



PATH FORWARD FOR AN OZONE ADVANCE PROGRAM

**THE CORPUS CHRISTI URBAN AIRSHED PATH FORWARD PLAN TO
MAINTAIN ATTAINMENT OF THE 8-HOUR OZONE STANDARD**

Submitted May 2014

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INTRODUCTION

The Corpus Christi Urban Airshed is made up of two adjoining counties in South Texas: Nueces County and San Patricio County. The region is a large urbanized area with a number of industrial point sources of air emissions and a concentration of mobile sources. The two counties are home to the nation's fifth busiest deep-water port with access to the Gulf of Mexico and the Gulf Intracoastal Waterway, and are home to a large industrial and petrochemical complex, a major military base, renewed oil and gas exploration activity, and a network of highways, including the Interstate Highway System, railroads, and air routes, that facilitates commerce and a thriving tourism industry.

Nueces County and San Patricio County (*Figure 1*) are defined by the U.S. Environmental Protection Agency (USEPA) and the Texas Commission on Environmental Quality (TCEQ) as an urban airshed in which air emissions from sources in both counties interact to influence the level of ambient air pollution in the Corpus Christi community. Control of ambient air quality requires a strategy that considers sources of air emissions in both counties.

Figure 1: Map of Corpus Christi Urban Airshed and location of regulatory ozone monitors (CAMS 4 and CAMS 21)



STAKEHOLDERS

The Corpus Christi Urban Airshed (Airshed) is an area in which local entities are working together via The Corpus Christi Air Quality Group to plan and implement voluntary actions appropriate for community needs in order to improve air quality.

The Corpus Christi Air Quality Group was established in 1995 to address National Ambient Air Quality Standards (NAAQS) ozone attainment issues for the Airshed. The group works collaboratively to identify air emission sources and to design and implement emission reduction programs that are suitable for the Corpus Christi area.

Members of the Corpus Christi Air Quality Group include individuals from the local government, business and industry, local universities, public agencies, a regional planning organization, the military, and the news media. The broad stakeholder representation within the Corpus Christi Air Quality Group allows the group to design common sense strategies that reflect the weather, driving habits, and economy of the region.

The Corpus Christi Air Quality Group meetings are held quarterly in public facilities such as meeting rooms at Texas A&M University-Corpus Christi, City Hall, or Port of Corpus Christi, and are open to the public. The Chair of the Corpus Christi Air Quality Group provides meeting announcements to Chamber of Commerce Groups, Port Industry Advisory Committees, Community Health Groups, and business groups, along with encouragement to attend and participate in the meetings.

On December 15, 2012, the Corpus Christi Air Quality Group submitted a letter of intent to the USEPA to participate in an Ozone Advance Program (*Attachment A*). The goal for the Airshed participation in the Ozone Advance Program is to maintain the area's successful record of maintaining healthy air quality and to encourage voluntary air emission reductions that help keep Nueces County and San Patricio County in attainment with the current 8-hour ozone standard of 75 ppb (parts per billion) as well as attainment of future ozone standards should the USEPA elect to lower the allowable standard for ozone.

The Corpus Christi Air Quality Group has developed and delivered similar plans, that have been formalized by the USEPA; the 1996 Flexible Attainment Region Memorandum of Agreement and both the 2002 and the 2007 8-O3FLEX Memorandum of Agreement (Agreements).

The policies and guidelines developed and implemented by the Corpus Christi Air Quality Group in these Agreements encouraged voluntary air emission reductions that helped keep the area in attainment of both the original 85 ppb ozone standard set in 2002 and the 75 ppb standard set in 2008, while contributing to the achievement of the positive health benefits envisioned under the 8-hour average. The Airshed is still experiencing the effects of the successful voluntary emission reductions efforts committed to in these Agreements.

Attachment A includes resolutions in support of the Corpus Christi Urban Airshed Ozone Advance from the following governmental authorities or participants in the Corpus Christi Air Quality Group:

- City of Corpus Christi
- San Patricio County
- Port of Corpus Christi Authority
- Regional Transportation Authority
- Corpus Christi Metropolitan Planning Organization
- Nueces County

Other stakeholders or participants in the Corpus Christi Air Quality Group making major contributions to this effort include the following:

- Port Industries of Corpus Christi and its member companies
- Texas A&M University-Corpus Christi, Pollution Prevention Partnership
- Texas A&M University-Kingsville/University of North Texas (UNT/TAMUK), Department of Environmental Engineering
- Corpus Christi Army Depot (CCAD)

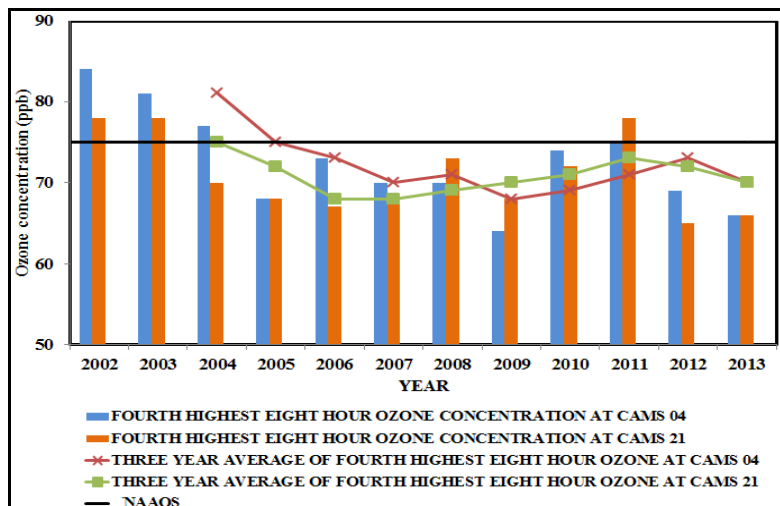
APPLICABLE STANDARDS

The current National Ambient Air Quality Standard (NAAQS) for ozone: the fourth highest daily maximum 8-hour average, averaged over the past three calendar years, may not exceed 75 ppb.

STATUS OF AIR QUALITY

TCEQ operates two Continuous Air Monitoring Stations (CAMS) in Corpus Christi: TCEQ CAMS 4, located at the Corpus Christi State Supported Living Center at 902 Airport Road; and TCEQ CAMS 21, located in West Guth Park at 9866 La Branch Street (*Figure 1*). Ozone levels recorded at these two monitors are used to determine the attainment status of the area. Currently, the Airshed is in attainment of the NAAQS for ozone at a current design value of 70 ppb. The Airshed has experienced an overall decreasing trend from 2002 through 2013 (*Figure 2*).

Figure 2: Corpus Christi Ozone Design Trends



Corpus Christi Air Quality Group participant and stakeholder UNT/TAMUK operates several research grade air monitoring stations (Figure 3). Two of those stations are upwind of the regulatory monitors, while one is located downwind. The two upwind air monitors, Aransas Pass (CAMS 659) and Odem (CAMS 686), have consistently recorded design values approaching or equal to the current NAAQS for ozone, suggesting an influence of long range transported emissions from outside of the Airshed at the local monitors (Table 1).

Figure 3: Map of Research Air Monitors Operated by UNT/TAMUK

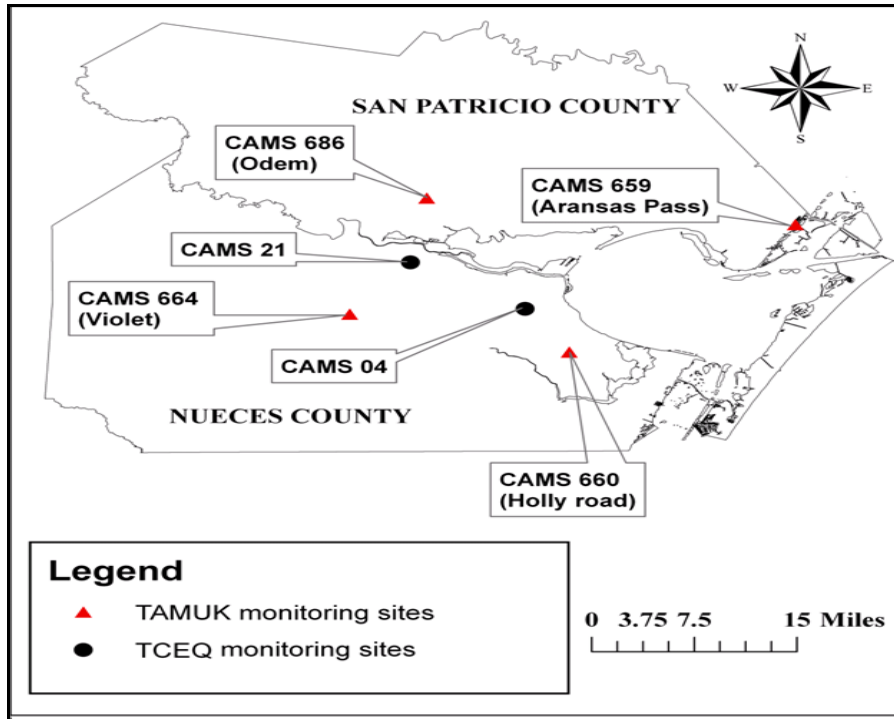


Table 1: Ozone design values observed at the non-compliance research grade monitoring stations

Year	CAMS 660 (Holly Rd)	CAMS 664 (Violet)	CAMS 659 (Aransas Pass)	CAMS 686 (Odem)
2006-2008	72	71	74	68
2007-2009	67	69	75	69
2008-2010	66	69	75	68
2009-2011	67	72	75	71
2010-2012	68	71	75	71

COMPLETED EMISSIONS REDUCTION ACTIVITIES

Since the last Agreement letter with the USEPA dated October 2007, the Corpus Christi Urban Airshed/Corpus Christi Air Quality Group have produced and implemented a number of air quality research projects, planning measures, and program deliveries of voluntary emission reduction initiatives.

Research

Air quality research measures for the Airshed are sponsored by the TCEQ, with examples listed below.

- For better assessment of air pollution in the Airshed along with the spatial distribution of ozone concentrations, three research-grade monitoring stations were setup by UNT/TAMUK as an integral part of RIDER FY_2002 (with funding provided through TCEQ), in addition to the two existing compliance grade monitoring stations.

These three new stations included:

- (1) an upwind site at the waste water treatment plant in Aransas Pass (CAMS 659);
- (2) a downwind site located at Violet Road, near Robstown, Texas (CAMS 664); and
- (3) an urban site at the municipal water pumping station on Holly Road (CAMS 660), south of SH-358 (South Padre Island Drive) in Corpus Christi.

Three more research grade monitoring stations were then set up by UNT/TAMUK as part of a Supplemental Environmental Project (SEP) in 2007:

- (1) Ingleside, Texas site (CAMS 685) - located on the property of the water pumping station off SH-361, which is situated in between the Sherwin Alumina plant and DuPont/Oxychem PVC production plant of Ingleside, Texas;
- (2) Odem, Texas site (CAMS 686) - located northwest of Corpus Christi on the property of the water pumping station in Odem, Texas operated by the San Patricio Municipal Water District; and
- (3) Taft, Texas site (CAMS 687) - located on the property of the water pumping station in Taft, Texas, operated by the San Patricio Municipal Water District.

Each of these sites is equipped with an ozone analyzer, weather sensors, and data logger for continuous measurement and data collection. The collected air quality data is posted on TCEQ's website using wireless modems and the TCEQ LEADS data acquisition system and is made available to the general public, stakeholders, and other researchers. The geographical location of the monitoring sites is shown in *Figure 3*.

- A complete emissions inventory was performed for year 2002 in 2005.

- A complete emissions inventory was performed for the year 2005 in 2008.
- An emissions inventory of port activities covering years 2006 to 2009 was performed in 2011.
- A complete emissions inventory (with the exception of port activities and construction equipment emissions) for the year 2011 was provided by TCEQ.
- The 2008 national emissions inventory of the Urban Airshed for the identified non-road sources was updated in 2013 by UNT/TAMUK, including marine vessels, pleasure craft, air craft, locomotives and agricultural equipment, which had been significantly under- or overestimated.
- The ozone concentration data, along with weather data measured at the compliance grade and research grade monitoring stations (including resultant wind speed, wind direction, outdoor temperature, and relative humidity), was used to update a conceptual modeling report through 2012. The analysis was used to identify potential ozone episodes for further photochemical modeling analysis.

Program Planning and Implementation

The local research performed in past emissions inventories and modeling has suggested that mobile sources were a significant emission source of ozone precursors. Planning measures were initiated based on the local research results, and mobile source emission reduction programs were implemented as an effective local measure to ensure Corpus Christi's continued attainment of ozone standards and healthy air quality.

Examples of programs that were implemented as a result of data provided by the emissions inventories include:

- The City of Corpus Christi installed three CNG fueling stations with two of those stations open to the public. The City of Corpus Christi increased its CNG fleet from five vehicles to forty-one dedicated CNG vehicles, sixteen bi-fuel CNG vehicles, and fifteen bi-fuel propane vehicles. The City of Corpus Christi also partnered with the US Postal Service to fuel eighty-two postal delivery vehicles and AT&T for the fueling of forty-three bi-fuel CNG vehicles. The City hosted a well-attended conference in November 2012 that encouraged private fleets to convert to CNG.
- The area's transit system, the Regional Transit Authority, purchased seven CNG fueled vans, seventeen CNG fueled buses, sixteen para-transit vehicles, and installed a large CNG fast fill station at its facility.
- The Pollution Prevention Partnership's AutoCheck vehicle emissions program has tested 3,732 public vehicles for emissions. Of those 3,732 vehicles tested for emissions, 944 were identified as polluting, and the owners were informed by AutoCheck staff that their vehicle

was polluting and impacting air quality. The AutoCheck program provided funds for the pollution prevention repairs of 246 of those polluting vehicles to bring them back up to clean standards. The AutoCheck program also emissions tested 389 fleet vehicles at area businesses.

