# CORPUS CHRISTI OZONE ADVANCE
## ANNUAL REPORT: MAY 2014 – APRIL 2015

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# CORPUS CHRISTI
# OZONE ADVANCE PROGRAM

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## INTRODUCTION

On December 15, 2012, the Corpus Christi Air Quality Group submitted a letter of intent to the U S EPA to participate in an Ozone Advance Program. In May 2014, the Corpus Christi Air Quality Group submitted a Path Forward Letter to the U S EPA initiating Corpus Christi's participation in an Ozone Advance Program with the U S EPA. The following report is the Corpus Christi Airshed background report of Year 1 activities for the Corpus Christi Ozone Advance.

### Corpus Christi Air Quality Group Background

The Corpus Christi Air Quality Group was established in 1995 to address National Ambient Air Quality Standards (NAAQS) ozone attainment issues for the Airshed. Members of the Corpus Christi Air Quality Group include individuals from area municipal and county government, business and industry, local universities, public agencies, a regional planning organization, the military, and the news media. The broad stakeholder representation within the Corpus Christi Air Quality Group works collaboratively to design and deliver effective strategies that are suitable for the Corpus Christi area. The group meets quarterly in public facilities such as Texas A&M University-Corpus Christi, City Hall, conference centers, etc., and are open to the public. The chair of the Corpus Christi Air Quality Group provides a meeting invitation and agenda quarterly to all members.

The Corpus Christi Air Quality Group met during the reporting period on July 18, 2014, October 9, 2014, January, 13, 2015, and April 17, 2015. Attachment A to this report is a communication list for the Corpus Christi Air Quality Group.

### Corpus Christi Ozone Advance Program Background

On December 15, 2012, the Corpus Christi Air Quality Group submitted a letter of intent to the U S EPA to participate in an Ozone Advance Program. In May 2014, the Corpus Christi Air Quality Group submitted a Path Forward Letter to the U S EPA initiating Corpus Christi's participation in an Ozone Advance Program. The goal for the Airshed participation in the Ozone Advance Program is to continue the area's successful record of maintaining healthy air quality and to encourage voluntary air emission reductions that keep Nueces County and San Patricio County in attainment with the current 8-hour ozone standard of 75 ppb (parts per billion), as well as, attainment of possible lower NAAQS for ozone announced by U S EPA in November 2014.

## Corpus Christi 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 U S 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 and location of regulatory ozone monitors (CAMS 4 and CAMS 21)**


The region is a large urbanized area with a number of industrial point sources of air emissions and a concentration of mobile sources. The two counties are home to the nation's fifth busiest deep-water port access to the Gulf of Mexico and the Gulf Intracoastal Waterway, and are home to a large industrial and petrochemical complex, a major military base, renewed oil and gas exploration activity, and a network of highways, including an interstate highway system, railroads, and an airport, that facilitates commerce and a thriving tourism industry. In addition, currently under construction or in the permitting process is a large LNG facility, a stainless steel pipe manufacturing facility, a plastics/resin production facility, and an iron processing facility.

## Applicable Standards

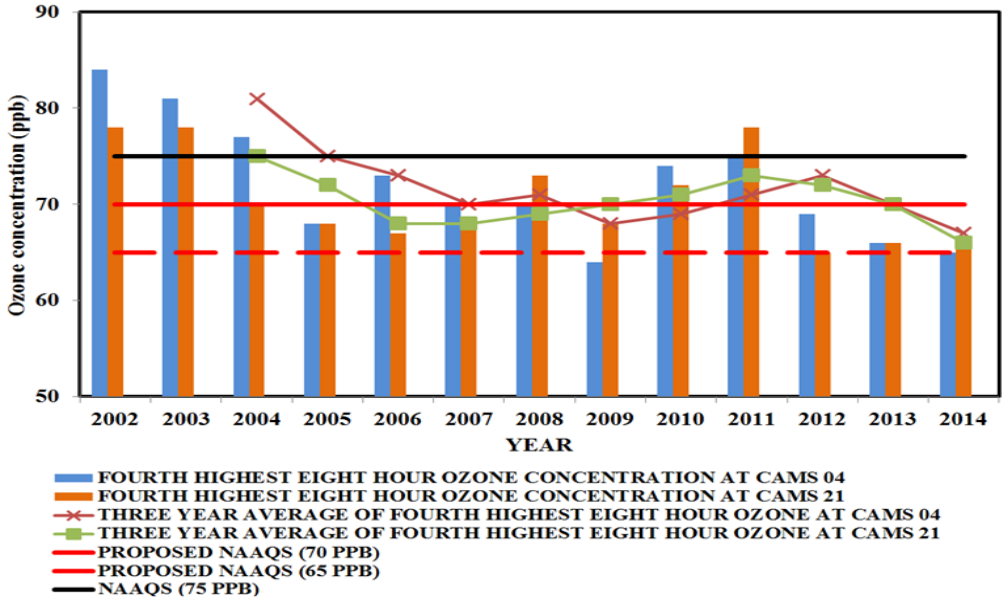
The current National Ambient Air Quality Standard (NAAQS) for ozone: the fourth highest daily maximum 8-hour average, averaged over the past three calendar years, may not exceed 75 ppb.

## Airshed Ozone NAAQS Status and Trending

The TCEQ operates two Continuous Air Monitoring Stations (CAMS) in Corpus Christi: TCEQ CAMS 4, located at the Corpus Christi State Supported Living Center at 902 Airport Road; and TCEQ CAMS 21, located in West Guth Park at 9866 La Branch Street *(Figure 1)*. Ozone levels

recorded at these two monitors are used to determine the attainment status of the area. Currently, the Airshed is in attainment of the NAAQS for ozone at a design value of 66 pbb. The Airshed has experienced an overall decreasing trend in ozone values from 2002 through 2014 (*Figure 2).*

**Figure 2: Corpus Christi Ozone Design Trends**




Additional ozone monitors are positioned upwind for research purposes by Corpus Christi Air Quality Group participant and stakeholder Texas A&M University-Kingsville/University of Texas. *(Figure 3)* The upwind air monitors, Aransas Pass (CAMS 659) and Odem (CAMS 686), have consistently recorded rising design values approaching or equal to the current NAAQS for ozone, suggesting an influence of long range transported emissions from outside of the Airshed at the local monitors *(Figure 4).*

