each) from 110 to 130, carrying a total of 789 passengers. Area employers with significant numbers of operating vanpools include TNRCC, Motorola, Advanced Micro Devices, and Farmers Insurance. All of the Clean Air Partners are committed to increasing the number of vanpools formed for their employees.

**CAPITAL METROPOLITAN TRANSPORTATION AUTHORITY
VANPOOL PROGRAM
Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)**

	2002	2007
VOC	6.58	18.39
NO_x	5.69	17.02

**Total Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)
(Includes pre-1999 implementation)**

	2002	2007
VOC	37.72	45.29
NO_x	32.65	41.92

3.2 Transportation Emission Reduction Measures

Transportation emission reduction measures (TERMs) are similar to transportation control measures (TCMs), except that TCMs apply to nonattainment areas. TCMs are included in the State Implementation Plan (SIP) and subject to transportation conformity requirements. For the purposes of the O₃ Flex Plan, TERMS will comply with the Federal Clean Air Act description of TCMs, but are not subject to nonattainment SIP or transportation conformity requirements.

In general, TERMS are transportation projects that are designed to reduce vehicle use, change traffic flow or reduce congestion conditions. A transportation project that adds single-occupancy vehicle (SOV) roadway capacity or is based on improvements in vehicle technology or fuels is not considered to be a TERM for O₃ Flex Plan purposes. General categories of TERMS include traffic signal synchronization and/or improvements, bicycle and pedestrian facilities, high-occupancy vehicle lanes, intersection improvements, park and ride lots, and transit projects.

Numerous TERMS have been identified that have been, or will be, implemented in the five-county area. Phase 1 TERMS are those projects that will reduce emissions for the 2002/2003 ozone season. Many Phase 1 TERMS will also reduce emissions through 2007 and are included in the Phase 2 total 2007 emissions reductions. Phase 2 TERMS are those measures implemented after 2003 that will reduce emissions in 2007 and those

Phase 1 TERMS that will still be reducing emissions in 2007. Many TERMS will reduce emissions for several years after implementation, and so will reduce emissions after 2007 as well. A project specific list of Phase 1 and Phase 2 TERMS is found in Appendix D, which provides locations, project limits, implementation dates, and emission reductions for all TERMS.

Table 3.1 summarizes the TERMS. Emissions reduction estimates are based on information from the CAMPO 2007 travel demand model forecast and associated information, which accounts for population, employment, VMT, and transportation system growth through 2007.

**Table 3.1
Transportation Emission Reduction Measures (TERMs)**

Project Type	Phase I		Phase II	
	VOC Reductions (lbs/day)	NOx Reductions (lbs/day)	VOC Reductions (lbs/day)	NOx Reductions (lbs/day)
Intersection Improvements	973.495	163.452	1231.185	186.674
Signal Improvements	1097.905	92.094	1985.616	113.965
Bike/Ped Facilities	40.395	54.746	42.910	58.305
Grade Separations	N/A	N/A	58.404	8.865
Park & Ride Facilities	135.482	117.260	235.740	218.218
Traffic Flow Improvements	Not quantified	Not quantified	Not quantified	Not quantified
Intelligent Transportation Systems (ITS)	Not quantified	Not quantified	Not quantified	Not quantified
TOTAL lbs/day	2247.278	427.551	3553.854	586.027
TOTAL tons/day	1.124	0.214	1.777	0.293

All TERMS are included in the CAMPO 2025 Transportation Plan, Transportation Improvement Program (TIP), TxDOT Statewide Transportation Improvement Program or

locally adopted transportation plan. Inclusion of the TERMS in these documents constitutes evidence that the TERMS were properly adopted, have funding and appropriate approval, and have a specific schedule to plan, implement and enforce these measures. In addition, all implementing agencies will comply with the tracking and reporting provisions of the O₃ Flex Agreement MOA, which will serve as the TERMS monitoring program.

Capital Metro TERMS

Capital Metro began implementation of a five-year bus system plan in FY 2001. The plan includes a 4% annual growth in bus service including more express and direct crosstown routes. The plan also includes construction of park and ride facilities, as well as transit centers. A 500 space park and ride facility in Northwest Austin is currently under early development.

Continuation of Capital Metro's five-year bus system plan with 4% annual growth rate of bus service is expected in Phase 2. The opening of the 500 space park and ride facility in Northwest Austin is scheduled for Spring 2003. Plans for park and ride and transit center facilities are under development. See Appendix D for more information.

TRANSPORTATION EMISSION REDUCTION MEASURES

Total Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)

	2002	2007
VOC	2,247.3	3,553.9
NO_x	427.6	586.0

3.3 Clean Fuels, Vehicles, and Equipment

Representatives of the A/SM MSA successfully negotiated with the region's gasoline supplier for the delivery of gasoline with a low sulfur content (150-160 ppm) beginning in the summer of 2001. The national average gasoline sulfur content is just over 300 ppm. The Tier 2 low sulfur gasoline rule (65FR6698 2/10/00) will not require sulfur concentrations below 300 pm until 2004. Initial estimates provided by the gasoline supplier indicate area NO_x reductions with the current gasoline to be as high as 4 tons per day. This reduction estimate will be verified and refined in a future revision of this Agreement. The Austin area also anticipates receiving even lower sulfur gasoline in 2005 (approximately 30 pm sulfur).

3.3.1 Alternative Fuels

A/SM MSA participants to the O₃ Flex Agreement are committed to encouraging the expanded use of alternative fuels and alternative fuel vehicles among the owners and/or operators of fleets of 15 vehicles or more. To qualify as an alternative fuel vehicle, the vehicle must operate 75% of the time on one of the federal Energy Policy Act fuels.

Approved alternative fuels are compressed natural gas (CNG), liquefied natural gas (LNG), liquefied petroleum gas (LPG), electricity, methanol, ethanol, and biodiesel (at a minimum 20% mix). Alternative fuels reduce NOx and VOCs at varying levels and are an appropriate strategy for reducing or even eliminating emissions. Credits are available under the federal Energy Policy Act (EPAct) for use of alternative fuels. Bastrop Independent School District has chosen to use biodiesel at a 20% mix with an additive to reduce NOx as their future fuel of choice. The school district runs a fleet of 92 buses.

**ALTERNATIVE FUELS
Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)***

	2002	2007
VOC	0.84	0.89
NOx	0	0

*Does not include reductions from biodiesel

3.3.2 Fleet Operations

In addition to alternative fuels and alternative fuel vehicles, signatories and participants have incorporated all or some of the following strategies, to the extent possible, into their fleet operation policies:

- Select the right size vehicle for a given use;
- Limit vehicle idling time to five minutes except in cases where health or safety may be jeopardized;
- Encourage refueling fleet vehicles in the evening hours. (This is not necessary if using an alternative fuel closed loop system);
- Use Ultra-Low Emission Vehicles (ULEV) and Super-Ultra-Low Emission Vehicles (SULEV); accelerated replacement of fleet vehicles
- Consolidate staff travel time and streamline deliveries to reduce VMT;
- Provide shaded parking for fleet vehicles;
- Minimize the number of vehicles taken to a worksite;
- Upgrade private pumps with vapor recovery systems;
- Perform regular maintenance in a manner that will minimize emissions;
- Reduce fuel consumption by 10% in 2005 based on the 1999 levels;
- Provide employee training to increase awareness of vehicle-related air quality issues; and
- Include in vendor contracts specifications for hours of deliveries.

**REFUELING VEHICLES AFTER 5:00 P.M.
Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)**

2002	2007
-------------	-------------

VOC	0	4.21
NOx	0	N/A*

*not available

NOTE: Shifting refueling time to the evening hours reduces VOC emissions somewhat, assuming the effect of lower temperatures. That VOC emission reduction is reflected in the table. However, VOC emissions of 20 lbs. a day are shifted to later in the day which should also reduce ozone formation.

**ULEVs and SULEVs
Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)**

	2002	2007
VOC	90.0	119.7
NOx	110.2	180.8

3.3.3 Diesel for On-Road Use

Capital Metro, the cities of Austin, Bastrop and Elgin, Travis County and the Austin Independent School District have agreed to purchase a diesel product that is believed to reduce particulate matter and increase overall efficiency. Use of this fuel increases engine performance, with corresponding air quality benefits through fuel efficiency. While reductions of NOx emissions from this product are not quantifiable at this time, the commitment to this fuel represents a good-faith effort on the part of these entities to purchase the best currently available diesel fuels.

