

# **AIR QUALITY RESEARCH PROGRAM**

**Texas Commission on Environmental Quality  
Contract Number 582-10-94300  
awarded to The University of Texas at Austin**

**Quarterly Report**

**September 1, 2010 through November 30, 2010**

**Submitted to**

**David Brymer  
Texas Commission on Environmental Quality  
12100 Park 35 Circle  
Austin, TX 78753**

**Prepared by**

**David T. Allen, Principal Investigator  
The University of Texas at Austin  
10100 Burnet Rd. MC R7100  
Austin, TX 78758**

**December 3, 2010**

## **Texas Air Quality Research Program**

### **Quarterly Progress Report**

**December 3, 2010**

#### **Overview**

The goals of the State of Texas Air Quality Research Program (AQRP) are:

- (i) to support scientific research related to Texas air quality, in the areas of emissions inventory development, atmospheric chemistry, meteorology and air quality modeling,
- (ii) to integrate AQRP research with the work of other organizations, and
- (iii) to communicate the results of AQRP research to air quality decision-makers and stakeholders.

On April 30, 2010, the Texas Commission on Environmental Quality (TCEQ) contracted with the University of Texas at Austin to administer the AQRP. For the 2010-2011 biennium, the AQRP has approximately \$4.9 million in funding available. Following discussions with the TCEQ and an Independent Technical Advisory Committee (ITAC) concerning research priorities, the AQRP released a call for proposals in May, 2010. Forty-five proposals, requesting \$12.9 million in research funding were received by the due date of June 25, 2010. These proposals were reviewed by the ITAC for technical merit, and by the TCEQ for relevancy to the State's air quality research needs. The results of these reviews were forwarded to the AQRP's Advisory Council, which made final funding decisions in late August, 2010. Successful proposers were notified, and subcontracts were initiated. The subcontracting involves two phases. First, a sub-agreement is established with each institution specifying terms and conditions. Second, once a sub-agreement is in place and a project Work Plan is approved, a Task Order is issued authorizing work to commence. At the end of the current quarter, 11 sub-agreements were in place, 5 sub-agreements were pending, and Task Orders or Letter Agreements for 4 projects were executed.

## **Background**

Section 387.010 of HB 1796 (81<sup>st</sup> Legislative Session), directs the Texas Commission on Environmental Quality (TCEQ, Commission) to establish the Texas Air Quality Research Program (AQRP).

Sec. 387.010. AIR QUALITY RESEARCH. (a) The commission shall contract with a nonprofit organization or institution of higher education to establish and administer a program to support research related to air quality.

(b) The board of directors of a nonprofit organization establishing and administering the research program related to air quality under this section may not have more than 11 members, must include two persons with relevant scientific expertise to be nominated by the commission, and may not include more than four county judges selected from counties in the Houston-Galveston-Brazoria and Dallas-Fort Worth nonattainment areas. The two persons with relevant scientific expertise to be nominated by the commission may be employees or officers of the commission, provided that they do not participate in funding decisions affecting the granting of funds by the commission to a nonprofit organization on whose board they serve.

(c) The commission shall provide oversight as appropriate for grants provided under the program established under this section.

(d) A nonprofit organization or institution of higher education shall submit to the commission for approval a budget for the disposition of funds granted under the program established under this section.

(e) A nonprofit organization or institution of higher education shall be reimbursed for costs incurred in establishing and administering the research program related to air quality under this section. Reimbursable administrative costs of a nonprofit organization or institution of higher education may not exceed 10 percent of the program budget.

(f) A nonprofit organization that receives grants from the commission under this section is subject to Chapters 551 and 552, Government Code.

The University of Texas at Austin was selected by the TCEQ to administer the program. A contract for the administration of the AQRP was established between the TCEQ and the University of Texas at Austin on April 30, 2010. Consistent with the provisions in HB 1796, up to 10% of the available funding is to be used for program administration; the remainder (90%) of the available funding is to be used for research projects, individual project management activities, and meeting expenses associated with an Independent Technical Advisory Committee (ITAC).

## **Research Project Cycle**

The research Program is being implemented through an 8 step cycle. The steps in the cycle are described from project concept generation to final project evaluation for a single project cycle.

During the first 4 months of AQRP operation, steps 1-5 were completed for the first project cycle. During the second quarter, sub-agreements for most projects were established and Task Orders began to be initiated (step 6 and parts of step 7). The projected timeline for the remainder of the biennium is also outlined below.