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

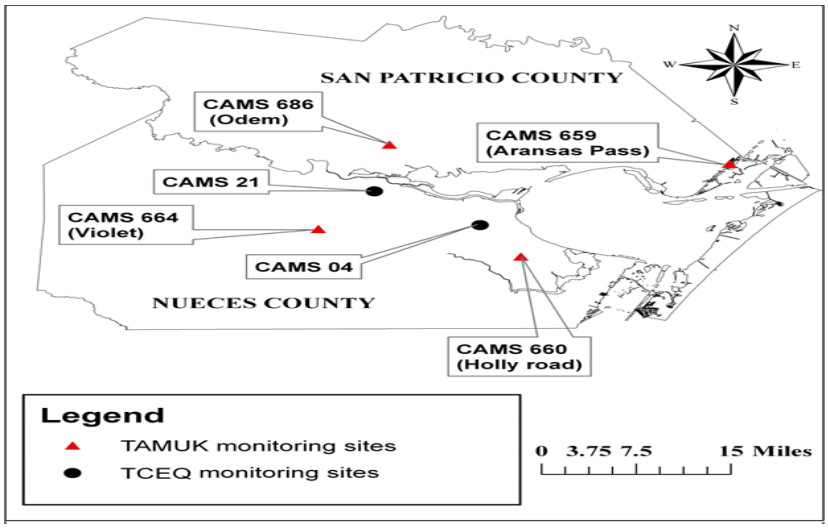
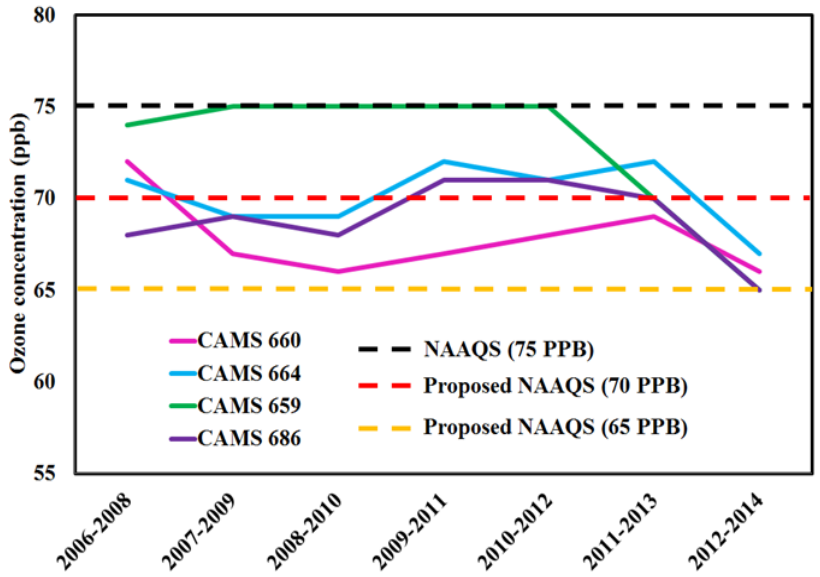


**Figure 4: Ozone Trending at Upwind Monitors**




# PATH FORWARD EMISSIONS REDUCTION COMMITMENTS PERFORMED DURING MAY 2014 – APRIL 2015

The Corpus Christi Airshed emission reduction commitments identified in its Ozone Advance Path Forward letter for Year 1 (May 2014 – April 2015) and the status of these commitments are reported below. Port of Corpus Christi and Construction Emissions

**Port of Corpus Christi and Construction Emissions Inventory**

1. Path Forward Commitment

*The Corpus Christi air-shed 2011 emissions inventory provided by TCEQ did not include emissions from the Port of Corpus Christi or construction equipment operated in the airshed. The Corpus Christi Air Quality Group requested a work-plan and quote from StarCrest LCC to provide an inventory and accurate analysis of these missing components in an effort to have a complete inventory and analysis of overall emissions contributions for our airshed. The Port of Corpus Christi has committed to funding the Year 1 work plan in the amount of $79,500, and Starcrest will perform those activities.*

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. The Port of Corpus Christi approved funding ($153,500) of the emissions inventory for Port of Corpus Christi and emissions from construction activities in both counties. StarCrest commenced work in June of 2014. The following Port of Corpus Christi emissions have been estimated: harbor craft and towboats, cargo handling equipment, heavy duty vehicles, ocean-going vessels and rail. A draft report on these emissions was provided in

May 2015. Data collection on construction activities is not complete at this time.

**Establishment of Air Quality Position and Program**

2. Path Forward Commitment

*The Corpus Christi Air Quality Group will work with stakeholders and potential sponsors to try to secure funding for a position that delivers a community-wide education campaign that strives to educate members of the community about the air quality impact of their choices and lower emission alternative choices that are available to them. An educated public is an important component of any community that strives to maintain healthy air quality.*

Status of Commitment

The development and submittal of a proposal to establish a full time air quality education position and program within the first year as stated in the Path Forward Plan is on track. 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), with the Pollution Prevention Partnership, 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, a sponsorship or any other type of funding for such a program has not been offered or found to be available.

**Monitoring**

3. Path Forward Commitment

*Through TCEQ funding provided by the 83rd Texas Legislature, the City of Corpus Christi has secured $596,195.00 in funding for a two-year work plan to implement numerous voluntary emissions reductions studies and programs.*

*A summarized scope of work follows:*

*Research, Modeling, Monitoring*

*Operate and maintain the three research grade monitoring stations within Nueces and San Patricio counties. These include:*

*(1) an upwind site at the waste water treatment plant in Aransas Pass, TX (CAMS 659);*

*(2) a downwind site located at Violet Road, near Robstown, TX (CAMS 664); and*

*(3) an urban site at the municipal water pumping station on Holly Road (CAMS 660),*

*SH-358 (South Padre Island Drive) in Corpus Christi.*

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

*Acquire data using an Enfora modem and provide the data to the public, stakeholders, and other researchers on TCEQ's website using the LEADS data acquisition system.*

Status of Commitment

The commitment is on track with 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, and 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 stakeholders, policy makers, researchers and community members. The weblink 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.

4. Path Forward Commitment

*Conduct continuous monitoring of nitrogen oxides (NOx) concentrations at an identified site during the 2014-2015 ozone season.*

Status of Commitment

The commitment is on track with 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 15th, 2014 through October 31st, 2014 and no concentrations were observed to range between 1 ppb to 9 ppb.

5. Path Forward Commitment

*Upgrade air monitoring equipment at the three UNT/TAMUK monitoring sites.*

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. As a part of the air monitoring equipment upgrade process, two new Teledyne-API 400E ozone analyzers and Teledyne – NOx analyzer have been acquired and installed. RM Young wind sensors have been repaired and calibrated to acquire valid wind measurements.

**Modeling**

6. Path Forward Commitment

*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.*

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. The 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.

**Research**

7. Path Forward Commitment

*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.*

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. Ozone concentrations and meteorological conditions, including resultant wind speed, and wind direction, outdoor temperature and relative humidity, measured at compliance grade monitoring stations, CAMS 04 and CAMS 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, were used to update the existing conceptual modeling report. Continued decrease in the ozone design values has been observed 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 both CAMS 659 and CAMS 660. Seasonal trend analysis of exceedance days demonstrated bimodal distribution with higher numbers during April and May and September and October.

Meteorological analysis of the identified episode days indicated dominant wind contributions from north and northwest. Additional trajectory analysis was conducted using the twenty four hour backward trajectories which was 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.

