

AIR QUALITY RESEARCH PROGRAM

**Texas Commission on Environmental Quality
Contract Number 582-15-50047
Awarded to The University of Texas at Austin**

**Quarterly Report
March 1, 2018 through May 31, 2018**

Submitted to

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Texas Air Quality Research Program

Quarterly Report

March 1, 2018 – May 31, 2018

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.

PROGRAM ACTIVITIES FOR THE QUARTER

Program activities during this reporting period were focused on the finalization of the State of the Science Assessment and Strategic Research Plan, the issuance of the FY 18-19 Request for Proposals, and the review of the proposals that were received in response to that Request for Proposals.

The draft State of the Science Assessment, providing a comprehensive overview of the research performed under the AQRP, was completed in December and underwent several rounds of review with the Independent Technical Advisory Committee, the Advisory Council, and the TCEQ. A final revision was accepted in early March 2018.

In February, a draft Strategic Research Plan was developed utilizing the State of the Science Assessment's evaluation of the program successes, challenges, and areas that should be considered a priority for future research activities. This also went through several rounds of review with the Advisory Council and the TCEQ. On March 29, the AQRP Program Management, the TCEQ, and the Advisory Council met to finalize the research priorities. On April 6, 2018, the Request for Proposals was released on the AQRP website and an email announcing the Request for Proposals went out to AQRP stakeholders.

Proposals were due to the AQRP by 5:00 central time on May 18, 2018. The AQRP received a total of 40 proposals. The review of the proposals by the Independent Technical Advisory Committee (ITAC) began on May 21. Each proposal was assigned to three different ITAC members who specialized in the proposal's research priority area, for initial review and rating via the AQRP Proposal Rating Form. Rating forms were due to the AQRP on May 31, 2018, in preparation for the ITAC Proposal Review meeting to be held on June 4 and 5, 2018.

BACKGROUND

Section 387.010 of HB 1796 (81st 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 July 29, 2015 for the 2016-2017 biennium. 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).

On September 4, 2017, the AQRP contract was renewed for the 2018 – 2019 biennium and additional funding of \$750,000 per year was awarded.

RESEARCH PROJECT CYCLE

The Research Program is implemented through a 9 step cycle. The steps in the cycle are described from project concept generation to final project evaluation for a single project cycle.

- 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, the Council and the TCEQ, develop research priorities; the research priorities are released along with a Request for Proposals.
- 2.) Project proposals relevant to the research priorities are solicited. The Request for Proposals can be found at <http://aqrp.ceer.utexas.edu/>.
- 3.) The Independent Technical Advisory Committee (ITAC) performs a scientific and technical evaluation of the proposals.
- 4.) The project proposals and ITAC recommendations are forwarded to the TCEQ. The TCEQ evaluates the project recommendations from the ITAC and comments on the relevancy of the projects to the State's air quality research needs.
- 5.) The recommendations from the ITAC and the TCEQ are presented to the Council and the Council selects the proposals to be funded. The Council also provides comments on the strategic research priorities.
- 6.) All Investigators are 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 are assigned an AQRP Project Manager at UT-Austin and a Project Liaison at TCEQ. The AQRP Project Manager is 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 AQRP Project Manager has responsibility for documenting progress toward project measures of success for each project. The AQRP Project Manager works with the researchers, and the TCEQ, to create an approved work plan for the project.

The AQRP Project Manager also works with the researchers, TCEQ and the Program's Quality Assurance officer to develop an approved Quality Assurance Project Plan (QAPP) for each project. The AQRP Project Manager reviews monthly, annual and final reports from the researchers and works with the researchers to address deficiencies.
- 8.) The AQRP Director and the AQRP Project Manager for each project describe progress on the project in the ITAC and Council meetings dedicated to on-going project review.
- 9.) The project findings are communicated through multiple mechanisms. Final reports are posted to the Program web site; research briefings are developed for the public and air quality decision makers; and a bi-annual research conference/data workshop is held.

The final research project for FY 2016-17 ended on January 15, 2018, and all final reports were posted to the AQRP website. Steps 1 and 2 of the FY 2018-19 cycle are complete and steps 3 and 4 are expected to take place early in the next quarter.

RESEARCH PROJECTS

FY 2016 – 2017 Projects

All research projects, with the exception of the State of the Science Assessment, were completed, fully invoiced, and paid at the end of the previous quarter. The State of the Science Assessment was completed in late January, as described below. A list of the FY 2016-2017 projects is provided in Table 1.

