

TexAQS II

An Assessment of
IMPLEMENTATION PLANS



Prepared for
The Partnership for Texas Air Quality Field Studies

Project H33-2004C2
By James W. Thomas
November 15, 2004

INRODUCTION – PURPOSE OF PLAN

The most significant advancements in understanding ozone formation, other air pollutants, and the air quality science supporting this understanding has been from major intensive air quality measurement campaigns commonly referred to as field studies. Tremendous progress has been made in the understanding of air quality science as a result of previous field studies, particularly the TexAQS 2000 field study conducted in August and September of 2000. The scientific information and findings produced from this study through the subsequent investigations and analysis provided the basis for advancements in understanding of air quality science and improvements to the tools used in air quality planning. A synthesis of the research work from TexAQS 2000 was recently published by Dr. David T. Allen, the University of Texas @ Austin as a project funded by the Texas Environmental Research Consortium (TERC). This document, entitled “State of the Science of Air Quality in Eastern Texas: Major Scientific Findings and Recommendations” is available on the TERC website at: <http://www.harc.edu/harc/Projects/AirQuality/Projects/Status/>.

Now, researchers from universities, state and federal agencies, private industry, and local governments are joining forces to conduct a second major field study to address air quality issues in east Texas (TexAQS II). Anticipated participants in TexAQS II will include the Texas Commission on Environmental Quality (TCEQ), a consortium of Texas universities, national labs and universities from around the world, and other regional stakeholders. Leadership will be provided by key participants from the University of Texas-Austin, the University of Houston, Texas A&M, Rice University, Lamar University, Baylor University, the Texas Commission on Environmental Quality, the Texas Environmental Research Consortium, the Texas Air Research Center, the National Oceanic and Atmospheric Administration, the Department of Energy, and members of the Southern Oxidants Study.

A draft Science Plan for the study was published and distributed in February 2004 for review and comment to participants and other interested parties. The responsibility for developing the final version of this plan is vested with the TCEQ, with input provided by a large group of stakeholders and will be published before by the end of January, 2005. As part of the responsibilities of the Study Coordinator for the Partnership for Texas Air Quality Field Studies and as a deliverable under the contracts supporting the Study Coordinator position, a larger document providing an assessment of the requirements for the plan is being provided to the Partnership members during September.

This document, an Assessment of Implementation Plans (AIP), is being developed to present the specific plans for the field study aimed at achieving to the extent possible the goals and objectives presented in the Science Plan. The AIP will restate the objectives of the Science Plan,

with some slight modification dictated by review and discussion since the draft was made public and will organize the specific field study activities under these objectives. A budget summary is included providing anticipated cost for the planned activities by priority and a comparison to the projected funding. Subsequent sections of the AIP will present the planned ground based monitoring networks for the study and the aircraft monitoring platforms to be used during the study. And the final two sections will address the communications plan and the data management plan for the study.

SCIENCE PLAN GOALS AND OBJECTIVES

The goals and objectives presented have been taken directly from the TexAQS II Science Plan and represented here for informational purposes with some slight modification. Some of the wording in the specific objectives has been changed to reflect better the intent of the study.

STUDY GOALS

Improved scientific understanding emerging from TexAQS II will support improvements in:

- 1. Regulatory analyses and prediction tools used for developing ozone, and/or regional haze State Implementation Plans if required for the state of Texas; and*
- 2. Assessments of the effectiveness of previously implemented air quality management strategies for one-hour ozone.*

STUDY OBJECTIVES

The study will examine ozone and regional haze formation, accumulation and transport. This will include examination of meteorological and chemical processes.

Specifically, the study will:

Characterize air pollution meteorology in all seasons: Previous air quality studies have been conducted during the months with the greatest frequency of air pollution episodes – August and September. Elevated air pollution concentrations can occur in all seasons, however, and the meteorology associated with episodes of high pollution will vary significantly from season to season. Therefore, TexAQS II measurements will be conducted over an 18-month field study period.

Refine and evaluate inventories of ozone precursor emissions: Findings from previous air quality studies indicate that some segments of the emission inventories critical to understanding ozone formation and accumulation are significantly underestimated or poorly understood. In particular, inventories of industrial VOC emissions are significantly underestimated. It is vital to improve point source inventories to account for magnitude and the variability in emissions. Other categories including, on-road emissions, non-road emissions, and biogenic emissions should be assessed for accuracy of magnitude and the spatial distribution of emissions.

Assess the extent of ozone transport into, within and out of Texas: Previous air quality studies have revealed that intrastate and interstate transport of ozone is substantial in the eastern half of Texas (IH-35/IH-37 corridor and east). Measurements indicate that, under some meteorological conditions, a substantial fraction of the pollutant concentrations in the eastern half of Texas are

the result of transport of North American continental air masses into the state. To better differentiate regional and local contributions to ozone, an expanded sampling network suitable for characterizing intercity, interstate, and international transport of ozone will be deployed for the 18-month field study period.

Develop additional scientific understanding of the processes controlling the formation and accumulation of ozone (both urban and regional): TexAQS 2000 provided insights into the chemical and meteorological processes that have the most effect on ozone formation in the greater Houston-Galveston area. Mixing and transport of ozone and ozone precursors play critical roles in ozone and regional haze formation. Efforts must be undertaken to evaluate models and improve the ability of models to operate with fine scale spatial resolution and to characterize regional scale transport of air pollutants throughout all parts of Texas. The data from this field study should provide additional understanding of the emissions and processes affecting the ozone concentrations in Texas, especially regionally.