**Clean Fleet**

8. Path Forward Commitment

*The Pollution Prevention Partnership will deliver the "Clean Fleet" vehicle emissions testing program and hold a minimum of one testing event each month. The program will include direct emissions testing from the tail pipe, possible repairs, post-repair direct emissions testing from the tail pipe, and an approximation of emissions reductions as a result of the repair. Certified garages will perform the repairs.*

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. The Pollution Prevention Partnership held seventeen (17) events testing public and fleet vehicles for emissions. A total of four hundred eighty-nine (489) vehicles were tested for emissions. Thirty-eight(38) vehicles were identified as polluting and sixty-six(66) gas caps were identified as leaking. Approximate emissions reductions as a result of replacing the gas caps and emission reducing repairs is (2) tons per year of NOx and four (4) tons per year of HC. The approximation of the emissions reductions is based on CARB and California emissions studies found at: http://www.valleycan.org/_pdfs/titu_2007_ArvinFinalReportJuly10-2008.pdf Attachment B are data sheets that include pre-repair and post-repair emissions and emission reduction calculations.

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 announcing vehicle emission events and other emission reduction information received 48,709 hits and their social

media page reached 552 people.

**Use of IR Cameras**

9. Path Forward Commitment

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

Status of Commitment

The commitment is on track with 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.

**CCAD Ozone Action Day Notifications**

10. Path Forward Commitment

*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.*

Status of Commitment

There were no Ozone Action Days called in 2014, however CCAD communication system was set up and ready to launch should an Ozone Action Day be called.

**Announcements of Federal and State Funding Opportunities**

11. Path Forward Commitment

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

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. Notification to the Corpus Christi Air Quality Group about applications for DERA projects were submitted in May, August and September of 2014. A letter of support from

the Corpus Christi Air Quality Group was provided in December 2014 to the Port of Corpus Christi for a DERA project application. A Clean School Bus application notification was distributed to the Group in August.

**Production of Low RVP Gasoline**

12. Path Forward Commitment

*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.*

Status of Commitment

The commitment is on track with 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.

**CNG Fueling Stations and Purchase of CNG Vehicles**

13. Path Forward Commitment

*The City of Corpus Christi will continue to operate two public use CNG fueling stations. The City of Corpus Christi plans to purchase fifteen OEM bi-fuel CNG vehicles within the year.*

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. The City of Corpus Christi has three (3) CNG fueling 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. The fourth station is expected to be in operation by second quarter of 2016.

The City of Corpus Christi has purchased 70 CNG bifuel and dedicated CNG vehicles in 2014 and plan to purchase a minimum of 50 bi-fuel or dedicated CNG vehicles in 2015.

14. Path Forward Commitment

*The US Postal Service will be installing another CNG fueling facility and will be purchasing twenty-six additional CNG vehicles.*

Status of Commitment

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

15. Path Forward Commitment

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

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. The CCRTA replaced 23 diesel paratransit vehicles and 20 diesel buses with CNG equivalents.

**MPO Assistance with Bicycle Transportation Planning**

16. Path Forward Commitment

*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, with establishing a database of accessible bike/pedestrian facilities, coordinating MPO and City planning documents to be consistent between policies and practices, and facilitating dialogue between the bicycle community and TxDOT, TAMUCC, and the City regarding the creation of new facilities, new policies, and the dissemination of public information.*

Status of Commitment

The commitment has exceeded its tasks and activities as stated in the Path Forward Plan. 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 (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 facilities (i.e. on-street bike lanes, separate cycle tracks, etc.) should be installed and 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 (i.e. racks, public repair stations, lockers, bike share infrastructure, wayfinding)
- Education, enforcement, and encouragement programs for promoting safe biking culture and awareness
- Policy and code reform programs (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 through 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 diversifying users (e.g. students, commenters, casual recreational riders).
- Established a Steering Committee comprised of delegates from 22 entities that are considered plan entities. The first meeting of this body was held 4/15/15.
- 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 a primary mode of transportation

- Leveraged a financial contribution from the Corpus Christi Regional Transportation Authority to support leveraging a 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 selection

- 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.)

**Education**

17. Path Forward Commitment

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

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. In July 2014 and May 2015, the Chair sent electronic communications to over 100 members in the Corpus Christi Air Quality Group that provided instructions on how to register for AirNow alerts and forecasts. Also included in the communications were numerous prepared scripts for emission reduction recommendations that could be easily forwarded or mass emailed should an AirNow alert be received. Examples of workplace polices to implement during elevated ozone days was also included in the May 2015 distribution. Attachment C contains these sample scripts and emissions reduction recommendations.

**Promotion of Van Share Program**

18. Path Forward Commitment

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

Status of Commitment

The commitment is on track with the schedule stated in the Path Forward Plan. The Regional Transportation Authority (RTA) was an invited speaker at the July 2014 Corpus Christi Air Quality Group meeting where over fifteen industrial and major employers were represented. The RTA representative provided Van Pool registration information for work-sites. An e-mail was then sent to the Corpus Christi Air Quality Group members "over 100" that provided the RTA presentation, contact information for the RTA 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 recommendations for the several hundred workers that will be commuting to the facilities.

# ADDITIONAL EMISSIONS REDUCTION ACTIVITIES ACCOMPLISHED MAY 2014 – APRIL 2015

The Port of Corpus Christi purchased five compressed natural gas (CNG) fueled work trucks with plans to continue to replace with CNG whenever the option exists.

The Port maintains an ISO 14001 certified Environmental Management System (EMS). Through the EMS program, the Port of Corpus Christi has adopted a number of initiatives and best practices for reducing air emissions. Some of these initiatives and best practices include a five-minute anti-idling program for Port vehicles and equipment, preventative maintenance program for the Port of Corpus Christi fleet which is verified through tail pipe emissions testing in cooperation with the Pollution Prevention Partnership, outreach and awareness training for employees, contractors, and customers through newsletters, web page updates, contract documents, and email communications, carpooling to job sites, requirement for use of low VOC paints and solvents, ceasing of all mowing, fueling and painting operations on ozone action days, requiring employees and contractors to follow best management practices for disposal of painting wastes, utilizing ultra-low sulfur diesel for PCCA fleet, and routine inspection and tank integrity testing on fuel storage tanks.

The Port of Corpus Christi is in the process of developing a Clean Equipment Program for the replacement of non-road equipment with Tier 4 final standard engine technology on all equipment operating in the Port area by 2020. It is expected that PM and NOX air emissions

will decrease by more than 40% in the first year of implementation of this program. In preparation for implementation, the Port of Corpus Christi has begun updating the Port fleet and in the last year has replaced eleven older technology and model forklifts with seven forklifts with Tier 4 final standard engine technology.

