



# Capital Area Council of Governments

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September 5, 2008

Texas Commission on Environmental Quality (TCEQ)

Buddy Garcia, Chairman

Larry R. Soward and Bryan W. Shaw, Ph.D., Commissioners

Executive Director Mark Vickery

P. O. Box 13087, (MC-100)

Austin, Texas 78711-3087

Re: Comments on Air Quality Boundary Designations for the 2008 8-hour  
Ground-level Ozone National Ambient Air Quality Standard (NAAQS)

Dear TCEQ Commissioners and Executive Director:

The Central Texas Clean Air Coalition (CAC) appreciates the opportunity to comment on the Texas Commission on Environmental Quality (TCEQ) designation recommendations to the U.S. Environmental Protection Agency (EPA) for the 2008 ground-level ozone NAAQS. The CAC is an association of elected officials representing 5 counties and 7 cities in the rapidly growing Austin-Round Rock Metropolitan Statistical Area (A-RR MSA). In addition to this comment period, the CAC recommends an additional comment opportunity be made available after the TCEQ develops draft boundary and designation recommendations.

The CAC would like to take this comment opportunity to supply the TCEQ with data needs suggested by the eleven factors detailed in Section 5 of the EPA's guidance memorandum (March 28, 2000, Boundary Guidance on Air Quality Designations for the 8-hour Ozone National Ambient Air Quality Standard) and the needs for regional strategies as noted in Section 7 of the same memo. Following are key issues for consideration by TCEQ in the process of determining nonattainment boundaries, attainment dates, and regional strategies (supporting documentation attached with this letter):

- Voluntary compliance efforts similar to the Early Action Compact, a proven success strategy, should be offered as a viable option to the traditional nonattainment process for areas such as Austin, which is already monitoring ozone levels close to the federal standard.
- We recommend that TCEQ keep intact discrete, well-established air quality planning areas when making boundary recommendations. We believe that effectiveness of planning efforts would be significantly diminished if the A-RRMSA was linked with San Antonio into a combined planning district.
- We ask TCEQ's assistance, though implementation of robust regional strategies and improved alignment of attainment dates, in mitigating the effects of ozone transport on our MSA counties. To reduce background contributions within the State, emission reductions for large combustion sources within the state ozone transport region should be considered.

- Air permitting policy for pre-construction review may need revisions to require a photochemical grid modeling evaluation for ozone impacts of emissions from significant new industrial plants, and to have regional ozone impacts addressed in the permit process.

The CAC appreciates your consideration of these comments and looks forward to an opportunity to review TCEQ's draft boundary and designation recommendation. Please feel free to contact Bill Gill or Cathy Stephens, Co-chairs of the Clean Air Coalition Advisory Committee (CACAC), with any questions concerning these comments.

