CORPUS CHRISTI URBAN AIRSHED

OZONE ADVANCE REPORT

2020

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CORPUS CHRISTI URBAN AIRSHED OZONE ADVANCE REPORT

YEAR 6 - 2020

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CORPUS CHRISTI URBAN AIRSHED OZONE ADVANCE REPORT

YEAR 6 – 2020

INTRODUCTION

On December 15, 2012, the Corpus Christi Air Quality Group (Group) submitted a letter of intent to the Environmental Protection Agency (EPA) to participate in an Ozone Advance Program. In May 2014, the Group submitted a Path Forward Letter (Appendix A) to the EPA initiating the Corpus Christi urban airshed's participation in an Ozone Advance Program with the EPA. This Path Forward Letter identified voluntary emission reduction activities that would be undertaken over a two-year period; scheduled for completion in May of 2016. In May of 2015, the Group submitted a report to the EPA on Year 1 Ozone Advance activities that took place from May 2014 – April 2015 (Appendix B). In July of 2016, the Group submitted a report to the EPA on Year 2 Ozone Advance activities that took place from May 2015 – April 2016 (Appendix C). In June of 2017, the Group submitted a report to the EPA on Year 3 activities that took place from May of 2016 – May of 2017 (Appendix D). In May 2018, the Group submitted a report to the EPA on Year 4 Ozone Advance activities that took place from May of 2017 – April 2018 (Appendix E). In May of 2019, the Group submitted a report to the EPA on Year 5 activities that took place from May of 2018 – April of 2019 (Appendix F). In May 2020, the Group submitted a report to the EPA on the remainder of Year 5 activities that took place from June 2019 – December 2019 (Appendix G). In addition to reporting on the activities committed to in the Path Forward Letter, each year's report included voluntary emission reduction activities accomplished above and beyond Path Forward Letter commitments as well as commitments that "looked forward" to future emission reduction commitments.

This report captures Year 6 activities that took place during the year of 2020 as well as "looking forward" commitments for 2021: Year 7.

Corpus Christi Air Quality Group Background

The Corpus Christi Air Quality Group (Group) was initially established as an ad-hoc task force in 1995 to address National Ambient Air Quality Standards (NAAQS) ozone attainment issues for the Corpus Christi airshed. From its inception in 1995 until 2020 the Group did not have a formalized structure, did not have dedicated funding or support staff, and was made up of volunteers including representatives from area municipal and county government, business and industry, the Port, local universities, public agencies, a regional planning organization, regional economic development corporations, the military, news media, and the public. Since 1995, the broad stakeholder representation within the Group worked collaboratively to design and deliver effective strategies to maintain NAAQS for ozone that are suitable for the Corpus Christi urban airshed. The Group met quarterly and all meetings were open to the public. The Chair of the Group was funded by contributions from the Port of Corpus Christi, the City of Corpus Christi, the

Metropolitan Planning Organization, the Regional Transportation Authority, and Nueces County.

In December 2019, the Group changed its name to Coastal Bend Air Quality Partnership (Partnership) to more accurately reflect the inclusion of both Nueces and San Patricio counties in the airshed as well as the partnership efforts of the participants.

In April 2020, the Partnership agreed that in order to strategically serve the airshed into the future, it was necessary to transition to a formalized organization with a Board of Directors, a fulltime Executive Director, bylaws, obtaining 501 C3 approval and obtaining long-term dedicated funding. The Partnership is currently in the transition process as of the writing of this report. An interim Board of Directors has been established, a strategic plan has been approved, a permanent Board of Directors has been defined and bylaws are being reviewed. A copy of the approved strategic plan is included in this report as ***Attachment 1***.

The Partnership continued to meet during the transition process to discuss, develop, and implement voluntary emission reduction programs and remains committed to Ozone Advance activities and reporting. During 2020, the Partnership met on April 29th, August 25th, and November 16th of 2020.

Included in this report ***Attachment 2*** is a communication list for the Partnership. Also included in this report ***Attachment 3*** are notes from each 2020 meeting that include an attendee list, discussion points and next steps.

Corpus Christi Urban Airshed Definition

The Corpus Christi urban airshed is made up of two adjoining counties in South Texas: Nueces County and San Patricio County. Nueces County and San Patricio County, *(Figure 1)* are defined by the EPA 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.

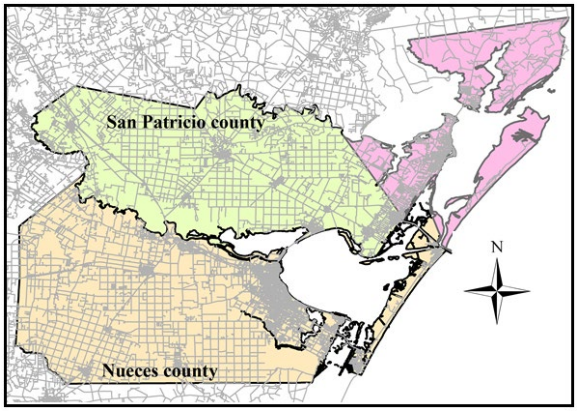


Figure 1: Map of Corpus Christi Urban Airshed

The region is a large, urbanized area with several industrial point sources of air emissions and a concentration of mobile sources. The two counties are home to the nation's third busiest deep-water port with access to the Gulf of Mexico and the Gulf Intracoastal Waterway, a large and growing industrial, manufacturing, and petrochemical complex, a major military base, oil and gas exploration activity, and a network of highways including an interstate highway system, railroads, and an airport that facilitate commerce and a thriving tourism industry.

Corpus Christi Urban Airshed Ozone Advance Goal

The goal of the Corpus Christi Urban Airshed participation in the Ozone Advance Program is to continue the area's successful history of maintaining healthy air quality and to encourage voluntary air emission reductions that maintain and protect Nueces County and San Patricio County attainment status of NAAQS for ozone.

Applicable Standards

The current NAAQS for ozone: the fourth highest daily maximum 8-hour average, averaged over the past three calendar years, must not exceed 70 ppb.

Corpus Christi Urban Airshed Ozone NAAQS Status and Trending

The TCEQ operates two Continuous Air Monitoring Stations (CAMS) in Corpus Christi: TCEQ CAMS 4, located at 902 Airport Road; and TCEQ CAMS 21, located at 9866 La Branch Street. TCEQ CAMS 4 and 21 are the regulatory monitors that determine Corpus Christi airshed's compliance with ozone NAAQS. *(Figure 2)*

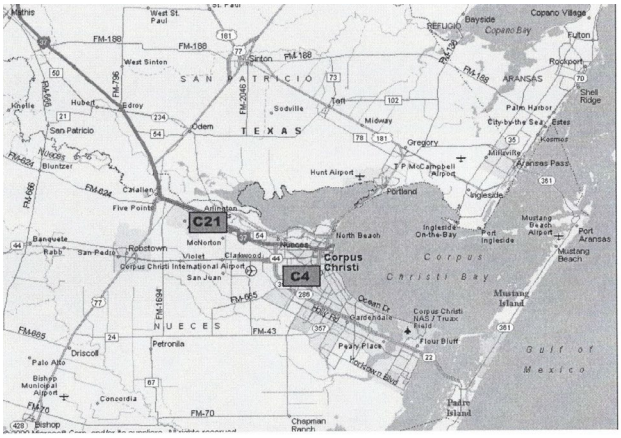


Figure 2: Map of TCEQ regulatory air monitor sites

Currently, the airshed is in attainment of NAAQS for ozone at a 3-year average value using data from years 2018, 2019, and 2020 of 61 ppb at both CAMS 4 and CAMS 21 as of year-end 2020. The air-shed has experienced an overall decreasing trend in ozone values. *(Figure 3)*

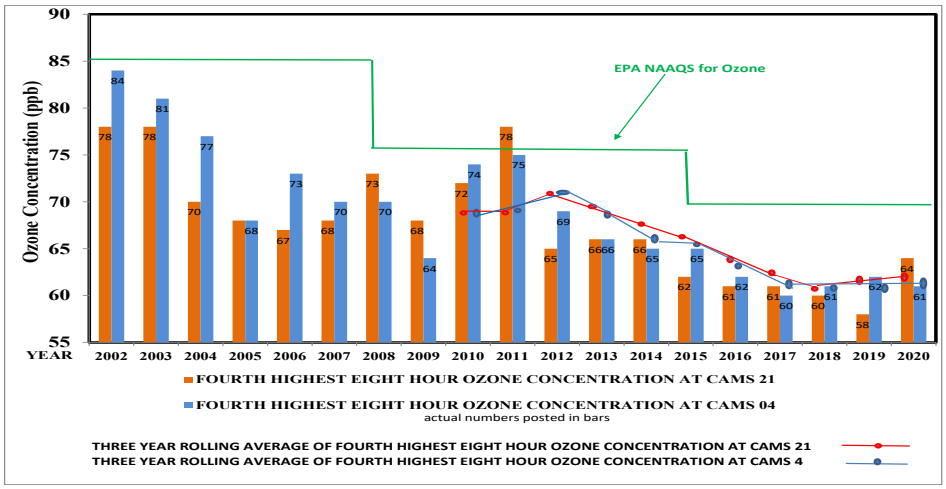


Figure 3: Corpus Christi Urban Airshed Ozone Design Trends at TCEQ regulatory monitors, CAMS 4 and CAMS 21

EMISSIONS REDUCTION ACTIVITIES PERFORMED - YEAR 6 (2020)

Air Quality Education Programs

Path Forward Plan for 2020

The Partnership webpage and Facebook page will continue in Year 6. Briefings and presentations about the importance of air quality and emission reduction recommendations will continue throughout the community in Year 6.

The Port of Corpus Christi has sponsored and commissioned a study to be performed by Dr. Jim Lee at Texas A&M University-Corpus Christi to identify the annual cost to the Corpus Christi urban airshed should the airshed be declared nonattainment. The study should be in presentation form by Summer of 2020 and will be utilized as an impressive tool in briefings and presentations to demonstrate the severe consequences of non-attainment and benefits of employing voluntary emission reduction activities.

The Port of Corpus Christi has also agreed to sponsor the graphics, production, and printing of a distribution piece for regional economic development corporations to provide to business and industry operating in or seeking to operate in the airshed. The distribution piece will include a letter from the Partnership, a checklist of emission reduction requirements, and letters of support from airshed elected officials and leaders. The piece is anticipated to be available by Summer 2020.

Air Quality Education Accomplishments in 2020

The Partnership Facebook page (facebook.com/ccairquality) reached approximately 64 people in 2020. During the same time period, the Partnership website (www.cctexas.com/planning-esi/environmental-strategic-initiatives-esi/cc-air-quality-group) experienced 640 hits and the Pollution Prevention Partnership Air Quality Website (outreach.tamucc.edu/p3/) enjoyed 2,038 hits.

In May of 2020, communications were sent to stakeholders that included instructions on how to register for elevated ozone alerts and forecasts via AirNow. The local newspaper continued daily postings of AQI information. A comparison of area ozone monitor readings from March/April 2019 and March/April 2020 was performed to communicate the possible impact of mobile sources on ozone levels during a typical commuting to work and school environment vs. the "stay-at-home-order" environment that occurred due to the Corona virus. A decrease of 25% in ozone levels occurred during the "stay at home order" March/April 2020 time period. This information was shared with the local newspaper and promoted the potential environmental and public health benefits of alternative transportation choices and mobility planning. Numerous other education efforts were also made by group stakeholder Pollution Prevention Partnership and are cited on page 7 and attachment 5 of this report.

Dr. Jim Lee with Texas A&M University-Corpus Christi completed the study on the local cost of non-attainment of air quality standards in late March of 2020 and the study was publicly released in May 2020. The study determined an annual cost of a marginal non-attainment designation for the Corpus Christi urban airshed of $586,000,000 - $1,700,000,000 for a minimum of 23 years. The results of the study were presented to the Port of Corpus Christi Commissioners, San Patricio County Commissioners, Port Industry managers, the Regional Transportation Authority Board, the Nueces County Judge, local environmental groups, and the local NPR station KEDT. Identifying the severe cost associated with non-attainment that our specific airshed would personally experience served as an effective tool to not only educate the community about the importance of ozone attainment but also instilling a call to action to continue and increase local efforts to remain in attainment of ozone standards. A copy of the study and its results is attached to this report. ***(Attachment 8)***

The emission reduction and policy distribution piece for area regional development corporations was developed, formatted, designed, and prepared for printing.

<u>Air Quality Briefing Accomplishments in 2020</u>

Briefings were provided to numerous community groups and leaders about current air quality issues and challenges, the importance of attaining air quality standards, the results of the local cost of non-attainment study, and recommendations for emission reduction activities. Leaders that received briefings included Nueces County Commissioners, San Patricio County Commissioners, Port of Corpus Christi Commissioners, Coastal Bend Bays Foundation, Port Industry Mangers and Technical Committee, and the Regional Transportation Authority Board.

<u>Path Forward for Air Quality Education and Briefings for Year 7</u>

The Partnership webpage and Facebook page will continue in Year 7. Briefings and presentations about the importance of air quality and emission reduction recommendations will continue throughout the community in Year 7. The local cost of non-attainment of ozone standards study will continue to be promoted in the community. When the Partnership is fully transitioned with the Board of Directors and Executive

Director established, the distribution piece for the Regional Economic Development Corporations will be presented for adoption.

Air Quality Curricula

Path Forward Plan for 2020
Area industry is considering funding for the continuation of an air quality curricula to be delivered to area 5th grade classes.

Air Quality Curricula Accomplishments 2020
Local elementary schools were closed for in-class learning and challenged with the new system of remotely producing and providing lessons due to Covid 19 issues and stay-at-home orders; therefore, air quality curricula was not delivered in 2020.

Path Forward for Air Quality Curricula for Year 7
Industry will meet to discuss funding air quality curricula for Year 7.

Monitoring and Research

Path Forward Plan for 2020
The Corpus Christi urban airshed was allocated $280,000 from legislative Rider funding to perform monitoring activities. City of Corpus Christi representatives plan to have receipt of the funding approved by City Council, finalization and approval of a work plan, and selection of contractors to accomplish the work plan deliverables in Year 6.

Monitoring and Research Accomplishments 2020
A monitoring workplan for three (3) monitors was accepted. Old equipment at the 3 existing pad sites was found to be unsalvageable and new monitoring equipment at all three sites was required. A subcontractor was identified, and a contract executed to install and oversee the monitors.

Path Forward for Monitoring and Research for Year 7
The subcontractor anticipates new monitors on-line by the end of April 2021, to run through Ozone season.

Clean Fleet

Path Forward Plan for 2020
The Pollution Prevention Partnership (P3) will continue to participate in the Coastal Bend Air Quality Partnership, and other policy related forums, and meetings. P3 will continue presenting Ozone reduction strategies and education at conferences, health fairs, meetings, and workshops. The emissions testing programs will be promoted at these venues and implemented on site when possible, funding contingent. P3 will add an electric lawn equipment section to the P3 web site.

Clean Fleet and P3 will continue our current affiliations and partnerships with EPA SmartWay, Texas Department of Transportation Drive Clean Across Texas, and The Port

of Corpus Christi. P3 will promote these partnerships and associated collateral material in person, on the web, and social media.

P3 will continue providing free voluntary emissions testing for private and public fleets and will continue funding repairs for qualified private vehicles with pollution related mechanical issues as long as funding is available. The screening protocol will continue to use tailpipe gas analysis, gas cap pressure testing, and Advanced Onboard Diagnostic System (OBD-II) Diagnostic Troubleshooting Codes (DTC). AutoCheck will replace missing tire valve stem caps for all participants to reduce incidents of low tire pressure due to dirty air valves.

P3 will continue to look for funding sources that will allow them to expand existing services or begin new programs such as an electric lawn equipment subsidy for gasoline engine exchange.

Clean Fleet Accomplishments 2020

With supplemental funding from The Port of Corpus Christi, Texas A&M University-Corpus Christi administered the Pollution Prevention Partnership (P3), Clean Fleet, and AutoCheck program. In combination these programs implemented a multipoint strategy to reduce ozone through voluntary emissions testing of private and business vehicles, repair of private vehicles, reports to fleet managers, ozone action training and awareness, distributions of tire gauges and literature from local, state, and federal air quality programs, and participation in policy planning meetings and forums.

The AutoCheck Supplemental Environmental Program (SEP) administered by P3 screens for pollution issues by tailpipe gas analysis, gas cap pressure testing, and reading Advanced Onboard Diagnostic System (OBD-II) Diagnostic Troubleshooting Codes (DTC). Qualified polluting vehicles are issued a voucher for repairs. AutoCheck also replaces missing tire valve stem caps for all participants to reduce incidents of low tire pressure due to dirty air valves. The repairs made by the AutoCheck SEP are performed with penalty monies from a Texas Commission on Environmental Quality enforcement action.

In Calendar year 2020, P3 held 34 vehicle emissions testing events where 262 vehicles were tested for emissions and OBD-II codes. This included a partnership with a fast-food franchise in which delivery driver vehicles were tested. ***Attachment 4***. Gas Cap and Evaporative Control System repairs were made to 9 vehicles, and 16 non-evaporative repairs were made resulting in an estimated 1,732 lbs. of hydrocarbon (HC) emissions and 6,781 lbs. of carbon monoxide (CO) directly reduced annually. Preventive repairs contributed additional but unquantifiable reductions in HC, CO, and Nitrogen Oxides (NOx). ***Attachment 5***

P3 provided ozone-reduction strategy, education, tools, service, and advocacy at 19 educational and policy meetings***. Attachment 6***

P3 is an EPA SmartWay affiliate and a Texas Department of Transportation Drive Clean Across Texas affiliate. Promotional and educational material from these programs are distributed to drivers directly at events, through our web site (http://outreach.tamucc.edu/p3/index.html), and the Community Outreach Facebook account (https://www.facebook.com/Community-Outreach-at-Texas-AM-University-Corpus-Christi-110752215660568/) the P3 and AutoCheck websites received 2,038 pageviews in 2020.

Information about green scaping and electric lawn equipment was gathered for the website but has not yet been formatted and published.

Path Forward for Clean Fleet for Year 7

In 2021 The Pollution Prevention Partnership (P3) will continue to participate in the Coastal Bend Air Quality Partnership and assist with transition to a non-profit entity. P3 will also participate in other policy related forums, and meetings. P3 will present Ozone reduction strategies and education at conferences, health fairs, meetings, and workshops. The emissions testing programs will be promoted at these venues and implemented on site when possible, funding contingent.

Clean Fleet and P3 will continue our current affiliation with EPA SmartWay and increase efforts to recruit one or more local SmartWay partners. Partnerships with Texas Department of Transportation Drive Clean Across Texas, and The Port of Corpus Christi will continue. P3 will promote these partnerships and associated collateral material in person, on the web, and social media.

P3 will continue providing free voluntary emissions testing for private and public fleets and continue funding repairs for qualified private vehicles with pollution related mechanical issues as long as funding is available. The screening protocol will continue to use tailpipe gas analysis, gas cap pressure testing, and Advanced Onboard Diagnostic System (OBD-II) Diagnostic Troubleshooting Codes (DTC). AutoCheck will replace missing tire valve stem caps for all participants to reduce incidents of low tire pressure due to dirty air valves.

P3 will publish electric lawn equipment and greenscaping sections on the P3 website. P3 will continue to look for funding sources to expand existing services or begin new programs such as an electric lawn equipment subsidy for gasoline engine exchange.

Use of IR Cameras

Path Forward Plan for 2020

Industry plans to continue the use of IR cameras to detect fugitive emissions.

Use of IR Camera Accomplishments 2020

Several stakeholders employed the use of IR cameras in 2020. A table capturing the overall use of IR cameras in addition to other volunteer activities is included on page 13 of this report.

Path Forward for Use of IR Cameras for Year 7
Industry plans to continue the use of IR cameras to detect fugitive emissions.

Corpus Christi Army Depot (CCAD) Ozone Action Day Notifications

Path Forward Plan for 2020
CCAD will continue to provide all employees with notifications when Ozone Action Days are declared and offer voluntary actions to take during and after work periods.

CCAD Notifications and Accomplishments 2020
CCAD practiced P2 by managing volatile materials in sealed containers when not in use and when managed as waste. CCAD and NASCC continued cooperation with local city bus service which is available onsite daily for employee transportation to and from the worksite. Elevated ozone level notification was set up for distribution.

Path Forward for Ozone Notification for CCAD for Year 7
CCAD will be replacing old paint booths which were equipped with dated pollution control technology. The new paint booths are coming online and in planning via NSR amendment application. DoD will be implementing non-chromate surface coatings with lower VOC content nationwide. DoD is testing and implementing toxic metal reductions (TMR) by replacing Chrome VI electroplating solutions with less toxic solutions. CCAD plans to continue to inform employees of ozone action days and emissions reduction recommendations and employ pollution prevention initiatives for Year 7.

Production of Low Reid Vapor Pressure (LRVP) Gasoline

Path Forward Plan for 2020
Industry plans to consider the continuation of producing LRVP.

Production of LRVP Gasoline Accomplishments 2020
Industry did not produce LRVP in 2020.

Operation of Public Use Compressed Natural Gas (CNG) Fueling Facilities

Path Forward Plan for 2020
The City currently has one (1) CNG Station located on Ayers St. that is available for City and Public use and one (1) Station located on Civitan Dr. that serves as a backup.

The City will partner with the Texas Natural Gas Vehicle (NGV) Alliance in promoting to the public and private fleets, the use and benefits of natural gas vehicles. The City will sponsor CNG workshops with the Greater Houston NGV Alliance.

Public Use CNG Fueling Facilities Accomplishments 2020
The Ayers St. CNG fueling facility remained available for public use in 2020. There was an increase of 7 new customers utilizing the CNG fueling facility in 2020.

Path Forward for Public Use CNG Fueling Facilities for Year 7
The City will continue to operate the CNG fueling facility and promote public use of the facility in Year 7. The Gas Department plans to conduct public outreach efforts promoting CNG fuel as a cleaner burning alternative to gasoline and diesel.

Electric Vehicle Infrastructure
There at 9 public charging facilities for electric vehicles in the airshed. Sites include La Palmera; a major shopping mall, several vehicle dealerships, and area hotels.

City of Corpus Christi Purchase of CNG Vehicles

Path Forward Plan for 2020
The City of Corpus Christi plans to purchase twenty-two (22) CNG bi-fuel and dedicated vehicles in 2020 to replace aging fleet.

City of Corpus Christi Purchase of CNG Vehicles Accomplishments 2020
The City removed fifteen (15) vehicles from service and replaced them with CNG bi-fuel and dedicated vehicles.

Path Forward for City of Corpus Christi Purchase of CNG Vehicles Year 7
There are plans to replace twenty (20) vehicles with CNG bi-fuel and dedicated vehicles.

RTA Purchase of CNG Vehicles

RTA Purchase of CNG Vehicles Accomplishments 2020
RTA did not purchase any new CNG or Electric vehicles in 2020.

MPO Assistance with Mobility Planning

Path Forward Plan for 2020
The Corpus Christi MPO plans to participate in the Partnership. The MPO plans to work with the Pollution Prevention Partnership, a community outreach program of Texas A&M University - Corpus Christi to make the public aware of regional air quality issues and will support the public outreach efforts for TCEQ and EPA reporting services.

MPO Assistance with Mobility Planning Accomplishments 2020
The MPO staff supported regional planning to address mitigation of environmental, historic preservation, stormwater, and air quality impacts of transportation. MPO staff also researched air quality related articles and reports regarding air quality and transportation planning.

Path Forward for Mobility Planning for Year 7
The MPO staff will continue to support transportation planning programs and research that seek to reduce transportation related air emissions. The MPO will update and modify the Air Quality section of the MPO website to enable visitors to the site to be able to link to air quality reports and conditions.

RTA Van Share and Community Shuttle Program

Path Forward Plan for 2020
The Chair will continue to promote the RTA Van Share program.

Van Share and Community Shuttle Accomplishments 2020
The RTA VanShare Program provided 487,589 miles of service for 45,341 trips: removing thousands of vehicles from the road in 2020. The chart posted below reflects the Van Share program accomplishments for 2020.

2020 Vanpool				
Field	Average Weekday Schedule	Average Saturday Schedule	Average Sunday Schedule	Annual Total
Vehicles in Operation	14	6	6	
TOTAL ACTUAL VEHICLE MILES	1,611	643	617	487,589
TOTAL ACTUAL VEHICLE HOURS	29	11	10	8,680
SERVICES CONSUMED				
Total Monthly Ridership Unlinked Passenger Trips (UPT):	155	50	40	45,341
SERVICES OPERATED (DAYS)	262	52	52	366

RTA provided shuttle services to 762 riders over a total of 854 miles in 2020, removing hundreds of vehicles from the road.

SPECIAL MOVEMENT EVENT	# Passenger Trips	Miles	Hours	Date	Days
January-20					
Autonomous Shuttle	20	75	2.8	1/14/20	1
MLK March	375	70	9.03	1/20/20	1
Autonomous Shuttle	15	79	4.33	1/21/20	1
Staging Vehicle for Rt 100 – The Surge	0	2	5.65	2/1/20	1
City of CC & Chamber Tour	71	122	6.66	2/4/20	1
City Manager Tour	24	24	1.92	2/5/20	1
Staging Vehicle for Rt 100 – The Surge	0	2	4	2/15/20	1
Staging Vehicle for Rt 100 – The Surge	0	3.5	3.75	2/29/20	1
CCIA Maintenance Facility	104	50	6.75	3/4/20	1

SPECIAL MOVEMENT EVENT	# Passenger Trips	Miles	Hours	Date	Days
CCAD Scholarship Field Trip – Buc Commission	32	59	4.53	3/6/20	1
League of Women Voters	51	18	2.62	3/7/20	1
CCPD/SWAT Training	70	317.37	13.83	6/6/20	1
CCPD Anti-Theft Press Conference	0	32	8	11/19/20	1

Green Building Initiatives

Corpus Christi home builders *Leads* initiative for "green" building titled "Coastal Bend GreenBuilt". The project includes a checklist and assigns a point value for each aspect of green initiatives built into a home. A copy of the checklist was provided in the Year 2 report (Appendix C). In 2020, over 50 certified Greenbuilt homes were built.

Port of Corpus Christi Initiatives

Port of Corpus Christi Accomplishments 2020

In 2020, the Port of Corpus Christi (PCCA) funded a study to provide projections for the potential economic costs as the result of a hypothetical scenario of an ozone nonattainment designation for the Corpus Christi Urban Airshed. The purpose of this study was to project the economic consequences, or potential losses, to the economies in the Corpus Christi metro area and its three counties that could arise after receiving either a marginal or moderate nonattainment designation. The results of the study were published in May 2020 and a copy of the study results is attached to this report. **(*Attachment 8)*** Significant funding was also provided by the Port for Texas A&M University-Corpus Christi Pollution Prevention Partnership activities, and financial support for the transition of the Coastal Bend Air Quality Partnership.

The Port continued its anti-idle policy for all Port-owned vehicles and equipment and enforced the policy through an installed Drive Cam system which identifies idling non-conformances. Also in 2020, the Port began a Port emissions inventory, and a new, more efficient electric crane was put in to operation. A list of numerous other emission reduction activities and policies undertaken by the Port of Corpus Christi in 2020 is included in the Stakeholder Initiatives Summary on page 13 of this report and in ***Attachment 7*** of this report.

Path Forward for Port of Corpus Christi Initiatives for Year 7

Through the Port's Strategic Plan, the Port has developed a Clean Fleet Program which is in the process of being implemented. Seven plug-in hybrid electric vehicles / hybrid electric vehicles have been ordered to replace the Administration pool vehicles. All Port-owned vehicles will be replaced with low emissions vehicles by 2023. The Port will complete its 2020 emissions inventory. The Port will continue to provide financial support for the Pollution Prevention Partnership and the Coastal Bend Air Quality Partnership.

The 2020 emissions inventory will be completed, and an emission reduction study and pilot program will support the Port's planning effort to develop emission reduction programs for emissions control strategies. The Port will purchase seven (7) air monitors capable of continuously monitoring PM 10 and PM 2.5 to replace a tenant funded system at the Bulk Terminal.

Stakeholder Initiatives Summary

The following table is a summary of the frequently employed voluntary emission reduction initiatives undertaken by area stakeholders. Please note that the following table summarizes voluntary emission reduction activities undertaken by several industrial and agency stakeholders. Many respondents noted individual activities not captured in the table. Individual responses citing emission reduction activities can be found in ***Attachment 7*** of this report.

Activity	Cheniere (*)	Flint Hills Resources (*)	Valero Refining (*)	Citgo Refining (*)	Equistar Chemicals (*)	MPO (*)	Texas A&M Corpus Christi (*)	Port of Corpus Christi (*)	OxyChem (*)	Nueces County (*)	City of Corpus Christi	NuStar
Register to receive ozone elevation notifications	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Communicate emission tips to employees and vendors	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Provide ozone education to personnel		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Promote car-pooling	✓				✓	✓	✓	✓	✓	✓	✓	✓
Anti idle policy				✓			✓	✓	✓	✓		
Postpone delivery activities				✓	✓		✓	✓	✓	✓		✓
Require low VOC materials	✓	✓	✓	✓			✓	✓	✓	✓		✓
Require scrubbers	✓	✓	✓	✓	✓				✓			
Recommend alternative or mass transit in fence-line	✓		✓				✓			✓		
Alternative fuel fleet							✓	✓	✓	✓	✓	
Emissions test fleet							✓	✓	✓	✓		

Replace older fleet			✓	✓				✓		✓		
Repower or replace older engines		✓	✓		✓		✓	✓	✓	✓	✓	
Filter traps and DOCs on diesel fleet									✓	✓		
Use low sulfur diesel	✓	✓	✓	✓			✓	✓	✓	✓	✓	
Flare reduction		✓	✓	✓	✓				✓			
Produce low sulfur diesel		✓	✓	✓								
Produce low RVP gasoline												
Utilization of IR cameras for inspections	✓	✓	✓	✓	✓					✓		
Routine inspections for fugitive emissions	✓	✓	✓	✓	✓		✓		✓	✓		
Low NOx burners	✓	✓	✓	✓	✓				✓	✓		
Flue gas recirculation		✓		✓					✓			
Vapor recovery		✓	✓	✓	✓				✓			
Low emitting tank roofs		✓	✓	✓	✓				✓			
Thermal Oxidizer		✓	✓	✓					✓			

Fired source alarm controls			✓		✓							
Routine storage tank inspections		✓	✓	✓	✓				✓			
Flare gas analyzer		✓	✓	✓	✓				✓			
Energy reduction programs			✓	✓	✓		✓	✓		✓	✓	
Enclosed materials storage and conveyors												

*Numerous additional voluntary emission reduction practices take place at these facilities and are described in their attached letters (Attachment 7)

APPENDIX A

PATH FORWARD LETTER

APPENDIX A
PATH FORWARD COMMITMENTS

Port of Corpus Christi and Construction Emissions Inventory

The Corpus Christi air-shed 2011 emissions inventory provided by TCEQ did not include port emissions or construction equipment. The Corpus Christi Air Quality Group requested a work-plan and quote from StarCrest LCC to provide an inventory and accurate analysis of overall emissions contributions for our air-shed. The Port of Corpus Christi has committed to funding the Year 1 and 2 work plans for a total amount of $153,500 and StarCrest will perform those activities.

Establishment of Air Quality Position and Program

The Group will work with stakeholders and potential sponsors 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 lower emission alternative choices that are available to them. An educated public is an important component in a community that strives to maintain healthy air quality.

Air Quality Curricula

An area Industry funded air quality curriculum will be delivered to 5th grade classes.

Research, Modeling and Monitoring

Operate and maintain the three research grade monitoring stations within Nueces and San Patricio counties. These include: an upwind site at the wastewater treatment plant in Aransas Pass, TX (CAMS 659); a downwind site located at Violet Road, near Robstown, TX (CAMS 664); an urban site at the municipal water pumping station on Holly Road (CAMS 660), SH358 (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.

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.

AutoCheck/Clean Fleet Vehicle Emissions Testing and Repair

The Pollution Prevention Partnership (P3) provides information, education and awareness campaigns, research, and participation in and promotion of ozone reduction strategies among citizens and organizations, and administration of the AutoCheck Supplemental Environmental Program (SEP). The AutoCheck SEP provides emissions data and direct reduction of emissions by screening and repair of highly polluting vehicles. The "Clean Fleet" vehicle emissions testing program will 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 the repairs.

Use of IR Cameras

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

CCAD Announcement of Ozone Action Days

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.

Production of LRVP Gasoline

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. In the month of October, 9 psi vapor pressure fuel will be provided; a reduction from the maximum of 11.5 psi currently allowed by Regulation in the month of October.

Operation of Public Use Compressed Natural Gas (CNG) Fueling Facilities

The City of Corpus Christi will continue to operate two public use CNG fueling stations. The City of Corpus Christi plans to purchase 15 Original Equipment Manufacture bi-fuel CNG vehicles within the year.

USPS Installation of CNG Fueling Facilities

The US Postal Service will be installing another CNG fueling facility and will be purchasing 26 additional CNG vehicles.

RTA Purchase of CNG Vehicles

The Regional Transportation Authority (CCRTA) will replace seven (7) gasoline fueled Paratransit vehicles with seven (7) CNG fueled vehicles and 24 diesel powered buses with 24 CNG buses by December 2018.

Bicycle Transportation Planning

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, Texas A&M University-Corpus Christi (TAMUCC), and the City about the creation of new facilities, new policies, and the dissemination of public information.

Corpus Christi Air Quality Group Education Efforts

The Group represents a broad array of agency, industry, university, and media associations. The Chair of the 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.

Announcement of Emission Reduction Funding Opportunities

All TCEQ Texas Emissions Reductions Program (TERP), Diesel Emissions Reductions (DERA), and other TCEQ and EPA applications for funding opportunities will be communicated to the Group and their workplaces by the Group's Chair.

Van Share Program Promotion

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

This appendix reflects the major highlights of the Path Forward Commitments to EPA. To view the complete Path Forward letter including details, charts, and attachments, please visit https://www.epa.gov/advance/texas-corpus-christi.

APPENDIX B

ANNUAL REPORT FOR YEAR 1 ACTIVITIES
May 2014 – May 2015

APPENDIX B
ANNUAL REPORT FOR YEAR 1 (May 2014 – May 2015)

Status of Port of Corpus Christi Emissions Inventory Commitment for Year 1 and Year 2 (May 2014 – May 2016)

The commitment for Year 1 and Year 2 is now complete. StarCrest commenced work on the port emissions inventory (including harbor craft and towboats, cargo handling equipment, heavy duty vehicles, ocean going vessels, and rail) and a partial construction equipment emission inventory for Nueces and San Patricio County in June 2014. This analysis will augment the existing mobile source inventory completed by the TCEQ that was completed for 2011, estimated up for 2013, in order to provide a full more current regional emission inventory. StarCrest provided the 2013 Air Emissions Inventory Report which included only the port emissions inventory. The construction equipment inventory effort failed after several attempts to get complete data. StarCrest was able to get data from the Texas Department of Transportation on construction equipment usage in the two counties but was not able to get construction equipment data for other construction activities from the local associated Builders and Contractors or the Associated General Contractors for the timely completion of the 2013 Emissions Inventory Report.

Path Forward Commitments for Year 2/3

A Future Path would be to utilize the emissions inventory data to identify additional emission reduction opportunities that will benefit our region. Additionally, outreach efforts to the two construction contracting company associations continue in the hopes that more accurate construction emission detail can be summarized in the next regional emission inventory.

Status of Establishing Air Quality Position and Program Commitment for Year 1

The commitment of efforts to fund an education position has been met and within the schedule stated in the Path Forward Plan. During May 2014-May 2015, a proposal in the amount of $100,000 per year was developed by the Pollution Prevention Partnership at Texas A&M University-Corpus Christi to fund an air quality public education program. The proposal included a full-time position salary and benefits as well as a budget for billboards, bus benches, bus wraps, media buys and printed materials. The position would also work to establish relationships with schools to fly air quality flags and distribute any other EPA available material. The proposal was submitted to several representatives of various area businesses and industry as well as the Chamber of Commerce in search of sponsorship. To date, (May 2015) funding for such a program has not been offered or available. Establishing the position and program has not taken place.

Status for Air Quality Curricula Delivery for Year 1

An air quality curriculum was provided to 5th grade students at four area schools. The curricula was delivered by an industry funded consultant. Twenty-two (22) classes received the curricula for a total of five-hundred fifty-one (551) students. Curricula included how ozone is formed, ozone producing activities and ozone emission reduction recommendations. Tests were submitted to students prior to and after receiving the curricula. Post curricula tests improved to seven out of ten possible correct answers from a pre-test average of 4 out of 10 possible correct answers. The curricula printing, classroom prizes and instructor/consultant time was sponsored by Citgo, Flint Hills, and Valero Refining.

Status of Research, Modeling and Monitoring Commitment for Year 1

The commitment has been met and within the schedule stated in the Path Forward Plan. The research grade monitoring stations have been operated through 2014 measuring continuous ozone measurements and meteorological parameters including resultant wind speed, resultant wind direction, outdoor temperature, and relative humidity. The data has been published on TCEQ's website using the LEADS data acquisition system and is made available to stake holders, policy makers, researchers, and community members. The web link to view and access the data is http://www.tceq.state.tx.us/cgi-bin/compliance/monops/daily_summary.pl. The data measured has been used to update the conceptual modeling report to assess the attainment status, identify episode days for further meteorological analysis, and locate possible regional sources contributing to long-range transport. The conceptual modeling report will be submitted for review and approval by TCEQ.

Path Forward for Monitoring for Year 2

Continuous monitoring of ozone and prevailing meteorological conditions will be continued at the urban site – CAMS 660 and downwind site – CAMS 664 during April 1, 2015 through October 31, 2016. In consideration of industrial development in San Patricio county and monitor, the inbound air parcel transport, CAMS 685 – Ingleside monitoring site setup as an integral part of Supplemental Environmental Project (SEP) will be continued during April 1, 2015 through October 31, 2016.

Status of NOx Monitoring Commitment for Year 1

The commitment has been met and within the schedule stated in the Path Forward Plan. Continuous monitoring of ozone precursor – nitrogen oxides (NOx) was conducted at CAMS 660 – Holly road site during ozone season of 2014. NOx concentrations ranging between 1.5 ppb to 14.5 ppb were measured during April 15, 2014 through October 31, 2014 while NOx concentrations were observed to range between 1 ppb to 10 ppb.

Path Forward for NOx Monitoring

Continuous monitoring of oxides of nitrogen (NOx) will be conducted during ozone season of 2016 (April 1, 2015 through October 31, 2016) at CAMS 660, Holly road site. Detailed data analysis will be conducted to study the trends, identify episodes, and characterize prevailing meteorological conditions.

Status of Commitment to Upgrade Monitors for Year 1

The commitment has been completed within the schedule stated in the Path Forward Plan. Two new Teledyne-API 400E ozone analyzers and Teledyne – NOx analyzer has been acquired. RM Young wind sensors have been repaired and calibrated to acquire valid wind measurements.

Status of Commitment to Update Model for Year 1

The commitment has been met and within the schedule stated in the Path Forward Plan. A Quality Assurance Project Plan (QAPP) to update the existing conceptual modeling report developed for ozone season 2011 and 2012 has been developed and submitted to TCEQ's technical committee for review. Data analysis has been conducted to update the conceptual modeling report, which upon approval of QAPP will be submitted to TCEQ for review and approval.

Status of Updating Ozone Attainment Status Commitment for Year 1

The commitment has been met and within the schedule stated in the Path Forward Plan. Ozone concentrations and meteorological conditions including resultant wind speed, resultant wind direction, outdoor temperature and relative humidity were measured at compliance grade monitoring stations including CAMS 04 and 21 maintained and operated by TCEQ and research grade monitoring stations CAMS 660, CAMS 659, CAMS 664 and CAMS 686 maintained and operated by UNT-TAMUK to update the existing conceptual modeling report. Continued decrease in the ozone design values has been noted at both the compliance and research grade monitoring stations. During 2014, the fourth highest eight-hour ozone concentrations of 62 ppb, 63 ppb, 66 ppb and 67 ppb were recorded at CAMS 686, CAMS 664, CAMS 660 and CAMS 659, respectively. Data from this activity is reflected in Figures 2, 3, and 4 of this report. Additional analysis of exceedance days considering the current NAAQS of 75 ppb and proposed levels of 70 ppb, 65 ppb and 60 ppb measured at both compliance and research grade monitoring stations during 2014 was conducted to assess the temporal and spatial variations in ozone concentrations. During 2014 one day of exceedance as per the current NAAQS was recorded at CAMS 659 – upwind site and CAMS 660. Seasonal trend analysis of exceedance days demonstrated bimodal distribution with higher numbers during April through May and September through October. Meteorological analysis of the identified episode days indicated dominant wind contribution from the north and northwest. Additional trajectory analysis was conducted using the twenty-four-hour backward trajectories generated using Hybrid Single-Particle Lagrangian Integrated Trajectory-Model (HYSPLIT) for the identified episode days. The trajectory analysis suggested an impact of regional transport from highly industrialized cities of Texas including Houston-Galveston, Beaumont, and Dallas-Fort Worth along with surrounding states. Data has been submitted to TCEQ for review and approval.

