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Tenth Biannual Report on the  
Early Action Compact for  
Northeast Texas

December 19, 2007

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### Background

On December 20, 2002, local governments in a five county area of Northeast Texas (Gregg, Harrison, Rusk, Smith, and Upshur counties) entered into an Early Action Compact (EAC) with the U.S. Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ). The purpose of the EAC is to develop and implement a Clean Air Action Plan (CAAP) that will reduce ground level ozone concentrations throughout the five county area to comply with the 8-hour ozone standard by December 31, 2007 and maintain the standard beyond that date. The EAC includes a series of milestones to guide progress toward the development of the CAAP as shown in Table 1. The area also must submit progress reports to EPA documenting progress in implementing the EAC and achieving the milestones. The requirements for the progress reports are given in EPA's April 4, 2003 guidance. This is the Tenth (December, 2007) progress report covering activities for the second half of 2007.

**Table 1.** Key milestone dates for the Northeast Texas Early Action Compact (EAC).

Date	Item
December 31, 2002	Signed EAC agreement
June 16, 2003	Identify/describe potential local emission reduction strategies
November 30, 2003	Initial modeling emission inventory completed Conceptual model completed Base case (1999) modeling completed
December 31, 2003	Future year (2007) emission inventory completed Emission inventory comparison for 1999 and 2007 Future case modeling completed
January 31, 2004	Schedule for developing further episodes completed Local emission reduction strategies selected One or more control cases modeled for 2007 Attainment maintenance analysis (to 2012) completed Submit preliminary Clean Air Action Plan (CAAP) to TCEQ and EPA
March 31, 2004	Final revisions to 2007 control case modeling completed Final revisions to local emission reduction strategies completed Final attainment maintenance analysis completed Submit final CAAP to TCEQ and EPA
December 31, 2004	State submits SIP incorporating the CAAP to EPA
December 31, 2005	Local emission reduction strategies implemented no later than this date
December 31, 2007	Attainment of the 8-hour ozone standard

## Implementing the Clean Air Action Plan

The TCEQ incorporated NETAC's CAAP into a SIP revision on November 17, 2004. The TCEQ submitted the SIP revision to EPA on schedule by December 31, 2004. On May 16, 2005, the EPA published a proposed rule for approval and promulgation of the Northeast Texas CAAP (Federal Register 70(93): 25794-25798). On August 19, 2005 EPA published the final rule approving and promulgating the Northeast Texas CAAP with an effective date of September 19, 2005 (Federal Register 70(160): 48642-48645).

## Ozone Attainment Status

The Northeast Texas ozone monitoring data determine whether the area is in compliance with the National Ambient Air Quality Standards (NAAQS) for ozone. The TCEQ operates three ozone monitors (Continuous Air Monitoring Station, CAMS) in Northeast Texas at Longview, Tyler, and Karnack. NETAC has operated a research ozone monitor that was located at Waskom in 2002-2003 and in Panola County in 2004-2006. The Panola research monitor operated from July 9, 2004 to October 30, 2006 and reported data through the TCEQ as CAMS 627. EPA designated all five NETAC counties as 8-hour ozone attainment areas on April 15, 2004 (see 69 FR 23858).

The annual 4<sup>th</sup> highest 8-hour ozone values at monitors in Northeast Texas for recent years are shown in graphical form in Figure 1, and are listed in Table 2 along with the resulting 2005-2007 8-hour design values. The ozone data for the last four years show that 2005 was relatively high ozone year in Northeast Texas; the 2005 data increased the three year averages used to calculate the 2004-2006 design values to the point where the Longview monitor was out of compliance with the 8-hour standard at the end of 2006. 2007, on the other hand, saw the lowest 4<sup>th</sup> high ozone values in the last decade at the Northeast Texas monitors. The 2005-2007 design values are all 84 ppb or less, which means that all Northeast Texas monitors are in compliance with the 8-hour ozone standard as of the date of this report. The ozone data from January 1, 2005 through November 30, 2007 have been validated by the TCEQ. The research monitor at Panola was not active in 2007, so a design value cannot be calculated for 2005-2007 for this monitor.

**Table 2.** Annual 4<sup>th</sup> highest 8-hour ozone values (ppb) and 2007 8-hour ozone design values for Northeast Texas