Flints Hills Resources operated a refinery for over one (1) year without flaring through flare management practices, elevated Ozone Day notification pages were sent to employees, compressed work schedules (9/80 or 4 day work week) were made available for some employees and contractors, infrared cameras were used to aid in leak detection, low emitting floating roofs were installed on targeted tanks, and LDAR connector monitoring was increased in targeted units, and a Mechanical Integrity program was put in place to reduce Heat Exchanger VOC leaks to Cooling Towers. Additionally, FHR is developing plans to update certain valves and pumps as well as install emission control technologies on heaters and burners.

Citgo Refining is in the process of installing a thermal oxidizer unit on three (3) benzene storage tanks and plans to complete the project by 2016.

NuStar Energy required vendors and contractors to properly dispose of rags, buckets, drums, etc. that contain VOC chemicals, and performed routine inspections for fugitive leaks from storage tanks, and vacuum loaded inland barges at new Oil Dock 16 and Dock 2 to reduce emissions.

The City of Corpus Christi entered into an agreement with McKinstry to retrofit the Airport, American Bank Center, Central Library, City Hall, Health Department, Museum of Science and History, Police and Courts buildings with energysaving equipment. In January 2015, a third party engineer performed an analysis on the energy savings that had taken place from August 2013 – July 2014. Significant reductions in energy use were confirmed. A copy of third party assessment is attached as Attachment D.

In December, 2013, the Corpus Christi City Council passed Mobility CC; a guide for multimodal transportation concepts. The Mobility CC document can be found at http://www.cctexas.com/Assets/Departments/PlanningEnvironmentalServices/Files/MobilityCC.pdf. Under Mobility CC, all street projects will be subject to the Mobility CC Project Checklist; a list that street project consultants must complete in order to evaluate each street project as a possible candidate for multi-modal treatments and considerations. The checklist is attached as Attachment E. During 2014, City staff developed a set of transportation performance measures under the Mobility CC guidelines that relate to air quality by deploying various transportation projects that will reduce vehicle emissions. These projects include bicycle facilities and pedestrian facilities to divert vehicles from streets and traffic flow improvements to efficiently move vehicles on the streets. The City is developing projects through the use of grants funds for:

- Schanen Ditch Hike and Bike Trail (Yorktown to Saratoga) - Phase I
- Schanen Ditch Hike and Bike Trail (Saratoga to Killarmet) – Phase II
- Dr. Hector Garcia Park Hike and Bike Trail

- Brewster Street Pedestrian Facility

- City-wide traffic signal improvements and Intelligent Transportation

The CCRTA partnered with the CC Convention & Visitors Bureau to provide 20,116 passenger trips during the Fiesta de la Flor event. CCRTA also partnered with the Buc Commission and offered discounted admission tickets to the Carnival in exchange for riding fixed route services to the Carnival's front door, provided shuttle service for Texas Jazz Fest, Big Bang July 4th Celebration , and Sandfest in Port Aransas, and provided 15,000-20,000 passenger trips May 16 during the 40th Annual Beach to Bay Marathon in Corpus Christi.

CCRTA continued express shuttle services to CCAD with three (3) routes, placed two new RideShare vans in San Patricio County for use by construction workers building a large pipe manufacturing facility. They also continued RideShare van service to a resort hotel on Padre Island and a resort management company on Padre Island.

An air quality curricula was provided to the teachers of $5^{th}$ grade students at four area schools The curricula was delivered by an industry funded consultant.. Twenty-two (22) classes used 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, class room prizes and instructor/consultant time was sponsored by Citgo, Flint Hills and Valero Refining.

Presentations were made to the following groups by the chair of the Corpus Christi Air Quality committee regarding ozone attainment and non-attainment, air quality impact of various activities, and emission reduction recommendations:

- Port Industries Technical Committee (May, 2014),
- Regional Health Awareness Board (May, 2014)
- Long Term Health Committee (May, October 2014)
- Port of Corpus Christi Commissioners (October 2014),
- Chamber of Commerce Infrastructure Committee (October, 2014)
- San Patricio Economic Development Corporation (November 2014)

Port Industries of Corpus Christi (PICC) participated in Earth Day - Bay Day Celebration held on 11 Apr 2015. PICC focus was on Ozone Awareness and included an Ozone Awareness Quiz for people to take, and an IR camera demonstration, and a petroleum tank model which demonstrated control of tank emissions. Overall attendance at the event was estimated at 4,000 people. PICC estimated interactions with between 350-400 attendees.

The AEP Building, which offices approximately 250 workers, has committed to posting ozone action notices and emission reduction recommendations throughout the building on ozone action days.

# ATTACHMENT A

# CORPUS CHRISTI AIR QUALITY GROUP

# CORPUS CHRISTI AIR QUALITY GROUP

| Member | Affiliation |
|---|---|
| Howard Fels | AEP |
| Nancy Hutton | AEP |
| Richard Fenza | AirLiquide |
| Darrell Jonas | AirLiquide |
| Ray Allen | Bays and Esturaries Program |
| Patrick B | Calpine |
| Carol Nash | CCAD |
| Art Barrera | CCAD |
| Rommel Daclan | CCAD |
| Chelsea Swatsell | CCAD |
| Yvonne Jimenez | Celanese |
| Leah Olivarri | Chamber of Commerce |
| Ralph Coker | Chamber of Commerce |
| Mark Chessman | Citgo Refining |
| Rosie Collin | Citgo Refining |
| Paulete Fonten | Citgo Refining |
| Larry Elizondo | Citgo Refining |
| Kevin McGee | Citgo Refining |
| Sharon Lewis | City of Corpus Christi |
| Tom Tagliabue | City of Corpus Christi |
| Kristina Leal | City of Corpus Christi |
| Richard Bennett | Coastal Bend Council of Govts. |
| Foster Edwards | Corpus Christi Chamber of Commerce |
| Mari Cuevas | Corpus Christi Community  Council |
| Willian Terry | Corpus Christi Independent School Dist. |
| Brigida Gonzalez | Corpus Christi MPO |
| Jeff Pollack | Corpus Christi MPO |
| Iain Vassey | Corpus Christi Regional Development Corp |
| Carrie Meyer | Corpus Christi resident |
| Steve Coffman | DuPont |
| Bob Trebatoski | Equistar |
| Gregg Robertson | First Rock |
| Curtis Taylor | Flint Hills Resources |
| Darcy Schroeder | Flint Hills Resources |
| Roger Tennapel | Flint Hills Resources |
| Tammy Buxkamper | Flint Hills Resources |
| Dana Perez | Flint Hills Resources |
| Jospeh Haug | Flint Hills Resources |
| Brittany Massingill | Kiewit |