- The Port of Corpus Christi repowered a 120-ton locomotive switch engine, which consisted of replacing the existing 1,000 horsepower engine with two more modern industrial engines totaling 1,400 horsepower, and reduced the NOx emissions by 49.2%, PM2.5 emissions by 65.2%, and hydrocarbon emissions by 54.4%. This repower project was funded by USEPA Diesel Emissions Reductions Act (DERA). The Port of Corpus Christi continuously stays abreast of funding opportunities to initiate other similar projects.
- The Port of Corpus Christi instituted a five minute anti-idling policy for Port fleet and Port employee vehicles.
- The Port of Corpus Christi has purchased and is using a CNG-powered truck with the purpose of assessing its use and capabilities in the Port's fleet.
- The Port Industries funded over \$20,000 for the development and delivery of an Air Quality curriculum for 5th grade students (*Attachment B*), which was delivered to 19 classes and 480 students. Port Industries provided the stipend for teacher curriculum development, prizes to incentivize students, and staff time to present the curriculum to the students.

OZONE ADVANCE PATH FORWARD EMISSIONS REDUCTIONS COMMITMENTS AND TIMELINE

The Corpus Christi Urban Airshed Path Forward Plan is to identify and implement new emissions reduction programs as well as continue existing successful emission reduction efforts that ensure the area remains in attainment of NAAQS ozone standards.

The recommended term of an area's participation in an Ozone Advance Program is five years.

Year 1: Emissions Inventory Analysis, Public Education, Funding

The Corpus Christi Air Quality Group recently received the TCEQ 2011 emissions inventory and subsequent EPA analysis of the TCEQ 2011 emissions inventory raw data (*Attachment C*). The 2011 emissions inventory provided by TCEQ did not include emissions from the Port of Corpus Christi or construction equipment.

The Corpus Christi Air Quality Group requested a workplan and quote from StarCrest LCC to provide an inventory and accurate analysis of these missing components in an effort to have a complete inventory and analysis of overall emissions contributions. This workplan and quote in the amount of \$79,500 for Year 1 and \$74,000 for Year 2 has been received (*Attachment D*). The Port of Corpus Christi has committed to funding the Year 1 work plan in the amount of \$79,500, and Starcrest will perform those activities.

Also included in the first year of Corpus Christi's Path Forward plan is the effort to fund a fulltime position for air quality public education. The Corpus Christi Air Quality Group will work with stakeholders and potential sponsors to try to secure funding for a position that delivers a community-wide education campaign that strives to educate members of the community about the air quality impact of their choices and what better, alternate choices are available to them. An educated public is an important component of any community that strives to maintain healthy air quality.

Year 1 and 2: Voluntary Emissions Reductions Studies and Programs

The Port of Corpus Christi has committed to funding Year 2 of the StarCrest work plan in the amount of \$74,000.

Through TCEQ's Rider 8 Program, the City of Corpus Christi has secured \$596,195.00 of funding for a two-year work plan to implement numerous voluntary emissions reductions studies and programs. The work plan and timeline has been included as *Attachment E*.

A summarized scope of work follows:

Research, Modeling, Monitoring

- Operate and maintain the three research grade monitoring stations within Nueces and San Patricio counties. These include:
 - (1) an upwind site at the waste water treatment plant in Aransas Pass, TX (CAMS 659);
 - (2) a downwind site located at Violet Road, near Robstown, TX (CAMS 664); and
 - (3) an urban site at the municipal water pumping station on Holly Road (CAMS 660), SH-358 (South Padre Island Drive) in Corpus Christi.

An additional research grade monitoring station, CAMS 686 (Odem, Texas) setup in the San Patricio county as an integral part of the Supplemental Environmental Project (SEP), will also be maintained for better spatial assessment of ozone levels within the Airshed.

- Acquire data using an Enfora modem and provide the data to the public, stakeholders, and other researchers on TCEQ's website using the LEADS data acquisition system.
- Conduct continuous monitoring of nitrogen oxides (NOx) concentration at an identified site during the 2014-2015 ozone season.
- Upgrade air monitoring equipment at the three UNT/TAMUK monitoring sites.
- Update the conceptual modeling report with the ozone concentrations as measured to identify and characterize the ozone episodes. The data will also be used to identify potential photochemical episodes for further analysis.

- Update the attainment status of ozone National Ambient Air Quality Standards (NAAQS) and analyze the design value trends for the Airshed through the current ozone season. The ozone concentrations measured at the compliance grade monitoring stations maintained and operated by TCEQ (CAMS 04, CAMS 21) along with the research grade monitoring stations maintained and operated by UNT/TAMUK (CAMS 660, CAMS 664, CAMS 659, and CAMS 686) will be used to study the annual and seasonal trends of ozone exceedances along with the diurnal trends. The ozone concentrations will be further used to identify the episode days exceeding current NAAQS and to characterize the prevailing meteorological conditions. The analysis will be used to update the conceptual modeling report for the Airshed for further identification of photochemical modeling episodes.

Mobile Sources

- The Pollution Prevention Partnership will deliver the “Clean Fleet” vehicle emissions testing program and hold a minimum of one testing event each month. The program will include direct emissions testing from the tail pipe, possible repairs, post-repair direct emissions testing from the tail pipe, and an approximation of emissions reductions as a result of the repair. Certified garages will perform On Board Diagnostics (OBD) prior to performing the repairs.

Year 3: Development of New Programs Based on Emissions Inventories

The StarCrest emissions inventory and analysis of the Airshed’s overall contribution sources and levels, after considering Port of Corpus Christi and construction equipment, will be reviewed and evaluated to identify new, feasible emissions reductions programs. The most effective application of limited resources will be evaluated to ensure that programs and efforts are met with the highest level of success in emissions reductions. Potential stakeholders and partners to participate in new emissions reductions efforts will be recruited, program delivery candidates will be identified, and funding will be sought after.

Years 1-5: Other Emissions Reductions Programs

In addition to the Port of Corpus Christi funded emissions inventory and analysis, and the scientific research and emissions reductions programs that will be implemented through the TCEQ Rider 8 Program funding, the following emissions reductions programs will take place during years 1-5:

Point Source

- Several Port Industries will continue to utilize IR cameras to detect and prevent fugitive emissions beyond what is required in regulations for fugitive emissions.

Area and Mobile Source

- Corpus Christi Army Depot (CCAD) is one of the largest industrial employers in the airshed and is committed to preventing pollution by including emissions reductions in ozone precursors as part of its environmental strategy. CCAD is a stakeholder in the City’s Air

Quality Work Group and provides all employees with notifications when Ozone Action Days are declared and offers voluntary actions to take during and after work periods. CCAD runs a screensaver through its entire web base that informs all employees of Ozone Alert notifications and recommendations.

- All TCEQ Texas Emissions Reductions Program (TERP), DERA, and other TCEQ and EPA applications for funding opportunities will be communicated to the Corpus Christi Air Quality Group and their work places by the Group's Chair.

Mobile Source

- Local refineries will continue to provide the Corpus Christi area with gasoline that has a maximum vapor pressure of 7.8 psi during the months of May through September and 9 psi in October; this is a reduction from the maximum of 11.5 psi currently allowed by Regulation.
- The City of Corpus Christi will continue to operate two public use CNG fueling stations. The City of Corpus Christi plans to purchase fifteen OEM bi-fuel CNG vehicles within the year.
- The US Postal Service will be installing another CNG fueling facility and will be purchasing twenty-six additional CNG vehicles.
- The Regional Transportation Authority will replace seven gasoline fueled Paratransit vehicles with seven CNG fueled vehicles and twenty-four diesel powered buses with twenty-four CNG buses by December 2018.
- The Corpus Christi Metropolitan Planning Organization (MPO) will assist other local government agencies in implementing the Regional Bicycle and Pedestrian Plan with the objective of improving facility accessibility to encourage the use of bicycling and walking as trip alternatives. The MPO will assist agencies, such as the City of Corpus Christi, to establish a database of accessible bike/pedestrian facilities, to coordinate MPO and City planning documents to be consistent between policies and practices, and to facilitate dialogue between the bicycle community and TxDOT, TAMUCC, and the City about the creation of new facilities, new policies, and the dissemination of public information.

Education

The Corpus Christi Air Quality Group represents a broad array of agency, industry, university, and media associations. The Chair of the Corpus Christi Air Quality Group will communicate, promote, and encourage all participants and their workplaces to take advantage of the many EPA education and outreach resources for air quality, including Enviroflash, AirNow, social media messaging, brochures, posters, anti-idling program templates, and more.

The Chair of the Corpus Christi Air Quality Group will partner with a Regional Transportation Authority representative to promote the Van Share program and will arrange for presentations at major local employers.

FUNDING CONTINGENT ACTIVITIES

Contingent upon funding provided by local sponsors and the timeline of the funding received, the Corpus Christi area participation in the Ozone Advance Program may include:

Year 2: Emissions Inventory, Analysis, Public Education

If funded in Year 1:

- A dedicated, fulltime air quality position will be secured, and a community-wide public education program for air quality will begin. This position will be responsible for delivering a community-wide air quality education program that will take advantage of the many EPA resources already available, such as Ozone Day school flags, brochures, websites, social media messaging resources, posters, school curricula, and more.
- The Port Industry funded air quality curricula delivered to 5th grade students will be repeated to new 5th grade classes (*Attachment B*).

Year 3: Implementation of New Programs Based on Emissions Inventory

If funded in Year 3:

- Initial implementation of newly identified and funded programs resulting from the StarCrest emissions inventory and analysis of the Port of Corpus Christi and construction equipment emissions will begin.

Year 4 and 5: New Emissions Inventory for Program Success Evaluation

If funded:

- A follow-up emissions inventory and analysis on the Port of Corpus Christi and construction equipment will be performed by StarCrest (*Attachment D*) to assess the effectiveness of the newly implemented programs.

EXPECTED OZONE ADVANCE DURATION

This Ozone Advance Program is anticipated to remain in effect for five years. By mutual agreement, the parties may extend the term of this Ozone Advance Program if the program is still in place.

CONDITIONS FOR MODIFICATION OR EARLY TERMINATION

This agreement may be modified or terminated by mutual consent of all parties.

Any party may withdraw from the agreement if provisions of the agreement are not carried out by the other parties. As a voluntary program, the area can choose to end its participation at any time.

ANNUAL REVIEW

During the term of this Ozone Advance Program, the Corpus Christi Air Quality Group will continue to meet quarterly to oversee the Path Forward commitments and initiatives and to monitor progress. On an annual basis, the Corpus Christi Air Quality Group will assess the effectiveness of the Path Forward plan. As part of the annual review, the Corpus Christi Air Quality Group will determine any mid-course corrections the Plan needs and will provide an annual report to USEPA Region 6 and local stakeholders containing the latest information on implementation of control measures, ozone monitoring data, and the success of current measures. The Corpus Christi Air Quality Group will communicate informally with USEPA between annual updates.

Should the area violate NAAQS for ozone, emergency or special meetings of the Corpus Christi Air Quality Group will be called and additional aggressive measures to address emissions reductions will be analyzed for immediate implementation.

ADDITIONAL TERMS OF THIS PROGRAM

This Agreement creates no cause of action against any party beyond those, if any, that may already exist under state or federal law. In addition, all parties agree that this Agreement cannot be used against one another or by a third party as an enforceable order in any court proceedings. This Ozone Advance Program will be reviewed and modified as needed.

Regulations that apply to the area would still apply under this program. This Ozone Advance Program does not shield the area from being redesignated non-attainment for the 8-hour ozone standard if the area is in violation of that standard. Should a violation occur, however, USEPA would consider factors in section 107, (d) (3) (A) of the Act. These include “air quality data, planning and control considerations, or any other air quality-related considerations the Administrator deems appropriate.” Where control measures are being actively implemented by program participants, the EPA may allow time to determine whether such measures bring an area back into attainment. As long as the program intent and Path Forward Plan are being fully implemented, USEPA would consider that circumstance in exercising its discretion in making a decision to redesignate the area to non-attainment.

This Ozone Advance Program emphasizes local flexibility in selecting and implementing emissions reduction measures. Given the varied emissions contributions and socioeconomic characteristics of the entities in the Airshed, not all measures can or should be implemented by all entities. Rather, each entity will implement the measures that work for its specific jurisdiction and, when added together, work for the region as a whole.

ATTACHMENT A:
Corpus Christi Urban Airshed Ozone Advance Letter of Intent

December 21, 2012

Ozone Advance
c/o Laura Bunte
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards, C304-01
Research Triangle Park, NC 27711

Dear Ms. Bunte:

The Corpus Christi Air Quality Group would like to participate in Ozone Advance with respect to the Corpus Christi Urban Air Shed. We wish to join this partnership with EPA to preserve or improve the air quality in the Corpus Christi Urban Air Shed, and we meet the program eligibility criteria, i.e.:

- (1) The Corpus Christi Urban Air Shed is not currently a nonattainment area for either the 1997 8-hour or the 2008 ozone National Ambient Air Quality Standards (NAAQS),
- (2) The Corpus Christi Urban Air Shed consists of Nueces and San Patricio counties in the Texas Coastal Bend Region. (US EPA Region 6)
- (3) The following air monitor(s) reflect the air quality in the Corpus Christi Urban Air Shed: CAMS 4 and CAMS 21, and
- (4) Existing emissions inventory reporting requirements have been met.

