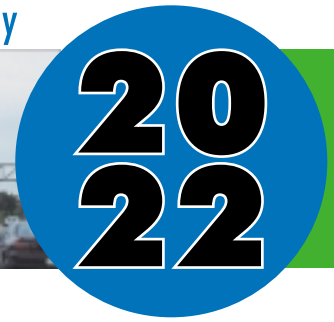


PUBLIC COMMENTS: 2022 MTP, 2002 TIP and Conformity



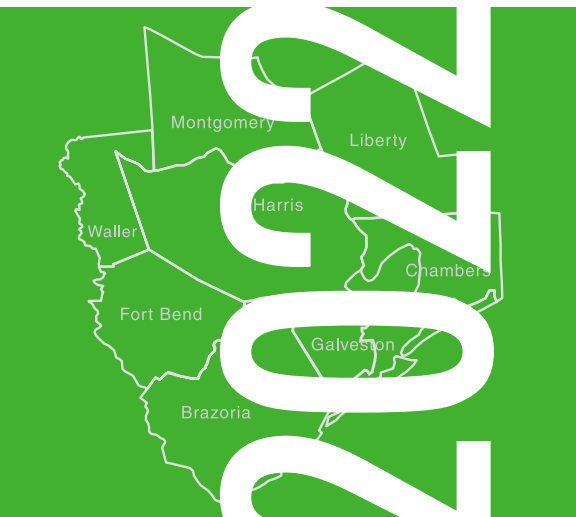
MTP

Houston–Galveston Transportation Management Area



VISION 2022 MTP is the long range transportation plan designed to meet the region's transportation needs through the year 2022. The Houston–Galveston Transportation Management Area (TMA) consists of 8-counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery and Waller.

Adopted February 25, 2000



Comment	Comment Type	Details	Possible Response
GENERAL COMMENTS ON THE PLAN, CONFORMITY, AND THE TIP			
1	ExB	Please define how much congestion is acceptable and demonstrate that condition to the public in some fashion	Pictures related to the varying levels of service and more descriptive information have been incorporated into the revised MTP Document (see page 35).
2	BA	Current model does not predict non-recurring congestion	<p>H-GAC defines non-recurring congestion to be congestion caused by irregular and random events. While it is true that the presence of non-recurring congestion somewhere in the regional transportation system within a 24-hour period is very near certainty, we know of no method for predicting the location and exact effect of those things that result in non-recurring congestion.</p> <p>Given this, we work with the characteristics of non-recurring congestion that we do know. It was established some time ago in research presented in the ITE journal¹ that non-recurring congestion accounts for two-thirds of the total daily delay that occurs in the transportation system while the remaining one-third of the total daily delay is caused by recurring congestion (congestion that repeatedly and regularly occurs). As part of the conformity analysis performed for the 2022 MTP and 2000 – 2002 TIP, H-GAC did account for the delay attributable to the non-recurring congestion on Harris County freeways as described in the summary of the conformity analysis.</p>
3	ExB/BA	No scenario building to show different strategies. All seem to be towards reducing congestion by speeding travel of vehicles	Due to the short timeframe for the preparation of this 2022 MTP it was not feasible to develop alternative system level scenarios. However in the development of the regional forecast for population and employment, alternative growth scenarios were evaluated by varying some of the causal factors relative to the funding available for construction and the cost of fuel. In addition METRO is in the process of re-evaluating the regional transit system. The results of that review will be incorporated into the next update to the MTP for the 2025 planning horizon. At that time it will be more feasible to consider alternative scenarios for system level strategies.

¹ Urban Freeway Congestion: Quantification of the Problem and Effectiveness of Potential Solutions, Jeffrey A. Lindley, ITE Journal, January 1987.

Comment	Comment Type	Details	Possible Response
4	BA	Special Generators not adequately accounted for or monitored	<p>The Houston-Galveston Regional Travel Models define special generators as facilities that generate traffic on a regular and daily basis but at a rate that is unique to that facility. Stadiums and large entertainment venues in and of themselves do not generate any traffic. The events that take place at the stadiums and entertainment venues generate traffic. In the context of travel demand analysis, these are consider “special events” and are not the same as special generators. The Houston-Galveston Regional Travel Models, similar to most if not all Regional Travel Models, estimate travel demand for “typical” non-summer weekdays. Special event traffic is not accounted for in the Regional Travel Models as there is no basis to establish the location, time and size of special events on a “typical” day in the present, not to mention twenty years into the future. If the objective of applying the regional travel models was to establish the amount of traffic on a particular date in the present, then knowledge of the location, time and size of special events on that day would be input into the regional travel models.</p> <p>In an urban region as large as the Houston-Galveston region, large regional malls are somewhat common and are not as unique as they might be in smaller urban regions. In the context of the Houston-Galveston Regional Travel Models, these malls are not considered special generators. The travel demand generated by these facilities is estimated based on the employment of the facilities in the mall.</p>
5	BA	Speed data is inaccurate; monitors are showing 24 hour speeds yet we have peak hours and other irregular traffic patterns (weekend, night, etc.)	<p>The regional travel models develop disaggregate speed estimates for four different time periods, am peak period, mid-day period, pm peak period and the over night period. These speeds are the basis for emissions estimates. 24-hour average speeds are not used to estimate emissions. Although the models are designed to estimate travel demand for a “typical” non-summer weekday, we do not represent them to account for the variations in travel that occur between Friday afternoons and other weekday afternoons, nor, obviously, Saturday or Sunday. The travel demand estimates from the regional models are adjusted to account for the variation in travel between Fridays and other weekdays.</p> <p>Regarding speeds, the model that is used to estimate time-of-day speeds accounts for the fact that the average driver exceeds the posted speed limit. The most recent posted speed limit data available was used in the estimation of time-of-day speeds. We believe the speeds and emissions are reasonably and accurately modeled.</p>
6	BA	Grand Parkway (Porkway) is unnecessary and leads to further congestion. Need to look at latent demand better.	<p>The Grand Parkway is one of several projects that will improve the regions options for hurricane evacuation. In addition, mobility within adjacent sub-areas of the region will be improved by the provision of alternative crosstown routes which will reduce some trip lengths that would have required travel through the central city to get across town.</p>