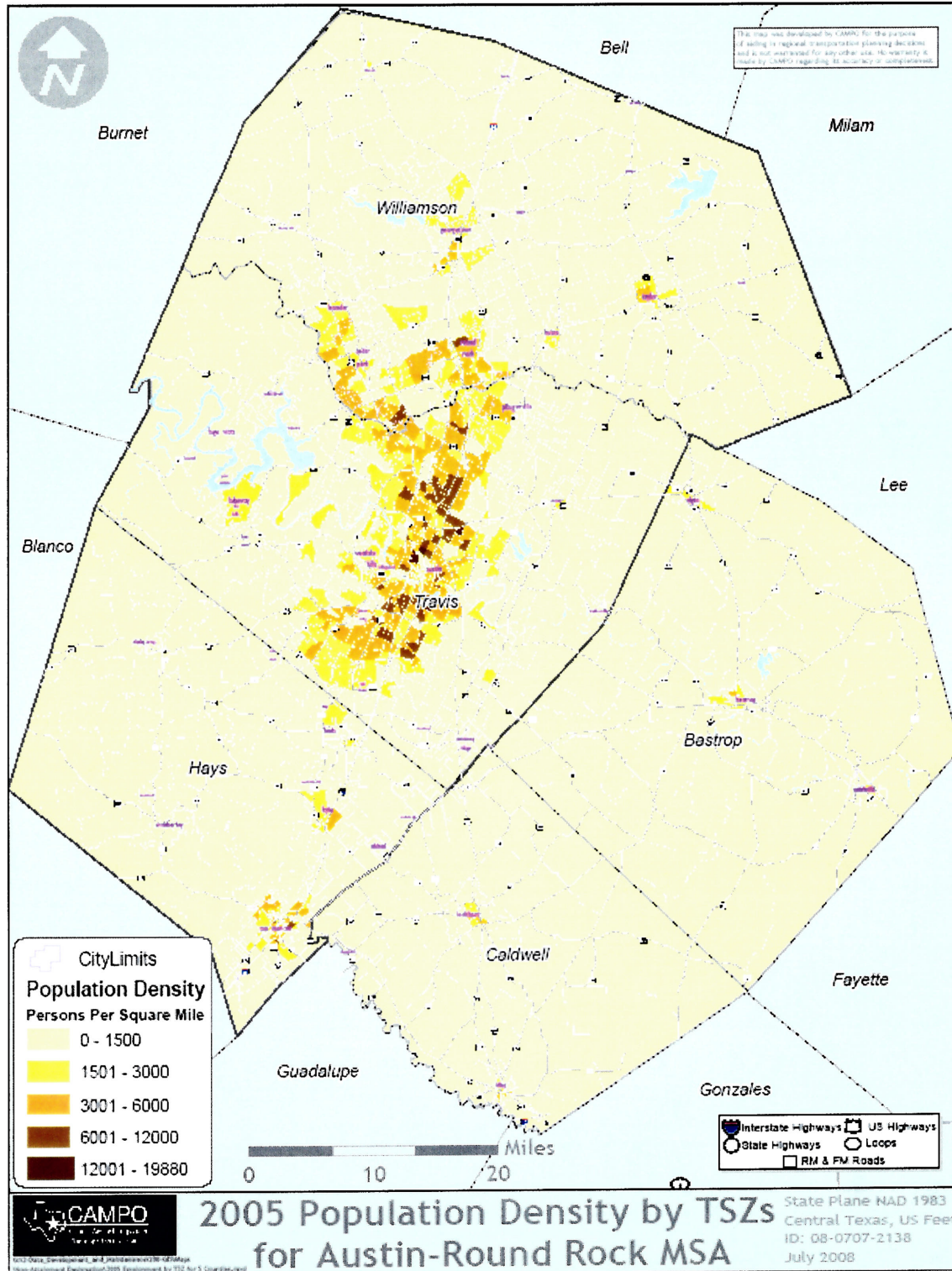
Regards,

A handwritten signature in black ink, appearing to read 'Will Wynn', with a stylized, cursive script.

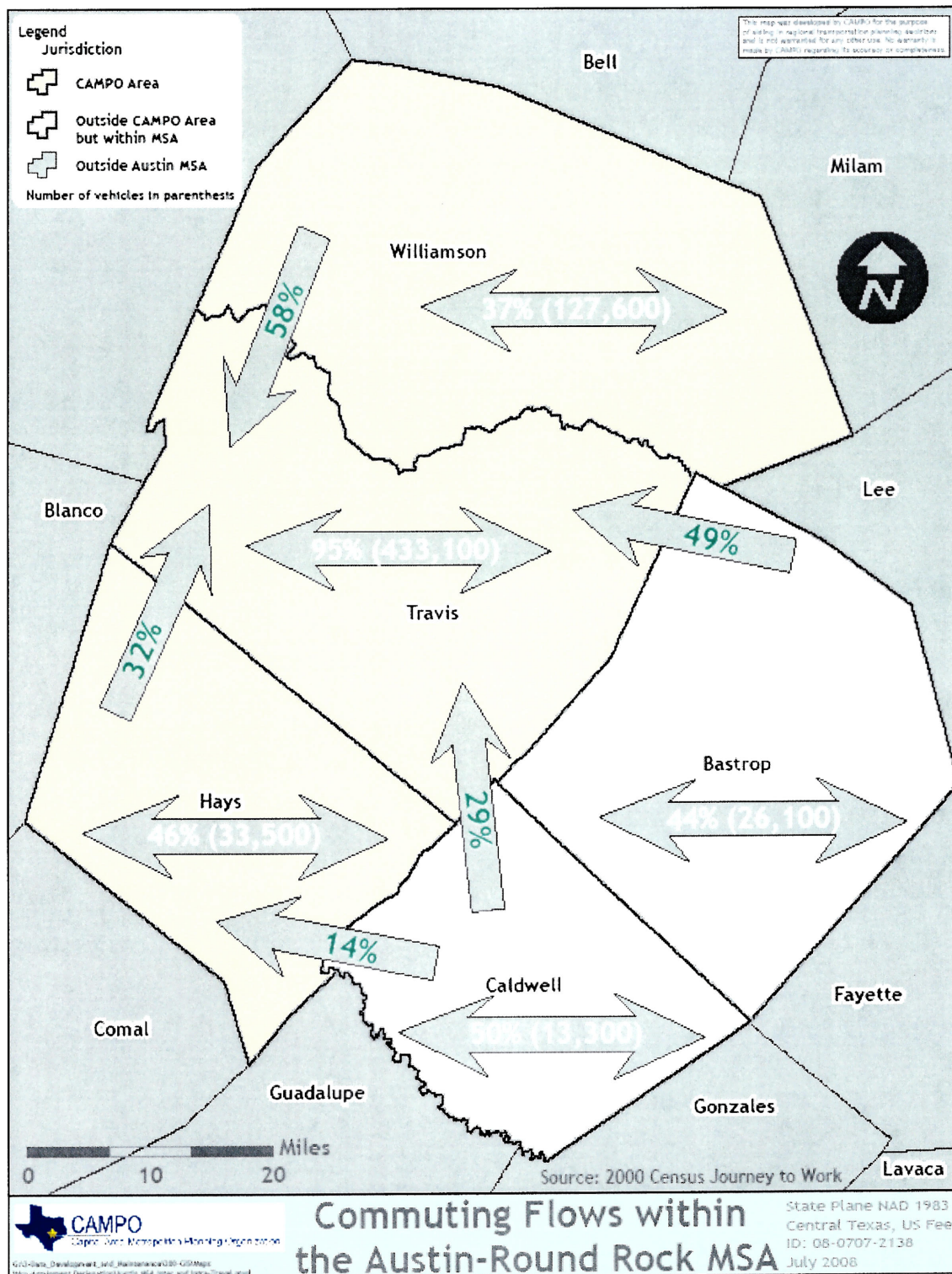
Will Wynn  
Austin Mayor  
Chairman, Central Texas Clean Air Coalition

