CMAQ Performance Plan

Mid Performance Period Report

(2022-2025)

Houston-Galveston Area Council

Approved by the Transportation Policy Council

September 27, 2024

Introduction

The Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2012, the Fixing America's Surface Transportation Act (FAST Act), in 2015, and the Infrastructure Investment and Jobs Act, in 2021, charged metropolitan planning organizations (MPOs) and state departments of transportation to develop performance measure targets to assist the Federal Highway Administration (FHWA) in assessing the conditions on the nation's roads in a consistent manner and to improve the performance of the National Highway System. These targets are developed in four-year increments and include a number of target categories. The current four-year performance period extends from 2022 to 2025. The performance measure categories that will receive focus in this report include activities funded through Congestion Mitigation and Air Quality (CMAQ) funds.

The purpose of this report is to provide a mid-term update to H-GAC's 2022 CMAQ Performance Plan Report. This will serve to document the progress towards meeting the region's two-year targets for peak-hour excessive delay, non-single-occupant-vehicles, and on-road mobile source emissions as set in that initial report. Additionally, this report will recommend revisions to the region's four-year targets as necessary.

These targets and target revisions were established by the Houston-Galveston Area Council with regional stakeholder input in coordination and consultation with the Texas Department of Transportation (TxDOT) as well as other regional metropolitan planning organizations (MPOs) within the State of Texas.

Initial Baseline Conditions

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 Emission Reductions Measure

The results of these analyses for the baseline years are documented in the following pages.

Traffic Congestion Measures

Two of the congestion measures relate to traffic conditions: Peak Hour Excessive Delay (PHED) and Non-Single Vehicle Occupancy Travel (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. Due to regional population distribution, this region is required to undertake target setting analyses for a pair of urban areas within the H-GAC region. These two regions are the Houston Urban Area and The Woodlands-Conroe Urban Area.

Peak Hour Excessive Delay (PHED), the annual average hours of extra travel time on the National Highway System spent in excessive delay, is defined as the time spent the when the average highway speed is less than 60% of the existing speed limit during peak periods. On a roadway segment with a speed limit of 60 mph, the excessive delay (60% of 60 mph) would be 36 mph. Peak periods are defined as Monday through Friday 6:00 AM – 10:00 AM and 3:00 PM – 7:00 PM.

The 2022 baseline annual PHED per capita for the Houston Urban Area was 13.5 hours. For the current performance period, the 2022 and 2024 PHED targets were set at 16.0 hours. After the first two years of the current performance period, the Houston Urban Area's 2024 actual PHED was 15.5 hours. H-GAC has opted to adjust the 2026 four-year target to 17.0 hours for the remainder of the performance period due to rapid population growth in the region which will increase vehicles miles traveled in the future and construction work zones that contribute to excessive delay.

The 2022 baseline annual PHED per capita measure for The Woodlands-Conroe Urban Area was 8.0 hours. Based on this baseline, H-GAC opted to set the 2022 and 2024 targets each at 8.0 hours for both two and four years. This urban area missed the 2024 two-year target of 8.0 by only one hour with a PHED of 9.0. Despite not meeting the target, H-GAC has opted not to adjust the 2026 four-year target, which will remain at 8.0 hours to provide an aspirational target for the remainder of the performance period. Specific details about the PHED targets for both the Houston and The Woodlands-Conroe Urban Areas can be found in Table 1.

Table 1 – Established CMAQ-focused 2-year and 4-year Targets Peak Hour Excessive Delay (PHED) Performance Measure

Performance Measure	2022 Baseline	2024 2-Year Targets	2024 2-Year Actual	Target Met?	2026 4-Year Targets	2026 4-Year Target Adj.
Annual PHED hours per capita Houston Urban Area	13.5	16.0	15.5	Yes	16.0	17.0
Annual PHED hours per capita The Woodlands-Conroe Urban Area	8.0	8.0	9.0	No	8.0	No Adjustment

(A decreased value indicates improvement.)

The Percent of Non-Single Occupant Vehicle (Non-SOV) measure is computed as the percent of the working population that do not travel alone to work in a car, van or truck and measures the percent of those who ride public transit, rideshare, bicycle, or telecommute to work. Based on federal procedures, three data collection methods are available to calculate this measure. For the second federal performance period of 2022 through 2025, H-GAC selected Method "A", which uses data from the American Community Survey (ACS) Journey to Work dataset. ACS data is aggregated in five-year bins.

The 2022 baseline Non-SOV for the Houston Urban Area was 21.4%. In 2022, the 2024 two-year target was set to 21.1%, and the 2026 target was set to 22.0% to reflect an increase in Non-SOV commuter travel over the full performance period. For The Woodlands-Conroe Urban Area, the 2022 baseline Non-SOV was 19.7%, the 2024 and 2026 targets were set to 20.0% to reflect an increase in Non-SOV travel.