We understand that our efforts under Ozone Advance may benefit the Corpus Christi Urban Air Shed by potentially:

- Reducing air pollution in terms of ozone as well as other air pollutants,
- Ensuring continued healthy ozone levels,
- Maintaining the ozone NAAQS,
- Helping avoid violations of the ozone NAAQS that could lead to a future nonattainment designation,
- Increasing public awareness about ground-level ozone as an air pollutant, and
- Targeting limited resources toward actions to address ozone problems quickly.

Our goal is to continue current programs that have demonstrated significant ozone reductions. Through modeling or other research, new programs may be implemented that could even further lower ozone in the Corpus Christi Urban Air Shed in the near term. We agree that it is in our best interest to work together and in coordination with stakeholders and the public to proactively pursue this goal.

Attached, please find resolutions from stakeholders City of Corpus Christi, San Patricio County, Port of Corpus Christi Authority, Regional Transportation Authority, and Metropolitan Planning Organization.

I can be reached at **361-825-3070** and by e-mail gretchen.arnold@tamucc.edu.

Sincerely,



Gretchen Arnold
Chair, Corpus Christi Air Quality Group

cc:

Carrie Paige, U S EPA Region 6
Ron Olson, City Manager, City of Corpus Christi
Judge Terry Simpson, San Patricio County
Mike Carrell, Chair, Port of Corpus Christi Authority Commission
Tom Niskala, Director, Corpus Christi Metropolitan Planning Organization
Scott Neeley, Director, Corpus Christi Regional Transportation Authority

Attachments:

City of Corpus Christi Resolution
San Patricio County Resolution
Port of Corpus Christi Authority Resolution
Metropolitan Planning Organization Resolution
Regional Transportation Authority Resolution

City of Corpus Christi Letter of Commitment

Resolution by the City Council of the City Corpus Christi supporting the Corpus Christi Air Quality Groups participation in the EPA Ozone Advance Program to promote local actions to reduce ozone precursors in the community and continue to maintain National Ambient Air Quality Standards for ozone.

Whereas, the City of Corpus Christi has been a stakeholder in the Corpus Christi Urbanized Area air reduction agreements; and

Whereas, the "Air Shed" stakeholders and entities represented in the Corpus Christi Air Quality Group, the Texas Commission on Environmental Quality (TCEQ), and the U.S. Environmental Protection Agency (EPA) have worked together to plan and implement voluntary actions appropriate to community needs to improve air quality through common sense strategies that reflect the weather, driving habits, and economy of the region; and

Whereas, the Corpus Christi Air Quality Group proposed a voluntary response to the federal policy authorizing an 8 Hour O3 FLEX program, and

Whereas, An 8 Hour O3Flex agreement for Nueces and San Patricio Counties was developed by the Corpus Christi Air Quality Group, and was approved by all parties on October 23, 2007; and

Whereas, the 8 Hour O3FLEX agreement expires at the end of 2012; and

Whereas, the Environmental Protection Agency is replacing the 8 Hour O3FLEX agreement with a new voluntary program call Ozone Advance;

NOW, THEREFORE, BE IT HEREBY RESOLVED:

That, the City Council of the City Corpus Christi supports the Corpus Christi Air Quality Group's participation in the EPA Ozone Advance Program to promote local actions to reduce ozone precursors in the community and continue to maintain National Ambient Air Quality Standards for ozone.

ATTEST:


Amanda Chapa
City Secretary

CITY OF CORPUS CHRISTI


Joe Adams
Mayor

029665

INDEXED

San Patricio County Letter of Commitment

THAT STATE OF TEXAS

COMMISSIONERS COURT

COUNTY OF SAN PATRICIO

CORPUS CHRISTI AIR QUALITY GROUP OZONE ADVANCE AGREEMENT

WHEREAS, San Patricio County has been a stakeholder in the Corpus Christi area air emissions reductions agreements; and

WHEREAS, the "Air Shed" stakeholders and entities represented in the Corpus Christi Air Quality Group, the Texas Commission on Environmental Quality (TCEQ), and the U.S. Environmental Protection Agency (EPA) have worked together to plan and implement voluntary actions appropriate to community needs to improve air quality through common sense strategies that reflect the weather, driving habits, and economy of the region; and

WHEREAS, the Corpus Christi Air Quality Group proposed a voluntary response to the federal policy authorizing an 8 Hour O3FLEX program; and

WHEREAS, An 8 Hour O3FLEX Agreement for Nueces and San Patricio Counties was developed by the Corpus Christi Air Quality Group, and was approved by all parties on October 23, 2007; and

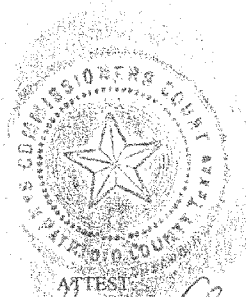
WHEREAS, the 8 hour O3FLEX Agreement expires at the end of 2012; and

WHEREAS, the Environmental Protection Agency is replacing the 8 hour O3FLEX Agreement with a new voluntary program called Ozone Advance;

NOW, THEREFORE, BE IT HEREBY RESOLVED:

The San Patricio County Commissioners supports the Corpus Christi Air Quality Group's continuing successful efforts to collaborate with the U S EPA while identifying local initiatives that reduce air emissions and to seek to maintain Corpus Christi's attainment status of air quality standards set forth by the U S EPA

PASSED and ADOPTED this the 16th day of July, 2012.



ATTEST:
Gracie Alaniz Gonzales
Gracie Alaniz Gonzales, County Clerk

Terry Simpson
Terry Simpson, County Judge

Nina B. Trevino
Nina Trevino, Commissioner, Pct. #1

Fred Nardini
Fred Nardini, Commissioner, Pct. #2

Alma V. Moreno
Alma V. Moreno, Commissioner, Pct. #3

Jim Price
Jim Price, Commissioner, Pct. #4

Nueces County Letter of Commitment

County of Nueces

4A7

MIKE PUSLEY
Commissioner
Precinct 1

JOE A. GONZALEZ
Commissioner
Precinct 2



SAMUEL L. NEAL, JR.
County Judge
Nueces County Courthouse, Room 303
501 Leopard Street
Corpus Christi, Texas 78401-3697

OSCAR ORTIZ
Commissioner
Precinct 3

JOE MCCOMB
Commissioner
Precinct 4

COMMISSIONERS COURT RESOLUTION

WHEREAS, Nueces County has been a stakeholder in previous Corpus Christi area air emissions reduction agreements; and

WHEREAS, the "Air Shed" stakeholders and entities represented in the Corpus Christi Air Quality Group, the Texas Commission on Environmental Quality, and the U.S. Environmental Protection Agency have worked together to plan and implement voluntary actions appropriate to the community needs to improve air quality through common sense strategies that reflected the weather, driving habits, and economy of the region; and

WHEREAS, the Corpus Christi Air Quality Group proposed a voluntary response to the federal policy authorizing an 8-hour O3FLEX Program; and

WHEREAS, an 8-hour O3FLEX Agreement for Nueces and San Patricio Counties was developed by the Corpus Christi Air Quality Group, and was approved by all parties on 23 October 2007; and

WHEREAS, the 8-hour O3FLEX Agreement expired at the end of 2012; and

WHEREAS, the Environmental Protection Agency has replaced the 8-hour O3FLEX Agreement with a new voluntary program called Ozone Advance;

NOW, THEREFORE, BE IT HEREBY RESOLVED, by the Commissioners Court of Nueces County, that Nueces County supports the Corpus Christi Air Quality Group's participation in the Ozone Advance Program, and its continuing successful efforts to work collaboratively with stakeholders in identifying local initiatives that reduce air emissions to keep Corpus Christi in attainment of national air quality standards.

DULY ADOPTED BY VOTE OF THE COMMISSIONERS COURT OF NUECES COUNTY, TEXAS, ON THIS THE 20th DAY OF NOVEMBER, 2013.


MIKE PUSLEY
Commissioner, Precinct 1


OSCAR ORTIZ
Commissioner, Precinct 3

ATTEST:

DIANA T. BARRERA, County Clerk


SAMUEL L. NEAL, JR.
Nueces County Judge




JOE A. GONZALEZ
Commissioner, Precinct 2


JOE MCCOMB
Commissioner, Precinct 4

Port of Corpus Christi Letter of Commitment

RESOLUTION

RESOLUTION AUTHORIZING PARTICIPATION IN THE OZONE ADVANCE PROGRAM

WHEREAS, the Corpus Christi Urban Airshed consists of two adjoining counties, Nueces and San Patricio Counties, and contains a large urbanized area with a number of industrial point sources for air emissions and a concentration of mobile sources; and

WHEREAS, the two county region is home to Port Corpus Christi, fifth largest port in the US, a large industrial and petrochemical complex, a major military base, and a network of highways, railroads, and air routes that facilitate commerce and tourism; and

WHEREAS, in 1995 a Regional Air Quality Committee was established to review ozone attainment issues for the Corpus Christi Urban Airshed as the area was not in attainment of the one-hour and proposed 8-hour National Ambient Air Quality Standard (NAAQS) for ozone and collaborate on voluntary measures and programs to improve air quality through flexible agreements; and

WHEREAS, the Port of Corpus Christi Authority was a signatory to the 1996 Flexible Attainment Region Memorandum, the 2002 O3FLEX Memorandum of Agreement, and the 2007 Corpus Christi Area 8-hour O3Flex Agreement which expires in October 2012; and

WHEREAS, the U.S. Environmental Protection Agency has indicated that the ozone flexible agreements will be replaced with the Ozone Advance Program instead and that there is under consideration modification to the current 8-hour ozone NAAQS; and

WHEREAS, the Corpus Christi Urban Airshed is currently in attainment of the NAAQS for ozone; and

WHEREAS, if the 8-hour ozone NAAQS is lowered the Corpus Christi Urban Airshed is in jeopardy of non-attainment of a revised standard; and

WHEREAS, regional collaboration has been successful since 1995 in our area for maintaining attainment of the ozone NAAQS; and

NOW, THEREFORE BE IT RESOLVED, that the Port Commission of the Port of Corpus Christi Authority hereby supports the Port Authority's participation in the Ozone Advance Program after the expiration of the 2007 Corpus Christi Area 8-hour O3 Flex Agreement in October 2012; and

BE IT FURTHER RESOLVED, by the Port Commission that the Port of Corpus Christi Authority is hereby authorized and directed to participate in the development of an Ozone Advance Program work plan for the Corpus Christi Urban Airshed.

ADOPTED the 11th day of September, 2012, by the Board of Port Commissioners of the Port of Corpus Christi Authority.



Mike Carrell
Chairman

Metropolitan Planning Organization Letter of Commitment

CORPUS CHRISTI METROPOLITAN PLANNING ORGANIZATION

SUPPORT OF THE CORPUS CHRISTI AIR QUALITY GROUP

OZONE ADVANCE AGREEMENT

WHEREAS, the Transportation Policy Committee is designated as the Metropolitan Planning Organization (MPO) serving as the policy and decision making forum for the Corpus Christi Urbanized Area; and

WHEREAS, the "Air Shed" stakeholders and entities represented in the Corpus Christi Air Quality Group, the Texas Commission on Environmental Quality (TCEQ), and the U.S. Environmental Protection Agency (EPA) have worked together to plan and implement voluntary actions appropriate to community needs to improve air quality through common sense strategies that reflect the weather, driving habits, and economy of the region; and

WHEREAS, the Corpus Christi Air Quality Group proposed a voluntary response to the federal policy authorizing an 8 Hour O3FLEX program; and

WHEREAS, An 8 Hour O3FLEX Agreement for Nueces and San Patricio Counties was developed by the Corpus Christi Air Quality Group, and was approved by all parties on October 23, 2007; and

WHEREAS, the 8 Hour O3FLEX Agreement expires at the end of 2013; and

WHEREAS, the Environmental Protection Agency is replacing the 8 Hour O3FLEX Agreement with a new voluntary program call Ozone Advance;

NOW, THEREFORE, BE IT HEREBY RESOLVED:


That the **Corpus Christi Transportation Policy Committee**, supports the Corpus Christi Air Quality Group's continuing successful efforts through collaboration with the U.S. Environmental Protection Agency (EPA). These efforts have identified local initiatives that reduce air emissions and maintain the Corpus Christi attainment status of air quality standards set forth by the US EPA. We will further those efforts by developing a voluntary program that meets the parameters of the Ozone Advance program.



