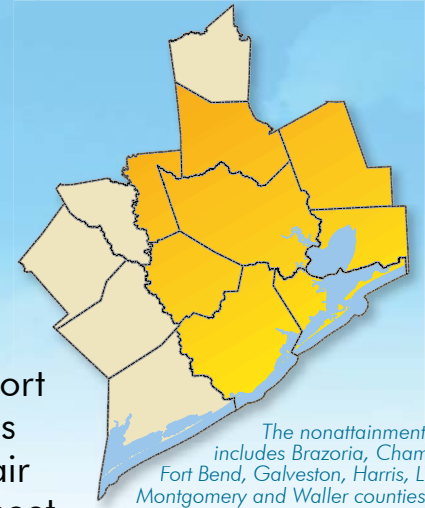


Air Quality INITIATIVES



The Houston-Galveston Area Council (H-GAC) is pleased to present the 2017 Air Quality Initiatives Report for the eight-county Houston-Galveston-Brazoria (HGB) region. This report presents the current air quality status for the region and provides the latest information about H-GAC and partner administered air quality programs that work to improve public health and help meet federal air quality standards within the region.

There are currently 6.5 million people residing within Houston and the surrounding region, with an anticipated 4 million additional residents expected to move to the region by 2040. This high growth rate has helped to establish the region as an economically competitive place to live and work. Unfortunately, this presents significant transportation, mobility, and air quality challenges for our region. To help alleviate these concerns, H-GAC works with partners throughout the region to develop and implement innovative solutions to reduce emissions without limiting regional economic or population growth.

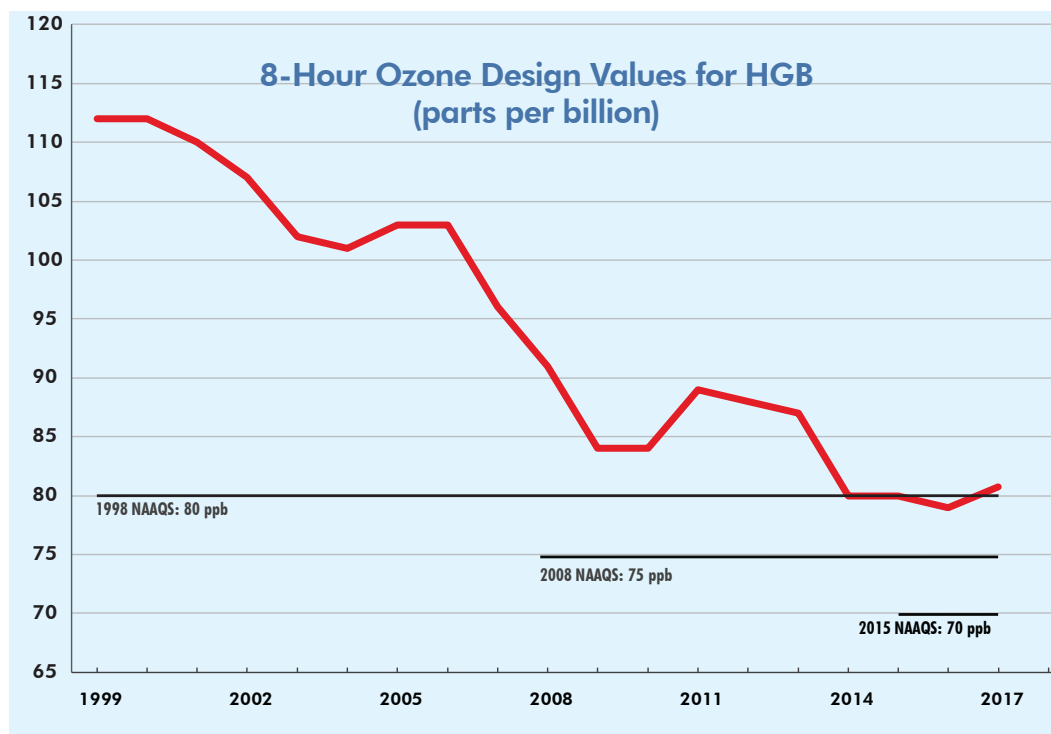
CURRENT STATE OF HGB AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has established the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants. These pollutants, which include carbon monoxide, nitrogen dioxide, lead, ground-level ozone, particulate matter, and sulfur dioxide, have received this designation due to known negative effects on human health and the wider environment. Of these pollutants, the region does not meet the standard for ground-level ozone, which is formed by a chemical reaction that combines surface-level precursors, nitrogen oxide (NO_x) and volatile organic compounds (VOC) on hot, sunny days. In our region, more than half of these

precursors are the result of mobile sources which include on-road and non-road vehicles/equipment, and oceangoing vessels.