- 1.) The project cycle is initiated by developing (in year 1) or updating (in subsequent years) the strategic research priorities. The AQRP Director, in consultation with the ITAC, and the TCEQ developed initial research priorities; the research priorities were released along with the initial Request for Proposals in May, 2010. An initial Strategic Plan was released in July, 2010. The Request for Proposals and the Strategic Plan are available at <http://aqrp.ceer.utexas.edu/>
- 2.) Project proposals relevant to the research priorities are solicited. The initial Request for Proposals was released on May 25, 2010. Proposals were due by June 25, 2010. Forty-five proposals, requesting \$12.9 million in funding, were received by the deadline.
- 3.) The Independent Technical Advisory Committee (ITAC) performs a scientific and technical evaluation of the proposals. For the initial round of proposals, the ITAC reviewed the proposals in conference calls and in a meeting held in Austin, Texas. The reviews were completed on July 22, 2010. Twelve proposals were highly recommended for funding; twelve proposals were recommended for funding, and 21 proposals were not recommended for funding.
- 4.) The project proposals and ITAC recommendations will be forwarded to the TCEQ. The TCEQ will evaluate the project recommendations from the ITAC, comment on the relevancy of the projects to the State's air quality research needs. For the first round of proposals, the TCEQ rated, as highly recommended, the same 12 research projects that were highly recommended by the ITAC. The TCEQ also recommended for funding the same 12 proposals that the ITAC recommended, however, the rank ordering of these 12 recommended proposals differed between the two groups.
- 5.) The recommendations from the ITAC and the TCEQ will be presented to the Council for their approval. The Council will also provide comments on the strategic research priorities. For the first group of proposals, the Council approved for funding all of the projects that were highly recommended by both the ITAC and TCEQ (12 projects). In addition, the Council approved for funding several projects in the recommended category, which were highly ranked within the recommended category by both the ITAC and TCEQ.
- 6.) All Investigators will be notified of the status of their proposals, either funded, not funded, or not funded at this time, but being held for possible reconsideration if funding becomes available.
- 7.) Funded projects will be assigned a Project Manager at UT-Austin and a Project Liaison at TCEQ. The project manager at UT-Austin will be responsible for ensuring that project objectives are achieved in a timely manner and that effective communication is maintained among investigators involved in multi-institution projects. The Project

Manager will have responsibility for documenting progress toward project measures of success for each project. The Project Manager will work with the researchers, and the TCEQ to create an approved work plan for the project. The Project Manager will also work with the researchers, TCEQ and the Program's Quality Assurance officer to develop an approved QAPP for each project. The Project Manager will review monthly, annual and final reports from the researchers and work with the researchers to address deficiencies. All respondents to the RFP have been notified of their award status. For those projects that will be funded, a Project Manager has been assigned and they have made initial contact with their PIs. TCEQ has been given a list of projects that will be funded, and has assigned a TCEQ Project Liaison to each project.

- 8.) The AQRP Director and the Project Manager for each project will describe progress on the project in the ITAC and Council meetings dedicated to on-going project review. The AQRP Director will ensure that at least 10% of project funds are available at the time of these presentations so that recommendations can be incorporated into final project deliverables.
- 9.) The project findings will be communicated through multiple mechanisms. Final reports will be posted to the Program web site; research briefings will be developed for the public and air quality decision makers; an annual research conference will be held.

### **Program Timeline, May 1, 2010-August 31, 2011**

May 2010: Finalize membership in Council and ITAC; solicit project proposals

June 2010: Proposals due; send proposals to ITAC for review.

July 2010: ITAC conducts review and ranking of proposals; TCEQ to review immediately after ITAC ratings are complete, Council to meet to approve projects immediately after TCEQ work is complete.

August 2010: Council to meet to approve projects immediately after TCEQ work is complete.

September 2010 – December 2010: Issue contracts and Task Orders for approved projects

September 2010-April 2011: Project reports and deliverables completed on an on-going basis

September 2010: Program quarterly report due to TCEQ

December 2010: Program quarterly report due to TCEQ

March 2010: Program quarterly report due to TCEQ

April 2011: Project progress report to ITAC and TCEQ; strategic plan review.

May 2011: Project progress reports to Council; strategic plan review. Program quarterly report due to TCEQ.

May 2011-August 2011: Projects continue with ITAC, TCEQ, and Council input; project reports and deliverables completed on an on-going basis

August 2011: Project completion; Program final report completed.

## RESEARCH PROJECTS

During the second quarter of operation, Program Administration focused on putting contracts in place with each of the institutions named in the 14 initially funded proposals. Project Managers and Project Liaisons were assigned to each of the projects and the Principal Investigators (PIs) began putting together project Work Plans, which include the Statement of Work, a detailed budget, and a Quality Assurance Project Plan (QAPP). Agreements were fully executed with 11 participating institutions, and are currently pending with 5 institutions. Two institutions (both from outside of the State of Texas) were unable to agree to the terms of the AQRP sub-agreement and one PI withdrew from the program.

A detailed summary of each of the projects approved for funding and their status follows:

---

<b>Project 10-006</b>	<b>STATUS: Work Plan under Review</b>
<b><i>Quantification of Industrial Emissions of VOCs, NO<sub>2</sub> and SO<sub>2</sub> by SOF and Mobile DOAS</i></b>	
Chalmers University – Johan Mellqvist	AQRP Project Manager – Dave Sullivan
University of Houston – Bernhard Rappenglüeck	TCEQ Project Liaison – John Jolly

**Requested Funding:** \$498,441  
(\$264,266 Chalmers, \$234,175 UH)

### **Additional Information:**

Fully executed contracts are in place with both Chalmers University and the University of Houston. The project Work Plan was submitted on October 22, 2010, and is in the process of being reviewed. Currently, it is being revised by the PI after AQRP review.