Status of AutoCheck/Clean Fleet Vehicle Emissions Testing and Repair Commitment for Year 1

The commitment has been met and within the stated schedule. The Pollution Prevention Partnership held 17 events testing public and fleet vehicles for emissions. A total of 489 vehicles were tested for emissions. Thirty-eight (38) vehicles were identified as polluting and 66 gas caps were identified as leaking and replaced. Approximate emissions reductions as a result of replacing the gas caps and emission reducing repairs is two (2) tons per year of NOx and four (4) tons per year of HC. (Approximation of emissions reductions based on CARB and California emissions studies on approximating emissions reductions as a result of repairing polluting vehicles.) http://www.valleycan.org/_pdfs/titu_-2007_ArvinFinalReportJuly10-2008.pdf. The Pollution Prevention Partnership also made numerous presentations to local agencies and community groups encouraging emission-reducing activities. Groups included the Breakfast Club, the USO, local television networks, Rotary, Chamber of Commerce, and more. The Pollution Prevention Partnership's website was used to announce vehicle emission events and other emission reduction information and received 48,709 hits and the social media page reached 552 people.

Status of use of IR Camera Commitment for Year 1

The commitment has been met and within the schedule stated in the Path Forward Plan. Several Port Industries continued to utilize IR cameras to detect and prevent fugitive emissions beyond what is required in regulations for fugitive emissions.

Status of CCAD Notification on Ozone Action Days Commitment for Year 1

Ozone forecasts are made daily by TCEQ meteorologists during the ozone-forecast season; April 1 – October 31. The forecast predicts whether ozone levels in the area are expected to reach or exceed the ozone standards. The EPA sets levels to notify the public about local air quality and recommend steps people can take to avoid exposure to air pollutants. TCEQ meteorologists use a set of criteria from historic meteorological data, ozone measurements, and ozone-prediction models to make these predictions. When they forecast an Ozone Action Day, TCEQ meteorologists contact the National Weather Service, which then broadcasts the information across its "weather wire." The TCEQ also provides a service to email anyone about an upcoming ozone action day. The forecasts are made, in most cases, by 2 p.m. local time and are valid for the next day. There were no Ozone Action Days during Year 1 (May 2014-May 2015), however the CCAD communication system was set up and ready to launch should an Ozone Action Day be called.

Status of Production of LRVP Commitment for Year 1

The commitment has been met and within the schedule stated in the Path Forward Plan. Local refineries provided the Corpus Christi area with gasoline that had a maximum vapor pressure of 7.8 psi during the months of May through September and 9 psi in October of 2014.

Status of Operation of Public Use CNG Fueling Facilities Commitment for Year 1

The commitment has been met and within the schedule stated in the Path Forward Plan. The City of Corpus Christi has three (3) CNG stations; one (1) for City use only and two (2) are available for public use. The City is currently in the bid process for the establishment of a fourth CNG station which will be available to the public and expects to have that station in operation by 2nd quarter of 2016. The City of Corpus Christi has exceeded the 15-unit commitment and purchased 70 CNG bi-fuel and dedicated vehicles in 2014. There are plans to purchase a minimum of 50 bi-fuel or dedicated CNG vehicles in 2015.

Status of USPS Installation of CNG Fueling Facility for Year 1

The US Postal Service plans to begin this project in 2015.

Status of RTA Commitment to Purchase CNG Vehicles for Year 1

The commitment has been met and ahead of the schedule stated in the Path Forward Plan. The CCRTA replaced 23 diesel Paratransit vehicles and 20 diesel buses with CNG vehicles.

Status of Bicycle Transportation Planning Commitment for Year 1

The commitment has exceeded its tasks and activities as stated in the Path Forward Plan and ahead of schedule. In February of 2015, the Corpus Christi Metropolitan Planning Organization (MPO) undertook a replacement of the 2005 Regional Bicycle and Pedestrian Plan. The new Strategic Plan for Active Mobility will be completed in two phases: Phase I Bicycle Mobility and Phase II Pedestrian Mobility. Phase I will address prescriptively:

- Where (on which corridors/segments) in the urbanized area of Nueces and San Patricio counties should bike facilities be installed to create a cohesive bicycle

mobility network that connects key destinations, functionally expands the reach of the transit network, and accommodates a diversity of riders.
- What type of facilities (e.g., on-street bike lanes, separate cycle tracks, etc.) should be installed on which segments.
- How, (i.e., to what standards), should those facilities be designed (and maintained).

Phase I will also include recommendations and best practices related to:
- Planning of ancillary and end-of-trip facilities (e.g., racks, public repair stations, lockers, bike share infrastructure, way finding.)
- Education, enforcement, and encouragement programs for promoting safe biking culture and awareness.
- Policy and code reform program (i.e., roadway maintenance, safe passage.)
- Development of performance measures to track progress against regional bicycle mobility and safety goals and objectives.

As part of this effort, the MPO has accomplished the following during the reporting period:

- Presented the scope of the planning effort to regional decision makers in multiple venues:
  - City of Corpus Christi City Manager and Senior Leadership (3/2/15)
  - Corpus Christi City Council (3/10/15)
  - City of Portland City Manager and Director of Engineering (3/19/15)
  - Corpus Christi Chamber of Commerce Infrastructure Committee (4/10/15)
  - Coastal Bend Bays Foundation (4/13/15)
  - Mayor's Fitness Council (scheduled 6/11/15)
- Created a multi-faceted Stakeholder Engagement Plan that details strategies for engaging plan users (i.e., municipalities and other entities that will support the construction of facilities specified in the plan) as well as a diversity of facility users (e.g., students, commuters, casual recreational riders.)
- Established a Steering Committee comprising delegates from 22 entities that are considered plan entities. The first meeting of this body was held on April 15, 2015.
- Established dedicated Web portal (www.CoastalBendInMotion.org) to facilitate stakeholder engagement in the planning process.
- Established three primary tools for virtual data collection, all of which are functional and are yielding high volumes of quality data about stakeholder priorities:
- On-line mapping tool to capture where users ride or where they would like to ride if the conditions for cycling improved.
- Downloadable SmartPhone application that allows users to log real-time data about their rides.
- On-line survey about riding habits, needs and perceived obstacles to cycling as transportation.
- Leveraged financial contribution from the Corpus Christi Regional Transportation Authority to support consultant to provide technical assistance in implementing direct (in-person) stakeholder engagement.

- Leveraged financial contribution from City of Corpus Christi to support consultant in providing technical assistance to the MPO with demand modeling and bike facility selections.
- Created geo-spatial (Geographic Information Systems) database with individual data layers for variables that will inform bike facility network development (e.g., origin/destination data at the Traffic Analysis Zone (TAZ) level, location of key people generators, including employment centers, shopping hubs, health care facilities, groceries and markets, transit stops, academic institutions, etc.)

Status of Education Efforts Commitment for Year 1

The commitment has been met and within the schedule stated in the Path Forward. In July of 2014 and May 2015, the Chair sent electronic communications to the over 100 participants in the Group that provided instructions on how to register for AirNow alerts and forecasts. Also included in the communication were numerous prepared scripts for emission reduction recommendations that could be easily forwarded, or mass emailed should an AirNow alert be received.

Status of Announcing Emission Reduction Funding Opportunities Commitment for Year 1

The commitment has been met within the schedule stated in the Path Forward Plan. Notification to the Group for DERA projects were submitted in May, August, and September of 2014. A letter of support from the Group was provided in December 2014 to the Port of Corpus Christi for a DERA project application. There were no TERP funds available for this reporting period. A Clean School Bus application notification was distributed to the Group in August.

Status of Van Share Promotion Commitment for Year 1

The commitment has been met and within the schedule stated in the Path Forward. The Regional Transportation Authority (RTA) was an invited speaker at the July 2014 Group meeting where over 15 industrial and major employers were represented. The RTA representative provided Van Pool registration information for worksites. An e-mail was sent to the over 100 Group members that provided the RTA presentation, contact information for the representative and encouragement to schedule a workplace appointment for the representative. In November 2014, the RTA representative was included in a presentation to the San Patricio County Regional Development Corporation regarding the air quality impact of numerous industrial facilities seeking to locate to the area and traffic management plan encouragement for the several hundred workers that will be commuting to the facilities.

This appendix reflects the major highlights of the Year 1 Ozone Advance Report submitted to EPA. To view the complete Year 1 Annual Report including details, charts, and attachments, please visit https://www.epa.gov/advance/texas-corpus-christi

APPENDIX C

ANNUAL REPORT FOR YEAR 2 ACTIVITIES
May 2015 – May 2016

APPENDIX C
ANNUAL REPORT FOR YEAR 2 (May 2015 – May 2016)

Status of Establishing Air Quality Position and Program Commitment for Year 2

Numerous efforts to meet the commitment and obtain funding for a position that delivers a community-wide education campaign in Year 2 were unsuccessful. The Chair of the Group performed several searches for grants available and studied numerous grant announcements in search of funding for an air quality education position or campaign. The only possible funding source found during these searches was Congestion Mitigation federal funding or CMAQ. A telephone call to a CMAQ funding representative confirmed that at present, CMAQ funding is currently available for areas in non-attainment of ozone standards only.

This commitment has not been met. Despite a concerted effort in Years 1 and 2 to identify funding for a dedicated fulltime position to deliver community-wide air quality education programs, the position was not funded in Year 1 or Year 2 and therefore not established. The Group met their commitment in Year 1 and Year 2 commitment to search out funding possibilities through stakeholders, potential sponsors, and grants to secure funding for a position that delivers a community-wide ozone education campaign. There is no indication through the many Year 1 and Year 2 grant searches, studies of grant announcements and meetings with local stakeholders that funding for this full-time position and program will become available. There were however, opportunities for no-cost public education tools and outlets identified and offered during these meetings such as newsletters, Face Book, Twitter feeds and distribution pieces that could be made available to provide air quality community education.

Education Path Forward for Year 3

The Chair of the Group will meet again with local entities that offered no-cost public education opportunities and work to implement these opportunities. These opportunities include contributing to Corpus Christi Chamber of Commerce newsletters that go out to over 400 local businesses about emissions reductions, including air quality messages in the Local Emergency Planning Committee (LEPC) info-line, investigating air quality messages to be included in LEPC reverse alert telephone and text notifications on elevated ozone days, contributing to LEPC Twitter and Face Book postings, participation in Corpus Christi Regional Economic Development Corporation welcome packages distributed to new businesses, and providing ozone notification tools and prepared messages to local meteorologists and the local newspaper (Corpus Christi Caller-Times). The Chair will also work with stakeholders to prepare an electronic presentation about air quality and emissions reduction recommendations that can be utilized by community, industry, local government, and business speakers. In addition, the Chair will continually review the EPA website found at https://www.epa.gov/education for resources such as school flags, digital distribution pieces and more for community education opportunities.

Status of Air Quality Curricula for Year 2

The commitment has been met and within the committed schedule. During Year 2, area industry (Citgo, Flint Hills Resources, Valero) funded the development of the curricula, the presenter, and learning prizes for students. In Year 2, the curricula was delivered to 7 classes in 2 elementary schools. A total of 175 students received the curricula.

Students were pretested on air quality and emission reduction recommendations before receiving the lessons and post tested after receiving the lessons. An improvement of over 50% in pre and post test scores was realized in most classes.

Air Quality Curricula Path Forward for Year 3

Area industry (Citgo, Flint Hills Resources, Valero) has provided funding for the air quality curricula to continue into the Fall 2016 school session.

Status of Research, Modeling and Monitoring Commitment for Year 2

The commitment has been completed and within the schedule stated in the Path Forward Plan. Continuous monitoring of ozone and prevailing meteorological conditions including resultant wind speed, resultant wind direction, outdoor temperature and relative humidity was conducted during Year 2 at CAMS 659 – Aransas Pass (Upwind site); CAMS 660 – Holly road (Urban site); CAMS 664 – Violet (downwind site) and CAMS 686 – Odem. During 2015, the downwind site – Violet (CAMS 664) recorded fourth highest daily maximum eight-hour ozone concentration of 69 ppb while CAMS 659 and CAMS 660 recorded 60 ppb. Odem – CAMS 686 located in the San Patricio county recorded the lowest fourth highest daily maximum eight-hour ozone concentrations of 59 ppb during 2015. On May 1, 2015 daily maximum eight-hour ozone concentrations exceeding current NAAQS of 70 ppb were recorded at compliance grade monitoring stations CAMS 04 and CAMS 21 as well as research grade monitoring stations including CAMS 659, CAMS 660 and CAMS 664. The downwind site recorded two episode days during October 2015. Additional data analysis is being performed to study the prevailing meteorological conditions as well as diurnal and seasonal trends.

Status of NOx Monitoring Commitment for Year 2

The commitment has been completed and within the schedule stated in the Path Forward Plan. The continuous monitoring of oxides of nitrogen was conducted at CAMS 660 – Holly road site during April 1, 2015 through October 31, 2015. Daily maximum one hour NOx concentrations ranging between 1.2 ppb to 15.1 ppb were recorded during ozone season of 2015 while daily maximum one hour NOx concentrations were observed to range between 0.7 ppb to 6.8 ppb. An episode day was conducted to study the trends of NOx concentrations during ozone seasons of 2014 and 2015 along with identification of episode days with high ozone and NOx concentrations for further assessment of prevailing meteorological conditions and diurnal trends. During days with elevated NOx concentration, dominant contribution from east, southeast and southwest wind sectors was noted along with significant contribution from the North and Northwest sectors. The diurnal time series analysis conducted during the high NOx episode days indicated elevated concentrations during early morning, midafternoon and late evening is contributed primarily by local rush hour traffic.

Status of Commitment to Upgrade Model for Year 2

The commitment has been completed and within the schedule stated in the Path Forward Plan. The Quality Assurance Project Plan (QAPP) was developed to update the conceptual modeling report through 2014. The QAPP has been submitted and approved by TCEQ's technical committee. Following the protocol of QAPP, a conceptual modeling report for the urban airshed has been updated through 2014. As shown by the data analysis in the conceptual modeling report. Corpus Christi is in attainment with the current Ozone NAAQS by a slight margin. The compliance grade TCEQ monitoring stations (CAMS 04 and CAMS 21) and research grade UNT-TAMUK maintained monitoring

stations upwind site – CAMS 659 (Aransas Pass); urban site – CAMS 660 (Holly road site) and Odem site – CAMS 686 recorded one to three episode days with daily maximum eight-hour ozone concentration exceeding NAAQS. The downwind site – CAMS 664 recorded up to 6 episode days exceeding current NAAQS of 70 ppb. Additional analysis assessing the prevailing meteorological conditions during the identified episode days along with twenty-four-hour backward trajectory analysis to locate the probable regional source contributors was performed.

Status of Updating Ozone Attainment Status Commitment for Year 2

The commitment to update ozone attainment status has been completed within the schedule stated in the Path Forward Plan. Ozone concentrations and meteorological conditions including resultant wind speed, resultant wind direction, outdoor temperature and relative humidity measured at compliance grade monitoring stations including CAMS 04 and 21 maintained and operated by TCEQ and research grade monitoring stations CAMS 660, CAMS 659, CAMS 664 and CAMS 686 maintained and operated by UNT-TAMUK are being used to update the existing conceptual modeling report. The conceptual modeling report will be submitted to TCEQ's technical committee for review and approval. Continued decrease in the ozone design values has been noted at both the compliance and research grade monitoring stations. During 2015, the fourth highest eight-hour ozone concentrations of 59 ppb, 69 ppb, 60 ppb and 60 ppb were recorded at CAMS 686, CAMS 664, CAMS 660 and CAMS 659, respectively.

Path Forward for Year 3 and 4

Through TCEQ funding provided by the 84th Texas Legislature, the City of Corpus Christi has secured $405,243 in funding for a two-year work plan for Years 3 and 4 (May 2016-May 2018) to continue air monitoring, research, and the Clean Fleet program. Funding was insufficient to provide modeling activities.

Status of AutoCheck/Clean Fleet Vehicle Emissions Testing and Repair Commitment for Year 2

The Clean Fleet commitment was met and within the stated schedule for Year 2. The Pollution Prevention Partnership and AutoCheck Program held 31 events since May 2015, testing public and fleet vehicles for emissions. A total of 470 vehicles were tested for emissions, 15 vehicles were identified as highly polluting and 40 gas caps were identified as leaking and needing replacement. Approximate emissions reductions as a result of documented repairs and gas cap replacement is 0.01 tons per year of NOx and 1.2 tons per year of HC. The Pollution Prevention Partnership also made numerous presentations to local agencies and community groups about ozone, health, and encouraging emission reducing activities. Groups included Flint Hills Environmental, Health, Safety Fair, and the Moody High School AP Environmental Science Class. Pollution Prevention Partnership also estimated the composition of the Nueces and San Patricio County Alternative Fuel light vehicle fleet and created models of emission reduction gains by various alternative fuel technology adoption scenarios. The presentation was delivered to the air quality group and made available through the Pollution Prevention Partnership web site. Four hundred twenty (420) presentations and documents about ozone reduction, alternative Fuels, and alternative transportation were downloaded onto the Pollution Prevention Partnership website and there were 5,281 other page hits. The Pollution Prevention Partnership website can be found at http://outreach.tamucc.edu/p3/.

Path Forward for Clean Fleet for Year 3

A minimum of one Auto Check/Clean Fleet event will be held each month beginning in January 2016 to test an average of 20 vehicles per month for the period of January 2016 through December 2017. Pollution Prevention Partnership (P3) will make every effort to ensure that at least half of all vehicles tested are private, non-fleet vehicles. In the event that a scheduled event is cancelled, it will be rescheduled. If it is rescheduled to a different month, both it and the event scheduled for that month will be performed. The Auto Check/Clean Fleet program will measure vehicle emissions from area public and private fleets for hydrocarbons and NOX; coordinate emission reducing repairs for 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 information for all tested vehicles ("clean" and "dirty") into an excel spreadsheet to be sent to the TCEQ with quarterly reports. The Pollution Prevention Partnership will attend or facilitate meetings for/with local governments, businesses, citizens groups, industry groups, and environmental groups to promote air pollution reduction strategies. A presentation about local air quality including emissions reduction strategies and community outreach programs (such as the Auto Check/Clean Fleet events) will be created to be given at these meetings where appropriate. The Pollution Prevention Partnership will maintain a public website/web page to facilitate public access to air quality information and outreach programs and will report on the analytics of website/web page traffic. The website will include the following information:

- current air quality information for the Corpus Christi area,
- copies of technical reports,
- copies of presentations,
- emissions, reduction strategies,
- outreach event information.

Status of use of IR Camera Commitment for Year 2

The commitment has been met and within the schedule stated in the Path Forward Plan. Several area industrial facilities utilized IR cameras to detect fugitive emissions in Year 2.

Status of CCAD Notification on Ozone Action Days Commitment for Year 2

There were no Ozone Action Days during Year 2, however the CCAD communication system was set up and ready to launch should an Ozone Action Day occur.

Status of Production of LRVP Commitment for Year 2

The commitment has been met and within the schedule stated in the Path Forward Plan. Several area facilities produced LRVP gasoline in Year 2.

Status of Operation of Public Use CNG Fueling Facilities Commitment for Year 2

The commitment has been completed and ahead of the schedule stated in the Path Forward Plan. The City of Corpus Christi is currently constructing a new public CNG station. This will give the Gas Department two CNG stations for City use only and two available for the public. Approximately 20-25 CNG vehicles were purchased in FY 15, with orders currently being taken for FY16. City departments are encouraged to consider purchasing CNG vehicles as needed.

Path Forward for CNG Fueling for Year 3
CNG will continue to be considered for all new vehicle purchases at the City. The City is also considering building a CNG station in Flour Bluff.

Status of USPS Installation of CNG Fueling Facility for Year 2
The commitment has not been met. Unfortunately, the USPS has decided not to pursue the CNG facility at this time, and no additional CNG vehicles were purchased. No plans to install this station in 2016 have been identified.

Path Forward for CNG for Year 3
The City will continue to encourage its partners to consider CNG vehicles.

Status of RTA Commitment to Purchase CNG Vehicles for Year 2
The commitment has been met and ahead of the schedule stated in the Path Forward Plan. The CCRTA replaced 15 diesel-fueled buses with 15 CNG buses in Year 2.

Status of Bicycle Transportation Planning Commitment for Year 2
The commitment continues to exceed its tasks and activities as stated in the Path Forward Plan.

The Bicycle Mobility Plan was completed in December of 2015 and delivered to the City of Corpus Christi and the City of Portland in February of 2016. This new plan prescribes:

- Where (i.e., on which corridors/segments), in the urbanized area of Nueces and San Patricio counties, should bike facilities be installed to create a cohesive bicycle mobility network that connects key destinations, to functionally expand the reach of the transit network and to accommodate a diversity of riders.
- What type of infrastructure (i.e., on-street bike lanes, separate cycle tracks, etc.) should be installed on each segment of the 290-mile network to uphold the level of safety to which the community aspires.
- How (i.e., to what national standards) should those bicycle facilities be designed and maintained.

The plan also includes over 60 best practice recommendations related to:

- Priorities for trip support facilities (i.e., racks, public repair stations, lockers, bike share infrastructure, wayfinding), education and encouragement programs for promoting safe biking culture and awareness.
- Policy and code reform programs (i.e., roadway maintenance, safe passage.
- Program evaluation to track progress against regional bicycle mobility and safety goals and objectives.

For each strategy, the plan included a suggested lead entity, potential partners, and relative priority and cost. The 10-month planning effort that yielded the Bicycle Mobility Plan included extensive, multi-pronged stakeholder engagement:

- 4 meetings of Project Steering Committee (20+ member body representing municipalities and other entities that will ultimately help implement the plan)
- Project website: www.CoastalBendInMotion.org that includes tools for virtual engagement

- 205 MAP IT routes by 84 discrete users
- 300+ discrete users logged routes via TRACK IT smartphone app
- 220 on-line ANSWER IT survey responses
- 12+ presentations by MPO Director or staff
- 15 public events attended by consulting team
- 46 key interviews conducted
- 900+ leaflets/posters distributed
- 5 focus groups conducted (industry, business owners, design engineers, Regional Transportation Authority operators and Corpus Christi Police Department.

Information gathered revealed that on average, most individual residences in the metropolitan area of Nueces and San Patricio counties are within a two to five minute bike ride (on a neighborhood street) from some segment of the network, and the network delivers riders within ¼ mile of:

- 158 of 178 (89%) early education and daycare centers, grade schools (public and private) and higher education campuses,
- 122 of 143 (85%) parks over two acres in size,
- 104 of 130 (80%) groceries, meat and fish markets, bakeries, and corner markets,
- 541 of 657 (82%) low-income housing units (Section 8 or Housing Tax Credit properties,
- 1088 of 1319 (83%) transit stops and stations,
- 186 of 242 (77%) pools, senior centers, recreation centers, movie theaters, community pools, fitness centers, museums, and hotels.

Based on feedback gathered from the community through interviews, focus groups, and on-line tools, the planning team prioritized a low-stress rider experience and maximal separation between cyclists and cars by using off-road trail segments on storm water easements wherever possible. Where the bike network corresponds to the street network, the planning team prioritized neighborhood streets with low traffic volumes and speeds. Where the network falls on busier roads, the Plan prescribes alternatives to the standard on-street bike lane, such as separated multi-use paths or protected cycle tracks. The Plan can be viewed at http://online.fliphtml5.com/dnvt/ldqv/. Maps included in the Plan can be viewed at https://ccmpo.maps.arcgis.com/apps/webappviewer/index.html?id=fd393dbf23c645f89180a818476354a7.

Path Forward for Bicycle/Mobility Planning for Year 3
Strategic Plan for Active Mobility

- Final design and initiation of construction of Bond 2012 and 2014 roadway projects will yield the implementation of separated cycling infrastructure (one-way protected cycle tracks adjacent to the sidewalk on both sides of the street) on around a dozen miles of roadway.
- Planning for implementation of various bicycle and pedestrian projects funded through the MPO's Transportation Alternatives program.

- Creation of various working products related to pedestrian mobility as preliminary steps in subsequent phases of the Strategic Plan for Active Mobility.

Status of Education Efforts Commitment for Year 2

The commitment has been met and within the schedule stated in the Path Forward Plan. In September 2015, communications were sent to the Group that included instructions on how to register for AirNow alerts and forecasts. Also included in the communication were numerous prepared scripts for emission reduction recommendations that could be easily forwarded or mass emailed. Incoming new industry representatives were added to the Corpus Christi communication list and included in all Group communications.

Path Forward for Education Efforts for Year 3

The Chair of the Group will continue to 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.

Status of Announcing Emission Reduction Funding Opportunities Commitment for Year 2

The commitment has been met within the schedule stated in the Path Forward Plan. A notification was circulated to the Group about Federal funding opportunities for emissions reductions programs on May 2, 2015 and another notification was circulated on May 13, 2015, for TERP funding opportunities.

Status of Van Share Promotion Commitment for Year 2

The commitment has been met and within the schedule stated in the Path Forward Plan. An e-mail was sent to the over one hundred (100) Group members in September 2015, that provided the RTA presentation, contact information for the representative and encouragement to schedule a workplace appointment for the representative. In Year 2, two (2) companies utilized vanpools with a total of two (2) vanpools at Port Royal Condominiums and four (4) vanpools at TPCO; a pipe manufacturing facility under construction.

This appendix reflects the major highlights of the Year 2 Ozone Advance Report submitted to EPA. To view the complete Year 2 Annual Report including details, charts, and attachments, please visit https://www.epa.gov/advance/texas-corpus-christi.

APPENDIX D

ANNUAL REPORT FOR YEAR 3 ACTIVITIES
May 2016 – May 2017

APPENDIX D
ANNUAL REPORT FOR YEAR 3 (May 2016 – May - 2017)

Status of Establishing Air Quality Position and Program Commitment for Year 3

This commitment has been met and within the committed schedule. During May 2016-May 2017, the Chair continued work with stakeholders to provide no cost opportunities to educate the public about Corpus Christi air quality. The Pollution Prevention Partnership at Texas A&M University-Corpus Christi developed a website that provides air monitor links, daily updated air quality information, emission reduction recommendations, elevated ozone day health tips, and more. The site is continuously updated and can be found at http://outreach.tamucc.edu/p3. The Port of Corpus Christi provided staff time and expertise to establish a Facebook site as well as twitter feeds for the Group programs and messaging. The Facebook site can be found at https://www.facebook.com/ccairquality/ . The Corpus Christi Chamber of Commerce provided air quality messages to over 400 members and distributed an emissions reductions list to its members. The Corpus Christi Regional Economic Development Corporation and the San Patricio Economic Development Corporation both began providing a document to newly sited businesses in the area that encourages the business to attend Group meetings and provides emissions reductions information. The Local Emergency Planning Committee (LEPC) committed to providing information on their info-line, and provides reverse alert telephone calls and text messages on ozone action days. The Corpus Christi newspaper (Corpus Christi Caller Times) included daily air quality information on their weather page and the Chair provided air quality information to the local television meteorologists.

Education Path Forward for Year 4

The Chair will continue to work with stakeholders to provide no-cost education opportunities and outlets. The Facebook site, webpage, twitter communications, welcome packages and newsletter contents and distributions will be updated. The Chair will continue to review the EPA website found at https://www.epa.gov/education for resources such as school flags, digital distribution pieces and more for community education opportunities and share those opportunities with stakeholders. The Chair will continue to distribute the emissions reductions recommendations and checklist to all stakeholders.

Status of Air Quality Curricula for Year 3

The air quality curricula commitment was met and within the committed schedule. The curricula was delivered to 23 5th grade classes at 4 elementary schools. A total of 569 students received the curricula. Students were tested on air quality and emission reduction recommendations knowledge prior to and after receiving the lessons. Prior to receiving the lessons, students tested correctly an average of 5 questions out of a possible 10. After receiving the lessons, students tested correctly an average of 9 questions out of a possible 10.

Path Forward Air Quality Curricula for Year 4

Area industry is considering funding the air quality curricula to continue in Year 4.

Status of Research, Modeling and Monitoring Commitment for Year 3

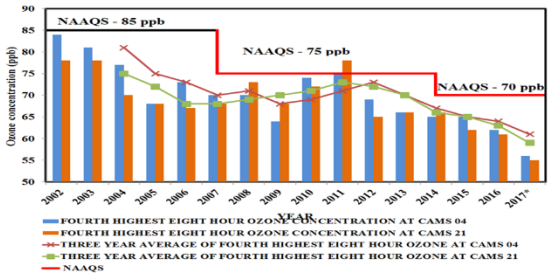
With budget constraints in funding provided by the 84th Texas Legislature, the below research grade monitoring stations were deactivated on May 31, 2016.

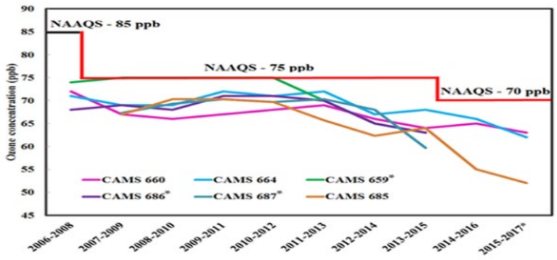
- Upwind site in Aransas Pass County – CAMS 659
- Odem monitoring site in San Patricio County – CAMS 686

A quality assurance project plan (QAPP) for maintenance and operation of three research grade monitoring stations including (1) Urban site – CAMS 660, (2) Downwind site – CAMS 664, and (3) Ingleside site – CAMS 685 as shown below was submitted and approved by TCEQ on May 16, 2016. The monitoring commitment for Year 3 was met and will continue beyond the stated schedule. Each of the research monitoring stations (CAMS 660, 664, and 665) was equipped with an ozone analyzer; weather sensors including RM Young wind sensor and coastal environmental temperature and humidity sensor; zeno data logger and Enfora wireless modems. Continuous measurements of ozone, wind speed, wind direction, outdoor temperature, and relative humidity were recorded at each of these stations and using the TCEQ LEADS acquisition system data was made publicly available on TCEQ's website. Additional continuous monitoring of oxides of nitrogen (NOx) was performed during this time at Holly Road monitor (CAMS 660).

<u>Status of Research; Updating Ozone Attainment Status Commitment for Year 3</u>

The commitment to update the ozone attainment status has been met and beyond the stated schedule. The design value trend of ozone concentrations measured at TCEQ maintained compliance grade monitoring stations and TAMUK/UNT maintained research grade monitoring stations are shown in below figures.





As demonstrated by the design value trends, a decreasing trend in ozone concentration has been noted at both TCEQ maintained compliance grade monitoring stations as well as research grade monitoring stations maintained and operated by TAMUK/UNT. During May 16, 2016 through April 7, 2017 highest daily maximum eight-hour ozone concentrations of 64 ppb and 61 ppb were measured at CAMS 04 (February 22, 2017) and CAMS 21 (October 11, 2016) on February 22, 2016 and October 11, 2017, respectively. The research grade monitoring stations also measured highest daily maximum eight-hour ozone concentrations of 73 ppb at Urban site - Holly road – CAMS 660 (September 29, 2016), 70 ppb at downwind site – Violet – CAMS 664 (October 11, 2016) and 55 ppb at Ingleside site – CAMS 685 (September 2, 2016). Additional monitoring of oxides of nitrogen was conducted at Holly road – CAMS 660 during ozone season of 2016. With QAPP approved by TCEQ on May 16, 2016 measurements of oxides of nitrogen was conducted from June 1, 2016. Measurements were not acquired during June 28 through July 13, 2016 due to failure of the reaction chamber. The analyzer was sent to the technician for replacement of reaction chamber and calibration. The analyzer was setup at Holly road on July 13, 2016 for continuous measurement of ozone

precursor. Highest maximum NO and NOx concentrations were measured in October 2016 (3.29 ppb of NO – October 26, 2016 and 8.81 ppb of NOx – October 22, 2016).

Looking Ahead; Updating Ozone Attainment Status for Year 4

Continuous monitoring of ozone and meteorological parameters will be conducted at urban site – CAMS 660; downwind site – CAMS 664 and Ingleside site – CAMS 685. The data will be made available to local stakeholders, policy makers, local communities, and other researchers through TCEQ's website. Additional monitoring of oxides of nitrogen also will be conducted during the ozone season (April 1 through October 31) at urban site – CAMS 660.

Status of AutoCheck/Clean Fleet Vehicle Emissions Testing and Repair Commitment for Year 3

The Clean Fleet commitment exceeded commitments and beyond the stated schedule. The Pollution Prevention Partnership (P3) became an EPA SmartWay® Affiliate in November 2016. SmartWay Partnerships between carriers, shippers, and logistics companies have been promoted in several venues: Group, Nueces County Community Action Agency-Health Advisory Meeting, CC Regional Transportation Authority-Policy Meeting and Texas-Freight Advisory Committee Regional Workshop. SmartWay information and links have been included on the P3 Website. SmartWay partners track and improve fuel efficiency, reducing emissions including NOx, a precursor of ground-level ozone. P3 CleanFleet and AutoCheck programs held 70 events from May 2016 to March 30, 2017, testing 630 public and fleet vehicles for emissions. Fifty (50) vehicles were identified as highly polluting and 31 gas caps were identified as leaking and needing replacement. Approximate emissions reductions as a result of documented repairs with post-test and gas cap replacement is 0.15 tons per year of NOx and 7.07 tons per year of HC. P3 also presented at or attended 18 meetings and health fairs at local agencies and community events to educate and encourage emission-reducing activities. Over 3,700 people were addressed. Some of the groups addressed were Nueces County Safe Communities Coalition, Nueces County Community Action Agency-Health Advisory Meeting, LEAD First Foundation and Superior Health Plan health fair, Solomon Coles school, Head Start, Girls in Engineering Math and Science Conference and three Head Start parent groups. The web content for P3 was expanded to include a SmartWay page. Four hundred sixty-five (465) presentations and documents about ozone reduction, alternative fuels, and alternative transportation were downloaded from the P3 website and there were 6,791 other page hits. The P3 website can be found at http://outreach.tamucc.edu/p3/.

Path Forward for Clean Fleet for Year 4

P3 will continue to promote SmartWay Partnerships between the freight industry and EPA. In addition to addressing groups, P3 will contact specific shippers and carriers to promote the business benefits of fuel efficiency and emissions reduction.

Ozone awareness and reduction strategies, education, and outreach will continue through presentations and facilitation of meetings for/with local governments, businesses, citizens groups, industry groups, and environmental groups to promote ozone and precursor reduction strategies.

P3 will continue to host CleanFleet and AutoCheck events at least once per month testing for emission problems. Repair subsidies will continue as long as funding is available.

Educational materials in presentations, print and online will be expanded to include greenscaping practices that reduce lawn maintenance requirements. Less lawn maintenance reduces ozone precursors and acute exposure of operators to toxic emissions.

P3 will plan and begin implementation of a media campaign coinciding with the 2017 Ozone season (April-October). Press releases, social media, and free PSA spots will be used when possible. Pending budget approval, paid outdoor and radio advertising could be used. Gas stations will be asked to participate in the media campaign to promote ozone actions.

P3 will implement one Lawn Equipment Exchange Program in which the public will trade-in working gasoline powered equipment for discounts on electric equipment. Trade-in equipment will be drained of fluids and recycled.

An SEP proposal to TCEQ is pending approval. The proposal, if approved, will expand the AutoCheck emissions screening and repair protocol to include some Standard On Board Diagnostic (OBD-II) Diagnostic Troubleshooting Codes (DTC). This expansion would allow repairs of malfunctioning systems not currently identified for repair by tailpipe screening alone. Further reduction in NOx and HC can be achieved by repairing OBD-II identified malfunctions such as the evaporative control system, mass airflow sensors, emission gas recirculation (EGR) valves, misfires, and lean conditions.

Status of use of IR Camera Commitment for Year 3
The commitment has been met and beyond the stated schedule in the Path Forward Plan. Industry continued the use of IR cameras to detect fugitive emissions in Year 3.

Path Forward for IR Camera Commitment for Year 4
Industry plans to continue the use of IR cameras to detect fugitive emissions in Year 4.

Status of CCAD Notification on Ozone Action Days Commitment for Year 3
There were no called Ozone Action Days during Year 3, however the CCAD communication system was set up for an Ozone Action Day.

Path Forward for CCAD Notification for Year 4
CCAD will continue to provide all employees with notifications when Ozone Action Days are declared and offer voluntary actions to take during and after work periods.

Status of Production of LRVP Commitment for Year 3
The commitment has been met and gone beyond the schedule stated in the Path Forward Plan. Several area facilities continued to produce LRVP gasoline in Year 3.

Path Forward for LRVP Year 4
Industry plans to continue to produce LRVP in Year 4.

Status of Operation of Public Use CNG Fueling Facilities Commitment for Year 3
The commitment is completed and beyond the schedule stated in the Path Forward Plan. The City continues to consider replacing gasoline fueled vehicles with CNG equivalents. The City purchased twenty (20) CNG bi-fuel and dedicated vehicles in 2016.

Path Forward for CNG Year 4 (May 2017-May 2018)
The City is considering building additional CNG stations in Flour Bluff and Annaville, which are areas within the city's limits.

Status of USPS Installation of CNG Fueling Facility for Year 3
Due to funding issues, the project has been postponed.

Looking Forward to CNG for Year 4
The city will continue to encourage its partners to consider CNG vehicles.

Status of RTA Commitment to Purchase CNG Vehicles for Year 3
The commitment has been exceeded and ahead of the schedule stated in the Path Forward Plan. During Year 3, the CCRTA purchased 11 CNG buses (35') and 7 CNG Cut-away buses (around 22' - 24'- mostly used in the paratransit division). The CCRTA also purchased 13 electric relief vehicles (Ford Escorts).

Status of Bicycle Transportation Planning Commitment for Year 3
The Bicycle and Mobility Planning Commitment continues to exceed commitments and scheduling stated in the Path Forward Plan.

- Strategic Plan for Active Mobility, Phase I – Bicycle Mobility was adopted by the City of Corpus Christi in May 2016.
- Program (TAP) funds for implementation of bicycle and pedestrian projects in FY2017 and FY2018 as summarized in the following table.

	AGENCY	PROJECT NAME	TOTAL PROJECT COST
FY 2017	City of Corpus Christi	Region-wide Bike Boulevard Wayfinding Initiative	$522,500
	City of Portland	Portland Bicycle Lanes	$359,878
FY 2018	City of Corpus Christi	Safe Shelter and Crossing Program	$168,520
	City of Portland	Memorial Parkway Hike & Bike Phase 1	$342,106

- City of Corpus Christi funded the development of roadway standard design details to facilitate consistent and effective implementation of bicycle mobility infrastructure in various roadway projects.
- Design completed for approximately 12 miles of 1-way, protected cycle tracks as part of Bond 2012 and Bond 2014 projects.
- City of Corpus Christi initiated a collaborative Branding and Design Study to define wayfinding and signage standards for the Bicycle Mobility Network (as in-kind match for an MPO Transportation Alternatives Program grant to fund the implementation of approximately 30 miles of bicycle boulevards).

- The City of Corpus Christi completed a 1.25-mile section of the Schannen Ditch off-road multi-use path (supported in part with Transportation Alternatives Program funds from the MPO).
- Corpus Christi RTA used MPO Transportation Alternative Program funds to purchase the following for installation at RTA transit stops within the MPO Boundary:

    - 1,000 bicycle racks (varying capacities)
    - 15 bicycle lockers
    - 150 free standing public air pumps
    - 65 freestanding public "FixIt" stations

MPO staff, with guidance from Strategic Plan for Active Mobility steering Committee, produced multiple pedestrian mobility planning working products and provided technical assistance with the planning of pedestrian elements in City of Corpus Christi roadway projects

Path Forward for Bicycle and Mobility Planning for Year 4

Strategic Plan for Active Mobility:

- Construction of Bond 2012 and 2014 roadway projects, including around 12 miles of protected 1-way cycle track, will continue.
    - City of Corpus Christi will complete the collaborative Branding and Design Study to define wayfinding and signage standards for the Bicycle Mobility Network.
    - City of Corpus Christi will use Transportation Alternatives Program funds from the MPO to implement around 30 miles of Bicycle Boulevards.
    - City of Corpus Christi will use Transportation Alternatives Program funds from the MPO to begin installation of a HAWK pedestrian crossing at Cole Part, a key Bayfront destination.
    - City of Portland will use Transportation Alternatives Program funds from the MPO to begin installation of around three miles of Buffered Bicycle Lanes.
    - City of Portland will use Transportation Alternatives Program funds from the MPO to begin construction of Phase I of the Memorial Parkway off-road multi-use path.
    - RTA will install bicycle trip support hardware purchased in Year 3 using Transportation Alternatives Program funds from the MPO.

Status of Education Efforts Commitment for Year 3

The commitment has been met and beyond the schedule stated in the Path Forward Plan. SmartWay, AirNow, Enviroflash, anti-idling and other initiatives were included in an emissions recommendation list that was distributed to the Group and other stakeholders in July and October 2016 and January and April 2017.

Path Forward for Education Efforts for Year 4

The Chair will continue to 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.