After the first two years of the current performance period, the Houston Urban Area's 2024 two-year actual Non-SOV is 25.3%, and The Woodlands-Conroe Urban Area's Non-SOV is 22.9%, therefore, both 2024 targets were met. The 2026 four-year targets for both urban areas were adjusted upwards to indicate improved performance. For the Houston Urban Area, the 2026 target was increased from 22.0% to 27.0%. Likewise, for The Woodlands-Conroe Urban Area, the 2026 target increased from 20.0% to 24.0%. In both cases, the adjustment to a more stringent target anticipates that further expansion of

Non-SOV travel is possible. Since 2018, the Work from Home category increased 10% in the Houston UA and 8% in The Woodlands-Conroe UA, a result of the COVID-19 pandemic, and the upward trend is expected to continue. Specific details about the Non-SOV targets for the Houston and The Woodlands-Conroe Urban Areas can be found in Table 2.

Table 2 – Established CMAQ-focused 2-year and 4-year Targets Non-Single Occupant Vehicle (Non-SOV) Performance Measure

Performance Measure	2022 Baseline	2024 2-Year Targets	2024 2-Year Actual	Target Met?	2026 4-Year Targets	2026 4-Year Target Adj.
Percent of Non-SOV Travel Houston Urban Area	21.4%	21.1%	25.3%	Yes	22.0%	27.0%
Percent of Non-SOV Travel The Woodlands-Conroe Urban Area	19.7%	20.0%	22.9%	Yes	20.0%	24.0%

(An increased value indicates improvement.)

CMAQ On-Road Mobile Source Emission Reductions Measure

The On-Road Mobile Source Emission Reductions Measure is the two-and four-year cumulative reported emission reductions for all projects funded by Congestion Mitigation Air Quality (CMAQ) funds by the applicable criteria pollutant and precursors of Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOC) for the years of 2022 through 2025.

Prior to the current performance period in 2022, H-GAC staff developed an initial estimate of on-road mobile source emission reductions related to CMAQ-funded projects within the agency's service area from the Transportation Improvement Program (TIP). For this initial target, emission reduction estimates attributed to TIP projects in federal fiscal years 2022-2025 were summed in kg/day to determine target estimates. This time span, agreed upon through discussions with TxDOT, as well as other MPOs within Texas, used NOx and VOC emissions estimates from programmed TIP projects anticipated to begin or obligate the CMAQ funding from 2022 through 2025. To develop the final targets for the current performance period, staff then applied a "project delivery success rate" to the base estimate to determine the final two- and four- year targets to compensate for project delays and shifts that normally occur when programming projects. The project delivery success rate is developed by comparing the planned emission reductions over the period from 2018 through 2023 with the actual emission reductions recorded for funded projects over the same period. Applying this ratio helps to account for challenges in moving programmed TIP project towards receiving federal obligation on-time, as scheduled. Project delays due to environmental clearance issues and right-of-way acquisition are some of the challenging realities that effect on-time project delivery. The resulting targets, as submitted, can be found in Table 3.

Assessment of Two-Year CMAQ Target Progress

After the first two years of the current performance period, H-GAC staff analyzed the emission reductions attributable to TIP projects that let within the fiscal years of 2022 and 2023 and were reported to the Federal Highway Administration's (FHWA) CMAQ Public Access System. In fiscal years 2022 and 2023, five CMAQ projects reached federal obligation totaling 19.9 kg/day for NOx and 4.3 kg/day for VOCs. There has been significantly less progress on the initial two-year target than was anticipated when these targets

were initially developed in 2022. As a result, the Houston region was unable to meet these two-year targets. Reasons for the shortfall of meeting the two-year target is due to the delay of thirteen (13) CMAQ funded project which were moved out to fiscal years 2024 and 2025 and seven (7) CMAQ projects moved to fiscal year 2026 and later. The results can be seen in Table 3.

Four-Year CMAQ Target

Despite not meeting the two-year performance targets for the region's CMAQ performance measures, H-GAC staff has opted to leave the four-year targets unchanged from the baseline report. While there have been project delays and funding reallocations that delayed the region meeting its targets, as discussed in the previous section, staff has been working hard to move these projects forward. This effort appears to be making progress and staff now anticipates that the region may be able to meet the original four-year target estimates.

Table 3 – Established H-GAC Region CMAQ-Focused Two-Year and Four-Year Targets (2022-2025)

Performance Measure	Two-Year Target	Two-Year Actual	Target Met?	Four-Year Target	Four-Year Target Adjustment
Emissions – NOx kg/day	221.251	19.964	No	601.465	No Adjustment
Emissions – VOC kg/day	69.939	4.343	No	172.864	No Adjustment

Nitrogen Oxides (NOx)
Volatile Organic Compounds (VOC)

Description of CMAQ 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 due to regional fleet turnover. Table 4 shows the projects that have been obligated and were included in the CMAQ Public Access System for fiscal years 2022 and 2023*. Table 5 shows the projects that have been programmed into the Transportation Improvement Program for future fiscal years 2024 2025 and are expected to contribute to the Houston region's progress towards meeting the four-year targets.