***Factors Influencing Ozone-Precursor Response in Texas Attainment Modeling***

Rice University – Daniel Cohan  
ENVIRON International – Greg Yarwood

AQRP Project Manager – Elena McDonald-Buller  
TCEQ Project Liaison – Jim Smith

**Funded Amount:** \$178,796  
(\$128,851 Rice, \$49,945 ENVIRON)

**Executive Summary:**

The aim of the proposed work is to characterize how various model inputs (parametric uncertainty) and formulations (structural uncertainty) influence predictions of ozone-precursor response in Texas SIP modeling episodes. Probabilistic representations of ozone response to emissions reductions, considering parametric uncertainty will be developed. The expected outcomes of this research are to improve understanding of how various factors (anthropogenic and biogenic emission rates, chemical mechanisms, photolysis rates, boundary conditions, and dry deposition schemes) influence ozone response predictions; to help prioritize future improvements to Texas SIP modeling; and to demonstrate how probabilistic analyses via an ensemble approach can supplement deterministic estimates of ozone response.

Please note that the Subaward from The University of Texas to Rice was executed October 14, and the Task Order was issued November 18.

So far the following tasks have been accomplished:

- Acquisition and Simulation of Base Case CAMx Modeling Episodes (Subtask 1.1)  
The original data files and documents for the 2006 HGB and DFW Ozone Modeling Episodes (HGB8H2 and DFW8H2) have been obtained from the TCEQ website. Both the June and Aug/Sept 2006 CAMx episodes are running on Rice's high-performance computing systems. The episodes are available at:
  - <http://www.tceq.state.tx.us/implementation/air/airmod/data/dfw8h2>  
(May 29-July 2 episode)
  - <http://www.tceq.state.tx.us/implementation/air/airmod/data/hgb8h2/hgb8h2.htm>  
(Aug 13-Sept 15 episode)

Simulations have been validated against the TCEQ results. For ozone the typical differences between them are within the order of magnitude of  $10^{-7}$  ppb. The Aug/Sept HGB episode has been updated to use CAMx 5.20.1 to be consistent with the June DFW episode. The computing time required by the newer version CAMx model is much longer than the CAMx 4.53 version.

- Acquisition and Integration of Air Quality Data from Multiple Platforms (Subtask 2.2)  
Data from the Texas Air Quality Study II (TexAQS II) campaign in Aug/Sept 2006 provide a unique opportunity to evaluate model performance in the crucial region. Measurement data of ozone and its precursors taken aboard the NOAA R/V Ronald H.

Brown vessel, on NOAA WP-3 aircraft, and at ground- and Moody-Tower-based sites during the campaign have been obtained. Measurements of ozone, NO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, etc. from the EPA Air Quality System (AQS), which covered a larger area than the HGB and DFW regions have also been obtained. Data have been assembled and uncertainties have been derived for the hourly means wherever the required information is available. Model grid cells containing the monitors have been identified.

- Development of the Bayesian Monte Carlo Method (Subtask 2.2)  
As an extension of the EPA recommended statistical measures for evaluation of model performance, a *weighted* root mean squared error is used in recognition of the unavoidable uncertainties in the observations. Data from multiple platforms need to be aggregated in space and time for weighting the relative likelihood of each case within the ensemble (calculating the likelihood function in the Bayesian Monte Carlo method). Several metrics have been developed to aggregate/assemble the observations and simulations, such as unpaired peaks, probability threshold integration (modeled and monitored concentrations within the same cumulative probability range), and spatial aggregation of ground sites for a particular region.

---

**Project 10-009**

**STATUS: Active – Sept. 8, 2010**

---

*Additional Flare Test Days for TCEQ Comprehensive Flare Study*

University of Texas at Austin – Vincent Torres

AQRP Project Manager – Cyril Durrenberger  
TCEQ Project Liaison – Russell Nettles

**Funded Amount:** \$591,332

**Executive Summary:**

Flare operational data collection funded by this award were collected in September 2010. Data collected from a full scale steam flare (~1 million pounds per hour) and a full scale air flare (~144,000 pounds per hour) included mass flow and speciation of the vent gas entering flare, the mass flow of the steam or air assist as applicable, measurements of emissions from the flare by two remote sensing technologies (Telops – infrared hyper-spectral imaging and Industrial Monitor & Control Corporation – passive and active Fourier transform infrared spectroscopy) and two in situ instruments. The two in situ instruments will provide speciated measurements including O<sub>2</sub>, CO, CO<sub>2</sub>, NO, NO<sub>2</sub>, O<sub>3</sub>, formaldehyde, propylene, methane, ethane, numerous other VOCs typically analyzed using GC-FID analyzers, and particulate matter composition through mass spectrometry. Data collected have not yet been final quality assured or analyzed. Preliminary results are expected to be available in December. This project is on schedule and in budget.