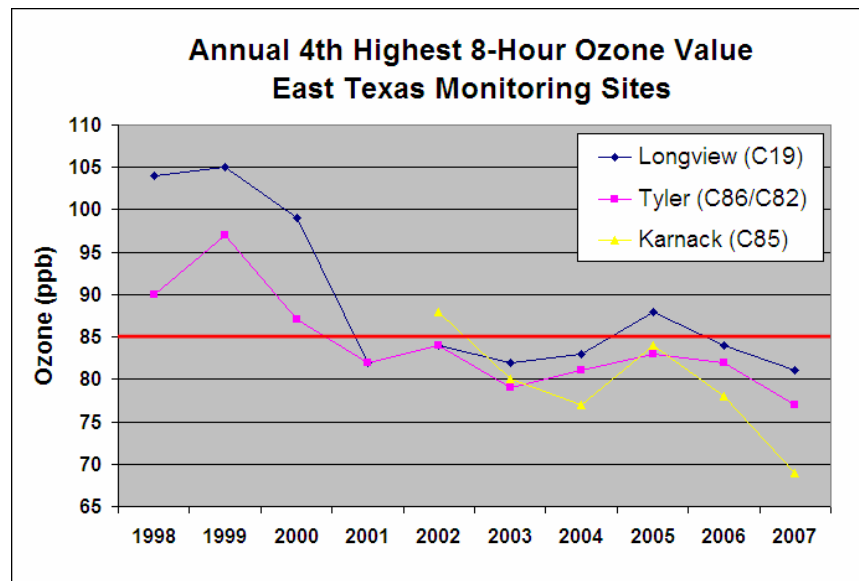
Year	Longview	Tyler	Karnack	Panola
2004	83	81	77	75
2005	88	83	84	79
2006	84	82	78	79
2007	81	77	69	N/A
2005-2007 Design Value	84	80	77	N/A

The recent trends in 8-hour ozone design values for Northeast Texas monitors are shown in Table 3. The Karnack design value has declined steadily over the last few years to its current value of 77 ppb. The Karnack monitor is located in a rural area near the Texas-Louisiana border; the reduction in the Karnack design value suggests that regional transport of ozone into

Northeast Texas is decreasing as regional control strategies for ozone take effect. The design value at the Tyler monitor fell by 2 ppb to 80 ppb for 2005-2007. The Tyler design value has been relatively steady over the last four years, with only small changes that may be attributed to variability in the weather. The design value at Longview increased by 1 ppb per year during the 2002-2006 period, and the 2004-2006 design value of 85 ppb was out of compliance with the 8-hour standard. During 2007, the 4<sup>th</sup> highest ozone value recorded at Longview was 91 ppb. This low value for 2007 brought the Longview design value for 2005-2007 to 84 ppb, which is in compliance with the 8-hour ozone standard.

**Table 3.** Recent trends in 8-hour ozone design values (ppb) for Northeast Texas

Design Value for Years	Longview	Tyler	Karnack	Panola
2002-2004	83	81	81	N/A
2003-2005	84	81	80	77
2004-2006	85	82	79	77
2005-2007	84	80	77	N/A



**Figure 1.** Trends in annual 4<sup>th</sup> highest 8-hour ozone values (ppb) at the Longview, Tyler, and Karnack monitors in Northeast Texas

### Analysis of 2007 Ozone Data

NETAC has reviewed 2007 ozone concentrations recorded at the Longview, Karnack, and Tyler ozone monitors through the date of this report. Although 2007 is not yet over, an ozone exceedance has never been recorded in December at the Longview, Tyler, or Karnack monitors; therefore, we present a preliminary analysis of the 2007 ozone season. For the purposes of the analysis presented below, we define a high ozone day to be one on which the daily maximum 8-hour average ozone concentration was greater than 80 ppb at one or more of

the three Northeast Texas monitors. There were six such days in 2007. One additional day with peak 8-hour ozone 77 ppb is included as a high ozone day because the Longview monitor had a 1-hour concentration of 97 ppb on this day (May 12).

Analysis of the high ozone days in Northeast Texas in 2007 showed:

- Four high ozone days at Longview were associated with northerly winds and a rapid early morning rise in ozone. These sharp ozone increases during times of northerly winds are consistent with the impact of a plume containing highly reactive volatile organic compounds (HRVOCs) from the chemical plant complex owned by Eastman, Westlake and Flint Hills (formerly Huntsman).
- On several high ozone days at Longview, elevated sulfur dioxide was observed at the same time as the ozone peak, indicative of plume impacts from nearby power plants. On two of these days, winds were northerly, indicating possible impacts from power plants in Titus County. On three of these days, winds were northeasterly, consistent with possible plume impacts from the Pirkey Power Plant.
- Regional 8-hour ozone levels in air entering the region were 60 ppb or higher on both of the days when the Longview monitor recorded values of 85 ppb or higher.
- Four high ozone days at Longview and one at Tyler were associated with ozone production from local sources superimposed on a regional 8-hour ozone background of 60 ppb or greater.
- The sole high ozone day at the Tyler monitor was likely due to an impact by the City of Tyler urban plume on a day with high (~70 ppb) regional background ozone.

2007 was somewhat different from the two preceding years in that high ozone days were most often associated with northerly or northeasterly winds. In 2005 and 2006, winds were frequently from the east or southeast on high ozone days. The 1999 episodes modeled for the CAAP were similar to the easterly/southeasterly high ozone days seen during 2005-2006. However, the surface monitoring data from the 2007 ozone season do not change the conceptual understanding of the factors leading to ozone levels exceeding the 8-hour ozone standard in Northeast Texas. In 2007 as well as 2005, 2006, and the CAAP episodes, high ozone in Northeast Texas was caused by emissions from sources within Northeast Texas superimposed on a high regional ozone background.