Comment	Comment Type	Details	Possible Response
7	BA	Information upon which the model is based is dated. Claim that three years should be the maximum age for any information used in modeling.	H-GAC almost continuously collects data to update the regional travel models. Given the size of the region and the large amount of data needed to perform model updates, 18 or more months pass between the time data is collected and is usable to begin a model update effort. H-GAC's practice has been to validate the regional models every five years and update and re-calibrate the regional models every ten years. The models were last validated in 1995 to a base year of 1990. H-GAC is nearing completion of a re-validation of the models to the year 1995. In addition, H-GAC is updating the current regional models and separately developing totally new regional travel models.
8	BA	Precision of data reflected to the tenth of a ton of emissions. This misleads the public into believing that more scientific precision is involved in the conformity determination than actually exists	We are not aware of a known margin of error associated with the emissions estimate. However, we have used "standard practice" in the preparation of the travel model and the estimation of the emission rates.
9	ExB	Please describe the accuracy of past models, forecasts etc. related to the VMT. Please explain why growth changes in the year 2007 and beyond.	<p>Standard regional model development practice has been to validate the regional models to a base year for which both model input data and data to which model results can be compared exist. Once the models can replicate observed data, it is assumed the models can be use as a predictive tool provided input data of the same type and quality exist.</p> <p>The Houston-Galveston regional models were last validated in 1995 to a base year of 1990. In short, the models matched overall regional travel, measured by counted vehicle miles of travel (VMT), within 1%. When looking at the performance of the model by different types of roadways, it matched regional travel, again measured in terms of counted VMT, as follows. The model estimated travel with 3% of observed travel for freeways, within 1% of observed travel on principal arterials, within 5% of observed travel on minor arterials and within 10% of observed travel on collector streets.</p> <p>The error associated with travel models is typically discussed as a function of the link volume or VMT; the higher the volume the less the percentage of error. The results of the validation show the model matches observed data very well for the higher volume facilities (freeways and principal arterial streets) and less well, but acceptable, on lower volume streets (minor arterial and collector streets).</p>

Comment	Comment Type	Details	Possible Response
10	ECB	Monitoring of the highway system needs to be done better	<p>The MPO , in cooperation with TxDOT and other transportation agencies in the region perform a significant number of monitoring activities on the roadway system in this region. Historically, the region's traffic volumes are measured through a series of "saturation counts" collected at over 13,275 locations.</p> <p>Every three years, the TxDOT, in cooperation with the Texas Transportation Institute performs an inventory of roadway conditions for the classified roadway system in the region.</p> <p>On an annual basis, the TxDOT Highway Performance Management System samples the roadway system for pavement and intersection performance measures. Every four to five years, the TxDOT and other transportation agencies in the region perform an measure travel speeds for both free flow and special events along the region's major arterials. Other observed or reported traffic conditions are periodically examined in conjunction with other programs (major investment studies) or roadway projects.</p> <p>Finally it should be noted that the H-GAC, in conjunction with the four TranStaragencies, are currently implementing a traffic volume, speed, and roadway conditions real-time monitoring system that will archive this information for all major roadways to provide an ongoing, consistent, historical frame of reference for all of the above activities.</p>
11	ECB	What costs to inner cities do the roadway projects have? What about to the other areas of the region. What about our natural resources. Not enough specific information done in this plan. All is reserved for the EIS.	This comment seems to be related to project level impacts which are not considered explicitly considered in this plan. System level costs are evaluated in the financial analysis.
12	ECB	Environmental impacts are not evaluated at the plan level.	Maybe a GIS overlay could look at urbanization growth near current parks and wetlands. We could discuss assumptions made in development patterns in the assignment of population.
APPENDIX E			
1	VOL	Violation of the Law. The Conformity relies on a SIP that has not been approved.	H-GAC has been directed by EPA to demonstrate conformity specifically on this 9% Rate of Progress Budget.
2	VOL	We would like a longer comment period	Plan has been developed over the last year through various public involvement procedures. Conformity regulations stipulate a 30 day public review period. Additional time was given to the public to review documentation unavailable at the beginning of the comment period. H-GAC has fulfilled this requirement and also provided 30 days for the public to comment on the process and methodology of the conformity determination.