---

**Project 10-014****STATUS: Withdrawn**

---

***Quantifying Emission Estimates from Biogenic and Oil and Gas Production Sources in Texas***

---

UCAR/NCAR – Christine Wiedinmyer

AQRP Project Manager – Elena McDonald-Buller  
TCEQ Project Liaison – Clint Harper**Funding Requested:** \$595,173**Additional Information:**

Contract negotiations with UCAR/NCAR were unsuccessful, as UCAR was not able to agree to the indemnification terms of the AQRP sub-agreement. A formal withdrawal notification was received by UT on October 21, 2010.

---

**Project 10-015****STATUS: Task Order Pending**

---

***An Assessment of Nitryl Chloride Formation Chemistry and its Importance in Ozone Non-attainment areas in Texas***

---

NOAA – James Roberts  
ENVIRON International – Greg YarwoodAQRP Project Manager – Elena McDonald-Buller  
TCEQ Project Liaison – Jim Neece**Funding Requested:** \$201,280  
(\$121,884 NOAA, \$79,396 ENVIRON)**Additional Information:**

On November 9, 2010, the TCEQ Liaison recommended that Project 10-015 should commence. A Task Order was issued to NOAA on November 22, 2010. NOAA has indicated that they are required to send the Task Order to the central office for signature, so it may take more time than some of the other projects. A Task Order will be issued to ENVIRON within the week. When they are returned, both Task Orders will be fully executed on the same date, whichever is later.

---

**Project 10-020****STATUS: Task Order Pending**

---

***NO<sub>x</sub> Reactions and Transport in Nighttime Plumes and Impact on Next-Day Ozone***

---

NOAA – Steven Brown  
ENVIRON International – Greg YarwoodAQRP Project Manager – Elena McDonald-Buller  
TCEQ Project Liaison – Dick Karp**Funding Requested:** \$202,498  
(\$122,959 NOAA, \$79,539 ENVIRON)**Additional Information:**

On November 8, 2010, the TCEQ Liaison recommended that Project 10-020 should commence. A Task Order was issued to NOAA on November 22, 2010. NOAA has indicated that they are required to send the Task Order to the central office for signature, so it may take more time than

some of the other projects. A Task Order will be issued to ENVIRON within the week. When they are returned, both Task Orders will be fully executed on the same date, whichever is later.

---

**Project 10-021** **STATUS: Active – Oct. 11, 2010**

---

***Dry Deposition of Ozone to Built Environment Surfaces***

University of Texas at Austin – Richard Corsi      AQRP Project Manager – Gary McGaughey  
TCEQ Project Liaison – Jim Smith

**Funding Awarded:** \$248,786

**Executive Summary:**

Work began on Project 10-021 when an account was established on October 21st. On November 9th, an informal meeting was held between members of the project team, the AQRP liaison Gary McGaughey, the TCEQ liaison Jim Smith, and Mark Estes of TCEQ. The project PI Rich Corsi and co-PI Elena-McDonald-Buller (with assistance from project team members Yosuke Kimura, Dustin Poppendieck and Erin Darling) outlined the goals and strategies for the experimental and deposition (computer) modeling components of the project. The meeting included time for an extended question and answer session, followed by a tour of the laboratory facilities.

Experimental work accomplished during October/November included the establishment of a preliminary list of materials to be tested, acquisition of supplies, and initial testing of the laboratory system. The funding delay for this project has pushed back the experimental schedule by approximately two weeks. Full testing of the laboratory testing chambers cannot be accomplished until a critical component of the experimental system, a six port multiple selector valve, is received. This valve was ordered when the project account was set up on October 21, 2010; however, the valve required ~3 weeks for construction and delivery. Work in support of deposition modeling included the identification and retrieval, when available, of datasets that provide information on the urban surface characteristics for residential, commercial, and industrial buildings and roadways within the Austin area. In addition, datasets that could be used to identify the amount of urban tree cover were investigated.

---

**Project 10-022** **STATUS: Work Plan under Review**

---

***Development of Speciated Industrial Flare Emission Inventories for Air Quality Modeling in Texas***

Lamar University – Daniel Chen      AQRP Project Manager – Vincent Torres  
TCEQ Project Liaison – Jim MacKay

**Funding Limited to:** \$150,000

**Additional Information:**

A fully executed contract is in place with Lamar University. The project Work Plan was submitted on October 25, 2010. The Work Plan was reviewed by AQRP and returned with comments to the PI at Lamar on November 16, 2010, and is in the process of being revised.