Judge Terry Simpson, Chairperson
Transportation Policy Committee

August 2, 2012

Regional Transportation Authority Letter of Commitment

**Corpus Christi
Regional Transportation Authority**

Resolution

WHEREAS, Corpus Christi Regional Transportation Authority has been a stakeholder in the Corpus Christi area air emissions reductions agreements; and

WHEREAS, the "Air Shed" stakeholders and entities represented in the Corpus Christi Air Quality Group, the Texas Commission on Environmental Quality (TCEQ), and the U.S. Environmental Protection Agency (EPA) have worked together to plan and implement voluntary actions appropriate to community needs to improve air quality through common sense strategies that reflect the weather, driving habits, and economy of the region; and

WHEREAS, the Corpus Christi Air Quality Group proposed a voluntary response to the federal policy authorizing an 8 Hour O3FLEX program; and

WHEREAS, An 8 Hour O3FLEX Agreement for Nueces and San Patricio Counties was developed by the Corpus Christi Air Quality Group, and was approved by all parties on October 23, 2007; and

WHEREAS, the 8 hour O3FLEX Agreement expires at the end of 2012; and

WHEREAS, the Environmental Protection Agency is replacing the 8 hour O3FLEX Agreement with a new voluntary program called Ozone Advance;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE CORPUS CHRISTI REGIONAL TRANSPORTATION AUTHORITY AS FOLLOWS:

RESOLVED, that the Corpus Christi Regional Transportation Authority Board of Directors fully supports the Corpus Christi Air Quality Group's continuing successful efforts to collaborate with the United States EPA, while identifying local initiatives that reduce air emissions and to seek to maintain Corpus Christi's attainment status of air quality standards set forth by the United States EPA.

DULY PASSED AND ADOPTED this 1st day of August 2012.

By 
John Valls
Board Chairman

ATTACHMENT B:
Port Industry Funded and Delivered Air Quality Curricula

Pollutants Lesson Plan

Day 1 - Pollutants Lesson

Part 1 – Introduction (5-8 minutes)

1. Introduce each Super Earth Team member
2. Give a brief explanation of what we will be learning this week and why.
3. Give them the Super Earth foam dolls and Super Earth handout. Explain that we will be having discussions (slides), learning vocabulary words, and participating in activities.
4. Ask them to bring the handout to class each day as we will be referring to different parts of it.

Part 2 – Discussion (25 – 30 Minutes)

1. Slides 1- 28
2. Vocabulary and Pollutants Facts handout
3. Slide discussion includes purpose of lesson, vocabulary, history of air pollution, sources of air pollution, and health effects.
4. Students will discover ways in which they can tell that the air is polluted, learn that there are both particulate and gaseous air pollutants, and define (in their own words) the term air pollution.
5. While the lights are off in the classroom, ask students if they see particles in the beam from the overhead projector. Ask the students if they think the air in the classroom is clean.

Part 3 - Activity (20 - 30 Minutes)

1. Refer to activity sheet “Now You See It, Now You Don’t” and prepare materials ahead of time.
2. Put students desks in a square with 4 to a team
3. Have a table set up where Super Earth Team members prepare 4 kinds of animal crackers (plain icing, ground black pepper icing, white vinegar icing, baking soda icing) using a popsicle stick to spread from tubs.
4. The students must not know what is in each tub.
5. Let one student at a time from each team get their crackers and place them on the squared sheet of paper with each square numbered 1- 4.
6. Give students time to sample the crackers and write their observations
7. Ask each team to talk about what they think was in each cracker and how they decided- sight, smell, taste?
8. Ask the question “If you don’t know what something is, why should you never use your senses of taste, smell, or touch to identify it.
9. Follow discussion questions in “Now You See It, Now You Don’t” activity sheet

VOCs and NOx Lesson Plan

Day 2 - VOCs and NOx Lesson

Part 1 – Terms (15 – 20 Minutes)

1. Slides 1-12
2. Vocabulary handout

First Activity (15 - 20 Minutes)

1. Tox Town Website - <http://toxtown.nlm.nih.gov/>
2. Cover city, town and port locations
3. Pick All Chemicals and start with NOx, VOCs and specific VOCs
4. Gives an idea where these are found

Part 2 – Why VOCs and NOx can be bad (5 minutes)

1. Connecting VOCs and NOx to Ozone
2. Slides 14-16
3. Ozone Formed Handout

Second Activity (10 - 15 Minutes)

1. Bucket List – VOCs and Sources of NOx
 - a. Give class 5 minutes to fill in buckets – prize for most answers (candy)
 - b. Left bucket – List VOCs and VOC Sources
 - c. Right Bucket – List NOx Sources
 - d. Fill in oversized buckets up front based on students input

Part 3 – VOCs, NOx, Ozone and Your health (10 – 15 Minutes)

1. Slides 18 – 23
2. Effects of Common Air Pollutants

Ozone Lesson Plan

Day 3 - Ozone Lesson

Part 1 - Discussion – (20 – 25 Minutes)

1. Slides 1-17
2. Vocabulary handout
3. Ozone handout
4. Discussion includes vocabulary, what ozone is, where ozone comes from, how it affects health, and what Ozone Action Days mean.

Part 2 - Activity (20 - 25 Minutes)

1. Jeopardy! game
2. Put students desks in squares with 4 to each team
3. Each team gets another turn with a right answer, passes to the next team with a right answer
4. Winning team gets a prize.

Air Quality Lesson Plan

Day 4 – Air Quality Lesson

Part 1 – Discussion (15 – 20 Minutes)

1. Slides 1-12
2. Vocabulary handout
3. Air Quality handout
4. Discuss how air quality affects our health and what protective mechanisms the body has against pollution.

Part 2 - Activity (8 - 10 Minutes)

1. Take the students outside.
2. Bring out two different types of aerosol sprays (i.e., hair spray and room deodorizer). Move the students to a more compact area.
3. Pass out paper dust masks. Tell them you are going to spray the aerosols up and out away from them. Let the students have the option of putting the masks on or not.
4. Press the nozzle to spray the ingredients inside one can and then the other. Ask them to answer the questions: What do I see? What do I smell? Ask them why they think you gave them the masks and what role they played

Part 3 - Activity (20 - 25 Minutes)

1. Take the students on walk around the school. Students have pens and notepads and write down sources of pollution they see.
2. Walk the students in the area around the school where they may have the possibility of viewing traffic and/or industrial/commercial processes. Have the students “smell” the air. Ask them if it smells clean, the way it does right after it rains.
3. Discuss whether this could be an Ozone Action Day (hot, still air? Or cool, windy?). Why? Why not?
4. Is it hazy near the horizon? What does that mean?
5. Look for signs of deposited air pollution particles on surfaces.
6. Point out things and ask if they could be sources of pollution (jet planes, refineries, chemical plants, lawn mowers, cars, barbeques pits, etc.) and how.
7. Students listing most possible sources are recognized back in the class room

ATTACHMENT C:
USEPA Analysis of TCEQ 2011 Emissions Inventory

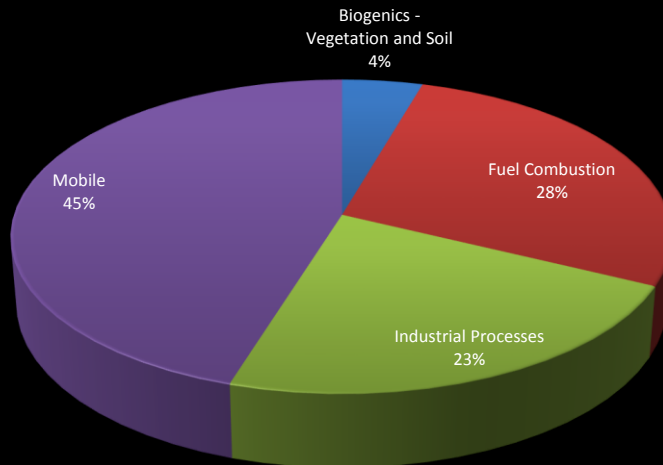
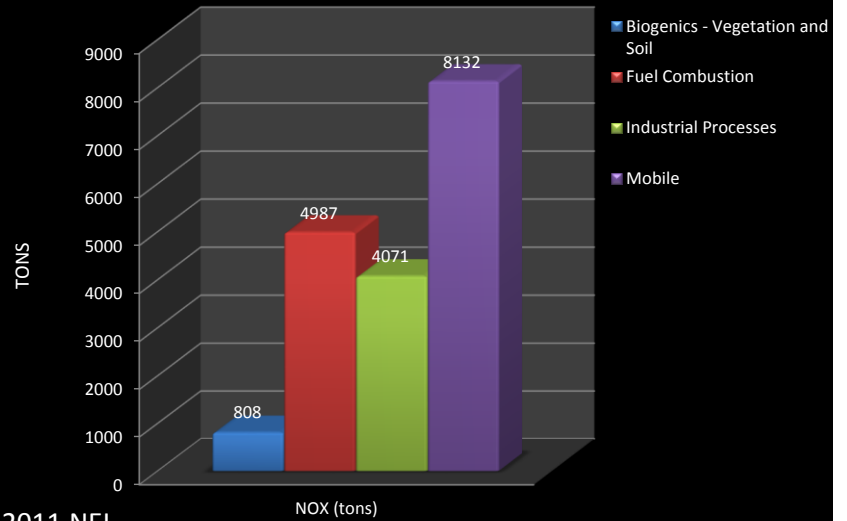
Facilities in Nueces County, Texas

State	County	Facility Name	NAICS Code	Facility Type	City	Zip Code	NOx(tons)	PM2.5(tons)	VOC(tons)
TX	Nueces	BALDWIN EAST FACILITY	211111		CORPUS CHRISTI	78406	30.1	0.1	6.3
TX	Nueces	BARNEY M DAVIS POWER STATION	221122	Electricity Generation via Combustion	CORPUS CHRISTI	78412	273.8	86.4	19.3
TX	Nueces	BISHOP FACILITY	325110	Pharmaceutical Manufacturing	BISHOP	78343	412.7	462.5	170.5
TX	Nueces	BLUNTZER CENTRAL PRODUCTION FACILITY	211111		ROBSTOWN	78410	4.5	0.2	23.3
TX	Nueces	BRADSHAW COMPRESSOR STATION	486210	Compressor station	AGUA DULCE	78330	14.1	0.5	9.5
TX	Nueces	BTB REFINING	424710	Petroleum Refinery	CORPUS CHRISTI	78412	8.4	0.5	22.8
TX	Nueces	COGENERATION FACILITY	221122	Electricity Generation via Combustion	CORPUS CHRISTI	78407	485.2	50.9	8.7
TX	Nueces	COMPRESSOR STATION 1 AGUA DULCE	486210	Compressor station	AGUA DULCE	78330	293.9	4.4	10.9
TX	Nueces	CORPUS CHRISTI ARMY DEPOT	928110	Military Base	CORPUS CHRISTI	78412	15.2	5.3	68.6
TX	Nueces	CORPUS CHRISTI CRUDE TERMINAL	486110		CORPUS CHRISTI	78402	0.1		30.2
TX	Nueces	CORPUS CHRISTI EAST PLANT	324110	Petroleum Refinery	CORPUS CHRISTI	78412	131.0	122.1	117.0
TX	Nueces	Corpus Christi Intl	48811	Airport	Corpus Christi	0	43.9	11.3	31.4
TX	Nueces	CORPUS CHRISTI LP TANK FARM	424710		CORPUS CHRISTI	78407			56.7
TX	Nueces	CORPUS CHRISTI PLANT	325110	Chemical Plant	CORPUS CHRISTI	78412	1192.3	147.9	191.4
TX	Nueces	CORPUS CHRISTI TERMINAL	493110		CORPUS CHRISTI	78412	3.1	0.6	58.8
TX	Nueces	CORPUS CHRISTI WEST PLANT	324110	Petroleum Refinery	CORPUS CHRISTI	78412	1033.9	483.9	614.1
TX	Nueces	DCP INTERCONNECT	486210		CORPUS CHRISTI	77019	0.1	0.0	9.6
TX	Nueces	DEEP SEA TERMINAL	424710	Petroleum Storage Facility	CORPUS CHRISTI	78412			22.8
TX	Nueces	EAST PLANT REFINERY	324110	Petroleum Refinery	CORPUS CHRISTI	78407	599.0	165.4	419.4
TX	Nueces	ELEMENTIS CHROMIUM CORPUS CHRIST TX FACILITY	325180	Chemical Plant	CORPUS CHRISTI	78412	170.3	15.6	0.8
TX	Nueces	ELIFF MINISYSTEMS	211111		BISHOP	78343	14.8	0.0	12.3
TX	Nueces	FLOUR BLUFF STATION	211112	Compressor station	CORPUS CHRISTI	78412	6.8	0.1	22.2
TX	Nueces	GT & T FACILITY	211111		CORPUS CHRISTI	78406	16.2	0.2	10.8
TX	Nueces	GULF PLAINS GAS PLANT	211112		BISHOP	78343	508.5	10.6	208.0
TX	Nueces	HARLAN TANK FARM	424710	Petroleum Storage Facility	DRISCOLL	78351			34.6
TX	Nueces	HYDROGEN PLANT INDUST GAS	325120		CORPUS CHRISTI	78469	50.7	8.0	4.7
TX	Nueces	MUSTANG ISLAND BOOSTER STATION	541360		PORT ARANSAS	78373	76.1	0.3	10.1
TX	Nueces	NUECES BAY POWER STATION	221122	Electricity Generation via Combustion	CORPUS CHRISTI	78412	98.8	78.2	14.7
TX	Nueces	OXEA BISHOP	325110	Chemical Plant	BISHOP	78343		26.3	42.9
TX	Nueces	SHOUP GAS PLANT	211112		CORPUS CHRISTI	78412	354.4	24.9	24.6
TX	Nueces	TALBERT FACILITY	211111		CORPUS CHRISTI	78046	57.3	0.2	9.6
TX	Nueces	VALERO CORPUS CHRISTI REFINING EAST	324110	Petroleum Refinery	CORPUS CHRISTI	78412	354.6	59.8	335.1
TX	Nueces	WARDNER CENTRAL TANK BATTERY & SWD SYSTEM	211111		BISHOP	78343			13.8
TX	Nueces	WEST PLANT FACILITY	324110	Petroleum Refinery	CORPUS CHRISTI	78409	347.5	59.3	162.3
TX	Nueces	WEST REFINERY	324110	Petroleum Refinery	CORPUS CHRISTI	78412	1352.4	371.1	713.6
TX	Nueces	WILSON 1 FACILITY	211111		CORPUS CHRISTI	78046	27.9	0.1	7.7