### **Emission Reduction Measures**

NETAC's CAAP includes modeling for a 1999 episode and a demonstration that the area expects to remain in compliance with the 8-hour ozone standard through 2007 and 2012 due to a combination of local and regional emission reduction measures. NETAC has developed a new ozone model for May-June 2005 and will reevaluate the effectiveness of local emission reductions and other expected emissions changes through 2012. The local measures included in the CAAP attainment demonstration and the new ozone model are reductions in NO<sub>x</sub> emissions

at several facilities operated by AEP and Luminant (formerly TXU) in Northeast Texas and both NOx and VOC reductions at the Eastman Complex. The local NOx and VOC reduction measures have been in place since 2005 or earlier. EPA's October 17, 2005 memorandum to EAC areas provided guidance on reporting progress with implementing local emission reductions. The status of the six local measures discussed in the CAAP at the end of 2005 is reviewed below.

### **1. Eastman Chemical Company enhanced leak detection/repair (LDAR)**

- Summary: Enhanced leak detection/repair programs were implemented in the cracking plants and polyethylene units at Eastman Chemical Company near Longview.
- Status: Measures were implemented by July 11, 2005 and are documented by Voluntary Emissions Reduction Permits #47007, #48588 and #48590.
- Implementation date: July 11, 2005.
- Emission reductions: 0.63 TPD of VOC.
- Resources: Eastman Chemical Company implemented the LDAR programs.

### **2. Flint Hills Resources (formerly Huntsman Chemical Company) enhanced leak detection/repair (LDAR)**

- Summary: Enhanced leak detection/repair programs at Flint Hills Resources chemical plant near Longview.
- Status: Measures were implemented in the first half of 2005 and are documented by Flexible Plant-wide Applicability Permit Limit (PAL) Permit # 18105.
- Implementation date: 2005
- Emission reductions: 0.08 TPD of VOC by 2005; 0.12 TPD of VOC by 2008
- Resources: Huntsman Chemical Company implemented the LDAR programs

### **3. NOx reduction strategies for gas compressor engines**

- Summary: Implement pilot project to demonstrate the effectiveness of retrofitting small (< 500 hp), spark-ignited, rich-burn compressor engines used in natural gas production with exhaust catalysts and electronic air/fuel ratio controllers in order to facilitate TERP or other TCEQ funding for such sources.
- Status:
  - In 2005, NETAC completed a pilot project to demonstrate the effectiveness and cost-effectiveness of this strategy on five engines within the NETAC area. At the end of 2005, these controls were achieving an estimated emission reduction of 0.1 TPD NOx. This emission reduction is not claimed because the pilot project was a demonstration project, not an enforceable emissions reduction strategy.
  - Based on the success of the pilot project, NETAC sought funding in 2005 for wider and enforceable implementation of this strategy through the TCEQ "TERP" and "SEP" programs.
  - In 2006, TCEQ's TERP program informed NETAC that compressor engine retrofits with catalyst technology would not be TERP-eligible because the technology was not certified or verified by EPA.

- On January 31, 2007, TCEQ's SEP coordinator informed NETAC that SEP funds would not be available for installation of catalyst technology on compressor engines because that technology lacked EPA certification or verification.
- Senate Bill 2000, filed by Senator Eltife of Tyler, was enacted by the Texas Legislature on May 25, 2007 and signed by the Governor on June 15, 2007. This bill authorizes implementation of a program to retrofit gas compressor engines with catalyst technology. However, no appropriation was provided.
- On June 21, 2007, TCEQ made available \$4 million to fund compressor engine retrofits with catalyst technology to implement SB 2000.
- As of October 30, 2007, 3 compressor engine retrofits had been performed in all of Texas, and only one of these was located in Northeast Texas.
- NETAC has undertaken further outreach in order to promote participation in the SB2000 program.
- Implementation date: NETAC completed its pilot program to demonstrate gas compressor controls in August 2005. TCEQ implemented a compressor engine retrofit program on a wider scale using the funding announced on June 21, 2007.
- Emission reductions: No enforceable emissions reductions to date, although the one compressor engine retrofit performed in Northeast Texas (in Harrison County) is a small emission reduction in NETAC's area.

#### **4. DOE "Clean Cities Program" voluntary on-road vehicle emission reductions**

- Summary: Funding for clean-fueled propane vans for local transit agencies.
- Status: 23 propane-fueled vans placed in service by the end of 2005
- Implementation date: On-going
- 0.5 TPY VOC 2.5 NO<sub>x</sub> TPY
- Funded by DOE's Clean Cities program

#### **5. Public awareness program**

- ETCOG runs public awareness programs for the NETAC area. Includes: ozone watch and warning communications network between local government & industries to communicate ozone action day forecasts issued by TCEQ; a NETAC website; public service announcements; school programs and teacher training workshops; distribution of public information & educational materials; and an Annual Ozone Season kick-off meeting for the NETAC area.
- ETCOG runs the NETAC public awareness program in 2007 as in previous years.
- Implementation date: On-going through 2008.
- Emission reductions: This measure has program-based benefits but specific emission benefits are not quantified.
- Funded by the State of Texas through Rider funding for near-nonattainment areas (NNAs)

