

CMAQ PERFORMANCE PLAN

**Houston-Galveston Area Council
September 28, 2018**

Introduction

The purpose of this report is to document how Congestion Mitigation and Air Quality (CMAQ) transportation funding for projects allocated in the Houston-Galveston region help to meet the region's two and four-year targets for peak-hour excessive delay, non-single-occupant-vehicles, and on-road mobile source emissions. These targets were established by the Houston-Galveston Area Council in coordination with the Texas Department of Transportation (TxDOT) after consultation with TxDOT as well as other regional metropolitan planning organizations within the State of Texas.

Baseline Condition

To establish targets, H-GAC and TxDOT looked at baseline conditions in the Houston-Galveston region for three specific measures that relate to the CMAQ program:

- Peak-Hour Excessive Delay Measure (PHED)
- Non-Single-Occupant-Vehicle Measure (Non-SOV)
- On-Road Mobile Source Emissions Measure

The results of these analyses for the baseline years are documented below.

Traffic Condition Measures

Two of the measures relate to traffic conditions: PHED and Non-SOV. The PHED measure is defined as the annual hours of peak hour excessive delay per capita. Excessive delay refers to the additional time spent in congestion based on an established speed threshold. Peak periods are defined as Monday through Friday 6:00AM – 10:00AM and 3:00PM – 7:00PM. The baseline annual 2017 PHED per capita measure for the Houston-Galveston region is 14.0 hours.

The Non-SOV measure is computed as the percent of working population that do not drive alone to work in a car, van or truck. A variety of data sources are available to calculate this measure. H-GAC and TxDOT, with assistance from the Texas A&M Transportation Institute (TTI) settled on using the American Community Survey (ACS) Journey to Work data. ACS data is aggregated in five-year bins. The baseline 2012-2016 calculated Non-SOV measure for the Houston-Galveston region is 20.1%.

On-Road Mobile Source Emissions Measures

For an initial estimate of on-road mobile source emissions reductions related to CMAQ-funded projects, H-GAC and TxDOT used the CMAQ Public Access System to compile the estimated emissions reduction benefits of projects in the Houston Transportation Improvement Program (TIP). For this initial estimate, projects in federal fiscal years 2014-2017 were summed in kg/day to determine an estimate of baseline and targets. Following this first estimate, H-GAC worked to develop a revised baseline and target using actual TIP emissions for 2018 through 2022.

Table 1 – Baseline On-Road Mobile Source Emissions

Pollutant	Baseline Emissions per Year (kg/day)
NO _x	453.741
VOC	66.850

Targets

For the first performance period, between 2018 and 2022, H-GAC coordinated with TxDOT to establish targets for the CMAQ traffic congestion and on-road emissions measures. TxDOT was required to set initial targets by May 20, 2018. H-GAC then had 180 days to approve the targets. H-GAC anticipates receiving approval of the targets by the regional Transportation Policy Council prior to the October 1 deadline for inclusion in the State DOT Baseline Performance Period Report.

Table 2 – Established State CMAQ-focused 2 and 4-year Targets

Performance Measure	2-Year Target	4-Year Target
Annual PHED per Capita*	15	16
Percent of Non-SOV Travel*	19.7%	19.5%
Emissions – NO _x	1,419.426	1,883.294
Emissions - VOC	169.301	200.809

Description of Projects

The Houston-Galveston Area Council coordinates with local stakeholders to select CMAQ projects for deployment in the Houston-Galveston-Brazoria ozone nonattainment area. These projects are selected to meet the program goals of reducing congestion and/or reducing emissions of ozone precursor pollutants. Emissions estimates for these projects are estimated by H-GAC using methodologies developed as part of the Texas Guide to Accepted Mobile Source Emission Reduction Strategies (MOSERS). In cases where no practical MOSERS methodology exists, verified past emission reduction performance is used to create an emissions reduction estimate. The results from these analyses are then uploaded by TxDOT into the CMAQ Public Access System upon the obligation of funding to projects and are accounted for in the expected benefits outlined in the table below. To simplify reporting, projects are grouped in the table based on general categories H-GAC uses to report project types in the TIP.

H-GAC is not required to report benefits for pollutants other than VOC and NO_x. As such, the table below reports only on these pollutants. Benefits for later years in the reporting period tend to be lower than earlier years. H-GAC has not yet fully programmed all CMAQ funding into the TIP for these later years. Expected emissions benefits will increase as more CMAQ projects are programmed later in the reporting period.