Over the last several decades, H-GAC and other regional stakeholders have worked to develop projects to improve regional air quality. These improvements have helped to reduce regional ozone concentrations over the last two decades. The EPA measures ozone based on the design value, which is calculated using average ozone values over the last three years. The 2017 design value for the region was 81 parts per billion (ppb). Though the design value for

some years may be higher than others, the regional ozone trend has generally been decreasing. The current effective ozone standard was proposed in 2008 and mandates that all regions must meet a maximum 8-hour average of 75 parts per billion (ppb) of ground level ozone. In October 2015, EPA issued a more stringent ozone standard of 70 ppb. Details for this new standard are still being set, but it is anticipated to take effect within the next several years. Until that time, the earlier 75ppb standard will remain in effect. Our region does not currently meet either of these standards.



VOLUNTARY MOBILE EMISSION REDUCTION PROGRAM (VMEP)

One of the key components of H-GAC's efforts to improve air quality and meet the NAAQS standards within the HGB region is the Voluntary Mobile Emissions Reduction Program (VMEP). VMEPs are activities designed to reduce mobile emissions and improve air quality. Specific emission reductions are not required for each individual project; however, the region has committed to making a good faith effort in the implementation of bottom-line commitments for all VMEPs. Two main strategies are used to reach these NOx reduction commitments: replacing or retrofitting older vehicles and engines, and reducing vehicle miles traveled within the region by expanding commute alternatives. H-GAC's contributions to VMEP reductions for 2017 are reflected in the table on this page. Additional details about each of these projects as well as outreach activities can be found throughout this report.

VEHICLE REPLACEMENT

Every day, millions of people across the eight-county region use vehicles such as trucks, trains, bulldozers, buses, and marine vessels as tools for work in the region's transportation, freight, and industrial sectors. H-GAC has several voluntary programs aimed at reducing emissions from these mobile sources

by replacing them with newer, cleaner models. These programs improve the region's air quality while helping local governments, businesses, and school districts save money through improved fuel economy and lower maintenance costs. In 2017, replacing heavy-duty diesel vehicles and equipment achieved a NOx reduction of nearly 276 tons, of which almost 206 tons were from on-road mobile sources, seven tons were from non-road engines and equipment, and another 13 tons resulted from regional TERP projects.

Clean Vehicles Program

The Clean Vehicles Program provides grant assistance to local governments, school districts, and businesses that operate in the region replace high-emitting, heavy-duty diesel vehicles. The program is supported mainly through Congestion Mitigation and Air Quality (CMAQ) funds and Supplemental Environmental Project (SEP) funds. There are also additional grants from the EPA, the U.S. Department of Energy, and the Texas Commission on Environmental Quality. Grants are also available for alternative fuel vehicle projects and alternative fuel stations. Grant amounts are based on expected emission reductions resulting from the reported past and expected future mileage and fuel use of the participants.

New vehicles provide most of the emission reductions. The costs of replacing high-emission vehicles that



are used mostly on regional roads are partially offset by the Clean Vehicles Program grants. In 2017, the program disbursed more than \$1 million to replace older vehicles, resulting in a reduction of nearly 100 tons of NOx.