Status of Announcing Emission Reduction Funding Opportunities Commitment for Year 3

The commitment has been met and went beyond the schedule stated in the Path Forward Plan. TCEQ Texas Emissions Reductions Program (TERP), DERA, and other TCEQ and EPA applications including the SmartWay program for funding opportunities were communicated to the Group in July 2016, October 2016, January 2017, and Aril 2017 of Year 3. A special presentation by Trent Thigpen (P3 Project Manager) was made at the October 28, 2016 Group meeting encouraging members to become SmartWay members. SmartWay and other initiatives are also included in the emissions recommendation list that is distributed to the Group and other stakeholders.

Path Forward for Announcing Funding Opportunities for Year 4

The Chair will go beyond the schedule stated in the Path Forward Plan and continue to inform the Group and other stakeholders of emission reduction funding opportunities.

Status of Van Share Promotion Commitment for Year 3

The commitment was exceeded and beyond the schedule stated in the Path Forward Plan. Registering with the RTA Van Pool program including contact information was included in an emissions reductions summary and checklist that was distributed to the Group in addition to other stakeholders April, July, and October of 2016 and in January and April 2017 during Year 3.

The RTA Van Pool Program had a total of 14,157 riders making 4,376 trips for a total of 201,430 miles in 8 vehicles, thereby removing thousands of vehicles from the road during Year 3. The following table provide a complete detail of the van-share trips.

This appendix reflects the major highlights of the Year 3 Ozone Advance Report submitted to EPA. To view the complete Year 3 Annual Report including details, charts, and attachments, please visit https://www.epa.gov/advance/texas-corpus-christi

APPENDIX E

ANNUAL REPORT FOR YEAR 4 ACTIVITIES
May 2017 – May 2018

APPENDIX E
ANNUAL REPORT FOR YEAR 4 (May 2017 – May 2018)

Status of Establishing Air Quality Position and Program Commitment for Year 4

The Group Facebook (www.facebook @ccairquality) enjoyed 49 likes and 52 followers during Year 4. Average visits to the page were between 4 and11 daily. The website (www.cctexas.com/planning-esi/environmental-strategic-initiatives-esi/cc-air-quality-group) has enjoyed 78 hits. The Pollution Prevention Partnership Air Quality Website (outreach.tamucc.edu/p3/) enjoyed 10,883 hits during Year 4.

Path Forward for Air Quality Education Efforts for Year 5

The Group will continue to host a Facebook site, a Website, and provide air quality public presentations to community groups, agencies, elected officials, and business leaders. Presentations will also include promoting the use of EPA flags, brochures and other no cost distribution materials.

Status of Air Quality Curricula for Year 4

Industry continued to fund the air quality curricula. The curricula was delivered to a total of 593 5th grade students in 26 classes at 4 schools. Pre and post testing of air quality knowledge was performed on the students prior to and after receiving the curricula. Testing results averaged 5 correct answers out a possible 10 prior to receiving the curricula and 8 correct answers after receiving the curricula.

Path Forward for Air Quality Curricula for Year 5

Industry will meet to consider funding air quality curricula for Year 5.

Status of Research, Modeling and Monitoring Commitment for Year 4

Each of the research monitoring stations (660, 664, and 685) was equipped with an ozone analyzer; weather sensors including RM Young wind sensor and coastal environmental temperature and humidity sensor; zeno data logger and Enfora wireless modems. Continuous measurements of ozone, wind speed, wind direction, outdoor temperature and relative humidity were recorded at each of the stations and using the TCEQ LEADS acquisition system data was made publicly available on TCEQ's website. Additional monitoring of nitrogen oxides was also conducted at CAMS 660 – Holly road during May 1st, 2017 through October 31st, 2017.

Research Accomplishments for Year 4

As demonstrated by the design value trends, a decreasing trend in ozone concentration has been noted at both TCEQ maintained compliance grade monitoring stations (Figure 3) as well as research grade monitoring stations maintained and operated by UNT-TAMUK (Figure 4).

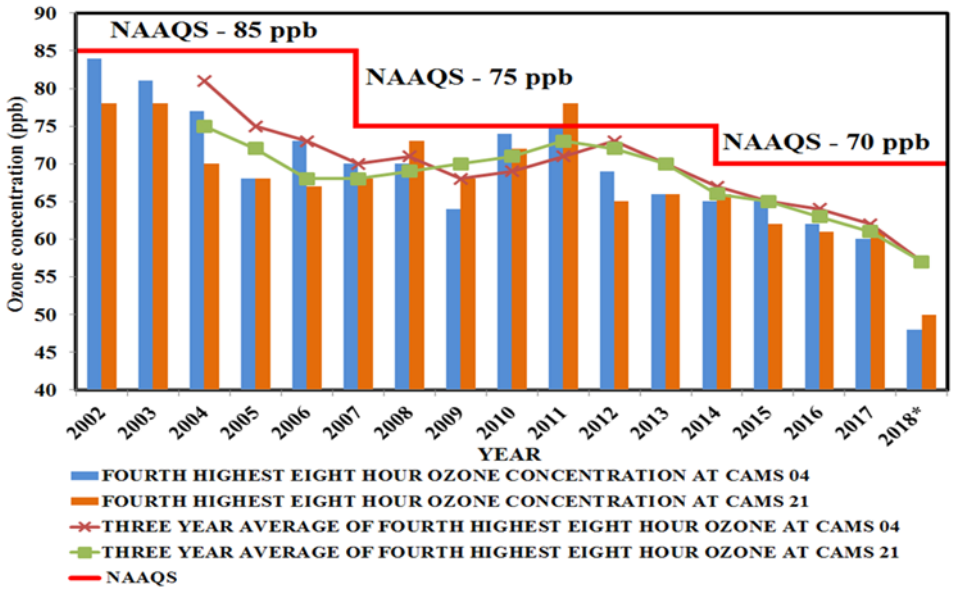


Figure 3. Corpus Christi Ozone Design Trends at TCEQ Regulatory Monitors CAMS 4 and CAMS 21

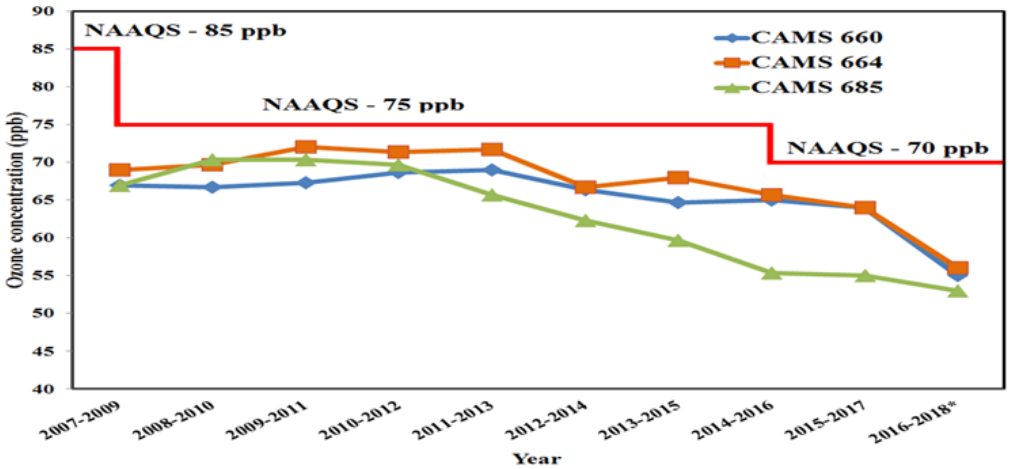


Figure 4. Corpus Christi Ozone Design Trends at TAMUK/UNT Research Monitors CAMS 660, 664, 685
*Deactivated

Daily maximum eight-hour ozone concentrations of 64 ppb were measured at the compliance grade monitoring stations CAMS 04 and CAMS 21 on September 12th, 2017. The research grade monitoring station in urban airshed – CAMS 660 recorded highest daily maximum eight-hour ozone concentrations of 67 ppb on May 24th, 2017 while downwind site – CAMS 664 recorded 68 ppb on October 18th, 2017 and Ingleside – CAMS 685 recorded 65 ppb on May 6th, 2017.

Additional monitoring of oxides of nitrogen was conducted at Holly road – CAMS 660 during ozone season of 2017. Nitric oxide concentrations ranging between 0.78 ppb to 6.61 ppb were measured during April 1st, 2017 through October 31st. 2017 while NOx concentrations recorded ranged between 1.20 ppb to 9.26 ppb. On May 6th, 2017 highest daily maximum concentrations of NO and NOx were measured at CAMS 660. The diurnal analysis of NO and NOx indicated elevated concentrations during 8:00 to 10:00 AM and midafternoon – 12:00 AM – 1:00 PM followed by late evenings – 4:00 PM

– 6:00 PM. The exhibited diurnal trends of precursor concentrations can be attributed to traffic sources that subsequently contributed to an increase in the ozone concentrations during mid-day and early evening hours.

Path Forward for Monitoring and Research for Year 5

Funding from the 84th Legislative session has been depleted. Temporary interim funding to continue research and monitoring activities until legislative funding can be restored has been provided by Port Industries. This temporary funding will provide for continuous monitoring of ozone and meteorological conditions at the three research grade continuous monitoring stations including Holly road CAMS 660 – Urban site, Violet CAMS 664 – downwind site, and Ingleside CAMS 685 into Year 5.

Status of AutoCheck/Clean Fleet Vehicle Emissions Testing and Repair Commitment for Year 4

The Rider funding contingent electric mower exchange and the media campaign planned for Year 4 could not be launched due to Rider funding to all near-non-attainment areas in Texas being vetoed by Governor Abbot after the closing of the 85th legislative session in June of 2017. The SEP proposal for advanced OBD diagnostics with AutoCheck events is still pending approval by TCEQ.

Ozone awareness and reduction strategies, education, and outreach was provided during Year 4 through presentations and participation in meetings for/with local governments, businesses, citizens groups, industry groups, and environmental groups to promote ozone and precursor reduction strategies. The SmartWay Partnership was included in audience appropriate presentations. (Attachment 4). Through a renewed partnership with The TxDOT, material from the 2018 Drive Clean Texas Campaign, promotional items including tire gages are being distributed to drivers. The digital media campaign anticipated in May will be launched on campus, social media, and press releases and PSAs were approved by the TAMU-CC marketing department.

P3 Clean Fleet held a total of 57 vehicle emission testing events in Year 4. The emission testing events were held throughout the community at sites such as local high schools, a university campus, the Port of Corpus Christi, a local market/trade center, shopping malls, and health fairs. (Attachment 2)

A total of 229 privately owned vehicles and 138 fleet vehicles were tested for emissions for a total of 367 vehicles tested for emissions in Year 4. Of the 367 vehicles tested, 330 tested as clean and 37 tested as dirty. There were 15 vehicles repaired to clean standards and nine gas caps detected as leaking and replaced. Total approximated emissions reductions as a result of the P3 Clean Fleet Year 4 activities is 2,774.03 pounds per year of hydrocarbons, and 16,204 pounds per year of carbon dioxide. Spreadsheets including pre and post repair emissions tests and reduction calculations are attached to this report (Attachment 3).

In addition to holding emission testing events, P3 made numerous emission reduction presentations throughout Year 4 reaching over 3,000 people. Presentations were made at local churches, student engineering classes, groups of employees, health associations and more. A summary of these events is attached to this report.

Path Forward for Year 5 for Clean Fleet

A co-branded partnership with the Port of Corpus Christi will provide funding for Clean Fleet and public outreach efforts through December 2018.

P3 will continue to host CleanFleet and AutoCheck events at least once per month testing for emission problems. Repair subsidies will continue as long as funding is available.

P3 will continue to promote SmartWay Partnerships between the freight industry and EPA.

Status of use of IR Camera Commitment for Year 4

Several industry stakeholders continued to use IR cameras to detect fugitive emissions during Year 4.

Path Forward for Use of IR Cameras for Year 5

Industry plans to continue the use of IR cameras to detect fugitive emissions.

Status of CCAD Notification on Ozone Action Days Commitment for Year 4

Corpus Christi experienced one ozone action day (September 12, 2017). CCAD provided notifications and recommendations for the day. In addition to providing an ozone action day notification during Year 4. CCAD implemented energy saving actions such as converting their entire production facility to LED lighting. CCAD also replaced large air chillers with higher energy efficient units that contain non ODS. In teaming with select DoD, NASA, and Army commands, CCAD is currently supporting research for less volatile cold solvents. Most of the cold solvent currently utilized at CCAD is Mil Prf 680 Type II which has a low vapor pressure, and a vapor density which is approximately six times denser than air. When the new Aircraft Corrosion Control (painting) Facility is operational in early 2019, CCAD will be utilizing the best available control technology (BACT) with active carbon filtration. This action is expected to reduce the depot's VOC emissions. CCAD is also a participant in an Army research project that is researching environmentally friendly alternatives to the toxic metals used in chrome plating processes.

Path Forward for Ozone Notification for CCAD for Year 5

CCAD plans to continue to inform employees of ozone action days and emissions reduction recommendations for Year 5.

Status of Production of LRVP Commitment for Year 4

Several industry stakeholders continued the production of LRVP gasoline during Year 4.

Path Forward for Production of LRVP Gasoline for Year 5

Area gasoline producers will continue to produce LRVP gasoline during qualifying months in Year 5.

Status of Operation of Public Use CNG Fueling Facilities Commitment for Year 4

The City currently has one (1) CNG Station that is available for City and Public use and one (1) Station that serves as a backup. The CNG Station located at City Hall has been removed from service and is currently being dismantled. The CNG Station located at the Gas Department is no longer operational and plans are to remove the equipment. The CNG Station at Civitan Dr. is currently used as a backup fueling station. The fourth CNG station located at Ayers St is used by the City and is available for public use.

Path Forward for Public Use CNG Fueling Facilities for Year 5

The City is still considering building the additional CNG Stations. The City will partner with the Greater Houston Natural Gas Vehicle Alliance in promoting to the public and private fleets the use and benefits of natural gas vehicles. The City will sponsor CNG workshops with the Greater Houston NGV Alliance.

Status of RTA Commitment to Purchase CNG Vehicles for Year 4

RTA purchased 13 CNG fueled buses, 7 CNG fueled vans and 11 electric powered sedans in Year 4. Posted below if a detailed chart of the vehicles purchased.

CNG Buses & Electric Support Vehicles Purchased between May 1, 2017 - Present

VEHICLE	Dept. the Vehicle is assigned to	YEAR	MAKE/MODEL	SIZE	Seating Maximum	Fleet Type	Lift Equipped	3 Position Wheel chair	Fuel Type	Eligible for Disposition	Purchase Date	Delivery Mileage	In Service Date
916	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,077	08/27/17
917	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,042	08/27/17
918	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,018	08/27/17
919	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,206	10/04/17
920	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,204	11/16/17
921	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17		
922	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,020	
923	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,050	
924	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,157	
925	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,026	
926	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17		
3013	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3014	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3015	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3016	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3017	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3018	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3019	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
INVENTORY OF ELECTRIC SERVICE VEHICLES													
3157	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/8/2017		10/16/17
3158	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/8/2017		10/25/17
3159	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/8/2017		10/16/17
3160	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/29/2017		10/16/17
3161	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/29/2017		10/16/17
3162	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/30/2017		10/25/17
3163	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/1/2017		10/25/17
3164	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/2/2017		10/25/17
3165	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/7/2017		11/27/17
3166	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/7/2017		11/27/17
3167	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/31/2017		11/13/17
3168	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	8/1/2017		11/13/17
3169	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2020	8/22/2017		11/28/17

Status of Bicycle Transportation Planning Commitment for Year 4

- Construction of Bond 2012 and 2014 roadway projects, including around approximately 7 miles of protected 1-way cycle track, continues.
- City of Corpus Christi completed the collaborative Branding and Design Study to define wayfinding and signage standards for the Bicycle Mobility Network
- City of Corpus Christi initiated project to designate approximately 30 miles of Bicycle Boulevards using Transportation Alternatives Program funds from the MPO.

- City of Corpus Christi initiated installation of a HAWK pedestrian crossing at Cole Part, a key Bayfront destination using Transportation Alternatives Program funds from the MPO.
- City of Portland initiated installation of approximately three miles of Buffered Bicycle Lanes using Transportation Alternatives Program funds from the MPO.
- City of Portland began construction of Phase I of the Memorial Parkway off-road multi-use path using Transportation Alternatives Program funds
- RTA installed bicycle trip support hardware purchased in Year 3 using Transportation Alternatives Program funds from the MPO.

In addition to the above committed activities, the MPO also performed the following activities during Year 4:

- Presented regional Bicycle Mobility Plan as a national case study through various organizations, including the American Planning Association, Transportation for America, and the Federal Highways Administration.
- Collected (in collaboration with regional partners) and maintained data on the performance metrics defined in the Bicycle Mobility Plan, including pre- and post-construction bicycle counts on corridors on which new bike infrastructure is to be installed to establish baseline bicycle demand and assess changes over time.
- Maintained a dedicated Web portal (www.CoastalBendInMotion.org) to disseminate the plan and performance measurement data collected to track implementation.
- Maintained three primary tools for virtual data collection, all of which are functional and are yielding high volumes of quality data about stakeholder priorities.
- On-line mapping tool to capture where users ride or where they would like to ride if the conditions for cycling improved.
- Downloadable Smartphone application that allows users to log real-time data about their rides.
- On-line survey about riding habits, needs and perceived obstacles to cycling as transportation.
- Maintained a geo-spatial (Geographic Information Systems) database with individual data layers for variables that will inform bike facility network development (e.g., origin/destination data at the Traffic Analysis Zone (TAZ) level, location of key people generators, including employment centers, shopping hubs, health care facilities, groceries and markets, transit stops, academic institutions, etc.)
- Held a Call for Projects for the Transportation Alternatives Set-Aside Program and ultimately awarded an $1.1M to the City of Corpus Christi for the Hector P. Garcia Park Hike and Bike Trail: Phase II (FY2019) and the Schanen Ditch Hike and Bike Trail: Phase IV (FY2020)
- Participated in TX Innovation Alliance, a statewide consortium working to develop technological strategies to address mobility challenges.

<u>Path Forward for Bicycle and Mobility Planning for Year 5</u>

- Foster the incorporation of Intelligent Transportation System technology in roadway infrastructure projects to promote efficiency in the regional

transportation system and mitigate congestion and associated air quality impacts.

- Assist the municipalities within the MPO with the build out of the regional Bicycle Mobility Plan as part of locally funded roadway work.
- Assist City of Corpus Christi in implementation of Bike Boulevard designation using MPO Transportation Alternatives funds
- Assist City of Corpus Christi in initiation of Hector P. Garcia Park Hike and Bike Trail: Phase II using MPO Transportation Alternatives funds
- Collect (in collaboration with regional partners) performance metrics data defined in the Bicycle Mobility Plan, including pre- and post-construction bicycle counts on corridors on which new bike infrastructure is to be installed to establish baseline bicycle demand and assess changes over time.
- Maintain a dedicated Web portal (www.CoastalBendInMotion.org) to disseminate the plan and performance measurement data collected to track implementation.

Status of Education Efforts Commitment for Year 4

In July and October 2017 communications were sent to the Group that included instructions on how to register for elevated ozone alerts and forecasts via AirNow. Included in the communications were numerous prepared scripts for emission reduction recommendations that could be easily forwarded, or mass emailed. Newly sited or planned to site industry representatives were added to the Corpus Christi communication list and included in all Group communications. Several media updates and briefings were provided during Year 4. The results of the updates and briefings included daily AQI information reported in the local newspaper, television, and newspaper recommendations on an ozone action day in September 2017, and several newspaper articles and editorials highlighting the air quality benefit of participating in emission reduction activities.

Path Forward for Education Efforts for Year 5

No-cost air quality education via media briefings, promotion of air quality messages through social media, promotion of EPA flags, brochures and other educational material will continue through Year 5. The Group Facebook site and web site will continue to be maintained and updated. The Chair will continue to distribute the emissions reductions recommendations and checklist to all stakeholders.

Status of Announcing Emission Reduction Funding Opportunities Commitment for Year 4

Funding announcements were sent to qualifying stakeholders during Year 4. Announcements included training and funding opportunities for Ozone Advance communities, and EPA and TCEQ grant calls. Announcements were sent in September and November of 2017 and February of 2018.

Path Forward for Announcing Funding Opportunities for Year 5

The Chair will continue to inform stakeholders and appropriate audiences of funding opportunities for emission reduction planning and programs during Year 5.

Status of Van Share Promotion Commitment for Year 4

The chart posted below reflects the Van Share program accomplishments for Year 4.

2017 Van Pool Information				
	Average Weekday Service	Average Saturday Service	Average Sunday Service	Annual Total
Vehicles In Operation	5	5	5	
Total Vehicle Miles	244	250	262	75,406
Total Vehicle Hours	11	12	13	3,457
Total Monthly Ridership Unlinked Passenger Trips				9,802
Days Operated	228	40	39	307

During Year 4, the RTA also provided shuttle services to 32,389 riders over a total of 7,060 miles to numerous community events: removing vehicles from the road. A break-out of shuttle services provided is provided below:

MARTIN LUTHER KING MARCH/PARADE

		TOTAL	TOTAL	TOTAL	No. of
	Date	RIDERS	MILES	HOURS	Buses
MLK Parade	01/15/18	145	64.00	5.85	2
MLK Parade	01/16/17	274	66.0	8.14	2
	Totals	**419**	**130**	**13.99**	**4**

Fiesta de la Flor

		TOTAL	TOTAL	TOTAL	No. of
DATE		RIDERS	MILES	HOURS	Buses
GRAND TOTAL		**11,889**	**1,153.0**	**171.40**	**21**
3/24/17	RTA	3,504	414.0	51.16	8
3/25/17	RTA	8,139	547.0	84.79	11
	RTA TOTALS	**11,643**	**961.0**	**135.95**	**19**
3/24/17	MV	37	51.0	6.73	1
3/25/17	MV	209	141.0	28.72	1
	MV TOTALS	**246**	**192.0**	**35.45**	**2**

2017 Air Show

		TOTAL	TOTAL	TOTAL	No. of
Date		RIDERS	MILES	HOURS	Buses
04/05/17	RTA	398	484.0	32.11	4
04/06/17	RTA	258	420.0	21.45	4
		656	**904**	**54**	**8**

BEACH2BAY

		TOTAL	TOTAL	TOTAL	No. of
Event	Year	RIDERS	MILES	HOURS	Buses
05/20/17	**RTA**	**10,860**	**2,958.0**	**183.08**	**22**

Mayor's 4th of July Big Bang Celebration

		TOTAL	TOTAL	TOTAL	No. of
		RIDERS	MILES	HOURS	Buses
RTA-Big Bang Celebration	7/4/2017	1,487	214.0	51.67	?
RTA-July 4 Dignitaries	7/4/2017	66	48.0	15.50	
RTA-Parade July 4th	7/4/2017	37	19.0	3.83	
		1,590	**281.0**	**71.00**	

Buc Days Event

		TOTAL	TOTAL	TOTAL	No. of
	DATES	RIDERS	MILES	HOURS	Buses
RTA-Buc Parade Drop Off	5/6/17	37	26.0	5.17	
RTA-Buccaneer Parade	5/6/17	2	14.0	9.00	
RTA-Buc Commission	4/17/2017	25	40.0	3.75	
		64	**80.0**	**17.92**	

Leadership Corpus Christi

		TOTAL	TOTAL	TOTAL	No. of
Leadership Corpus Christi	Date	RIDERS	MILES	HOURS	Buses
	9-Jan	35	34	4.16	2
	12-Jan	61		3.67	
	Totals	**96**	**34**	**7.83**	**2**

Dia De Los Muertos

		TOTAL	TOTAL	TOTAL	No. of
	Date	RIDERS	MILES	HOURS	Buses
RTA-Dia De Los Muertos	10/28/2017	2,483	231.0	49.37	
MV-Dia De Los Muertos	10/28/2017	117	56.0	10.90	
		2,600	**287**	**60.27**	

2017 JAZZ FESTIVAL

		TOTAL	TOTAL	TOTAL	No. of
	Date	RIDERS	MILES	HOURS	Buses
Jazz Fest	10/20/17	692	278.0	45.28	5
Jazz Fest	10/21/17	2,495	588.0	108.45	
Jazz Fest	10/22/17	654	204.0	39.78	4
Jazz Fest	10/20/17	168	56.0	8.33	
Jazz Fest	10/21/17	447	78.0	12.98	1
Jazz Fest	10/22/17	5	29.0	4.40	1
		4,461	**1,233.0**	**219.22**	**11.00**

Bike Share Program
In August 2016, the City of Corpus Christi, The Regional Transit Authority, and the Downtown Management District partnered to develop and launch the Bike Corpus Christi Bike Share program. Seven bicycle stations providing a total of 44 bicycles were placed in strategic locations in uptown and downtown Corpus Christi. Printed materials including maps of bike station locations were widely distributed. During Year 4, there were 13,465 trips taken on the bicycles by 8,241 active members for a total of 71,768 miles.

Electric Vehicle Infrastructure
Public charging facilities for electric vehicles grew to a total of 14 during Year 4. Sites include La Palmera, a major shopping mall, a BMW dealership, 2 Nissan dealerships, and in Corpus Christi, has free electric vehicle parking and charging stalls. Charging stations are also available at the local Nissan dealership, the local BMW dealership, and 5 area hotels.

Briefings
The Chair provided over a dozen briefings to community groups and leaders about current air quality issues and challenges during Year 4. Groups and leaders that received briefings included the MPO Planning Committee, Nueces County Commissioners, San Patricio County Commissioners, Port of Corpus Christi Commissioners, Port Industry managers, local business owners, and Corpus Christi Chamber of Commerce. Information presented included the importance of remaining in attainment of ozone standards, the critical need for emission reduction programs and program funding challenges.

This appendix reflects the major highlights of the Year 4 Ozone Advance Report submitted to EPA. To view the complete Year 4 Annual Report including details, charts, and attachments, please visit https://www.epa.gov/advance/texas-corpus-christi

APPENDIX F

ANNUAL REPORT FOR YEAR 5 ACTIVITIES
May 2018 – APRIL 2019

APPENDIX F

ANNUAL REPORT FOR YEAR 5 (May 2018 – April 2019)

Status of Establishing Air Quality Position and Program Commitment for Year 5

The Group Facebook (facebook.com/ccairquality) reached approximately 160 people during Year 5. The Group website (www.cctexas.com/planning-esi/environmental-strategic-initiatives-esi/cc-air-quality-group) experienced 605 hits. The Pollution Prevention Partnership Air Quality Website (outreach.tamucc.edu/p3/) enjoyed 293 hits during Year 5.

Path Forward for Air Quality Education Efforts for Year 6

The Group will continue to host a Facebook site, a Website, and provide air quality public presentations to community groups, agencies, elected officials, and business leaders. Presentations will also include promoting the use of EPA flags, brochures and other no cost distribution materials.

Status of Air Quality Curricula for Year 5

Air quality curricula was delivered to a total of 555 5th grade students in 25 classes at 4 schools in Year 5. Pre and post testing of air quality knowledge was performed on the students prior to and after receiving the curricula. Testing results averaged 5 correct answers out a possible 10 prior to receiving the curricula and 8 correct answers after receiving the curricula.

Path Forward for Air Quality Curricula for Year 6

Industry will meet to consider funding air quality curricula for Year 6.

Status of Research, Modeling and Monitoring Commitment for Year 5

Funding from the 84th Legislative session has been depleted. Temporary interim funding to continue research and monitoring activities until legislative funding can be restored has been provided by Port Industries. This temporary funding will provide for continuous monitoring of ozone and meteorological conditions at the three research grade continuous monitoring stations including Holly road CAMS 660 – Urban site, Violet CAMS 664 – downwind site, and Ingleside CAMS 685 into Year 5.

Monitoring Accomplishments

With the funding support provided by Port Industries, continuous monitoring of ozone and meteorological parameters was conducted at CAMS 660, CAMS 664, and CAMS 685 during 2018. Each of the sites were equipped with an ozone analyzer; weather sensors including RM Young wind sensor and coastal environmental temperature and humidity sensor; Zeno data logger and Enfora wireless modems. Continuous measurements of ozone, wind speed, wind direction, outdoor temperature, and relative humidity were recorded at each of the stations and using the TCEQ LEADS acquisition system data was made publicly available on TCEQ's website. Additional monitoring of nitrogen oxides was also conducted at CAMS 660 – Holly Road during April 1st, 2018 through October 31st, 2018. An overall decrease in the ozone design value trend was observed during 2007 through 2018 at both compliance grade and research grade monitoring stations. *Figure 4*

Research Accomplishments

The design value trend analysis performed using the ozone concentrations measured at compliance grade monitoring stations (CAMS 04 and CAMS 21) and research grade monitoring station (CAMS 660, CAMS 664, and CAMS 685) is shown below.

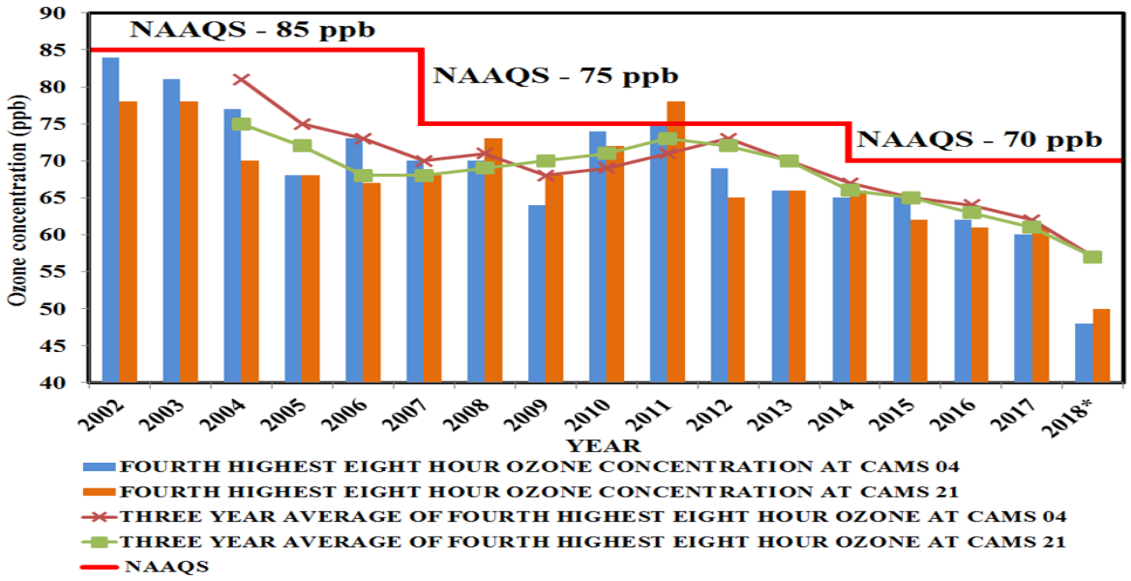


Figure 3. (repeated) Corpus Christi Ozone Design Trends at TCEQ Regulatory Monitors CAMS 4 and CAMS 21

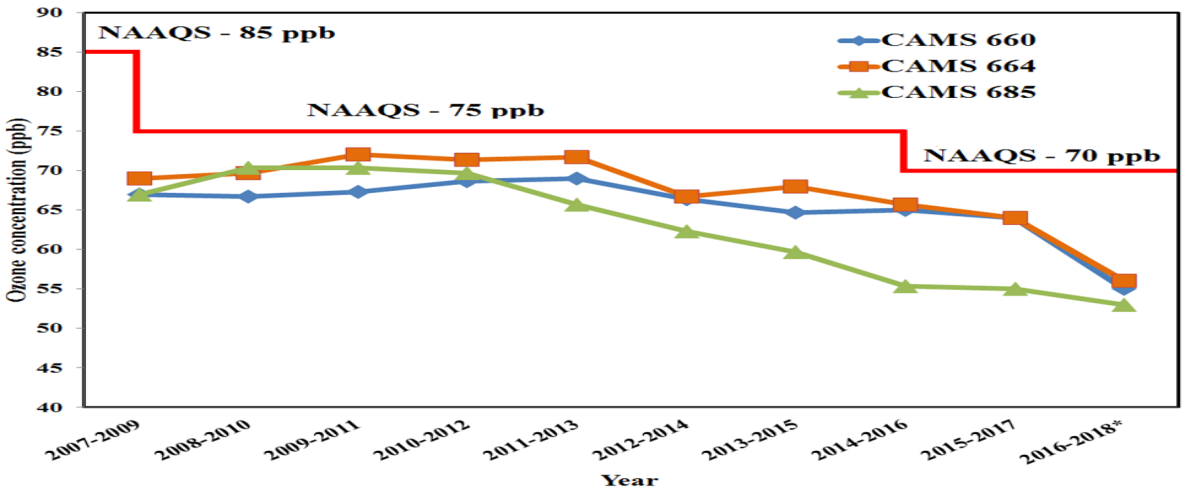


*Figure 4. Corpus Christi Ozone Design Trends at TAMUK/UNT Research Monitors CAMS 660, 664, 685 *Deactivated*

As demonstrated by the design value trends, a decreasing trend in ozone concentration has been noted at both TCEQ maintained compliance grade monitoring stations as well as research grade monitoring stations maintained and operated by UNT-TAMUK. At both CAMS 04 and CAMS 21 zero days with daily maximum eight-hour ozone concentration above 70 ppb were recorded. The downwind site in Violet – CAMS 664 and upwind site Ingleside – CAMS 685 also recorded zero days exceeding 70 ppb while urban site – Holly Road (CAMS 660) recorded two days. The two days included August 1st (74 ppb) and August 2nd (71 ppb). The highest daily maximum eight-hour ozone concentrations of 66 ppb were recorded on April 25th at CAMS 21 and August 2nd at CAMS 04. The downwind site – Violet (CAMS 664) recorded 65 ppb on August 1st and 68 ppb on August 2nd. The

urban site – CAMS 660 recorded one day which was August 3rd (66 ppb) with daily maximum eight-hour ozone concentration ranging between 65 ppb and 70 ppb. Contrary to urban and downwind site, upwind site Ingleside recorded two days with daily maximum eight-hour ozone concentrations ranging between 65 ppb and 70 ppb during late April. The two days included April 27th and 28th with highest of 69 and 68 ppb, respectively. The dominant winds during 2018 were noted to be southeasterly with speeds varying from 2.0 – 4.0 m/s.

Additional monitoring of oxides of nitrogen was conducted at Holly Road – CAMS 660 during ozone season of 2018. The daily maximum one-hour concentrations of Nitric oxide concentrations ranged between 0.7 ppb to 4.4 ppb with an average of 1.6 ppb while NOx concentration ranged between 1.3 ppb to 8.3 ppb with an average of 3.8 ppb. The diurnal analysis of NO and NOx indicated elevated concentrations during 8:00 to 10:00 AM and midafternoon – 12:00 AM – 1:00 PM followed by late evenings – 4:00 PM – 6:00 PM. The exhibited diurnal trends of precursor concentrations can be attributed to traffic sources that subsequently contributed to an increase in the ozone concentrations during mid-day and early evening hours.

Path Forward for Monitoring and Research for Year 6

Funding is depleted for monitoring and research and these activities have been ceased. Path forward for Year 6 is to work with the Texas legislature and local stakeholders to reinstate funding to resume monitoring and research activities.

Status of AutoCheck/Clean Fleet Vehicle Emissions Testing and Repair Commitment for Year 5

Through funding assistance provided by the Port of Corpus Christi, the Pollution Prevention Partnership (P3) Clean Fleet program implemented a multipoint strategy to reduce ozone: Voluntary emissions testing of private and business vehicles, ozone action training and awareness, distributions of tire gauges and literature from local, state, and federal air quality programs, and participation in policy planning meetings and forums. P3 also continuously researched potential future programs and air quality strategies such as an electric lawn equipment exchange and green scaping.

P3 held 55 vehicle emissions testing events where 292 private vehicles and 122 fleet vehicles were tested for emissions. 10 repairs and gas cap replacements were funded resulting in an estimated 1,250 lbs. of hydrocarbon and 8,422 lbs. of carbon monoxide emissions reduced annually. 13 vehicles were referred to fleet managers for inspection and maintenance. A spreadsheet detailing emission test events is attached to this report (Attachment 2). A spreadsheet detailing pre and post emissions reductions calculations is attached to this report (Attachment 3).

P3 provided ozone-reduction strategy, education, tools, and advocacy at 21 educational and policy meetings, interacting with over 3,000 individuals. P3 exhibited and presented at fairs, conferences, and workshops with themes of STEM, health, safety, environment, education, and community planning. A summary of these events is attached to this report (Attachment 4).

P3 is an EPA SmartWay affiliate and a Texas Department of Transportation Drive Clean Across Texas affiliate. Promotional and educational material from these programs are distributed to drivers directly, through our web site (http://outreach.tamucc.edu/p3/index.html) and periodically distributed through Community Outreach Facebook account (https://www.facebook.com/Community-Outreach-at-Texas-AM-University-Corpus-Christi-110752215660568/)

Service contracts with the Port of Corpus Christi were executed which provide funding for many of the emission reduction activities. P3 is also working with TCEQ to amend and expand emissions testing protocol to include OBD-II malfunction indicator lights. This change would allow more emissions reducing repairs to be completed on vehicles that have a longer remaining lifespan, therefore increasing cumulative annual emissions reductions.

Path Forward for Clean Fleet for Year 6

P3 will continue to participate in the Corpus Christi Air Quality Group, and other policy related forums, and meetings. Ozone reduction strategies and training will continue at conferences, health fairs and workshops. The emissions testing programs will be promoted at these venues and implemented on site when possible, funding contingent.
Clean Fleet and P3 will continue our current affiliations and partnerships with EPA SmartWay, Texas Department of Transportation Drive Clean Across Texas and The Port of Corpus Christi. P3 will promote these on the web and social media. P3 will continue providing free voluntary emissions testing for private and public fleets, funding contingent, and will continue funding repairs for private vehicle with pollution related mechanical issues as long as funding is available. P3 anticipates that the expanded OBD-II repair criteria will be implemented.
P3 will continue to look for funding sources that will allow them to expand existing services or begin new programs such as an electric lawn equipment subsidy for gasoline engine exchange.

Status of use of IR Camera Commitment for Year 5

Several industry stakeholders continued to use IR cameras to detect fugitive emissions during Year 5.

Path Forward for Use of IR Cameras for Year 6

Industry plans to continue the use of IR cameras to detect fugitive emissions.

Status of CCAD Notification on Ozone Action Days Commitment for Year 5

Corpus Christi did not have an ozone action day during this reporting period. CCAD did have the notification system set up and prepared during the reporting period. CCAD partners with select DoD, NASA, and Army commands, and is currently supporting utilization of volatile cold solvents and lower VOC paints. Posted below is a chart reflecting the emissions reductions since 2014 as a result of these lower VOC initiatives.

	2018 Percent Changes in Emissions from 5 Years Ago (2014)
PM-10	-0.54
Nonmethane Organic Compounds	-0.26
Sulfur Dioxide	-0.41
Nitrogen Oxide	-0.35
Carbon Monoxide	-0.47
Total	-0.33

Path Forward for Ozone Notification for CCAD for Year 6

CCAD plans to continue to inform employees of ozone action days and emissions reduction recommendations and employ pollution prevention initiatives for Year 6.

Status of Production of LRVP Commitment for Year 5
Several industry stakeholders continued the production of LRVP gasoline during Year 5.

Path Forward for Production of LRVP Gasoline for Year 6
Area gasoline producers will continue to produce LRVP gasoline during qualifying months in Year 6.

Status of Operation of Public Use CNG Fueling Facilities Commitment for Year 5
The City currently has one (1) CNG Station located on Ayers St. that is available for City and Public use and one (1) Station located on Civitan Dr. that serves as a backup.
The City purchased seven (6) CNG bi-fuel and dedicated vehicles in 2018.

Path Forward for Public Use CNG Fueling Facilities for Year 6
The City will partner with the Texas Natural Gas Vehicle (NGV) Alliance in promoting to the public and private fleets the use and benefits of natural gas vehicles. The City will sponsor CNG workshops with the Greater Houston NGV Alliance.

Status of RTA Commitment to Purchase CNG Vehicles for Year 5
RTA did not purchase any new CNG or Electric vehicles during Year 5. The chart below updates 6 vehicles that were purchased in late 2017/early 2018 but were not put into service until 2018.