Comment	Comment Type	Details	Possible Response
3	BA	Concerned that the assumptions used to predict population and other trends are not good. Reflect a “trend is destiny” philosophy of H-GAC.	<p>The primary concern about H-GAC's population & employment forecast seems to be that the forecast is somehow too aggressive. H-GAC employed generally accepted planning methodologies to the problem of forecasting the region's future growth trends. Generally, the criticisms that apply to any rational approach to the social sciences apply to this procedure. This said, we can only note that the population levels that result from our projections of regional population growth are on par with those of other government agencies.</p> <p>The Texas Water Development Board's internet site posts population projections used in its 2002 State Water Plan. The last update was December 1999. One might note that the TWDB posted projections for the CMSA are consistently higher than our own through 2025. This is in no way a criticism of the TWDB projections, and is only presented as an indicator of the lack of substantial effect that a hypothetical "pro growth" bias has had on our forecast results</p>
4	BA	Planners can’t plan past 5 years with reliable accuracy, no discussion about the quality or the accuracy of the data sets.	<p>Many unforeseen factors influence regional transportation plans from year to year. It is not an exact science. However the guidelines for metropolitan planning require the use of the best information that is available at the time. In that regard, the regional travel demand models which estimate the future transportation system characteristics are calibrated and validated periodically according to the requirements set forth by the Metropolitan Planning Organizations’ certification process. Typically a travel demand model set is considered to be reliable if the regional results are within plus- or- minus 2% of counted data. (Verify with Andy).</p>
5	BA	Hard to believe that the transit fare will not increase over the life of the plan.	<p>Given the manner in which transit fares are used within the regional travel models, we are assuming that transit fares remain at “existing levels” in a constant dollar sense. In other words, we assume transit fares will not increase or decrease at a rate substantially different than regional average income. H-GAC’s knows of no plans by local transit operators to increase or decrease fares relative to current levels as measured in constant dollars.</p>
6	BA	Same as above, but about the toll facilities.	<p>Given the manner in which toll pricing is used within the regional travel models, we are assuming that tolls remain at “existing levels” in a constant dollar sense. In other words, we assume tolls will not increase or decrease at a rate substantially different than regional average income. H-GAC knows of no plans by toll road operators to increase or decrease tolls relative to current levels as measured in constant dollars.</p>
7	ExB	VMT growth changes at 2007 please explain why.	See general comment 9, DUPLICATION
8	ExB	Increasing speeds for the 8-county area while increasing congestion seems unlikely.	<p>The plan includes various items to improve traffic flow, thereby reducing congestion and allowing for higher speeds. A disaggregated representation of speeds by county, roadway type and time period is contained in Appendix 5. While it is true that slight increases in speeds also cause slight increases in NOx emissions, the increased speeds indicate a reduction in traffic congestion. The reduction of delay or congestion has reductions in both NOx and VOC emissions associated with it, though it is hard to quantify to what extent.</p>

Comment	Comment Type	Details	Possible Response
9	ExB	Please justify the VMT factors	<p>H-GAC is required by EPA to estimate emissions using VMT estimates that are “consistent” with the VMT estimates derived from FHWA’s Highway Performance Monitoring System (HPMS). Since HPMS is not a predictive tool, H-GAC, along with all other entities which perform on-road mobile source emissions estimates using travel model-based VMT, must compare VMT produced by the regional travel model to VMT estimated by HPMS for a base year and develop adjustment factors to make the regional model VMT exactly the same as the HPMS estimate of VMT. These adjustment factors must then be used to adjust regional travel model VMT used in on-road mobile source emission estimations.</p> <p>As presented in the conformity documentation, H-GAC performed this comparison for the year 1995 and found that the regional travel model’s estimate of VMT on non-local streets in the region (which account for 90% of the travel) was within 0.6% of the HPMS estimate of VMT and was within 93% of the HPMS, as revised by TxDOT, on local streets. These adjustment factors were used in the development of the emissions budgets as well as the emissions forecasts produced as part of the conformity analysis.</p>
10	BA	Basing things on the 1996 rate of progress SIP relies on information that is too old.	The conformity analysis is based on the same EPA emission model and procedures developed from the 1996 ROP SIP. The input data is consistent with that used to create the 1999 ROP SIP budget, which is being conformed to.
11	BA	How are I/M compliance statistics accounted for?	A 96% compliance rate within Harris County was agreed upon by TNRCC. Emissions are further adjusted for motorists commuting from outer counties without I/M programs into Harris County.
(second 11)	BA	No mention of I-69 or emissions from foreign vehicles.	<p>That is correct. A Route Feasibility Study for I-69 is in process at this time. Potential impacts of increased truck traffic due to the designation of a NAFTA trade route through the Houston area are being considered in that study. The timeframe for completion of that study and a subsequent Major Investment Study and Environmental Impact Assessment will be under development for several years.</p> <p>From a travel demand perspective, all vehicles entering the region are accounted for via forecasts of vehicles crossing the boundary of the 8-county region. However, the emissions characteristics of all vehicles are assumed to be that of the U.S. vehicle fleet. Emission characteristics of vehicles not manufactured in the U.S. are not accounted for in this analysis.</p>