Project 16-SOTS/17-SOTS

**STATUS: Active – November 2, 2017
Completed – January 31, 2018**

AQRP State of the Science Assessment FY 2016-2017

The University of Texas at Austin – Elena McDonald-Buller

AQRP Project Manager – David Sullivan
TCEQ Project Liaison – Mark Estes

Funded Amount:	FY 2016 \$ 3,788.49	Expended Amount:	FY 2016 \$ 3,635.83
	<u>FY 2017 \$22,211.51</u>		<u>FY 2017 \$21,538.51</u>
	Total \$26,000.00		Total \$25,174.34

Amount Returned to AQRP: FY 2016 \$152.66
FY 2017 \$673.00
Total \$825.66

Executive Summary

Since its inception in 2010, the Texas Air Quality Research Program (AQRP) has had three primary objectives:

- (1) to support scientific research related to Texas air quality including field measurement campaigns, ambient air quality and meteorological data analyses, controlled environmental chamber studies aimed at improving the understanding of atmospheric chemical processes, emissions inventory development and assessment, and meteorological and air quality modeling studies;
- (2) to integrate AQRP research with the work of other organizations;
- (3) to communicate the findings of sponsored research to air quality planning and management stakeholders and the scientific research community.

The AQRP is administered by the University of Texas at Austin under contract to the Texas Commission on Environmental Quality (TCEQ). The program has completed four funding cycles to date that have included the 2010-2011, 2012-2013, 2014-2015, and 2016-2017 biennia. The AQRP has sponsored more than 60 projects from researchers around the world. Projects have involved collaborations between academic institutions, state and national government agencies, and the private sector. The program has contributed directly to the understanding of specific and sometimes unique emissions and atmospheric physical and chemical processes that lead to air

pollution in Texas and to the identification of effective, efficient approaches for air quality improvement and management.

The State of the Science report summarizes the scientific findings from projects addressed by the AQRP during the 2016-2017 project cycle as well as more briefly from previous AQRP funding cycles between 2010 and 2015. It is the third such summary, with the first report released in 2013 and the second in 2015. Within this report, findings are divided into sections corresponding to the areas where the AQRP performs research: emissions inventory development and assessment, tropospheric chemistry, and atmospheric physical processes and long-range transport of pollutants. Each section summarizes major findings by project topic areas. A complete list of projects by funding cycle as well as publications and presentations resulting from the program are also included.

Project Update

Project 16-SOS/17-SOS is complete. The State of the Science report is approved and all expenses have been paid.

Table 1: FY 2016-2017 Funded Research Projects

AQRP Project Number	Title	Start Date	End Date	Total Project Funding Awarded	Total Project Expenditures	Funding Returned to AQRP
	Institution (*Institution = Lead Institution and PI)	Principal Investigator		Project Funding Awarded to Institution	Institution Project Expenditures	Institution Funding Returned to AQRP
16-008	High Background Ozone Events in the Houston-Galveston-Brazoria Area: Causes, Effects, and Case Studies of Central American Fires	9/22/2016	10/31/2017	\$191,366.00	\$189,684.87	\$1,681.13
	*The University of Houston	Yuxuan Wang				
16-010	MOVES-Based NOx Analyses for Urban Case Studies in Texas	10/20/2016	8/31/2017	\$69,075.00	\$69,075.00	\$0.00
	*Sonoma Technology, Inc.	Stephen Reid				
16-011	A Next Generation Modeling System for Estimating Texas Biogenic VOC Emissions	10/6/2016	8/31/2017	\$158,134.00	\$158,127.36	\$6.64
	*Ramboll Environ US Corporation	Gregory Yarwood				
16-019	The Influence of Alkyl Nitrates from Anthropogenic and Biogenic Precursors on Regional Air Quality in Eastern Texas	9/30/2016	8/31/2017	\$180,641.00	\$180,170.20	\$470.80
	*The University of Texas at Austin	Elena McDonald-Buller		\$118,019.00	\$117,551.39	\$467.61
	Ramboll Environ US Corporation	Gregory Yarwood		\$62,622.00	\$62,618.81	\$3.19
16-031	Condensed Chemical Mechanisms for Ozone and Particulate Matter Incorporating the Latest in Isoprene Chemistry	10/18/2016	8/31/2017	\$225,000.00	\$223,820.08	\$1,179.92
	*University of North Carolina–Chapel Hill	William Vizuete				
16-SOTS	AQRP State of the Science Assessment FY 2016	11/2/2017	1/31/2018	\$3,788.49	\$3,635.83	\$152.66
	*The University of Texas at Austin	Elena McDonald-Buller				