| Member | Affiliation |
|---|---|
| Rhiannon Villanueva | Kiewit |
| David Harvey | Lyonelll |
| Greg Bezdeck | Markwest |
| C. Bowen | Markwest |
| Dale Nelson | Media |
| Corpus Christi Caller Times | Media |
| Robert Gonzalez | Media |
| ABC News | media |
| Dilip Shaw | NAS Corpus Christi |
| Ross Ybarra | NAS Corpus Christi |
| Ben Carmine | NRG |
| Annete Mouttet | Nueces County |
| Dipak Desai | Nueces County |
| Glen Sullivan | Nueces County |
| Chris Burnett | NuStar |
| Rafael DeCAstro | NuStar |
| Aron Bagget | OxyChem |
| Mark Evans | OxyChem |
| Cathy Barnard | OxyChem |
| D. K. Bennett | Plains Pipeline |
| K. M. Rugard | Plains Pipeline |
| Chris Cisneros | Pollution Prevention Partnership |
| Bob Paulison | Port Industries |
| Steven Ashely | Port of Corpus Christi |
| Judy Hawley | Port of Corpus Christi |
| John LaRue | Port of Corpus Christi |
| Nelda Olivos | Port of Corpus Christi |
| Paul Carrangelo | Port of Corpus Christi |
| Sarah Garza | Port of Corpus Christi |
| James H | Port of Corpus Christi |
| Danielle Converse | Port of Corpus Christi |
| Dianne Garcia | Regional Transportation Authority |
| Sharon Montez | Regional Transportation Authority |
| Jane Haas | Regional Transportation Authority |
| Bill Hennings | Retired City Manager |
| Ron Barnard | Retired, City of Corpus Christi |
| Colleen Johnson | RSA Consulting |
| Lynn Spenser | San Patricio County |
| Tom Ballou | Sherwin Alumina |
| T. Russell | Sherwin Alumina |

| Member | Affiliation |
|---|---|
| Shannon Parkham | Sherwin Alumina |
| Jeff Turner | Stripes |
| Saritha Karnae | Texas A&M University-Kingsville |
| Susan Clewis | Texas Commission on Environmental Quality |
| Kelly Ruble | Texas Commission on Environmental Quality |
| Nick Andrade | Topaz Energy |
| Denise Rogers | Trafigura |
| Glenda Swierc | Trinity Consultants |
| Christopher Amy | TxDOT |
| Jerry Batey | TxDOT |
| Kuruvilla John | University of North Texas |
| Clair Meurer | Valero Refining |
| Kelli Coates | Valero Refining |
| Barry Bennett | Valero Refining |
| Dennis Payne | Valero Refining |
| Joe Almarez | Valero Refining |
| Lillian Riojas | Valero Refining |
| Chris Abshire | Valero Refining |
| Meagan Marguard | Valero Refining |
| Matt Pastl | Voestalpine |

# ATTACHMENT B

# CLEAN FLEET EMISSIONS REDUCTIONS

Quarter 1

## 2014 AutoCheck Emissions Reductions Data

| Vehicle | | | Event Pre-Repair | | | | Post-Repair | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Make | Model | $NO_x$ | CO% | HC | $CO_2$% | $NO_x$ | CO% | HC | $CO_2$% | | |
| Regional Transit Authority | | | 1/6/2014 | | | | | | | | | |
| 2008 | Nissan | Xterra | Gas | Cap | Only | | | | | | gas cap | 66.55 |
| 2003 | Ford | F150 | 34.00 | 1.50 | 57 | 15.70 | | | | | | |
| Tailpipe Tuesday 2/25/2014 | | | | | | | | | | | | |
| 2007 | Jeep | Wrangler | 0.00 | 0.03 | 0 | 16.01 | | | | | | |
| 2007 | Chevy | Avalance | 4.00 | 0.08 | 25 | 19.94 | 0 | 0.00 | 5 | 14.00 | | |
| Tailpipe Tuesday 3/4/2014 | | | | | | | | | | | | |
| 2000 | Nissan | Altima | 145.00 | 1.27 | 19 | 14.95 | | | | | | |
| 2010 | Ford | Explorer | 350.00 | 1.90 | 319 | 16.70 | | | | | | |
| Flint Hills Employee Health Fair | | | | | | | | | | | | |
| 1998 | Chevy | S10 | 175.00 | 0.42 | 49 | 16.76 | | | | | | |
| 2003 | Nissan | Altima | 79.00 | 0.60 | 69 | 16.10 | 3 | 0.04 | 0 | 14.51 | Oxegen sensor | 492.89 |
| 2004 | Ford | Ranger | 16.00 | 0.12 | 0 | 18.09 | | | | | | |
| 2008 | Honda | Accord | 22.00 | 0.12 | 0 | 16.38 | | | | | | |
| 2004 | Toyota | Tacoma | 130.00 | 0.03 | 69 | 18.49 | | | | | | |
| 2011 | Toyota | Tacoma | 20.00 | 0.10 | 0 | 16.49 | | | | | | |
| Tailpipe Tuesday 3/25/2014 | | | | | | | | | | | | |
| 2003 | Chevy | Avalance | Gas | Cap | Only | | | | | | gas cap | 66.55 |
| 2005 | Ford | F150 | 10.00 | 10.00 | 0.00 | 16.70 | 7 | 0.04 | 0 | 14.84 | FI Clean, Gas cap, Air cleaner element | 373.87 |
| 2006 | Chevy | Silverado | 14.00 | 0.12 | 0.00 | 17.17 | | | | | | |
| 1998 | Chevy | Silverado | 39.00 | 0.17 | 36.00 | 17.90 | | | | | | |
| 2011 | Toyota | Tacoma | 20.00 | 0.10 | 0 | 16.49 | | | | | | |
| | | | 42448 | 16.56 | 643 | 253.87 | 3 | 0.04 | 5 | 28.51 | | 999.86 |