Comment	Comment Type	Details	Possible Response
Second 11, part b	BA	Nonrecurring emission estimates are inadequate	<p>Nonrecurring emissions are calculated based on methods agreed to by TNRCC and the Texas Transportation Institute. The first three analysis years are not projected to have significant congestion.</p> <p>Regarding the prevalence of incidents in Montgomery and Fort Bend County and their effect on the amount of non-recurring congestion; we have made the assumption that, despite the population and employment growth and traffic growth in those counties, the relationship of non-recurring to recurring congestion discussed in Jeffrey Lindley's research does not apply in these counties. Even with the forecasted amount of growth in these counties they will remain much less urbanized than most of Harris County. The relationship of non-recurring to recurring congestion mentioned previously applies only in highly urbanized areas.</p> <p>One of the inputs to the process for estimating the effect of non-recurring congestion on emissions is the estimated free-flow speed of Harris County freeways. This analysis, given that it is being done for the years 2000, 2007, 2015 and 2022, including the estimation of free-flow speed, should reflect the effect of higher speed limits on free-flow speeds. Because the process for estimating the effects of non-recurring congestion is done manually, any change to estimated free-flow speed has to be done manually. This is in contrast to the speed estimation process, which changes programmatically the free-flow speed based upon changes to speed limits.</p> <p>Prior to this conformity analysis, the manual process for estimating the effects of non-recurring congestion had not been applied since the ROP SIP budget development. At that time, the free-flow speed assumptions were adjusted from 58.5 mph to 61.5 mph (see footnote #15 in Appendix 7) to reflect the first speed limit changes made in the region. For this reason, the free-flow speed assumption of 61.5 mph was still reflective of the assumption made during the ROP SIP budget development process. Since speed limits on Harris County freeways continued to change through the past 18 months to between 60 mph and 70 mph, the free-flow speed assumption should have been updated again to reflect this.</p> <p>An error was made in that the free-flow speed input to the process for estimating the emissions effects of non-recurring congestion was not updated. This error resulted in the procedure estimating no effect of non-recurring congestion on emissions for the year 2000, 2007, 2015 and a small effect in 2022. This was not correct. Based on travel time and speed surveys and professional judgement, H-GAC feel that an appropriate free-flow speed for Harris County freeways is 70 mph. Estimates of the effects of non-recurring congestion on emissions should have been prepared using a revised free-flow speed estimate.</p> <p>A revised estimate of the effects of non-recurring congestion on emissions for all years has been developed using an input free-flow speed (70 mph) that reflects current speed limits on Harris County freeways. This change has been incorporated into the emissions estimates presented in the conformity analysis.</p>

Comment	Comment Type	Details	Possible Response
12	BA	Accuracy of the MOBILE model on Heavy Duty Diesel Vehicle emission factors	EPA will soon release a new version of the MOBILE model that will better address Heavy Duty Diesel Vehicles. Currently H-GAC is using the best available EPA approved model
13	BA	Irregular traffic peaking and speed underestimates	The regulations stipulate that the average work-day is used for conformity modeling purposes. Unfortunately speeds higher than 65 mph cannot be modeled by the current version of MOBILE.
14	BA	NOx emissions from Non-recurring congestion	H-GAC has requested assistance in creating a methodology to calculate NOx emissions from nonrecurring congestion. At this time, no known methodology exists that is suitable for NOx.
15	VOL	Monitoring of TCMs is not occurring. Sanctions are warranted.	Conformity only requires the TCM commitments to be met as far as emission reductions.
APPENDIX E1 THE PUBLIC PROCESS			This comment relates to the timely implementation of TCM's (#15 above). The formatting was modified somehow. The timely implementation of TCM's is required. Progress towards their implementation is reported at least bi-annually. The effectiveness of the TCMs is evaluated after implementation. The vast majority of the TCMs have been implemented in accordance with the State Implementation Plan. The one area of delayed implementation is for the bicycle and pedestrian projects which have encountered numerous un-anticipated delays which have been documented.
1	VOL	Meetings are at times when public cannot attend.	H-GAC has tried to schedule meetings such as RAQPC at night or on weekends in the past, however, these meetings suffered unusually poor attendance.
2	VOL	Boards or committees do not represent the community.	They are elected officials, who represent the community to a large degree. Others have been appointed when underrepresented groups have been identified and recommended. The list could include many other groups of people, but no realistic solution is suggested. We also have many notices and meeting agenda items available on the internet with availability to comment. We also have the VISION and Clean Air Action newsletters.
3	VOL	Boards and committees rarely go to the community to perform public outreach, education...	To move the meeting locations for boards and committees around the region would make it more difficult for people to know where the meetings are. Staff have consistently made and been available to make presentations concerning these matters.
APPENDIX E2			
1-17	GOB	Individual Projects that are of concern to the organization. Especially concerned about any roadway greater than 5 lanes including frontage roads. Belief that roadways by their nature nurture VMT and congestion and their costs to the environment including air quality are too great to justify. Particular emphasis on SH 99, completion of the Hardy Tollway, US 90, and Westpark Tollway	Many of the roadways in Houston and other major metropolitan areas currently have more than 5 lanes. Increasing roadway congestion is an indication of economic growth within a constrained area, limited by the roadway infrastructure that was developed many years ago for a smaller population base. The specific projects that are mentioned would provide some relief to seriously congested parallel facilities.

Comment	Comment Type	Details	Possible Response
APPENDIX E6			
CMAQ AND			
OTHER			
EMISSION			
REDUCTIONS			
1	VOL	Feeling that some of the projects expand capacity.	A CMAQ analysis is required to show beneficial air quality impacts before it can be funded with CMAQ. In some cases a project may include some elements that are eligible for CMAQ funding, such as a High Occupancy Vehicle Lane. Other elements of the same project may be funded from other sources.
2	ExB	Please explain how total TPD is less in 2022 than in 2000.	The average emission factors for later years, such as 2022, are much smaller due to the increase in newer vehicle that comply with tougher emission standards. These reduced emission factors translate to reduced emission credits.
3	BA	More reduction claimed than emissions produced, please explain.	Please refer to the methodology at the end of the section. The emission credit equals the emissions from a regular vehicle minus the emissions from the alternatively fueled vehicle replacing the regular vehicle.
4	ExB	Units of VOC and NOx are not the same.	Units are labeled appropriately and correctly.
5	ExB	Units of Measurement are not consistent	All final emission credits are presented in tons/day. Other units are used during calculations as steps t