Table 4 – FY2022 and FY2023 Obligated CMAQ Projects in the Houston-Galveston Region (as reported in CMAQ Public Access System)

Project Type	MPO ID	Project Description	Year of CMAQ Obligation	NOx Benefit (kg/day)	VOC Benefit (kg/day)	PHED Benefit	Non-SOV Benefit
Pedestrian/Bicycle	11719[1]	City of South Houston Sidewalks Construction	2022	0.076	0.018	Yes – reduces peak hour delay	Yes – Increases Non-SOV travel
Traffic Flow Improvements	14173	FM 1960 Intersection Improvements	2022	3.070	0.750	Yes – reduces peak hour delay	No
Pedestrian/Bicycle	15321	City of Houston Sidewalks in SE Central Business District	2022	0.110	0.030	Yes – reduces peak hour delay	Yes – Increases Non-SOV travel
2022 Emissions Total				**3.256**	**0.798**		

[1] Project 11719 was obligated in 2022 and was subsequently cancelled by the project sponsor.

Project Type	MPO ID	Project Description	Year of CMAQ Obligation	NOx Benefit (kg/day)	VOC Benefit (kg/day)	PHED Benefit	Non-SOV Benefit
Traffic Flow Improvements	18031	SH 105 Improvements - add left turn bays	2023	0.208	0.135	Yes – reduces peak hour delay	No
Air Quality	18363	Regional METRO Star vanpool operations	2023	16.500	3.410	Yes – reduces peak hour delay	Yes – Increases Non-SOV travel
2023 Emissions Total				**16.708**	**3.545**		

Table 5 – Expected Benefits of FY2024 and FY2025 Programmed CMAQ Projects in the Houston-Galveston Region

Project	MPO ID	Project Description	Year of Anticipated CMAQ Obligation	NOx Benefit (kg/day)	VOC Benefit (kg/day)	PHED Benefit	Non-SOV Benefit
Pedestrian/Bicycle	17122	Construct shared use path, intersection improvements and pedestrian crossings on FM 518	2024	1.037	0.227	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Transit	19035	Improvement to regional Park & Ride facilities – Westpark Tollway Park & Ride	2024	1.464	5.947	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
2024 Emissions Estimates				**2.501**	**6.174**		

Project	MPO ID	Project Description	Year of Anticipated CMAQ Obligation	NOx Benefit (kg/day)	VOC Benefit (kg/day)	PHED Benefit	Non-SOV Benefit
Transit	11268	Replacement of METRO's 160 diesel hybrid buses with 160 clean diesel buses	2025	29.020	1.840	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Transit	11473	Engineering for construction of the Inner Katy Bus Rapid Transit Busway (BRT) and transit center	2025	3.410	19.340	Yes – reduces peak hour delay	Yes – increases Non-SOV travel

Transit	15243	Replacement of METRO's 20 40' heavy duty diesel buses with 20 all electric buses, purchase 10 all electric 'cutaway' buses; purchase recharging stations	2025	2.800	0.380	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Transit	15265	Universal Transit Accessibility Phase 2	2025	5.000	5.000	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Air Quality	16088	Travel Demand Management Commute Solutions Program	2025	88.300	56.318	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Traffic Flow Improvements	17062	Construct wireless traffic signal communication system	2025	1.750	0.430	Yes – reduces peak hour delay	No
Traffic Flow Improvements	18036	US 90 grade separation overpass at the UP Railroad crossing in Dayton	2025	0.137	0.108	Yes – reduces peak hour delay	No
Transit	18238	Supplemental funding for purchase of 28 new commuter buses for new transit service from Fort Bend County to downtown Houston	2025	2.510	0.012	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Transit	18260	Regional Transit Fare Collection System	2025	0.600	0.570	Yes – reduces peak hour delay	Yes – increases Non-SOV travel

Traffic Flow Improvements	18522	US 290 - Install new ITS Equipment and Infrastructure	2025	0.820	1.650	Yes – reduces peak hour delay	No
Traffic Flow Improvements	18523	SH 6 - Install new ITS Equipment and Infrastructure	2025	0.030	0.060	Yes – reduces peak hour delay	No
Air Quality	18607	Travel Demand Management, Marketing, Outreach and Public Education	2025	21.630	1.170	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Transit	18762	METRO 56 Airline/Montrose Boost Corridor improvements	2025	5.000	5.000	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Transit	18846	Continued implementation of a Regional Transit Fare Collection System	2025	0.600	0.570	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Air Quality	18853	Clean Vehicles Program	2025	395.390	10.790	Yes – reduces peak hour delay	No
Transit	18854	Commuter and Transit Pilot Program	2025	31.870	47.710	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
Transit	19043	The Woodlands Township commuter bus purchases	2025	4.737	0.3	Yes – reduces peak hour delay	Yes – increases Non-SOV travel
2025 Emissions Estimates				**593.604**	**151.248**		