NOx in Nueces County, Texas

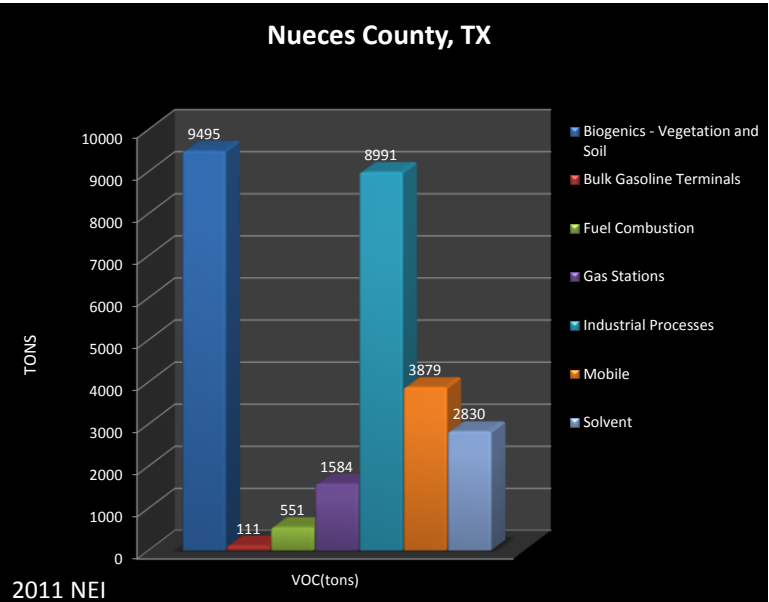
State	County	Sector	NOX (tons)
TX	Nueces	Biogenics - Vegetation and Soil	808
TX	Nueces	Fuel Comb - Comm/Institutional - Biomass	0
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Biomass	0
TX	Nueces	Fuel Comb - Residential - Oil	0
TX	Nueces	Fuel Comb - Comm/Institutional - Other	0
TX	Nueces	Fuel Comb - Electric Generation - Oil	0
TX	Nueces	Fuel Comb - Comm/Institutional - Oil	0
TX	Nueces	Fuel Comb - Comm/Institutional - Natural Gas	4
TX	Nueces	Fuel Comb - Residential - Other	8
TX	Nueces	Fuel Comb - Residential - Wood	11
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Oil	19
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Natural Gas	88
TX	Nueces	Fuel Comb - Comm/Institutional - Natural Gas	115
TX	Nueces	Fuel Comb - Residential - Natural Gas	121
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Oil	310
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Other	627
TX	Nueces	Fuel Comb - Electric Generation - Natural Gas	1058
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Natural Gas	2626
		Fuel Combustion	4987
TX	Nueces	Industrial Processes - NEC	1
TX	Nueces	Industrial Processes - Storage and Transfer	7
TX	Nueces	Industrial Processes - Oil & Gas Production	89
TX	Nueces	Industrial Processes - Oil & Gas Production	768
TX	Nueces	Industrial Processes - Chemical Manuf	966
TX	Nueces	Industrial Processes - Petroleum Refineries	2241
		Industrial Processes	4071
TX	Nueces	Miscellaneous Non-Industrial NEC	1
TX	Nueces	Mobile - Non-Road Equipment - Gasoline	1
TX	Nueces	Mobile - Non-Road Equipment - Other	1
TX	Nueces	Mobile - Locomotives	2
TX	Nueces	Mobile - Non-Road Equipment - Diesel	3
TX	Nueces	Mobile - Aircraft	39
TX	Nueces	Mobile - Non-Road Equipment - Other	89
TX	Nueces	Mobile - On-Road Diesel Light Duty Vehicles	134
TX	Nueces	Mobile - Non-Road Equipment - Gasoline	154
TX	Nueces	Mobile - Locomotives	160
TX	Nueces	Mobile - On-Road Gasoline Heavy Duty Vehicles	177
TX	Nueces	Mobile - Non-Road Equipment - Diesel	1212
TX	Nueces	Mobile - Commercial Marine Vessels	1611
TX	Nueces	Mobile - On-Road Diesel Heavy Duty Vehicles	1810
TX	Nueces	Mobile - On-Road Gasoline Light Duty Vehicles	2739
		Mobile	8132
TX	Nueces	Solvent - Degreasing	1
TX	Nueces	Solvent - Industrial Surface Coating & Solvent Use	5
		Solvent	6

Nueces County, TX

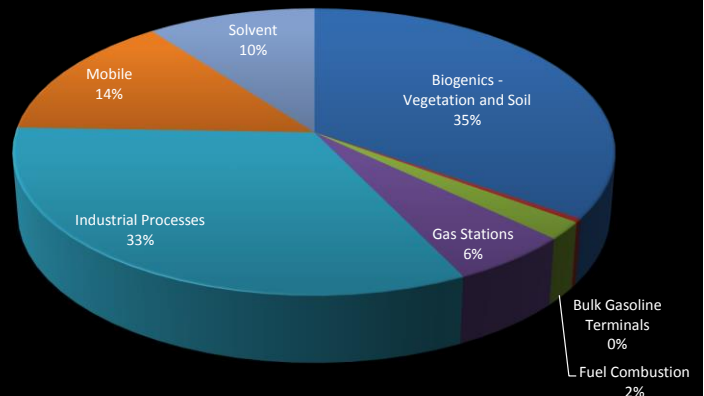


VOC in Nueces County, Texas

State	County	Sector	VOC(tons)
TX	Nueces	Biogenics - Vegetation and Soil	9495
TX	Nueces	Bulk Gasoline Terminals	4
TX	Nueces	Bulk Gasoline Terminals	106
TX	Nueces	Bulk Gasoline Terminals	111
TX	Nueces	Commercial Cooking	12
TX	Nueces	Fuel Comb - Comm/Institutional - Biomass	0
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Biomass	0
TX	Nueces	Fuel Comb - Residential - Oil	0
TX	Nueces	Fuel Comb - Comm/Institutional - Other	0
TX	Nueces	Fuel Comb - Comm/Institutional - Oil	0
TX	Nueces	Fuel Comb - Electric Generation - Oil	0
TX	Nueces	Fuel Comb - Comm/Institutional - Natural Gas	0
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Oil	0
TX	Nueces	Fuel Comb - Residential - Other	0
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Natural Gas	5
TX	Nueces	Fuel Comb - Comm/Institutional - Natural Gas	6
TX	Nueces	Fuel Comb - Residential - Natural Gas	7
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Oil	19
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Other	59
TX	Nueces	Fuel Comb - Electric Generation - Natural Gas	67
TX	Nueces	Fuel Comb - Residential - Wood	115
TX	Nueces	Fuel Comb - Industrial Boilers, ICES - Natural Gas	273
		Fuel Combustion	551
TX	Nueces	Gas Stations	1584
TX	Nueces	Industrial Processes - Petroleum Refineries	9
TX	Nueces	Industrial Processes - NEC	9
TX	Nueces	Industrial Processes - NEC	58
TX	Nueces	Industrial Processes - Oil & Gas Production	108
TX	Nueces	Industrial Processes - Storage and Transfer	125
TX	Nueces	Industrial Processes - Chemical Manuf	296
TX	Nueces	Industrial Processes - Petroleum Refineries	1142
TX	Nueces	Industrial Processes - Storage and Transfer	1273
TX	Nueces	Industrial Processes - Oil & Gas Production	5972
		Industrial Processes	8991
TX	Nueces	Miscellaneous Non-Industrial NEC	96
TX	Nueces	Mobile - Locomotives	0
TX	Nueces	Mobile - Non-Road Equipment - Gasoline	0
TX	Nueces	Mobile - Non-Road Equipment - Other	0
TX	Nueces	Mobile - Non-Road Equipment - Diesel	1
TX	Nueces	Mobile - Locomotives	9
TX	Nueces	Mobile - On-Road Diesel Light Duty Vehicles	20
TX	Nueces	Mobile - Non-Road Equipment - Other	20
TX	Nueces	Mobile - Aircraft	31
TX	Nueces	Mobile - On-Road Gasoline Heavy Duty Vehicles	46
TX	Nueces	Mobile - Commercial Marine Vessels	57
TX	Nueces	Mobile - Non-Road Equipment - Diesel	125
TX	Nueces	Mobile - On-Road Diesel Heavy Duty Vehicles	131
TX	Nueces	Mobile - Non-Road Equipment - Gasoline	1651
TX	Nueces	Mobile - On-Road Gasoline Light Duty Vehicles	1786
		Mobile	3879
TX	Nueces	Solvent - Dry Cleaning	1
TX	Nueces	Solvent - Degreasing	7
TX	Nueces	Solvent - Graphic Arts	12
TX	Nueces	Solvent - Industrial Surface Coating & Solvent Use	81
TX	Nueces	Solvent - Degreasing	104
TX	Nueces	Solvent - Non-Industrial Surface Coating	323
TX	Nueces	Solvent - Industrial Surface Coating & Solvent Use	449
TX	Nueces	Solvent - Consumer & Commercial Solvent Use	1852
		Solvent	2830
TX	Nueces	Waste Disposal	7



2011 NEI



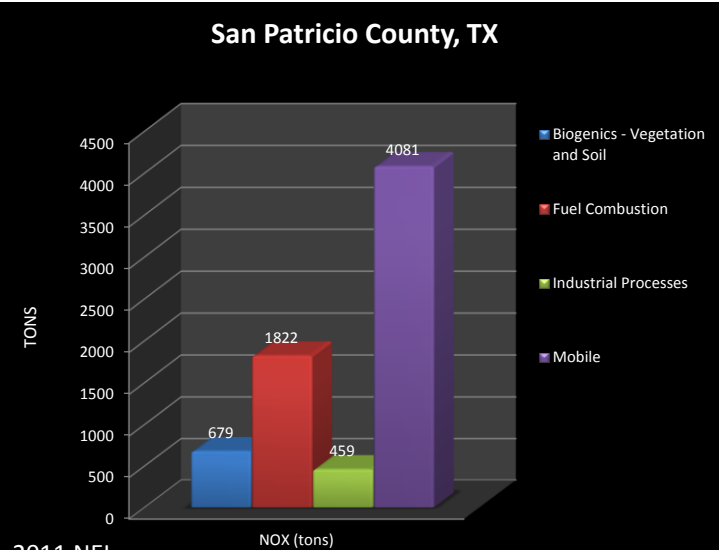
Sector Contributions

Facilities in San Patricio County, Texas

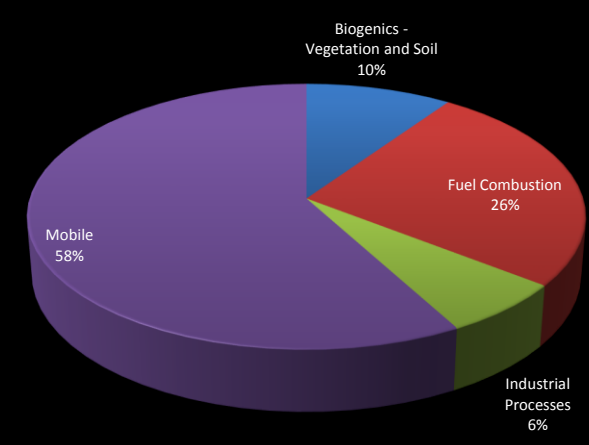
State	County	Facility Name	NAICS Code	Facility Type	City	Zip Code	NOx(tons)	PM2.5(tons)	VOC(tons)
TX	San Patricio	ARANSAS PASS SITE	332312		ARANSAS PASS	78336	30.5	8.0	68.8
TX	San Patricio	CORPUS CHRISTI PLANT	325110		INGLESIDE	78362	11.9	2.1	13.2
TX	San Patricio	EAST WHITE POINT PRODUCTION FACILITY	211112		PORTLAND	78374	69.9	0.4	17.3
TX	San Patricio	FABRICATION YARD	336611	Ship/Boat Manufacturing or Repair Facility	INGLESIDE	78380		3.0	87.1
TX	San Patricio	GREGORY PLANT	211112		GREGORY	78359	660.5	4.0	31.0
TX	San Patricio	GREGORY POWER FACILITY	221121	Electricity Generation via Combustion	GREGORY	78359	451.0	128.1	4.2
TX	San Patricio	INGLESIDE MARINE TERMINAL	493110	Oil or Gas Processing	INGLESIDE	78362	1.9	4.0	16.5
TX	San Patricio	INGLESIDE PLANT	325110	Chemical Plant	INGLESIDE	78362	419.1	99.1	29.4
TX	San Patricio	KNIPE GAS UNIT 1 TANK BATTERY	211111		GREGORY	78374	75.4	0.1	22.7
TX	San Patricio	NUECES BAY STATE TRACT PRODUCTION FACILITY	211111		PORTLAND	78374	48.2	0.4	13.1
TX	San Patricio	ONEIL FACILITY	211111		ODEM	78370	34.2	0.1	8.3
TX	San Patricio	PORTILLA GAS PLANT	211112	Oil or Gas Processing	SINTON	78387	43.6	1.6	4.0
TX	San Patricio	SHERWIN ALUMINA PLANT	325180	Alumina Refinery	INGLESIDE	78362	45.5	52.4	28.3
TX	San Patricio	SOUTH YARD	332312		INGLESIDE	78362	7.7	2.2	14.3
TX	San Patricio	WELDER TANK BATTERY	211111	Oil or Gas Processing	SINTON	78387	39.3	1.4	20.6