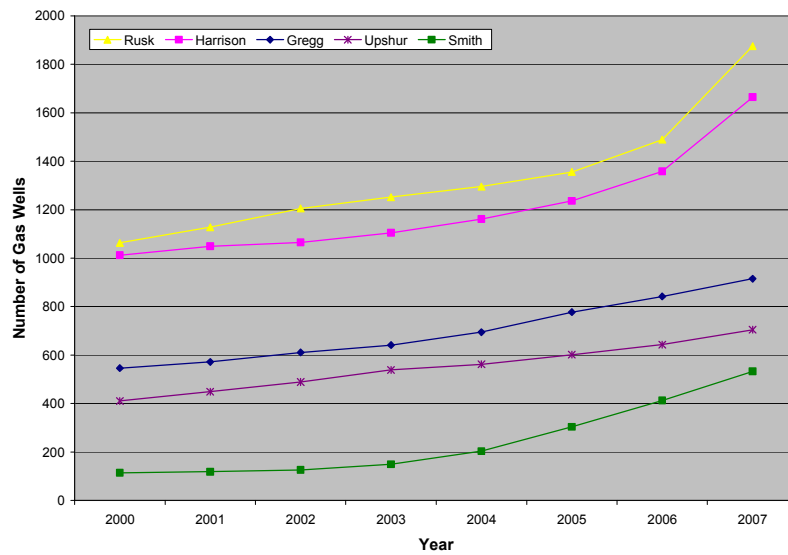
#### **6. Energy efficiency programs**

- Summary: The City of Tyler program includes: building lighting; HVAC & Controls Upgrades; Traffic Light Upgrades; Park Lighting Upgrades; and Wastewater Plant Motor and Controls Upgrades. The City of Longview program includes: Improvements in lighting; HVAC systems; swimming pool operations; and purchase of energy efficiency rated equipment for Public Safety communications; The City of Marshall is initiating an energy efficiency plan with assistance from Texas A&M University.
- Status: On-going.
- Implementation date: 2003-2008
- Emission reductions: Emission benefits for the NETAC area are not quantified because it is difficult to determine where the reduced electrical generation would occur.

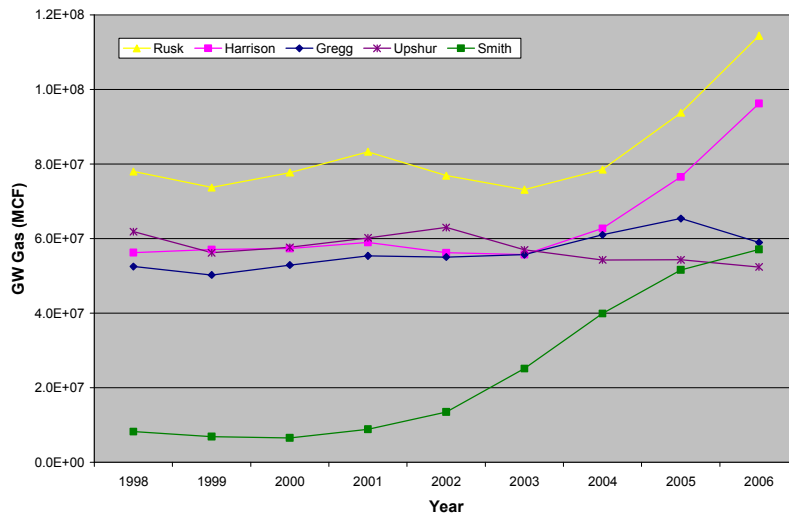
## 7. Additional Measures to Reduce Emissions

- Incentive Grants to Reduce Emissions from Gas Compressor Engines.

The CAAP also describes additional local emission reduction strategies that go beyond the attainment demonstration to further improve air quality in Northeast Texas. In particular, NETAC initiated a “pilot program” to demonstrate NO<sub>x</sub> emission reduction technologies for gas compressor engines. The purpose of this program is to retrofit small (< 500 hp), spark-ignited, rich-burn compressor engines used in natural gas production with exhaust catalysts and electronic air/fuel ratio controllers. NETAC’s 1999 emission inventory for the CAAP modeling estimated that 32 tons/day of NO<sub>x</sub> emissions are generated by a large number of relatively small gas compressor engines that are widely distributed throughout the five county area. A recently completed 2005 emission inventory estimated that 44 tons/day of NO<sub>x</sub> are emitted from small gas compressor engines in the five county area. This is a 27% increase in NO<sub>x</sub> emissions over a six year period. Natural gas well and production data from the Texas Railroad Commission show the reason for this upward trend in NO<sub>x</sub> emissions. Figure 1 shows that the number of gas wells in all 5 NETAC counties has increased during the 2000-2007 period. The increase in the number of wells with time means more gas compressor engines are operating within the 5-county area, which is consistent with the increasing NO<sub>x</sub> emissions noted in the 2005 emission inventory. Figure 2 shows natural gas production from 1998-2006. Note that natural gas production is increasing in some counties and decreasing in others. The ratio of gas production to well number varies with time, indicating that the amount of work required to extract gas from the ground is also changing. In counties where the ratio decreases, we expect that compressor engines are working harder to remove natural gas from the ground, and that this added effort causes NO<sub>x</sub> emissions to rise above and beyond the increases due to the addition of new wells.