Develop additional scientific understanding of the processes controlling the formation, accumulation, and transport of regional haze: The study is primarily being conducted for ozone purposes; however, additional data and information will be obtained to assist in the assessment of regional haze issues in Texas and preparation of the Regional Haze SIP.

The broad objectives outlined above for TexAQS II will present challenges for planning a successful study. The purpose of the AIP is to identify specific activities under each of the objectives and to define approaches to complete to the extent possible the study objectives, constrained by the resources available to the study. The current document is an initial draft that is subject to revision and will evolve as the planning effort progresses over the next several months.

TexAQS II is expected to be conducted during an eighteen-month period, from May 2005 through October 2006. The work of the study is expected to occur in three time segments:

- Pre-Field Study work and planning during 2004
- Collection and possible concurrent analysis of meteorological data, pollutant concentrations, and pollutant transport during an eighteen-month period (May 2005 to October 2006).
- Major Field intensive activities for 30-45 days, mid August through mid to late September, 2006.

SUMMARY OF ANTICIPATED FUNDING COMPARED TO RESEARCH ACTIVITY COST

Anticipated Funding

Funding for TexAQS II is projected to be in the approximate range of \$29-\$31 million dollars for FY 2004-FY 2007 depending on the success of various funding request. This projection includes anticipated funding of \$10.15 million for TexAQS II from a federal funding request of \$13 million, funding of \$5.00 million from TERC state funds, \$5.48 million from the TCEQ Technical Analysis Division's operating budget, a potential \$5.0 million from the state legislature through a TCEQ exceptional item request for FY06-FY07, and \$2.00 million from TARC research funding. Other potential funding sources are available under grant programs such as the NTRD program, federal grant programs such as NASA's grant program, funding for programs which are funded from the TERP program due to receipts to the fund exceeding initial projections such TERC and NTRD, and the potential for unexpended EPA PPG grant funds and other special purpose funding from EPA such as border grant funds being received by the TCEQ. The upper range is based on the assumption that all of the above funding sources would materialize in a timely manner.

Anticipated Research Activity Cost Funded By TexAQS II

Based on the summaries of activities by objective previously presented in this report, projects totaling approximately \$4.9 million were funded in FY2004 & FY2005. This response in funding for these years shows TCEQ and TERC have eagerly embraced the need for funding TexAQS II projects. Unfunded projects from the TCEQ's solicitation for TexAQS II research activities based on these summaries total \$26 million, which includes cost for the intensive portion of TexAQS II and supplemental funding for NOAA if their budget is not restored to the requested level. This does not account for projects place in a deferred status by the SCC work groups, nor does it take into consideration projects that may subsequently be identified.

Total project cost for TexAQS II is currently estimated to be in the range of \$26 - \$27 million if funding is available at the higher level estimate, exclusive of the NOAA funding. Failure to receive funding at the higher level could reduce the study cost to some lower range which would be dependent on the funding received.

Anticipated In-kind Support and Participation in TexAQS II

In-kind support which may be furnished to TexAQS II through the participation of NOAA, DOE, and other funded researchers is estimated to range from \$10 - \$15 million. The spread in the estimate is due to the uncertain status of participant's budget request. If funding is provided at the requested level, the higher figure would represent a good first estimate of the in-kind support expected for the study.

Budget Summary of Research Activity Cost Compared to Anticipated Funding

ESTIMATE OF \$ AVAILABLE AND \$ NEEDED
(MILLION \$)

YEAR	AVAILABLE FUNDING BY SOURCE					TOTAL FUNDING REQUESTED		
	UNIVER.**	TCEQ***	TERC*	TARC*	TOTAL	HIGH	MEDIUM	H + M
2004	\$0.40	\$0.10	\$0.50	\$0.50	\$1.50	\$3.04	\$1.61	\$4.65
2005	\$3.33	\$2.38	\$1.25	\$0.50	\$7.46	\$9.01	\$2.60	\$11.61
2006	\$3.33	\$6.50	\$1.25	\$0.50	\$11.58	\$6.72	\$1.61	\$8.33
2007	\$3.33	\$6.50	\$1.25	\$0.50	\$11.58	\$3.76	\$0.95	\$4.71
	\$10.39	\$15.48	\$4.25	\$2.00	\$32.12	\$22.53	\$6.77	\$29.30
	TOTAL AVAILABLE FUNDS				\$32.12			

NOTES:

- * BASED ON 25% TERC FUNDING AND 100% TARC FUNDING TO SUPPORT TexAQS II
- ** ASSUMES \$10 MIL TO THE UNIVERSITY ALLIANCE EXCLUSIVE OF \$2 MIL TO HARC FOR TRANSPORTATION RESEARCH
- *** INCLUDES FY06-FY07 EXCEPTIONAL ITEM REQUEST OF \$2.50 MIL./YEAR

FUNDING ESIMATES FOR TERC, TARC, AND TCEQ ASSUME CONTINUATION OF CURRENT FUNDING LEVELS