Quarter 2

## 2014 AutoCheck Emissions Reductions Data

| Vehicle | | | Event Pre-Repair | | | | Post-Repair | | | | Type of repair | Cost | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Make | Model | $NO_x$ | CO% | HC | $CO_2$% | $NO_x$ | CO% | HC | $CO_2$% | | | |
| Our Lady of Prep. Help | | | 9/26/2014 | | | | | | | | | | |
| 2005 | Hyundau | Tiberon | 8.00 | 0.02 | 0 | 15.90 | | | | | | | |
| 2007 | Chevy | Silverado | 7.00 | 15.20 | 5 | 0.02 | 0 | 13.20 | 0 | 0.02 | o2 sensor | 412.13 | |
| 2005 | Ford | Focus | 97.00 | 0.02 | 6 | 29.40 | 14 | 0.02 | 1 | 15.20 | seal intake manifold, FI clen, Silicone sealer, spark plugs, gas cap | 498.82 | |
| 1997 | Chevy | CV | 29.00 | 0.08 | 47 | 15.68 | | | | | | | |
| 2004 | Ford | Explorer | 22.00 | 0.03 | 23 | 15.21 | 2 | 0.02 | 2 | 14.32 | FI clean, Spark plugs | 500 | |
| 2009 | Dodge | Journey | 199.00 | 0.04 | 0 | 15.09 | | | | | | | |
| 1998 | Toyota | 4 runner | 289.00 | 0.40 | 187 | 15.80 | | | | | | | |
| 2006 | Dodge | Ram | GasCap Only | | | | | | | | | | |
| Yeager Elementary | | | | | | | | | | | | | |
| 2010 | Toyota | Carolla | 18.00 | 0.00 | 0 | 16.13 | | | | | | | |
| 2007 | Toyota | Avalon | 2.00 | 0.00 | 7 | 15.08 | | | | | | | |
| 2001 | Chevy | Tahoe | 11.00 | 0.19 | 0 | 16.89 | | | | | | | |
| 2002 | Chevy | Avalanche | 36.00 | 0.18 | 0 | 17.08 | | | | | | | |
| 2005 | Ford | Explorer | 4.00 | 0.06 | 6 | 16.03 | | | | | | | |
| 2001 | Lincoln | TC | 32.00 | 0.18 | 0 | 16.83 | | | | | | | |
| 2011 | Mazda | 6 | 30.00 | 0.16 | 2 | 16.90 | | | | | | | |
| 2008 | Dodge | Avenger | 14.00 | 2.26 | 0 | 15.90 | | | | | | | |
| 2008 | Chevy | Impala | 40.00 | 0.02 | 0 | 17.62 | | | | | | | |
| 2005 | Nissan | Xterra | 31.00 | 0.02 | 21 | 14.65 | 3 | 0.00 | 14.51 | 14.23 | oxegen sensor | 492.89 | |
| 2001 | Ford | F-150 | 1.00 | 0.01 | 2 | 16.46 | | | | | | | |
| La Palmera M | | | | | | | | | | | | | |
| 2011 | Chevy | Camaro | GasCap Only | | | | | | | | gas cap only | 66.55 | |
| 2004 | Ford | Mustang | 55.00 | 0.02 | 0 | 15.97 | 2 | 0.02 | 0 | 14.30 | Fuel injector cleaning, fuel filter | 443.03 | |
| 2004 | Dodge | Dakota | 7.00 | 0.03 | 20 | 14.32 | 2 | 0.00 | 8 | 14.32 | FI clean, gas cap | 298.89 | |
| 2005 | Chevy | Malibu | 4.00 | 0.02 | 14 | 15.07 | 0 | 0.00 | 10 | 14.69 | gas cap, FI clean, PCV valve, air cleaner, Oxegen sensor | 497.75 | |
| 2005 | GMC | Yukon | 6.00 | 0.05 | 0 | 15.11 | | | | | | | |
| 2005 | Izuzu | Ascender | 11.00 | 0.03 | 2 | 15.32 | 7 | 0.01 | 0.01 | 14.36 | Thermostat houseing, Coolant, Air cleaner element, FI clean | 498.19 | |
| 2000 | Ford | PU | 24.00 | 0.00 | 9 | 16.05 | 7 | 0.04 | 0 | 14.84 | FI clean, gas cap, air element | 373.87 | |
| NEC | | | | | | | | | | | | | |
| 1998 | GMC | Acadia | 0.00 | 0.00 | 0 | 15.29 | | | | | | | |
| 2007 | Toyota | Tacoma | 0.00 | 0.03 | 8.00 | 15.02 | | | | | | | |
| 1997 | Dodge | R1500 | 58.00 | 1.60 | 36.00 | 19.02 | 5 | 0.07 | 9 | 14.87 | vaccum hoses, FI clean, Gas cap | 437.55 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | 42687 | 20.65 | 395 | 427.84 | 23 | 13.26 | 25.51 | 72.39 | | 4519.67 | |

Quarter 3

## 2014 AutoCheck Emissions Reductions Data

| Vehicle | | | Event Pre-Repair | | | | Post-Repair | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Make | Model | $NO_x$ | CO% | HC | $CO_2$% | $NO_x$ | CO% | HC | $CO_2$% | | | Type of repair | Cost |
| | Port Event | | 7/9/2014 | | | | | | | | | | | |
| 2003 | Ford | F 150 | Gas Cap Only | | | | | | | | | | | |
| 2002 | Saturn | SL | Gas Cap Only | | | | | | | | | | | |
| 2004 | Chrysler | PT Cruiser | Gas Cap Only | | | | | | | | | | | |
| 2004 | Ford | F 150 | Gas Cap Only | | | | | | | | | | | |
| 1997 | Chevy | Silverado | Gas Cap Only | | | | | | | | | | | |
| 1997 | Cadillac | Deville | Gas Cap Only | | | | | | | | | | | |
| 1997 | Lincoln | Mark 8 | Gas Cap Only | | | | | | | | | | | |
| 2002 | GMC | Envoy | Gas Cap Only | | | | | | | | | | | |
| 1989 | Buick | Lasabre | Gas Cap Only | | | | | | | | | | | |
| | Oldsmobile | Silhouette | Gas Cap Only | | | | | | | | | | | |
| 1999 | Pontiac | Sunfire | Gas Cap Only | | | | | | | | | | | |
| 1999 | Chevy | Tahoe | Gas Cap Only | | | | | | | | | | | |
| 2003 | Chevy | Impala | Gas Cap Only | | | | | | | | | | | |
| 2009 | Hyundai | Elantra | Gas Cap Only | | | | | | | | | | | |
| 2005 | Ford | Taurus | Gas Cap Only | | | | | | | | | | | |
| 2004 | Ford | F 150 | Gas Cap Only | | | | | | | | | | | |
| 2004 | Ford | Expedition | Gas Cap Only | | | | | | | | | | | |
| 2002 | Mercury | Sable | Gas Cap Only | | | | | | | | | | | |
| 2003 | Saturn | | Gas Cap Only | | | | | | | | | | | |
| 1995 | Ford | F 250 | 2 Gas Caps only | | | | | | | | | | | |
| 2001 | Toyota | Sienna | Gas Cap Only | | | | | | | | | | | |
| 2001 | Chevy | | Gas Cap Only | | | | | | | | | | | |
| 2012 | Dodge | Caliber | Gas Cap Only | | | | | | | | | | | |
| 2000 | Chevy | 3500 | 38.00 | 0.49 | 130 | 11.46 | | | | | Gas Cap Also | | | |
| 2003 | Chevy | Impala | 0.00 | 0.01 | 15 | 15.10 | 6 | 0.01 | 15 | 14.57 | Gas Cap Also | | canister vent solinoid, canister vent | 500 |
| 1997 | Ford | F 150 | 88.00 | 0.48 | 379 | 12.03 | 88 | 0.48 | 319 | 12.03 | | | Gas Cap/Diagnotic | 48.99 |
| 1993 | Chevy | Silverado | 107.00 | 0.26 | 194 | 12.39 | 46 | 0.71 | 176 | 16.32 | Gas Cap Also | | FI clean, gas cap | 317.44 |
| 1985 | Nissan | Pick-Up | 19.00 | 0.08 | 0 | 11.15 | | | | | | | | |
| 2008 | Chevy | Trail Blazer | 13.00 | 0.11 | 0.00 | 15.97 | | | | | | | | |
| 2008 | Chevy | Aveo | 13.00 | 0.15 | 0 | 16.30 | | | | | | | | |
| 1991 | Mercury | Marquis | 22.00 | 2.44 | 399.00 | 7.14 | | | | | | | | |
| 2007 | Ford | Sport Trac | 9.00 | 0.07 | 0.00 | 15.46 | | | | | | | | |
| TAMUCC | 8/19/2014 | ilplpe Tuesday | | | | | | | | | | | | |
| 2000 | Honda | CRV | 48.00 | 0.88 | 14.00 | 18.97 | 22 | 0.02 | 4 | 14.42 | | | Rotor, spark plugs, | 498.73 |
| 1995 | Geo | Prism | 62.00 | 0.40 | 219.00 | 13.84 | | | | | | | | |
| | | | | | | | | | | | | | | |
| RTA | Dump The | Pump | | | | | | | | | | | | |
| 2001 | Ford | F 150 | Gas Cap Only | | | | | | | | | | | |
| | | | 419.00 | 5.37 | 1350 | 149.81 | | | | | | | | 1365.16 |