NOx in San Patricio County, Texas

State	County	Sector	NOX (tons)
TX	San Patricio	Biogenics - Vegetation and Soil	679
TX	San Patricio	Fuel Comb - Comm/Institutional - Biomass	0
TX	San Patricio	Fuel Comb - Industrial Boilers, ICes - Biomass	0
TX	San Patricio	Fuel Comb - Residential - Oil	0
TX	San Patricio	Fuel Comb - Comm/Institutional - Other	0
TX	San Patricio	Fuel Comb - Comm/Institutional - Oil	0
TX	San Patricio	Fuel Comb - Electric Generation - Oil	0
TX	San Patricio	Fuel Comb - Residential - Wood	2
TX	San Patricio	Fuel Comb - Industrial Boilers, ICes - Oil	5
TX	San Patricio	Fuel Comb - Residential - Other	5
TX	San Patricio	Fuel Comb - Industrial Boilers, ICes - Oil	8
TX	San Patricio	Fuel Comb - Comm/Institutional - Natural Gas	13
TX	San Patricio	Fuel Comb - Industrial Boilers, ICes - Other	14
TX	San Patricio	Fuel Comb - Industrial Boilers, ICes - Natural Gas	17
TX	San Patricio	Fuel Comb - Residential - Natural Gas	24
TX	San Patricio	Fuel Comb - Electric Generation - Natural Gas	451
TX	San Patricio	Fuel Comb - Industrial Boilers, ICes - Natural Gas	1284
		Fuel Combustion	1822
TX	San Patricio	Industrial Processes - NEC	25
TX	San Patricio	Industrial Processes - Chemical Manuf	37
TX	San Patricio	Industrial Processes - Non-ferrous Metals	46
TX	San Patricio	Industrial Processes - Oil & Gas Production	75
TX	San Patricio	Industrial Processes - Oil & Gas Production	277
		Industrial Processes	459
TX	San Patricio	Miscellaneous Non-Industrial NEC	0
TX	San Patricio	Mobile - Aircraft	1
TX	San Patricio	Mobile - Non-Road Equipment - Other	24
TX	San Patricio	Mobile - On-Road Diesel Light Duty Vehicles	29
TX	San Patricio	Mobile - On-Road Gasoline Heavy Duty Vehicles	76
TX	San Patricio	Mobile - Non-Road Equipment - Gasoline	89
TX	San Patricio	Mobile - Locomotives	149
TX	San Patricio	Mobile - Non-Road Equipment - Diesel	579
TX	San Patricio	Mobile - On-Road Gasoline Light Duty Vehicles	609
TX	San Patricio	Mobile - On-Road Diesel Heavy Duty Vehicles	1112
TX	San Patricio	Mobile - Commercial Marine Vessels	1414
		Mobile	4081

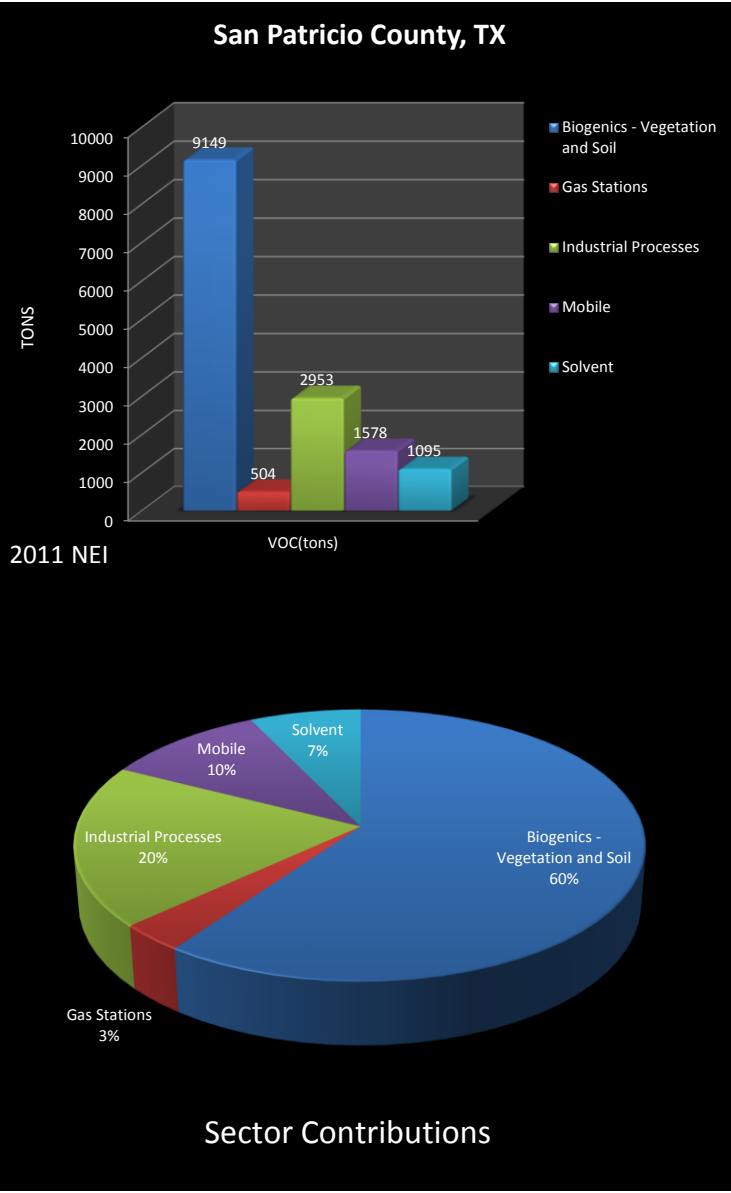


2011 NEI



VOC in San Patricio County, Texas

State	County	Sector	VOC(tons)
TX	San Patricio	Biogenics - Vegetation and Soil	9149
TX	San Patricio	Bulk Gasoline Terminals	0
TX	San Patricio	Bulk Gasoline Terminals	8
TX	San Patricio	Bulk Gasoline Terminals	8
TX	San Patricio	Commercial Cooking	2
TX	San Patricio	Fuel Comb - Comm/Institutional - Biomass	0
TX	San Patricio	Fuel Comb - Industrial Boilers, ICES - Biomass	0
TX	San Patricio	Fuel Comb - Residential - Oil	0
TX	San Patricio	Fuel Comb - Comm/Institutional - Other	0
TX	San Patricio	Fuel Comb - Comm/Institutional - Oil	0
TX	San Patricio	Fuel Comb - Electric Generation - Oil	0
TX	San Patricio	Fuel Comb - Industrial Boilers, ICES - Oil	0
TX	San Patricio	Fuel Comb - Residential - Other	0
TX	San Patricio	Fuel Comb - Industrial Boilers, ICES - Oil	1
TX	San Patricio	Fuel Comb - Comm/Institutional - Natural Gas	1
TX	San Patricio	Fuel Comb - Industrial Boilers, ICES - Natural Gas	1
TX	San Patricio	Fuel Comb - Industrial Boilers, ICES - Other	1
TX	San Patricio	Fuel Comb - Residential - Natural Gas	1
TX	San Patricio	Fuel Comb - Electric Generation - Natural Gas	4
TX	San Patricio	Fuel Comb - Residential - Wood	21
TX	San Patricio	Fuel Comb - Industrial Boilers, ICES - Natural Gas	33
		Fuel Combustion	63
TX	San Patricio	Gas Stations	504
TX	San Patricio	Industrial Processes - Petroleum Refineries	0
TX	San Patricio	Industrial Processes - NEC	3
TX	San Patricio	Industrial Processes - Storage and Transfer	22
TX	San Patricio	Industrial Processes - Chemical Manuf	23
TX	San Patricio	Industrial Processes - Non-ferrous Metals	28
TX	San Patricio	Industrial Processes - NEC	46
TX	San Patricio	Industrial Processes - Storage and Transfer	46
TX	San Patricio	Industrial Processes - Oil & Gas Production	60
TX	San Patricio	Industrial Processes - Oil & Gas Production	2725
		Industrial Processes	2953
TX	San Patricio	Miscellaneous Non-Industrial NEC	20
TX	San Patricio	Mobile - Aircraft	1
TX	San Patricio	Mobile - On-Road Diesel Light Duty Vehicles	4
TX	San Patricio	Mobile - Non-Road Equipment - Other	5
TX	San Patricio	Mobile - Locomotives	8
TX	San Patricio	Mobile - On-Road Gasoline Heavy Duty Vehicles	16
TX	San Patricio	Mobile - Commercial Marine Vessels	37
TX	San Patricio	Mobile - Non-Road Equipment - Diesel	55
TX	San Patricio	Mobile - On-Road Diesel Heavy Duty Vehicles	63
TX	San Patricio	Mobile - On-Road Gasoline Light Duty Vehicles	387
TX	San Patricio	Mobile - Non-Road Equipment - Gasoline	1001
		Mobile	1578
TX	San Patricio	Solvent - Dry Cleaning	0
TX	San Patricio	Solvent - Graphic Arts	1
TX	San Patricio	Solvent - Degreasing	2
TX	San Patricio	Solvent - Degreasing	22
TX	San Patricio	Solvent - Non-Industrial Surface Coating	61
TX	San Patricio	Solvent - Industrial Surface Coating & Solvent Use	134
TX	San Patricio	Solvent - Industrial Surface Coating & Solvent Use	237
TX	San Patricio	Solvent - Consumer & Commercial Solvent Use	638
		Solvent	1095
TX	San Patricio	Waste Disposal	1



**ATTACHMENT D:
StarCrest LLC Work Plan and Quote to Provide Emissions
Inventory and Analysis of Port of Corpus Christi and
Construction Equipment Emissions**

2013 INVENTORY OF AIR EMISSIONS

SCOPE OF WORK AND COST ESTIMATE

Prepared for:
Corpus Christi Air Quality Committee

April 2014
Revised May 2014

Submitted by:
Starcrest Consulting Group, LLC
Established 1997

Project Principal:
Bruce Anderson
andersob@starcrestllc.com
(360) 930-2523



Introduction

The scope of work proposed to the Corpus Christi Air Quality Committee (the Committee) is to develop and present an inventory of air emissions in Nueces and San Patricio counties by making use of existing inventory components and by developing emission estimates for emission source categories that are outdated or otherwise limited in their usefulness. Starcrest is mindful of the expense involved in developing detailed emissions inventories and proposes to focus the attention in developing new estimates on the emission source categories that are most in need of refinement or bringing current, and that have the highest potential value for air quality planning purposes. Based on Starcrest's review of existing emissions inventories developed by the Texas Commission on Environmental Quality (TCEQ) and others, updating the categories of port-specific emissions and non-road equipment and vehicles emissions would provide the most value to the Committee. [Revisions to this scope of work in terms of task timing for budgetary reasons have been made to the final section, **Cost Estimate** \(May, 2014\). All other sections remain as they were.](#)

The last emissions inventory of Port of Corpus Christi marine vessel emissions was prepared for the 2006 through 2009 time period. While the inventory appears to have been produced using appropriate data sources and methods it has limitations. The most recent year covered by the inventory is 2009, which was prior to the modest economic recovery that has been taking place in the past few years, prior to a significant increase in oil and gas activity, and prior to the implementation of the first phase of the North American Emission Control Area (ECA) that required lower-sulfur fuels starting in 2012. Increased emissions from more ship calls may have been offset to some extent by lower emissions resulting from the cleaner fuel, but it is not apparent what the net effect on emissions has been. In addition, the emissions inventory is limited to ocean-going vessels (OGVs) and towboats that transport barges to and from the port along the Gulf Intra-Coastal Waterway (GIWW), and does not include other emission source categories typically associated with ports such as cargo handling equipment, heavy-duty diesel trucks, and railroad locomotives. For these reasons this proposal includes the development of a detailed and comprehensive emissions inventory of port-related mobile sources associated with the Port of Corpus Christi.

The State of Texas, through the TCEQ, has developed and published inventories of emissions from all significant emission source categories, including stationary (point) sources, area sources, on-road mobile sources, and non-road mobile sources. The point source inventory for stationary sources is developed by the TCEQ from estimates submitted by the sources' operators, who use agency-approved methods to estimate emissions. It would be difficult to obtain information from the operators to develop independent inventories, which in any case would be similar to the reported inventories if similar methods were used. Likewise, on-road mobile source emissions are developed for specific purposes and should be adequately based on local conditions, so this component also does not need to be addressed in terms of independently estimating emissions. For the area source category there are inventory numbers for the various activities that make up the area source component but a detailed analysis of the inventory of each activity (in terms of data sources,

calculation methods, etc.) would be necessary to understand whether more work needs to be done on a given activity's inventory. The non-road source category, particularly construction equipment, appears to be a good candidate for refinement because the existing emission estimates appear to have been made using a model that typically uses default activity parameters in place of actual activity data. It has been Starcrest's experience that refining off-road emission estimates using activity data obtained from the people using the equipment can result in more reliable emission estimates because of the variety of ways equipment is used in practice, and the limited activity data used to develop defaults.