17-007	Evaluating Methods for Determining the Vapor Pressure of Heavy Refinery Liquids	11/3/2016	1/15/2018			
				\$205,500.00	\$202,348.21	\$3,151.79
	*The University of Texas at Austin	Vincent Torres				
17-024	Improving the Modeling of Wildfire Impacts on Ozone and Particulate Matter for Texas Air Quality Planning	10/17/2016	8/31/2017			
				\$170,039.00	\$170,039	\$0.00
	*Atmospheric and Environmental Research, Inc.	Matthew Alvarado				
17-032	Spatial Mapping of Ozone Formation near San Antonio	12/6/2016	8/31/2017			
				\$59,000.00	\$58,964.17	\$35.83
	*Drexel University	Ezra Wood				
17-039	Use of Satellite Data to Improve Specifications of Land Surface Parameters	11/16/2016	10/31/2017			
				\$149,227.00	\$149,226.81	\$0.19
	*University of Alabama – Huntsville	Richard McNider				
17-053	Identifying and Apportioning Ozone Producing VOCs in Central American Fires	1/10/2017	8/31/2017			
				\$185,193.00	\$185,193.00	\$0.00
	*Aerodyne Research, Inc.	Scott Herndon				
17-SAFS	San Antonio Field Study Logistics	4/13/2017	10/31/2017			
				\$46,000.00	\$35,999.96	\$10,000.04
	*The University of Texas at Austin	David Sullivan				
17-SOTS	AQRP State of the Science Assessment FY 2017	11/2/2017	1/31/2018			
				\$22,211.51	\$21,538.51	\$673.00
	*The University of Texas at Austin	Elena McDonald-Buller				
Notes:						

FINANCIAL STATUS REPORT

Initial funding for fiscal years 2016 and 2017 was established at \$1,000,000 each, for a total award of \$2,000,000 for the FY 2016/2017 biennium. On September 4, 2017, the AQRP contract was renewed for the FY 2018/2019 biennium and additional funding of \$750,000 per year was awarded. For each year, the 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 (per Fiscal Year)

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 several staff members were involved, at various levels of effort, in the administration of the AQRP. Dr. David Allen, Principal Investigator and AQRP Director, is responsible for the overall administration of the AQRP. Maria Stanzione, AQRP Program Manager, with Terri Mulvey and Susan McCoy, each provided assistance with program organization and financial management. Denzil Smith is responsible for the AQRP Web Page development and for data management. Gina Palacios is providing assistance with the website redesign.

Fringe benefits for the administration of the AQRP were initially budgeted to be 25% of salaries and wages across the term of the project. It should be noted that this was an estimate, and actual fringe benefit expenses are reported for each month. The fringe benefit amount and percentage 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 is greater for a person with family medical insurance versus a person with individual medical insurance. Actual fringe benefit expenses to date are included in the spreadsheets below.

All FY 2016-17 Administrative funds were expended at the end of the previous quarter.

Table 2: Administration Budgets

**Administration Budget (includes Council Expenses)
FY 2016/2017**

Budget Category	FY16 Budget	FY17 Budget	Total	Expenses	Remaining Balance
Personnel/Salary	\$74,376.95	\$73,027.36	\$147,404.31	\$147,404.31	\$0.00
Fringe Benefits	\$18,118.37	\$18,695.22	\$36,813.59	\$36,813.59	\$0.00
Travel	\$34.00	\$0.00	\$34.00	\$34.00	\$0.00
Supplies	\$32.98	\$974.69	\$1,007.67	\$1,007.67	\$0.00
Equipment					
Total Direct Costs	\$92,562.30	\$92,697.27	\$185,259.57	\$185,259.57	\$0.00
Authorized Indirect Costs	\$7,437.70	\$7,302.73	\$14,740.43	\$14,740.43	\$0.00
10% of Salaries and Wages					
Total Costs	\$100,000.00	\$100,000.00	\$200,000.00	\$200,000.00	\$0.00