VEHICLE	Dept Assigned to	YEAR	MAKE/MODEL	SIZE	Seating Max	Fleet Type	Lift Equipped	3 Position Wheel Chair	Fuel Type	Eligible for Disposition	Purchase Date	Delivery Mileage	In Service Date
921	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	5/1/2017	2,265	3/7/2018
922	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	5/1/2017	2,020	4/5/2018
923	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	5/1/2017	2,050	3/27/2018
924	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	5/1/2017	2,157	7/10/208
925	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	5/1/2017	2,026	4/30/2018
926	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	5/1/2017	2,037	8/27/2018

CNG Buses & Electric Support Vehicles Purchased between May 1, 2017 - Present

VEHICLE	Dept. the Vehicle is assigned to	YEAR	MAKE/MODEL	SIZE	Seating Maximum	Fleet Type	Lift Equipped	3 Position Wheel chair	Fuel Type	Eligible for Disposition	Purchase Date	Delivery Mileage	In Service Date
916	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,077	08/27/17
917	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,042	08/27/17
918	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,018	08/27/17
919	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,206	10/04/17
920	Vehicle Maintenance	2017	GILLIG/ Low Floor	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,204	11/16/17
921	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17		
922	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,020	
923	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,050	
924	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,157	
925	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17	2,026	
926	Vehicle Maintenance	2017	GILLIG/ Low Floor - Not in Serv	35'	32	Fixed	Ramp	Yes	CNG	2029	05/01/17		
3013	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3014	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3015	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3016	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3017	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3018	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
3019	MV Transit	2017	ARBOC/SOM-Spirit of Mobility	26'	13+2 WC	Paratransit	Ramp	Yes	CNG	2022	1/1/2018		01/15/18
INVENTORY OF ELECTRIC SERVICE VEHICLES													
3157	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/8/2017		10/16/17
3158	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/8/2017		10/25/17
3159	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/8/2017		10/16/17
3160	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/29/2017		10/16/17
3161	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/29/2017		10/16/17
3162	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	6/30/2017		10/25/17
3163	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/1/2017		10/25/17
3164	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/2/2017		10/25/17
3165	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/7/2017		11/27/17
3166	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/7/2017		11/27/17
3167	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	7/31/2017		11/13/17
3168	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2021	8/1/2017		11/13/17
3169	MV - Rta Relief Vehicles	2016	Ford Focus Electric	5-DR	5	Sedan	No	No	Electric	2020	6/22/2017		11/28/17

Status of Bicycle Transportation Planning Commitment for Year 5

MPO Assistance with Bicycle Mobility Planning Accomplishments

- Continued construction of Bond 2012 and 2014 roadway projects resulting in the implementation of 1-way cycle tracks, and multi-use side paths.
- RTA installed bicycle trip support hardware purchased in Year 3 using Transportation Alternatives Program funds from the MPO.
- Collected (in collaboration with regional partners) and maintained data on the performance metrics defined in the Bicycle Mobility Plan, including pre- and post-construction bicycle counts on corridors on which new bike infrastructure is to be installed to establish baseline bicycle demand and assess changes over time.
- Maintained a dedicated Web portal (www.CoastalBendInMotion.org) to disseminate the plan and performance measurement data collected to track implementation.
- Maintained three primary tools for virtual data collection, all of which are functional and are yielding high volumes of quality data about stakeholder priorities:
    - On-line mapping tool to capture where users ride or where they would like to ride if the conditions for cycling improved

- Promoted Strava smartphone application that allows users to log real-time data about their rides
- On-line survey about riding habits, needs and perceived obstacles to cycling as transportation
- Individual data layers for variables that will inform bike facility network development (e.g., origin/destination data at the Traffic Analysis Zone (TAZ) level, location of key people generators, including employment centers, shopping hubs, health care facilities, groceries and markets, transit stops, academic institutions, etc.)

Path Forward for Bicycle Mobility Planning for Year 6

Foster the incorporation of Intelligent Transportation System technology in roadway infrastructure projects to promote efficiency in the regional transportation system and mitigate congestion and associated air quality impacts.

Assist the municipalities within the MPO with the build out of the regional Bicycle Mobility Plan as part of locally funded roadway work.

Assist City of Corpus Christi in implementation of Bike Boulevard designation using MPO Transportation Alternatives funds.

Assist City of Corpus Christi in continued development of Hector P. Garcia Park Hike and Bike Trail: Phase II using MPO Transportation Alternatives funds.

Collect (in collaboration with regional partners) performance metrics data defined in the Bicycle Mobility Plan, including pre- and post-construction bicycle counts on corridors on which new bike infrastructure is to be installed to establish baseline bicycle demand and assess changes over time.

Maintain dedicated Web portal (www.CoastalBendInMotion.org) to disseminate the plan and performance measurement data collected to track implementation.

Status of Van Share Promotion Commitment for Year 5

The chart posted below reflects the Van Share program accomplishments for Year 5.

2018 Vanpool				
Field	**Average Weekday Schedule**	**Average Saturday Schedule**	**Average Sunday Schedule**	**Annual Total**
Vehicles in Operation	10	3	1	N/A
TOTAL ACTUAL VEHICLE MILES	364	34	51	82,942
TOTAL ACTUAL VEHICLE HOURS	8	1	1	1,935
SERVICES CONSUMED				
Total Monthly Ridership Unlinked Passenger Trips (UPT):	16,002			
SERVICES OPERATED (DAYS)				
Field	Total Weekday Schedule	Total Saturday Schedule	Total Sunday Schedule	Annual Total
Days Operated	224	22	12	258

During Year 5, the RTA also provided shuttle services to 42,495 riders over a total of 6,537.02 miles to numerous community events: removing vehicles from the road.

2018 YEARLY MOVEMENTS						
Event	**Year**	**Total Pasngrs .**	**Total Miles**	**Total Hours**	**Date**	
MLK DAY	2018	145	64	5.85	1/15/2018	
Fiesta De La Flor	2018	12,686	912	149.57	4/13/18 & 4/14/18	
Port Aransas Sand Festival	2018	1630	707.02	73.5	4/27/18 to 4/29/18	
Buc Days:Carnival,Night Parade	2018	198	683	73	5/3/18 to 5/12/18	Includes both MV & RTA
Beach2Bay	2018	14,584	2,655	169.23	05/19/18	
July 4-Big Bank Celebration	2018	1514	268	54.71	7/4/2018	
JAZZ Festival	2018	2385	798	146.54	10/19/18 to 10/21/18	Includes both MV & RTA
American Cancer Walk	2018	1,110	146	24.73	10/20/2018	
MV-Dia De Los Muertos	2018	8,243	304	63	10/27/18	Includes both MV & RTA

Bike Share Program

In August 2016, the City of Corpus Christi, The Regional Transit Authority, and the Downtown Management District partnered to develop and launch the Bike Corpus Christi Bike Share program. Seven bicycle stations providing a total of 44 bicycles were placed in strategic locations in uptown and downtown Corpus Christi. Printed materials including maps of bike station locations were widely distributed. During Year 5, there were 11,483 trips taken on the bicycles by 4,357 active members for a total of 41,977 miles.

Electric Vehicle Infrastructure

Public charging facilities for electric vehicles grew to a total of 18 during Year 5. Sites include La Palmera, a major shopping mall, a BMW dealership, 2 Nissan dealerships, 2 Ford dealerships, Cinnamon Shores condominiums, and Fairfield Inn.

This appendix reflects the major highlights of the Year 5 Ozone Advance Report submitted to EPA. To view the complete Year 5 Annual Report including details, charts, and attachments, please visit https://www.epa.gov/advance/texas-corpus-christi

APPENDIX G

ANNUAL REPORT FOR THE COMPLETION OF YEAR 5 ACTIVITIES
JUNE 2019 – DECEMBER 2019

APPENDIX G
ANNUAL REPORT FOR COMPLETION OF YEAR 5 (May 2018 – April 2019)

Air Quality Education Programs

Path Forward Air Quality Education

The Partnership will continue to host a Facebook site, a Website, and provide air quality public presentations and briefings to community groups, agencies, elected officials, and business leaders. Presentations will also include promoting the use of EPA flags, brochures and other no cost distribution materials. No-cost air quality education via media briefings, promotion of air quality messages through social media, brochures and other educational material will continue. The Chair will continue to distribute the emissions reductions recommendations and checklist to all stakeholders. Industry will meet to consider funding air quality curricula.

Air Quality Education Accomplishments (May 2019 – December 2019)

The Partnership Facebook page (facebook.com/ccairquality) reached approximately 98 people during May 2019 – December 2019. During the same time period, the Partnership website (www.cctexas.com/planning-esi/environmental-strategic-initiatives-esi/cc-air-quality-group) experienced 267 hits and the Pollution Prevention Partnership Air Quality Website (outreach.tamucc.edu/p3/) enjoyed 3,114 hits.

In May of 2019, communications were sent to stakeholders that included instructions on how to register for elevated ozone alerts and forecasts via AirNow. Work with the local newspaper resulted in daily posting of AQI information. In October and November of 2019, emissions reduction checklists were provided to San Patricio and Corpus Christi Regional Economic Development Corporations. Numerous education efforts were also made by group stakeholder Pollution Prevention Partnership and are cited on page 9 and attachment 5 of this report.

Air Quality Briefing Accomplishments (May 2019 – December 2019)

Several briefings were provided to community groups and leaders about current air quality issues, the importance of attaining air quality standards, air quality challenges, and recommendations for emission reduction activities during May 2019 – December 2019. Groups and leaders that received briefings included the Nueces County Commissioners, San Patricio and Corpus Christi Regional Economic Development Corporations, United Chamber of Commerce representatives, an environmental panel, and the Corpus Christi Metropolitan Planning Organization.

Path Forward for Air Quality Education and Briefings for Year 6

The Partnership webpage and Facebook page will continue in Year 6. Briefings and presentations about the importance of air quality and emission reduction recommendations will continue throughout the community in Year 6.

The Port of Corpus Christi has sponsored and commissioned a study to be performed by Dr. Jim Lee at Texas A&M University-Corpus Christi to identify the annual cost to the Corpus Christi urban airshed should the airshed be declared nonattainment. The study is anticipated to be in presentation form by Summer of 2020 and will be utilized as an

impressive tool in briefings and presentations to demonstrate the severe consequences of non-attainment and benefits of employing voluntary emission reduction activities.
The Port of Corpus Christi has also agreed to sponsor the graphics, production, and printing of a distribution piece for regional economic development corporations to provide to business and industry operating in or seeking to operate in the airshed. The distribution piece will include a letter from the Partnership, a checklist of emission reduction requirements, and letters of support from airshed elected officials and leaders. The piece is anticipated to be available by Summer 2020.

Air Quality Curricula

Path Forward Air Quality Curricula
Area industry is considering funding for the continuation of an air quality curricula to be delivered to area 5th grade classes.

Air Quality Curricula Accomplishments (May 2019 – December 2019)
Air quality curricula was delivered in the Spring of 2019. There was no delivery of air quality curricula in the May 2019 – December 2019 time period.

Path Forward for Air Quality Curricula for Year 6
Industry will meet to discuss funding air quality curricula for Year 6.

Monitoring and Research

Path Forward for Monitoring and Research
Funding is depleted for monitoring and research and these activities have ceased. The path forward is to work with the Texas legislature and local stakeholders to reinstate funding to resume monitoring and research activities.

Accomplishments for Monitoring and Research (May 2019 – December 2019)
Stakeholder efforts to reinstate legislative funding for air monitoring and research was successful and funding to the area in the amount of $281, 250 was approved by the legislature in May 2019 for monitoring and/or emission inventory activities. During September through December 2019, telephone meetings took place between City of Corpus Christi representatives and TCEQ to prepare a work plan for the funding.

Path Forward for Monitoring and Research for Year 6
City of Corpus Christi representatives plan to have receipt of the funding approved by City Council, finalization and approval of a work plan, and selection of contractors to accomplish the work plan deliverables in Year 6.

Clean Fleet

Path Forward for Clean Fleet
A co-branded partnership with the Port of Corpus Christi will provide funding for Clean Fleet and public outreach efforts through December 2019 through the Pollution Prevention Partnership (P3). P3 will continue to host CleanFleet and AutoCheck events at least once per month testing for vehicle emission problems. Repair subsidies will continue as long as funding is available. P3 will continue to promote SmartWay Partnerships between the freight industry and EPA.

Clean Fleet Accomplishments (May 2019 – December 2019)

With supplemental funding from The Port of Corpus Christi, Texas A&M University-Corpus Christi administered the Pollution Prevention Partnership (P3), AutoCheck, and Clean Fleet program. In combination these programs implemented a multipoint strategy to reduce ozone through voluntary emissions testing of private and business vehicles, repair of private vehicles, ozone action training and awareness, distributions of tire gauges and literature from local, state, and federal air quality programs, and participation in policy planning meetings and forums.

In May 2019, the Texas Commission on Environmental Quality, approved an amendment to the AutoCheck Supplemental Environmental Program (SEP) administered by P3. This allowed the program to expand its screening protocol to include many Diagnostic Troubleshooting Codes (DTC) provided by the Advanced Onboard Diagnostic System (OBD-II). By making repairs based on these "Check Engine Light" issues, AutoCheck can make more emission reduction and prevention repairs on vehicles that have a longer remaining lifespan, therefore increasing cumulative annual emissions reductions. The repairs made by the AutoCheck SEP are performed with penalty monies from a Texas Commission on Environmental Quality enforcement action.

P3 held 31 vehicle emissions testing events where 266 vehicles were tested for emissions and OBD-II codes. 27 Gas Cap and Evaporative Control System repairs were made, and 24 non-evaporative repairs were made resulting in an estimated 3,681 lbs. of hydrocarbon emissions and 1,974 pounds of carbon monoxide directly reduced annually. Preventive repairs contributed additional, but unquantifiable reductions. Detailed information on the events and pre and post emissions is provided in *Attachments 1 and 2.*

P3 provided ozone-reduction strategy, education, tools, and advocacy at 13 educational and policy meetings, interacting with 1,633 individuals. P3 exhibited and presented at fairs, conferences, and workshops with themes of STEM, health, safety, environment, education, and community planning. A summary of these events is provided in *Attachment 3.*

P3 is an EPA SmartWay affiliate and a Texas Department of Transportation Drive Clean Across Texas affiliate. Promotional and educational material from these programs are distributed to drivers directly, through web site (http://outreach.tamucc.edu/p3/index.html) and periodically distributed through Community Outreach Facebook account (https://www.facebook.com/Community-Outreach-at-Texas-AM-University-Corpus-Christi-110752215660568/)

Path Forward for Clean Fleet for Year 6

P3 will continue to participate in the Coastal Bend Air Quality Partnership, and other policy related forums, and meetings. P3 will continue presenting Ozone reduction strategies and education at conferences, health fairs, meetings, and workshops. The emissions testing programs will be promoted at these venues and implemented on site when possible, funding contingent. P3 will add an electric lawn equipment section to the P3 web site.

Clean Fleet and P3 will continue our current affiliations and partnerships with EPA SmartWay, Texas Department of Transportation Drive Clean Across Texas, and The Port

of Corpus Christi. P3 will promote these partnerships and associated collateral material in person, on the web, and social media.

P3 will continue providing free voluntary emissions testing for private and public fleets and will continue funding repairs for qualified private vehicles with pollution related mechanical issues as long as funding is available. The screening protocol will continue to use tailpipe gas analysis, gas cap pressure testing, and Advanced Onboard Diagnostic System (OBD-II) Diagnostic Troubleshooting Codes (DTC). AutoCheck will replace missing tire valve stem caps for all participants to reduce incidents of low tire pressure due to dirty air valves.

P3 will continue to look for funding sources that will allow them to expand existing services or begin new programs such as an electric lawn equipment subsidy for gasoline engine exchange.

Use of IR Cameras

Path Forward for Use of IR Camera
Industry plans to continue the use of IR cameras to detect fugitive emissions.

Use of IR Camera Accomplishments (May 2019 – December 2019)
A table capturing the overall use of IR cameras in addition to other volunteer activities is included on page 16 of this report.

Path Forward for Use of IR Cameras for Year 6.
Industry plans to continue the use of IR cameras to detect fugitive emissions.

Corpus Christi Army Depot (CCAD) Ozone Action Day Notifications

Path Forward for CCAD Notification
CCAD will continue to provide all employees with notifications when Ozone Action Days are declared and offer voluntary actions to take during and after work periods.

CCAD Notifications and Accomplishments (May 2019 – December 2019)
Corpus Christi did not have an ozone action day during this reporting period. CCAD did have the notification system set up and prepared during the reporting period.

Path Forward for Ozone Notification for CCAD for Year 6
CCAD plans to continue to inform employees of ozone action days and emissions reduction recommendations and employ pollution prevention initiatives for Year 6.

Production of Low Reid Vapor Pressure (LRVP) Gasoline

Path Forward for Production of LRVP
Industry plans to consider the continuation of producing LRVP.

Production of LRVP Gasoline Accomplishments (May 2019 – October 2019)
The production of LRVP gasoline was continued. A table summarizing local participation in the production of LRVP gasoline in addition to other voluntary emission reduction activities can be found on page 16 of this report.

Path Forward for Production of LRVP Gasoline for Year 6
Area gasoline producers will continue to consider the production of LRVP gasoline during qualifying months in Year 6.

Operation of Public Use Compressed Natural Gas (CNG) Fueling Facilities

Path Forward for Public Use CNG Fueling Facilities
The City is still considering building the additional CNG Stations. The City will partner with the Greater Houston Natural Gas Vehicle Alliance in promoting to the public and private fleets the use and benefits of natural gas vehicles. The City will sponsor CNG workshops with the Greater Houston NGV Alliance.

Public Use CNG Fueling Facilities Accomplishments (May 2019 – December 2019)
The City currently has one (1) CNG Station located on Ayers St. that is available for City and Public use and one (1) Station located on Civitan Dr. that serves as a backup.

Path Forward for Public Use CNG Fueling Facilities for Year 6
The City will partner with the Texas Natural Gas Vehicle (NGV) Alliance in promoting to the public and private fleets the use and benefits of natural gas vehicles. The City will sponsor CNG workshops with the Greater Houston NGV Alliance.

Electric Vehicle Infrastructure
There at 13 public charging facilities for electric vehicles in the airshed. Sites include La Palmera; a major shopping mall, a BMW dealership, 2 Nissan dealerships, and area hotels.

City of Corpus Christi Purchase of CNG Vehicles

City of Corpus Christi Purchase of CNG Vehicles Accomplishments (May 2019 – December 2019)
The City of Corpus Christi purchased six (*) CNG bi-fuel and dedicated vehicles.

Path Forward for City of Corpus Christi Purchase of CNG Vehicles for Year 6
The City of Corpus Christi plans to purchase twenty-two (22) CNG bi-fuel and dedicated vehicles in 2020 to replace aging fleet.

RTA Purchase of CNG Vehicles

RTA Purchase of CNG Vehicles Accomplishments (May 2019 – December 2019)
RTA did not purchase any new CNG or Electric vehicle from May 1, 2019 to the December 31, 2019. The details below update 1 vehicle that were purchased in Mid-2019 but was not put into service until late 2019.

VEHICLE	Dept. Assigned to	YEAR	MAKE /MODEL	SIZE	Seating Max	Fleet Type	Lift Equipped	3 Position Wheel Chair	Fuel Type	Eligible for Disposition	Purchase Date	Delivery Mileage	In Service Date
	CCRTA Support	2019	Ford Fusion	5-DR	5	Support	N/A	No	Unleaded	2028	5/31/2019	0	9/17/2019

MPO Assistance with Mobility Planning

MPO Assistance with Mobility Planning Accomplishments (May 2019 – December 2019)
The MPO continued construction of Bond 2014 roadway projects resulting in the implementation of 1-way cycle tracks. Funding provided by MPO Transportation Alternatives Program completed local mass transit bicycle trip support hardware. A dedicated Web portal (www.CoastalBendInMotion.org) was maintained to disseminate the mobility plan and performance measurement data collected to track implementation. The MPO also maintained three primary tools for virtual data collection, all of which are functional and are yielding high volumes of quality data about stakeholder priorities for mobility including an on-line mapping tool to capture where users ride or where they would like to ride if the conditions for cycling improved, promoted Strava smartphone application that allows users to log real-time data about their rides, and an on-line survey about riding habits, needs and perceived obstacles to cycling as transportation,

Path Forward for Mobility Planning for Year 6
The Corpus Christi MPO plans to participate in the Partnership. The MPO plans to work with the Pollution Prevention Partnership, a community outreach program of Texas A&M University - Corpus Christi to make the public aware of regional air quality issues and will support the public outreach efforts for TCEQ and EPA reporting services.

Bike Share Program

The Bike Share Program in Corpus Christi was discontinued in November 2019 when private sector funding dissolved. From May 2019 – November 2019, there were 2,741 trips taken on through the Bike Share Program.

RTA Van Share and Community Shuttle Program

Path Forward for Van Share Program
The Chair will continue to promote the RTA Van Share program.

Van Share and Community Shuttle Accomplishments (May 2019 – December 2019)
The chart posted below reflects the Van Share program accomplishments for May 2019 – December 2019.

2019 Vanpool				
Field	**Average Weekday Schedule**	**Average Saturday Schedule**	**Average Sunday Schedule**	**Annual Total**
Vehicles in Operation	**22**	**5**	**5**	
TOTAL ACTUAL VEHICLE MILES	**1,353**	**439**	**370**	**392,928**
TOTAL ACTUAL VEHICLE HOURS	**30**	**10**	**8**	**8,674**
SERVICES CONSUMED				
Total Monthly Ridership Unlinked Passenger Trips (UPT):	**219**	**67**	38	62,327
SERVICES OPERATED (DAYS)	**261**	52	46	359
Field	**Total Weekday Schedule**	**Total Saturday Schedule**	**Total Sunday Schedule**	**Annual Total**
Days Operated				

During this same time, the RTA provided shuttle services to 18,912 riders over a total of 8,657 miles to numerous community events: removing thousands of vehicles from the road.

SPECIAL MOVEMENT EVENT	# Passenger Trips	Miles	Hours	Date	Days
May-19					
American GI Forum	59	93.0	10.25	5/1/2019	1
Buccaneer Headquarters	79	27.0	5.50	5/2/2019	1
2019 Buccaneer Parade	250	258.0	258.00	5/4/2019	1
TAMU-CC Shuttle	528	358.0	34.78	5/15,16,17/2019	3
Beach to Bay Marathon Race	7136	2,335.0	124.98	5/18/19	1
June-19					
City Evacuation Drill	16	33.0	16.88	6/21/2019	1
Summer Camp	288	1,849.0	46.22	6/5 to 6/26/2019	16
July-19					
Big Bang Celebration	1409	279.0	55.23	7/4/2019	1
September-19					
C.C. City Hall Officials to Exxon Refinery	7	54.0	5.00	9/12/2019	1
TAMU-CC Track & Field Events	61	75.0	3.73	9/21/2019	1
October-19					
JAZZ Festival	1157	2,248.0	146.55	10/18,19,20/2019	3
American Cancer Walk	1092	90.0	17.08	10/19/20	1
November-19					
Dia De Los Muertos	4468	226.0	74.20	11/2/2019	1
Movement of City Officials	35	42.0	3.83	11/7/2019	1
Staging of bus	0	15.0	2.00	11/7/2019	1
Run the Runway Race @ CC Airport	395	45.0	7.66	11/23/2019	1
Miller High-vs-Veterans Memorial High Football Shuttle	739	276.0	35.70	11/29/2019	1
December-19					
Veterans Memorial High-vs-San Antonio Football Shuttle	135	143.0	20.20	12/6/2019	1
2019 Feast of Sharing	947	65.0	5.00	12/14/19	1
2019 Wreaths for Veterans @ VA Cemetery Shuttle	111	146.0	20.68	12/14/2019	1

Green Building Initiatives

Corpus Christi home builders lead an initiative for "green" building titled "Coastal Bend GreenBuilt". The project includes a checklist and assigns a point value for each aspect of green initiatives built into a home. A copy of the checklist was provided in the Year 2 report (Appendix C). From May 2019 – December 2019, approximately 70 certified Greenbuilt homes were built.

Port of Corpus Christi Emissions Inventory

In September 2019, an emissions inventory of Port of Corpus Christi activities was published and presented. The emissions inventory was performed in 2017 by Star Crest. The inventory reflected significant reductions in emissions from an emissions inventory performed in 2013. *Figure 4*

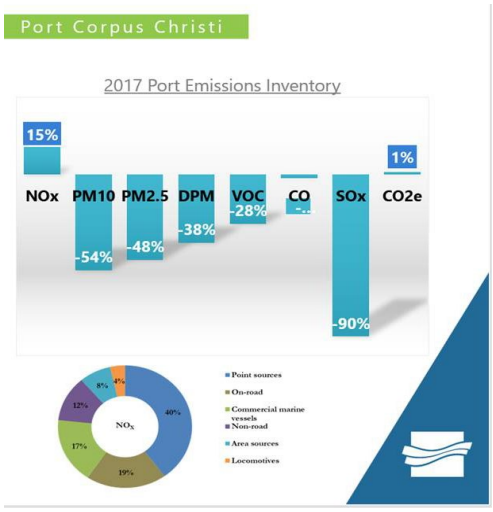


Figure 4

Much of the decrease in SOx emissions was the result of EPA MARCOM rules lowering the allowable level of sulfur in fuel utilized by any ship in US waters; however, the Port of Corpus Christi also has an anti-idle policy for all Port vehicles and equipment, purchases 100% green energy, purchased highest tier engines available on the market including 5 CNG vehicles and equipment, emissions tests their fleet, performs monitoring of pm at a bulk terminal, and installed a new more efficient crane at a dock. *Attachment 6*.

This appendix reflects the major highlights of the Year 5 Ozone Advance Report submitted to EPA. To view the complete Year 5 Annual Report including details, charts, and attachments, please visit https://www.epa.gov/advance/texas-corpus-christi

ATTACHMENT 1

COASTAL BEND AIR QUALITY PARTNERSHIP STRATEGIC PLAN

Coastal Bend Air Quality Partnership
Strategic Plan 2021 – 2023

Background

It is essential that the Coastal Bend Air Quality Partnership (Partnership) transition from an informal and unstructured volunteer group to a full-time, formal organization to strategically serve the future of the Coastal Bend's air quality and quality of life. New economic development has created the opportunity—and imperative—for regional partners to define and strive for a permanent, full - time air quality organization. The mission of the Partnership is to work daily to ensure that the region can rely on having a long-term future of the healthy air quality and economy we enjoy today.

Vision Statement

The Partnership is a dependable and long-term, research, advisory, and action- oriented organization that the Coastal Bend community can rely on to protect its current and future healthy air quality and quality of life. Via mutually beneficial relationships with stakeholders, the Partnership is a regional and national success for voluntary reductions of air emissions and protection of air quality.

Mission Statement

The mission of the Partnership is to protect the region's healthy air quality and inspire all emission sources to strive for performance targets beyond general compliance through research, education, and the development and distribution of guidance documents, recommendations, tools, and protocols for emission producing activities. The Partnership believes that everyone wants to live, work and play in a community with healthy air. The Partnership believes that with its leadership and commitment to protecting healthy air quality, the work of the Partnership and its stakeholders will provide the region with the tools and resources it needs to maintain and protect the future of its healthy air.

Strategic Goals

1) Advance regional dialogues about the effects of air quality on health, environment, economy, and overall quality of life.
2) Educate and advise industry, government, small businesses, and the public on air quality issues.
3) Promote voluntary air quality improvement measures and emission reducing activities beyond legal compliance.
4) Propose, promote, and implement programs for monitoring air quality.
5) Maintain attainment status for federally regulated air pollutants.

Objectives (2021-2023)

Objective accomplished in 2020 – Proposing financial commitments to support annual operating budget of $131,200 for 2021 – 2023

Hire a full-time Executive Director by end Q1 2021Establish non-profit status by the end of 2021

1) Secure 50% of total annual operating budget in grant funds and remaining 50% of total annual operating budget in support from existing and new contributors for years 2024 - 2026 by end of 2022.
2) Increase grant revenues by 10 % annually beginning in 2023
3) Develop, adopt, and implement a Clean Air Action Plan by the end of 2022 to protect air quality.
4) Commission a Nueces and San Patricio county air emissions inventory for ozone precursors and criteria pollutants to be conducted by the end of 2022.
5) Deploy at least two new air monitors for research purposes by the end of 2023.

ATTACHMENT 2

COASTAL BEND AIR QUALITY PARTNERSHIP COMMUNICATION LIST

NAME	AFFILIATION
Clair Garza	Valero Refining
Aron Baggett	OxyChem
Curtis Taylor	Flint Hills Resources
Corpus Christi Caller Times	Media
Leah Olivarri	Community Communications
Howard Fels	AEP
Bob Trebatoski	Equistar
Joe Almarez	Valero Refining
Bob Paulison	Port Industries
Denise Rogers	Trafigura
Sharon Montez	Regional Transportation Authority
Glenda Swierc	ModaMidstream
Greg Bezdeck	Markwest
Sharon Murphy	City of Corpus Christi
Roger Tennapel	Flint Hills Resources
Ginny Cross	United Corpus Christi Chamber of Commerce
John LaRue	United Corpus Christi Chamber of Commerce
Nelda Olivo	Port of Corpus Christi
Sarah Garza	Port of Corpus Christi
Susan Clewis	Texas Commission on Environmental Quality
Christopher Amy	TxDOT
Dana Perez	Flint Hills Resources
Colleen Johnson	EarthCon Consultants
Mari Cuevas	Corpus Christi Community Council
Carrie Meyer	Corpus Christi resident
David Harvey	Equistar
Kelly Ruble	Texas Commission on Environmental Quality
Danielle Converse	Port of Corpus Christi
Craig Eckberg	NRG
Kevin Lassahn	Valero Refining
Iain Vasey	Corpus Christi Regional Economic Development Corp
Rosie Collin	Port of Corpus Christi
Molly Edens	NuStar
Trent Thigpen	Pollution Prevention Partnership
Scott Peters	Equistar
Matt Nerren	Corpus Christi Army Depot
Maria Garcia	Corpus Christi Army Depot
Alfredo Diaz	Flint Hills Resources

NAME	AFFILIATION
Bea Vasquez	Flint Hills Resources
Darcy Schroeder	Valero Refining
Kevin Kenall	Citgo Refining
Errol Summerlin	San Patricio County Citizen
Rose Cornelius Crawford	Citizens Alliance
Sean Strawbridge	Port of Corpus Christi
Rev. Adam Carrington	Citizens Alliance
Snapper Armstrong	Stack Test
Gretchen Arnold	Chair
Bob Peneda	Magellan
Ramona Josefeczyk	Port of Corpus Christi
Beatriz Riverra	Port of Corpus Christi
Beth Becerra	Exxon Mobile
Colette Walls	Exxon Mobile
Catherine Barnard	Environmental Consulting
Lauren Wenner	NRG
A J Hansborough	Trinity Consultants
Isabelle Palacious	Voestalpine
Jeremy Landers	media
Jessica Muennink	Cheniere
Carrie Paige	EPA
Ruben Herrera	Oxy
Tammy Embrey	City of Corpus Christi
Daniel Carazales	MPO
MPO	MPO
Miyoung Squire	Consultant
Melissa Zamora	Community
Adrianna Escamilla	Port of Corpus Christi
Ashleigh Holden	Community
Steve Coffman	Chemours
Jennifer Lira	Citgo Refining
Robert MacDonald	MPO
Andrew Frazone	OxyChem
Matt Garcia	TxOGA
Dennis Taylor	Voestalpine
Randy Pitre	EPA
Cathy Skurow	City of Portland
Kirsten Crow	media
Austin Taylor	Moda Midstream
Randy Wright	City of Portland
Brent Moore	HDR Engineering
Jane Gimler	Builders and Contractors

NAME	AFFILIATION
Zulema Garcia	Citgo Refining
Christina Bryant	Regional Development Corp
Veronica Fuentes	Citgo Refining
Isabele Rivero	Exxonmobile
Claire Lindsey	Flint Hills Resources
Aimee Almaraz	Valero Refining
Jim Lee	Community
Beatrice Rivera	Port of Corpus Christi
A Grams	Port of Corpus Christi
R Schulze	Port of Corpus Christi
Nicole Hailey	Magellan
Ashley McMullan	Weston Solutions
Brad White	Weston Solutions
MacKenzie Ward	Port of Corpus Christi
Meagan Marquard	Valero Refining

ATTACHMENT 3

COASTAL BEND AIR QUALITY PARTNERSHIP MEETING NOTES

Coastal Bend Air Quality Partnership Meeting Notes
Coastal Bend Air Quality Partnership Meeting

April 29, 2020

Present

Gretchen Arnold, Chair
Trent Thigpen, Pollution Prevention Partnership, TAMUCC, Moderator
Errol Summerlin, Citizen
Beth Becerra, Exxonmobile
Sarah Garza, POCA
Sean Strawbridge, POCCA
Jessica Muennink, Cheniere
Robert Zamora, Valero
Maria Sparks, Citgo
Troy Penshorn, Voestalpine
Al Hansborough, Trinity Consultants
Molly Martin, Nustar Energy
Darcy Schroeder, Valero
Rick Mendoza, Citgo
Matt Garcia, TXOGA
Robert Macdonald, CC MPO
Danielle Converse, POCCA
Andrew Franzone, Oxy
Austin Taylor, Moda Midstream
Andrew Kiss, POCCA
Jeff Pollack, POCCA
Sharon Bailey Murphy, City of Corpus Christi
Melissa Zamora, TAMUCC
Isabel Palacios, Voestalpine
Bob Paulison, Port Industries
Glenda Swierc, Moda Midstream
Curtis Taylor, FHR
Darcy Schroeder, Valero
John LaRue, United Corpus Christi Chamber
Claire Lindsey, FHR
Colleen Johnson, Earthcon
Sonny Lopez, TCEQ
Carin Wunneburger, FHR
Cathy Skurow, City of Portland, Mayor
Carrie Paige, US EPA

* There were meeting attendees that telephoned into the meeting and therefore their names were not recorded in the WebEx document. The attendee list will be updated as needed.

(Port of Corpus Christi Authority; POCCA, Metropolitan Planning Organization; MPO, Flint Hills Resources; FHR, Texas Commission on Environmental Quality; TCEQ, Environmental Protection Agency; EPA.)

The April 29, 2020 meeting was held virtually via WebEx. WebEx service was provided by Texas A&M University-Corpus Christi and moderated by Trent Thigpen.

Discussion Points

The 2020 ozone season was discussed.

- The 4rth high to date of ozone at CAMS 4 is 49 ppb. It was 48 when update document was created on 04/22.
- The 4rth high to date of ozone at CAMS 21 is 54 ppb. It was 52 when update document was created on 04/22.
- Elevated ozone levels on April 23, 24, 25 and 26. Each of those days experienced winds out of the north east at 10-15 mph.
- In order for the Corpus Christi urban airshed to remain in attainment of ozone standards at the end of year 2020, CAMS 4 must experience a 4th high ozone level of less than 87 ppb and CAMS 21 must experience a 4th high ozone level of less than 91 ppb in 2020.

A comparison of ozone monitor readings for March/April 2019 and March/April 2020 was provided to evaluate the impact on ozone of the stay-at-home order. CAMS 4 experienced a 25% decrease in the ozone monthly average for March and a 19% decrease in April. CAMS 21 experienced CAMS 21 experienced a 3% decrease in March and stayed the same for April.

The Clean Air Act requires the EPA to review current NAAQS for regulated pollutants every 5 years. The review process may include revised NAAQS standards for regulated pollutants based on scientific community (CASAC) recommendations to EPA regarding adequate protection of public health. 2020 is a review year. In February 2020 CASAC provided a memo to EPA Administrator Wheeler recommending no change to NAQQS for ozone. An announcement is expected soon from EPA confirming the ozone NAAQS recommendation. In March 2020 EPA Administrator Wheeler announced there would be no change to NAAQS for pm.

Gretchen provided an update on Update on Local Air Quality Program Funding

- Stakeholder efforts to reinstate legislative funding for air monitoring and research was successful and funding to the area in the amount of $281, 250 was approved by the legislature. City Council passed receipt of the funding for the first reading on April 21 of this year and is expected to pass the second reading scheduled for May 12th. A workplan will be developed after the agreement is executed.
- Pollution Prevention Partnership and AutoCheck administration and operations are funded by Port of Corpus Christi and Texas A&M University-Corpus Christi through the rest of 2020. AutoCheck repair funds provided by Texas Commission on Environmental Quality enforcement actions are also expected to last the rest of the year and part of next year.
- The AutoCheck Supplemental Environmental Program (SEP) repair funds depend on elective contributions through Agreed Orders related to air emissions violations. AutoCheck is on a list of preapproved SEP’s that a

respondent can choose to fund as part of a penalty offset. By choosing AutoCheck, funds are used to remedy local air emissions instead of going into a general State fund.

Coastal Bend Air Quality Partnership Moving Forward

- Gretchen presented to the group where the group needed to be in order to be sustainable and be the airshed's reliable air quality organization years from now. She stated the group needs to transition to a full-time organization with full time staff and a full-time physical presence in the community that is reliably funded well into the future.
- The group currently does not have the structure or reliable funding to make plans or commitments for the future in order to be sustainable. The group currently operates on a year -to-year basis with part time assistance from a home operation and is at risk for dissolving each year.
- Gretchen asked for people to be part of a working committee to transition the group from where it is now to where it needs to be. Gretchen stated that the group would be provided with working committee updates and would continue to meet as a group.
- Suggested milestones were presented including the development of a strategic plan, becoming a non-profit and the recruitment of a full-time executive director. Gretchen informed the group that a full-time director for the group is necessary and that she is not able to fill that position. She will be available as a resource for the group and transitioned organization.
- A proposed budget was provided that included a $45,000 commitment in addition to office space provided by the Port of Corpus Christi.
- Sean Strawbridge with the Port of Corpus Christi stated the Port's support for the plan and emphasized the importance of attainment of air quality standards. The need for resiliency and continued economic health is tied in to and an important part of the need to protect our air quality and the need for a formal air quality organization.
- Darcy Schroeder with Valero stated that this need has been discussed for some time and is important for the area. Her statements were echoed by Bob Paulison with Port Industries.
- Errol Summerlin, Darcy Schroeder, Sharon Lewis, Glenda Swierc, Sarah Garza, Jeff Pollack, Robert MacDonald, and Bob Paulison volunteered to be part of the working committee to discuss and put structure to the transition plan.

Next Steps

- Hold working committee meeting to work through structure and milestones and provide updates to the group.

Future Agenda Items:

- Area Air Monitors
- Where they are, what data do they collect, access to data.
- Cost of Non-Attainment Study Results
- Regional Economic Development Corporation Distribution Piece

Coastal Bend Air Quality Partnership Meeting Notes
Coastal Bend Air Quality Partnership Meeting

August 25, 2020

Present

Gretchen Arnold, Chair
Trent Thigpen, Pollution Prevention Partnership, TAMUCC, Moderator
Mary Garcia, Citgo
Andrew Franzone, Oxy
Aron Baggett, Oxy
Beth Becerra, Gulf Coast Growth Ventures
Bob Paulison, PICC
Brad Duda, Celanese
B Rivera, POCCA
C Casper, MPO
Colleen Johnson, Earthcon
Craig Kondoff, Cheniere
Curtis Taylor, FHR
Darcy Schroeder, Valero
Francisca Deter, Lyondell Basell
Ginny Cross, United Corpus Christi Chamber
Glenda Swierc, Moda Midstream
Isabel Rivero, Exxon Mobil
Jessica Munnink, Cheniere
Jane Gimler, Associated Builders and Contractors
Dr. Jim Lee, TAMUCC
Joseph Miller, TAMUCC
Mike Culbertson, Corpus Christi Regional Development Corp.
Melissa Zamora, TAMUCC
Matt Garcia, Texas Oil and Gas
Molly Martin, NuStar
Marie Sparks, Citgo
Miyoung Squire, MSE Group
Nelda Olivo, POCCA
Rob McDonald, MPO
Bobby Zamora, Valero
Roger TenNapel, FHR
Randy Wright, City of Portland
Sarah Garza, POCCA
Sherman Hampton, Exxon Mobil
Sharon Murphy, City of Corpus Christi
Sean Strawbridge, POCCA
Errol Summerlin, Portland Citizen
Tammy Embrey, City of Corpus Christi
Troy Penshorn, Voestalpine
Vincent Torres, U T Austin

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(Port of Corpus Christi Authority; POCCA, Metropolitan Planning Organization; MPO, Flint Hills Resources; FHR, Texas Commission on Environmental Quality; TCEQ, Environmental Protection Agency; EPA.)

The August 25, 2020 meeting was held virtually via WebEx. WebEx service was provided by Texas A&M University-Corpus Christi and moderated by Trent Thigpen.

Meeting Notes

Ozone Season 2020 Update

- Gretchen presented an ozone season update to the group.
  - The 4rth high to date of ozone at CAMS 4 is 58 ppb.
  - The 4rth high to date of ozone at CAMS 21 is 64 ppb.
  - In order for the Corpus Christi urban airshed to remain in attainment of ozone standards at the end of year 2020, CAMS 4 must experience a 4th high ozone level of less than 87 ppb and CAMS 21 must experience a 4th high ozone level of less than 91 ppb in 2020.

- Cost of non-attainment for the Corpus Christi Urban Airshed (Nueces and San Patricio counties)
  - Gretchen introduced Dr. Jim Lee with the South Texas Economic Development Center at Texas A&M University-Corpus Christi. Gretchen informed the group that she approached Dr. Lee about performing a cost study specific to our airshed so that real-life cost numbers could be applied to the general statement that a non-attainment designation for our area would be costly.
  - Dr. Jim Lee provided a presentation on his study identifying the cost of non-attainment to the Corpus Christi Urban Airshed (Nueces and San Patricio counties).