# ATTACHMENT C

# SAMPLE SCRIPTS AND EMISSION REDUCTION RECOMMENDATIONS

ELEVATED OZONE DAY POLICY EXAMPLES

Communications:

- Register to receive weekly ozone forecasts at http://www.enviroflash.info/signup.cfm
- Communicate elevated ozone forecasts to employees, vendors and contractors.
- Include emission reduction policies or recommendations in communications.
- Encourage employees to car pool, particularly on elevated ozone days – even if it's just for lunch.
- Encourage employees to use alternative modes of transportation (bus, bike, walk), particularly on elevated ozone days
- Encourage employees to telecommute, particularly on ozone action days
- Encourage teleconferencing instead of driving to meetings
- Provide flexible work schedules on elevated ozone days

Contractors and Vendors

- Have an anti-idle policy for all contractor and delivery vehicles
- Postpone non-essential deliveries on elevated ozone days
- Require painters to use low VOC paints
- Require grounds crews to postpone operations on elevated ozone days
- Require vendors and contractors to use low VOC solvents
- Require vendors and contractors to use low VOC 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 vacuum equipment

**CORPUS CHRISTI NEEDS YOUR HELP TO REMAIN IN ATTANMENT OF OZONE STANDARDS!**

YOU CAN…

Sign up for ozone action day notifications that can be e-mailed to your computer or texted to your phone. Register at http://www.enviroflash.info/signup.cfm Encourage your co-workers to register.

Prefer social messaging such as a tweet or facebook messages about your air quality and how you can make a difference? Register for tweets at https://twitter.com/airnow Or get facebook messages at https://www.facebook.com/airnow

When you get an Ozone Action Day forecast, pass it along to all your coworkers and friends via e-mail, twitter or facebook.

To make the message more meaningful, copy and send out any of the following "Ah Hah's":

"Our daily activities make up about 30% of the ozone causing precursors in our air shed! YOU can and do make a difference!"

Put it in Park

- Did you know that much of the pollutants that causes higher levels of ozone are emitted from our vehicles? Did you know that our RTA has a van pool program? RTA provides the van and you can leave your money-eating, pollution making vehicle in the garage!

- Did you know that our RTA has a Park and Ride Program?

For more information about CCRTA's Vanpool Program or Park and Ride Program, contact Jane Dare Haas, CCRTA Marketing Director, at 361.903.3493'. Jane can come to your place of business, present to your co-workers at environmental, safety or health meetings, and meet with you and/or your HR representative and set up a program. It's easy!

Stop at the Click

- When fueling, avoid "topping off" the tank – that is, dispensing a little more gasoline into the tank after the pump automatically clicks off – because it allows more fuel to escape as vapor and increases the possibility of spilling fuel on the ground where it will evaporate into the air.

- Spilling one ounce of gasoline that evaporates produces the same ozone-producing VOC emissions as a car driving 56 miles.

- Refueling your car at night can help prevent formation of ozone, which will keep your lungs healthier.

- Don't throw your money on the ground! Spilled gasoline from topping off your tank means less money in the bank.

Avoid Idling

- Idling for long periods of time, such as while waiting in line at a drive-through, can burn more gasoline and create more polluting emissions than turning off and then re-starting the vehicle.

Drive the Speed Limit

- A vehicle burns more gas and releases more emissions when quickly accelerated or driven fast.

Trip Chaining

Remember when you got your chores done all at once so you could go out and play? Trip chaining is the same idea…only you'll save the air in addition to saving time.

- When you start your car after it's been sitting for more than an hour, it pollutes about five times more than when the engine is warm. That's why combining your errands into one trip means more time in your life, less traffic congestion, and less pollution.

- Family and personal business—including window shopping, purchasing goods and services, doctor visits, picking up or dropping off someone, and other personal reasons, such as haircuts, banking, and car repair—account for about 45% of all trips.

- Combining three separate short trips (such as to a nearby bank, post office, and grocery store) into one trip every week could eliminate about 200 miles on your vehicle, and save you 10 hours and 10 gallons of gas every year.

- Emissions are highest when a vehicle is started "cold." For example, starting a 5-mile trip when the engine is cold generates about 17% more nitrogen oxides and 50% more volatile organic compounds than the same trip when the car is started warm.

- Eliminating five separate 1-mile trips reduces about the same amount of ozone-related pollution as eliminating one 15-mile trip.

- Between 1995 and 2001, there was a 21% increase in the number of commuters who trip chained in the home-to-work direction and a 12% increase in commuters who trip chained in both directions.

Maintain Your Vehicle

- Replacing a clogged air filter can improve your car's gas mileage by as much as 10%—saving up to 55 gallons of gasoline, or about three trips to the gas station, each year.

- Regular car maintenance, such as tune-ups, oil changes, air filter maintenance, and proper tire inflation, can save 23 gallons of gasoline per year on average.

- Keeping your tires inflated to the proper pressure can improve your gas mileage by

around 3%—saving up to 18 gallons of gasoline per year.

- A well-maintained vehicle produces up to 20% less volatile organic compounds (VOCs) and 10% less nitrogen oxides (NOx)—the precursors of ground-level ozone—than a poorly maintained vehicle.

# ATTACHMENT D

# GREEN BUILDING ENERGY EFFICIENCY ASSESMENT

March 17, 2015

CITY OF CORPUS CHRISTI USING MCKINSTRY TO SOLVE CAPITAL INFRASTUCTURE CHALLENGES AND REDUCE ENERGY CONSUMPTION WITHOUT INCREASES TO EXISTING BUDGET, TAXES AND FEES.