Not quantifiable at this time.

3.3.4 Voluntary Idling Restrictions

Participating entities will direct vehicle operators under their employ, or on their property or worksite, to limit vehicle or equipment engine idling to no more than five consecutive minutes. Exemptions may be made for emergency or law enforcement vehicles on active duty, vehicles or equipment that must operate the engine to perform job duties (such as providing power for a mechanical operation or heating and air conditioning for multiple passenger vehicles), and vehicles or equipment that are being operated for maintenance or diagnostic purposes.

**5-MINUTE IDLING RESTRICTIONS
Emission Reduction from A/SM MSA O₃ Flex Commitments (lbs. per day)**

	2002	2007
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VOC	N/A*	20.92
NOx	N/A*	51.82

*not available

3.4 Local Government and Agency Initiatives

The programs described in this section are generally implemented by municipalities, counties, and power generation sources. It should be noted, however, that the private sector also plans to implement programs which require use of low-VOC asphalt and paints and are implementing Ozone Action Response Programs.

3.4.1 Airport Clean Air Plan

The City of Austin (COA) Department of Aviation (DOA) has developed and implemented numerous air quality initiatives, both landside and airside, to reduce fixed and mobile emission sources at Austin-Bergstrom International Airport (ABIA). Most of the initiatives detailed in the plan are part of the airport’s normal operating procedures while others will be implemented on Ozone Action Days.

Landside initiatives implemented at ABIA include operating alternative fuel (AF) administrative and maintenance vehicles and equipment and AF shuttles from the passenger terminal to the surface parking lots. ABIA also offers flexible work schedules and allows DOA employees to telecommute when appropriate to reduce congestion on Austin area roads. Future development includes the construction of an on-site AF station in order to reduce the vehicle miles traveled to off-site refueling stations and to allow for full operations during ozone season. The DOA long-term plan includes the implementation of propane fueling infrastructure for air and landside operations.

Airside initiatives include encouraging the airlines to use building-supplied power and pre-conditioned air for aircraft parked at the gate. This will eliminate the need to run on-board Auxiliary Power Units (APUs) and Ground Power Units (GPUs). Approximately 90 percent of the airlines utilize these systems. Additionally, aircraft engine run-ups have been relocated from the air cargo apron to the maintenance apron. This provides an air quality benefit to the community located directly north of the cargo apron.

In addition to the above year-round air quality activities, the DOA has developed and plans to implement specific initiatives during the ozone season (April 1- October 31) and on Ozone Action Days. These initiatives include scheduling training, drills, and non-essential activities during off-peak periods and on non-Ozone Action Days. These include, but are not limited to, mowing, landscaping, and power washing, and vehicle and equipment engine tests. Terminal curbside activities will be monitored for excessive vehicle idling and parking lot gates will be monitored to avoid malfunctions that could lead to traffic delays. Construction activities will also be monitored to ensure erosion and dust control measures are being implemented and the use of gasoline-powered equipment will be minimized.

AIRPORT CLEAN AIR PLAN

Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)

	2002	2007
VOC	N/A*	2.81
NO_x	N/A*	0

*not available

3.4.2 Austin Energy – Additional NO_x Reductions

Austin Energy, the City of Austin-owned electric utility, is committed to meeting the region’s growing demand for electricity while doing its share to protect the region’s air quality. Austin Energy’s Sand Hill Energy Center (SHEC) will provide an additional 680 megawatts (MW) of electric generating capacity when completed in 2006. Austin Energy will voluntarily take two important steps to minimize the impact of the SHEC on regional air quality.

First, the project will feature state-of-the-art emission controls. The two base-loaded units and the four peaking units will meet a NO_x standard of 5 ppm or less. For the four peaking units (which account for 180 MW of the installed capacity), this emission standard will result in much lower emissions than required. The state standard for this type of unit is currently 25 ppm.

Second, Austin Energy will offset all NO_x emissions from the SHEC project, resulting in no net increase of NO_x emissions from the building of this plant. In practice, this offset will be achieved by reducing emissions from Austin Energy’s Decker Creek and Holly Street power plants by an amount equal to the emissions from the SHEC facility. This goes beyond any state or federal requirements. The total NO_x cap that Austin is committing to for the Decker Creek, Holly Street, and SHEC power plants is 1741 tons per year (4.77 tons per day). This cap will be in effect as of May 1, 2003.

Austin Energy is making NO_x emission reductions beyond all state and federal requirements. These additional reductions are expected to result in the utility’s having excess allowances on a regular basis. While Austin Energy may eventually use these excess allowances in a banking/trading program, the utility will not sell the allowances within the five-county Central Texas region. The 2007 NO_x reduction resulting from Austin Energy’s emission reduction program is, therefore, included in the total emission reductions to be achieved under this Agreement.

**AUSTIN ENERGY
Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)**

	2002	2007
VOC	0	0
NO_x	N/A*	2,694.5

*not available

3.4.3 Lower Colorado River Authority Voluntary Offsets of NO_x Emissions from New Power Plants

The Lower Colorado River Authority (LCRA) has three gas-fired power plants in Bastrop County that were built in the 1960's. The three plants were grandfathered from compliance with clean air laws. Part of Senate Bill 7, passed in 1999, deregulated the electric industry and also repealed the grandfathering provisions for power plant emissions. Consequently, these plants are required to reduce their NO_x emissions from about 2300 tons per year (~9.15 tons per day) to around 1200 tons per year (~4.68 tons per day). In 1998, LCRA partnered with the Calpine Corporation to add more capacity at the site, the Lost Pines Power Project. The Lost Pines Project added 500 megawatts of capacity to the 640 megawatts already in place. LCRA determined that the emissions from the three old units plus the emissions from the new unit should stay below the 1200 tons per year that the old units were going to have to meet. As a result, instead of producing up to 9 ppm of NO_x at the new plant, which the TNRCC would have allowed, LCRA spent considerably more money to reduce this amount to 5 ppm. LCRA also added more controls onto the old units than were required in order to fully offset the emissions from the new unit. The result is more power with no net increase in NO_x.

**LOWER COLORADO RIVER AUTHORITY – LOST PINES POWER PLANT
Emission Reductions from A/SM MSA O3 Flex Commitments (lbs. per day)**

2002 2007

VOC	N/A*	N/A*
NOx	N/A*	961.8

*not available

3.4.4 Low-Emitting Asphalt and Striping Materials

VOC emissions reductions can be achieved by using medium-cure and/or rapid-set asphaltic concrete materials and water-based or thermoplastic striping. Examples of the medium and rapid-cure asphalt are HFRS-2P (rapid-set) and SSI (medium-cure). Participating entities that are responsible for building and/or maintaining roadways in the region will commit to use these types of materials whenever feasible. Exceptions may be granted for emergency repairs.

**LOW-EMITTING ASPHALT AND STRIPING MATERIALS
Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)**

2002 2007

VOC	N/A*	360.66
NOx	N/A*	0

3.4.5 Lawn and Garden – Low Emission Gas Cans

Gasoline-powered lawn and garden equipment are a significant source of VOCs in the region. A particularly effective control measure is the use of nonpermeable, spill-proof gasoline containers. An estimated 0.2 tons per day of VOC reductions could result from 100% use in the commercial sector. Several of the A/SM MSA signatories have selected this measure to include in their commitments.

**LOW-EMISSION GAS CANS
Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)**

2002 2007

VOC	N/A*	168.65
NOx	N/A*	0

*not available

3.4.6 Ozone Action Day Response Programs

The Capital Area Metropolitan Planning Organization (CAMPO) has established an “Ozone Season Emission Reduction Program.” The program consists of an approximate 10% VMT reduction for staff and a time-of-day component (no CAMPO meetings scheduled before 10:00 a.m. during ozone season). On Ozone Action Days, staff will work at home and not travel to the office until 10:00 a.m., unless by bus or another alternative transportation mode. In order to quantify the emission reductions from this program, each staff member records and submits the number of miles traveled to and from work on an average day.

The Austin City Manager has directed that all City of Austin departments have in place an “Ozone Action Day (OZAD) Plan.” Each department has assigned an Ozone Action Day Coordinator. Staff with the city’s Air Quality program have provided the coordinators with a wide variety of educational tools and outreach materials on air quality issues. Departmental OZAD programs include flexible work schedules, teleworking, delaying work arrival time to 10:00 a.m., and encouraging use of transit or carpooling. All city employees are notified via e-mail the day before an OZAD to allow planning for alternatives to the single-occupant vehicle commute.