    - The annual cost incurred by Nueces and San Patricio counties should the airshed be designated as non-attainment of ozone standards includes:
      - Impact on local industry - $565,945,755 - $1,690,216,126,
      - Losses due to road construction delays - $20,263,963 - $20,291,740,
      - Education and outreach programs - $123,474,
      - Cost of voluntary control measures - $29,655,

      - Total annual cost of marginal non -attainment incurred in our airshed - $583,362,847 - $1,710,660,996

      - Annual costs of non-attainment are imposed on an airshed for a minimum of 23 years. Once an area is declared as non-

attainment, there is a minimum period of 23 years (3-year time frame to regain attainment levels and two 10-year maintenance periods) before that airshed is re-designated as attainment.

- Errol Summerlin commented. He appreciated the detail in the presentation and questioned why the cost of non-attainment on the petrochemical industry so much more than plastics manufacturing was. Dr. Lee replied that the cost information was based on historical and current trending regarding the local inventory of industry sectors, filing for permits, etc. Historically there have been more permits and operations for petrochemical industry than plastics manufacturing.

Coastal Bend Air Quality Partnership transition update

- Gretchen introduced the agenda item by stating that the results of Dr. Lee's study confirm the urgency for the informal as-needed air quality group to transition to a formal full-time organization.
- Sarah Garza presented an update to the group on the status of the transition to a full-time organization.
- The working committee has been expanded to now include Errol Summerlin, Darcy Schroeder, Sharon Murphy, Glenda Swierc, Sarah Garza, Jeff Pollack, Robert MacDonald, Gretchen Arnold, Bob Paulison, A J Hansborough, and Rosie Collin.
- An interim Board was elected. Sarah Garza; Chair, Trent Thigpen; Vice-Chair, Sharon Murphey; Secretary, and Gretchen Arnold; Executive Director.
- Current tasks in process include the development of by-laws for approval with legal assistance provided by Welder/Leshin, applying for 501 C3 approval, finalizing the strategic plan, and securing adequate funding.
- Gretchen provided information on funding. To date, Nueces County has agreed to providing $15,000 per year, City of Corpus Christi has requested $15,000 in their annual budget request, San Patricio County has requested $15,000 in their annual budget request, RTA has committed to $5,000 a year, MPO has committed to $4,000 a year, Port of Corpus Christi has committed to $45,000 a year and Port Industries has been requested to provide $60,000 a year.

San Patricio County community air monitors

- Beth Becerra with Gulf Coast Growth Ventures introduced Vincent Torres with U T Austin and Vincent provided a presentation to the group on three (3) community monitors in San Patricio county.
- Vincent stated that three (3) community air monitors have been installed in San Patricio county within the last year or so. Two are located in Portland (Gregory Portland High School and East Cliff High School) and one (1) is located in Gregory at Stephen F. Austin Elementary. The Portland monitors were funded

by Gulf Coast Growth Ventures and the Gregory monitor was funded by Cheniere. All monitors are operated by and reported on by a third party. The Portland monitors are operated by AECOM and the Gregory monitor is operated by U T Austin. U T Austin provides all of the reporting on all the monitors and operates the website that reflects the monitor data. The website was designed by a community focus group.

- The website address for the monitor information and data is https://gpair.ceer.utexas.edu The website includes information on the focus group representatives, monitor locations, pollutants that the monitors measure and data trending.
- The purpose of the monitors is for long term health analysis and therefore longer-term trending is gathered and reported instead of instant real-time data. The Portland monitors measure for volatile organic compounds and particulate matter. The Gregory monitor measures for volatile organic compounds, NOx, SO2 and particulate matter.
- Errol Summerlin questioned why the Gregory monitor measured for NO2 and SO2 and the Portland monitor did not. Vincent replied that the determination was made in consideration of what was thought to be most critical to look for based on which facility and facility process the monitor was sited downwind from.
- Collen Johnson asked how the monitor information was to be communicated. Beth replied that they are briefing community leaders about the website and will soon be taking it to social media. The information is also on the GCGV website.
- Melissa Zamora asked why U T Austin was doing the operational work instead of Texas A&M University-Corpus Christi. Beth replied that GCGV is looking to work with TAMUCC on future aspects of the project.

Next Steps

- Gretchen asked the group for issues or topics they would like to see on the next agenda. An update on ozone season will be brought to the group and an update from the transition committee.

Coastal Bend Air Quality Partnership Meeting Notes
Coastal Bend Air Quality Partnership Meeting

November 16, 2020

The meeting was held virtually via WebEx and hosted by Pollution Prevention Partnership, Texas A&M University-Corpus Christi.

Present

Gretchen Arnold, Chair
Trent Thigpen, Pollution Prevention Partnership, TAMUCC, Moderator
Beth Becerra, Gulf Coast Growth Ventures
Bob Paulison, PICC
B Rivera, POCCA
Craig Casper, MPO
Colleen Johnson, Earthcon
Craig Kondoff, Cheniere
Curtis Taylor, FHR
Darcy Schroeder, Valero
Francisca Deter, Lyondell Basell
Ginny Cross, United Corpus Christi Chamber
Glenda Swierc, Moda Midstream
Isabel Rivero, Gulf Coast Growth Ventures
Jessica Munnink, Cheniere
Jane Gimler, Associated Builders and Contractors
Dr. Jim Lee, TAMUCC
Melissa Zamora, TAMUCC
Miyoung Squire, MSE Group
Nelda Olivo, POCCA
Rob McDonald, MPO
Roger TenNapel, FHR
Cathy Skurow, City of Portland
Sarah Garza, POCCA
Sharon Murphy, City of Corpus Christi
Errol Summerlin, Portland Citizen
Tammy Embrey, City of Corpus Christi
Troy Penshorn, Voestalpine
Howard Peters, Lyondell
Dana Perez, FHR
Joe Almaraz, Valero
John LaRue, United Corpus Christi Chamber
Linda Spickelmier, Weston Solutions
Tammy Embrey, City of CC
McKenzie Ward, POCCA
Nicole Haley, Magellan
Susan Clewis, TCEQ
R. Shulz, POCCA
M Mason, Citgo
Aimee Almaraz, Valero

Claire Lindsey, FHR
C Bryant, TAMUCC
Amanda Grams, POCCA
Tom Randolph, TCRQ
Payton Pearce, TCEQ

* There were meeting attendees that telephoned into the meeting and therefore their names were not recorded in the WebEx document. The attendee list will be updated as needed.

(Port of Corpus Christi Authority; POCCA, Metropolitan Planning Organization; MPO, Flint Hills Resources; FHR, Texas
Commission on Environmental Quality; TCEQ, Environmental Protection Agency; EPA.)

Meeting Notes

Ozone Season 2020 Update

- Gretchen presented an ozone season update to the group. The 4rth high to date of ozone at CAMS 4 is 61 ppb. The 4rth high to date of ozone at CAMS 21 is 64 ppb. In order for the Corpus Christi urban airshed to remain in attainment of ozone standards at the end of year 2020, CAMS 4 must experience a 4th high ozone level of less than 87 ppb and CAMS 21 must experience a 4th high ozone level of less than 91 ppb in 2020.

Coastal Bend Air Quality Partnership transition update

- Sarah Garza; CBAQP Interim Board President, presented an update to the group on the status of the transition to a full-time organization. Sarah began by recognizing Trent Thigpen and Sharon Bailey Murphy as fellow interim board members, Gretchen as interim executive director and a working group consisting of about 10 people that have worked together on and contributed to the transition effort. Sarah reviewed with the group that the transition committee was established in the Spring of 2020 during a general meeting of the CBAQP. The tasks to be accomplished by the transition committee included establishing an interim board and developing a strategic plan. The committee has established an interim board and a strategic plan has been developed and approved by the interim board. Sarah outlined the 5 goals of the strategic plan: (1) Advance regional dialogues about the effects of air quality on health, environment, economy, and overall quality of life, (2) Educate and advise industry, government, small businesses, and the public on air quality issues, (3) Promote voluntary air quality improvement measures and emission reducing activities beyond legal compliance, (4) Propose, promote, and implement programs for monitoring air quality, and (5) Maintain attainment status for federally regulated air pollutants. Sarah then reviewed the 7 objectives in the strategic plan: (1) Hire a full-time Executive Director, (2) Establish non-profit status, (3) Secure grant funding, (4) increase grant revenues by 10 %, (5) Develop, adopt, and implement a Clean Air Action Plan, (6) Commission an emissions inventory, and (7) establish area research air

monitors. Sarah informed the group that the transition committee is working on preparation tasks to accomplish the goals and objectives included in the strategic plan. Preparation tasks include working with attorney Richard Leshin to assist with the application for non-profit status and draft the by-laws. The non-profit application requires by-laws, and the by-laws must include permanent board information to include the number of seats on the board and sectors represented by board members. Sarah shared that after much discussion, a full committee workshop and an interim board meeting, the interim board approved a permanent board of 5 seats defined as Transportation, Industry, Economic Development/Small Business, Government, and Environment/Community. The definition of the qualifications for an individual to be considered to serve on the board has been assigned to the working committee to be completed by the end of November. Sarah shared that during several discussions among committee members it was made clear that the committee felt strongly that there should be adequate representation on the board of all sectors, that the number of seats be such that the board can be efficient and effective, and that board members have passion for the mission of the group and a willingness to serve. Once the requirements for the permanent board members have been approved, Richard Leshin will be asked to provide a draft for consideration for by-laws. This draft will go through a series of reviews by the committee, the interim board will approve the reviewed and edited by-laws and send that back to Richard Leshin to apply for non-profit status. It is hoped that this all be accomplished by the end of this year. Timing is unsure on when the permanent board will be voted in. Once established, the development of a Clean Air Action Plan will begin that sets out measures the community can take to meet the goals of the strategic plan. The topic was opened for questions. Roger TenNaple asked about the review and approval process for the by-laws. Sarah stated that the by-laws are not yet developed and that it was the recommendation of Richard Leshin to determine the board definition and requirements and then work on the by-law draft. Sarah stated that the committee will all work on reviewing and providing recommendations and edits to the by-law draft before the board meets to approve them and Roger shared that he was glad there was a group-committee effort to review and provide input to the by-laws.

Corpus Christi Urban Airshed Air Monitor Network

Gretchen Arnold began the presentation with slides showing a map of air monitors in the airshed that included 8 stationary TCEQ monitor pads housing a total of 12 monitors. An explanation of continuous and non-continuous monitors was provided, and a list of the pollutants measured at each monitor site was provided (particulate matter, ozone, carbon dioxide, sulfur dioxide, hydrogen sulfide, and total non-methane hydrocarbons at various monitors). The map also showed 3 community monitors located in the Portland/Ingleside area. These monitors were sponsored by Gulf Coast Growth Ventures and Cheniere and the data is gathered and made available through U T Austin.

Beth Becerra and Isabel Rivero were called upon to provide information on the 3 community monitors; two of which were sponsored by GCGV and one by Cheniere. The group was reminded that an in-depth presentation on these monitors was provided to the group earlier in the year by Vince Torres with U T Austin. Beth and Isabel provided a 1-

page document to the group that showed where the monitors are, the pollutants measured for, and how to access data collected by the monitors. Craig Casper asked if the monitors measured for heavy metals. Isabel responded that the monitors look for numerous VOCs including toluene. Isabel referred Craig to the monitor website where all the pollutants measured are listed. Melissa Zamora asked if the monitors had shown any fluctuations or increase in pollutants. (*special note – audio during Melissa's question was poor and her question was not clear). Isabel responded that there were some fluctuations in particulate matter during a Saharan dust event but that quarterly reports for all monitor data and trending are available on the web site. Beth committed to getting Melissa the websites for her review. The website for review for the community air monitors is: https://gpair.ceer.utexas.edu. The resources page for the quarterly reports on the monitor data is at https://gpair.ceer.utexas.edu/resources.php.

Aimee Almaraz with Valero was called on to present information on industry monitors. Aimee discussed monitoring measures above and beyond requirements performed by Valero such as the use of IR cameras to search for emissions and gas chromatographs. (audio during Aimee's presentation was poor and it was not possible to hear much of what she said). Darcy Schroeder with Valero stepped in to provide information and her audio was much clearer. Darcy shared that Valero has 40 fence-line monitors for benzine as did surrounding refineries and Valero also participated in several monitoring activities within their fence-line.

Sharon Bailey Murphy briefed the group on the status of re-establishing Rider funded air monitors. Sharon reminded the group that Legislative Rider funding in the past had provided funding for various research air monitors but that in the legislative session before last, the funding was vetoed. Funding in the last session was re-established for monitoring purposes and work is being done to re-commission 4 research monitors located at Holly Rd, Violet, Aransas Pass, and Odem. Dr. J. David Felix with Texas A&M University-Corpus Christi will oversee the project. A QAPP has recently been approved for the monitors and the monitors will need to be inspected to ensure they are still working properly. They are in the field and set up but have not been run in about a year. It is hoped that they will be inspected and begin operations by the end of this year.

Tom Randolph with TCEQ was called on to provide information on the TCEQ mobile monitoring project. Tom shared with the group that funding was received to upgrade mobile monitoring capabilities. Three vans; two already in their fleet and one new, were upgraded to include state-of-the art monitoring and sampling capacities so that air samples can be pulled and reportable in minutes instead of hours or weeks. The systems can sample or look for up to 1,000 compounds. A brief video of a 10-minute mobile sampling run on the Joe Fulton Corridor during an event showed numerous benzine samplings done and recorded in that 10-minute time period. Tom shared that the benefit of the program is that information is collected and usable immediately, and if there is a pollution event, the monitor can go to the pollution instead of the waiting for the pollution to go in the specific direction of a monitor and hit the monitor.

Gretchen closed the meeting by informing the group that the next meeting will be held in early January and will include a final ozone season 2020 report and impact on 2021 and that the transition working committee will continue to work on meeting transition milestones and bring an update to the group.

ATTACHMENT 4

CLEAN FLEET EVENT SUMMARY

Event Report

From 5/1/2019
To 12/31/2019

Report Date 3/3/2020

Event Information				Vehicle Count			Voucher Issues			Fleet Issues			Vehicles	
Date	Event	Location	Time	Private	Fleet	Total	EVAP	Tailpipe	DTC	EVAP	Tailpipe	DTC	Dirty	Clean
5/14/2019	Autocheck	La Palmera	9:00 AM	9	0	9	0	0	2	0	0	0	2	7
5/16/2019	Autocheck	La Palmera	9:00 AM	2	0	2	0	0	0	0	0	0	0	2
5/21/2019	Autocheck	La Palmera	9:00 AM	8	0	8	0	0	1	0	0	0	1	7
5/23/2019	Autocheck	La Palmera	9:00 AM	4	0	4	0	0	0	0	0	0	0	4
5/28/2019	Autocheck	La Palmera	9:00 AM	7	0	7	0	0	1	0	0	0	1	6
5/30/2019	Autocheck	La Palmera	9:00 AM	7	0	7	1	0	0	0	0	0	1	6
6/11/2019	Autocheck	Tamucc	9:40 AM	1	0	1	0	0	1	0	0	0	1	0
6/14/2019	Autocheck	Garcia Center	7:30 AM	13	0	13	2	0	2	0	0	0	4	9
6/18/2019	Autocheck	TAMU-CC Island Dr.	9:00 AM	4	0	4	0	0	0	0	0	0	0	4
6/28/2019	Autocheck	Garcia Center	3:30 PM	10	0	10	2	0	4	0	0	0	6	4
7/13/2019	Autocheck	American Bank Center	9:00 AM	8	0	8	0	0	1	0	0	0	1	7

Event Information				Vehicle Count			Voucher Issues			Fleet Issues			Vehicles	
Date	Event	Location	Time	Private	Fleet	Total	EVAP	Tailpipe	DTC	EVAP	Tailpipe	DTC	Dirty	Clean
7/20/2019	FUMC Autocheck	FUMC Health Fair Portland	9:00 AM	20	0	20	1	0	4	0	0	0	4	16
7/27/2019	Autocheck	American Bank Center	10:00 AM	21	0	21	3	0	2	0	0	0	5	16
8/17/2019	Autocheck	Moody High School	10:00 AM	18	0	18	7	0	8	0	0	0	11	7
8/26/2019	Autocheck	TAMU-CC Island Dr.	10:00 AM	2	0	2	0	0	0	0	0	0	0	2
8/29/2019	Autocheck	Garcia Center	1:00 PM	5	0	5	0	0	0	0	0	0	0	5
9/9/2019	Autocheck	TAMU-CC Island Dr.	10:00 AM	3	0	3	0	0	1	0	0	0	1	2
9/16/2019	Autochek	Del Mar West Campus	1:00 PM	2	0	2	0	0	0	0	0	0	0	2
9/16/2019	Motor Monday	TAMU-CC Island Dr.	10:00 AM	1	0	1	0	0	0	0	0	0	0	1
9/23/2019	Autocheck	TAMU-CC Island Dr.	10:00 AM	3	0	3	1	0	1	0	0	0	2	1
9/26/2019	Autocheck	Garcia Center	1:00 PM	8	0	8	1	0	4	0	0	0	4	4
9/30/2019	AUTOCHECK	TAMU-CC Island Dr.	10:00 AM	3	0	3	1	0	2	0	0	0	2	1
10/4/2019	Autocheck	Whataburger Field	11:00 AM	60	1	61	17	0	21	0	0	0	27	34

Event Information				Vehicle Count			Voucher Issues			Fleet Issues			Vehicles	
Date	Event	Location	Time	Private	Fleet	Total	EVAP	Tailpipe	DTC	EVAP	Tailpipe	DTC	Dirty	Clean
10/23/2019	Autocheck	Garcia Center	2:00 PM	10	0	10	0	0	0	0	0	0	0	10
11/4/2019	Autocheck	Flint Hills	9:00 AM	4	0	4	2	0	0	0	0	0	2	2
11/5/2019	AUTOCHECK	Flint Hills	9:00 AM	7	0	7	0	0	0	0	0	0	0	7
11/6/2019	AUTOCHECK	Flint Hills	9:00 AM	5	0	5	0	0	0	0	0	0	0	5
11/7/2019	Autocheck	Flint Hills	9:00 AM	4	0	4	1	0	0	0	0	0	1	3
11/25/2019	Autocheck	TAMU-CC Island Dr.	11:00 AM	4	0	4	1	0	0	0	0	0	1	3
12/12/2019	Autocheck	Garcia Center	2:30 PM	11	0	11	1	0	1	0	0	0	2	9
12/18/2019	Autocheck	TAMU-CC Island Dr.	11:00 AM	1	0	1	0	0	0	0	0	0	0	1

Event Information				Vehicle Count			Voucher Issues			Fleet Issues			Vehicles	
Date	Event	Location	Time	Private	Fleet	Total	EVAP	Tailpipe	DTC	EVAP	Tailpipe	DTC	Dirty	Clean

Totals

Events
31

Total Vehicle Count			Total Voucher Issues			Total Fleet Issues		Vehicles	
Private	Fleet	Total	EVAP	Tailpipe	DTC	EVAP	Repairs	"Dirty"	"Clean"
265	1	266	41	0	56	0	0	79	187

ATTACHMENT 5

CLEAN FLEET EMISSIONS REDUCTIONS DATA

Post Repair Emissions Summary Report

From 5/1/2019
To 12/31/2019
Report Run: Tuesday, January 21, 2020

Invoice Date	V#		Pre-Repair g/mi HC	Pre-Repair g/mi NOx	Pre-Repair g/mi CO	Post-Repair g/mi HC	Post-Repair g/mi NOx	Post-Repair g/mi CO	Annual Reductions lbs/yr HC	Annual Reductions lbs/yr NOx	Annual Reductions lbs/yr CO	Repairs	DTC	EVAP	Pipe
6/21/2019	640	Left	0.35	0	3.38	0.74	0	0.17	-12.3	0	99.18	Catalytic Converter Replaced, Mass Air Flow Sensor	☑	☐	☐
		Right													
6/21/2019	645	Left	0.44	0.02	8.78	0.97	0	0.22	-16.4	0.74	264.2	Idle Air Control Valve, MAF or MAP Sensor Replaced, Spark Plugs Replaced	☑	☐	☐
		Right													
7/2/2019	639	Left	0.07	0.3	86	0.3	0	49.3	-7.15	9.38	1132.64	MAF or MAP Sensor Replaced, Spark Plugs Replaced	☑	☐	☐
		Right													
7/17/2019	649	Left	0.77	0.04	6.33	0	0.03	0	23.74	0.5	195.24	IgnitionCoil, Spark Plugs Replaced	☑	☐	☐
		Right													
7/26/2019	654	Left	0	0	0	0.76	0	0.17	-23.5	0	-5.33	Timing or Camshaft Position	☑	☐	☐
		Right													

Invoice Date	V#		Pre-Repair g/mi HC	Pre-Repair g/mi NOx	Pre-Repair g/mi CO	Post-Repair g/mi HC	Post-Repair g/mi NOx	Post-Repair g/mi CO	Annual Reductions lbs/yr HC	Annual Reductions lbs/yr NOx	Annual Reductions lbs/yr CO	Repairs	DTC	EVAP	Pipe
7/31/2019	652	Left	0.13	0	0							Catalytic Converter Replaced	☑	☐	☐
		Right													
8/1/2019	653	Left	0.06	0.03	0.62							Evap System repair, Spark Plugs Replaced	☑	☑	☐
		Right													
8/21/2019	657	Left	0	0	0	0.67	0	0.15	-20.8	0.15	-4.72	Catalytic Converter Replaced, Spark Plugs Replaced	☑	☐	☐
		Right													
9/5/2019	660	Left	0.15	0	0.3	0	0	0	4.73	0	9.12	Injector Replaced	☑	☐	☐
		Right													
9/9/2019	664	Left	0.63	0.03	0	1.09	0	0.25	-14.4	0.89	-7.67	EGR Valve Repaired, Exhaust Leak Repaired	☑	☐	☐
		Right													
9/11/2019	667	Left	0.2	0.01	26.67	0	0	0	6.09	0.21	823.29	Spark Plugs Replaced	☑	☐	☐
		Right													

Invoice Date	V#		Pre-Repair g/mi HC	Pre-Repair g/mi NOx	Pre-Repair g/mi CO	Post-Repair g/mi HC	Post-Repair g/mi NOx	Post-Repair g/mi CO	Annual Reductions lbs/yr HC	Annual Reductions lbs/yr NOx	Annual Reductions lbs/yr CO	Repairs	DTC	EVAP	Pipe
9/19/2019	671	Left	0.06	0.11	5.93	0.01	0	0	1.49	3.27	183.14	Evap System repair, Spark Plugs Replaced, Valve Cover Gasket Set	☑	☑	☐
		Right													
9/23/2019	668	Left	0	0	0	0	0	0	0	0	0	IgnitionCoil, Spark Plugs Replaced	☑	☐	☐
		Right													
10/8/2019	691	Left	0	0	0	2.54	0.02	2.34	-78.3	-0.35	-72.26	Gas Cap Replaced, O2 Sensor Replaced	☑	☑	☐
		Right													
10/10/2019	679	Left	0.16	0	0	0.56	0	1.24	-12.4	0	-38.35	EGR Valve Repaired, O2 Sensor Replaced	☑	☐	☐
		Right													
10/10/2019	690	Left	0.69	0.08	6.7	1.45	0.05	1.34	-23.2	0.91	165.47	Catalytic Converter Replaced, Spark Plug Wires Replaced, Spark Plugs Replaced	☑	☐	☐
		Right													
10/9/2019	692	Left	0	0.84	0	0	1.28	0	-0.12	-13.6	0	Air Intake Sensor Replace, MAF or MAP Sensor Replaced, Spark Plugs Replaced	☑	☐	☐
		Right													

Invoice Date	V#		Pre-Repair g/mi HC	Pre-Repair g/mi NOx	Pre-Repair g/mi CO	Post-Repair g/mi HC	Post-Repair g/mi NOx	Post-Repair g/mi CO	Annual Reductions lbs/yr HC	Annual Reductions lbs/yr NOx	Annual Reductions lbs/yr CO	Repairs	DTC	EVAP	Pipe
10/15/2019	681	Left	0	0.13	0.52	0	0.06	0.93	0	1.97	-12.47	Distributor Cap & Rotor Replaced, O2 Sensor Replaced, Spark Plug Wires Replaced, Spark Plugs Replaced	☑	☐	☐
		Right													
10/18/2019	702	Left	0	0.05	0	2.89	0.15	12.6	-89.1	-3.09	-388.74	Distributor Cap & Rotor Replaced, Fuel Filter, Spark Plugs Replaced	☑	☐	☐
		Right													
10/23/2019	686	Left	0	0	0	0	0	1.86	0	0	-57.55	O2 Sensor Replaced, Spark Plugs Replaced	☑	☐	☐
		Right													
11/20/2019	709	Left	0	0	0	1.11	0	0	-34.3	0	0	Ignition Coil Replaced, O2 Sensor Replaced, Spark Plugs Replaced	☑	☐	☐
		Right													
10/28/2019	678	Left	0	0.03	0	2.43	0.12	11.1	-75.1	-2.78	-342.46	Catalytic Converter Replaced, Fuel Evaportive Canistr Replace	☑	☑	☐
		Right													
12/19/2019	703	Left	0	0.09	0	0	0.01	0	0	2.4	0	Canister Purge Solenoid, O2 Sensor Replaced	☑	☐	☐
		Right													

Invoice Date	V#		Pre-Repair g/mi HC	NOx	CO	Post-Repair g/mi HC	NOx	CO	Annual Reductions lbs/yr HC	NOx	CO	Repairs	DTC	EVAP	Pipe
11/8/2019	670	Left	1.12	0	12.27	1.02	0	11.24	2.88	0	31.55	Evaporator Purge Valve, Fuel Evaportive Canistr Replace, Gas Cap Replaced	☑	☑	☐
		Right													

Invoice Date	V#	Pre-Repair g/mi HC	NOx	CO	Post-Repair g/mi HC	NOx	CO	Annual Reductions lbs/yr HC	NOx	CO	Repairs	DTC	EVAP	Pipe

Repair Count

EVAP Repairs (Includes Gas Caps)

Invoice Date	VoucherID
5/21/2019	602
5/23/2019	644
6/20/2019	643
7/9/2019	641
7/15/2019	642
8/1/2019	653
8/1/2019	655
9/3/2019	665
9/12/2019	666
9/19/2019	671
10/8/2019	621
10/8/2019	672
10/8/2019	691
10/10/2019	705
10/15/2019	680
10/15/2019	688
10/17/2019	677
10/18/2019	675

HC includes Gas Caps + Other EVAP Repairs

Annual Reductions lbs/yr

HC	NOx	CO
3681.94	0.59	1974.27

Non-EVAP Repairs:

24

Invoice Date	V#	Pre-Repair g/mi HC	Pre-Repair g/mi NOx	Pre-Repair g/mi CO	Post-Repair g/mi HC	Post-Repair g/mi NOx	Post-Repair g/mi CO	Annual Reductions lbs/yr HC	Annual Reductions lbs/yr NOx	Annual Reductions lbs/yr CO	Repairs	DTC	EVAP	Pipe
10/22/2019	673													
10/24/2019	685													
10/28/2019	678													
10/28/2019	710													
11/6/2019	650													
11/8/2019	670													
11/22/2019	695													
11/22/2019	699													
12/13/2019	630													

Gas Cap and EVAP Repairs	27
HC Reductions lbs/yr	4050

ATTACHMENT 6

POLLUTION PREVENTION PARTNERSHIP EDUCATION/OUTREACH SUMMARY

Meetings

Tuesday, January 21, 2020
1:58:27 PM

Date	Time	Location	Group or Event	Topic	Presentation	~Attendance
5/7/2019	10:30:00 AM	Fire Department Headquarters Building	LEPC	Community Air Quality Activities Pollution Prevention Partnership (P3): AutoCheck - CleanFleet - SmartWay	LEPC Community Air Quaility Action Pollution Prevention Partnership.pptx	42
5/22/2019	3:00:00 PM	Corpus Christi Development Services and Fire Department Headquarters Building	Corpus Christi Air Quality Group	2019 status of ozone attainment. Efforts to restore air program funding via Legislative Rider funding. •Dr. Laurie Haws with Tox Strategies provided a presentation on the new EPA Refinery Sector Rule (RSR)		22
7/13/2019	9:00:00 AM	American Bank Center	Nueces County Medical Society Health Fair	Ozone season education. Ozone prevention, car maintenance, fuel efficiency and AutoCheck promotion. One on one conversations		162
7/20/2019	9:00:00 AM	FUMC Portland	First United Methodist Church Community Health Fair	Ozone season education. Ozone prevention, car maintenance, fuel efficiency and AutoCheck promotion. One on one conversations		61
7/26/2019	11:30:00 AM	Del Mar College West Campus	Nueces County Community Action Health Advisory	AutoCheck networking and promotion. Announcement finding new venues.		36
7/27/2019	10:00:00 AM	American Bank Center	CCPolice Department Operation Safe Return Health Fair	Ozone Prevention and AutoCheck Promotion		406

Date	Time	Location	Group or Event	Topic	Presentation	~Attendance
8/17/2019	10:00:00 AM	Moody HS	L.E.A.D. First Health Fair	Ozone education and AutoCheck promotion for emissions testing and repair program.		650
9/25/2019	3:00:00 PM	TAMU-CC	Environmental Council	Ozone Actions	2019-09 TAMUCC environmental Council.pptx	32
10/16/2019	1:00:00 PM	Webinar	SmartWay National Affiliate Discussion	SmartWay Team and our Regional Representatives about the actions you take to raise awareness on freight sustainability.		0
10/29/2019	11:30:00 AM	North Shore Country Club Portland	CC Air quality group	Local status of ozone attainment ▫What is local - airshed ▫Importance of ozone attainment, Cost of non-attainment studies, ▫Voluntary measures and commitments to reduce emissions		45
10/31/2019	11:00:00 AM	Flint Hills Training Center	Flint Hills Employee Health and Safety Fair	Ozone reduction strategies and AutoCheck Promotion	One-on-One Discussions	117
11/2/2019	12:00:00 PM	American Collision	Scouts Merit Badge Workshop	Tire Care and Maintenance	Tire Care and Maintenance	35
12/12/2019	3:00:00 PM	Port Administration	CC Air Quality Group	The 2019 ozone season impact. status of a study being performed by Dr. Jim Lee at Texas A&M University-Corpus Christi, update to the group on the status of legislative funding. Update on work with area Economic Development Corporations (EDCs)		25

13	Meetings and Informational Events	Networking and Informational Contacts	1633

ATTACHMENT 7

EMISSION REDUCTION RESPONSE SHEETS AND LETTERS

April 13, 2021

Ms. Gretchen Arnold
Chair, Coastal Bend Air Quality Partnership
121 Atlantic Street
Corpus Christi, TX 78404

Re: Commitment to Air Quality Improvements
NuStar Logistics, L.P.- Central West South Region

Dear Ms. Arnold:

NuStar Logistics, L.P. remains committed to supporting efforts to maintain and improve air quality in the Corpus Christi Urban Airshed. Commitment to achieving environmental excellence continues to be a top priority at NuStar and is included in the first of our company's Guiding Principles and is exemplified by NuStar personnel.

NuStar will promote continued improvements in the air quality of the area by voluntarily committing to the following measures:

- Notify South Texas employees of Ozone Action Days and offer suggestions for minimizing mobile sources,
- When possible, schedule maintenance activities like mowing and painting around Ozone Action Days,
- Utilize low VOC solvents, paints, and adhesives when possible,
- Receive ozone alerts through AirNow and TCEQ,
- Utilize teleconference when feasible to minimize vehicular traffic during Ozone Action Days and,
- Continued participation in the Coastal Bend Air Quality Partnership.

If you have any questions, please contact me at (361) 249-9402 or by email at wes.gore@nustarenergy.com.

Sincerely,

Wes Gore

Wes Gore
VP and GM of NuStar Energy Central West South Region

Corpus Christi Liquefaction, LLC
622 Hwy 35
Gregory, TX 78359
phone: 361.977.1000

April 15, 2021

Ms. Gretchen Arnold
Director, Coastal Bend Air Quality Partnership

RE: Commitment to Air Quality Improvements
Corpus Christi Liquefaction

Dear Ms. Arnold:

Corpus Christi Liquefaction, LLC (CCL) is committed to supporting the efforts to maintain and improve air quality in the Corpus Christi Urban Airshed and surrounding communities. CCL will promote the following voluntary reductions to support continued air quality improvements in the region:

Staying Informed and Communicating

- Register with AirNow to receive email or text alerts for ozone action days.
- Register with TCEQ to receive weekly ozone forecasts.

Vehicle and Equipment Emissions

- Provide resources for your employees to telecommute, particularly on elevated ozone days.
- Provide resources for CCL employees to teleconference.
- Provide park and ride or shuttle service for CCL employees.
- Use low sulfur diesel fuel for our diesel fleet and all diesel operated equipment.

Operations

- Recommend the use of low VOC paints, solvents and adhesives.
- Require vendors and contractors to properly dispose of items containing VOC chemicals.
- Reccommend vendors and contractors to use scrubbers on VOC chemical extraction processes.
- Utilization of IR cameras to detect and repair fugitive emissions and preform inspections.
- Perform routine inspections for leaks and fugitive emissions
- Use of vapor recovery or incineration.

In addition, the following air emission reduction commitments are planned for 2021:

- CCL Site-wide communication will be sent to all CCL Employees to remind them of emissions reduction policies, recommendations and local ozone action days.
- Communicate local Ozone Action Days to employees.

If you have any questions regarding this information, please contact Jessica Muennink, HSE Manager, at (361) 977-1342 or jessica.muennink@cheniere.com.

Sincerely,

Ari Aziz
Vice President and General Manager

VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED
2020

Staying Informed and Communicating

- ✓ Register with AirNow to receive email or text alerts for ozone action days. http://www.enviroflash.info/signup.cfm
- ✓ Register with TCEQ to receive weekly ozone forecasts. Forecasts are provided via email, text or social media and can be easily forwarded throughout your workplace. You can register at this link: https://service.govdelivery.com/accounts/TXTCEQ/subscriber/new
- ✓ Communicate elevated ozone forecasts to employees, vendors and contractors and remind them of your emission reduction policies and recommendations.
- ✓ Other Provide ozone education in routine personnel health and safety training

Vehicle and Equipment Emissions

- o Require that all on and off road construction equipment used during the facility construction process be equipped with pollution prevention devices, practice anti idling, and utilize low sulfur diesel
- o Provide resources and offer incentives for your employees to carpool, particularly on elevated ozone days – even if it's just for lunch.
- o Provide resources and offer incentives for your employees to use alternative modes of transportation (bus, bike, walk), particularly on elevated ozone days.
- o Provide resources for your employees to telecommute, particularly on elevated ozone days.
- ✓ Provide resources for your employees to teleconference.
- ✓ Provide flexible work schedules to remove vehicles from the road during congested times.
    - o Information including templates and tools to provide employee commute resources can be found at https://www.bestworkplaces.org/
- o Provide park and ride or shuttle service for your employees.
- o Participate in the RTA van pool program.
    - o Local van pool, shuttle and park and ride opportunities can be found at https://www.ccrta.org/rider-info/programs/
- ✓ Provide an opportunity for your employees to have their vehicles emission tested with AutoCheck. Call 825-3070.
- o Have your fleet emissions tested via AutoCheck and perform necessary repairs to minimize fleet emissions.
- ✓ Have an anti-idle policy for all construction, contractor, delivery and freight vehicles.
- ✓ Have an anti-idle policy for your fleet.
    - o Information including templates and tools to establish an anti-idle policy can be found at https://cleancities.energy.gov/technical-assistance/idlebox/
- ✓ Use alternative fueled vehicles and equipment.
- o Repower or replace older engines in your fleet.
- o Install filter traps and DOCs on your diesel fleet.
- o Perform diesel retrofits.
- ✓ Use low sulfur diesel fuel for your diesel fleet.
- o Other _____

Operations.

- ✓ Postpone non-essential deliveries on elevated ozone days.
- ✓ Postpone ground crew activities on elevated ozone days.
- ✓ Postpone surface coating operations on elevated ozone days.
- ✓ Postpone any non-essential activity that emits VOCs or NOx on elevated ozone days.
- ✓ Require vendors to use low VOC paints, solvents and adhesives.
- ✓ Require vendors and contractors to properly dispose of rags, buckets, drums, etc. that contain VOC chemicals.
- ✓ Require vendors and contractors to use scrubbers on VOC chemical extraction processes.
- ✓ Implement a flare reduction program.
- ✓ Utilization of IR cameras to detect and repair fugitive emissions.
- ✓ Perform routine inspections for leaks and fugitive emissions.
- ✓ Installation of low NOx burners on boilers or heaters.
- ✓ Installation thermal oxidizers on storage tanks (during maintenance activities).
- ✓ Use of low NOx water heaters.
- ✓ Use of flue gas recirculation.
- ✓ Use of vapor recovery or incineration.
- ✓ Installation of additional seals and liners on storage tanks.
- ✓ Other proactive inspection of storage tanks to check for leaks and fugitive emissions

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED IN 2020

- ✓ Benzene Reduction Program – initiated project to connect storage tank to vapor control system
- ✓ Initiated project to replace burners on three boilers with new Ultra Low NOx burners
- ✓ Installed field GC unit for real-time data to mitigate emissions faster

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES COMMITTED TO FOR 2021

- ✓ Benzene Reduction Program – continue project to connect additional storage tanks to vapor control system
- ✓ Develop Climate Action Plan for overall carbon footprint reduction of GHG
- ✓ Fugitive emissions reduction

Veronica Fuentes CITGO Refining and Chemicals Company, L.P. (Corpus Christi Refinery) April 13, 2021

Signature Organization Date

VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED 2020

Staying Informed and Communicating

- ✓ Register with AirNow to receive email or text alerts for ozone action days. http://www.enviroflash.info/signup.cfm
- ✓ Register with TCEQ to receive weekly ozone forecasts. Forecasts are provided via email, text or social media and can be easily forwarded throughout your workplace. You can register at this link: https://service.govdelivery.com/accounts/TXTCEQ/subscriber/new
- ✓ Communicate elevated ozone forecasts to employees, vendors and contractors and remind them of your emission reduction policies and recommendations.
- Other _____

Vehicle and Equipment Emissions

- Require that all on and off road construction equipment used during the facility construction process be equipped with pollution prevention devices, practice anti idling, and utilize low sulfur diesel
- ✓ Provide resources and offer incentives for your employees to carpool, particularly on elevated ozone days – even if it's just for lunch.
- Provide resources and offer incentives for your employees to use alternative modes of transportation (bus, bike, walk), particularly on elevated ozone days.
- Provide resources for your employees to telecommute, particularly on elevated ozone days.
- ✓ Provide resources for your employees to teleconference.
- Provide flexible work schedules to remove vehicles from the road during congested times.
    - Information including templates and tools to provide employee commute resources can be found at https://www.bestworkplaces.org/
- Provide park and ride or shuttle service for your employees.
- Participate in the RTA van pool program.
    - Local van pool, shuttle and park and ride opportunities can be found at https://www.ccrta.org/rider-info/programs/
- ✓ Provide an opportunity for your employees to have their vehicles emission tested with AutoCheck. Call 825-3070.
- ✓ Have your fleet emissions tested via AutoCheck and perform necessary repairs to minimize fleet emissions.
- Have an anti-idle policy for all construction, contractor, delivery and freight vehicles.
- Have an anti-idle policy for your fleet.
    - Information including templates and tools to establish an anti-idle policy can be found at https://cleancities.energy.gov/technical-assistance/idlebox/
- ✓ Use alternative fueled vehicles and equipment.
- ✓ Repower or replace older engines in your fleet.
- Install filter traps and DOCs on your diesel fleet.
- Perform diesel retrofits.
- ✓ Use low sulfur diesel fuel for your diesel fleet.
- Other _____

Operations.

- o Postpone non-essential deliveries on elevated ozone days.
- o Postpone ground crew activities on elevated ozone days.
- o Postpone surface coating operations on elevated ozone days.
- o Postpone any non-essential activity that emits VOCs or NOx on elevated ozone days.
- o Require vendors to use low VOC paints, solvents and adhesives.
- o Require vendors and contractors to properly dispose of rags, buckets, drums, etc. that contain VOC chemicals.
- o Require vendors and contractors to use scrubbers on VOC chemical extraction processes.
- o Implement a flare reduction program.
- o Utilization of IR cameras to detect and repair fugitive emissions.
- o Perform routine inspections for leaks and fugitive emissions.
- o Installation of low NOx burners on boilers or heaters.
- o Installation thermal oxidizers on storage tanks.
- o Use of low NOx water heaters.
- o Use of flue gas recirculation.
- o Use of vapor recovery or incineration.
- o Installation of additional seals and liners on storage tanks.
- o Other _____

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED IN 2020

- o _____
- o _____

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES COMMITTED TO FOR 2021

- o Provide Auto Check opportunities for employees
- o Provide Auto check opportunity for Fleet

Shawn Bailey, Synergy 4/16/2021

Signature Organization Date

VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED
2020

Staying Informed and Communicating

- ✓ Register with AirNow to receive email or text alerts for ozone action days. http://www.enviroflash.info/signup.cfm
- ✓ Register with TCEQ to receive weekly ozone forecasts. Forecasts are provided via email, text or social media and can be easily forwarded throughout your workplace. You can register at this link: https://service.govdelivery.com/accounts/TXTCEQ/subscriber/new
- ✓ Communicate elevated ozone forecasts to employees, vendors and contractors and remind them of your emission reduction policies and recommendations.
- ✓ Other - Provide ozone education in your routine personnel health and safety training.