In 2012, City Council members unanimously voted to partner with McKinstry, an expert in energy efficiency, architecture, engineering, as well as design-build services, to reduce the city's energy consumption by upgrading the city's facility energy and water consuming infrastructure. The city is using the verified energy savings to pay for the improvements without burdening the city's operating budget or burdening the citizens with increases in taxes or fees.

The city implemented the program in phases.

Phase 1 included: the Airport, American Bank Center, Central Library, City Hall, Health Department, Museum of Science & History and Police and Courts.

The city's public works department commissioned an experienced third party professional engineer to verify the performance of Phase 1 energy savings in January, 2015.

Using the pre-retrofit utility rates, the third party professional engineer verified energy savings of $663,627 for the 12 months from August 2013 through July 2014. This is more than $100,000 above the proposed energy savings. The city also expected to see more than $223,395 from operational and maintenance savings during this same time period.

Phase 2 included: 76 facilities including fire stations, gas department, water department, police facilities, libraries, marina, parks and recreation centers, senior centers, art museum, Frost Bank, warehousing, as well as additional work related to water conservation at the American Bank Center, Central Library, City Hall, Health Department, Museum of Science and History and Police and Courts.

Before preceding the public works department submitted the project scope and the projected energy savings to a third party engineer for review and comment. This work has been completed and the energy and water savings are projected to be $584,454 annually with operational and maintenance savings of $34,359 annually.

Phase 3 proposed: Prior to the City Council decision to consolidate the city water, wastewater and storm water systems over the next 15 years McKinstry had conducted high level projections of energy savings associated with infrastructure upgrades across the water utility department and proposed the engineering and design of a solution to capture more than $1,000,000.00 in energy and operational savings that could be redirected to pay for those upgrades.

Future opportunities: Due to the plan to consolidate facilities, McKinstry will revise the Phase 3 proposal to the City of Corpus Christi. McKinstry plans to continue to be the city's energy efficiency partner and would like to have a "seat at the table" as the owner representative in regards to the future of the water systems as well as other city infrastructure. We welcome the opportunity to provide insight and experience to assure that long term energy efficiency is part of the plan and implementation of projects within the city.

# ATTACHMENT E

# MOBILITY CC CHECKLIST

# MobilityCC Project Checklist

*This checklist should be used to review transportation projects designed prior to completion of any implementable in MobilityCC including but not limited to roadway reclassification and street right-sizing.*

**Project Name:** _____

| | | | |
|---|---|---|---|
| **Data:** | Pedestrian Counts:<br>Bicycle Counts:<br>Truck Volumes:<br>Average Daily Trips:<br>Street Matrix Score: | | |
| **Road Classification** | What is the Road Classification of the project?<br>*Prior to reclassification of road type.* | | |
| **Land Use** | What are the land uses around the project by percentage? | | |
| **MobilityCC** | **HikeBikeCC**<br>Are there HikeBikeCC recommendations within the project area?<br>On-Street or Off-Street facility?<br>Priority?<br>Opportunity?<br>Existing?<br>Describe any recommendations included in this project:<br>Describe any recommendations NOT included in this project and reason for deferral: | Yes<br>On<br>Yes<br>Yes<br>Yes | No<br>Off<br>No<br>No<br>No |
| **Urban Transportation Plan (UTP)** | Are there Urban Transportation Plan (UTP) recommendations within the project area?<br>Describe any recommendations included in this project:<br>Describe any recommendations NOT included in this project and reason for deferral: | Yes | No |
| **ADA Master Plan** | Are there ADA Master Plan recommendations within the project area?<br>Describe any recommendations included in this project:<br>Describe any recommendations NOT included in this project and reason for deferral: | Yes | No |
| **Design Techniques** | Are there Design Techniques that can be implemented within the project area?<br>Describe any recommendations included in this project:<br>Describe any recommendations NOT included in this project and reason for deferral: | Yes | No |
| **Road Diet** | Is the Average Daily Trip (ADT) count below 20,000?<br>Is the Average Daily Trip (ADT) count 8,000 – 15,000?<br>Does the project have 4 or more travel lanes?<br>If yes, to any of the above:<br>Crash Rate: _____<br>Transit Corridor?<br>Accessibility Corridor?<br>Popular or essential bicycle routes/links?<br>Destination Node?<br>Catalyst/Infill Area?<br>Reinvestment Areas or Enterprise Zones.<br>Historic streets or scenic roads. | Yes<br>Yes<br>Yes<br><br><br>Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes | No<br>No<br>No<br><br><br>No<br>No<br>No<br>No<br>No<br>No<br>No |
| **Other Plans** | *City of Corpus Christi Comprehensive Plan (PlanCC)*<br>Are there recommendations from the City's Comprehensive Plan (PlanCC) within the project area?<br>Describe any recommendations included in this project:<br>Describe any recommendations NOT included in this project and reason for deferral:<br><br>*City of Corpus Christi Area Development Plans (ADP)*<br>Are there recommendations from any of the City's Area Development Plans (ADP) within the project area?<br>Describe any recommendations included in this project:<br>Describe any recommendations NOT included in this project and reason for deferral: | Yes<br><br>Yes | No<br><br>No |

| | | | |
|---|---|---|---|
| | | | |
| **Other Plans** | *Corpus Christi Regional Transit Authority (RTA) Master Plan*<br>Are there Corpus Christi Regional Transit Authority (RTA) Master Plan recommendations within the project area?<br>Describe any recommendations included in this project:<br>Describe any recommendations NOT included in this project and reason for deferral:<br><br>*Corpus Christi Metropolitan Planning Organization (MPO)*<br>Are there Corpus Christi Metropolitan Planning Organization (MPO) recommendations within the project area?<br>Describe any recommendations included in this project:<br>Describe any recommendations NOT included in this project and reason for deferral:<br><br>*Texas Department of Transportation (TXDOT)*<br>Are any Texas Department of Transportation (TXDOT) projects within the project area?<br><br>If "yes", are there specific recommendations that fall within the project area?<br>Describe any recommendations included in this project:<br>Describe any recommendations NOT included in this project and reason for deferral: | Yes No<br><br>Yes No<br><br>Yes No | |
| **Bus Stops** | Are there bus stops within the project area?<br>Describe average distances between bus stops in/or adjacent to the project area:<br>If bus stops are less than 0.25 miles (1,320 ft.) apart, can stops be consolidated?<br>Describe which stops could be consolidated: | Yes No | |
| **Project Manager Summary** | Describe any MobilityCC elements that will need to be addressed outside of this project and the division or program responsible for implementation:<br>How does the project accommodate bicycles, pedestrians, transit, freight, and traffic during construction?<br>Describe impacts to the funding schedule and/or other commitments as a result of incorporating MobilityCC elements:<br>Are there any additional comments or considerations? | | |

**Project Engineer: _____**

**Project Manager: _____**