# Clean Air Coalition Comments to the TCEQ on Air Quality Boundary Designations for the 8-hour Ground-level Ozone National Ambient Air Quality Standard (NAAQS)

## Additional Documentation Provided for Addressing Transportation Related Criteria Which may Affect Nonattainment Boundaries

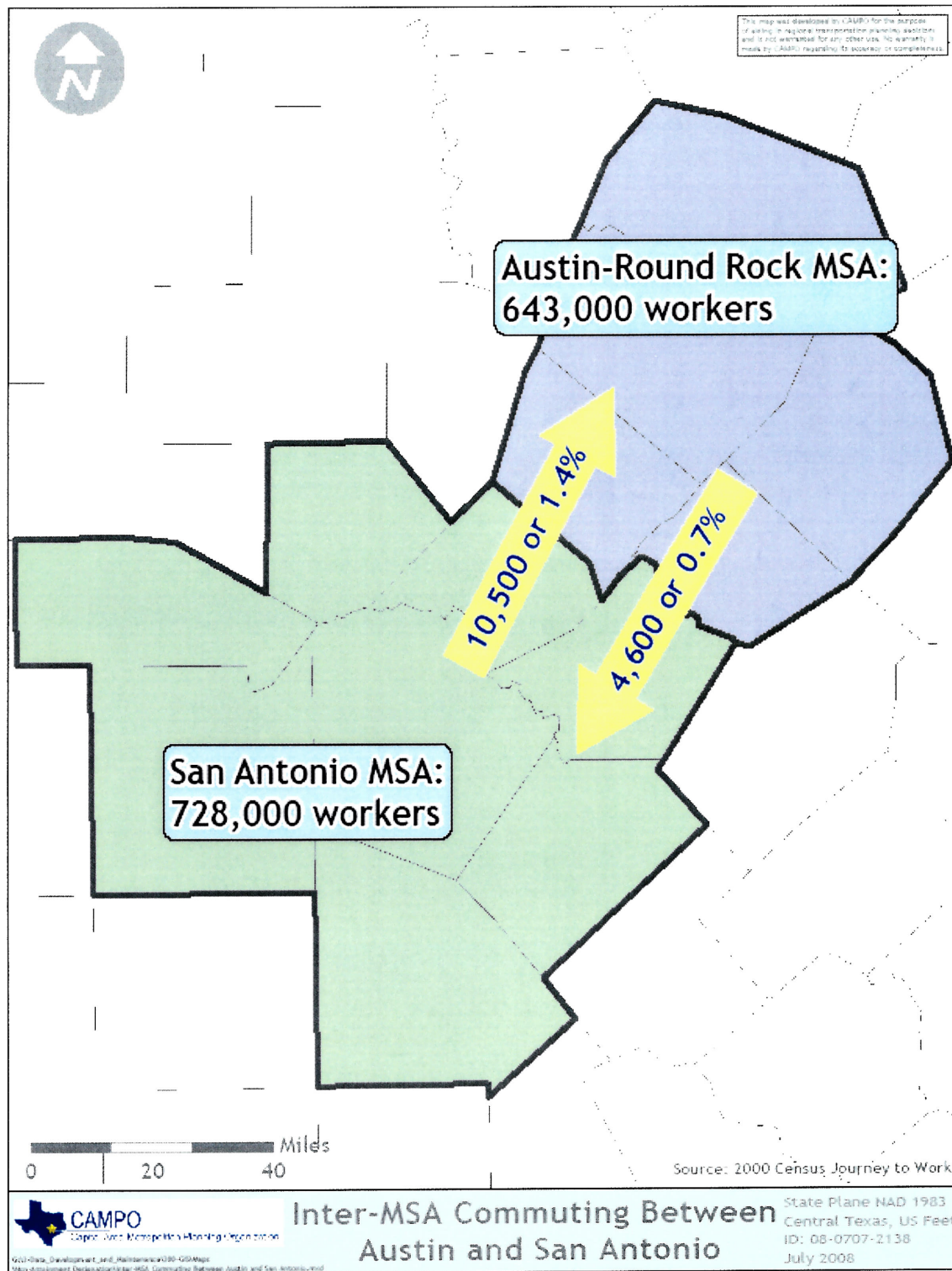








**Clean Air Coalition Comments to the TCEQ on Air Quality Boundary Designations for the 8-hour Ground-level Ozone National Ambient Air Quality Standard (NAAQS)**







## Attachment for Clean Air Coalition Comments to the TCEQ on Air Quality Boundary Designations for the 2008 8-hour Ground-level Ozone National Ambient Air Quality Standard (NAAQS)

### Emissions Inventory Composition and Trends

Regional planning initiatives continue to focus on reducing NO<sub>x</sub> and VOC emissions from A-RR MSA ozone contributing source categories. Figures 2 and 3 show anthropogenic NO<sub>x</sub> and VOC emissions from the 2005 Emissions Inventory in tons per day for four major contributing source categories represented in each of the A-RR MSA counties. The predominant sources of anthropogenic VOC and NO<sub>x</sub> in the A-RR MSA are on-road, non-road, and area.