APPENDIX E7
ORIGINAL
DOCUMENTATI
ON FOR THE
1998 ROP SIP
BUDGET

1	BA	Data is too old.	<p>This Appendix was taken from an existing SIP and is not out for comment. It was included to give readers and reviewers information on the budget that is currently being conformed to.</p> <p>Neither 1990 traffic counts nor projected 2010 daily traffic forecasts were used to “look” at the 2000, 2007, 2015 or 2022 traffic. Nor were the 1990 traffic counts or 2010 daily traffic forecasts used to develop in travel demand forecasts that were the basis for the emissions estimates developed for the 1998 (1999) ROP SIP budget.</p> <p>Regarding the use of 1985 data to calibrate and 1990 data to validate the models, the response to comment #7 from GENERAL COMMENTS ON THE TIP, MTP, CONFORMITY DETERMINATION AND TRANSPORTATION IN THE HOUSTON-GALVESTON AREA applies to this comment as well.</p>
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Comment	Comment Type	Details	Possible Response
2	BA	H-GAC admits to a mistake, how do we know that other mistakes aren't occurring?	<p>The estimated transit mode share of 3.97% is reasonable considering that the 1990 Census Journey to Work Profile reported that 3.65% of work trips in the Houston-Galveston – Brazoria SMSA were by transit bus. The forecasted transit ridership for the year 2007 developed in 1997/98 as part of the ROP SIP budget reflected H-GAC and METRO's analysis of a year 2007 transit system assumed in 1997/98 in light of a year 2007 roadway system assumed in 1997/98. Given changes in assumptions regarding what the year 2007 transit and roadway systems would be, along with changes to assumptions as to the amount and location of people and jobs in 2007 between 1997, when the ROP SIP analysis was done and 1999/2000 when this conformity analysis was done, that the forecasted transit ridership for a year in the future changes as assumptions change. This is not any admission of an error it simply reflects changes to assumptions about a time period in the future.</p> <p>H-GAC believes that its forecasting tools are adequately calibrated to produce reasonable forecasts of transportation conditions on a regional and sub-regional scale given reasonable input data. Assuming that the demographic and transportation system inputs are accurate reflections of the future, the model should reasonably forecast travel demand characteristics in the future.</p>
3	BA	More recorders of traffic should be used to make sampling.	H-GAC agrees with the observation that more data is useful. Despite this, H-GAC believes the data from 11 ATR sites is adequate for use in developing factors to adjust typical non-summer weekday VMT to "ozone season" VMT as described in the documentation.
4	BA	I/M compliance question.	See answer to comment #11 under APPENDIX E.
5	BA	Speed of traffic is not high enough.	<p>The free-flow speed estimate of 61.5 mph cited in the footnote was used in the development of the ROP SIP budget documented in the Appendix E7. As the cited footnote states, this free-flow speed represented a revision to the original free-flow speed assumption made specifically to address the speed limit changes that had taken place as of the time of the development of the ROP SIP budget. Since that time (1997/98) speed limit changes have continued. The cited footnote is not part of documentation of the process used in the conformity analysis currently under review. Further details regarding the free-flow speed assumption used in the non-recurring congestion estimation process are contained in response to comment #11 on Appendix E.</p> <p>Also, see answers to comment # 13 under APPENDIX E and comment #5 from GENERAL COMMENTS ON THE TIP, MTP, CONFORMITY DETERMINATION AND TRANSPORTATION IN THE HOUSTON-GALVESTON AREA.</p>

Comment	Comment Type	Details	Possible Response
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**APPENDIX E8
TECHNICAL
MEMORANDUM
ON SPECIAL
GENERATORS**

1	BA	Special Generators are not sufficiently defined.	With respect to the comments on the inclusion of sports and entertainment stadiums as special generators, H-GAC offers its response to comment #4 from GENERAL COMMENTS ON THE TIP, MTP, CONFORMITY DETERMINATION AND TRANSPORTATION IN THE HOUSTON-GALVESTON AREA.
2	BA	Bayport Terminal is incorrectly labeled as “expanded” when it is actually a new facility. Bush Intercontinental Airport is being expanded, but no mention is made in the document.	It is H-GAC’s understanding that there is some type of goods handling/movement facility currently in operation at Bayport. The use of the word “expanded” was meant to convey that the level of activity that would take place at Bayport as a result of the implementation of the Port of Houston Authority’s proposal would be larger than what currently takes place. The proposed Houston Intercontinental Airport expansion and its forecasted impact on on-road travel demand is accounted for in the conformity analysis. As stated in the technical memorandum, both commercial airports in the Houston region are treated as special generators in the regional travel models. In short, the rate at which trips are generated by the activities at the airport is a function of the number or originating enplaned passengers.
3	BA	Better estimates for truck traffic are needed.	Little is, in fact, known about NAFTA-generated traffic. Some forecasts of the general effects of NAFTA on overall traffic between the U.S. and Mexico have been developed. Those performing planning studies on the proposed I-69 NAFTA highway have developed forecasts of the amount of traffic that would be expected through the Houston region among the various routing alternatives considered. Additionally, the I-69 NAFTA highway is not currently in the MTP. Regarding the number of truck trips generated by the proposed Bayport terminal, H-GAC relied on figures provided by the Port of Houston authority as representative of normal weekday operations. It is H-GAC’s understanding that the 7,000 truck trips per day represents the maximum number of trucks after buildout of the facility. It is stipulated that average daily traffic be used for conformity analysis purposes.