Vehicle and Equipment Emissions

- ○ Require that all on and off road construction equipment used during the facility construction process be equipped with pollution prevention devices, practice anti idling, and utilize low sulfur diesel
- ○ Provide resources and offer incentives for your employees to carpool, particularly on elevated ozone days – even if it's just for lunch.
- ○ Provide resources and offer incentives for your employees to use alternative modes of transportation (bus, bike, walk), particularly on elevated ozone days.

- ✓ Provide resources for your employees to telecommute, particularly on elevated ozone days.
- ✓ Provide resources for your employees to teleconference.
- ✓ Provide flexible work schedules to remove vehicles from the road during congested times.
  Information including templates and tools to provide employee commute resources can be found at https://www.bestworkplaces.org/
  - ○ Provide park and ride or shuttle service for your employees.
  - ○ Participate in the RTA van pool program.

    Local van pool, shuttle and park and ride opportunities can be found at https://www.ccrta.org/rider-info/programs/

  - ○ Provide an opportunity for your employees to have their vehicles emission tested with AutoCheck. Call 825-3070.
  - ○ Have your fleet emissions tested via AutoCheck and perform necessary repairs to minimize fleet emissions.
- ✓ Have an anti-idle policy for all construction, contractor, delivery and freight vehicles.
- ✓ Have an anti-idle policy for your fleet.

  Information including templates and tools to establish an anti-idle policy can be found at https://cleancities.energy.gov/technical-assistance/idlebox/

  - ○ Use alternative fueled vehicles and equipment.
- ✓ Repower or replace older engines in your fleet.
- ✓ Install filter traps and DOCs on your diesel fleet.
- ✓ Perform diesel retrofits.
- ✓ Use low sulfur diesel fuel for your diesel fleet.

Operations.

- Postpone non-essential deliveries on elevated ozone days.

✓ Postpone ground crew activities on elevated ozone days.
✓ Postpone surface coating operations on elevated ozone days.
✓ Postpone any non-essential activity that emits VOCs or NOx on elevated ozone days.
✓ Require vendors to use low VOC paints, solvents and adhesives.
✓ Require vendors and contractors to properly dispose of rags, buckets, drums, etc. that contain VOC chemicals.
✓ Require vendors and contractors to use scrubbers on VOC chemical extraction processes.
✓ Implement a flare reduction program.

- Utilization of IR cameras to detect and repair fugitive emissions.

✓ Perform routine inspections for leaks and fugitive emissions.
✓ Installation of low NOx burners on boilers or heaters.
✓ Installation thermal oxidizers on storage tanks.

- Use of low NOx water heaters.

✓ Use of flue gas recirculation.
✓ Use of vapor recovery or incineration.
✓ Installation of additional seals and liners on storage tanks.
✓ Other - Installation of scrubbers.
✓ Other - Continuous and routine inspection of storage tanks for fugitive emissions.
✓ Other - Utilize Flare gas Analyzers.

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED IN 2020

✓ Support Corporate Sustainable Development Goals and Objectives.
✓ Energy Use - Encourage employees to turn off lights in rooms and computers that are not in use.
✓ Energy Use - Set thermostats to a comfortable, but efficient level.

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES COMMITTED TO FOR 2021

✓ Support Occidental Petroleum Corporation efforts as a global leader for permanent Carbon storage and sequestration solutions.

Aron Baggett Manager Environmental Occidental Chemical Corporation Ingleside Facility 04/12/2021

Signature Organization Date

Communications:

- Registered to receive ozone elevation notifications
- Communicate emission reduction recommendations to employees and vendors
- Provide ozone education to personnel
- Adjust delivery schedules if possible to reduce excess driving

Operations:

- Flare reduction/minimization program
- Utilization of IR cameras for inspections
- Routine inspections for leaks and fugitive emissions
- Use of Low NOx burners
- Use of CEMS analyzers to monitor NOx and CO emissions
- Use of low emitting tank roofs
- Regular tune-ups of boilers and process heaters
- Fired source alarm controls to optimize combustion and limit firing rate
- Flare gas analyzers
- Installation of scrubbers and carbon canisters on frac tanks and vacuum trucks
- Use of vapor recovery
- Identification and repair of steam leaks

Maintenance Activities:

- Delay painting and lawn mowing during ozone action days
- Avoid use of diesel air compressors when possible
- Replacement of diesel driven air compressor with electric motor driven air compressor
- Reduce the use of engine driven equipment as possible;
- Limit refueling of plant vehicles between 6:00 AM and 2:00 PM when possible
- Encourage carpooling to and inside the plant if possible

Office Energy Efficiency:

- Encourage employees to turn off lights in rooms that are not in use
- Set office equipment in low power mode when possible
- Set thermostats to a comfortable but efficient level
- Improve insulation for heated sources

VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED
2020

Staying Informed and Communicating

- ✓ Register with AirNow to receive email or text alerts for ozone action days. http://www.enviroflash.info/signup.cfm
- ✓ Register with TCEQ to receive weekly ozone forecasts. Forecasts are provided via email, text or social media and can be easily forwarded throughout your workplace. You can register at this link: https://service.govdelivery.com/accounts/TXTCEQ/subscriber/new
- o Communicate elevated ozone forecasts to employees, vendors and contractors and remind them of your emission reduction policies and recommendations.
- o Other _____

Vehicle and Equipment Emissions

- o Require that all on and off road construction equipment used during the facility construction process be equipped with pollution prevention devices, practice anti idling, and utilize low sulfur diesel
- o Provide resources and offer incentives for your employees to carpool, particularly on elevated ozone days – even if it's just for lunch.
- o Provide resources and offer incentives for your employees to use alternative modes of transportation (bus, bike, walk), particularly on elevated ozone days.
- o Provide resources for your employees to telecommute, particularly on elevated ozone days.
- ✓ Provide resources for your employees to teleconference.
- ✓ Provide flexible work schedules to remove vehicles from the road during congested times.
  - o Information including templates and tools to provide employee commute resources can be found at https://www.bestworkplaces.org/
- o Provide park and ride or shuttle service for your employees.
- o Participate in the RTA van pool program.
  - o Local van pool, shuttle and park and ride opportunities can be found at https://www.ccrta.org/rider-info/programs/
- o Provide an opportunity for your employees to have their vehicles emission tested with AutoCheck. Call 825-3070.
- o Have your fleet emissions tested via AutoCheck and perform necessary repairs to minimize fleet emissions.
- o Have an anti-idle policy for all construction, contractor, delivery and freight vehicles.
- o Have an anti-idle policy for your fleet.
  - o Information including templates and tools to establish an anti-idle policy can be found at https://cleancities.energy.gov/technical-assistance/idlebox/
- o Use alternative fueled vehicles and equipment.
- ✓ Repower or replace older engines in your fleet.
- o Install filter traps and DOCs on your diesel fleet.
- o Perform diesel retrofits.
- ✓ Use low sulfur diesel fuel for your diesel fleet.
- ✓ Other Use of an onsite fuel pump for fleet vehicles

Operations.

- o Postpone non-essential deliveries on elevated ozone days.
- ✓ Postpone ground crew activities on elevated ozone days.
- o Postpone surface coating operations on elevated ozone days.
- o Postpone any non-essential activity that emits VOCs or NOx on elevated ozone days.
- ✓ Require vendors to use low VOC paints, solvents and adhesives.
- ✓ Require vendors and contractors to properly dispose of rags, buckets, drums, etc. that contain VOC chemicals.
- ✓ Require vendors and contractors to use scrubbers on VOC chemical extraction processes.
- ✓ Implement a flare reduction program.
- ✓ Utilization of IR cameras to detect and repair fugitive emissions.
- ✓ Perform routine inspections for leaks and fugitive emissions.
- ✓ Installation of low NOx burners on boilers or heaters.
- ✓ Installation thermal oxidizers on storage tanks.
- o Use of low NOx water heaters.
- ✓ Use of flue gas recirculation.
- ✓ Use of vapor recovery or incineration.
- ✓ Installation of additional seals and liners on storage tanks.
- ✓ Other Onsite dining.

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED IN 2020

- ✓ VOC sensor installation to provide continuous monitoring data for digital monitoring system to enhance safety and reduce emissions. Operational in the Mid-Crude and Metaxylene Units at the West Refinery.

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES COMMITTED TO FOR 2021

- ✓ Continue VOC sensor installation to provide continuous monitoring data for a digital monitoring system that will enhance safety and reduce emissions across the West Refinery and East Refinery.

Dana S. Perez | Flint Hills Resources Corpus Christi, LLC | 4.14.2021

Signature | Organization | Date

VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED 2020

Staying Informed and Communicating

- The Corpus Christi MPO participated in the activities of the Coastal Bend Air Quality Partnership to stay connected to their efforts related to air quality strategies.
- The MPO staff continued to scan air quality related articles, reports and presentations by various state and federal agencies to look for opportunities for local actions.
- The Corpus Christi MPO continually list the Corpus Christi Ozone Advance Annual reports from the Coastal Bend Air Quality Partnership on its Environment/Air Quality web page - https://www.corpuschristi-mpo.org/04_studies_eaq.html.

Vehicle and Equipment Emissions

- Provided resources and offer incentives for your employees to carpool, particularly on elevated ozone days.
- Provided resources and offered incentives for your employees to work remotely or use alternative modes of transportation (bus, bike, walk), particularly on elevated ozone days.
- Provided resources for your employees to telecommute, particularly on elevated ozone days.
- Provided resources for your employees to teleconference.
- Provided flexible work schedules to remove vehicles from the road during congested times.
    - Information including templates and tools to share with employees related to commute resources are found at https://www.bestworkplaces.org/.
- Provided an opportunity for your employees to have their vehicles emission tested with AutoCheck. Call 361-825-3070.

Operations

- Not applicable to the MPO.

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED IN 2020

- The Corpus Christi MPO staff supported regional planning to address mitigation of environmental, historic preservation, stormwater, and air quality impacts of transportation in alignment of environmentally related performance measures.
- Completed narrative and data contributions to the annual Ozone Advance and other regional reporting Documents.

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES COMMITTED TO FOR 2021

- Continue the registration with AirNow to receive email or text alerts for ozone action days. http://www.enviroflash.info/signup.cfm
- Continue the registration with TCEQ to receive weekly ozone forecasts. Link the forecasts on the Corpus Christi MPO website. Forecasts are provided via email, text or social media and will be forwarded throughout your workplace. Registered at the link: https://service.govdelivery.com/accounts/TXTCEQ/subscriber/new.
- Continue to communicate elevated ozone forecasts to employees, vendors and contractors and remind them of your emission reduction policies and recommendations.
- We will create and look to update and modify the Air Quality Information section to the Corpus Christi MPO website to enable visitors to the MPO information to be able to link to updated air quality reports and conditions.

- The Corpus Christi MPO staff will continue to support regional planning to address mitigation of environmental, historic preservation, stormwater, and air quality impacts of transportation in alignment of environmentally related performance measures.
- Complete narrative and data contributions to the annual Ozone Advance and other regional reporting Documents.
- The Corpus Christi MPO will participate in the activities of the Coastal Bend Air Quality Partnership to stay connected to their efforts related to air quality strategies.
- The MPO staff will continue to scan air quality related articles, reports and presentations by various state and federal agencies to look for opportunities for local actions.

Corpus Christi MPO 04/16/2021

Robert F. MacDonald Organization Date
Transportation Planning Director

County of Nueces

Department of Public Works

County Roads and Bridges
Engineering Services
Facilities Management
Environmental Enforcement
9*1*1 Addressing Program

Juan A.Pimentel, P.E.

Director of Public Works
Nueces County Engineer

March 12, 2021

Gretchen Arnold
Chair, Corpus Christi Air Quality Group
121 Atlantic St.
Corpus Christi, TX. 78404

Re: Nueces County Public Works Voluntary Air Emissions Reduction Measures-January 1, 2020-March 14, 2021

Dear Ms. Arnold:

This is a summary of the Nueces County Department of Public Works' (DPW) voluntary measures to reduce the County's ozone emissions with collateral benefit of reducing our carbon footprint. Our objectives are long term, and the measures achieve air emissions reductions of ozone precursors like VOCs and NOx in the most productive and effective manner in the countywide urban and suburban airsheds. Nueces County as a good neighbor, programmatically incorporated measures that are pragmatic, effective, practicable, sustained by good engineering and protective of life safety issues to proactively contribute to the total effort of the Ozone Taskforce to voluntarily reduce ozone and ozone precursor pollutant emissions through a combination of available technology and commonsense practices. This summary is for Ozone (Oxides of Nitrogen, NO composed of nitric oxide and nitrogen dioxide NO2; and volatile organic compounds, VOCs as the key precursors) reduction measures from Jan 1, 2020 through March 14, 2021. The report is formatted to address your response request criteria.

In cognizance of the recent episodic arctic cold weather in mid-February 2021, when the Texas Electricity Grid encountered extreme increases in electricity demand such that there was inadequate supply which resulted in power outages and adverse impacts on consumer life safety and equipment that relies on electric power. Thus it is most important that consumers conserve power by using electrical and fossil energy efficiently, effectively and wisely, by proactively using energy conservation measures, such as equipment replacement, retrofits and modifications to improve efficiency and conserve energy to do our part in reducing energy and power demand on the source (Electricity Generators), because the existing grid and power generation appeared to be inadequate in fulfilling the electricity demand during such adverse cold weather that is alien to a southern state like Texas. Conservation of energy allows us to use energy efficiently, sustain our needs and reduce our ozone emissions and carbon footprint.

Nueces County recognized the need to proactively conserve energy early on 2019 and 2020, when we redesigned, replaced, revamped and retrofitted our heaviest electricity consuming systems to improve efficiencies of our electricity consuming systems by tailoring their retrofit designs to make them capable of providing adequate electrical energy and power, and at the same time reduce our total load on the

electricity generators, which are the point sources of the carbon footprint for the Coastal Bend Urban and Suburban airsheds.

The DPW maintains a fleet of vehicles and equipment for routine maintenance of roads and bridges in the unincorporated areas of Nueces County using petroleum road base materials, fuels, lubricants and additives for road repair. We also provide civil construction and general MEP (Mechanical, Electrical and Plumbing) repair, modulation, maintenance services and technical assistance to over 50 County buildings which consume utilities (electricity, natural gas and water) for domestic consumption, and heating ventilation and air conditioning (HVAC) systems such as direct expansion, chilled water, rooftop and split systems. We are happy to state, our biggest buildings with chilled water HVAC systems are retrofitted with sequentially programmed (in effect a system that self modulates operations and sequences through Artificial Intelligence Controllers-fed continuous data to make continuous instantaneous decisions evaluating trends to make decisive corrections and over-rides) and thus conserve energy, and extend equipment life, with the ultimate target of reducing our carbon (fossil fuel dependent) footprint. Using real-time data to archive equipment behavior pattern and history, we estimate the useful effective life of major equipment (such as Courthouse Chillers) is near terminus, after which we design and fund replacement of obsolete and relatively inefficient equipment and their in-train devices to improve efficiency and significantly reduce the consumption of utilities that get power from the ultimate point source Power Plant (Electricity Generator) that relies on fossil fuels. This assures quantifiable reduction of fossil fuel consumption and ozone emissions at the source of power generation and is detailed under Section **V** of this report.

The following is a summary of Nueces County's Energy Conservation Efforts managed and executed by the Department of Public Works:

I. Staying Informed, Communicating and & Training:

The Director of Commissioners Court and Director of Commissioners Court and Public Information Officer Mr. Tyner Little and or his designee) has:

- Registered with AirNow to receive email or text alerts for ozone action days http://www.enviroflash.info/signup.cfm
- Registered with TCEQ (We are using the link: https://service.govdelivery.com/accounts/TXTCEQ/subscriber/new to receive weekly ozone forecasts that are provided via email, text or social media and which will be forwarded to the DPW Construction Engineer Mr. Perez, P.E. and immediately disseminated throughout our workplace by him and our head foreman Mr. Jerry Garcia under my direct oversight.

Public Works and other Departments' senior staff, and I track local media broadcasts, bulletins and advisories for elevated ozone alerts, which in turn are communicated to the head foreman for dissemination down the chain of command to field workers and technicians that everyone is notified.

II. Employees and Appropriate Training:

All employees, vendors and contractors are encouraged to voluntarily conduct activities that result in ozone and ozone precursor emissions reductions, without compromising safety, work output, quality or schedules, so our work is done in compliance of applicable Local and State Regulations and mandatory Texas Jail Standards (we maintain and operate Jails and Courts).

(i). Employees are encouraged to car pool, particularly on elevated ozone days, even for lunch.

County of Nueces

Department of Public Works

County Roads and Bridges
Engineering Services
Facilities Management
Environmental Enforcement
9*1*1 Addressing Program

Juan A.Pimentel, P.E.

Director of Public Works
Nueces County Engineer

(ii). Employees are encouraged to use alternative modes of transportation (bus, bike, walk), on ozone days.
(iii). Exempt employees have liberty to dress comfort casual.
(iv). Employees are encouraged to take advantage of the RTA van pool program if practicable.
(v). Pool cars are provided designated parking spots.
(vi). Informal ozone education/training is imparted during dialogue between supervisors and employees.

III. Contractors and Vendors

(i). Recommend minimal idling of vehicles by contractor and delivery vehicles.
(ii). Prioritize and schedule deliveries by reducing non-essential deliveries on elevated ozone days.
(iii). Recommend painters to use low VOC paints as practicable.
(iv). Require grounds crews to minimize operations on elevated ozone days.
(v). Recommend vendors and contractors to use low VOC solvents.
(vi). Recommend vendors and contractors to use low VOC adhesives.
(vii). Require vendors/contractors to properly dispose of rags, buckets, drums, etc. that contain VOC chemicals

IV. Fleet Vehicles

(i). We have alternate fueled (propane, CNG) vehicles in our fleet.
(ii). Periodically we emissions test our fleet to ensure it is well maintained.
(iii). Programmed and scheduled replacement of older units in fleet.
(iv). Replace or rehabilitate older engines in fleet.
(v). Recommend minimum idling of all fleet vehicles, with due consideration for public and employee safety.
(vi). Perform diesel retrofits upon need.
(vii). Our underground storage tanks (USTs) have low sulfur diesel for our fleet and off road equipment.
(viii). Our USTs are tested monthly for vapor releases under a TCEQ approved leak detection program to insure we minimize air emissions of VOCs as well as subsurface contamination from uncontrolled releases. Deficiencies are immediately corrected.

V. Mechanical Electrical and Other Non-Fleet Equipment

(i). All boilers that operate on natural gas fuel use low NOx burners.
(ii). Boilers/heaters undergo scheduled maintenance to keep them well tuned which reduces ozone emissions.
(iii). All of the HVAC chilled water systems (chillers, condensers, evaporators, cooling towers, AHUs, VAVs et al) located at the Courthouse-Jail, Juvenile Detention, and McKinzie Annex have been retrofitted with Energy Savings Controls like VFDs, Network Engines, Field Controllers, wireless transmitters on VAVs and AHUs, gauges, sensors, capacitor banks, water conservation devices and

sensors, solar water heater, solar photovoltaic electricity arrays, a wind turbine and a solar array at Central garage, to conserve energy which ultimately augments reduction of ozone related emissions from the point source (Electricity Generation Power Station). This was done under the State of Texas State Energy Conservation Office (SECO) recommended engineered equipment utility cost reduction measures (UCRMs), at a cost of about $ 18 million. Energy efficiency has resulted in quantifiable energy savings with emissions reductions of ozone precursors.

(iv) About 2 years back, we retrofitted 7 additional buildings with remote controls for operational optimization, energy savings, enhanced performance and remote modulation to save time and money, eliminating technicians' on-site commutes to trouble shoot malfunctions, by evaluating systems and malfunctions via a graphics interface on our PCs (web-based system trademarked Niagara) online.

(v). All of the HVAC and other equipment follows a rigorous scheduled maintenance program.

(vi).The 2 Courthouse Chillers (875 tons/hr of cooling capacity) have been replaced. Our engineers had tested and determined the Chillers were at their life cycle terminus and after that they were replaced in early 2020. This replacement has resulted in significant energy consumption reductions which have the end effect of significantly reducing our airborne ozone precursor emissions by conserving energy, at the power generation sources in our airshed. We are proud of our contribution in reducing the ozone emissions and thus help in maintaining Nueces County's status as "Attainment" for all EPA designated criteria pollutants. This provides Nueces County with a significant economic advantage over most other major Counties in the United States.

(vii). Electric lights in our buildings and facilities have been replaced with more efficient low power consuming ones, in about 70 % of our offices. Heat and opacity detection sensors (infra-red and photoelectric sensors) automatically turn them on or off based upon occupancy load.

(vii). We are now actually realizing more energy consumption savings from the 2 New CH chillers along with contributions in energy savings from the major almost 80 % upgrades, retrofits, repairs and modifications to the open loop water system (condensers to cooling towers and back) with our 3 cooling towers resulting in significant improvement of the heat exchange efficiency and resultant energy consumption savings.

(viii). Realtime engineering measurement of our targeted deices of our energy savings systems show about 25 % reduction in actual consumption for water, gas and electricity, proportionally reducing emissions from the Power Generation point source, thereby accomplishing our main objective of ultimately reducing ozone and ozone precursor emissions.

VI. Vehicle and Equipment Emissions

The following are general emissions reduction measures:

(i) Our on and off-road equipment used during construction and repair is equipped with pollution prevention devices; we do not allow idling, and utilize low sulfur diesel.

(ii) We encourage employees to carpool, particularly on elevated ozone days; including lunch.

(iii) We encourage employees to use alternative modes of transportation during ozone alert days.

(iv) Provide resources to employees to telecommute, particularly on elevated ozone days.

(v) Provide resources for employees to teleconferencing.

(vi) Provide flexible work schedules to reduce on-road vehicles during congested times. Our ability is limited because we have strict timelines for road repair and public and employee safety mandate.

(vii) Provide park and ride car-pool service to employees during ozone alerts and on-site for work.

(viii) Encourage employees to join RTA van pool program (https://www.ccrta.org/rider-info/programs/)

(ix) Advise employees to have their personal vehicles emission tested with AutoCheck (361-825-3070).

(x) Our fleet emissions are tested, and necessary repairs made to minimize fleet emissions.

(xi) We have an anti-idle requirement for all construction, contractor, delivery and freight vehicles.

(xii) Use alternative fueled vehicles/equipment as appropriate without compromising work quality or safety.

(xiii) We replace older vehicles under a formal program for older/high mileage fleet vehicles.

(xiv) Our fleet vehicles are equipped with filter traps and DOCs if they are fueled with diesel.

(xv) All our fleet vehicles use low sulfur diesel fuel.

VII. Operations.

The following measures are automatically incorporated in our activities and operations as long as safety and work quality are not compromised.

(i) As feasible we postpone non-essential deliveries on elevated ozone days.

(ii) As feasible, we postpone ground crew activities on elevated ozone days.

(iii) If possible, we postpone surface coating operations on elevated ozone days.

(iv) Postpone non-essential activities that emit VOCs or NOx on elevated ozone days.

(v) Require vendors to use low VOC paints, solvents and adhesives.

(vi) Require vendors/contractors to properly dispose of VOC containing wastes (rags, buckets, drums, etc.).

(vii) We do not require vendors and contractors to use scrubbers on VOC chemical extraction processes.

(viii) We do not have chemical processing units so a flare reduction program is irrelevant in our operations.

(ix) We use a FLIR (Forward Looking Infra-Red) camera to detect and repair failures, leaks and electrical shorts.

(x) We have a formal inspection program to measure and fix leaks and fugitive emissions for USTs.

(xi) All of our boilers are equipped with low NOx burners.

(xii) Our storage tanks are for diesel, gasoline and asphalt, so we do not require thermal oxidizers.

(xiii) We use low NOx boilers and electrical water heaters.

(xiv) We do not need flue gas recirculation because we don't have refining, distillation or cracking units.

(xv)We do not need secondary vapor recovery or incineration for our fuel dispensing activities.

(xvi) Proper seals and liners are installed on our fuel storage tanks which are inspected under a schedule.

In our chain of command, field level foremen and supervisors are authorized to immediately correct deficiencies and failures by treating them as emergencies, in effect incorporating measures to conserve energy, minimize environmental upsets and incorporate corrective measures at the ground level. If you have any questions, please contact me.

Sincerely,

Juan A. Pimentel, P.E.
Director of Public Works/County Engineer

Cc: Barbara Canales, County Judge

901 Leopard Street, Suite 103 Corpus Christi, Texas 78401-3602 Telephone (361) 888-0490 FAX (361) 888-0485

PORT CORPUS CHRISTI®

March 30, 2021

Gretchen Arnold
Coastal Bend Air Quality Partnership
Corpus Christi, Texas

Subject: Voluntary Air Emissions Reduction Performed, January 2020 – December 2020

Dear Gretchen,

The Port of Corpus Christi Authority (PCCA) has prepared a Voluntary Air Emissions Reduction Performance Report for the reporting period of January 1, 2020 through December 31, 2020. This report has been prepared to provide input to the comprehensive Ozone Advance report to demonstrate the various voluntary emission reduction efforts accomplished by members of the Coastal Bend Air Quality Partnership. In addition, a high-level emissions reduction accomplishment list has also been compiled and attached to this letter.

In an effort to keep Nueces and San Patricio county air healthy and in compliance with EPA standards, PCCA funded a study to provide projections for the potential economic costs as the result of a hypothetical scenario of an ozone nonattainment designation. The purpose of this study was to project the economic consequences, or potential losses, to the economies in the Corpus Christi metro area and its three counties that could arise after receiving either a marginal or moderate nonattainment designation.

The study provided a quantitative analysis for the potential costs to the Corpus Christi metropolitan statistical area (MSA) as a result of a hypothetical scenario of an ozone nonattainment designation based on the U.S. Environmental Protection Agency's (EPA) National Ambient Air Quality Standards (NAAQS). While Corpus Christi has never failed to meet the EPA's ozone NAAQS nor has the Texas Commission on Environmental Quality (TCEQ) ever designated any part of this area as "nonattainment" with respect to ozone, continued population and economic growth, particularly rapid development of industrial manufacturing plants in the Port of Corpus Christi district and across San Patricio County, are expected to further degrade local air quality and thus increase ozone impairment in the future.

The results of the study were prepared by the South Texas Economic Development Center at Texas A&M University Corpus Christi and *Potential Costs of Ozone Nonattainment in the Corpus Christi Metropolitan Area* was published in May 2020.

The Port continues to manage its air emission programs in accordance with the PCCA New Source Review, Permit by Rule, and additional voluntary emission reduction efforts under our ISO 14001:2015 certified EMS program, whereby we prevent pollution, continually improve and

maintain compliance of our operations. Additionally, through this program, PCCA has implemented and maintains an anti-idling policy for all Port-owned vehicles and equipment. This anti-idling policy is enforced through installed Drive Cam system which identifies idling non-conformances. Additionally, through the Port's Strategic Plan the Port has developed a Clean Fleet Program which is in the process of being implemented. Seven plug-in hybrid electric vehicles / hybrid electric vehicles have been ordered to replace the Administration pool vehicles with all Port-owned vehicles will be replaced with low emissions vehicles by 2023.

If you have any questions or concerns, please call me at (361) 885-6163.

Sincerely,
PORT OF CORPUS CHRISTI AUTHORITY

Sarah L. Garza
Director of Environmental
Planning and Compliance

Enclosure

cc: Jeff Pollack, Chief Strategy Officer, Port of Corpus Christi Authority
Robert P. Schulz, Manager of Compliance, Port of Corpus Christi Authority
Amanda Grams, Senior Environmental Specialist, Port of Corpus Christi Authority

PORT CORPUS CHRISTI

VOLUTARY AIR EMISSIONS REDUCTION ACOMPLISHMENTS
Port of Corpus Christi Authority
January 1, 2020 – December 31, 2020

Staying Informed and Communicating

- ✓ Registered with Air Now to receive email or text alerts for ozone action days. http://www.enviroflash.info/signup.cfm
- ✓ Registered with TCEQ to receive weekly ozone forecasts. Forecasts are provided via email, text or social media and can be easily forwarded throughout your workplace. PCCA has purchased a yellow "Ozone Action Day" flag which flies above PCCA sites on ozone action days. https://public.govdelivery.com/accounts/TXTCEQ/subscriber/new
- ✓ Communicate elevated ozone forecasts to employees, vendors and contractors and remind them of emission reduction policies and recommendations.
- ✓ Provide ozone education and emissions reduction tips in routine employee training.
- ✓ Encourage employees to carpool, particularly on elevated ozone days.
- ✓ Hosted a Public AutoCheck event per year, providing an opportunity for employees to have their vehicle's emissions tested on December 18, 2020.
- ✓ Encourage employees to turn off lights in rooms that are not in use. PCCA has posted static stickers below light switches to remind personnel to turn off lights when not in use.
- ✓ Port Emission Inventory performed for calendar years 2005, 2008, 2013, and 2017 and 2020 is under development.

Vehicle and Equipment Emissions

- ✓ From March through December due to the global pandemic, administration employees worked remotely and all meetings were conducted virtually.
- ✓ Require that all on and off-road construction equipment used during the facility construction process be equipped with pollution prevention devices, practice anti-idling, and utilize low sulfur diesel.
- ✓ Fleet emissions tested via AutoCheck.
- ✓ Anti-idling policy in effect for fleet. Idling is limited to 5 minutes or less. This is verified through vehicle camera reports.
- ✓ Use alternative fueled equipment (propane, CNG). Repower or replace older engines in fleet. Purchase only highest tier engines available in the market for equipment.
- ✓ Use of low sulfur diesel fuel for diesel fleet.
- ✓ Implementation of Clean Fleet Program. Full turnover of the fleet expected by 2023.

PORT CORPUS CHRISTI

Operations

- ✓ Use of a new, more efficient, electric crane at Bulk Dock-1 at the Bulk Terminal Facility.
- ✓ Postpone ground crew activities on elevated ozone days. Require vendors to use low VOC paints, solvents and adhesives.
- ✓ Require vendors and contractors to properly dispose of rags, buckets, drums, etc. that contain VOC chemicals.
- ✓ Purchase 100% green energy credits for all electricity consumed by Port operations. Repair poor seals around windows.
- ✓ Air monitoring program in place at the Bulk Terminal Facility.

Other

- ✓ Full funding of the Pollution Prevention Partnership (P3) for 2020 activities.
- ✓ Partial funding of the Coastal Bend Air Quality Partnership in 2020 and in-kind services to support the transition of the Partnership.
- ✓ Sarah Garza, Director of Environmental Planning & Compliance appointed interim Chair of the Air Quality Partnership in the Spring of 2020.
- ✓ Construction of a new, energy efficient, office building.

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION COMMITMENTS FOR 2021

- Continued implementation of Clean Fleet Program.
- Continued funding of P3 and the Coastal Bend Air Quality Partnership for 2021 calendar year.
- Implementation of the Clean Equipment Program.
- Completion of an emission inventory for 2020, and including a separate emissions study evaluating lightering operations in the Gulf of Mexico.
- Implement an Emission Reduction Study & Pilot Program which will support PCCA's planning effort in developing an emission reduction program for control strategies with an emphasis on how to reduce at least 90% of overall NOx, PM2.5, ROG, and DPM emissions from diesel engines at PCCA's Avery Point.
- Purchase seven (7) air monitors capable of continuously monitoring PM10 and PM2.5 to replace tenant funded system at the Bulk Terminal.

Signature

Port of Corpus Christi Authority	03/30/2021
Organization	Date

VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED
2020

Staying Informed and Communicating

- ✓ Register with AirNow to receive email or text alerts for ozone action days. http://www.enviroflash.info/signup.cfm
- ✓ Register with TCEQ to receive weekly ozone forecasts. Forecasts are provided via email, text or social media and can be easily forwarded throughout your workplace. You can register at this link: https://service.govdelivery.com/accounts/TXTCEQ/subscriber/new
- ✓ Communicate elevated ozone forecasts to employees, vendors and contractors and remind them of your emission reduction policies and recommendations.
- o Other _____

Vehicle and Equipment Emissions

- o Require that all on and off road construction equipment used during the facility construction process be equipped with pollution prevention devices, practice anti idling, and utilize low sulfur diesel
- o Provide resources and offer incentives for your employees to carpool, particularly on elevated ozone days – even if it's just for lunch.
- ✓ Provide resources and offer incentives for your employees to use alternative modes of transportation (bus, bike, walk), particularly on elevated ozone days.
- ✓ Provide resources for your employees to telecommute, particularly on elevated ozone days.
- ✓ Provide resources for your employees to teleconference.
- o Provide flexible work schedules to remove vehicles from the road during congested times.
  - o Information including templates and tools to provide employee commute resources can be found at https://www.bestworkplaces.org/
- o Provide park and ride or shuttle service for your employees.
- ✓ Participate in the RTA van pool program.
  - o Local van pool, shuttle and park and ride opportunities can be found at https://www.ccrta.org/rider-info/programs/
- ✓ Provide an opportunity for your employees to have their vehicles emission tested with AutoCheck. Call 825-3070.
- ✓ Have your fleet emissions tested via AutoCheck and perform necessary repairs to minimize fleet emissions.
- ✓ Have an anti-idle policy for all construction, contractor, delivery and freight vehicles.
- ✓ Have an anti-idle policy for your fleet.
  - o Information including templates and tools to establish an anti-idle policy can be found at https://cleancities.energy.gov/technical-assistance/idlebox/
- ✓ Use alternative fueled vehicles and equipment.
- ✓ Repower or replace older engines in your fleet.
- o Install filter traps and DOCs on your diesel fleet.
- o Perform diesel retrofits.
- ✓ Use low sulfur diesel fuel for your diesel fleet.
- o Other _____

Operations.

- ✓ Postpone non-essential deliveries on elevated ozone days.
- ✓ Postpone ground crew activities on elevated ozone days.
- ✓ Postpone surface coating operations on elevated ozone days.
- ✓ Postpone any non-essential activity that emits VOCs or NOx on elevated ozone days.
- ✓ Require vendors to use low VOC paints, solvents and adhesives.
- ✓ Require vendors and contractors to properly dispose of rags, buckets, drums, etc. that contain VOC chemicals.
- ○ Require vendors and contractors to use scrubbers on VOC chemical extraction processes.
- ○ Implement a flare reduction program.
- ○ Utilization of IR cameras to detect and repair fugitive emissions.
- ✓ Perform routine inspections for leaks and fugitive emissions.
- ○ Installation of low NOx burners on boilers or heaters.
- ○ Installation thermal oxidizers on storage tanks.
- ○ Use of low NOx water heaters.
- ○ Use of flue gas recirculation.
- ○ Use of vapor recovery or incineration.
- ○ Installation of additional seals and liners on storage tanks.
- ○ Other _____

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES PERFORMED IN 2020

- ✓ Participation in the Corpus Christi Regional Transportation Authority's (CCRTA) SURGE autonomous E-shuttle pilot program run on the Texas A&M Corpus Christi campus. https://tamucc.edu/news/2020/01/012320-rta-surge-autonomous-shuttle-debut.html
- ✓ In partnerships with the Port of Corpus Christi Authority and Texas Commission on Environmental Quality, TAMU-CC supports the Pollution Prevention Partnership and AutoCheck programs which test fleets and private vehicles for emissions and pays for repairs that reduce and prevent ozone precursors.

ADDITIONAL VOLUNTARY AIR EMISSION REDUCTION ACTIVITIES COMMITTED TO FOR 2021

- ○ _____
- ○ _____

Nathaniel C. Galvan	Texas A&M University Corpus Christi	April 14, 2021
Signature	Organization	Date

Valero

MEMBER CLEAN INDUSTRIES 2000

April 26, 2021

Mrs. Gretchen Arnold
Director, Corpus Christi Air Quality Group

Subject: **Ozone Advance Agreement 2020 Annual Report**

Dear Mrs. Arnold,

Valero Corpus Christi Refineries continue to support the Corpus Christi Air Quality Group (CCAQG) and its efforts to maintain compliance with the current Ozone NAAQS for the Corpus Christi urban airshed. As part of our commitment to the environment and our community, Valero has implemented and continues to implement measures to reduce emissions from our operations:

- Installation of a new state of the art boiler with SCR in Valero East Plant
- Voluntary installation of Flare Gas Recovery Units in support of a flare reduction program at the Valero West and East Plants
- Completed low NOx burner replacements on four (4) heaters and a boiler in the Valero West Plant
- Installation of ultra-low NOx burners and SCR unit on new crude unit heater in the Valero West Plant
- Operation of electric engines preferentially over internal combustion engines where practical
- Operation of a Thermal Oxidizer with Carbon Absorption back-up on select tanks, which is above and beyond what BACT requires
- Operation of a new state of the art boiler with SCR in the Valero West Plant
- Operation of Ultra Low Sulfur Diesel and a Gasoline De-sulfurization Units to produce fuel that supports new technology in vehicles that reduces NOx emissions
- Utilize IR camera to identify potential VOC leaks not routinely seen
- Registered with TCEQ to receive weekly ozone forecasts.
- Implement projects designed to further improve the reliability of both refineries

Environmental stewardship continues to be a core value at Valero, and we remain committed to doing our part to help keep the Corpus Christi urban airshed in compliance with the NAAQS. Valero is driven to make a difference.

Sincerely,

Joe Almaraz
Director, Environmental, Health & Safety
Valero Corpus Christi Refineries

ATTACHMENT 8

COST OF NON-ATTAINMENT DESIGNATION FOR CORPUS CHRISTI URBAN AIRSHED STUDY AND RESULTS

Potential Costs of Ozone Nonattainment in the Corpus Christi Metropolitan Area

Report Prepared for

PORT CORPUS CHRISTI®

May 2020

TEXAS A&M UNIVERSITY CORPUS CHRISTI | SOUTH TEXAS ECONOMIC DEVELOPMENT CENTER

Potential Costs of Ozone Nonattainment in the Corpus Christi Metropolitan Area

Final Report: May 15, 2020

Prepared for:

Port of Corpus Christi
222 Power Street
Corpus Christi, Texas 78401

Prepared by:

South Texas Economic Development Center
Texas A&M University-Corpus Christi
6300 Ocean Drive
Corpus Christi, Texas 78412
Telephone: 361-825-5831

TABLE OF CONTENTS

ACKNOWLEDGEMENT

This study benefits from the support and assistance of the following individuals:

- Gretchen Arnold, Chair, Coastal Bend Air Quality Partnership
- Sarah Garza, Director of Environmental Planning & Compliance, Port of Corpus Christi Authority
- Robert MacDonald, Transportation Planning Director, Corpus Christi Metropolitan Planning Organization
- Trent Thigpen, Pollution Prevention Partnership and AutoCheck Program Manager, Department of Community Reach, Texas A&M University-Corpus Christi

EXECUTIVE SUMMARY

This study provides a quantitative analysis for the potential costs to the Corpus Christi metropolitan statistical area (MSA) as a result of a hypothetical scenario of an ozone nonattainment designation based on the U.S. Environmental Protection Agency's (EPA) National Ambient Air Quality Standards (NAAQS). The current NAAQS for ground-level ozone is 70 parts per billion (ppb).

Historically, Corpus Christi has never failed to meet the EPA's ozone NAAQS. Also, the Texas Commission on Environmental Quality (TCEQ) has never designated any part of this area as "nonattainment" with respect to ozone. However, continued population and economic growth, particularly rapid development of industrial manufacturing plants in the Port of Corpus Christi district and across San Patricio County, are expected to further degrade local air quality and thus increase ozone impairment in the future.

The purpose of this study is to project the economic consequences, or potential losses, to the economies in the Corpus Christi metro area and its three counties that could arise after receiving either a marginal or moderate nonattainment designation. Economic costs are determined according to lost output measured alternatively by gross regional product (GRP), gross business sales or revenues, wage earnings, and jobs that might occur in the respective cases of marginal and moderate nonattainment.

It is not conceivable that Corpus Christi would receive one of the more serious nonattainment classifications, such as serious, severe, and extreme, in the immediate future. The quantitative findings in this report can also be interpreted as the economic benefits of taking voluntary actions or implementing preemptive policy measures to maintain or even reduce ozone levels in an attainment area. The costs associated with local residents' health risk are outside the scope of this study.

Estimates for the potential economic impacts of nonattainment include:

1. costs of Nonattainment New Source Review (NNSR) and permitting,
2. economic losses associated with delays in industrial construction projects,
3. potential loss of industrial expansion or firm relocation to the area,
4. costs of point source reductions in nitrogen oxide (NOx) and volatile organic compounds (VOC)
5. economic losses due to road construction delays,
6. economic losses associated with vehicle inspection fees,
7. additional costs of educational programs, and

8. additional costs of voluntary control measures, such as the Texas Emissions Reduction Plan (TERP) programs.

The first four types of economic impacts broadly refer to losses of local economic activity as a result of new federal requirements under a nonattainment designation. Other than the additional economic costs that would potentially constrain future industrial growth in the area, a nonattainment area will also face lost economic activity due to point source emission offsets, road construction delays and vehicle inspection fees due to the new transportation conformity requirements. In addition, the area will incur additional costs associated with the implementation of educational programs and voluntary control measures.