**Figure 1.** Number of natural gas wells for 2000-2007 for each County in the NETAC 5-County Area.



**Figure 2.** Natural gas production (millions of cubic feet) for 1998-2006 for each County in the NETAC 5-County Area.

To date, NETAC's continuing pilot program has retrofitted five gas compressor engines and demonstrated that NOx emissions can be reduced by approximately 96% at a cost effectiveness of less than \$200 per ton of NOx reduced. NETAC sought funding in 2005 for broader implementation of the gas compressor retrofit program through TCEQ's supplemental

environmental projects (SEP) program and through the TERP program. To date, funding has not been authorized under either program.

NETAC has continued its efforts to implement a voluntary emission reduction program for gas compressor engines by obtaining a funding source. Representatives of NETAC met with TCEQ Chairman Kathleen Hartnett White in December 2006 to explore options and develop plans for funding. At the recommendation of Chairman White, NETAC conducted a forum with representatives of TCEQ, EPA, gas compressor engine operators and NETAC Policy Committee members in March 2007. At that forum, NETAC representatives requested that TCEQ review NETAC's pilot project report to determine whether it could be used to satisfy the criteria of TCEQ's TERP guidelines by establishing verification of catalyst technology on the basis of the data and analyses presented in the study.

Following NETAC's forum on gas compressor engines, NETAC representatives have worked closely with Senator Kevin Eltife to develop legislation that would provide a funding mechanism for a voluntary emission reduction program from gas compressor engines. The resulting legislation, Senate Bill 2000, was approved by the Texas Legislature and signed by the Governor, but no funding was appropriated. However, on June 21, 2006, TCEQ announced that it would provide funding of \$4 million to implement the compressor engine retrofit program authorized by SB 2000.

NETAC and ETCOG are working with TCEQ to implement the compressor engine retrofit program using the \$4 million in funding made available by TCEQ. This funding can be utilized to achieve reductions earlier than required by TCEQ's East Texas Combustion Rule discussed below. Additionally, the retrofit program applies to engines below the 240 hp range specified in TCEQ's rule, thus providing controls to a broader group of engines that covered by TCEQ's rule.

- East Texas Combustion Rule

In June 2007, the TCEQ adopted an East Texas Combustion Rule as part of the Dallas-Fort Worth 8-Hour Ozone SIP Revision. The rulemaking will subject owners or operators of stationary sources of NO<sub>x</sub> in the Dallas-Fort Worth eight-hour ozone nonattainment area, as well as in specified counties in the northeast Texas area, to more stringent emission control, monitoring, testing, recordkeeping, and reporting requirements. The Rule applies to rich-burn engines with horsepower greater than 240 hp. The preamble to the proposed rule published in December 2006 noted that catalyst technology is expected to be the primary control technology for rich-burn, gas-fired engines. The rule applies in 33 East Texas Counties, and the compliance deadline is March 1, 2010. An analysis performed by the TCEQ suggests that NO<sub>x</sub> reductions from the East Texas Combustion Rule for the 5-county Tyler-Longview area would be approximately 7 tons per day. TCEQ has stated that adopting the rule would not preclude implementation of voluntary emission reduction programs before the rule's compliance date.

- Luminant Emission Reductions at Martin Lake Power Plants

Luminant has made a commitment to reduce NOx emissions from coal-fired power plants by 20% below 2005 annual emissions. To implement this commitment, Luminant has filed with TCEQ applications for the installation of selective catalytic reduction (SCR) technology on the three electric generating units at the Martin Lake station. During TCEQ's June 13, 2007, consideration of a Luminant permit application for a new generating unit, TCEQ commissioner Larry Soward asked for clarification concerning the Luminant commitment. Luminant's legal counsel advised Commissioner Soward and the commission that the commitment was evidenced by the applications to install SCR controls on the Martin Lake units and the Sandow-4 unit. Luminant's legal counsel reaffirmed that these emission reductions will occur.

On July 17, 2007, the NETAC Policy Committee adopted a resolution urging TXU (now Luminant), Kohlberg Kravis Roberts, and Texas Pacific Group to cooperate with NETAC and TCEQ in making its proposed emission reductions legally enforceable. NETAC's co-chairs met with Luminant in 2007 to discuss plans for additional controls at the Martin Lake units. Luminant has promised to provide NETAC additional information during the first quarter of 2008.