TIP

1	GOP	No projects greater than 6 lanes, including frontage roads.	Large roads of six lanes or greater are necessary as part of the MTP to improve mobility, accessibility and safety.
2	GOP	No information is given for these projects. Insufficient information for analysis.	Detailed information is available. Before projects are selected for implementation within the TIP development cycle they have been analyzed for cost effectiveness and other factors as described in the Methodology for Project Evaluation.
3	GOP	Not enough money being allocated to the local streets.	Normal maintenance of local roadways remains a responsibility of local governments (cities, counties, etc).
4	VOL	Public involvement program is inadequate	See Appendix E1 comment 1 – 3

Comment	Comment Type	Details	Possible Response
5	GOP	Cost overrun is too high to not be reviewed.	The project costs and revenue projections are based on the best information available at the time. Numerous amendments to the TIP and MTP are made each year and the information is updated during the development of the MTP. The recommended policies for obtaining additional revenues are subject to approval and implementation but represent a set of reasonable expectations.
6	GOP	Secondary impacts of projects are not taken into account in any environmental analysis.	Air quality impacts are estimated based upon the models. Our plan does not however look at other impacts except during the EA/EISs that are completed for individual projects.
7	VOL	Time of meetings is not convenient.	See Appendix E1 comment 1.
8	GOB	NEPA wants us to look at secondary impacts.	See comment 6 above.
9	VOL	Where is the CMS and how is it being implemented.	<p>The Transportation Policy Council (TPC) of the Houston-Galveston Metropolitan Planning Organization (MPO) adopted the CMS Plan as a component of VISION 2020 on October 10, 1997. The Plan was revised and approved by the TPC to include a specific CMS roadway network on December 19, 1997. The Plan was further amended and ratified by the TPC for clarity purposes on May 22, 1998.</p> <p>The purpose of the CMS is to identify the role that relatively low cost, low capital investment management measures can plan in improving the performance of our transportation systems. Added capacity roadway projects are justified only if cost-effective demand management and system management strategies fail to reduce vehicular congestion to acceptable levels. Where demand or system management projects are feasible and cost-effective, project sponsors, or relevant implementing agencies, and the MPO must commit to their implementation or incorporation into a proposed added-capacity project as a pre-condition to federal funding assistance. Project design, concept, and scope must also be consistent with any selected management strategies. As the MPO, the H-GAC is responsible for implementing the CMS in the TMA.</p> <p>Implementation on the CMS Plan started in 1998. It has been found that by 2020, the level of mobility (LOM) for the regionally significant roadways in the previous 1998-2000 TIP and the existing 2000-2002 TIP in the Houston-Galveston Transportation Management Area will deteriorate enough to justify added capacity. Even with the implementation of Transportation Control Measures (TCMs) on several of these projects, it has been determined that although TCMs show impact in congestion mitigation, they are insufficient to impend the added capacity justification of these projects. These TCM projects as such are termed "Significant". These projects include: Regional Computerized Traffic Signal System (RCTSS), Actuated Traffic Signal Installation, Traffic Signal Synchronization, Computerized Transportation Management Systems (CTMS) and Automated Traffic Management Systems (ATMS) Projects. Certain TCM projects like Turning Lanes at Intersections, Bus Priority Lanes, Bike Projects and Park-&-Ride Projects, when combined with the above-mentioned TCMs also show significant impact. Detailed data collection and analysis procedures can be found in the three separate reports.</p>

Comment	Comment Type	Details	Possible Response
10	ECB	Criteria of level of mobility have too many acceptable levels. Need to make standard stricter and stop building roads that do not “fix” congestion.	In a growing major metropolitan area such as Houston it is not likely that congestion will be eliminated. Many of the projects and programs that are funded in the 2022 MTP will alleviate congestion in some corridors and manage it better system-wide during peak periods. Alternatives to automobile travel are being implemented in this region, but their impacts are relatively small compared to the vast majority of trip-making by private automobiles.
11	ECB	Cost/Benefit ratios are biased against projects that protect the environment in other ways. Need to look at costs other than number of dollars spent.	When projects are ranked and scored for TIP programming, the TPC is provided with comments on “other benefits” which may be associated with a given project, such as safety issues and hurricane evacuation routes. During the project selection process, this comment field would be an appropriate place to provide additional information regarding non-quantifiable benefits or significant public opposition.
MTP 2022			
1	ExB	Don’t like the three-mile buffers around congested segments. Don’t like segments that are only partially congested to be shown as congested along the entire segment.	Various methodologies have been used to display the numerical information that is part of the project evaluation process. There are advantages and disadvantages to each approach that has been used in the past. Specific suggestions for improvement are welcome.
2	GOB	No roads equals no development. We don’t like H-GAC stating that they support development by building parallel roadways. Not H-GAC’s job to develop the area.	The MTP and the TIP are intended to provide the region with a variety of viable transportation alternatives, including but not limited to roadways, transit, park and ride facilities, HOV lanes, as well as bicycle and pedestrian facilities.
3	ECB	Cost/Benefit ratios are biased against projects that protect the environment in other ways. Need to look at costs other than number of dollars spent.	See TIP Comment 11.
4	VOL	Projects that increase NOx should not be classified as TSMs.	The acronym TSM refers to Transportation System Management and includes low- cost capital improvements that will improve the operational flow of traffic in a corridor. In cases where vehicles are stuck in traffic, and idling, a TSM improvement would result in increased average speeds and improved mobility.
5	VOL	Where is the CMS and how is it being implemented.	See TIP Comment 9.

Comment	Comment Type	Details	Possible Response
6	GOB	We oppose any project that is any way associated with the following projects or that increase a roadway past 5 lanes including frontage roads: I-69, Grand Parkway, West Park Tollway, Highway 90 through Herman Brown Park, Any project through Memorial Park, any project on existing or past railroad right-of-way, Hardy Tollway from I-610 to downtown, I-610 west from 290 to Braeswood, SH 99.	See Appendix E-2 Comments 1-17.