#### Anthropogenic Sources of NO<sub>x</sub> and VOC in the A-RR MSA (2005)

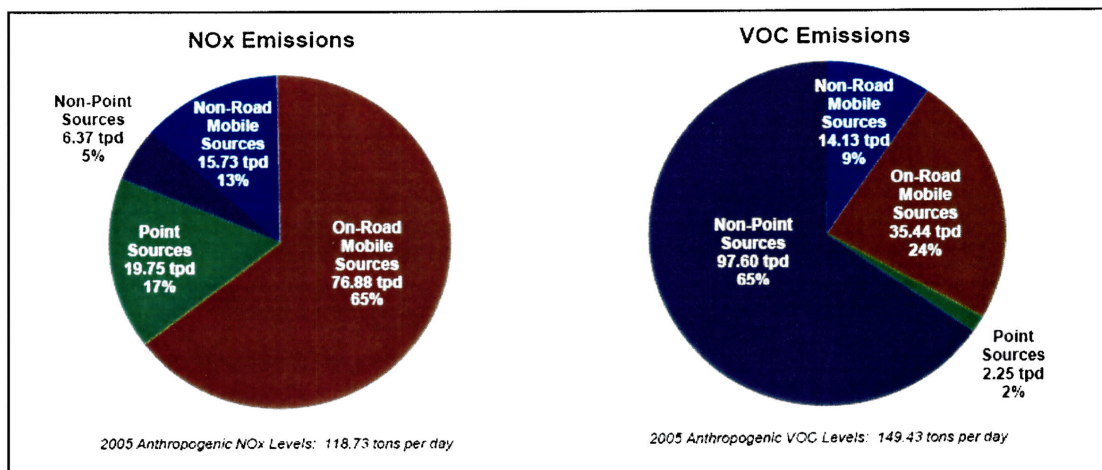


Figure 2 - Anthropogenic sources of NO<sub>x</sub> and VOC from the TCEQ 2005 Emissions Inventory.

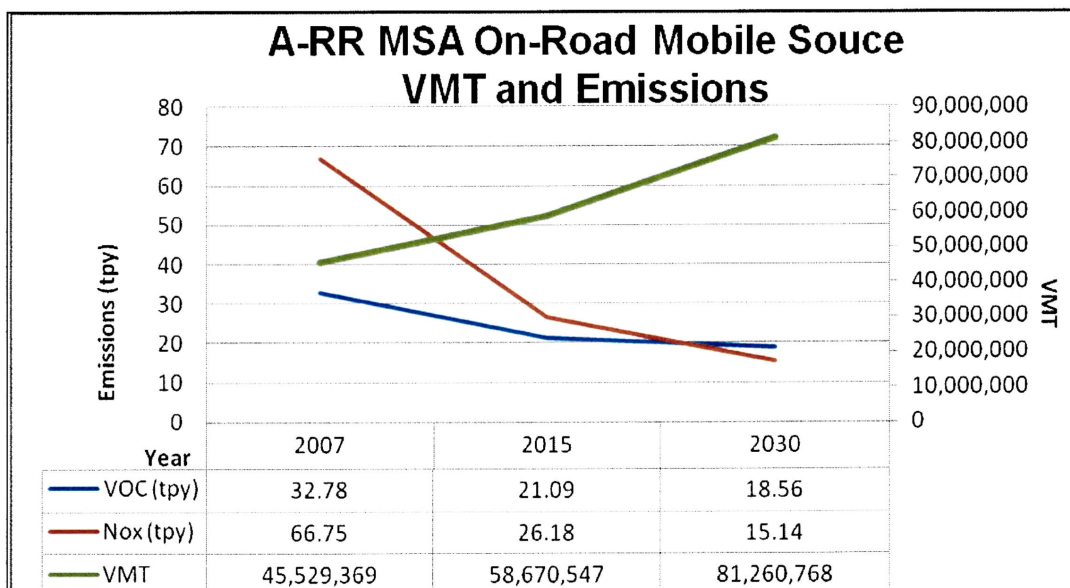
#### Anthropogenic Sources of NO<sub>x</sub> and VOC in the A-RR MSA (2015)

Figure 3 - The 2015 emissions for the on-road mobile sources was obtained from Texas Transportation Institute (TTI) report: "Austin Early Action Compact Region On-Road Mobile Source Emissions Inventories: 2007, 2015, And 2030: Revised Emissions Results", TTI, February 2007; The non-road growth factors were developed by running the US EPA NONROAD model for years 2002, 2005, 2007, 2012 and 2015. Similarly, the area and point source emission trends were also developed by applying growth factors; however, the growth factors were obtained from the 2003 EAC document and applied to the 2005 TCEQ Emissions Inventory data. The represented 2015 emission projections were developed by using an interpolation method for both area and point source categories.

The change in emissions shown in Figure 2 and 3 suggests that the A-RR MSA will see significant reduction of NO<sub>x</sub> and VOC from on-road and non-road mobile, with no significant change in point source emissions.

In 2007, the Texas Transportation Institute (TTI) performed and documented a regional emissions analysis for the A-RR MSA for 2007, 2015, and 2030. This analysis predicts that total Vehicle Miles Travelled (VMT) for the MSA will increase through 2030, while overall emissions from on-road mobile sources are expected to decrease (see Figure 4). The decrease in on-road mobile emissions can be attributed to technological improvements and refinements to emission standards over time.

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**Figure 4 – VMT and emissions trends for onroad mobile sources in Austin-Round Rock MSA**

As federally mandated reduction measures are implemented for mobile sources, it will become increasingly difficult to identify new areas within the A-RR MSA for emission reductions.