For the reasons discussed above, Starcrest is proposing in this document to develop emissions inventories for the Port of Corpus Christi and related land-based goods movement activities (such as heavy duty trucks and locomotives) and for non-road construction equipment operating in Nueces and San Patricio counties, and to conduct a detailed review of the TCEQ area source inventory categories to advise on their value for air quality planning purposes.

Project Scope

The inventory of Nueces and San Patricio counties will include the following emission source categories:

- Stationary sources (to be compiled from TCEQ public records)
- On-road mobile sources (to be compiled from TCEQ public records)
- Area sources (to be compiled from TCEQ public records)
- Port of Corpus Christi sources (to be estimated using 2013 or 2014 activity data):
 - Ocean-going vessels (OGVs)
 - Harbor craft & towboats
 - Cargo handling equipment
 - Heavy-duty vehicles
 - Locomotives (will include non-port locomotive activity as available)
- Non-road construction equipment (to be estimated using 2013 or 2014 activity data)

Exhaust emissions of the following pollutants will be estimated for the port and construction categories (with reporting units as noted):

- Criteria pollutants, surrogates, and precursors in tons
 - Oxides of nitrogen (NO_x)
 - Sulfur dioxide (SO₂)
 - Particulate matter (PM) (10-micron, 2.5-micron)
 - Volatile organic compounds (VOCs)
 - Carbon monoxide (CO)

- Toxic air contaminant diesel particulate matter (DPM) in tons,¹ which is the particulate matter emitted from diesel internal combustion engines
- Greenhouse gases in tonnes (metric tons)
 - Carbon dioxide(CO₂)
 - Nitrogen dioxide (N₂O)
 - Methane (CH₄)
 - Carbon dioxide equivalent (CO₂e)

The development of an overall emissions inventory document for Nueces and San Patricio counties would be accomplished in several tasks, described as follows.

Task 1 - Data Collection and Coordination with Data Providers

The goal of coordinating with the port's tenants and data providers is to minimize the effort of the tenants in providing the data needed and to foster improvements in data quality as the activity information for each source category is collected, and also to capture information on new retrofits or emission reduction technologies used by the tenants to reduce emissions. Data collection is an integral part of the proposed activity-based emissions inventory project, and data collection activities will be coordinated with the Committee' Project Manager

The deliverables from this task will be final tables compatible for use in the emissions calculations of the information provided by the port's tenants, which includes activity data on OGVs, harbor craft, cargo handling equipment, trucks, locomotives, and construction equipment. The locomotive and construction information will relate to the two-county area with locomotive activity specific to the port being presented separately to the extent this is feasible.

Task 2 - OGV Inventory

The first task for this source category will be to define the over-water geographic domain of the inventory with the Committee' Project Manager. The basic methodology for estimating emissions from the various types of OGVs that call on the port uses local activity-based data to the greatest extent possible. This includes call records from the Vessel Traffic Service, U.S. Coast Guard, and Pilots. Starcrest is intimately familiar with OGV emission sources and operations by operational mode and will incorporate the data into the emission estimates after rigorous quality control steps. Emission reduction strategies will be identified and incorporated into the emission estimates.

Starcrest will modify its existing OGV emissions calculation engine for the specifics to the overwater boundary to estimate emissions from the OGVs that called the port during the inventory calendar year. The effects of identified emission reduction measures will be included in the emission estimates. Input and output data will be thoroughly screened for technical correctness and reasonableness to ensure that the results are accurate and

¹ In 1998, the California Air Resources Board (CARB) identified diesel particulate matter as a toxic air contaminant. California EPA Air Resources Board, Resolution 98-35, 27 August 1998. See: <http://www.arb.ca.gov/regact/diesltac/res98-35.pdf>.

defendable to public scrutiny. Needed geographical information system (GIS) work associated with this source category will be developed if not available from POCCA.

The deliverables from this task will include OGV vessel and activity data incorporated into the inventory, emission estimates reflecting the OGV activity reported to a level of detail to include emissions by vessel type, by location, by operating mode, and by engine type, and a detailed description of methods used for data collection and emission estimation, including the identified emission reduction measures and their effects on emissions. Many of the elements of these deliverables will be included in the draft inventory report

Task 3 – Harbor Craft & Towboat Inventory

The first task for this source category will be to define the over-water geographic domain of the inventory with the Committee's Project Manager. Starcrest will coordinate with vessel operators, the Texas Waterway Operators Association, and the American Waterway Operators to collect vessel, operational, and activity information from the multiple different companies and organizations involved with the diverse activities of harbor craft and towboats. The collected data will be reviewed and formatted for input to Starcrest's existing emissions calculation engine, which will be used to calculate emissions. Input and output data will be thoroughly screened for technical correctness and reasonableness to ensure that the results are accurate and defendable to public scrutiny. Emission reduction measures identified during the data collection process will be reviewed with the Committee's Project Manager to ensure that emission reduction measures are appropriately included in the inventory.

The deliverables from this task will include harbor craft vessel and activity data incorporated into the emissions calculation engine structure, emission estimates reflecting the harbor craft activity reported to a level of detail to include emissions by vessel type, by location, and by engine type, and a detailed description of methods used for data collection and emission estimation, including the identified emission reduction measures and their effects on emissions. Many of the elements of these deliverables will be included in draft inventory report.

Task 4 - CHE Inventory

Starcrest will discuss the needed equipment, operational, and activity information with the owners and/or operators of CHE at the port to collect this information as available. The collected data will be reviewed and formatted for input to Starcrest's existing emissions calculation engine, which will be used to calculate emissions based on output from EPA's non-road equipment emissions estimating model.² The emission reduction measures identified during the data collection process will be reviewed with the Committee's Project Manager to ensure that emission reduction measures are appropriately included in the inventory.

² The latest version of EPA's NONROAD model will be used to estimate CHE emissions on a horsepower hour basis. See: <http://www.epa.gov/otaq/nonrdmdl.htm>

The deliverables from this task will include equipment, operational, and activity data associated with CHE incorporated into the emissions calculation engine structure, emission estimates reflecting the CHE activity reported to a level of detail to include emissions by terminal type, by equipment type, and by fuel type, and a detailed description of methods used for data collection and emission estimation, including the identified emission reduction measures and their effects on emissions. Many of the elements of these deliverables will be included in the draft inventory report.

Task 5 - HDV Inventory

The HDV portion of the emissions inventory covers operations on the port's terminals and on-road operations on port roads and outside the port boundary within the two-county area. This source category requires data from a variety of sources, including: time on terminal, average terminal speeds, queue times, number of trucks by type (load, trailer, bobtail, etc.), origin and destination information, model age distribution, etc. This task optionally includes a survey to characterize the origins and destinations of truck trips originating or terminating at the port and the distribution of truck model years among the trucks calling t the port. Without this option, assumptions can be made for average truck trip length using local knowledge and an evaluation of highway distances within the two counties, and default age distributions can be used in the emission factor model³ used to estimate emissions per truck mile.

The deliverables from this task will include HDV activity data, emission estimates reflecting the HDV activity, and a detailed description of methods used for data collection and emission estimation, including any identified emission reduction measures and their effects on emissions. Many of the elements of these deliverables will be included in the draft inventory report.

Task 6 - Locomotive Inventory

Starcrest will discuss rail operations with knowledgeable port personnel and others with local knowledge of the rail system in the two county area. In addition, Starcrest has been working with the Class 1 railroads for several years to improve the activity information the railroads are able to provide, although their ability to provide data is still limited. Contacts at the Class 1 railroads serving the port and passing through the area will be requested to provide available information on activities, rail freight volumes, train schedules, etc. The emission estimates will include line haul and switching locomotive operations within the port's terminals and within the two-county inventory area. Any emission reduction measures identified during the data collection process will be reviewed with the Committee's Project Manager to ensure that emission reduction measures are appropriately included in the inventory.

The deliverables from this task will include locomotive activity data, emission estimates reflecting the rail activity, and a detailed description of methods used for data collection and

³ The latest version of EPA's MOVES model will be used to estimate heavy duty truck emissions on a per-mile basis See: <http://www.epa.gov/otaq/models/moves/>

emission estimation, including any identified emission reduction measures and their effects on emissions. Many of the elements of these deliverables will be included in the draft inventory report.

Task 7 – Construction Equipment Inventory

Starcrest will contact and survey companies that own, lease, rent, and/or operate construction equipment in the two-county area through contacts provided by the Committee and through coordination with industry groups such as the Associated General Contractors of Texas and others as appropriate. The information collected will relate to the equipment population and characteristics in the area, and to the typical modes of such as the typical number of operating hours per week and per year, extended periods of no operation, etc. The emission estimates⁴ will take into account the active equipment population, the distribution of equipment ages, to the extent that appropriate data is available, and the average number of operating hours of the equipment. The effect of any emission reduction measures identified during the data collection process will be included in the emission estimates.

Task 8: Prepare Draft and Final Air Emissions Inventory Deliverables

Starcrest will prepare a detailed draft report of data collection and calculation methods and emission estimates. A summary of the emission source categories adequately covered by estimates available from TECQ will be included. Graphical representations will be used where possible to illustrate the data and the emissions. The draft report will be provided to the Committee’s Project Manager for review, and the Committee’s comments will be discussed and incorporated. After a second round of review by the Committee, Starcrest will finalize the report, which will be submitted electronically. Options include paper copies and the provision of a web-based interface through which Committee members could view the detailed emission estimates and the underlying data. Another option is the preparation of a high-level presentation summarizing the report, including charts and graphs to clearly present the inventory’s findings for presentation.

Schedule

Starcrest anticipates that the scope of work as described in this proposal, with options, can be completed within a year after receiving authorization to proceed. The following figure illustrates the progression of major task groups or phases during 2014 assuming authorization to proceed is provided by the end of May 2014. The schedule calendar can be progressed for start dates later than June and the schedule for 2015 can be developed as timing of work in the second calendar year becomes clear.

^{4 4} The latest version of EPA’s NONROAD model will be used to estimate construction equipment emissions. See: <http://www.epa.gov/otaq/nonrdmdl.htm>

*Corpus Christi Air Quality Committee
2013 Inventory of Air Emissions
Revised Scope of Work and Cost Estimate*

Month (2014)	June	July	August	Sept	Oct	Nov	Dec
Project phase							
Kickoff							
Data collection							
Calculations							
Draft report writing							
Review							
Report finalize							

Cost Estimate

The ultimate cost of the proposed scope of work depends on the components of the scope that the Committee decides to act on. The table below summarizes the estimated costs for each of the tasks and optional elements discussed above, **given potential 2014 funding of approximately \$75,000**. Starcrest anticipates that for the given level of funding in 2014, the activity data for all source categories can be collected, and emissions can be estimated for CHE, port-related HDVs, and locomotives. An origin/destination and model year survey would be possible but would increase the 2014 cost to \$79,500 unless one of the other categories (CHE or locomotives) were partially deferred.

Starcrest would be happy to perform any or all of the components, although limiting the tasks to a subset of the listed base tasks may result in a revised total cost estimate due to efficiencies in data collection and report preparation that may be lost if less than the whole scope of work is performed. Starcrest only bills for work actually performed, so the actual cost may be lower than shown in the table. Conversely, if it becomes apparent that more work will be needed than anticipated for a particular task such that the overall estimated cost may be exceeded, Starcrest will promptly notify the Committee’s Project Manager to discuss ways to either revise the scope of work or obtain additional authorization to complete the work as planned.

If requested, paper copies of the emissions inventory report can be provided at the cost of printing and binding.

*Corpus Christi Air Quality Committee
2013 Inventory of Air Emissions
Revised Scope of Work and Cost Estimate*

Estimated Maximum Cost per Year with Options

Task	Description	Estimated Cost, \$		
		Total	2014	2015
Task 1	Data Collection	21,000	21,000	0
Task 2	OGVs	47,500	15,000	32,500
Task 3	Harbor Craft and Towboats	9,500	1,000	8,500
Task 4	Port CHE	9,500	9,500	0
Task 5	Port-related Trucking	10,000	10,000	0
Task 6	Locomotives	8,500	8,500	0
Task 7	Non-Road Construction	8,500	1,000	7,500
Task 8	Draft and Final Reports	15,000	1,250	13,750
	Management & coordination	6,500	3,250	3,250
	Travel (data collection)	5,000	4,000	1,000
Base Total Cost Estimate		141,000	74,500	66,500
Optional Elements:				
Estimate uncontrolled emissions in addition to controlled		7,500		7,500
Origin/destination and model year survey		5,000	5,000	
Web-based interface for results and underlying data		15,000		15,000
Total Cost Estimate with all Options		168,500	79,500	89,000

**ATTACHMENT E:
TCEQ Funded Research and Emissions Reductions Programs
and Timeline**

Texas Commission on Environmental Quality

PROPOSAL FOR GRANT ACTIVITIES AND NOTICE TO COMMENCE UNDER THE GRANT UMBRELLA
FROM TCEQ TO: City of Corpus Christi

Proposal for Grant Activities and Notice to Commence No.:

582-14-40055-FY14-01

Rider 8 – Near Non-Attainment Area Work Plan

Grant Number: **582-14-40055**

Proposal for Grant Activities Amount: \$442,300

Time Line

The activities shall begin upon issuance of this executed Proposal for Grant Activities (PGA) and must be completed no later than August 31, 2015.