---

**Project 10-026**

**STATUS: Withdrawn**

---

*Biogenic VOC Flux Measurements in East Texas*

Texas A&M University – Gunnar Schade

AQRP Project Manager – Elena McDonald-Buller  
TCEQ Project Liaison – Clint Harper

**Funding Limited to:** \$200,000

**Additional Information:**

On November 16, 2010, UT received official notification from Texas A&M University that Dr. Gunnar Schade would not be proceeding with his AQRP proposal due to budget constraints and scope of work revisions.

---

**Project 10-029**

**STATUS: Task Order Pending**

---

*Wind Modeling Improvements with the Ensemble Kalman Filter*

Texas A&M University – John Nielson-Gammon

AQRP Project Manager – Gary McGaughey  
TCEQ Project Liaison – Bright Dormblaser

**Requested Funding:** \$80,108

**Additional Information:**

A fully executed contract is in place with Texas A&M University. The project Work Plan was submitted to TCEQ on November 26, 2010 for final review. On November 29, 2010, the TCEQ Liaison recommended that Project 10-029 should commence. A Task Order is in the process of being issued.

---

**Project 10-032**

**STATUS: Work Plan under Review**

---

*SHARP Data Analysis: Radical Budget and Ozone Production*

University of Houston – Barry Lefer  
Pennsylvania State University – William Brune  
University of New Hampshire – Jack Dibb  
University of Miami – Xinrong Ren  
UCLA – Jochen Stutz

AQRP Project Manager – Cindy Murphy  
TCEQ Project Liaison – John Jolly

**Requested Funding:** \$248,652

(\$41,884 UH, \$69,641 Penn State, \$23,054 New Hampshire, \$64,789 Miami, \$49,284 UCLA)

**Additional Information:**

A fully executed sub-agreement is in place with the University of Houston and UCLA. Final negotiations with the University of Miami look promising, and UT anticipates an agreement will be in place soon. Initially, the University of Houston intended to issue a purchase order to the University of New Hampshire due to the smaller scope and budget of their portion of the project.

New developments indicate that the University of New Hampshire will be involved in another AQRP project, so UT will be issuing a sub-agreement to New Hampshire.

On November 19, 2010, UT received notification from Penn State University that they were unable to proceed with executing the sub-agreement due to the indemnification language. The PI of Project 10-020 has been notified of this development and is determining which portions of the project can be reassigned and which portions will not be possible without Penn State.

The project Work Plan review process is on hold until a new revision reflecting the change in participants and responsibilities is submitted. A final determination is expected in early December 2010.

---

**Project 10-034**

**STATUS: Work Plan under Review**

---

*Dallas Measurements of Ozone Production*

University of Houston – Barry Lefer  
Pennsylvania State University – William Brune

AQRP Project Manager – Dave Sullivan  
TCEQ Project Liaison – Doug Boyer

**Requested Funding:** \$195,054

(\$38,874 UH, \$156,180 Penn State)

**Additional Information:**

A fully executed sub-agreement is in place with the University of Houston. On November 19, 2010, UT received notification from Penn State University that they were unable to proceed with executing the sub-agreement due to the indemnification language. The PI Project 10-034 has been notified of this development and is currently assessing different options to determine whether or not the project can continue.

The project Work Plan review process is on hold until the PI indicates whether or not he can complete the project without Penn State's participation. The plan currently under consideration is for UH to purchase or rent the necessary equipment from Penn State utilizing a Purchase Order rather than enter into a sub-agreement. A final determination response is expected in early December 2010.

---

**Project 10-042****STATUS: Active – Oct. 8, 2010**

---

***Environmental Chamber Experiments to Evaluate NOx Sinks and Recycling in Atmospheric Chemical Mechanisms***

ENVIRON International – Greg Yarwood

AQRP Project Manager – Elena McDonald-Buller  
TCEQ Project Liaison – Jim Neece**Funded Amount:** \$237,481**Executive Summary:**

Ground level ozone formation requires both VOCs and NOx. Although VOCs are generally considered in terms of enhancing O<sub>3</sub> formation, they are also important in affecting NOx levels. Most VOCs tend to remove NOx by forming compounds such as organic nitrates and thus reducing the availability of NOx to form O<sub>3</sub> (NOx sinks). The objectives of this project are to carry out well-characterized environmental chamber experiments with advanced measurements of NOx species designed to test mechanisms for NOx sinks from VOCs, to use the data obtained and other available chamber data to assess their implications on the capabilities of current mechanisms to predict ozone formation under NOx-limited conditions, and to make recommendations on improvements needed for the mechanisms in the near term. The VOCs to be studied will focus on aromatics because they are important in anthropogenic emissions, have highly uncertain mechanisms, and are known to have very high NOx sinks compared to other types of VOCs. Biogenics such as isoprene and terpenes will also be studied as resources permit.

Progress through November: The project was initiated when the signed task-order was received on November 23, 2010. A project kick-off meeting was held on November 26, 2010 to review the work plan and evaluate the schedule.