The CLEAN AIR Force notifies approximately 250 area businesses and individuals when an Ozone Action Day is declared. Employers have requested this notification in order to alert their employees and provide time to plan for alternative transportation or other actions to lower emission levels. Most employers report posting the notices in prominent areas and/or forwarding the notice via intracompany e-mail. Some employers put up special signs in prominent lobby and entry/exit areas. One large employer reports mandatory no-idling for vendors and other deliveries on Ozone Action Day, and several area agencies and employers significantly alter landscape maintenance practices on these days. One small employer (14 employees) requires teleworking or using public transportation or other alternative to the SOV commute for all staff on Ozone Action Days.

Directionally sound, but not quantifiable at this time.

3.4.7 Tree Planting

Trees remove pollutants from the air and can provide shade to impervious surfaces, reducing “urban heat island” impacts (i.e., lowering temperatures). Adding trees to parking areas can be particularly effective in reducing these impacts. In addition to the cleansing action trees provide in removing pollutants, the shade-induced lower temperatures reduce cooling and energy consumption requirements. Tree planting programs can be effective tools in saving energy and improving air quality.

Directionally sound, but not quantifiable at this time.

3.4.8 e-Government and Improved Accessibility to Services

This strategy involves establishing mechanisms which allow citizens to utilize government services via the internet—vehicle registrations, bill paying, permits, etc. Making these services available reduces traffic congestion and vehicle miles traveled. Governments can also achieve these benefits by, where feasible, increasing the number of locations for providing services.

The City of Austin Public Library now offers online book renewal and reserving. The City of Austin’s Watershed Protection and Development Department has internet access for GIS information and permit applications, and the Parks and Recreation Department will have an online reservation system for its facilities within the year.

e-GOVERNMENT

Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)

	2002	2007
VOC	N/A*	21.04
NO_x	N/A*	20.76

*not available

3.4.9 Land Use and Transit-Oriented Development

Local governments implement development criteria either requiring or providing incentives for sprawl reduction such as vertical zoning, mixed use zoning, enhanced mobility choices, reducing distances between home sites, work sites, and service sites. These types of development criteria will reduce the impacts of new development on air quality.

LAND USE AND TRANSIT-ORIENTED DEVELOPMENT

Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)

	2002	2007
VOC	2.9	25.1
NO_x	4.0	34.1

3.4.10 Resource Conservation

Conservation of natural resources, among many benefits, provides significant air quality benefits. A/SM MSA participants are committed to implementing strategies which

encourage and facilitate the adoption of resource conservation practices by businesses, governments, and individuals. Specific programs include:

- Green Power - The use of green (sustainable gas, photovoltaic, wind, most fuel cells) and/or nuclear power has a positive impact on air quality, creating significantly less emissions than coal or gas fired power plants. Consumers of Austin Energy and LCRA can pay a small surcharge and 'buy into' green power.
- Water conservation – Among the largest users of electric power are the water and wastewater service providers. Energy is used to pump, treat, and distribute potable water, as well as to collect, pump, and treat wastewater. Water conservation, water re-use and other measures to reduce these costs and emissions should be encouraged. Utilizing Xeriscape techniques reduces water needs in the landscape and often reduces maintenance (e.g., mowing) needs.
- Energy conservation - Any program that saves energy, (Air Conditioning SEER incentives, Energy Star Appliances, co-generation, etc) will directly impact energy consumption and therefore point source emissions.
- Smart Driving - keeping a vehicle properly maintained, avoiding jack-rabbit starts and slam-on-the-brake stops, trip chaining, and avoiding congestion are all driving practices that can reduce tailpipe emissions and thereby directly impact air quality.
- Development - Development strategies that reduce the need for vehicles through better alternative mode choices (hike-and-bike trails, planning for mass transit amenities), reducing distances between living areas and destinations (transit oriented development, mixed zoning, etc) can impact air quality through reducing VMT per household.
- Landfill Diversion – Diverting waste from landfills saves energy. The City of Austin provides curbside recycling, brush and bulky materials collection, and recycling in its offices.

RESOURCE CONSERVATION

Emission Reductions from A/SM MSA O₃ Flex Commitments (lbs. per day)

	2002	2007
VOC	N/A*	0
NOx	N/A*	589.2

*not available

3.5 Education Programs

Although difficult to quantify, education programs play a major role in helping the general public understand air quality issues, what role individuals play in contributing to

air quality problems, and the actions that can be taken to reduce emissions that result in high levels of ground-level ozone. The A/SM MSA participants are committed to continuing an already extensive education and public outreach program and expanding that program, particularly to increase awareness and individual actions throughout the MSA.

3.5.1 Ozone Action Day Notification Program

Since 1993, the CLEAN AIR Force has been the TNRCC-designated entity to manage the region's Ozone Action Day Program. Since 1997, Ozone Action Days are declared using the 8-hour standard when weather conditions and background ozone levels of 75 ppb or higher are predicted for a given day. As of the 2001 Ozone Season, approximately 250 area businesses, local governments, state and local elected officials, schools, and media outlets are notified of declared Ozone Action Days via pager, fax, or e-mail. That notification includes a menu of actions to reduce emissions contributing to development of ground-level ozone.

Although many entities require that their employees and vendors take specific actions on Ozone Action Days to reduce ozone-producing emissions, for many Central Texans the Ozone Action Day notification prompts voluntary actions. CAMPO public opinion surveys conducted in 1997 and 2000 indicated increases in awareness of Ozone Action Days (85% in 1997, and 91% in 2000) as well as increases in the numbers of people who reported taking specific actions on Ozone Action Day to reduce emissions.

The notification also prompts some required actions. These actions range from "no-mow" days (TxDOT Austin District) to teleworking and alternative work hours (City of Austin, CAMPO), to restrictions on vehicle idling for vendors and delivery services. Since 1993, Capital Metro has offered free bus rides on Ozone Action Days. An approximate 10% increase in ridership was experienced on Ozone Action Days in FY 2000.

While it is understood that Ozone Action Days are merely predictions and do not necessarily mean that high ozone levels will definitely occur, in many cases high levels (75 ppb or higher) are observed on these days. Surveys indicate that the program has increased general awareness of the area's air quality issues. Actions taken on Ozone Action Days can lead to permanent behavior changes.

An expanded Ozone Action Day program is planned for the 2002 ozone season. Through a mailing to area employers, the CLEAN AIR Force will seek to double the number of employers receiving advance notification. Working with the Clean Air Partners, the CLEAN AIR Force will assist employers in setting up expanded networks and techniques for communicating with employees about the action options available to them and ways to facilitate those actions (prime parking for carpoolers, bus passes, shower facilities for bike riders, etc.).

Directionally sound, but not quantifiable at this time.

3.5.2 Local Education Programs

Many communities in Central Texas do not have the resources to design and launch programs to increase public awareness of air quality. In most of the region, Ozone Action Days and air quality issues are viewed as a City of Austin phenomenon and an Austin problem. While the region's deteriorating air quality has changed this picture somewhat, the general understanding of the importance of the issue has not grown significantly. A market survey conducted for the CLEAN AIR Force in the summer of 2001 revealed that 58% of the respondents were unaware that violations of federal air quality standards had occurred.

In developing their O₃ Flex commitments, each of the signatories agreed that, at a minimum, local educational programs would be developed to increase awareness and to encourage voluntary actions by individuals. The CLEAN AIR Force is working with the signatory communities to fulfill this commitment. Articles for employee newsletters, paycheck stuffers, and articles for local newspapers are being developed. During the 2001 ozone season, the CLEAN AIR Force used paid print ads in community newspapers to promote information and tips on ways individuals can help ozone-producing emissions; a print ad campaign is also planned for the 2002 ozone season. For many of the rural and less affluent areas of the Central Texas region, an assertive effort to increase public awareness of air quality issues may be their most cost-effective strategy. Also, while these programs are difficult to quantify in terms of their impact on ozone levels, education efforts take on a particularly important role when the problem's solution relies heavily on personal actions and choices.

Directionally sound, but not quantifiable at this time.