**Administration Budget (includes Council Expenses)
FY 2018/2019**

Budget Category	FY18 Budget	FY19 Budget	Total	Expenses	Remaining Balance
Personnel/Salary	\$53,700.00	\$53,700.00	\$107,400.00	\$24,927.60	\$28,772.40
Fringe Benefits	\$12,930.00	\$12,930.00	\$25,860.00	\$6,874.61	\$6,055.39
Travel	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Supplies	\$3,000.00	\$3,000.00	\$6,000.00	\$247.33	\$2,752.67
Equipment					
Total Direct Costs	\$69,630.00	\$69,630.00	\$139,260.00	\$32,049.54	\$37,580.46
Authorized Indirect Costs	\$5,370.00	\$5,370.00	\$10,740.00	\$2,492.76	\$2,877.24
10% of Salaries and Wages					
Total Costs	\$75,000.00	\$75,000.00	\$150,000.00	\$34,542.30	\$40,457.70

ITAC

All ITAC expenses for FY 2016/2017 were accounted for by the end of September 2016.

Table 3: ITAC Budgets

ITAC Budget FY 2016/2017

Budget Category	FY16 Budget	FY17 Budget	Total	Expenses	Remaining Balance
Personnel/Salary					
Fringe Benefits					
Travel	\$4,076.57	\$0.00	\$4,076.57	\$4,076.57	\$0.00
Supplies	\$1,079.20	\$0.00	\$1,079.20	\$1,079.20	\$0.00
Total Direct Costs	\$5,155.77	\$0.00	\$5,155.77	\$5,155.77	\$0.00
Authorized Indirect Costs					
10% of Salaries and Wages					
Total Costs	\$5,155.77	\$0.00	\$5,155.77	\$5,155.77	\$0.00

ITAC Budget FY 2018/2019

Budget Category	FY18 Budget	FY19 Budget	Total	Expenses	Remaining Balance
Personnel/Salary					
Fringe Benefits					
Travel	\$7,500.00	\$7,500.00	\$15,000.00	\$0.00	\$15,000.00
Supplies	\$1,500.00	\$1,500.00	\$3,000.00	\$0.00	\$3,000.00
Total Direct Costs	\$9,000.00	\$9,000.00	\$18,000.00	\$0.00	\$18,000.00
Authorized Indirect Costs					
10% of Salaries and Wages					
Total Costs	\$9,000.00	\$9,000.00	\$18,000.00	\$0.00	\$18,000.00

Project Management

Table 4: Project Management Budgets

**Project Management Budget
FY 2016/2017**

Budget Category	FY16 Budget	FY17 Budget	Total	Expenses	Remaining Balance
Personnel/Salary	\$53,470.31	\$51,912.00	\$105,382.31	\$105,197.89	\$184.42
Fringe Benefits	\$11,337.17	\$12,535.00	\$23,872.17	\$23,573.81	\$298.36
Travel	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Supplies	\$23.72	\$500.00	\$523.72	\$163.62	\$360.10
Other	\$0.00	\$5,000.00	\$5,000.00	\$0.00	\$5,000.00
Total Direct Costs	\$64,831.20	\$69,947.00	\$134,778.20	\$128,935.32	\$5,842.88
Authorized Indirect Costs 10% of Salaries and Wages	\$5,347.03	\$5,191.00	\$10,538.03	\$10,519.79	\$18.24
Total Costs	\$70,178.23	\$75,138.00	\$145,316.23	\$139,455.11	\$5,861.12

**Project Management Budget
FY 2018/2019**

Budget Category	FY18 Budget	FY19 Budget	Total	Expenses	Remaining Balance
Personnel/Salary	\$38,060.00	\$38,060.00	\$76,120.00	\$0.00	\$76,120
Fringe Benefits	\$9,134.00	\$9,134.00	\$18,268.00	\$0.00	\$18,268
Travel	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Supplies	\$1,000.00	\$1,000.00	\$2,000.00	\$0.00	\$2,000.00
Other	\$2,500.00	\$2,500.00	\$5,000.00	\$0.00	\$5,000.00
Total Direct Costs	\$50,694.00	\$50,694.00	\$101,388.00	\$0.00	\$101,388.00
Authorized Indirect Costs 10% of Salaries and Wages	\$3,806.00	\$3,806.00	\$7,612.00	\$0.00	\$7,612.00
Total Costs	\$54,500.00	\$54,500.00	\$109,000.00	\$0.00	\$109,000.00

Research Projects

For FY 2016/2017, a total of \$1,630,000 was originally budgeted for research projects. In previous quarters those funds were increased by \$9,216, due to the reduction in funds allocated to Other and ITAC. In February 2018, FY 2017 Contractual/Research Project funds were increased by \$6,862 from the rebudget of unused ITAC funds.