Total Amount of this Proposal for Grant Activities

The total amount to be reimbursed by TCEQ for activities performed under this Proposal for Grant Activities shall not exceed the amount shown on the face of this PGA unless the amount is changed by an amendment to the PGA.

GRANT ACTIVITIES

Task 1: Ambient Air Quality Monitoring Activities

Task 1.1: The Performing Party (PP) will continue ambient monitoring of the urban airshed as listed in Table 1: Ambient Air Monitoring Sites to be operated by the Grant Recipient. The geographical location of the monitoring sites is shown in Figure 1.

The data will be transferred regularly to the TCEQ's Leading Environmental Analysis and Display System (LEADS) data system as specified in Table 1.

Table 1. Ambient air monitoring sites to be operated.

LOCATION (ADDRESS)	EQUIPMENT (INSTRUMENTS)	START DATE	END DATE
Holly Road site (CAMS 660) - Water pumping station operated by the City of Corpus Christi located in the growing suburbs of the south side of the City.	Teledyne API 400E ozone analyzer, F460 wind sensors, Coastal environmental Atmospheric Temperature/Relative Humidity (AT/RH) sensor, Zeno 3200 datalogger, and Enfora wireless modem.	Apr 1, 2014 Apr 1, 2015	Nov 1, 2014 Nov 1, 2015
Aransas Pass site (CAMS 659) - Wastewater treatment plant operated by City of Aransas Pass and in cooperation with the San Patricio Water District. A coastal location to the NE of Corpus Christi.	Teledyne API 400E ozone analyzer, RM young wind sensors, Coastal environmental Atmospheric Temperature/Relative Humidity (AT/RH) sensor, Zeno 3200 datalogger, and Enfora wireless modem.	Apr 1, 2014 Apr 1, 2015	Nov 1, 2014 Nov 1, 2015
Violet site (CAMS 664) - Pumping station located west of Corpus Christi. Rural location surrounded by open field for several miles.	Teledyne API 400E ozone analyzer, RM young wind sensors, Coastal environmental Atmospheric Temperature / Relative Humidity (AT/RH) sensor, Zeno 3200 datalogger, and Enfora wireless modem.	Apr 1, 2014 Apr 1, 2015	Nov 1, 2014 Nov 1, 2015
Odem site (CAMS 686) - Pumping station operated by San Patricio Water District. Rural location NW of Corpus Christi.	Teledyne API 400E ozone analyzer, F460 wind sensors, Coastal environmental Atmospheric Temperature / Relative Humidity (AT/RH) sensor, Zeno 3200 datalogger, and Enfora wireless modem.	Apr 1, 2014 Apr 1, 2015	Nov 1, 2014 Nov 1, 2015

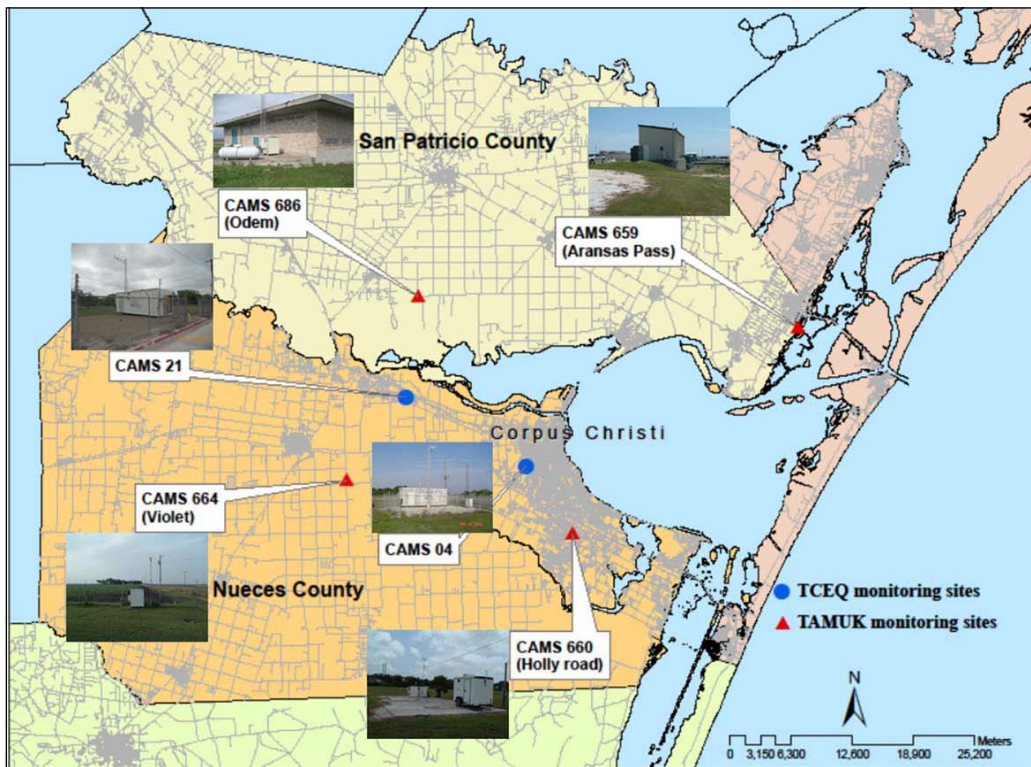


Figure 1. Air monitoring sites in the Corpus Christi urban airshed.

This contractor-owned transfer standard will be calibrated according to TCEQ specifications, policies and procedures in the TCEQ's NAMS/SLAMS Network and U.S. Mexico Border Support Activities Quality Assurance Project Plan for Air Monitoring in Texas. These requirements are based on requirements found in the code of Federal Regulations (CFR) 40, Parts 50, 53, and 58. See URL <http://www.epa.gov/docs/epacfr40/chapt-I.info/subch-C.htm>

Deliverable 1.1: Ambient monitoring data collected at monitoring sites delivered to TCEQ's LEADS.

Deliverable Date: Continuously between April 1, 2014, and November 1, 2014 and April 1, 2015, and August 31, 2015, or as soon as practical.

Task 1.2: Equipment upgrade

Upgrade ozone analyzers, wind sensors, outdoor temperature and relative humidity sensors. A detailed summary of the equipment upgrade with approximate cost estimation is provided in the below Table 2.

Table 2. Equipment upgrade cost at the proposed monitoring stations

1.	Ozone analyzers at the four sites
2.	Wind sensors at the four sites
3.	Atmospheric temperature and relative humidity sensors at the
4.	New enclosures to replace the corroded and weekend enclosures at the field sites.

Deliverable 1.2: Continuity in measurements and elimination of technical issues.

Deliverable Date: November 2014(Enter Text)

Task 2 – Update Conceptual Model through the 2014 Ozone Season:

The Performing Party (PP) will identify necessary and sufficient conditions for high or exceeding ozone measurements in their program area (defined as the immediate statistical area plus adjacent counties) of the ozone National Ambient Air Quality Standards (NAAQS). The PP's analyses will include any seasonal variations and use data through 2014 to the extent possible. In particular, the PP's conceptual model will include the following analyses:

- Evaluate the wind speeds, directions and time of day associated with high ozone events to determine the local conditions and source alignments most frequently associated with high ozone events.
- Develop 24 hour back trajectories to determine source regions most (and least) likely to affect local area ozone.
- Conduct a weekday/weekend analysis to evaluate the potential effectiveness of reduced levels of local industrial and mobile source activity on their area;

- Evaluate the range and average background ozone concentrations associated with local wind directions;
- Investigate ozone and precursor trends and estimate the annual frequency of high ozone days at varying standard levels (above); and
- Address additional relevant questions listed in Section 11.1.1 of EPA’s ozone modeling guidance document, Guidance on the Use of Models and Other Analyses to Demonstrating Attainment of Air Quality goals for Ozone, PM2.5, and Regional Haze.

Deliverable 2: The PP will deliver an updated Conceptual Model containing analysis of monitoring and other data for year 2013 and 2014. The conceptual model will be delivered to the TCEQ in a Microsoft Office Word and Adobe Acrobat Reader (*.pdf) format. Accompanying data and other supporting material will be provided in a mutually agreeable electronic format.

Deliverable Date: Conceptual modeling report through 2013 – March 15th, 2014
 Conceptual modeling report through 2014 – March 15th, 2015

Task 3 – Ambient monitoring of oxides of nitrogen

The PP would perform continuous monitoring of ozone precursors including NOx the urban site during the ozone season as indicated in Table 3.

Table 3. Ambient monitoring stations to be operated to measure NOx

LOCATION (ADDRESS)	EQUIPMENT (INSTRUMENTS)	START DATE	END DATE
Holly Road site (CAMS 660) - Water pumping station operated by the City of Corpus Christi located in the growing suburbs of the south side of the City.	NOx analyzer	April 1, 2014	November 1, 2014
		April 1, 2015	November 1, 2015
Aransas Pass site (CAMS 659) - Wastewater treatment plant operated by City of Aransas Pass and in co-operation with the San Patricio Water District. A coastal location to the NE of Corpus Christi.	NOy analyzer	April 1, 2014	November 1, 2014
		April 1, 2015	November 1, 2015

Deliverable 3: The PP will deliver a report with detailed analysis of ozone precursor data including NOx. The report will be delivered to the TCEQ in a Microsoft Office Word and Adobe Acrobat Reader (*.pdf) format. Accompanying data and other supporting material will be provided in a mutually agreeable electronic format.

Deliverable Date: August 31, 2015.

Task 4: Planning and Outreach

Task 4.1 The PP will develop, implement and deliver an Auto Check/Clean Fleet program for the Corpus Christi air shed. The Auto Check/Clean Fleet program will measure vehicle emissions from

area public and private fleets for hydrocarbons and NO_x, coordinate emission reducing repairs to identified polluting fleet vehicles, re-test the emissions of each repaired vehicle, calculate and quantify emissions reductions as a result of repairs, and enter all pollution measurements (clean and dirty vehicles; pre and post repair) in an excel spreadsheet to be sent to TCEQ with quarterly reports.

Vehicles driven 20,000 miles per year or less will be tested annually and vehicles driven in excess of 20,000 miles per year will be tested quarterly. A minimum of 1 fleet recruiting effort and/or emissions testing will be performed each month; starting in December 2013 (events conducted before then will be covered under the existing work plan). In the event a monthly event is cancelled, it will be rescheduled; if it is rescheduled to a different month, both it and the scheduled event for that month will be performed. P3 commits to test an average of 20 vehicles per month, or more, from the period beginning December 2013 through August 2015, or 420 vehicles. P3 will make efforts to ensure that at least half of the vehicles tested will be private, non-fleet vehicles.

In addition to this effort, the PP will compile information on emissions of vehicles that utilize new technology and alternative fuels compared to common vehicles found on the road in this area. The PP will attempt to collect data on the number of new technology and alternative fuel vehicles – including gas/electric hybrids, electric-only, CNG, and others – in the Corpus Christi area, as well as the number of “standard” (gasoline/diesel fueled) vehicles, to compare emissions from each, and to estimate the effect on area wide emissions if, for example, 10% of the Corpus gasoline/diesel vehicle population was replaced by one of the alternatives mentioned above. The PP may make reasonable assumptions in making these estimates or doing calculations needed to obtain these figures.

The PP will compile emissions data into one power point style presentation that will be made available via the P3 website for general use at no cost. This presentation, and others where appropriate for particular audiences, will be made by the PP to civic groups and other local organizations in an effort to promote real-world, successful strategies and ideas to reduce air pollution. The PP shall maintain a continuous community presence of a Pollution Prevention Partnership and air quality messages via media briefings, coordination and participation in air quality outreach opportunities.

Deliverables:

1. The PP shall sponsor a minimum of one Auto Check/Clean Fleet event each month and provide a quarterly update on events held. Additionally, the PP shall provide an annual report that summarizes the Auto Check/Clean Fleet program and includes the following:
 - a. A list of Auto Check/Clean Fleet events, the number of vehicles screened at each one, the number of “clean” vehicles at each one, and the number of “dirty” vehicles at each one;
 - b. A spreadsheet in Microsoft Excel format showing the pre repair emissions levels for each vehicle, the cost of each vehicle repair, and the repairs made; and estimating the cumulative emissions reductions provided through the Auto Check/Clean Fleet program.

2. A spreadsheet in Microsoft Excel format showing the PP's best estimate of total number of vehicles registered in Corpus Christi, and if possible, an estimate of how many vehicles are of new technology or alternative fuels, as described in Task 6.1 above. As well, if reasonably possible the PP will provide an approximate estimate of average VOC and NOx emissions of an average car, and an approximate estimate of total auto/truck VOC and NOx emissions in Corpus Christi,
 - a. The PP shall compose a Microsoft PowerPoint presentation containing the items described in paragraphs 3 and 4 of Task 4.1 (above).

A spreadsheet tracking the number of webpage hits and downloads of the presentation, as well as a spreadsheet tracking the groups (date, time, attendance) to which presentations were made. A leave-behind jump drive including the presentation will be presented to the head of every group for their reuse.

P3 will provide to TCEQ lists of attendees at each meeting or conference in which it presents the above materials or conferences where it attends but does not present, along with meeting notes from each of these events.

Deliverable Date: August 31, 2015.

Task 4.2 The PP shall maintain a public website to facilitate public access to air quality information.

Deliverable Date: August 31, 2015