3.6 Resources

3.6.1 Commute Solutions Program

The Capital Area Metropolitan Planning Organization (CAMPO) has been managing the region's Commute Solutions program since 1996. The program pools the resources of several "Commute Solutions Partners" specifically to promote actions which reduce traffic congestion and air pollution. Commute Solutions Partners include staff from CAMPO, the Capital Metropolitan Transportation Authority (the Austin area public transit authority), Capital Area Rural Transportation System (CARTS), Texas Department of Transportation Austin District, the City of Austin Air Quality Program, the City of Austin Bike and Pedestrian Program, the TNRCC, the State Comptroller's Office (teleworking expertise), Texas Department of Insurance (information on auto insurance discounts available for carpoolers and vanpoolers), and the City of Austin Police Department (general auto safety and theft awareness).

A business outreach program is being developed to expand opportunities to encourage alternatives to the single-occupant vehicle commute. This effort includes development of training and educational materials for corporate Commute Solutions Coordinators, development of a Commute Solutions website which will offer on-line rideshare

matching services, and commitment of additional resources to strengthen the Program's outreach to corporate management

3.6.2 Clean Cities

Clean Cities is a voluntary federal program designed to accelerate and expand the use of alternative fuel vehicles (AFVs) in communities throughout the country and to provide refueling and maintenance facilities for their operation. Sponsored by the United States Department of Energy (DOE), Clean Cities encourages local governments and organizations to form public/private partnerships in developing markets for AFVs. The overall goal of the Clean Cities program is "to promote and encourage use of alternative fueled vehicles in significant quantities, with essential refueling and maintenance infrastructure, in an economically self-sustaining manner."

The Central Texas Clean Cities is a resource readily available to actively pursue and coordinate efforts in the interest of:

- Reducing dependence on petroleum-based and imported fuels, as specified in the Energy Policy Act of 1992;
- Working towards meeting the vehicle emission standards set forth in Title II of the Clean Air Act Amendments of 1990;
- Educating the public on alternative fuels and alternative fuel vehicles and their contribution towards an overall emissions reduction strategy;
- Encouraging the development of safe public AFV infrastructure;
- Reducing fleet operation costs;
- Supporting mandated fleets in meeting their state, federal and local alternative fuel requirements; and
- Supporting the goals and objectives of the Central Texas Clean Cities stakeholders' alternative fuel policies and AFV Implementation Plan.

3.6.3 City of Austin

The City of Austin staff have developed ten strategies that are designed to ensure that the City of Austin exercises leadership and sets a positive example for the community by minimizing the amount of NOx and VOC emissions that results from the city's daily operations. These strategies include actions to be undertaken by individual entities as well as actions which involve coordination among two or more organizations. The ten

strategies have been designed not only for city operations, but also to serve as a template for duplication by other local governments and businesses. These strategies include:

- Voluntary transportation control measures for employees;
- Reductions in emissions from fleet vehicles;
- Reductions in emissions related to traffic congestion;
- Reductions in emissions through contractual agreements;
- Programs to encourage Smart Growth initiatives;
- Enhanced public education programs;
- Development of regional partnerships;
- Reductions in emissions from mobile sources;
- Reductions in emissions from non-road mobile sources; and
- Reductions in emissions from area and point sources.

3.6.4 CLEAN AIR Force

The CLEAN AIR Force is a 501(c)(3) organization representing area businesses, environmental groups, community interests, health experts and local governments. Since 1993, the CLEAN AIR Force Technical Advisory Committee has provided a forum for discussion and exchange of information on regional air quality issues, has directed technical research funded by the state legislature during the 1995, 1997, 1999 and 2001 legislative sessions, and managed an extensive public outreach and education program. Through its monthly meetings, members are given access to technical and policy information and can advise their respective member organizations on air quality issues.

The current chair of the CLEAN AIR Force Board of Directors is Commissioner Mike Heiligenstein, Williamson County Commissioners Court. Serving on the board's Executive Committee are representatives from the law firm of Rogers & Whitley, LLP, Zephyr Environmental, Inc., Environmental Defense, the mayor of the City of Austin, Motorola, and the Greater Austin Chamber of Commerce. Members of the CLEAN AIR Force board and Technical Advisory Committee also include representatives from the Capital Area Metropolitan Planning Organization (the local MPO), Texas Department of Transportation (Austin District), the American Lung Association, Capital Metropolitan Transportation Authority, Capital Area Planning Council (the local Council of Governments), TNRCC, Advanced Micro Devices, Dell, Lower Colorado River

Authority, Bastrop, Caldwell, Hays, and Travis counties, and the cities of Austin, Cedar Park, Elgin, Lockhart, Round Rock, and San Marcos.

3.6.5 TNRCC Texas Emission Reduction Plan (TERP)

The new Texas Emission Reduction Plan (TERP), administered by the TNRCC, will provide grants and other incentives for improving air quality in Texas. The Plan was passed in the 77th Texas Legislature as part of Senate Bill 5. There are three components of the TERP that will reduce emissions from vehicles and equipment. The TNRCC will administer the first two programs. The Texas Comptroller of Public Accounts will administer the light duty vehicle program.

Emissions Reduction Incentive Grants

This program offers incentive grants to cover the incremental cost of projects that reduce NOx emissions, including:

- lease or new purchase of non-road equipment (over 50 horsepower);
- repower, retrofit, or add-on equipment for non-road diesel equipment (over 50 horsepower);
- repower, retrofit, or add-on equipment for on-road heavy-duty (over 10,000 lbs. Gross Vehicle Weight Rating [GVWR]) diesel vehicles;
- infrastructure projects;
- use of qualifying fuel; and
- demonstration of new technology.

Heavy-Duty Motor Vehicle Purchase or Lease Incentive Program

This program offers financial incentives that cover the incremental costs of purchasing or leasing certain new heavy-duty motor vehicles (vehicles over 10,000 lbs. GVWR). Eligible vehicles have been certified by EPA according to emission standards that are more stringent than those required by federal law. These incremental costs are reimbursable for any eligible heavy-duty motor vehicle that exceeds the standards, regardless of the fuel used to power the engine.

Light-Duty Motor Vehicle Purchase or Lease Incentive Program

This program offers financial incentives to consumers who purchase or lease certain new light-duty motor vehicles. The eligible vehicles have been certified by EPA according to emission standards that are more stringent than those required by federal law for the average light-duty motor vehicle. The incentives apply to any eligible light-duty motor vehicle that meets the required standards, regardless of the fuel used to power the engine.

3.7 Government and Public Sector Initiatives

Tables 3.4 and 3.5 summarize the emission reduction measures committed to by government and other public sector agencies. Given the varied social and economic characteristics of jurisdictions in the region, not all measures can, or should be,

implemented by all government and public sector entities. Rather, each entity will implement the measures that work for its specific jurisdiction and, when added together, work for the region as a whole. To the extent possible, these measures will be implemented and/or effective for the 2002 ozone season and, in any event, no later than the 2003 ozone season. For local government signatories, the measures will be implemented through a combination of voluntary programs, ordinances or resolutions at the direction of the respective signatory governments. Other public agency programs will be implemented through management policy. All implementing agencies will comply with the tracking and reporting provisions of the O₃ Flex Plan MOA. See Appendix E for complete measure description and implementation information.

Table 3.4 Commitments by A/SM MSA O3 Flex Agreement Signatories

Control Measure	City of Austin	Travis County	City of Round Rock	Williamson County	City of San Marcos	Hays County	City of Bastrop	City of Elgin	Bastrop County	City of Lockhart	City of Luling	Caldwell County
Employee VMT/Emissions Reduction (Commute Solutions)												
Compressed Work Week	√	√	√						√		√	
Flexible Work Schedule	√	√	√									
Carpool or Alternative Transportation Incentives	√											
Transit Pass Subsidized by Employer	√											
Ozone Action Day Response Program	√		√									√
Teleworking (full time)	√											
Teleworking (part time)	√		√									
Direct Deposit	√	√	√	√	√				√			√
Resource Conservation	√	√	√	√	√						√	
Fleet Emissions Reduction												
Alternative Fuel Vehicles	√	√	√									
Low Emission Vehicles	√	√	√	√						√		√