The following table summarizes estimates for the average annual potential costs in the Corpus Christi metro area associated with the alternative marginal and moderate nonattainment designations. All figures are expressed in 2020 dollars. The low estimates represent our conservative projections of economic impacts, while the high estimates represent the effects of extreme yet probable hypothetical situations. The impact on local industry includes permitting costs, costs associated with industrial project delays, potential lost firm expansion or relocation, and the costs of point source emission reductions as part of the general conformity requirements. Transportation conformity costs include costs associated with road construction delays, inspection fees, educational programs and the Texas Emissions Reduction Plan (TERP).

Summary of Average Annual Potential Costs of Nonattainment in Corpus Christi MSA (2020 $)

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Permitting Costs	$186,222	$465,556	$186,299	$465,748
Cost of Industrial Project Delays	$10,111,927	$10,111,927	$10,111,927	$10,111,927
Potential Lost Firm Expansion/Relocation	$554,785,332	$1,664,355,997	$554,785,332	$1,664,355,997
Costs of Point Source Emission Reductions	$862,273	$15,282,646	$1,293,409	$22,923,969
Lost GRP due to Road Construction Delays	$20,263,963	$20,291,740	$27,348,016	$27,373,016
Lost GRP due to Inspection Fees	–	–	$5,769,684	$9,281,666
Additional Costs of Educational Programs	$123,474	$123,474	$261,148	$261,148
Additional Costs associated with TERP	$29,655	$29,655	$29,655	$29,655
Total	**$586,362,847**	**$1,710,660,996**	**$599,785,472**	**$1,734,803,126**

The above cost estimates are average costs per year over the window of analysis, which includes the nonattainment and two subsequent 10-year maintaince periods. The cumulative costs over the entire study periods amount to $16 billion–$46 billion in the case of marginal nonattainment, and to $18 billion–$52 billion in the case of moderate nonattainment.

The following table summarizes the distribution of the potential economic losses across the three counties in the Corpus Christi metro area.

Average Annual Potential Costs of Nonattainment by County (2020 $)

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Aransas County	$15,466,449	$45,717,942	$15,876,593	$46,367,817
Nueces County	$505,192,034	$1,477,576,569	$515,041,166	$1,495,117,905
San Patricio County	$65,704,364	$187,366,485	$68,867,713	$193,317,405
MSA Total	**$586,362,847**	**$1,710,660,996**	**$599,785,472**	**$1,734,803,126**

Other than population size, the extent of economic impact on an individual county due to a nonattainment designation to the metro area depends largely on the local economic and industrial landscape, including the locations of major sources of air emissions. A typical resident in the Corpus Christi metro area would incur a potential economic loss of $1,115–$3,299 per year. Residents in Nueces County are expected to each bear at least $1,200 annually. Still, residents in Aransas County—which is relatively far from existing prominent sources of air pollution—are expected to incur at least $560 per year in the case of ozone nonattainment for the entire metro area.

1. INTRODUCTION

This study was initiated by the Coastal Bend Air Quality Partnership (formerly Corpus Christi Air Quality Group) and funded by the Port of Corpus Christi. The objective is to determine the potential economic consequences of a hypothetical scenario of ozone nonattainment designation to the Corpus Christi region. The nonattainment designation refers to an area with air quality worse than the National Ambient Air Quality Standards (NAAQS), as defined in the Clean Air Act of 1970.

Similar studies have been conducted in recent years for the Austin-Round Rock and San Antonio metro areas. In 2015, the Capital Area Council of Governments completed a study on the potential costs of a hypothetical ozone nonattainment designation to the Austin area in Central Texas.[1] A similar study for the San Antonio area was completed in 2017 for the Alamo Area Council of Governments.[2] Following these two studies, this report expressly focuses on the negative consequences of an ozone nonattainment designation on the Corpus Christi economy. The study for San Antonio might has potentially served as a guide to community stakeholders in its Bexar County, which has received a nonattainment designation.

Keep in mind that the objective of the present study is not to assess the risk of ozone nonattainment. Corpus Christi has never been designated as nonattainment. Also, a consensus among community stakeholders holds that the area is currently not on the brink of nonattainment. From these perspectives, the quantitative findings in this report can instead be interpreted as identifiable economic benefits of preemptive actions and policy measures taken in the past or future to maintain the federal air quality attainment status and ultimately the overall quality of life among local residents.

[1] Capital Area Council of Governments, *The Potential Costs of an Ozone Nonattainment Designation to Central Texas*, September 22, 2015.

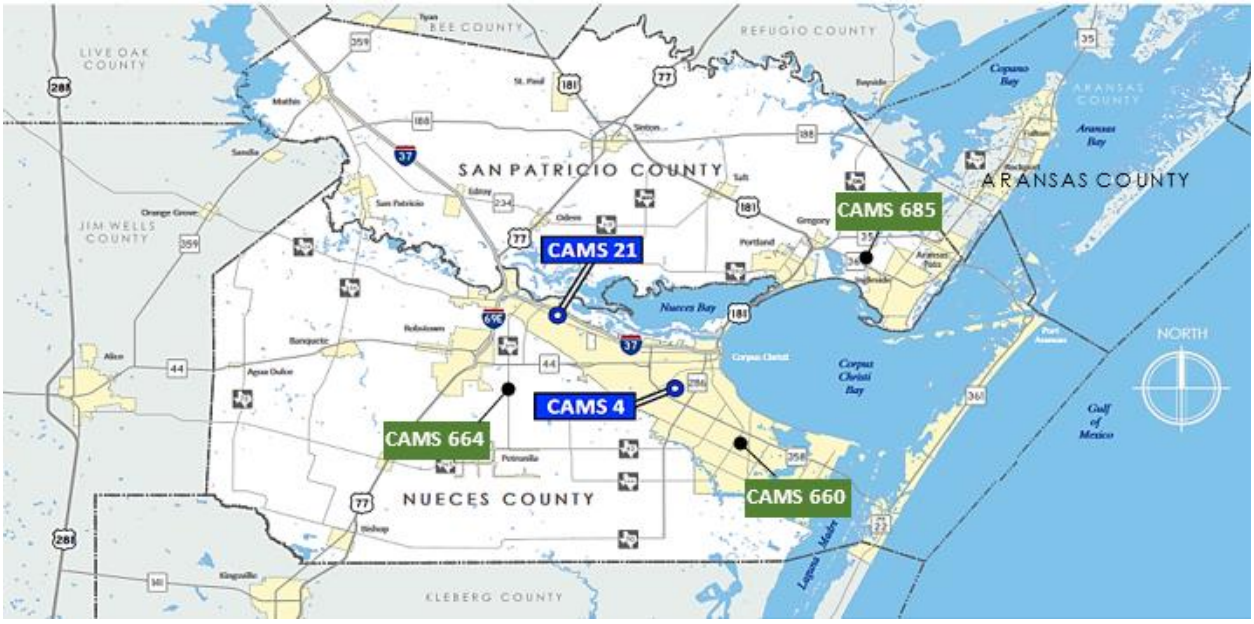
[2] Nivin, Steve, Belinda Roman, and David Turner, *Potential Cost of Nonattainment in the San Antonio Metropolitan Area*, study conducted for Alamo Area Council of Governments, February 21, 2017.

2. BACKGROUND

2.1 Geographic Scope

The geographic scope of this study is the Corpus Christi Metropolitan Statistical Area (MSA), which consists of Aransas, Nueces, and San Patricio Counties. The Corpus Christi Urban Airshed comprises Nueces and San Patricio Counties. The Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ) define the Corpus Christi Urban Airshed in which air emissions from sources in both counties interact to influence the level of air pollution in the Corpus Christi community (see Exhibit 2.1). Within a population of slightly more than 24,000 (2019 Census), Aransas County is not part of the Corpus Christi Urban Airshed. However, given the close economic and other interactions among the three counties, particularly the impact of a hypothetical nonattainment status on the Corpus Christi region, this the scope of this study includes Aransas County in addition to the other two counties.

Exhibit 2.1: Map of the Corpus Christi Urban Airshed and Air Quality Monitoring Sites



Source: Corpus Christi Metropolitan Planning Organization.

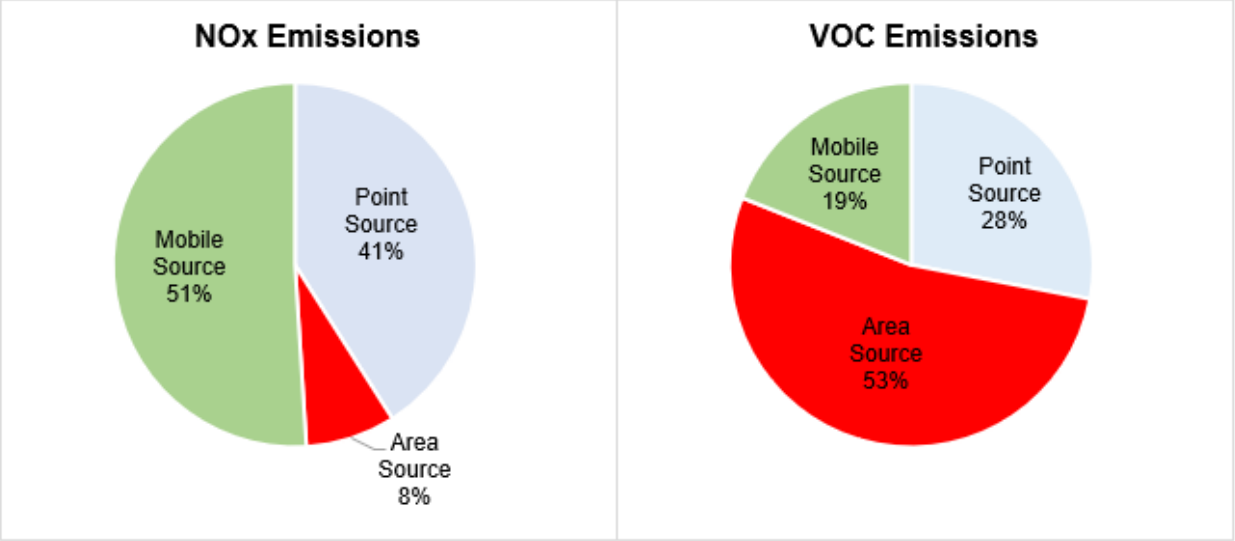
In Corpus Christi, the TCEQ operates two Continuous Air Monitoring Stations (CAMS) that determine the area's airshed's compliance with ozone NAAQS (see Exhibit 2.1 above): (1) CAMS 4 that is located at 902 Airport Road, and (2) CAMS 21 that is located at 9866 La Branch Street. Until recently, three additional ozone monitors were operated for research purposes by Texas A&M University-Kingsville and University of North Texas (CAMS 660, CAMS 664, and CAMS 6850). These monitors have been decommissioned.

2.2 Overview on Air Emissions

The EPA meets its obligations under the Clean Air Act of 1990 by establishing the National Ambient Air Quality Standards (NAAQS). These standards define acceptable ambient, or outdoor, air concentrations for six air pollutants: nitrogen dioxide (NO2), ozone (O3), sulfur dioxide (SO2), carbon monoxide (CO), lead (Pb), and particulate matters (PM10 and PM2.5).[3]

Instead of through direct emissions, ground-level ozone is created indirectly by chemical reactions of NOx and VOC in the presence of sunlight. In addition to natural or biogenic sources of emissions, such as crops, grass and trees, these chemicals are produced by a wide variety of human activities that are broadly classified as point and non-point sources. Point sources include electric power plants, industrial boilers, petroleum refineries, and manufacturing facilities. Non-point sources are further classified as: (1) area sources that are small-scale industrial, commercial and residential sources that generate emissions, and (2) mobile sources that represent a variety of on-road and non-road vehicles and equipment that generate emissions.

Exhibit 2.2: Air Emission Sources in Corpus Christi (Nueces and San Patricio Counties)



Source: TCEQ *Emissions Inventory*, 2019. Accessed online at: https://www.tceq.texas.gov/airquality/areasource/emissions-sources-charts.

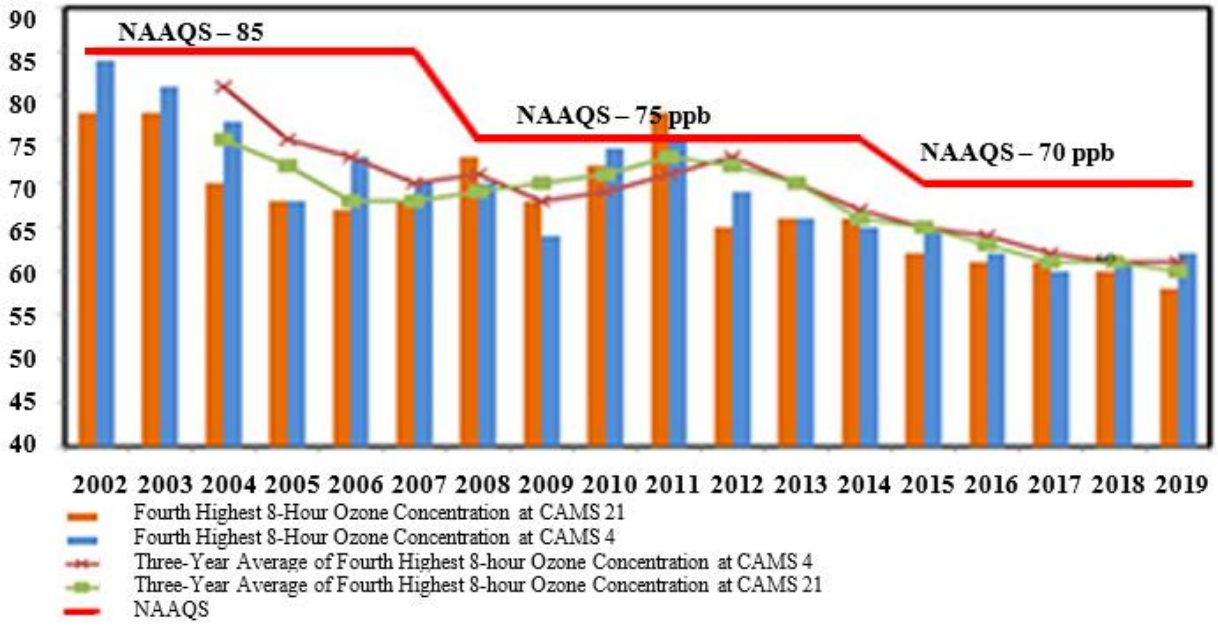
[3] Environmental Protection Agency, *NAAQS Table*. Accessed online at: https://www.epa.gov/criteria-air-pollutants/naaqs-table.

In the Corpus Christi urban airshed, mobile sources are responsible for more than half of the NOx emissions, while area sources account for the majority of VOC emissions (see Exhibit 2.2 above). From these perspectives, it is important to pay as much attention to the impact of vehicle emissions on local air quality as to emissions from large industrial plants.

For ozone, the Clean Air Act establishes nonattainment-area classifications according to the severity of the area's air pollution problem. The NAAQS for ozone is based on an annual fourth highest daily maximum of 8-hour concentration that is averaged over the three past calendar years. In 2008, the ozone NAAQS was revised from previously 85 parts per billion (ppb) to 75 ppb. In 2015, the EPA revised the primary and secondary 8-hour ozone NAAQS for attainment to 70 ppb.

The Corpus Christi metro area has never been designated as a nonattainment area. The city of Corpus Christi is widely known as the "Sparkling City by the Sea." According to readings at the two regulatory monitoring stations (CAMS 4 and CAMS 21), the area's airshed has experienced an overall decreasing trend in ozone concentration since 2011 (see Exhibit 2.3). The fourth highest 8-hour ozone concentration readings between the two stations were around 60 ppb in 2019, about 10 ppb below the NAAQS.

Exhibit 2.3: Corpus Christi Area Ozone Concentration, ppb.



Source: Corpus Christi Air Quality Group, 2019.

Other than technological advances that have raised vehicles' fuel efficiency and the effectiveness of emission controls, the declining trend in ozone concentration in the local airshed was attributable to local efforts spearheaded by the Coastal Bend Air Quality Partnership. This partnership was established in 1995 as Corpus Christi Air Quality Group to address NAAQS ozone attainment issues for the local airshed. Since then, the group has initiated and implemented air quality planning and voluntary emission reduction measures for the area. Participants in this group are representatives of local community stakeholders, such as the City of Corpus Christi, Nueces County, Corpus Christi Metropolitan Planning Organization (MPO), Corpus Christi Regional Transportation Authority (RTA), Port of Corpus Christi Authority and industry, Texas A&M University-Corpus Christi, and Texas A&M University-Kingsville. Since 2006, the group has participated in the EPA's 8-hour Ozone Flex (O3 Flex) program that aims to continue meeting the ozone NAAQS.

Still, there are reasons for the area to be at risk of ozone nonattainment or deterioration in overall air quality. First, given the periodic tightening of the NAAQS, it is conceivable that a new acceptable level for ozone attainment in the future be lowered further to close to 60 ppb. Given the current recorded ozone levels in Corpus Christi, any such revision to NAAQS would make the area at risk of nonattainment. Along with Victoria, Corpus Christi has been classified by the TCEQ as a near nonattainment community.[4]

Second, Corpus Christi has lost state funding for vehicle emissions reduction programs and other air quality programs. In 2017, Governor Abbot vetoed funding that had been approved to support emission reduction programs that assisted communities to remain in attainment. The TERP program was established in 2001 with an aim to reduce emissions from mobile sources, including vehicles and non-road equipment, such as construction equipment, trains, and marine vessels. While local stakeholders have provided interim funding for the area's committed air quality programs, such activities would likely be discontinued in the future without state funding.

Third, the area is poised to continue to expand its industrial sector at a rapid pace. Along with significant growth in energy exports of crude oil and liquefied natural gas (LNG), the Port of Corpus Christi has become the third largest port in the United States by total revenue tonnage. As more petrochemical, plastic, steel and other heavy industrial facilities become operational within the next five years, the amounts and sources of air pollutants would likely increase.

[4] Texas Commission on Environmental Quality, *Texas SIP Revisions*. Assessed online at: https://www.tceq.texas.gov/airquality/sip/sipplans.html.

A recent report by the Environmental Integrity Project indicated two Corpus Christi petrochemical refineries were among the six Texas refineries with benzene levels substantially above the federal action limit (Collier, 2020).[5] Without any offsetting measures, overall air quality in the region may deteriorate as additional large-scale industrial facilities are being built near those petrochemical refineries in "Refinery Row"—an area near Corpus Christi's north end.

The EPA requires each state to monitor ambient air quality and evaluate compliance to the NAAQS. Based on these evaluations, EPA characterizes the air quality within a defined area that ranges in size from portions of a city to a region comprising different counties to a metropolitan statistical area. Areas in attainment have levels of a given criteria air pollutant below the NAAQS, while areas in nonattainment have air quality levels that exceed the NAAQS. Based on the degree exceeding the NAAQS, an ozone nonattainment classification is further defined in Exhibit 2.4 below.

Exhibit 2.4: 8-Hour Design Value for the 2015 Ozone NAAQS

Nonattainment Classification	8-Hour Design Value (ppb)
Marginal	70 to 80
Moderate	71 to 92
Serious	93 to 104
Severe - 15	105 to 110
Severe - 17	111 to 162
Extreme	163 or more

Source: EPA, *NAAQS Table*.

[5] Collier, Kiah, Report 6 State Refineries Exceed Limits for Benzene, *Corpus Christi Caller Times*, February 7, 2020, Page A5.

3. OVERVIEW OF NONATTAINMENT AREA REQUIREMENTS

3.1 State Implementation Plan

The ozone nonattainment classification for an area determines the planning and control requirements that will improve the area's air quality and move the area towards the attainment status. If an area is designated as nonattainment, then the state must develop revisions to its state implementation plan (SIP) that demonstrate the plans that the state will take to bring that area back to attainment.

According to the EPA, basic SIP components for nonattainment areas are as follows:[6]

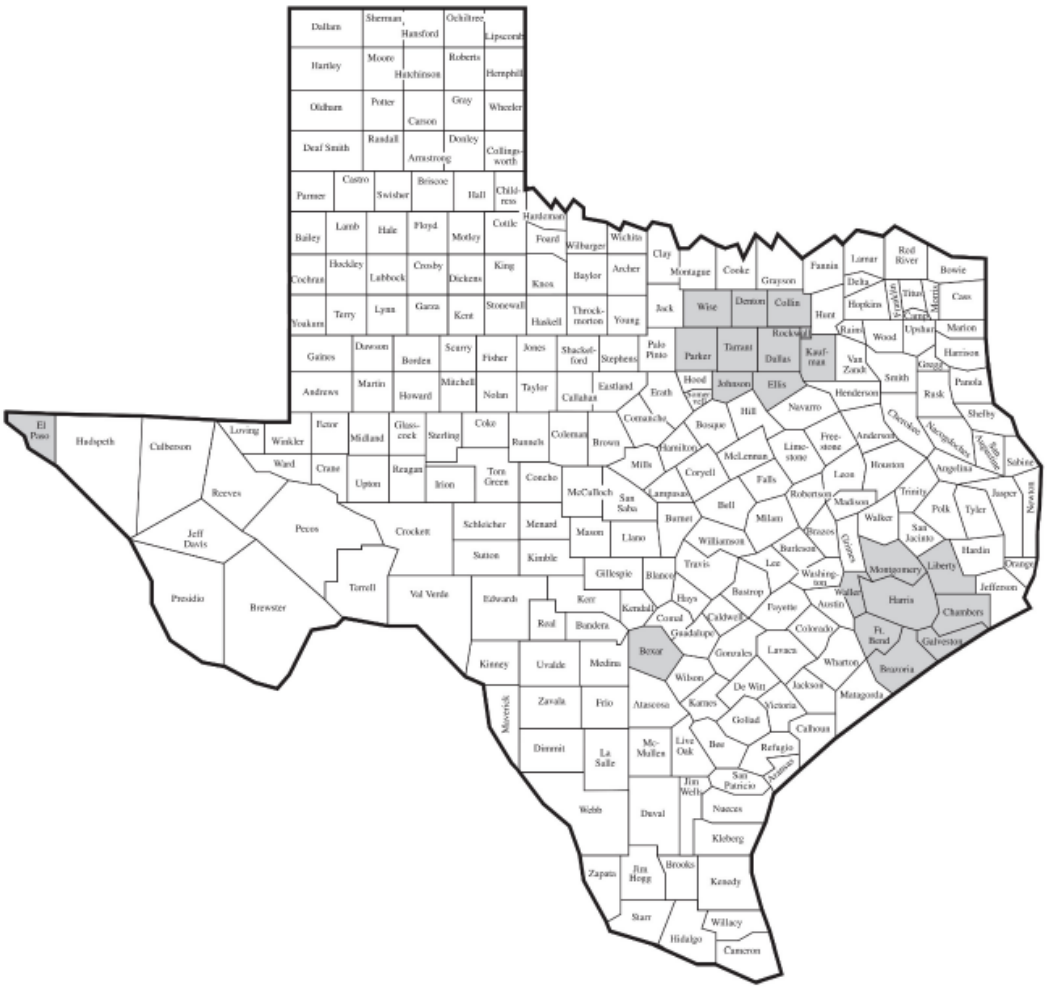
- Emissions inventory and emissions reporting statement rule
- Reasonable further progress (RFP) plan
- Reasonably available control technology (RACT)
- Reasonably available control measure (RACM)
- Attainment demonstration
- Contingency measures
- Nonattainment new source review (NNSR) program
- Motor vehicle emissions budget (MVEB)
- As applicable, a variety of area-wide mobile source and stationary source control programs

In 2015, the EPA revised the primary 8-hour NAAQS for ground-level ozone from the 2008 standard of 75 ppb to 70 ppb. The secondary 8-hour NAAQS for ozone was also revised to the equivalent of the primary standard at 70 ppb. In 2016, the TCEQ issued its recommendations for ozone attainment, nonattainment, or unclassifiable under the new 8-hour NAAQS for all areas within the state. In addition to the 9-county Dallas-Fort Worth and 6-county Houston-Galveston-Brazoria metro areas that had received the ozone "marginal" nonattainment designations for the 2015 8-hour ozone NAAQS, Bexar County in the San Antonio metro area became a new nonattainment area with respect to ozone (see Exhibit 3.1 below).

[6] Environmental Protection Agency, *Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications and State Implementation Plan Requirements*, Federal Register, Vol. 81, No. 222. November 17, 2016.

Exhibit 3.1: Texas Nonattainment Areas

Area	Counties
Dallas-Fort Worth Eight-Hour Ground-Level Ozone Nonattainment Area	Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise
Houston-Galveston-Brazoria Eight-Hour Ground-Level Ozone Nonattainment Area	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller
Bexar County Eight-Hour Ground-Level Ozone Nonattainment Area	Bexar County
City of El Paso Particulate Matter (PM_{10}) Nonattainment Area	El Paso County (for purposes of TERP eligibility, the TCEQ includes the entire county)
Colin County Lead Nonattainment Area	Part of Colin County



Source: TCEQ, *Texas Emission Reduction Plan Biennial Report*, December 2018.

Depending on the level of nonattainment designation, different requirements are imposed with the goal of improving the air quality levels and returning to attainment status. These requirements are established through revisions to the SIP:[7]

Marginal (3 years to attain):

- Baseline emission inventory, followed by periodic updates
- New source review (NSR) program
  - NSR offset ratio 1.1:1
- Major source emission statements
  - Major source threshold 100 tons per year (tpy), and
- Transportation conformity demonstration

Moderate (6 years to attain):

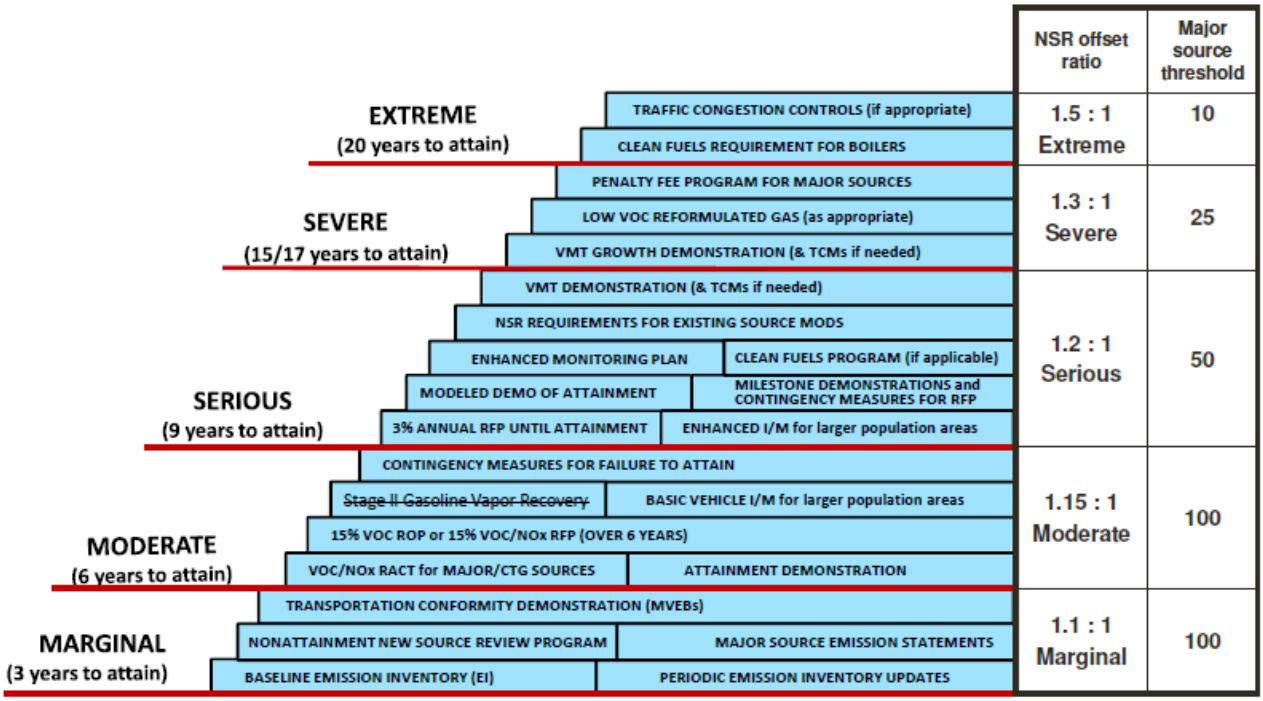
- All requirements for Marginal classification, with
  - Major source threshold 100 tpy
  - NSR offset ratio 1.15:1
- Major source (NOx/VOC) reasonably available control technology (RACT)
- Attainment demonstration
- 15% reasonable further progress (RFP) over 6 years
- Basic vehicle inspection and maintenance (I/M) program
- Contingency measures for failure to attain
- Gasoline vapor recovery (no longer required due to the development of on-board vapor recovery technology)

The "offset" requirements ensure new emissions must be offset so that there is no net increase in emissions in the airshed. New emissions can occur through a new operation or the expansion of an existing emitter in the airshed. The amount of new projected pollutants introduced into the airshed must be offset or neutralized by reducing pollutants elsewhere in the airshed at the same amount, or by purchasing pollutant credits from an airshed emissions trading program.

If the air quality in a nonattainment area improves to meet the NAAQS, the area will be designated as a maintenance area. It is important to consider that even if the regional air quality improves and achieves a designation of maintenance, the requirements will remain in effect until continued NAAQS compliance can be demonstrated. Exhibit 3.2 below shows the general timeline for an area receiving a nonattainment designation.

[7] Ibid.

Exhibit 3.2: Overview of Clean Air Act Ozone Planning and Control Requirements by Classification



Source: EPA, *Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications and State Implementation Plan Requirements*, Federal Register, Vol. 81, No. 222, November 17, 2016.

An ozone nonattainment designation for Corpus Christi would likely have 23 or more years of regulatory and economic consequences for the area. The 23-year period assumes that the area is designated as "marginal" nonattainment, so it would take three years for the area's regulatory ozone monitoring data averaged over three years to effectively report ozone attainment levels. The area would then transition into two 10-year maintenance periods beginning immediately after it is re-designated as ozone attainment. The corresponding period for "moderate" nonattainment is 26 years, given the initial six years to receive a nonattainment designation.

3.2 Air Permitting for Stationary Sources

The New Source Review (NSR) is a pre-construction permitting program serving to establish and document air pollution emission limitations from "major" stationary sources of air pollution. NSR includes two primary permitting programs: Prevention of Significant Deterioration (PSD) and Nonattainment NSR (NNSR). These permits apply to new "major" sources of air pollution or existing major sources that are making a "major" modification. PSD applies to attainment areas, while NNSR applies to nonattainment areas.

For NNSR permitting in a marginal or moderate ozone nonattainment area, a "major" source is defined as a facility that has the potential to emit at least 100 tons per year (tpy) of either NOx or VOC, and a "major" modification is a physical modification or change in operations that would raise emissions of NOx or VOC by at least 40 tpy.[8] According to the EPA, all NNSR programs have to require: (1) the installation of the lowest achievable emission rate (LAER),(2) emission offsets, and (3) opportunity of public involvement.[9]

The LAER requirements can be achieved in different ways, including changes to raw materials, process modifications, and add-on controls. These methods will likely increase the cost of building a new facility as a major source or the cost of expanding operations of an existing major source. In addition, a typical NNSR involves permitting fees that are higher than the typical NSR or PSD permits, as well as an extensive review process.[10] According to the TCEQ, the target time frame for NNSR permit issuance is 365 days, significantly longer than the target of 285 days for NSR permits.[11]

3.3 Conformity

Under the Clean Air Act, "conformity" is a provision that mandates all federal activities to conform, or meet, the requirements of an approved SIP in nonattainment and maintenance areas. Essentially, conforming activities should not cause or contribute to new violations, increase the frequency or severity of existing violations, or delay timely attainment of any emission reductions. Conformity regulations are categorized as transportation conformity and general conformity.

Transportation Conformity

Transportation conformity requirements apply to transportation-related plans and programs, including projects funded or approved by federal transportation agencies such as Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). As a nonattainment area, the transportation conformity process involves the revision of the long-term metropolitan transportation plan

[8] Environmental Protection Agency, *Infrastructure SIP Requirements*. Accessed online at: https://www3.epa.gov/airquality/urbanair/sipstatus/infrastructure.html.

[9] Environmental Protection Agency, *Nonattainment NSR Basic Information*. Accessed online at: https://www.epa.gov/nsr/nonattainment-nsr-basic-information.

[10] Environmental Protection Agency, *Status of SIP Requirements for Designated Areas*. Accessed online at: https://www3.epa.gov/airquality/urbanair/sipstatus/reports/tx_elembypoll.html#ozone-8hr__2008__1404.

[11] Texas Commission on Environmental Quality, *Texas Commission on Environmental Quality Fact Sheet - Air Permitting*.

(MTP) and shorter-term transportations improvement programs (TIPs) by including an analysis of the potential impact of the plans on local air quality in order to demonstrate that the activities conform to the SIP. The SIP must conform to the motor vehicle emission budget (MVEB), which is a representation of the area's projected local on-road mobile source emissions for NAAQS specific pollutants. For the ozone NAAQS, the EPA's determination of transportation conformity is based on evaluating the area's impact of MTP and TIP on future emissions of NOx and VOC as ozone precursors against the MVEB in the SIP. With a one-year grace period, an area that has received nonattainment designation enters a conformity "lapse" if it fails to demonstrate transportation conformity. A lapse results in restrictions in federal funding for highway and transit improvement projects.

For the Corpus Christi region, the Corpus Christi Metropolitan Planning Organization (MPO) provides direction for the allocation of federal funds for urban transportation planning through its development of MTP and TIPs. Should the area be designated as ozone nonattainment, the MPO would be the primary agency for demonstrating transportation conformity.

General Conformity

In a nonattainment or maintenance area, general conformity is determined on a project-by-project basis. This federal requirement applies to activities that are federally funded or approved and they are not covered by transportation conformity regulations. Under general conformity, the EPA requires that the federal agency proposing a project work with state and local governments to evaluate whether the potential impact of the project on air quality would conform to the SIP.

The military and various divisions of Department of Defense together play a key role in the Corpus Christi economy. The military installation of Naval Air Station Corpus Christi, including Corpus Christi Army Depot, is the largest single employer in the region.[12] A nonattainment designation will impact this military base's operations due to additional regulations on air emissions.

One key criterion for general conformity determinations is the *de minimis* level that the total direct and indirect emissions associated with a proposed project must fall below. For marginal and moderate nonattainment areas respect to ozone, the *de minimis* level is 100 tpy of NOx or VOC.

[12] Texas Comptroller of Public Accounts, *Naval Air Station Corpus Christi, Estimated Contribution to the Texas Economy, 2015*. Accessed online at: https://comptroller.texas.gov/economy/economic-data/military/2015/nas-corpus.php.

If the proposing federal agency fails to demonstrate general conformity of the project, then it may obtain emission offsets in order to ensure that there is no net increase in emissions for the area. Offsets must occur during the same calendar year as any emissions increase from the proposed project; otherwise, offsets must exceed a 1.1-to-1 ratio of projected emissions for marginal nonattainment areas and 1.15-to-1 ratio for moderate nonattainment areas (recall Exhibit 3.2).

The general conformity requirements affect both large and small businesses. Small businesses, from bakeries and dry cleaners to gas stations and auto body shops, may not be major sources of air emissions but can also be affected when operating in a non-attainment community. TCEQ requires that any business that emits pollutants into the air either file for a permit or maintain extensive reports to prove that they are exempt from permitting. The additional documentation needed for permitting and reporting can be expensive and challenging particularly for small businesses that do not have an environmental staff to assist with managing the new requirements.

3.4 Reasonably Available Control Technology

If an area is designated as moderate or more severe nonattainment with respect to ozone, then sources of emissions within the area must demonstrate that they have implemented Reasonably Available Control Technology (RACT). The EPA defines RACT as the lowest emission limitation that a given source is capable of meeting by the application of control technology at that is reasonably available based on technological and economic feasibility (EPA, 2016g).[13] Existing facilities would need to be retrofitted with pollution control technology. In Texas, TCEQ establishes RACT requirements for ozone based on NOx and VOC emissions.

3.5 Attainment Demonstration

If an area is classified as moderate or more severe nonattainment with respect to ozone, then the area is required to demonstrate that it will be able to achieve attainment by the attainment date. The demonstration must include evidence that the state has implemented reasonably available control measures necessary to advance attainment as well as any additional measures that will be

[13] Environmental Protection Agency, *Implementing Reasonably Available Control Technology Requirements for Sources Covered by the 2016 Control Techniques Guidelines for the Oil and Natural Gas Industry*. Accessed online at: https://www.epa.gov/nsr/nonattainment-nsr-basic-information.

implemented in the case of failing to achieve attainment by the pre-specified date.

3.6 Reasonable Further Progress

If an area is classified as moderate or more severe nonattainment with respect to ozone, then the Clean Air Act requires its state to submit plans to show reasonable further progress (RFP) towards achieving attainment. In Texas, the TCEQ would be required to submit an RFP analysis as a revision to its SIP for the nonattainment area within three years of the nonattainment designation. The SIP revision would involve reducing ozone precursor emissions at annual increments between the baseline year and the attainment year.

3.7 Vehicle Inspection and Maintenance Programs

The Inspection and Maintenance (I/M) programs aim to improve air quality by identifying cars and trucks that may need repairs due to high emissions. Areas designated as moderate or more severe nonattainment with respect to ozone are required to implement I/M programs. The SIP must be revised to include the implementation of a basic I/M program. In Texas, the I/M programs in nonattainment areas are integrated with the annual safety inspection program run by the Texas Department of Public Safety (DPS) in conjunction with the TCEQ.[14]

[14] Texas Commission on Environmental Quality, *Vehicle Emissions Inspections in Texas: Program Overview of the Vehicle Inspection and Maintenance (I/M) Program in Texas*. Accessed online at: https://tceq.state.tx.us/airquality/mobilesource/vim/overview.html.

4. OVERVIEW OF METHODOLOGY

The overall methodology of this study draws on the related economic impact studies for the Austin and San Antonio regions in the case of ozone nonattainment. The Austin study was completed by the Capital Area Council of Governments.[15] The San Antonio study was prepared for the Alamo Area Council of Governments.[16] Both studies were financed through grants from the TCEQ. By following the general approach of these two reports, we can compare the estimated potential costs of nonattainment against these regions within Texas. A comparison across the three regions also highlights unique characteristics of the Corpus Christi that contribute to its economic consequences of ozone nonattainment.

As in the studies for Austin and San Antonio metro areas, this report focuses on the alternative hypothetical scenarios of marginal and moderate nonattainment with respect to ozone. The EPA imposes substantially more stringent statutory and regulatory requirements for the serious, severe, and extreme nonattainment classifications.

4.1 Economic Impact Measures

Consistent with the common practice and the economic methodology of related studies for Austin and San Antonio, estimates of economic impacts are captured by projected changes in gross regional product (GRP), or value added, in the Corpus Christi metro area as well as its three individual counties. Gross regional product is a comprehensive measure of the size of a regional economy. Other key measures of economic impacts are employment (full-time-equivalent job positions), wage incomes including benefits, and gross business sales (revenues or output).

4.2 Multiplier Effects

This report documents not only the "direct" impacts of a nonattainment designation on local economic activity, but also the "secondary" impacts that are associated with the direct economic impacts. For instance, a delay in an industrial facility's expansion due to a longer building permit process will result in economic losses beyond the direct loss of the economic activity in that facility. This delay also affects the company's suppliers and employees, as well as all other local businesses and their workers that rely on purchases from those suppliers and

[15] Capital Area Council of Governments, *The Potential Costs of an Ozone Nonattainment Designation to Central Texas*, September 22, 2015.

[16] Nivin, Steve, Belinda Roman, and David Turner, *Potential Cost of Nonattainment in the San Antonio Metropolitan Area*, study conducted for Alamo Area Council of Governments, February 21, 2017.

employees. These secondary impacts are also known as the multiplier effects, which capture all changes in the local economy as a result direct changes in economic activity.

We calculate the "total" economic impacts in terms of changes in GRP using the Economic Modeling Specialists International (EMSI) model. This model applies the IMPLAN input-output multiplier data to the Corpus Christi metro area. This approach allows us to directly compare our economic impact estimates with those in the Austin and San Antonio studies that apply the same economic methodology.

4.3 Key Assumptions

For economic analysis of hypothetical or counterfactual scenarios, it is necessary to first make assumptions about specifics of the scenarios and future conditions in the Corpus Christi area. The following lists some general assumptions followed in this study. Other assumptions will be described in the next section for economic analysis.

- The entire time span of this study is 27 years for the case of marginal nonattainment, and 30 years for the case of moderate nonattainment. These windows cover the two 10-year maintenance periods and the time to attain nonattainment designation.
- All dollar values are in 2020 dollars.
- The economic structure (e.g., distribution of businesses and jobs) of the three individual counties in the Corpus Christi metro area as well as their population shares remain unchanged in the future
- To allocate the economic costs across the three counties, the counties' shares of the area population, employment or GRP are used, depending on the analysis (see Exhibit 4.1):

Exhibit 4.1: County Shares of Corpus Christi MSA

	Population	Employment	GRP
Aransas County	5.3%	4.9%	2.7%
Nueces County	80.0%	80.6%	86.7%
San Patricio County	14.8%	14.5%	10.6%

Sources: Bureau of Census (2019), Bureau of Labor Statistics (2019), Bureau of Economic Analysis (2018).