### **Transport and high background levels**

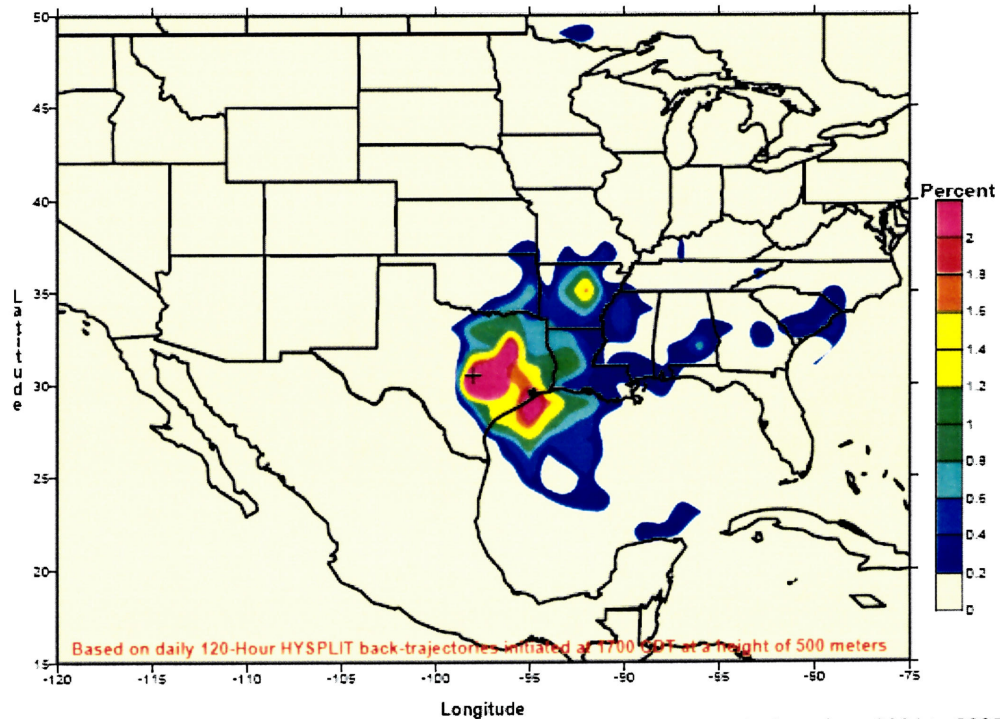
As noted in EPA's 8-hour guidance memorandum on ozone nonattainment designations, regional strategies such as those employed in the Ozone Transport Region in the Northeast U.S. and in the EPA NOx SIP call are needed to address the long-range transport component of ozone nonattainment.

The HYSPLIT (Hybrid Single-Particle Lagrangian Integrated Trajectory) model was used to investigate the potential source regions of air entering the A-RR MSA. HYSPLIT uses meteorological model forecast data from the National Centers for Environmental Prediction (NCEP) archived by Air Resources Laboratory (ARL). Figures 5 and 6 present the residence time maps for the 20% highest ozone days for June and September based on the maximum ozone concentration at either the Murchison or Audubon monitoring station during the years 2001 through 2005. These back trajectories suggest long-range transport of continental air into the MSA from upwind areas located to the east and northeast of Texas. Multi-day high ozone episodes are often associated with a ridge of high pressure that extends southwestward into Texas. The transport pattern prior to high ozone days is consistent with the large-scale clockwise circulation around this high pressure ridge. This high pressure ridge is often associated with local meteorological conditions that are favorable for the formation and accumulation of ground-level ozone. In addition, the continental air mass transported into the MSA likely contains elevated concentrations of ozone and its precursor compounds associated with both biogenic and anthropogenic emissions from sources located in states and other areas of Texas upwind of the A-RR MSA (Austin Conceptual Model, UT Austin, 2007).



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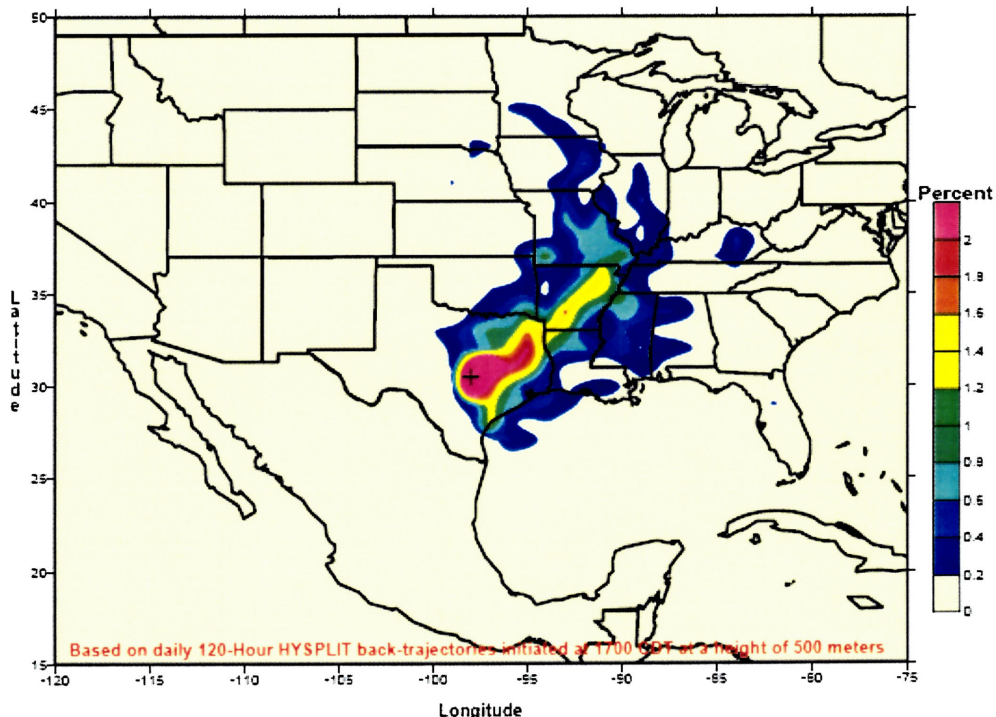
**Trajectory Residence Time In Percent for the Top 20% 8-Hour Ozone Days  
Years 2001 - 2005: June; AUSTIN**