Control Measure	City of Austin	Travis County	City of Round Rock	Williamson County	City of San Marcos	Hays County	City of Bastrop	City of Elgin	Bastrop County	City of Lockhart	City of Luling	Caldwell County
Right Sizing	√	√	√									
5-minute Limit on Diesel Idling	√		√	√						√	√	√
Cleaner Diesel	√	√	√	√		√	√	√	√			
Vehicle Maintenance	√	√	√	√	√	√			√			√
Vapor Recovery on Pumps			√									√
Miscellaneous Emissions Reductions												
Low VOC Asphalt		√	√	√								
Low VOC Striping Material	√	√	√	√		√				√		
Employee Education Program	√	√	√	√	√	√	√	√	√	√	√	√
Public Education Program	√	√	√	√	√	√	√	√	√	√	√	√
Ozone Action Notification Program	√	√	√	√	√	√	√	√	√	√	√	√
Low-Emission Gas Cans	√		√	√		√	√	√		√	√	
Airport Clean Plan	√											
Intelligent Transportation Systems	√	√	√									
Intersection Improvements	√	√										
Park-and-Ride Facilities					√							
Signal and Traffic Flow Improvements	√	√	√	√								

Control Measure	City of Austin	Travis County	City of Round Rock	Williamson County	City of San Marcos	Hays County	City of Bastrop	City of Elgin	Bastrop County	City of Lockhart	City of Luling	Caldwell County
Transit-Oriented Development	√											
Tree Planting	√	√	√	√	√					√		
Bicycle and Pedestrian Facilities	√	√		√	√							
e-Government and/or Available Locations	√	√		√	√							
Fueling Vehicles in the Evening	√	√	√	√		√			√	√	√	√
Shaded Parking	√	√										

Table 3.5 Participating Agency Commitments

Control Measure	Capital Metro	CAMPO	TxDOT	TNRCC	CAPCO	LCRA
Compressed Work Week	√	√	√	√		
Flexible Work Schedule	√	√	√	√	√	
Carpool or Alternative Transportation Incentives	√			√		
Transit Pass Subsidized by Employer	√					

Control Measure	Capital Metro	CAMPO	TxDOT	TNRCC	CAPCO	LCRA
Ozone Action Day Response Program	√	√	√	√	√	√
Teleworking (full-time)						
Teleworking (part-time)		√	√	√		
Direct Deposit	√		√	√	√	√
Resource Conservation	√		√	√	√	√
Alternative Fuel Vehicles	√		√	√		
Low Emission Vehicles	√					√
Right Sizing	√					
5-minute Limit on Diesel Idling	√					√
Cleaner Diesel	√					√
Vehicle Maintenance	√		√	√		√
Vapor Recovery on Pumps	√					
Low VOC Asphalt	√		√			
Low VOC Striping Material	√		√			
Employee Education Program	√	√	√	√	√	√
Public Education Program	√	√	√	√		

Control Measure	Capital Metro	CAMPO	TxDOT	TNRCC	CAPCO	LCRA
Ozone Action Day Notification Program	√	√	√	√	√	√
Low-Emission Gas Cans	√					√
Intelligent Transportation Systems	√		√			
Intersection Improvements	√		√			
Park-and-Ride Facilities	√					
Shaded Parking				√		
Signal and Traffic Flow Improvements	√		√			
Transit-Oriented Development	√					
Tree Planting			√			√
Bicycle and Pedestrian Facilities	√		√	√		√
e-Government and/or Available Locations	√			√	√	
Fueling Vehicles in the Evening	√					
Grade Separations	√		√			
Approval of the TERMS		√				

4.0 Contingency Measures

The local governments will implement one or more of the following contingency measures if the A/SM MSA violates the 1-hour ozone standard during the term of this agreement. The signatory parties will select the appropriate contingency measure(s) within 60 days of the date of the 1-hour ozone standard violation. The selected measure(s) will be submitted to TNRCC within 15 days of the date of selection by the signatory parties for adoption into the SIP. The selected contingency measure(s) will be implemented within one year of the date of the violation.

4.1 Heavy Truck Speed Limit Reduction

Initial technical analysis indicates that significant NO_x emissions reductions can be achieved by implementing reduced speed limits for heavy trucks in the five-county area. Additional benefits of the measure include fuel savings and a reduction in the severity of truck related traffic accidents.

EPA's MOBILE5b emission model indicates that a 5 mph speed limit reduction from 65 mph to 60 mph would reduce NO_x emissions by approximately 4.00 tons per day (tpd) in 2007, while VOC emissions remain constant. Reducing the heavy truck speed limit to 55 mph would reduce NO_x emissions by approximately an additional 2.8 tpd in 2007 and would reduce VOC emissions by approximately 0.06 tpd. Although additional emissions reductions occur by reducing the heavy truck speed limit from 70 mph to 65 mph, MOBILE5b does not model speeds over 65 mph, so these additional reductions have not been calculated. It is important to note that the emission rates for heavy trucks in MOBILE6, EPA's new MOBILE model, are expected to be higher than those in MOBILE5b, so the emissions reductions from this measure may increase when calculated using MOBILE6. MOBILE5b 2007 emission rates in grams per mile for Heavy Duty Gas Vehicles (HDGV) and Heavy Duty Diesel Vehicles (HDDV) are as follows:

MOBILE5	HDDV NO _x g/mi	HDDV VOC g/mi	HDGV NO _x g/mi	HDGV VOC g/mi
65 mph	10.86	0.94	5.31	1.55
60 mph	8.86	0.94	5.14	1.55
55 mph	7.49	0.96	4.98	1.58
50 mph	6.56	1.00	4.81	1.63

The initial analysis performed by the Capital Area Metropolitan Planning Organization (CAMPO) used available data for 2007 from the Texas Department of Transportation (TxDOT) and the Texas Transportation Institute (TTI). If this measure is selected for implementation, this analysis will be refined using MOBILE6 and comparative runs of the CAMPO Travel Demand Model. The analysis first calculated HDGV and HDDV vehicle miles traveled (VMT) that would be affected by reduced speed limits. It was assumed that the affected HDGV and HDDV VMT occurs only on higher speed

roadways during off-peak periods, when vehicles can travel at posted speeds. Although vehicles can usually travel at posted speeds during peak periods in the rural portion of the five-county area, the CAMPO analysis only used HDGV and HDDV from the off-peak periods. The TxDOT/TTI data indicates that 79% of the HDGV and HDDV VMT occurs during the off-peak midday and overnight periods. The CAMPO analysis also only used the HDGV and HDDV VMT for the higher speed facilities, excluding VMT on roadways estimated to have posted speeds below 50 to 55 mph. The final HDGV and HDDV VMT were multiplied by the appropriate 2007 HDGV and HDDV emission rates to calculate the emission reductions.

Speed limit signs will have to be changed to implement this measure, which is estimated to take approximately six months for the five-county area. Reduced heavy truck speed limits on state system roadways for emission reduction purposes must be implemented through TNRCC and TxDOT. Local roadway reduced truck speed limits can be implemented by the appropriate local jurisdiction. The measure would be enforced by state and local law enforcement agencies.

4.2 Mandatory Heavy Vehicle Idling Restrictions

This measure restricts engine idling of vehicles with a gross vehicle weight rating of more than 14,000 pounds to five consecutive minutes while the vehicle is operating in the five-county area. The measure will reduce NO_x and particulate matter (PM) emissions in the five-county area and also reduce exposure to toxic compounds associated with diesel fuel use. In addition, the measure will result in fuel savings.

Exemptions are allowed for vehicles with a gross vehicle weight rating of 14,000 pounds or less; that are forced to remain motionless because of traffic conditions over which the operator has no control; are being used as an emergency or law enforcement vehicle; when the engine operation is providing power for a mechanical operation other than propulsion; when engine operation is providing power for multiple passenger heating or air conditioning; when the engine is being operated for maintenance or diagnostic purposes.

Alternative methods of providing power to the vehicle are currently available. Truck stop electrification allows the vehicle operator to access electricity as a power source, or small generators, which emit less and can be used as auxiliary power sources, can be used and are commercially available.

Implementation of this measure in the five-county area would require a revision to the TNRCC idling restriction rule or local regulations. This measure could be implemented relatively quickly by specifying an effective date within a short timeframe in the rule or regulation. Estimated NO_x emission reductions in the five-county area are 0.35 tons per day.