5. ANALYSIS OF ECONOMIC CONSEQUENCES

We represent our estimates of potential economic impacts under the following broad categories:

- Impact on local industry's expansion and operations
  The impacts are measured in terms of the costs associated with nonattainment new source review (NNSR) permitting rules, economic consequences of construction project delays, potential losses in firm expansion or relocation, and the costs of point source reductions in NOx and VOC. These impacts include general conformity costs.

- Transportation conformity costs
  The impacts are measured in terms of economic losses due to federally funded road construction delays and the costs associated with vehicle inspection fees and repair costs.

- Additional costs of educational programs and voluntary control measures
  These are costs associated with additional educational programs and the additional costs in the Texas Emissions Reduction Plan (TERP) beyond those voluntary programs already taken. Such costs are considered economic "losses," or waste to society, in the sense that the new programs might otherwise be unnecessary if local air quality is not a critical community issue and thus resources associated with those costs would otherwise be allocated to other activities, including leisure.

5.1 Impact on Local Industry

Nonattainment New Source Review Permitting Costs

Under the new point source review requirements in a nonattainment area, firms that plan to expand its operations or relocate a new facility in the area may be required to conduct a conformity analysis. According to the TCEQ, the potential costs of conducting conformity analysis for a construction permit are between $100,000 and $250,000.[17]

[17] Texas Commission on Environmental Quality, *Texas Commission on Environmental Quality Fact Sheet - Air Permitting*.

To determine the potential number of permits to be filed in the future, we derived data on the construction permits filed with TCEQ since 1995. The average number of permits per year was 50 for the Corpus Christi metro area. About 66% of all construction permits were filed in Nueces County, 27% in San Patricio County, and 7% in Aransas County.

The total costs of permitting per year equal the historical average number of permits times the alternative estimates of permitting costs. The low and high estimates correspond, respectively, to the low and high estimated dollar costs of a conformity analysis. In line with the San Antonio report, the total NNSR permitting cost is assumed to be 13% higher for moderate nonattainment than for marginal nonattainment. The total costs of permitting under a nonattainment designation ranges from about $5 million to nearly $14 million per year. The exhibit below lists the estimates by county and by level of nonattainment (see Exhibit 5.1).

Exhibit 5.1: Annual Costs of Nonattainment New Source Review Permitting by County (2020 $)

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Aransas County	$336,000	$840,000	$373,488	$933,719
Nueces County	$3,336,000	$8,340,000	$3,708,198	$9,270,496
San Patricio County	$1,356,000	$3,390,000	$1,507,289	$3,768,223
MSA Total	**$5,028,000**	**$12,570,000**	**$5,588,975**	**$13,972,438**

Consequences of Construction Project Delays

A more lengthy and stringent permitting process for the nonattainment designation results in losses in economic activity associated with construction delays. Since a new source review permit could take up to 365 days, this delay potentially results in one year of lost business and wage earnings associated with the operation of the new facility.

The numbers of firms directly affected by construction delays are determined by the distribution of TCEQ permits by industry. The impact of construction delays in a given industry on RGP is calculated by multiplying the average firm size, as measured by gross sales, by the yearly number of permits in its respective industry. Essentially, the estimated reductions in GRP represent the impacts of a one-year delay in the construction project of a typical firm in different industries.

As shown in Exhibit 5.2 below, construction project delays are projected to result in a total loss of $273 million annually in the metro area's GRP under a marginal nonattainment designation. The corresponding reduction in GRP increases to $303 million under a moderate nonattainment designation.

Exhibit 5.2: Annual Reductions in GRP due to Construction Project Delays (2020 dollars)

	Marginal Nonattainment	Moderate Nonattainment
Aransas County	$7,439,110	$8,265,677
Nueces County	$236,731,564	$263,035,071
San Patricio County	$28,851,359	$32,057,065
MSA Total	**$273,022,032**	**$303,357,813**

Potential Loss of Firm Expansion or Relocation

When an area is designated as nonattainment, many local firms are required to install new emission control systems or engage in other activities to reduce emissions. Emissions control systems may cost more than $1 million to install and additional staff to maintain. In addition, offsets may be prohibitively expensive for many firms to purchase, even if they are available. All these additional costs may affect firms' decision to expand or relocate in a nonattainment area.

Since 2010, the Corpus Christi metro area has received more than $52 billion in capital expenditures. The following exhibit is a list of announced construction projects with a capital cost about $1 billion or more (see Exhibit 5.3).

Exhibit 5.3: Major Construction Projects in Corpus Christi Beginning 2010

	Year Start	Year End	$ Millions	Industry
TPCO	2011	2016	$1,200	steel
M&G	2014	2016	$1,100	plastics
voestalpine	2014	2016	$1,000	steel
Cheniere	2015	2018	$15,000	natural gas
OxyChem	2015	2017	$1,000	petrochemical
ExxonMobil/SABIC	2019	2022	$11,000	plastics
Steel Dynamics	2020	2021	$1,800	steel
Total			**$32,100**	

Corpus Christi's attainment status has been touted as one advantage for at least some of those corporate decisions to build industrial facilities in the area, as

opposed to other nonattainment areas, such as Houston. It is therefore conceivable that some of those facilities would not have occurred in the current locations in Nueces or San Patricio County if the area were designated as nonattainment.

We consider losses from potential firm expansion and relocation in three industries with major point sources of air emissions: oil and gas extraction, petrochemical manufacturing, and steel and fabricated pipe manufacturing. As evident in Exhibit 5.3 above, these industries account for the majority of new capital construction in the area during the past decade. The utilities industry, which includes electric power generation, is also a major air pollution source, but public utilities are most likely not to relocate or expand due to a nonattainment designation.

As in the San Antonio study, we first consider the potential loss of one average-sized firm in each of those three industries. The "direct" effects in terms of employment, wage income, GRP, and gross sales in a particular industry are measured by dividing their corresponding industry totals by the number of firms in that industry. As explained above, the loss of one industrial plant not only results in a direct loss of economic activity in that particular facility, but also losses of economic activity that ripple across the region. We used ESMI input-output model for the Corpus Christi area to project the alternative measures of total (including direct and secondary) economic impacts.

In addition to new construction, it is also probable that additional permitting and construction costs due to nonattainment will prevent some existing industrial plants from expanding in the future. In this scenario, we assume that the potential loss from firm expansion in a particular industry is equivalent to one-third of the average firm capacity. Our estimated potential losses from firms not expanding represents the low end of the range, while the estimated potential losses from firms relocating elsewhere represents the high end of the range.

The above two tables (Exhibits 5.4 and 5.5) show the low and high annual impact estimates by county due to firm expansion and relocation, respectively. A nonattainment designation for the Corpus Christi metro area would result in potential losses of 657 to 1,970 jobs, $555 million to $1.66 billion in GRP, and $1.3 billion to $4 billion in annual business revenues.

Exhibit 5.4: Low Estimates of Annual Impacts of Average Firm Expansion by Industry

Industry	Employment	Wage Income	GRP	Sales
Oil and Gas Extraction				
Aransas County	0	$36,953	$322,567	$602,291
Nueces County	7	$611,223	$10,264,925	$19,166,437
San Patricio County	1	$110,064	$1,251,025	$2,335,885
MSA Total	**9**	**$758,240**	**$11,838,517**	**$22,104,613**
Petrochemical Manufacturing				
Aransas County	31	$4,047,630	$14,766,935	$35,426,216
Nueces County	513	$66,949,950	$469,921,778	$1,127,353,110
San Patricio County	92	$12,055,820	$57,271,120	$137,394,729
MSA Total	**637**	**$83,053,400**	**$541,959,833**	**$1,300,174,056**
Steel and Pipe Manufacturing				
Aransas County	1	$34,400	$26,893	$53,323
Nueces County	9	$568,993	$855,791	$1,696,868
San Patricio County	2	$102,460	$104,298	$206,804
MSA Total	**11**	**$705,853**	**$986,982**	**$1,956,994**
Area Total				
Aransas County	32	$4,118,983	$15,116,395	$36,081,829
Nueces County	529	$68,130,166	$481,042,494	$1,148,216,415
San Patricio County	95	$12,268,344	$58,626,443	$139,937,418
MSA Total	**657**	**$84,517,493**	**$554,785,332**	**$1,324,235,662**

Exhibit 5.5: High Estimates of Annual Impacts of Average Firm Expansion by Industry

Industry	Employment	Wage Income	GRP	Sales
Oil and Gas Extraction				
Aransas County	1	$110,859	$967,702	$1,806,872
Nueces County	21	$1,833,669	$30,794,774	$57,499,310
San Patricio County	4	$330,193	$3,753,074	$7,007,655
MSA Total	**26**	**$2,274,720**	**$35,515,551**	**$66,313,838**
Petrochemical Manufacturing				
Aransas County	93	$12,142,891	$44,300,806	$106,278,648
Nueces County	1,540	$200,849,850	$1,409,765,334	$3,382,059,331
San Patricio County	277	$36,167,459	$171,813,361	$412,184,188
MSA Total	**1,911**	**$249,160,200**	**$1,625,879,500**	**$3,900,522,167**
Steel and Pipe Manufacturing				
Aransas County	2	$103,200	$80,678	$159,968
Nueces County	26	$1,706,979	$2,567,373	$5,090,604
San Patricio County	5	$307,379	$312,895	$620,411
MSA Total	**32**	**$2,117,559**	**$2,960,946**	**$5,870,983**
Area Total				
Aransas County	96	$12,356,950	$45,349,186	$108,245,488
Nueces County	1,588	$204,390,498	$1,443,127,481	$3,444,649,245
San Patricio County	286	$36,805,031	$175,879,330	$419,812,254
MSA Total	**1,970**	**$253,552,479**	**$1,664,355,997**	**$3,972,706,987**

Costs of Point Source Emission Reductions

An area designated as nonattainment with respect to ozone is required to perform specific types of NOx and VOC emission reductions. In particular, federally funded projects may obtain emission offsets to ensure there is no net increase in emissions for the area. The offset ratios are 1.1 to 1 for marginal nonattainment and 1.15 to 1 for moderate nonattainment (recall Exhibit 3.2).

In Corpus Christi, power plants and petroleum refineries are key industrial sources of ozone precursors. For marginal and moderate ozone nonattainment areas, a major source in the NNSR program is a facility with 100 tons per year (tpy) emissions of ozone precursors. The following exhibit displays the total amount of NOx and VOC emissions from the area's major sources in the electric power and petroleum refining industries (see Exhibit 5.6). The electric power industry includes the Barney M. Davis and Nueces Bay power plants now operated by Talen Energy, and the Calpine's Corpus Christi Energy Center. The petroleum refineries, located in so-called "refinery row" near the Corpus Christi ship channel, are facilities operated by Citgo, Flint Hills Resources and Valero.

Exhibit 5.6: NOx and VOC Emissions of Major Power Plants and Petroleum Refineries in Corpus Christi

	NOx Emissions (TPY)	VOC Emissions (TPY)
Power Plants	703	239
Petroleum Refineries	3,766	2,478
Total	**4,469**	**2,477**

Source: EPA, *Comprehensive Data Collected from the Petroleum Refining Sector*, accessed online at: https://www.epa.gov/stationary-sources-air-pollution/comprehensive-data-collected-petroleum-refining-sector; EPA, *Power Plant Emission Trends*, 2019, accessed online at: https://www.epa.gov/airmarkets/power-plant-emission-trends; and author's estimates.

The cost estimates for air emission reductions in 2020 dollars draw from the EPA's Regulatory Impact Analyses (RIAs). Depending on the emission sources, the average cost of NOx controls ranges between $1,200 to $19,000 per ton, and the average cost of VOC controls ranges between $1,200 to $25,000 per ton. These costs apply to a typical area with the ozone NAAQS of 70 ppb or lower.[18] The estimates are comparable to the historical Emission Reduction Credit Trade Data for the Dallas-Fort Worth area, but they are substantially lower than the trade costs for the Houston-Galveston-Brazoria metro area with fewer trades. As pointed out in Section 3.1, a non-attainment area can meet the "offset"

[18] Environmental Protection Agency, Office of Air Quality Planning and Standards, *Regulatory Impact Analysis of the Final Revisions to the National Ambient Air Quality Standards for Ground- Level Ozone*. September 2015. EPA-452/P-15-007.

requirements by implementing an emissions trading program, as in the Dallas and Houston metro areas.

The following exhibit shows estimates of the annual potential costs of point source emission reductions by county (see Exhibit 5.7). The low and high cost estimates correspond to the low and high ends of EPA estimates for emission control costs.[19] In line with the required offset ratios for ozone nonattainment, estimates for the scenario of marginal nonattainment represent the total costs of an 10% reduction in both NOx and VOC emissions, and estimates for the scenario of moderate nonattainment represent the total costs of a 15% reduction in both NOx and VOC emissions. The distribution of costs across the three counties is proportional to their shares of point source emissions. While most power plants and petroleum refineries are located in Nueces County, the majority of industrial manufacturing plants that has recently been built or under construction are in San Patricio County. These newly developed industrial sites are poised to contribute to major air pollutant sources in the future. In light of locations of these new industrial facilities along with the existing power plants and refineries, the allocations of the emission reduction cost estimates are assumed to be 70% and 30% for Nueces and San Patricio Counties, respectively.

Exhibit 5.7: Annual Potential Costs of Point Source Emission Reductions by County (2020 $)

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Aransas County	$0	$0	$0	$0
Nueces County	$603,591	$10,697,852	$905,387	$16,046,778
San Patricio County	$258,682	$4,584,794	$388,023	$6,877,191
MSA Total	**$862,273**	**$15,282,646**	**$1,293,409**	**$22,923,969**

Overall Impact on Local Industry

The following exhibit summarizes the annual impact on Corpus Christi's local industry associated with projected losses in future firm decisions to expand or relocate in the area as well as operations of existing firms due to a nonattainment designation (see Exhibit 5.7). The range of potential costs on local industry is between $0.56 million and $1.69 million each year. Reductions in economic activity, or GRP, due to a potential loss of industrial construction and expansion

[19] Environmental Protection Agency, *Regulatory Impact Analyses for Air Pollution Regulations: Economic Impact Analyses and Industry Profiles by Sector*. Available online at: https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/regulatory-impact-analyses-air-pollution.

opportunities contribute to the bulk of the nonattainment designation's impacts on Corpus Christi's industry sector.

Exhibit 5.7: Average Annual Potential Costs of Nonattainment on Corpus Christi MSA Industry (2020 $)

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Cost of NNSR Permitting	$186,222	$465,556	$186,299	$465,748
Cost of Industrial Project Delays	$10,111,927	$10,111,927	$10,111,927	$10,111,927
Lost Firm Expansion/Relocation	$554,785,332	$1,664,355,997	$554,785,332	$1,664,355,997
Costs of Point Source Reduction	$862,273	$15,282,646	$1,293,409	$22,923,969
Total	**$565,945,755**	**$1,690,216,126**	**$566,376,968**	**$1,697,857,641**

5.2 Transportation Conformity Costs

From the perspective of transportation conformity, the economic costs of ozone nonattainment arise largely from traffic congestion in the urban area that contributes to ozone as a result of vehicle idling. As indicated in Section 2 above, vehicles are major sources of NOx and VOC emissions. An ozone nonattainment designation would result in additional requirements in terms of environmental assessments for federally funded transportation projects. According to the Capital Area Council of Governments (2015), the additional cost of completing such analyses ranges between $100,000 and $250,000 per project. [20] A lapse in conformity to the federal regulations would result in a loss of federal funding for the area's road works altogether.

The following exhibit is a sample of the major planned road construction projects in Corpus Christi MPO's region, including a proposed new 4-lane regional parkway in the south side of the city of Corpus Christi (see Exhibit 5.8).

Exhibit 5.8 : Major Road Construction Projects in Corpus Christi MPO 2020-2045 MTP

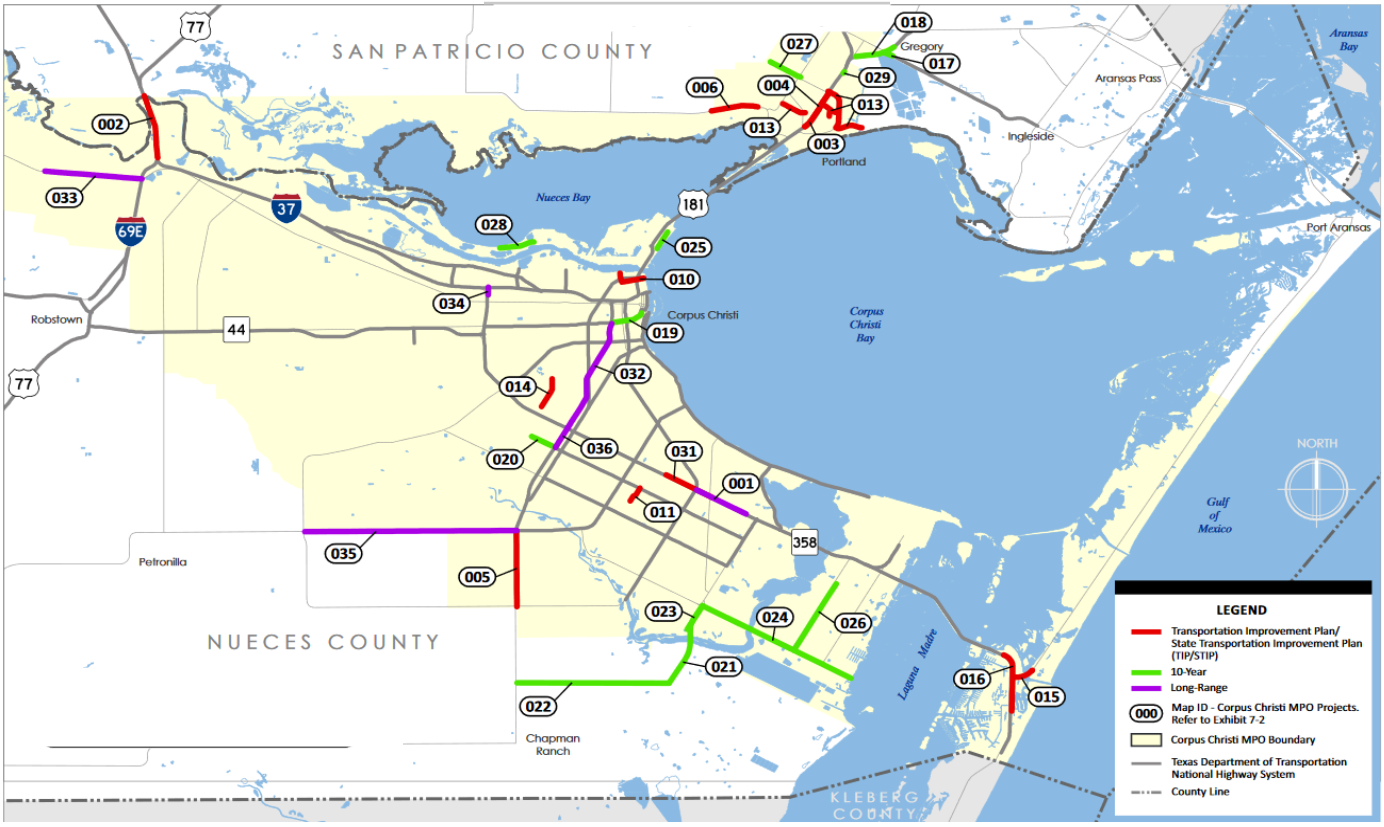
Project Description	Construction Cost
Plan to build a 4-lane regional parkway	$416,608,000
SH 286 (Crosstown) expansion and improvements	$219,916,800
Park Road 22 Improvements	$74,015,004
I-37 Expansion and Improvements	$289,475,200
US 181 Improvements	$123,914,880
Sample Total	**$1,123,929,884**

Source: Corpus Christi Metropolitan Planning Organization, 2020-2045 Metropolitan Transportation Plan (MTP), February 2020.

[20] Capital Area Council of Governments, *The Potential Costs of an Ozone Nonattainment Designation to Central Texas*, September 22, 2015.

The list of road construction and improvement projects in Exhibit 5.8 above is part of the Corpus Christi MPO's 2020-2045 Metropolitan Transportation Plan (MTP) for short- and long-range projects. The following exhibit is a map of these projects (see Exhibit 5.9). The total construction costs of these projects in the 2020-2045 MTP total $1.83 billion.[21]

Exhibit 5.9: Map of Corpus Christi MPO 2020-2045 MTP



These traffic improvement and roadway projects will enhance flows in the Corpus Christi urban area. When one of these projects is completed, the typical travel time will reduce. The time savings for drivers translate into additional time for other activities. Reducing vehicle idling time that would otherwise occur in congestion also results in less air pollution. From these perspectives, potential delays in federally funded road improvement projects due to ozone nonattainment will involve losses in potential economic benefits.

[21] Corpus Christi Metropolitan Planning Organization, *2020-2045 Metropolitan Transportation Plan, Chapter 7: Implementation Plan*. Accessed online at: http://www.corpuschristi-mpo.org/01_mtp.html.

Costs Associated with Road Construction Delays

As for pre-construction delays in building new industrial facilities (see Section 5.1 above), any delay in starting a road improvement or construction project would result in a potential loss of local economic activity or business that relies on a timely completion of that project.

To calculate potential losses due to pre-construction delays in road improvement projects, we draw on a recent study by Texas A&M Transportation Institute (TTI).[22] Exhibit 5.10 below shows estimates of monthly costs of delay based on the sizes of the projects. All of the roadworks shown in Exhibit 5.9 above belong to "large" projects according to the TTI classification. The total economic costs include: (1) direct costs to travelers due to additional travel time, (2) increases in construction costs due to a delay, and (3) impact on economic activity due to a delay.

Exhibit 5.10: Monthly Costs of Road Construction Project Delays (2020 $)

	Small Projects	Large Projects	Total
Project Total Costs	$702,958,429	$1,123,929,884	**$1,826,888,313**
Direct Cost to Travelers per Month	$1,419,313	$1,427,272	**$2,846,585**
Construction Cost Increase per Month	$3,664,668	$14,530,263	**$18,194,931**
Impact on Economic Activity per Month	$665,556	$1,069,053	**$1,734,608**
Total Costs of Delay per Month	**$5,749,537**	**$17,026,588**	**$22,776,125**

Sources: Beaty et al. (2015), and author's calculations.

According to the TTI's 2019 *Urban Mobility Report*, the average "economic" value of time for Corpus Christi travelers is $18.12 per hour.[23] From the perspective of all future projects in the Corpus Christi MPO's 2020-2045 MTP, a one-month delay would result in a total of slightly less than $3 million worth of local traveling time per month.

The TTI estimates that each month of pre-construction delay in road projects results in a 0.5% increase in construction costs for small projects and a 1.3% increase for large projects. Accordingly, construction costs are projected to

[22] Curtis Beaty, David Ellis, Brianne Glover, and Bill Stockton, *Assessing the Costs Attributed to Project Delay During Project Pre-Construction Stages*, Texas A&M Transportation Institute, March 2016.

[23] Texas A&M Transportation Institute, Urban Mobility Report, 2019. Accessed online at: https://tti.tamu.edu/conferences/tsc11/program/presentations/construction-2/ellis.pdf.

increase by $17 million if all those planned road projects for Corpus Christi are delayed by one month.

The last type of economic costs due to road construction delay is the indirect impact on local economic activity. Any delay in roadworks necessarily means a delay in employing construction workers. Other economic costs are associated with excess fuel consumed and additional CO2 emissions due to vehicle idling during traffic congestion that likely occurs before the construction project is complete. The EPA estimates 8.887 grams of CO2 emissions from a gallon of gasoline consumption and $40 per ton of pollution cost.[24] According to the U.S. Office of Management and Budget, $1 in reduced air emissions from mobile sources would generate $9 in economic benefits.[25] This ratio can also be interpreted as the potential costs of any delay in road improvement projects.

The following exhibit lists the total economic impact on the three individual counties in the metro area (see Exhibit 5.11). Following the San Antonio report, we assume that transportation conformity analyses under the alternative marginal and moderate nonattainment designations would respectively result in 2-year and 3-year delays in federally funded road projects. Accordingly, we multiply the corresponding monthly economic costs due to road project delays by 24 and 36 to arrive at the respective 2-year and 3-year cumulative estimates. The total impact also includes the costs of conducting transportation conformity analyses. Given the five major projects listed in Exhibit 5.9 above, the low estimates are based on a cost of $100,000 per conformity analysis and the high estimates are based on a cost of $250,000 per conformity analysis.

Exhibit 5.11: Cumulative Total of Reduced GRP due to Transportation Conformity by County (2020 $)

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Aransas County	$700,547	$701,507	$1,050,500	$1,051,460
Nueces County	$393,006,713	$393,545,446	$589,330,493	$589,869,225
San Patricio County	$153,419,733	$153,630,040	$230,059,497	$230,269,804
MSA Total	**$547,126,993**	**$547,876,993**	**$820,440,490**	**$821,190,490**

[24] Environmental Protection Agency, Greenhouse Gas Emissions from a Typical Passenger Vehicle. Available online at: https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle.

[25] Capital Area Council of Governments, *The Potential Costs of an Ozone Nonattainment Designation to Central Texas*, September 2015.

The *cumulative* impact on the metro area economy over the entire study period is projected to exceed $547 million for marginal nonattainment and $820 million for moderate nonattainment. The distribution of estimated reductions in GRP among the three counties is proportional to the counties' shares of area-wide road construction employment.

5.3 Vehicle Inspection and Repair Costs

An area of moderate nonattainment is required to implement the basic vehicle inspection and maintenance (I/M) program. In this program, vehicles that are 2 to 24 years old with light or medium duty engines are required to get an on-board diagnostic emission inspection each year. In Texas, the current inspection fees are between $11.5 per vehicle in El Paso and $18.5 in the Dallas-Fort Worth and Houston areas.

The following exhibit shows the average annual reductions in GRP due to the vehicle inspection requirement (see Exhibit 5.12). To arrive at the estimates in the table, we first collected data on the total number of registered vehicles in each county from the Texas Department of Motor Vehicles. Next, we extrapolated those numbers with a projected population growth rate of 1% per year for the next 30 years (the window of this study). Assuming the inspection fees to remain the same for the entire 30-year period, the low estimates correspond to $11.5 per vehicle and the high estimates correspond to $18.5 per vehicle.

The total impact on the local economies in terms of RGP includes the multiplier, or spillover, effects on local economic activity associated with corresponding reductions in households' disposable income for purchasing other local goods and services after paying for vehicle inspections. The EMSI input-output models for the individual counties are used to project the multiplier effects due to corresponding reductions in household disposable incomes.

Exhibit 5.12 Annual Lost GRP due to Inspection Fees by County Under Moderate Nonattainment (2020 $)

	Low Estimate	High Estimate
Aransas County	$393,836	$633,563
Nueces County	$4,348,630	$6,995,622
San Patricio County	$1,027,218	$1,652,481
MSA Total	**$5,769,684**	**$9,281,666**

As shown in the above exhibit, the requirement for vehicle inspections in the Corpus Christi metro area would result in a reduction in GRP between $5.8 million and $9.3 million each year. According to the historical data of Dallas-Fort Worth and Houston areas, about 4% of vehicles fail initial inspections and the typical repair cost of those vehicles was between $200 and $300 per vehicle. For the Corpus Christi metro area, this would result in about $4.4 million annually in repair costs due to inspections. However, such costs are not included in this report because vehicle repairs represent economic activity and thus income transfers from vehicle owners to auto repair shops.

5.4 Educational and Outreach Programs

As indicated above, the Coastal Bend Air Quality Partnership is at the forefront to address NAAQS ozone attainment issues for the Corpus Christi metro area. Participants in this group include municipal and county government agencies in the area, the Port Authority and port industry, the MPO, universities, the military sector, and the news media across the region.

One strategy spearheaded by this alliance is participation in the EPA's Ozone Advance Program. Through this program, a diverse group of local community stakeholders have been participating in the following Path Forward activities:[26]

- Air quality education and outreach programs
- Grade school air quality curricula
- Additional air quality monitoring and research with CAMS 660, CMAS 664, and CMAS 685 (recently discontinued)
- Pollution Prevention Partnership's Clean Fleet program for voluntary vehicle emission testing and repairs (AutoCheck)
- Detection of fugitive emissions by infrared cameras
- Corpus Christi Army Depot Ozone Action Day for pollution reduction and prevention actions
- Operation of public use Compressed Natural Gas (CNG) fueling facilities
- RTA's replacement of the existing fleet with CNG and electric vehicles
- MPO's bicycle mobility planning in roadway projects
- Bike Share program in Corpus Christi downtown
- RTA Van Share and community shuttle programs
- Local home builders' Coastal Bend GreenBuilt initiative for "green" building

[26] Corpus Christi Air Quality Group, *Corpus Christi Urban Airshed Annual Ozone Advance Report*, May 2019.

An ozone nonattainment designation would necessitate more promotion and outreach activities beyond those in the existing Ozone Advance Program. Its total budget, which includes costs for vehicle emission reductions and air monitoring programs, currently exceeds $200,000 annually. The following exhibit lists estimates for the average additional annual costs of air quality educational and outreach programs by county (see Exhibit 5.13). As discussed above, such educational and outreach activities represent economic "costs" in the sense that their associated resources might otherwise be allocated to other economic activities, including leisure, if air quality is not a critical community issue.

Exhibit 5.13: Costs of Additional Educational Programs by County per Year (2020 $)

	Marginal Nonattainment	Moderate Nonattainment
Aransas County	$6,061	$12,820
Nueces County	$92,293	$195,200
San Patricio County	$17,042	$36,044
MSA Total	**$115,397**	**$244,064**

The estimates for moderate nonattainment are based on a per capita cost of $0.48, which is the inflation-adjusted per capita cost of $0.45 for the Commute Solutions programs in the Houston metro area in 2016, as funded by the Texas Department of Transportation (TxDOT). The projected cost for each county in a given year equals the projected local population of that year times the per capita cost. Consistent with historical trends, we assume a 1% population growth rate per year for each of the three counties. Under the moderate nonattainment designation, the Corpus Christi metro area would potentially incur an additional $244,064 each year in air quality educational programs. This amount exceeds the total costs of major programs currently conducted by the Coastal Bend Air Quality Partnership participants.

The Houston area has been in moderate nonattainment. For the hypothetical scenario of marginal nonattainment designation, we follow the San Antonio study and assume the additional educational costs to be half of the full projected costs for moderate nonattainment. Over the period of marginal nonattainment, the Corpus Christi metro area is projected to incur $115,397 each year in air quality educational programs, or more than half of the current budget of the Coastal Bend Air Quality Partnership programs.

5.5 Costs of Voluntary Control Measures

Under the Texas Emissions Reduction Plan (TERP), communities can apply for funding to pay for programs that reduce emissions from vehicles in the area. These programs include the Diesel Emission Reduction Incentive (DERI), Texas Clean Fleet (TCFP) Program, Texas Natural Gas Vehicle Grant Program (TNGVGP), and Drayage Truck Incentive Program (DTIP).

The following exhibit lists the two TERP programs in which Corpus Christi has participated and the average annual amount of grants the area received over the 2001-2018 period. According to the TCEQ, the area received an annual average of slightly less than $500,000 through the DERI program and about $18,000 through the TNVGP program.[27]

Exhibit 5.14: TERP Programs for Corpus Christi, 2001-2018

	Annual Average
Diesel Emissions Reduction Incentive Program	$546,385
Texas Clean Fleet Program	—
Texas Natural Gas Vehicle Grant Program	$18,189
Drayage Truck Incentive Program	—
TERP Programs Total	**$564,575**

Source: TCEQ, *Texas Emissions Reduction Plan, Biennial Report (2017-2018),* December 2018.

We assume that the Corpus Christi community will continue to participate in these programs and receive funding for the same amounts (2020 dollars) on average every year. However, these programs have covered only two of the three counties of the metro area. Under a nonattainment designation, we assume Aransas County will begin participating in these programs along with the other two counties. The projected costs of those two TERP programs for Aransas County in the future are calculated as the projected county population (see Section 5.4 above) times the per capita estimates of the program total costs listed in Exhibit 5.14 above.

The following exhibit lists the additional costs of the TERP programs cumulated over the entire windows of marginal and moderate nonattainment designation, respectively (see exhibit 5.15). In total, a nonattainment designation would potentially result more than $800,000 in costs for the area beyond the existing TERP programs.

[27] Texas Commission on Environmental Quality, *Texas Emissions Reduction Plan, Biennial Report (2017-2018),* December 2018.

Exhibit 5.15: Cumulative Additional Costs of TERP Programs by County (2020 $)

	Marginal Nonattainment	Moderate Nonattainment
Aransas County	$800,692	$889,658
Nueces County	—	—
San Patricio County	—	—
MSA Total	**$800,692**	**$889,658**

6. OVERALL FINDINGS

6.1 Overall Economic Losses

We have estimated the potential costs of an ozone nonattainment designation for Corpus Christi in terms of the local economic impacts from potential losses of industry expansion, delays in construction projects, including industrial projects and federally funded road works, additional vehicle inspection costs, additional educational and outreach program costs, and additional costs of voluntary emission control measures. It is important to note that these costs affect not only businesses, both big and small, but also individuals within the nonattainment community.

The following exhibit summarizes the annual average of potential economic costs of nonattainment for the Corpus Christi metro area (see Exhibit 6.1). In total, the area is projected to incur a total economic loss between $586 million and $1.7 billion annually, depending on different hypothetical scenarios of nonattainment and cost assumptions. The low range of the cost estimates is equivalent to 2.4% of the metro area GRP, and the high range of the cost estimates is equivalent to 7.1% of the metro area GRP.

Exhibit 6.1: Average Annual Potential Costs of Nonattainment in the Corpus Christi MSA (2020 $)

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Impact on Local Industry	$565,945,755	$1,690,216,126	$566,376,968	$1,697,857,641
Losses due to Road Construction Delays	$20,263,963	$20,291,740	$27,348,016	$27,373,016
Vehicle Inspection Costs	–	–	$5,769,684	$9,281,666
Educational/Outreach Program Costs	$123,474	$123,474	$261,148	$261,148
Costs of Voluntary Control Measures	$29,655	$29,655	$29,655	$29,655
Total	**$586,362,847**	**$1,710,660,996**	**$599,785,472**	**$1,734,803,126**

Within the Corpus Christi metro area, Nueces County is the most populated county with nearly 80% of the regional population. This county is projected to incur between $0.5 billion and roughly $1.5 billion each year if the metro area as a whole receives an ozone nonattainment designation.

For each of three counties in the metro area, the following exhibit displays the corresponding annual cost estimates per capita by dividing the total cost estimates for the county by its projected average county population over the period of study. The estimates essentially represent the burden on each local resident should the metro area fails to maintain the ozone attainment status.

Exhibit 6.2: Average Annual Potential Costs of Nonattainment per County Resident (2020 $)

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Aransas County	$560	$1,655	$575	$1,679
Nueces County	$1,201	$3,514	$1,225	$3,555
San Patricio County	$846	$2,413	$887	$2,490
MSA	**$1,115**	**$3,253**	**$1,141**	**$3,299**

According to Exhibit 6.2 above, the burden from the nonattainment designation is the highest for residents in Nueces County due in part to the county's relatively more employment and business opportunities that might potentially be lost. However, even though most existing industrial activity that contributes to major air pollution sources occurs in Nueces and San Patricio Counties, a typical resident in Aransas County would still experience economic losses between $560 and $1,679 each year.

Our analyses cover a period of 27 years in the case of marginal nonattainment designation, and 30 years in the case of moderate nonattainment. For the Corpus Christi metro area as a whole, the projected cumulative costs therefore amount to $16 billion-$46 billion under marginal nonattainment, and $18 billion-$52 billion under moderate nonattainment.

6.2 Comparisons with Other Areas

While our cost measures seem significant in comparison of the size of the Corpus Christi economy, it is instructive to compare such estimates with those in the corresponding studies for San Antonio and Austin metro areas. The following exhibits lists the estimates for San Antonio corresponding to our broad classifications (see Exhibit 6.3).[28]

Exhibit 6.3: Average Annual Potential Costs of Nonattainment in the San Antonio MSA

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Impact on Local Industry	$95,302,311	$997,059,928	$95,094,903	$996,763,631
Losses due to Road Construction Delays	$21,133,273	$21,133,273	$28,529,919	$28,529,919
Vehicle Inspection Costs	–	–	$112,533,112	$181,031,510
Educational/Outreach Program Costs	$545,755	$545,755	$1,108,899	$1,108,899
Costs of Voluntary Control Measures	$318,460	$318,460	$318,460	$318,460
Total	**$117,299,799**	**$1,019,057,416**	**$237,585,294**	**$1,207,752,419**

[28] Nivin, Steve, Belinda Roman, and David Turner, *Potential Cost of Nonattainment in the San Antonio Metropolitan Area*, study conducted for Alamo Area Council of Governments, February 21, 2017.

For the Austin study, there are no estimates for costs associated with vehicle inspection, educational programs, and voluntary control measures. On the other hand, there are more detailed costs associated with general conformity requirements.[29]

Exhibit 6.4: Average Annual Potential Costs of Nonattainment in the Austin-Round Rock MSA

	Marginal/Moderate Nonattainment	
	Low Estimate	**High Estimate**
Impact on Local Industry	$806,604,694	$1,375,725,114
General & Transportation Conformity Costs	$3,379,474	$9,179,770
Vehicle Inspection Costs	–	–
Educational/Outreach Program Costs	–	–
Costs of Voluntary Control Measures	–	–
Total	**$809,984,168**	**$1,384,904,884**

There are two major observations in comparing the cost estimates across the three metro areas. First, even though the current size of population in the Corpus Christi metro area is less than 20% of that in the San Antonio metro area, the estimated annual economic impact from nonattainment is higher in Corpus Christi than in San Antonio. By comparison, the Austin-Round Rock metro area is projected to incur the highest overall economic cost that are nearly seven times of its San Antonio counterpart, despite a similar population size.

Second, estimates for the economic consequences from potential losses of firm expansion or relocation dominate variations in estimated economic impacts across the three metro areas. In the case of the Austin-Round Rock metro area in Central Texas, the report considers the potential impact of a nonattainment designation on prospective capital investments, such as an expansion for the existing Samsung semiconductor manufacturing facility in Travis County. According to the report, forgiving this capital investment project alone would result in a cumulative economic impact up to $3.7 billion.

Likewise, given the outsized economic significance of recent growth in the industrial manufacturing sector to Corpus Christi, the region's "opportunity" costs of potential firm expansion and relocation are expected to be substantial as well. Our estimates based on the average-sized firms in various industries today generate only conservative projections. Still, as a result of the relative size of the industrial sector in Corpus Christi that is similar to that in Austin, our estimates for the impact on local industry and thus the overall economic consequences of

[29] Capital Area Council of Governments, *The Potential Costs of an Ozone Nonattainment Designation to Central Texas*, September 22, 2015.

nonattainment are much more comparable to the corresponding estimates for Austin than for San Antonio. The corresponding estimates for potential economic losses in Corpus Christi would even be greater should we instead consider the possibility of losing any of the newly built manufacturing plants near the Port of Corpus Christi, including the ExxonMobil plastics plant and the Steel Dynamics facility currently under construction.

One drawback of all these related studies is the high level of uncertainty involving the projections for the potential economic losses from firms' decision to expand or build a new facility in an area. From this perspective, we follow the San Antonio study and focus on the "hard" costs of nonattainment alternatively. These "hard" costs, which can be estimated with high levels of confidence, consist of the costs of nonattainment new source review (NNSR) permitting, the impact on local economic activity due to industrial construction project delays and road construction delays, as well as losses associated with the requirement for vehicle inspection. The costs of NNSR permitting and losses due to industrial project delays are parts of the estimated impact on local industry (section 5.1). The estimated losses from road construction delays and vehicle inspection represent costs related to transportation conformity (section 5.2).

Exhibit 6.5: Average Annual Potential "Hard" Costs of Nonattainment in the Corpus Christi MSA (2020 $)

	Marginal Nonattainment		Moderate Nonattainment	
	Low Estimate	**High Estimate**	**Low Estimate**	**High Estimate**
Cost of NNSR Permitting	$186,222	$465,556	$186,299	$465,748
Cost of Industrial Project Delays	$10,111,927	$10,111,927	$10,111,927	$10,111,927
Losses due to Road Construction Delays	$20,263,963	$20,291,740	$27,348,016	$27,373,016
Vehicle Inspection Costs	$0	$0	$5,769,684	$9,281,666
Total	**$30,562,112**	**$30,869,223**	**$43,415,927**	**$47,232,357**

With a focus on the "hard" costs, a nonattainment designation for the Corpus Christi metro area is projected to generate an annual impact of $30 million–$47 million. While the cost estimates in total are substantially smaller than the corresponding overall estimates in Exhibit 6.1 above, they nevertheless highlight the importance, or economic benefits, of maintaining clean air quality to local residents.

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