**Figure 5 - Trajectory residence time in percent for the highest 20% ozone days in June from 2001 to 2005.**

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**Trajectory Residence Time In Percent for the Top 20% 8-Hour Ozone Days  
Years 2001 - 2005: September; AUSTIN**



**Figure 6 - Trajectory residence time in percent for the highest 20% ozone days in September from 2001 to 2005.**

According to the Austin Ozone Conceptual Model (The University of Texas at Austin, July 26, 2007), from 1993 through 2006, one or more monitoring stations measured 75 ppb or greater on 228 days. The number of high ozone days varied from a minimum of 6 in 1996 to a maximum of 34 in 1999. The frequency of occurrence of high ozone days over the course of a typical ozone season is characterized by a bi-modal distribution, with a primary peak in the frequency of high ozone days during the August through early October period and a secondary peak during late May and June. In recent years (2001 through 2006) the average number of late summer high ozone days declined substantially. The frequency of occurrence of high ozone days was equally distributed between the May/June and August/September peaks.

The common meteorological condition occurring with high ozone is a clockwise circulation around a surface ridge of high pressure, often centered over the Central Plains or Ohio/Mississippi River Valleys. It generates northeasterly or easterly wind that transports continental air and haze into eastern Texas. This continental air mass is often characterized by reduced visibility, and likely contains elevated concentrations of ozone and its precursor compounds associated with both biogenic and anthropogenic emissions. High ozone concentrations are often measured at monitoring stations throughout the eastern half of Texas.

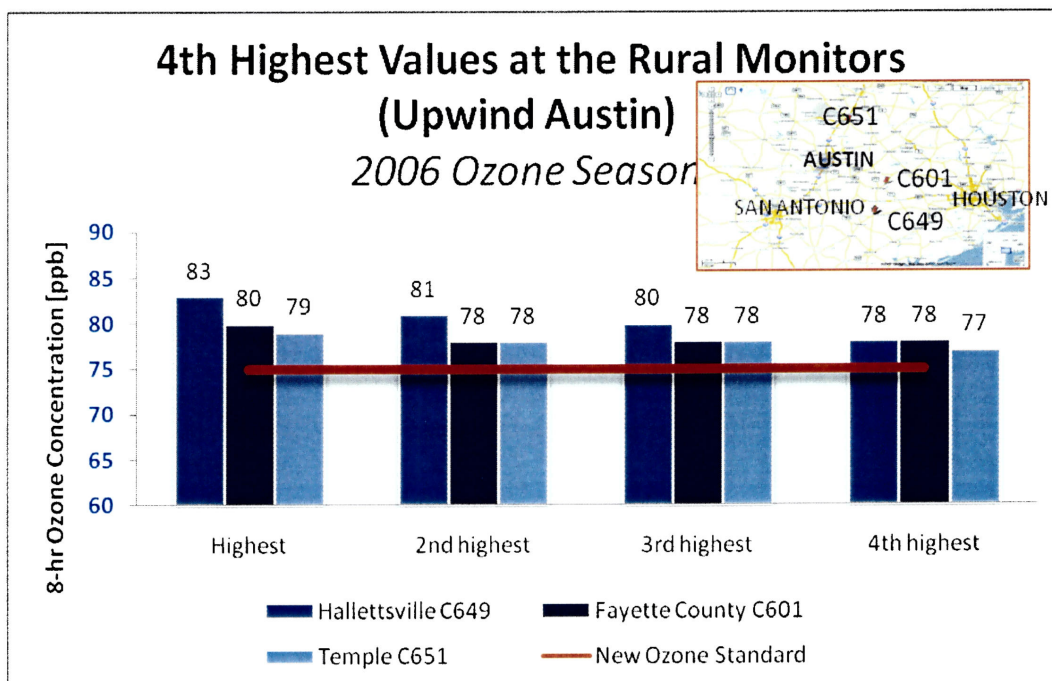
In the A-RR MSA, monitoring data collected during these episodes shows background ozone concentrations of typically 80-85% of the observed local maximum. Based on



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these analyses, the enhancement of ozone concentrations due to emissions from sources within the A-RR MSA generally ranged between 10 ppb and 20 ppb on individual high ozone days, with an average enhancement of 15 ppb. With background concentrations ranging from 65 ppb to 75 ppb, even relatively small contributions of ozone formed from local source emissions in the A-RR MSA would have resulted in an exceedance of the 8-hour ozone National Ambient Air Quality Standard (NAAQS).