### **NETAC's Stakeholder Process**

In 1995, local elected officials and other leaders in local government, business and industry created Northeast Texas Air Care (NETAC) in order to provide leadership and guidance in addressing ozone air quality issues in a five county area consisting of Gregg, Harrison, Rusk, Smith, and Upshur counties. A policy committee consisting of representatives of local government, business and industry, the general public and environmental interest groups governs NETAC. (Attachment 1)

From its inception, NETAC has emphasized the need to ensure that air quality planning activities are developed using scientifically sound techniques. In order to achieve this objective NETAC created a Technical Advisory Committee to undertake, supervise, and guide technical studies such as emission inventory development, air quality modeling and control strategy development, and specialized monitoring studies. The Technical Advisory Committee reports to the policy committee. The Technical Advisory Committee consists of representatives from local government, local business and industry, EPA technical staff, TCEQ technical staff, Texas Department of Transportation planning staff, and the general public and environmental interest groups (Attachment 2).

NETAC is actively involved in public education and outreach programs concerning ozone air quality issues. This work is guided by NETAC's Public Education/Outreach Committee, which consists of representatives from local government, local business and industry, TCEQ staff, and environmental interest groups (Attachment 3). The Public Education/Outreach Committee reports to the NETAC Policy Committee.

NETAC receives staff support for its activities from the East Texas Council of Governments (ETCOG), which receives and administers grant funds provided by the Texas Legislature for air quality planning activities.

NETAC and its subcommittees meet on an as-needed basis. All meetings are open to the public and are posted at the East Texas Council of Governments and advertised through the distribution of information packets to local media outlets.

During the second half of 2007, the NETAC Technical Advisory Committee held meetings on June 28 and October 30, and will meet again on December 19. The NETAC Policy Committee met on July 17 and October 30.

During the June 28 and October 30 meetings, the Technical Committee discussed: (a) the status of EPA's proposed revisions to the ozone NAAQS; (b) progress on funding NETAC's gas compressor pilot project to demonstrate engine retrofits that reduce NOx emissions in Northeast Texas; (c) the impact of fires on high ozone days at the Longview monitor during May-June, 2005; (d) measurements of VOCs at the Longview CAMS 19 during 2005-2006 and 2007; (e) the 2007 ozone season and current attainment status; (f) high ozone events during 2007; (g) ozone modeling of May-June 2005; (h) compressor testing for NETAC's Pilot Project; and (i) the status of future reduction strategies in Northeast Texas (gas compressor engine rule, SB2000, and Luminant's reductions at Martin Lake).

During the July 17 and October 30 meetings, the Policy committee discussed: (a) the status of EPA's proposed revisions to the ozone NAAQS; (b) funding for the gas compressor engine retrofits program; (c) transportation conformity; (d) New Source Review in nonattainment areas; (e) criteria for maintaining policy committee membership; (f) TCEQ rulemaking to implement HB 3732 on advanced clean energy projects; (g) the 2007 ozone season and current attainment status; (h) EPA's review of the ozone standard and TCEQ's comments; (i) the status of future reduction strategies in Northeast Texas (gas compressor engine rule, SB2000, and Luminant's reductions at Martin Lake). The Policy Committee also (j) approved a resolution concerning TXU emission reduction plans at Martin Lake and (k) presented a Clean Air Achievement award to Senator Kevin Eltife.

## **Public Outreach**

NETAC is actively engaged in public education and outreach activities concerning ozone air quality issues. The public outreach committee organized an ozone season awareness kickoff event for April 26, 2007. The purpose of the "kickoff event" was to raise public awareness of ozone air quality issues and encourage public support for programs designed to minimize ozone formation.

NETAC Public Education/Outreach activities for 2007 have consisted of the following:

- Hosting the NETAC website ([www.netac.org](http://www.netac.org)). The website is regularly updated with meeting dates, associated agendas and enclosures for Committee meetings. The public can also find minutes of past meetings, various air quality reports, and a directory of all participants in NETAC.

- In cooperation with the Texas Commission on Environmental Quality, NETAC and local governments in the area provide “ozone action alerts” for the public on days when TCEQ predicts meteorological conditions are favorable for high ozone formation. Notification is provided through the NETAC website, local government public access channels, and the display of ozone alert flags.
- The Annual Ozone Season Awareness Event was held in Tyler at the Rose Garden Center on April 26, 2007. Speakers at the event included Theresa Pella, Air Quality Planning Section Manager, TCEQ, who discussed air quality issues affecting East Texas. Other speakers included Jim Mathews, NETAC Legal Counsel, who gave the NETAC Progress Report for 2007 and Steve Dayton, TERP Grant Contract Development Team Leader, TCEQ, who discussed the status of TERP activities in Northeast Texas.
- NETAC also sponsored a series of public service announcements (PSAs) that ran on several local radio stations from May through September 2007. A series of five different PSAs sought to educate the public about what they can do at both work and home during the ozone season to reduce their impact on air quality readings.
- The NETAC Public Education/Outreach Committee approved the purchase of book covers for school districts in the five county region for the 2007-2008 school year. The book covers have an informational theme as well as including information on where to learn more about air quality. This is one of the most well received activities as ETCOG receives numerous thank you letters from students and school administrations.
- The NETAC Public Education/Outreach Committee approved the purchase of additional signage for the inside of transit buses operated by ETCOG Rural Transit. The signage promotes the air quality benefits of public transit and the alternative-fueled buses operated by these transit providers.