* Subject to final approval by the H-GAC Transportation Policy Council in October 2018

Table 3 – Expected Benefits of CMAQ Projects in the Houston-Galveston Region

Project	Project Description	Year of Anticipated CMAQ Obligation	NOx Benefit (kg/day)	VOC Benefit (kg/day)	PHED Benefit	Non-SOV Benefit
Transit	Transit facility construction support	2019	0.02	0.00	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Regional vanpool operations	2019	31.68	6.54	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Support for pilot transit routes	2019	11.53	17.26	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Ridesharing, transit incentives, and public outreach	2019	29.51	44.17	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Pedestrian/Bicycle	Construct Multi-Use Bicycle Path	2019	0.02	0.04	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Transit	Construct park & ride	2019	1.98	0.47	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Traffic Flow Improvements	Projects to smooth traffic and reduce idling emissions	2019	0.53	0.13	Yes – reduces peak hour delay	No
Traffic Flow Improvements	Install ITS equipment and infrastructure	2019	1.75	0.43	Yes – reduces peak hour delay	No

Pedestrian/Bicycle	Projects to improve and expand pedestrian experience	2019	0.08	0.02	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Transit incentives, and public outreach	2019	69.55	3.75	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Vehicle replacement incentives	2019	822.66	22.46	No	No
Air Quality	Regional vanpool operations	2019	16.50	3.41	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Pedestrian/Bicycle	Projects to improve and expand pedestrian experience	2020	0.00	0.00	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Pedestrian/Bicycle	Construct multi-use bicycle path	2020	0.32	0.22	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Transit	Transit facility construction support	2020	0.02	0.00	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Regional vanpool operations	2020	31.68	6.54	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Traffic Flow Improvements	Intersection Improvements	2020	3.07	0.75	Yes – reduces peak hour delay	No
Pedestrian/Bicycle	Projects to improve and expand pedestrian experience	2020	1.58	2.68	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Traffic Flow Improvements	Projects to smooth traffic and reduce idling emissions	2020	2.35	16.97	Yes – reduces peak hour delay	Yes – increases non-SOV travel

Traffic Flow Improvements	Install ITS equipment and infrastructure	2020	0.21	0.07	Yes – reduces peak hour delay	No
Traffic Flow Improvements	Install ITS equipment and infrastructure	2020	0.07	0.02	Yes – reduces peak hour delay	No
Pedestrian/Bicycle	Projects to improve and expand pedestrian experience	2020	0.01	0.00	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Transit incentives, and public outreach	2020	58.79	12.15	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Regional rideshare program	2020	106.51	22.00	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Regional vanpool operations	2020	16.50	3.41	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Vehicle replacement incentives	2020	212.52	5.80	No	No
Air Quality	Regional vanpool operations	2021	16.50	3.41	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Pedestrian/Bicycle	Projects to improve and expand pedestrian experience	2021	0.09	0.02	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Traffic Flow Improvements	Construct railroad underpass	2021	0.86	0.21	Yes – reduces peak hour delay	No
Pedestrian/Bicycle	Projects to improve and expand pedestrian experience	2021	0.03	0.01	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Air Quality	Vehicle replacement incentives	2021	212.52	5.80	No	No

Air Quality	Regional vanpool operations	2022	16.50	3.41	Yes – reduces peak hour delay	Yes – increases non-SOV travel
Traffic Flow Improvements	Install ITS equipment and infrastructure	2022	2.32	6.15	Yes – reduces peak hour delay	No
Air Quality	Vehicle replacement incentives	2022	212.52	5.80	No	Yes – increases non-SOV travel
Traffic Flow Improvements	Install ITS equipment and infrastructure	2022	2.53	6.70	Yes – reduces peak hour delay	No

Table 4 – Summarized Annual CMAQ Emission Benefits and Unobligated Balance by Year

Federal Fiscal Year	NO _x Benefit (kg/day)	VOC Benefit (kg/day)	Unobligated Federal CMAQ Balance	Approximate Percent of CMAQ Funds Unobligated
2018	985.805	98.681	\$80,592,961	58%
2019	433.621	70.620	\$47,608	0%
2020	229.998	9.448	\$53,571,369	51%
2021	233.870	22.060	82,266,000	78%