5.0 Other Potential Emission Reduction Strategies

In addition to the Action Plan strategies listed in Section 3.0, the A/SM MSA may implement other strategies in order to achieve the health benefits envisioned under the 8-hour standard. The decision to implement these strategies will be based on monitoring data and improved photochemical modeling, emissions inventories, and technical analyses expected to be completed in 2002. The A/SM MSA O₃ Flex Agreement, by agreement of the participants, may be modified to include these additional strategies. Some of the strategies that will be evaluated are Heavy Truck Speed Limit Reduction and Mandatory Heavy Vehicle Idling Restrictions. Both of these strategies are also included as Contingency Measures in Section 4.0

5.1 Inspection /Maintenance Program

An inspection/maintenance (I/M) program requires vehicle emission testing and repair, if necessary to pass the emissions test. The state of Texas currently administers I/M programs in counties in the Dallas/Fort Worth, Houston and El Paso areas. The current state I/M program requires all gasoline vehicles that are at least two and less than twenty-five years old, registered and primarily operated in affected counties, to undergo an annual emissions test in conjunction with the annual safety inspection. Vehicles that do not pass the emissions test must be repaired. Waivers are available for low income vehicle owners and a low income repair assistance program (LIRAP) is currently under development. The program does not apply to motorcycles or slow moving vehicles, as defined by Section 547.001, Transportation Code. The state program also contains a remote sensing component, which uses remote or automatic emissions detection and analysis equipment.

With the exception of the El Paso area, counties in the state I/M program will use, effective May 1, 2002, a combination test consisting of the on-board diagnostic test (OBD) for model years 1996 and newer and the acceleration simulation mode test (ASM-2) for model years 1995 and older.

The OBD test uses the computer system installed in a vehicle by the manufacturer which monitors the performance of the vehicle's emission control equipment, fuel metering system and ignition system for the purpose of detecting malfunction or deterioration in performance that would be expected to cause the vehicle not to meet emissions standards.

The ASM-2 test uses a dynamometer (a set of rollers on which a test vehicle's tires rest) which applies an increasing load or resistance to the drive train of a vehicle, thereby simulating actual tailpipe emissions of a vehicle as it is moving and accelerating. The ASM-2 vehicle emission test consists of two phases: (1) the 50/15 mode - in which the vehicle is tested on the dynamometer simulating the use of fifty percent of the vehicle's available horsepower to accelerate at a rate of 3.3 miles per hour (mph) at a constant speed of 15 mph and (2) the 25/25 mode - in which the vehicle is tested on the

dynamometer simulating the use of twenty-five percent of the vehicle's available horsepower to accelerate at a rate 3.3 mph at a constant speed of twenty-five mph.

Effective May 1, 2002, the fee in the state program for all vehicles will be up to \$27 in Houston/Galveston and Dallas/Fort Worth, \$14 in El Paso. For vehicles tested using OBD, \$6.00 of the \$27 fee can go to the county LIRAP fund if applicable (LIRAP is not available in El Paso.).

Counties in the A/SM MSA can join the state I/M program if the county and the largest city in the county adopt a resolution requesting to do so. The state enforces the program through vehicle registration denial and inspection stickers.

5.1.1 Low-Income Repair , Retrofit, and Accelerated Vehicle Retirement Program (LIRAP)

The 77th Texas Legislature (2001) passed into law HB 2134, which includes new rules for vehicle inspection and maintenance programs (VIMP) and a new Low-Income Vehicle Repair Assistance, Retrofit, and Accelerated Vehicle Retirement (LIRAP) program. As a result, new rules being promulgated by the TNRCC will capture \$6 from each OBD II emissions test performed in Texas to fund the LIRAP program.

Participation in LIRAP will be on a county-wide basis and will be dependent upon the county's request to participate. Only those counties that implement a VIMP program will be allowed to participate in LIRAP. Funds generated for the LIRAP program by counties with a VIMP program will be returned to that county. Funds collected in Austin for LIRAP, for example, cannot be used to support a LIRAP program in San Antonio. Nevertheless, funds collected in those counties that implement VIMP program but do NOT choose to participate in the LIRAP program will be sent to the state's General Revenue fund. As set out in HB 2134, counties are allowed to use only 5% of the funding to administer the LIRAP program.

HB 2134 requires TNRCC to assign emission credits to private commercial or business entities that purchase vehicles for accelerated retirement under LIRAP and for the retirement of a fleet vehicle owned or leased by a government entity. It also prohibits the reselling or reuse of a vehicle in this state that was retired under a retirement program and is not classified as an existing or future collectible vehicle.

TNRCC is currently expected to promulgate rules for the LIRAP program in January, 2002, and the program is expected to go into effect in May, 2002.

5.2 Speed Limit Reductions

Significant emissions reductions can be achieved by reducing speed limits for all vehicles on higher speed facilities in the five-county area. According to EPA's MOBILE5 emissions model, vehicle emission rates increase at speeds above 55 miles per hour (mph). Reduced speed limits are being implemented in both the Dallas/Fort Worth and Houston/Galveston areas as emission reduction measures. The maximum speeds in the

eight counties in the Houston nonattainment area will be 55 mph. Implementation is expected to reduce 2007 NO_x emissions by 12.33 tpd and 2007 VOC emissions by 1.76 tpd. Many of the speed limits in the eight counties in the Dallas/Fort Worth area will be reduced by 5 mph (70 to 65 and 65 to 60 mph). Implementation is expected to reduce 2007 NO_x emissions by approximately 5 tpd and 2007 VOC emissions by 0.55 tpd.

Reduced speed limits on state system roadways must be implemented by TNRCC and TxDOT, while speed limits on local roadways can be reduced by the appropriate local jurisdiction. Speed limit signs must be changed to implement this measure. The measure would be enforced by state and local law enforcement agencies. Additional benefits of this measure include fuel savings and decreased severity of speed-related accidents.

5.3 Equipment and Contract Specifications

Off-road equipment contributes a significant amount of NO_x to the region's total emissions. Reducing NO_x emissions from all sources will help reduce the amount of ozone formed. Municipalities, counties, and state agencies can include emission reduction strategies in contracts and competitively-let bids for construction and service contracts. Such strategies could require contractors to take certain measures to reduce emissions or include incentives in the bid process.

One example of a measure that would reduce emissions is to alter work on days when high ozone levels are expected because high levels (95 ppb) were reached the previous day by 1:00 pm. Work that is known to produce high emissions of NO_x or VOC can be scheduled after 2:00 pm or lower-emitting equipment may be used.

An example of adding incentives in the bid process is to have scoring criteria that would allow a contractor operating alternative fueled or low-emitting equipment to score higher than contractors operating conventional equipment.

5.4 Recycle Impounded and Old Fleet Vehicles

The Vehicle Recycling/Retirement Program will focus on removing high emitting vehicles from the regional fleet. The program is aimed at impounded vehicles not claimed by their owners, as well as fleet vehicles that are retired or replaced. If these vehicles meet "high-emitter" criteria or do not pass an emissions test, then their engines will be disabled and their parts recycled. Jurisdictions that opt into this program will manage, track, and report results, according to the provisions in Section 7.2. This program will aid in reducing mobile source emissions in the region.

5.5 Heavy Truck Speed Limit Reduction

Initial technical analysis indicates that significant NO_x emissions reductions can be achieved by implementing reduced speed limits for heavy trucks in the five-county area. Additional benefits of this measure include fuel savings and a reduction in the severity of truck-related traffic accidents.

EPA’s MOBILE5b emission model indicates that a 5 mph speed limit reduction from 65 mph to 60 mph would reduce NOx emissions by approximately 4.00 tons per day (tpd) in 2007, while VOC emissions remain constant. Reducing the heavy truck speed limit to 55 mph would reduce NOx emissions by approximately an additional 2.8 tpd in 2007 and would reduce VOC emissions by approximately 0.06 tpd. Although additional emissions reductions occur by reducing the heavy truck speed limit from 70 mph to 65 mph, MOBILE5b does not model speeds over 65 mph, so these additional reductions have not been calculated. It is important to note that the emission rates for heavy trucks in MOBILE6, EPA’s new MOBILE model, are expected to be higher than those in MOBILE5b, so the emissions reductions from this measure may increase when calculated using MOBILE6. MOBILE5b 2007 emission rates in grams per mile for Heavy Duty Gas Vehicles (HDGV) and Heavy Duty Diesel Vehicles (HDDV) are as follows:

MOBILE5	HDDV NOx g/mi	HDDV VOC g/mi	HDGV NOx g/mi	HDGV VOC g/mi
65 mph	10.86	0.94	5.31	1.55
60 mph	8.86	0.94	5.14	1.55
55 mph	7.49	0.96	4.98	1.58
50 mph	6.56	1.00	4.81	1.63

The initial analysis performed by the Capital Area Metropolitan Planning Organization (CAMPO) used available data for 2007 from the Texas Department of Transportation (TxDOT) and the Texas Transportation Institute (TTI). If this measure is selected for implementation, this analysis will be refined using MOBILE6 and comparative runs of the CAMPO Travel Demand Model. The analysis first calculated HDGV and HDDV vehicle miles traveled (VMT) that would be affected by reduced speed limits. It was assumed that the affected HDGV and HDDV VMT occurs only on higher speed roadways during off-peak periods, when vehicles can travel at posted speeds. Although vehicles can usually travel at posted speeds during peak periods in the rural portion of the five-county area, the CAMPO analysis only used HDGV and HDDV from the off-peak periods. The TxDOT/TTI data indicates that 79% of the HDGV and HDDV VMT occurs during the off-peak midday and overnight periods. The CAMPO analysis also only used the HDGV and HDDV VMT for the higher speed facilities, excluding VMT on roadways estimated to have posted speeds below 50 to 55 mph. The final HDGV and HDDV VMT were multiplied by the appropriate 2007 HDGV and HDDV emission rates to calculate the emission reductions.