Clean School Bus Program

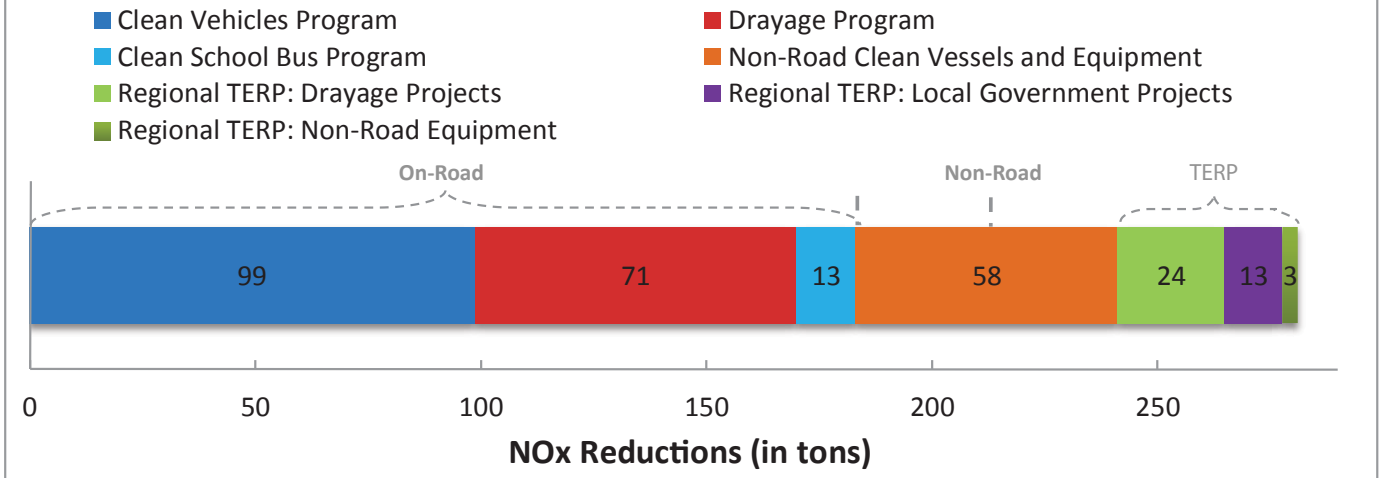
The Clean School Bus Program provides grants to school districts to replace old buses with new, low-emission buses. These new buses improve the air quality both inside and outside school buses and help protect the health of children, drivers, and their communities. Grant amounts are based on emission reductions from the new vehicle as well as on needs assessment. The Area Emission Reduction Credit Organization (AERCO) serves as the advisory board and funding source for the Clean School Bus Program within the HGB region. In 2017, AERCO disbursed over \$1 million in SEP funds to help replace 19 older school buses with new buses in seven different local school districts. The Clean School Bus Program reduced over 13 tons of NOx emissions in 2017.

Drayage Program

Drayage truck projects support the replacement of the older, dirtier diesel trucks that operate primarily in and around area ports. As in the Clean Vehicles Program, the cost of new, cleaner, and more reliable trucks is partially offset by CMAQ grants. Qualifying applicants may also receive a low-interest loan to finance the remaining cost of the new vehicle. Started in 2009, the Drayage Program has helped replace 231 drayage trucks and disbursed nearly \$13 million in grant funding and over \$11.5 million in

Voluntary Mobile Emission Reduction Measures	2017	2018
	Annual H-GAC NOx Reduction (tons/day)	Total HGB NOx Commitment (tons/day)
<u>Commuter Alternatives</u>	0.02	0.20
Commuter & Transit Services Pilot Projects	N/A	
Telework, Bike/Ped, Compressed Work Week	N/A	
Ridesharing	N/A	
METRO STAR Vanpool	0.02	
<u>Vehicle/Equipment Replacement</u>	0.70	1.30
Clean Vehicles & Clean School Buses	0.43	
Drayage Trucks	0.27	
Clean Vessels & Equipment	0.22	0.70

2017 Annual NOx Reductions: Clean Fleets



loan funding. Trucks participating in this program reduced nearly 951 tons of NOx in 2017.

Clean Vessels and Equipment Program

The Clean Vessels and Equipment Program provides grants for local governments and businesses to replace heavy-duty marine engines and construction equipment with new, cleaner engines. Established in 2011, the Clean Vessels and Equipment Program has replaced 11 engines on six marine vessels and has disbursed more than \$1 million in EPA grant funds. This program resulted in a reduction of over 58 tons of NOx in 2017.

Regional TERP

The Regional Texas Emissions Reduction Plan (TERP) provides grants to local governments for the replacement of older, heavy-duty diesel trucks and engines with newer, cleaner models. The TERP program also provides grants for truck owner/operators and private fleets to replace drayage trucks that serve regional ports. To date, the H-GAC Regional TERP Program has contracted for \$4.1 million with four local government entities, 11 private companies, and 22 truck owner-operators to replace a total of 27 non-road equipment units and 81 drayage trucks. In 2017, the TERP funded drayage and local government projects reduced nearly 24 tons and 13 tons of NOx, respectively.

COMMUTE ALTERNATIVES

To reduce traffic and improve air quality in the Houston-Galveston region, H-GAC continually promotes travel alternatives through the Commute Solutions program. Alternatives to driving alone such as carpooling, vanpooling, transit, walking, biking, teleworking, and working a compressed work week not only improves the air, but also makes the region more livable, accessible, and economically competitive. H-GAC developed partnerships with businesses, local governments, and organizations to bring these strategies to the region.

Telework, Compressed Work Week and Bicycle/Pedestrian

Teleworking even once a week can help save money on office space, parking, and employer overhead, while attracting new employees and serving as an additional benefit to employees. Implementing a compressed work schedule allows an employee to work nine hours per day and take one full day off every other week. This option helps reduce congestion caused by commuters traveling to work, but also energy consumed at the office.