Issues: The first deliverable "Technical Memorandum on Assessment of Available Data and Experimental Design" was scheduled for December 13, 2010. Due to the delayed start in the project this deliverable is rescheduled for January 13, 2010.

**Additional Information:**

Environ will be issuing purchase orders (POs) to Smog Reyes and the University of California – Riverside for services related to mechanism development, and specialized technical assistance and use of the chamber, respectively.

---

**Project 10-045****STATUS: Work Plan under Review**

---

***Quantification of Hydrocarbon, NOx, and SO2 emissions from Petrochemical Facilities in Houston: Interpretation of the 2009 FLAIR dataset***

UCLA – Jochen Stutz

UNC - Chapel Hill – William Vizueté

Aerodyne – Scott Herndon

Washington State University – George Mount

AQRP Project Manager – Cindy Murphy

TCEQ Project Liaison – Marvin Jones

**Requested Funding:** \$398,401

(\$150,132 UCLA, \$33,281 UNC, \$164,988 Aerodyne, \$50,000 Washington State)

**Additional Information:**

A fully executed contract is in place with UCLA, Aerodyne, and Washington State University. Negotiations are on-going with UNC – Chapel Hill and are expected to be successful. The project Work Plan was received on November 2, 2010, and has been reviewed and sent back to the PI for revisions.

Because of the limited dollar amount budgeted and the scope of the work to be done, Aerodyne plans to issue purchase orders (POs) to Montana State University and the University of Massachusetts, Amherst for \$20,000 each for work related to this project.

---

**Alternate Projects**

During the negotiation process, the National Center for Atmospheric Research (UCAR/NCAR) was unable to agree to the terms of the contract. Additionally, Dr. Gunnar Schade withdrew his project during the Work Plan development stage. The withdrawal of these participants enabled the Program Administration to award funding to the two projects being held for further consideration pending availability of funding.

---

**Project 10-024**

**STATUS: Work Plan under Development**

*Surface Measurements and One-Dimensional Modeling Related to Ozone Formation in the Suburban Dallas-Fort Worth Area*

Rice University – Robert Griffin  
University of Houston – Barry Lefer  
University of New Hampshire – Jack Dibb  
University of Michigan – Allison Steiner  
NCAR – Withdrawn

AQRP Project Manager – Vincent Torres  
TCEQ Project Liaison – Doug Boyer

**Funding Requested:** \$459,100

(\$216,805 Rice, \$98,134 Houston, \$70,747 New Hampshire, \$73,414 Michigan)

**Additional Information:**

On November 11, 2010, the PI of Project 10-024 was notified that his project would be partially funded, but that the level of funding was not known at that time. The PI submitted a revised proposal that reflected NCAR's withdrawal from the project. This revision has been reviewed and approved. With the withdrawal of Project 10-026, it has been determined that Project 10-024 can be funded at the level requested in the revision. The PI has been notified and has been asked to submit a full Work Plan by December 8, 2010.

Fully executed contracts are in place with Rice University and the University of Houston. Contracts are in the process of being issued to the University of New Hampshire and the University of Michigan.

---

**Project 10-044** **STATUS: Work Plan under Development**  
*Airborne Measurements to Investigate Ozone Production and Transport in the Dallas-Fort Worth (DFW) Area During the 2011 Ozone Season*

University of Houston – Maxwell Shauck

AQRP Project Manager – Gary McGaughey  
TCEQ Project Liaison – Erik Gribbin

**Funding Requested:** \$380,261

**Additional Information:**

Dr. Shauck was notified on November 12, 2010, that his project would be partially funded. The PI is currently putting together a Work Plan for a budget between \$200,000 and \$300,000. The final funding amount will be determined in early December.

---

**Financial Status Report**

Initial funding for fiscal year 2010 was established at \$2,732,071.00. In late May 2010 an amendment was issued increasing the budget by \$40,000. Funding for fiscal year 2011 was established at \$2,106,071, for a total project award of \$4,878,142. These funds were distributed across several different reporting categories as required under the contract with TCEQ. The reporting categories are:

Program Administration – limited to 10% of the overall funding

This category includes all staffing, materials and supplies, and equipment needed to administer the overall AQRP. It also includes the costs for the Council meetings.

ITAC

These funds are to cover the costs, largely travel expenses, for the ITAC meetings.

Project Management – limited to 8.5% of the funds allocated for Research Projects

Each research project will be assigned a Project Manager to ensure that project objectives are achieved in a timely manner and that effective communication is maintained among investigators in multi-institution projects. These funds are to support the staffing and performance of project management.

Research Projects / Contractual

These are the funds available to support the research projects that are selected for funding.

## Program Administration

Program Administration includes salaries and fringe benefits for those overseeing the program as a whole, as well as, materials and supplies, travel, equipment, and other expenses. This category allows indirect costs in the amount of 10% of salaries and wages.