## **Technical Activities**

NETAC technical activities during 2005 and 2006 were focused on ambient air monitoring. During 2007, there has been a shift in emphasis from monitoring to emission inventory development and ozone modeling and with the goal of understanding the causes of episodes of elevated ozone concentrations at the Longview monitor and developing a plan for maintaining attainment through 2012. NETAC carried out the following technical activities in the second half of 2007 to support the EAC and CAAP:

### Air Monitoring

For several years, NETAC has collected canister VOC samples at CAMS 19 to augment the TCEQ’s monitoring activities at Longview. VOC samples collected at CAMS 19 in August-September, 2006 were analyzed to identify what categories of VOCs were present and their potential to form ozone. Light alkanes (with less than 8 carbon atoms) consistent with composition of natural gas were the most frequently detected VOCs at Longview. They were

present in all samples, and the individual VOC species were well-correlated, suggesting a common source such as oil and gas production. VOC species associated with oil and gas production have a low tendency to form ozone, but they were a constant presence at CAMS 19, and their concentrations were large enough that they could make a significant contribution to ozone formation. The ozone forming potential of biogenic emissions as well as the contribution of highly reactive anthropogenic volatile organic compounds was determined, but limitations on the spatial and temporal sampling in this data set make it likely that their contributions were underestimated.

NETAC continued to continue to collect VOC data in 2007. During the months of August and September, 2007, near-continuous VOC monitoring was performed at CAMS 19 using a new technology. VOCs were analyzed using photo-acoustic spectroscopy (PAS) every 5-10 minutes, 24 hours a day, providing a nearly continuous record of non-methane hydrocarbon concentrations speciated to several broad classes.

NETAC conducted an aircraft study in August and September of 2006 to obtain data on ozone contributions from local sources in Northeast Texas and from ozone transport. This is the third NETAC aircraft study; the first was performed in August/September 2003 and the second in August/September, 2005. In 2006, the aircraft was operated by Baylor University and collected data for ozone, nitrogen oxides (NO<sub>x</sub>), total reactive nitrogen (NO<sub>y</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), formaldehyde (HCHO), light scattering by haze, total olefins, and meteorological parameters. Successful flights were completed on seven days from August 9 to November 3, 2006. The aircraft observed ozone production from sources in Northeast Texas including chemical plants, power plants, forest fires, and urban areas. The aircraft measured ozone transport into Northeast Texas across the border with Louisiana. One flight was focused on characterizing emissions from the Eastman Complex. During this flight, the aircraft investigated the spatial variations of highly reactive volatile organic compounds and NO<sub>x</sub> in the immediate vicinity of the facility and in a plume extending downwind of it.

NETAC operated a radar profiler at Longview CAMS19 from September, 2006 to September, 2007 to collect upper air data on wind speed and direction. The profiler was put in place as part of the TexAQS II field study, and NETAC extended the deployment through the 2007 ozone season. The data were incorporated into conceptual models of high ozone days that occurred in 2007. The data have been archived so that they would be available for future analysis and modeling studies.

### Evaluating Emissions Growth

In 2007, NETAC focused on further refinement of the 2005 emission inventory for Northeast Texas and began work on the development of a 2012 future year emission inventory. High priority was placed on improving the inventory of NO<sub>x</sub> emissions from compressor engines associated with natural gas production. NETAC is developing an emission inventory for 2012 focused on Northeast Texas that incorporates growth projections and the effects of planned controls. Several activities were undertaken to inform those projections of growth and controls. During the first half of 2007, NETAC analyzed natural gas well and production data from the Texas Railroad Commission with the aim of understanding trends in NO<sub>x</sub> emissions associated

with gas compressor engines (See Figures 1 and 2). NETAC also cataloged potential emission reductions through 2012 that will be effected through the TERP program. The impact of future emissions reductions under the CAIR and BART programs was assessed.

Because power plants are a major source of NO<sub>x</sub> in Northeast Texas, it is important to incorporate into the 2012 inventory the effects of new power plants as well as new controls in existing plants. The TCEQ has received permit applications to construct several new coal-fired electrical generating units (EGUs) in eastern Texas to meet future energy demand in the state. During the first half of 2007, representatives of NETAC met with the firms that acquired the former TXU (now known as Luminant): Kolberg, Kravitz, Roberts & Co. and Texas Pacific Group. These prospective owners were seeking input on emission reduction plans in light of announced decisions to cancel construction of 8 of Luminant's 11 proposed new coal-fired electric generating units in Texas. NETAC representatives urged the prospective owners to proceed with implementation of previously announced plans to implement selective catalytic reduction (SCR) controls on the 3 existing units at Martin Lake. Luminant filed permit applications with TCEQ to authorize implementation of SCR controls on the three existing units at Martin Lake.