Ridesharing

H-GAC is collaborating with various transportation partners and stakeholders on a new app-based platform intended to present commuters with real-time travel options based on their

driving patterns. With the potential to tie-in to TxDOT's larger project that earned funding from FHWA through its Advanced Transportation and Congestion Management Technologies Deployment program, the platform will incentivize drivers to try an alternative mode of commuting by providing personalized options and various rewards for trying one of these options.

The METRO STAR Vanpool Program provides an additional ride-sharing service for commuters within the region. METRO's affordable vanpool service connects a group of five to fifteen commuters who live and work near each other for an average cost of \$4 to \$6 a day. METRO STAR saves commuters money on gas, vehicle maintenance, time, and reduces stress. In 2017, the METRO STAR Vanpool program reduced NOx emissions by 13 tons, and reduced vehicle miles traveled by nearly 51 million.

Active Transportation

Walking and bicycling can make communities healthier and more livable by reducing air pollution from cars. H-GAC supports communities to become more livable through planning programs and funding. Neighborhoods that are less dependent on motor vehicles make our streets safer for those who walk or bicycle. Safer, more walkable and bikeable streets also encourage people to walk and bicycle more often, which leads to health benefits for those individuals.

Vehicle emissions contribute to unhealthy levels of ozone, also known as “smog,” and particulate matter. Short-distance automobile trips are especially high in pollutant emissions. Travelers can shift to bicycling and walking as alternatives to driving for short trips and for first-mile and last-mile connections to transit. Replacing short-distance motor vehicle trips with walking or bicycling can help the region attain its clean air goals.

Walking and bicycling is increasing in our region. H-GAC has four permanent counters that measure people walking and bicycling 24 hours a day every day of the year. H-GAC installed two permanent counters in 2013 and two permanent counters in 2017. These counters provide baseline data about bicycling and walking. In 2017, more than 550,000 people were counted on the White Oak Bayou Trail and the MKT Trail in the Heights. Usage on these trails increased by 9 percent from 2016 to 2017. Since 2013, usage on these trails has increased by 72 percent. As our cities and counties build more infrastructure that is safe for people walking and bicycling, we will continue to see an increase in people choosing to walk and bicycle for transportation as well as recreational purposes.

Commuter and Transit Services Pilot Program

The Commuter and Transit Services Pilot Program supports the development of new commuter transit services. This program provides operating expense grants to transit agencies, local governments, transportation management organizations, and other public transportation service providers within the region. The Commuter and Transit Services Pilot program provided nearly \$8.5 million in funding for nine projects since 2007. In 2017, two of these projects received funding through H-GAC

which resulted in reductions of nearly 0.01 ton of NOx and over seven million vehicle miles travelled on our region’s roads.

PUBLIC OUTREACH ACTIVITIES

“Road Warriors for Smarter Commutes” Campaign

In 2017, Commute Solutions continued to promote the all-new “Road Warriors for Smarter Commutes” campaign launched a year ago. The campaign encourages commuters to rethink the way they get to work; by actively opting for a smarter commute, commuters can reduce



stress and save money, as well as help to ease traffic congestion and improve air quality for the entire region. Throughout 2017, H-GAC’s Commute Solutions program held approximately 29 public events. These events promoted public transit, carpooling, vanpooling, teleworking, and biking/walking, reaching more than 16 organizations and more than 146,000 participants. During those events, staff also distributed materials to promote usage of cleaner engines and no-idling policies.

As part of a State Planning and Research study that was commissioned by H-GAC and TxDOT to analyze highly congested corridors, the

Commuter Solutions Program concentrated outreach efforts along US 290, IH 45 North, and US 59 South. By offering specialized incentives



Find a smarter way to work.

and recognition, 26 employers were recruited to offer and promote commuter benefits to their employees.

Employers and residents who are interested in being “Road Warriors for Smarter Commutes” can learn more about commute solutions at findasmarterwaytowork.org.

Houston-Galveston Clean Cities Coalition

In addition to helping fund the transition to cleaner engines, H-GAC also assists fleets throughout the region better understand the benefits of alternative fuels through the Houston-Galveston Clean Cities Coalition (HGCCC). This coalition works with the DOE to help local businesses and governments learn more about these relatively new fuels and technologies. This coalition provides educational outreach to fleet professionals through networking and educational events and helps local businesses locate and secure funding for projects and vehicles. In 2017, HGCCC held six public events with approximately 164 participants, including the Clean Cities Technologies Conference which brought together alternative fuel users and professions from the entire region to share knowledge and learn more about available opportunities.

To become a member of HGCCC and learn more about the alternative fuel promotion activities, please visit: www.houston-cleancities.org.



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