During the reporting period eight staff members were involved in the administration of the AQRP. Dr. David Allen, Principal Investigator and AQRP Director, is responsible for the overall administration of the AQRP. James Thomas, AQRP Manager, is responsible for assisting Dr. Allen in the program administration. Ms. Maria Stanzone, AQRP Grant Manager, with assistance from Rachael Bushn and Melanie Allbritton, assisted with program organization and financial management. This included assisting with the contracting process, issuing Task Orders, and invoicing functions. Mr. Denzil Smith is responsible for the AQRP Web Page development and for data management.

Table 1: AQRP Administration Budget

### Administration Budget (includes Council Expenses)

Budget Category	FY10	FY11	Total	Expenses	Pending Expenses	Remaining Balance
Personnel/Salary	\$173,100	\$148,755	\$321,855	\$142,369.80	\$28,248.00	\$151,237.20
Fringe Benefits	\$38,082	\$32,726	\$70,808	\$21,916.64		\$48,891.36
Travel	\$8,500	\$7,500	\$16,000	\$346.85		\$15,653.15
Supplies	\$34,215	\$2,744	\$36,959	\$4,157.45		\$32,801.55
Equipment	\$6,000	\$0	\$6,000			\$6,000.00
Other		\$4,007	\$4,007			\$4,007.00
Total Direct Costs	\$259,897	\$195,732	\$455,629	\$168,790.74	\$28,248.00	\$258,590.26
Authorized Indirect Costs	\$17,310	\$14,876	\$32,186	\$11,389.44		\$20,796.56
10% of Salaries and Wages						
<b>Total Costs</b>	<b>\$277,207</b>	<b>\$210,608</b>	<b>\$487,815</b>	<b>\$180,180.18</b>	<b>\$28,248.00</b>	<b>\$279,386.82</b>
Fringe Rate	22%	22%				

Dr. Mariana Dionisio and Cameron Faxon, a post-doctoral associate and a graduate student, respectively, are working on the development of a state of the science document. This is an extension of the initial research priorities and Strategic Plan, and will be used to assess project objectives.

Fringe benefits for the Administration of the AQRP were initially budgeted to be 22% of salaries and wages across the term of the project. It should be noted that this is an estimate, and actual fringe benefit expenses will be reported for each month. The fringe benefit amount and percentage will fluctuate each month depending on the individuals being paid from the account, their salary, their FTE percentage, the selected benefit package, and other variables. For example, the amount of fringe benefits will be greater for a person with family medical insurance versus a person with individual medical insurance. At the end of the project, the overall total of fringe benefit expensed is expected to be at or below 22% of the total salaries and wages. Fringe benefit expenses for the months of September and October are included in the spreadsheet above. November fringe benefit expenses have not posted as of the writing of this report.

Supplies and materials expenditures included monthly telecom charges, postage, and office supplies. In addition, a laptop computer was purchased for Rachael Bushn to be used for Program Administration. The remaining travel expenses for the Council Meeting also posted during this period.

Indirect costs for the months of September and October are included in Table 1. November indirect costs have not posted as of the writing of this report.

At the initiation of the AQRP, funds were budgeted and expenses were projected based on assumptions made with the information known at that time. As the AQRP has progressed, spending decisions and staffing allocations have been made to most efficiently meet the needs of the program. Since the program started later than anticipated, the contracting and other program start-up activities have been pushed into FY 11 and concentrated into a shorter period of time. Thus the amount of time (FTE) spent on the program in FY 10 was reduced and the amount of time (FTE) those individuals working within the Administrative roles are spending on necessary program start-up functions has increased in FY 11. Their original percent time was estimated and divided between FY 10 and FY 11. As stated above, these tasks still need to be completed within FY 11 and thus the increase of FTE within FY 11

As these start-up activities are essential, the AQRP Administration requests permission to utilize the FY 10 funds during FY 11. This is for all classes of funds including Administration, ITAC, Project Management, and Contractual. The intent is to fully expend (or encumber, in the case of the contractual funds) the FY 10 funds, and then begin spending the FY 11 funds.

The remaining FY 10 funds and the FY 11 funds will be budgeted as follows for the remainder of the AQRP (December 2010 – August 2011):

AQRP PI	Dr. Allen	3 Months @	45% FTE
Program Administration	James Thomas	9 Months @	50% FTE
Grant Management	Maria Stanzione	9 Months @	50% FTE
Web Design/Data Mgmt	Denzil Smith	9 Months @	18% FTE
Admin/Finance	Rachael Bushn	9 Months @	100% FTE
Invoice Payment	Susan Micho	9 Months @	15% FTE
Payroll/Acct Reconciliation	Melanie Allbritton	9 Months @	15% FTE
Post Doc	Dr. Mariana Dionisio	9 Months @	75% FTE

## ITAC

The final expenditures for the ITAC meeting held in Austin, Texas, on July 22, 2010, posted during this quarter. Of the \$18,864 budgeted for FY 10 ITAC expenses, \$9,239.83 have been expended as of November 30, 2010.