Speed limit signs will have to be changed to implement this measure, which is estimated to take approximately six months for the five-county area. Reduced heavy truck speed limits on state system roadways for emission reduction purposes must be implemented through TNRCC and TxDOT. Local roadway reduced truck speed limits can be implemented by the appropriate local jurisdiction. The measure would be enforced by state and local law enforcement agencies.

5.6 Mandatory Heavy Vehicle Idling Restrictions

This measure restricts engine idling of vehicles with a gross vehicle weight rating (GVWR) of more than 14,000 pounds to five consecutive minutes while the vehicle is operating in the five-county area. The measure will reduce NO_x and particulate matter (PM) emissions in the five-county area and also reduce exposure to toxic compounds associated with diesel fuel use. In addition, the measure will result in fuel savings.

Exemptions are allowed for vehicles with a GVWR of 14,000 pounds or less; that are forced to remain motionless because of traffic conditions over which the operator has no control; are being used as an emergency or law enforcement vehicle; when the engine operation is providing power for a mechanical operation other than propulsion; when engine operation is providing power for multiple passenger heating or air conditioning; when the engine is being operated for maintenance or diagnostic purposes.

Alternative methods of providing power to the vehicle are currently available. Truck stop electrification allows the vehicle operator to access electricity as a power source, or small generators, which emit less and can be used as auxiliary power sources, can be used and are commercially available.

Implementation of this measure in the five-county area would require a revision to the TNRCC idling restriction rule or local regulations. This measure could be implemented relatively quickly by specifying an effective date within a short timeframe in the rule or regulation. Estimated NO_x emission reductions in the five-county area are 0.35 tpd.

6.0 Coordination and Stakeholder Participation

Since the early 1990's several organizations in the A/SM MSA have been active in the evaluation of local air quality issues. The Greater Austin Chamber of Commerce took the lead in 1993 in assembling representatives from the various stakeholder groups—industry, environmental groups, government agencies, health organizations, community organizations--to tackle these issues. These stakeholders formed the CLEAN AIR Force of Central Texas as a forum for the exchange of technical information, coordination of educational programs, and conduct of emission inventory development, air quality monitoring, and photochemical modeling studies.

In 2000, City of Austin Mayor Kirk Watson brought together representatives of local governments and their staff to analyze the key issues and to initiate work on a cooperative regional plan of action. This Clean Air Coalition consists of representatives from the County Commissioners Courts in Bastrop, Caldwell, Hays, Travis, and Williamson Counties. Mayor of the cities of Austin, Bastrop, Elgin, Lockhart, Luling, Round Rock, and San Marcos are also members of the Coalition. In mid-2001, the Coalition members directed staff to begin developing an O₃ Flex Agreement for the region.

An advisory committee to the Coalition charged with this task included staff, as well as representatives from the Lower Colorado River Authority, Environmental Defense, Tx DOT Austin District, Greater Austin Chamber of Commerce, Capital Area Metropolitan Planning Organization (the federally-designated MPO for the Austin area), Capital Metropolitan Transportation Authority, Capital Area Planning Council (the region's Council of Governments), and the CLEAN AIR Force of Central Texas. Staff from TNRCC and the University of Texas Center for Energy and Environmental Policy provided valuable assistance on technical and policy issues.

Coordination and Stakeholder Participation Activities

- Prepared and published “Breathing Easier—A Citizen’s Participation Guide to Cleaner Air.” The booklet was mailed to almost 500 individuals in the region—businesses, educators, media outlets, elected officials, community leaders, and environmental organizations. “Breathing Easier” provides general information about air quality in Central Texas, explains the actions individuals can take to reduce ozone-forming pollutants, and encourages the public to become involved in air quality planning. In addition to the booklet, a one-page flyer was prepared as a summary of the booklet. Besides the mailout, copies of the booklet and flyer have been made widely available—additional copies furnished to school districts, copies available in lobbies of public agencies and businesses, distribution at outreach events. Two phone numbers are offered—a local Austin number (343-SMOG) and a toll-free number (1-866-916-4AIR). These numbers ring in the offices of the CLEAN AIR Force and citizens are encouraged to use these avenues to order copies of the booklet or flyer, to offer comments on regional air quality issues, or to ask questions about air quality, or

to get information. The booklet can also be reviewed at www.cleanairforce.org and the City of Austin's website, www.ci.austin.tx.us/airquality.

- During the summer and fall of 2001, CLEAN AIR Force staff briefed the signatory entities on progress in development of the O₃ Flex Agreement. Presentations were made to city council and commissioners court meetings in the 5-county region. All of these briefings were held in public session. As the Coalition, representatives from these local governments also met several times in 2001 and early 2002 to review progress and to provide input to development of the O₃ Flex Agreement. Capital Metro and CAMPO boards (elected officials) each held two public meetings on this Agreement.
- In October 2001, a draft O₃ Flex Agreement was completed and distributed to the Coalition members, EPA Region 6 staff, and TNRCC staff for review. The draft was also submitted to members of the CLEAN AIR Force for review and comment. In November and December, elected officials considered the menu of ozone control measures identified in the draft Agreement. By January 1, 2002, each of the signatory authorities had taken action to formalize their control measure commitments
- During January 2002, signatories completed detailed descriptions of how their commitments would be implemented—estimated participation rates, number of low-emission vehicles, timelines, and other data for quantification of emission reductions. Eastern Research Group, Inc., CAMPO, and CAPCO staff conducted the quantification analyses.
- A signing ceremony for the A/SM MSA's O₃ Flex Agreement will be held on March 28, 2002.

The A/SM MSA's O₃ Flex Agreement does not include control measures that require action by the general public. Signatories and participants are local governments, agencies and private businesses which are undertaking programs that affect their internal operations and employees. In addition to signatories and participating agencies, many key stakeholders were actively involved in the development of this Agreement. The Greater Austin Chamber of Commerce assembled several task forces representing a variety of interests—landscape industry, facility HSE officials, fleet managers, the construction industry, building managers—and these task force groups worked on voluntary strategies to improve air quality, specifically promoting membership in the Clean Air Partners Program. The CLEAN AIR Force membership is representative of a broad range of business, environmental, and community interests; the CLEAN AIR Force Board of Directors has endorsed this Agreement. The Boards of the Capital Area Metropolitan Planning Organization, the Capital Area Planning Council, and the Capital Metropolitan Transportation Authority—comprised of elected officials in the region—have also endorsed the Agreement.

7.0 Schedules and Reporting Mechanism

7.1 Schedules

The schedule below indicates activities and milestones of the O₃ Flex Agreement process, so that signatory and interested parties know when significant actions will occur or are necessary.

April 11, 2001: Resolutions of intent to develop an O₃ Flex Agreement submitted to EPA Region 6 and TNRCC

Fall 2001: Draft O₃ Flex Agreement developed; review by elected officials; selection of control measure commitments; initiate quantification process.

March 2002: O₃ Flex Agreement signed by local signatories, EPA Region 6, and TNRCC

Fall 2002: O₃ Flex Agreement semi-annual review

Ozone Season 2002: Some Action Plan strategies are implemented

Spring 2003: O₃ Flex Agreement semi-annual review

Ozone Season 2003: All Action Plan strategies are implemented

Fall 2003: O₃ Flex Agreement semi-annual review

Spring 2004: O₃ Flex Agreement semi-annual review

Fall 2004: O₃ Flex Agreement semi-annual review

Spring 2005: O₃ Flex Agreement semi-annual review

Fall 2005: O₃ Flex Agreement semi-annual review

Spring 2006: O₃ Flex Agreement semi-annual review

Fall 2006: O₃ Flex Agreement semi-annual review

Spring 2007: O₃ Flex Agreement semi-annual review

Fall 2007: O₃ Flex Agreement semi-annual review

Spring 2008: O₃ Flex Agreement semi-annual review

7.2 Reporting Mechanism

All local governments and implementing agencies will track and document the implementation activities associated with the strategies within their jurisdiction. The documentation will include, at a minimum, implementation status and results. Results will be quantified to the extent possible. The documentation will be provided to the signatory parties at least 30 days before the date of the semi-annual review. Appropriate parties agree to participate in the semi-annual review to address any concerns of the signatory parties.