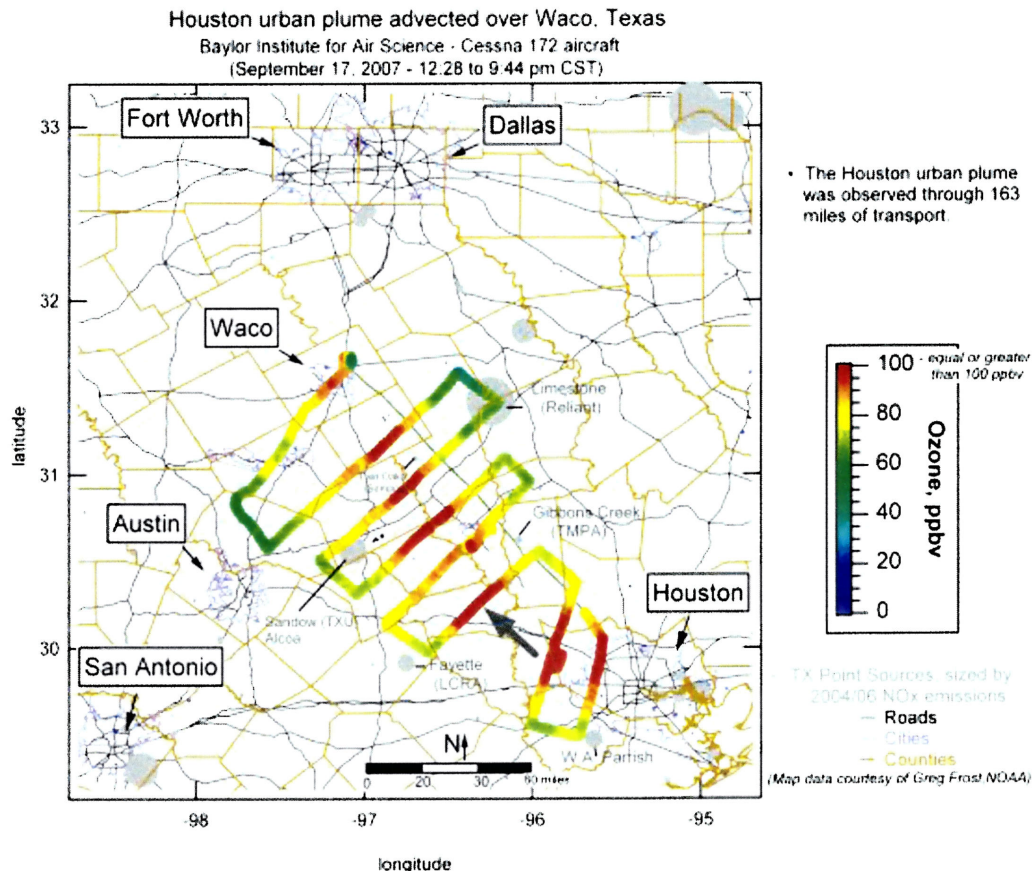
The A-RR MSA and other areas are significantly impacted by interstate and intrastate transport from sources outside the MSA or presumed nonattainment area. Figure 7 demonstrates monitored background ozone levels above the new standard. Based on these monitor readings, the MSA would violate the standard due to transported emissions and high background levels that will not be reduced by implementing controls in the MSA area. Given this, EPA and the states must significantly reduce transported and background emissions if compliance to a lower standard is to be achieved.



**Figure 7** - Four highest ozone readings in 2006 at the Austin upwind monitors

Transported emissions often come from heavily polluted upwind areas, many of which are already ozone nonattainment areas. Recent airborne monitoring conducted by the Baylor Institute of Air Sciences (see Figure 8) demonstrates the extent to which an urban ozone plume emanating from a large nonattainment area can impact areas far downwind of the source region. The federal classification scheme for nonattainment areas allows heavily polluted areas more time to attain than those with lesser pollution problems. Given the prevalence of transport and high background emissions, attainment dates for all areas should be closely aligned, since areas with lesser pollution problems will not be able to attain until the more heavily polluted areas have significantly reduced emissions. It may be prudent and necessary to accelerate heavily polluted areas' attainment deadlines to adequately protect public health.

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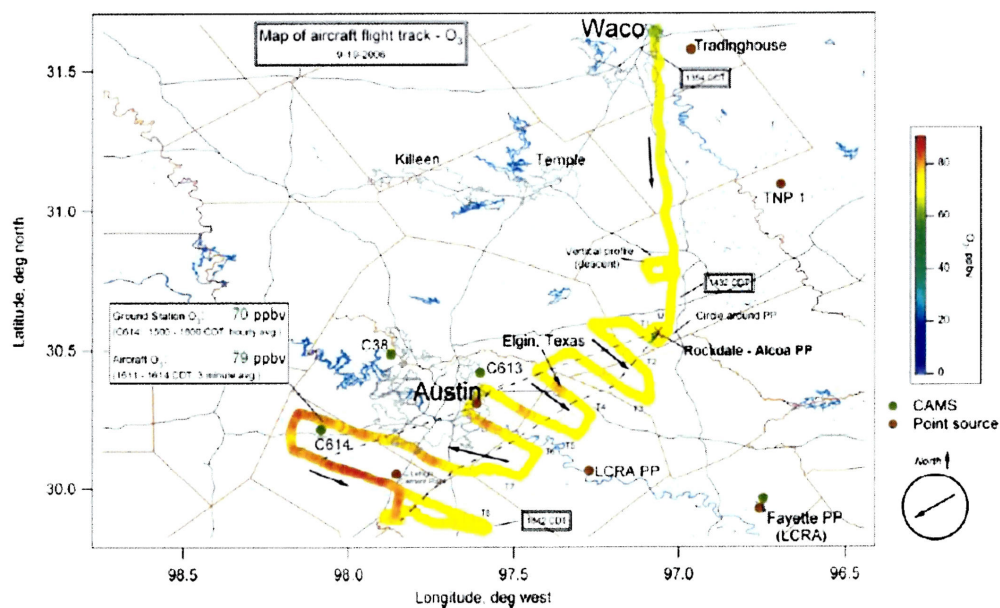
**Figure 8** Houston urban ozone plume. Airborne sampling data acquired by Baylor University on September 17, 2007