A conference call has been scheduled with the ITAC on December 2, 2010 to provide an update on the status of the AQRP, discuss the disposition of remaining funds (if any), discuss the DFW Field Program, and begin the Strategic Plan for the next biennium.

Table 2: ITAC Budget

### ITAC Budget

Budget Category	FY10 Budget	FY11 Budget	Total Budget	Expenses	Pending Expenses	Remaining Balance
Personnel/Salary						
Fringe Benefits						
Travel	\$16,500	\$16,600	\$33,100	\$8,990.45		\$24,109.55
Supplies	\$2,364	\$2,800	\$5,164	\$249.38		\$4,914.62
Equipment						
Other						
Contractual						
Total Direct Costs	\$18,864	\$19,400	\$38,264	\$9,239.83	\$0.00	\$29,024.17
Authorized Indirect Costs						
10% of Salaries and Wages						
<b>Total Costs</b>	<b>\$18,864</b>	<b>\$19,400</b>	<b>\$38,264</b>	<b>\$9,239.83</b>	<b>\$0.00</b>	<b>\$29,024.17</b>

## Project Management

Project Managers (PMs) have been assigned to each of the research projects. During the period from September 1, 2010 through November 30, 2010, PMs have worked with PIs to develop project Work Plans. A significant amount of time has been focused on the development and review of Quality Assurance Project Plans (QAPPs). For those projects that are now active, the role of the PM has evolved to helping the PIs accomplish project goals and ensuring that all reporting requirements are met.

As none of the Research Projects were approved for funding until the end of FY 10, as with the Project Administration funds, the intent is to utilize the FY 10 and FY 11 funds during FY 11 to cover costs associated with project management.

Table 3: Project Management Budget

### Project Management Budget

Budget Category	FY10 Budget	FY10 Budget	Total Budget	Expenses	Pending Expenses	Remaining Balance
Personnel/Salary	\$139,653	\$101,011	\$240,664	\$55,707.50	\$6,857.00	\$178,099.50
Fringe Benefits	\$30,725	\$22,223	\$52,948	\$10,075.41		\$42,872.58
Travel	\$4,000	\$5,200	\$9,200			\$9,200.00
Supplies	\$1,657	\$1,465	\$3,122			\$3,122.00
Equipment						
Other						
Contractual						
Total Direct Costs	\$176,035	\$129,899	\$305,934	\$65,782.91	\$6,857.00	\$233,294.09
Authorized Indirect Costs	\$13,965	\$10,101	\$24,066	\$4,512.25		\$19,553.75
10% of Salaries and Wages						
<b>Total Costs</b>	<b>\$190,000</b>	<b>\$140,000</b>	<b>\$330,000</b>	<b>\$70,295.16</b>	<b>\$6,857.00</b>	<b>\$252,847.84</b>

## **Research Projects**

As of November 30, 2010, a total of 4 projects are active. Table 4 on the following page illustrates the funding awarded to each project and the total expenses reported on each project as of November 30, 2010.

At this time, it is anticipated that all funding for research projects will be allocated to the projects listed above. It is still early in the Program, but it is anticipated that all Program funds will also be used.

Table 4: Contractual Expenses

<b>Contractual Expenses</b>				
<b>FY 10 Contractual Funding</b>		<b>\$2,286,000</b>		
<b>Project Number</b>		<b>Amount Awarded (Budget)</b>	<b>Cumulative Expenditures</b>	<b>Remaining Balance</b>
10-008	Rice University	\$128,851	\$0	\$128,851
10-008	Environ International	\$49,945	\$0	\$49,945
10-009	UT-Austin	\$591,332	\$268,737	\$322,595
10-021	UT-Austin	\$248,786	\$33,099	\$215,687
10-042	Environ International	\$237,481	\$0	\$237,481
FY 10 Total Contractual Funding Awarded		\$1,256,395		
FY 10 Contractual Funding Remaining to be Awarded		\$1,029,605		
FY 10 Contractual Funds Expended to Date*			\$301,836	
FY 10 Contractual Funds Remaining to be Spent				\$1,984,164
<b>FY 11 Contractual Funding</b>				
<b>FY 11 Contractual Funding</b>		<b>\$1,736,063</b>		
<b>Project Number</b>		<b>Amount Awarded (Budget)</b>	<b>Cumulative Expenditures</b>	<b>Remaining Balance</b>
				\$0
				\$0
FY 11 Total Contractual Funding Awarded		\$0		
FY 11 Contractual Funding Remaining to be Awarded		\$1,736,063		
FY 11 Contractual Funds Expended to Date*			\$0	
FY 11 Contractual Funds Remaining to be Spent				\$1,736,063
Total Contractual Funding		\$4,022,063		
Total Contractual Funding Awarded		\$1,256,395		
Total Contractual Funding Remaining to be Awarded		\$2,765,668		
Total Contractual Funds Expended to Date*			\$301,836	
Total Contractual Funds Remaining to be Spent				\$3,720,227

\*(Expenditures Reported as of November 30, 2010.)