A total of ten (10) projects were selected for funding out of fifty four (54) proposals submitted to the AGRP RFP for the 2016-2017 biennium. An additional project to oversee the logistics of the San Antonio Field Study was added in April 2017. With the addition of this project \$1,639,916 has been allocated across the eleven 2016-2017 research projects.

In November 2017, \$26,000 was allocated to the State of the Science Assessment. The funds for this project were made available from remaining FY 2016 and FY 2017 project funds. Program Administration did not know the amount of FY 2016 funds available until all FY 2016 projects submitted final invoices and close-out documents. Once this information was available the State of the Science Assessment was funded. This process allowed the most efficient use of the available funding and ensures all FY 2016 funds are expended within the funding period. This project is now complete and all expenses have been paid.

Table 5 on the following page shows the distribution of the projects across the fiscal years and the cumulative expenditures to date, along with the funds remaining.

For FY 2018/2019, a total of \$1,223,000 is budgeted for research projects. Any remaining FY 2017 Research Project funds (expected to be less than \$2000) will be used to augment this amount.

Table 5: Contractual/Research Project Budget

Contractual Expenses				
FY 16 Contractual Funding		\$815,000		
FY 16 Contractual Funding Transfers		\$9,666		
FY 16 Total Contractual Funding		\$824,666		
Project Number		Amount Awarded (Budget)	Cumulative Expenditures	Remaining Balance
16-008	University of Houston	\$191,366	\$189,684.87	\$1,681.13
16-010	Sonoma Technology, Inc.	\$69,075	\$69,075.00	\$0.00
16-011	Ramboll Environ	\$158,134	\$158,127.36	\$6.64
16-019	Univ. of Texas - Austin	\$118,019	\$117,551.39	\$467.61
16-019	Ramboll Environ	\$62,622	\$62,618.81	\$3.19
16-031	UNC - Chapel Hill	\$225,000	\$223,820.08	\$1,179.92
FY 16 Total Contractual Funding Awarded		\$824,216		
FY 16 Contractual Funds Expended (Init. Projects)			\$820,877.51	
FY 16 Contractual Funds Remaining to be Spent				\$3,788.49
FY 16 Additional Expenditures				
	State of the Science	\$3,788.49	\$3,635.83	\$152.66
			\$824,513.34	
FY 16 Contractual Funds Remaining to be Spent				\$152.66

Table 5: Contractual/Research Project Budget (continued)

Project Number		Amount Awarded (Budget)	Cumulative Expenditures	Remaining Balance
FY 17 Contractual Funding		\$815,000		
FY 17 Contractual Funding Transfers		\$9,862		
FY 17 Total Contractual Funding		\$824,862		
17-007	Univ. of Texas - Austin	\$205,500	\$202,348.20	\$3,151.80
17-024	Atmospheric and Environmental Research, Inc.	\$170,039	\$170,039.00	\$0.00
17-032	Drexel University	\$59,000	\$58,958.17	\$41.83
17-039	Univ. of Alabama - Huntsville	\$149,227	\$149,226.81	\$0.19
17-053	Aerodyne Research, Inc.	\$185,193	\$185,193.00	\$0.00
17-SAFS	Univ. of Texas - Austin	\$46,000	\$35,999.96	\$10,000.04
FY 17 Total Contractual Funding Awarded		\$814,959		
FY 17 Contractual Funding Expended (Init. Projects)			\$801,765.14	
FY 17 Contractual Funds Remaining to be Spent				\$23,096.86
FY 17 Additional Expenditures				
	State of the Science	\$22,211.51	\$21,538.51	\$673.00
FY 17 Contractual Funds Expended			\$823,303.65	
FY 17 Contractual Funds Remaining to be Spent				\$1,558.35
Total Contractual Funding		\$1,649,528		
Total Contractual Funding Awarded		\$1,639,175		
Total Contractual Funding Remaining to be Awarded		\$10,353		
Total Contractual Funds Expended to Date			\$1,647,816.99	
Total Contractual Funds Remaining to be Spent				\$1,711.01