The semi-annual review will address, at a minimum, control strategy implementation and results, monitoring data, contingency measures (if applicable), and future plans. If possible, services of a regional air quality coordinator will be retained by CAPCO to facilitate the tracking, reporting and review process.

8.0 Austin/San Marcos Metropolitan Statistical Area Memorandum of Agreement

This Memorandum of Agreement (MOA) is between the local governments representing Bastrop, Caldwell, Hays, Travis and Williamson counties and the cities of Austin, Bastrop, Elgin, Lockhart, Luling, Round Rock and San Marcos (herein after referred to as the local governments) the Texas Natural Resource Conservation Commission (TNRCC) and the United States Environmental Protection Agency (EPA) for the purpose of reducing ground-level ozone concentrations in the Austin/San Marcos Metropolitan Statistical Area (A/SM MSA) using locally selected control measures that account for the unique character of the region and accommodate the region's social and economic needs.

This agreement emphasizes local flexibility in selecting and implementing emissions reduction measures. Given the varied emissions contributions and socioeconomic characteristics of the entities in the A/SM MSA, not all measures can or should be implemented by all entities. Rather, each entity will implement the measures that work for its specific jurisdiction and, when added together, work for the region as a whole.

I. General Provisions

- A. The signatory parties commit to develop, implement and maintain the O₃ Flex Agreement according to EPA O₃ Flex Guidelines issued June 21, 2001 and adhere to all terms and conditions stated in the guidelines. See Appendix F for EPA O₃ Flex Guidelines.

II. EPA and TNRCC Responsibilities

- A. The EPA O₃ Flex Guidelines state that “by developing, signing and maintaining such an agreement, a specific area would remain designated attainment for the 1-hour ozone standard for a limited period of years, as long as the control measures in the agreement are being implemented.” EPA agrees to defer redesignation of the A/SM MSA attainment area to nonattainment for the 1-hour ozone standard for the duration of this agreement, even if a violation occurs, as long as the control strategies are being implemented.

- B. The signatories' intent in entering into the O₃ Flex Agreement is to proactively implement and sustain air quality improvement strategies that are tailored to local conditions and are effective, practical and measurable in reducing ground-level ozone concentrations. The Agreement should in no way be construed as a strategy to avoid or to defer a nonattainment designation under the 8-hour ozone standard. However, signatories urge EPA to adopt a policy of quickly restoring attainment status to areas that come into expedited compliance with the 8-hour standard as a result of an O₃ Flex Agreement.

C. The EPA O₃ Flex Guidelines also indicate that “In developing an implementation plan for the 8-hour NAAQS, EPA intends to propose streamlined requirements for areas that have chosen on a voluntary basis to implement measures to reduce ozone levels, such as those areas that enter into O₃Flex Memoranda of Agreement (MOA)” and further states that “EPA plans to provide implementation options that recognize the efforts of areas that voluntarily achieve near-term emission reductions”. Therefore, EPA and TNRCC commit to informing the A/SM MSA of all available options and flexibilities, to the extent allowed by the Federal Clean Air Act, in the event that the area, or any portion of the area, is determined to be nonattainment for the 8-hour ozone standard for the duration of this agreement.

D. Attachment B of the EPA O₃ Flex Guidelines indicates that “EPA will allow these elective emission reductions to be credited for any future SIP that may be required”. EPA will, consistent with the Federal Clean Air Act, do all it can do to allow the A/SM MSA appropriate SIP credit for strategies implemented under the terms of this Agreement.

E. The MOA’s terms do not abrogate any state or federal legal requirement. The TNRCC and the EPA enters this MOA solely for the purpose of their responsibilities under Section 107(d)(3)(A) through (D) of the Federal Clean Air Act.

III. Local Government Responsibilities

A. As specified in the EPA O₃ Flex Guidelines, the O₃ Flex Agreement developed by the A/SM MSA contains an executive summary and sections describing the region’s background, action plan, other potential measures, contingency measures, coordination and public participation process, schedules and reporting mechanism. These sections and associated appendices further define the local governments and participating entities commitments and actions.

B. The local governments will continue to conduct air dispersion modeling and design through the Capital Area Planning Council (CAPCO), the regional Council of Government (COG).

C. The local governments will continue to develop and regularly update area emissions inventories through CAPCO.

D. The local governments will implement contingency measure(s) that will be effective if a violation of the 1-hour ozone standard occurs.

1. The contingency measure(s) will be selected from those listed by the local governments within 60 days of the date of the 1-hour ozone standard

violation. The selected measure(s) will be submitted to TNRCC within 15 days of the date of selection by the signatory parties for adoption into the SIP.

2. The selected contingency measure(s) will be implemented within one year of the date of violation.

IV. Expected Agreement Duration

A. The signature date of the A/SM MSA O₃ Flex MOA is the start date of the agreement's term. This agreement remains in effect until December 31, 2007.

V. Conditions for Modification or Early Termination

A. This agreement may be modified or terminated by mutual consent of all signatory parties.

B. Any signatory party may withdraw from the agreement if provisions of the agreement are not carried out by the other signatory parties.

C. This agreement may be modified at any time. It may also serve regional efforts to meet the Clean Air Act requirements, as appropriate, when the 8-hour ozone guidance is issued.

D. Failure to abide by the terms of the agreement, should violation of the 1-hour standard occur, could lead to redesignation as nonattainment for the 1-hour standard.

VI. Additional Terms of This Agreement

A. This MOA creates no cause of action against any party beyond those, if any, that may already exist under state or federal law. In addition, all parties agree that this MOA cannot be used against one another or by a third party as an enforceable order in any court proceedings. This MOA will be reviewed and modified as needed.

B. It is understood that emission reductions achieved through individual measures will be donated to the regional O₃ Flex efforts and will not be available for use in an emissions banking/trading program, with one exception. The City of Austin electric utility (dba Austin Energy) intends to make additional NO_x emission reductions beyond all state and federal requirements. These additional reductions are expected to result in the utility's having excess allowances on a regular basis. While Austin Energy may eventually use these excess allowances in a banking/trading program, the utility will not sell the allowances within the five-county Central Texas region. The 2007 NO_x

reduction resulting from Austin Energy’s emission reduction program is, therefore, included in the total emission reductions to be achieved under this Agreement.

C. Additional signatories can be added at any time.

Executed in multiple copies by the signatory parties to this Memorandum of Agreement. The representatives of the signatory parties executing this Agreement represent their authority to sign the Agreement and to bind the signatory party they represent to the terms of this Agreement.

The Honorable Mike Heiligenstein
Williamson County Commissioner

The Honorable Samuel T. Biscoe
Travis County Judge

The Honorable H. T. Wright
Caldwell County Judge

The Honorable Jim Powers
Hays County Judge

The Honorable Ronnie McDonald
Bastrop County Judge

The Honorable Eric Carlson
Mayor, City of Elgin

The Honorable David Chiu
Mayor, City of San Marcos

The Honorable Gustavo L. Garcia
Mayor, City of Austin

The Honorable Mike Hendricks
Mayor, City of Luling

The Honorable Ray Sanders
Mayor, City of Lockhart

The Honorable Tom Scott
Mayor, City of Bastrop

The Honorable Robert Stluka
Mayor, City of Round Rock

Gregg Cooke
Administrator, Region 6,
U.S. Environmental Protection Agency

Robert J. Huston
Chair, Texas Natural Resource
Conservation Commission

Appendix A - Descriptions of Participating Groups and Agencies

Appendix B – 1999 Emissions Inventory Summary

Appendix C - Environ Draft Final Report

Appendix D - Transportation Emission Reduction Measures

Appendix E - Phase 1 Control Measure Commitments – Resolutions and Worksheets

Appendix F - ERG Report and Quantification Back-Up

Appendix G - EPA O₃ Flex Guidelines