2022 MTP (14

page handout)

1	ExB	Inadequate presentation of walking as a mode being supported in the plan	The region has an adopted bicycle and pedestrian plan.
2	GOB	Plan seems to be more of the same.	Other transportation suggestions and alternatives are encouraged.
3	GOB	Plan claims to be a cooperative venture, but secondary impacts and other areas of concern are not discussed or presented describing this cooperation or opportunity for cooperation.	See Appendix E1 comment 1-3.
4	GOB	Public outreach is limited.	See Appendix E1 comment 1-3
5	GOB	Environmentally responsible and coordinating land-use and transportation are not proven.	The environmentally responsible goal refers to the need for the planned transportation system to reflect improvements to the air quality as modeled for the transportation conformity analysis. The coordination between land-use development and the transportation plan is reflected in the inclusion of higher density population and employment estimates in the central core of the region.
6	GOB	Not all projects are subject to environmentally responsible actions towards wetlands and or noise.	All federally funded transportation projects must meet minimum federal standards regarding environmental/wetlands/noise prior to implementation.
7	BA	Charts showing increasing population and VMT continuing a “trend is destiny” debate	Similar trends have been revealed in many sun-belt cities in the United States that are experiencing rapid growth in areas where cheap land is available for development. The trend lines merely reflect the patterns of historical growth and the anticipation of continued growth in the future. At the same time it is desirable to develop alternate modes of travel so that eventually the transportation system will be more balanced in terms of travel options.
8	VOL	Bicycle projects have been delayed and there is no mention of this.	The majority of bicycle projects in the TIP have been delayed due to significant cost estimate increases associated with revised engineering plans to meet AASHTO standards (adopted by TxDOT) with regard to r-o-w, at-grade RR crossings, as well as increases in construction material costs. H-GAC has been meeting with the City of Houston and TxDOT every other month to exclusively address these cost increases and to attempt to mitigate future delays in project lettings.

Comment	Comment Type	Details	Possible Response
9	ExB/BA	H-GAC is trying to scare the public into thinking that congestion is eminent but doesn't fairly define what is too much congestion	

**CONFORMITY
WITH TNRCC
TRANSPORTATION
REGULATIONS**

This comment relates to #9 above, the formatting was accidentally changed. Many commuters in the Houston region experience significant travel delays on a regular basis. The amount of delay an individual decides is acceptable varies from one part of the region to another, partly depending on the travel options that are available and their personal travel needs. For example, commuters to downtown Houston have access to an extensive system of High Occupancy Vehicles lanes if transit, carpooling or vanpooling is feasible for them. Commuters to the suburban employment centers have fewer options available but probably experience less travel delays than their downtown counterparts.

1	VOL	TCM implementation has not been timely	The Conformity Regulations allow for TCM implementation to be delayed as long as the implementing agency has demonstrated a good faith effort in fulfilling these commitments. Total emission reductions committed to through TCMs have more than adequately been fulfilled.
2	VOL	No plan to monitor performance or to ensure implementation	“

Violation of Law = VOL
General Objection to Provision = GOP
Evaluation of Costs & Benefits = ECB
Explain Better = ExB
Better Accuracy = BA

**Responses to Written Comments for
The 2000-2002 TIP, The 2022 MTP, and the Corresponding Conformity Analysis**

Comments from *Resource Systems Group, Inc.*

1) Are the land use forecasts used in the conformity analyses properly influenced by the transportation investments planned in the MTP?

Response: HGAC believes that the most appropriate process for linking transportation investments and land use forecasts is during corridor analysis. HGAC along with TXDOT and METRO regularly include review of land use / demographic forecasts as part of its corridor level studies. At the conclusion of all

corridor level studies revised land use / demographic forecasts for the corridor are incorporated into the regional land use / demographic forecasts. This practice has been in place since the initiation of corridor level studies in 1994 and continues in practice today.

2) Are model speeds calibrated to current actual speeds?

3) Are model speeds sensitive enough to model congestion so that future speeds are accurate?

Response (2&3): As mentioned in the comments, the post assignment speed model was demonstrated to replicate both 1985 and 1990 observed speeds. The model is based on established traffic engineering speed/flow principles as described in the 1991 Highway Capacity Manual. The model, developed by the Texas Transportation Institute, estimates, in disaggregate fashion the cross-sectional speed of a roadway segment based upon the volume, capacity and estimated free flow speed of the link. Purposely the model was developed to estimate the free flow speed of a link based upon the posted speed limit of the link. The speed limit data input to the model for this conformity analysis reflects recent increases in speed limits in the Houston region. The logic of free flow speed estimation in the model assumes that drivers typically exceed the speed limit. Given the structure of the model and its basis in established traffic engineering principles, H-GAC feels its model represents an advanced state-of-the-practice speed estimation technique. Presentation of this technique has been made at both the Transportation Research Board and the TRB Planning Applications conference and has been accepted by practitioners as a state-of-the-practice tool.

The commenters contrast the changes in speed relative to changes in VMT per lane mile per day in the H-GAC conformity analysis and that presented in the TTI *Urban Mobility Study*². The H-GAC speed data cited in the comments represent a 24-hour average speed whereas the data presented in both the referenced graphic from the TTI *Urban Mobility Study* and the corresponding table are six-hour peak period speeds. Changes in 24-hour average speeds will almost always be less than changes to peak period speeds given changes to highway volumes. The comparison made is not appropriate.

The commenters also cite traffic assignment functions based upon the 1985 Highway Capacity Manual (HCM) as being more appropriately sensitive to traffic volume than the H-GAC speed model. As mentioned, the H-GAC speed model is based upon speed-flow relationships presented in the 1991 HCM. It is important to note that the freeway speed flow relationships contained in the 1985 HCM were revised as part of the 1991 HCM. These revisions were an acknowledgement that freeway speeds were less sensitive to traffic volumes than was previously thought.