NETAC previously modeled the impact of 11 proposed new EGUs and Luminant's offset strategy. The modeling data indicate that installation of SCR on the 3 existing Martin Lake units would reduce the 2007 design value at Longview by approximately 1.4 ppb. NETAC will continue to closely follow Luminant's plans for Martin Lake and other power plants.

### Ozone Modeling

In 2006, NETAC completed seasonal ozone modeling for June to September of 2002 and May to September of 2005. NETAC's 2005 seasonal ozone model is being refined to develop a SIP-quality episodic/seasonal ozone model. This model will be used to understand the reasons for recent ozone trends in Northeast Texas through an examination of the influences of regional transport, local sources and meteorological variability on Northeast Texas ozone levels. The emission inventory updates described above will be integrated into the model, and their impact will be assessed. The episodic/seasonal modeling will be evaluated against monitoring data. Future year modeling of 2012 will be performed using the emission inventory described above. The impact of new emissions sources and controls in Northeast Texas will be evaluated. The role of regional transport will be examined over time to determine whether trends in ozone transport are improving, and how transport and meteorology would be expected to influence ozone levels in Northeast Texas in the future. The model will also be used to evaluate the impacts on Northeast Texas of potential new regional emission sources and the potential benefits of regional emission reduction strategies. The model will guide any steps that may be taken to maintain compliance with 8-hour ozone standard.

In the second half of 2007, a 4-km resolution meteorological database for the ozone model was completed and evaluated against observed weather data. Ozone modeling of the May-June 2005 period was performed and the model was evaluated against TCEQ monitoring data. The model was found to simulate measured surface ozone with good accuracy. During

November of 2007, TCEQ made available a revised emission inventory for 2005. The incorporation of this inventory into the ozone model was initiated during the second half of 2007, as well the addition of hourly continuous emissions monitoring data for large NO<sub>x</sub> sources in the region, an updated, high resolution biogenic emission inventory, and a new, state-of-the-science chemical mechanism.

## **Attachment 1**

### NETAC Policy Committee

- Gregg County
  - Judge Bill Stoudt, Co-Chair
- Harrison County
  - Judge Richard Anderson
- Rusk County
  - Judge Sandra Hodges
- Smith County
  - Judge Joel Baker
- Upshur County
  - Judge Dean Fowler
- City of Gilmer
  - Jeff Ellington
- City of Henderson
  - Mayor Buzz Fullen
- City of Kilgore
  - Jeff Howell
- City of Longview
  - Mayor Jay Dean
  - Councilman John Bolster
- City of Marshall
  - Mayor Ed Smith
  - Janet Cook
- City of Tyler
  - Mayor Joey Seeber, Co-Chair
  - Greg Morgan
- Longview Economic Development Corp. (LEDCE)
  - John Stroud
- Marshall Economic Development Corp. (MEDCO)
  - Cliff Todd
- Tyler Economic Development Corporation (TEDCO)
  - Tom Mullins
- WE CAN
  - Ms. Tammy Campbell
- AEP/SWEPCO
  - Keith Honey

- Delek Refining
  - No current representative
- Eastman Chemical Company
  - Darrell Rachels
- Luminant
  - David Duncan

## Attachment 2

### NETAC Technical Advisory Committee

- City of Longview
  - Robert Ray, Assistant City Attorney
  - Karen Owen, Longview MPO
- City of Marshall
  - Janet Cook
- City of Tyler
  - Greg Morgan
  - Angela Choy
- EPA
  - Carrie Page
  - Erik Sndyer
- TCEQ
  - Keith Mars
  - Doug Boyer
  - Charles Murray
- NETAC General Counsel,
  - Jim Mathews, Mathews and Freeland
- TxDOT
  - Dale Spitz
- AEP/SWEPCO
  - Kelly Spencer
  - Kimberly Hughes
  - N. N. Dharmarajan
  - Bruce Moore
- CenterPoint Energy
  - Laura Guthrie
  - Lynette James
- Delek Refining-Oil & Gas Company
  - No current Representative
- Eastman Chemical Company
  - Sharon Wellman
- Huntsman Chemical Company
  - Dennis Leahy
- Luminant
  - David Duncan
  - Dick Robertson

- Rick Hanning
- Caddo Lake Institute, Inc.
  - Rick Lowerre, Lowerre & Frederick
- Environmental Defense Fund
  - Mr. Ramon Alvarez, Ph.D.

### **Attachment 3**

#### NETAC Public Education/Outreach Committee

- Robert Ray, Assistant City Attorney, City of Longview
- Greg Morgan, Project Coordinator, City of Tyler
- Janet Cook, City of Marshall
- Sharon Wellman, Eastman Chemical Company
- Rick Hanning, Luminant
- Kathy Bell, TCEQ-Region 5 Air Program
- Leigh Ann Brunson, TCEQ-Austin
- Kelly Spencer, AEP/SWEPCO
- Scott McCloud, AEP/SWEPCO