### State and Federal permitting rules and policies

Current interpretation of permitting rules and policies does not require evaluation or consideration of the effect of emissions from a proposed point source will have on regional ozone levels or downwind areas. Figure 9 demonstrates the impact a significant source outside of the immediate MSA can have on ozone readings. Figure 10 shows the amount of large point sources outside of the A-RR MSA that have the potential to impact air quality in the MSA. Both state and federal permitting rules and policies need to be revised or clarified to require an evaluation of the emissions impacts of a proposed point source on regional ozone and downwind areas. The rules and policies should also consider modification of the permit if impacts cannot be sufficiently minimized or mitigated to avoid adverse health impacts or violations of the NAAQS in the affected region or downwind area.

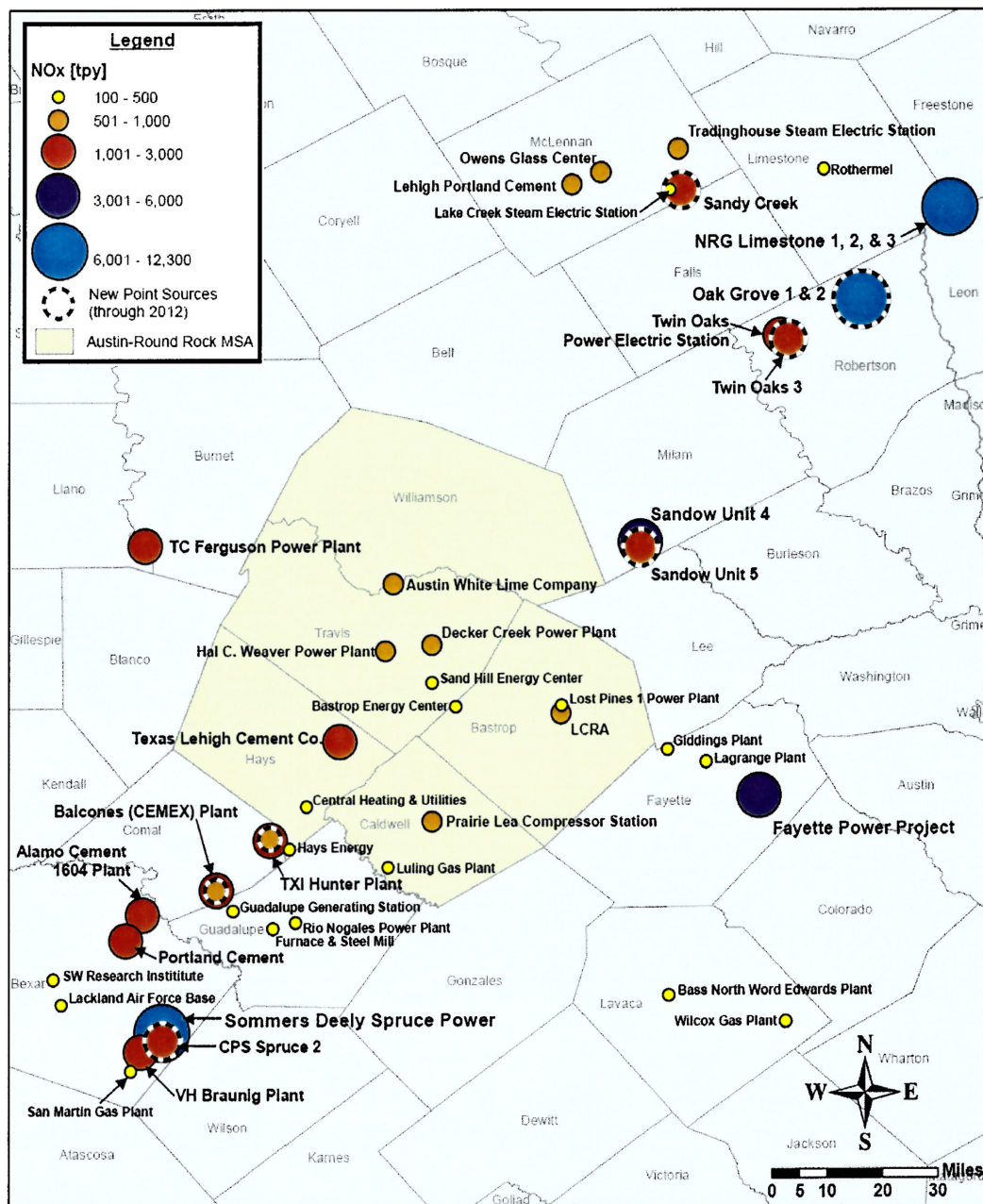


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**Figure 9 - Map of color-coded ozone concentrations along flight track showing an increase of ozone downwind of the Alcoa-Sandow facility and two transects downwind of Austin, Texas.**

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Existing and New Significant Point Sources of NOx Emissions in Central Texas (2012)

Figure 10 - Map of existing and new significant point sources in and around the Austin-Round Rock MSA.