As an addendum to the response to comments on modeled speeds, H-GAC offers a copy of a report presented by TTI and H-GAC on the post-assignment speed model. H-GAC is confident that this document will assist in establishing that the H-GAC post-assignment speed model represents one of the more sophisticated speed estimation tools in practice in the U.S. today.

4) Are the emission factors used correct?

Response: H-GAC uses the POLFAC model developed by the Texas Transportation Institute to run the EPA Mobile model for each speed. This model did not indicate any fleet or temperature warning messages, however these warnings do not affect the accuracy of the emission factors used in the conformity analysis. The fleet warnings from the Mobile model occurred because the vehicle registration distribution data did not sum directly to 1, as it should. Due to rounding errors in the 25 numbers that make up the total registration distribution for each vehicle type, the sum may be slightly above or below one.

The temperature warnings occurred because the modeling runs done by time period contained an average temperature instead of a temperature range. The temperature range in the 24 hour time period runs were used to produce diurnal emission rates, which were later incorporated into the IMPSUM model (also developed by the Texas Transportation Institute). A reviewer at the Texas Natural Resource Conservation Commission has confirmed these warnings and their explanations. Furthermore, the Eastern Research Group did a quality assurance of all of the emission factors used for conformity.

5) Are errors in calculations of off-model emission reductions accompanied by similar errors elsewhere in the analyses?

² http://mobility.tamu.edu/study/PDFs/travel_speed.pdf

Response: The errors pointed out within the off-model analysis spreadsheet have been corrected. The delay reduction in each calculation should always be hours per day and the fuel used per train in the “Port” calculations is measured in gallons per day. The Houston-Galveston Area does not rely on these emission credits to demonstrate emissions below the required conformity budgets. The reviewing agencies will be checking these spreadsheets and alerting us to any other corrections that may be necessary.

General: We would like to thank *Resource Systems Group, Inc.* for submitting clear and concise comments, which aided us in making final corrections to the draft conformity analysis.

Comments from Sierra Club

1) Statutory Conformity Criteria

Response: H-GAC believes that it has satisfied all conformity criteria, as outlined in the conclusion section of the Conformity Summary document. The present conformity analysis is related to the Motor Vehicle Emission Budget (MVEB) contained in the May 1998 Nine Percent Rate of Progress State Implementation Plan (SIP). A separate conformity analysis will be done for the MVEB submitted in the November 1999 Attainment Demonstration SIP, no later than 18 months after its submittal. The Texas Natural Resource Conservation Commission (TNRCC) is responsible for putting together MVEBs and the SIPs that contain them; H-GAC is complying with federal regulations in demonstrating conformity to the MVEB already set in the SIP by TNRCC.

2) Conformity Freeze in Houston/Galveston Nonattainment Area

Response: The SIP document submitted in May 1998 contains two distinctly different sections, a 9 % Rate of Progress SIP and an Attainment Demonstration SIP. This conformity analysis pertains to the 9% Rate of Progress portion of the May 1998 SIP. The November 1999 Attainment Demonstration SIP was submitted in order to address the shortfalls in the May 1998 Attainment Demonstration SIP. The SIP is a single document with many different sections that are continuously changing through updates, additions and revisions.

3) The Inadequacy of the Rate-of-Progress NOx Budget and the Requirements for Emission Reduction Tests

Response: H-GAC cannot address shortfalls in the NOx budget, as it is determined by the TNRCC (see response to comment #1). This Rate of Progress budget is not meant to demonstrate attainment. Instead it is meant to satisfy the 9% Rate of Progress requirement.

4) The H-GAC Must Implement All Reasonably Available Control Measures by 2007

Response: H-GAC has demonstrated that Emission Reductions from TCM commitments up to and including those in the May 1998 9% Rate of Progress SIP have been fulfilled. H-GAC is a separate entity from the transit agency. Future plans from the METRO, the transit agency in Harris County, as well as other transit agencies, are incorporated into the Transportation Plans created by H-GAC. H-GAC is pursuing and encouraging other agencies to pursue transportation measures that will improve air quality.

Comments from Jim Blackburn (Representing the Texas Office of Environmental Defense, Galveston Houston Alliance For Smog Prevention (GHASP), and Galveston Bay Conservation and Preservation Association (GBCPA)

- 1) The 1998 Rate of Progress State Implementation Plan motor vehicle emission budgets are insufficient to determine whether proposed transportation projects will contribute to the frequency and severity of ozone violations and delay attainment of the ozone standard for the Houston/Galveston area.
 - A) The Transportation Conformity Determination fails to conform to the requirements of the Clean Air Act Section 176(c)(1).
 - B) The Transportation Conformity Determination is required by the Clean Air Act to use the most recent estimates of emissions.
 - C) The 1998 9% ROP/SIP does not demonstrate attainment of the ozone NAAQS mandated by the Clean Air Act.

Response:

A) Conformity determinations must be made within 18 months of a State Implementation Plan (SIP) Motor Vehicle Emission Budget (MVEB) submittal, regardless of whether the budget insures attainment of the ozone standard by 2007. The purpose of the budget in the 1998 9% Rate of Progress SIP is to demonstrate a 9% rate of progress, or reduction in emissions of pollutants leading to ozone formation. H-GAC will be completing a new conformity analysis for the attainment demonstration budget submitted in the November 1999 SIP before May 2001.

B) The most recent estimates of emissions, according to “standard practice” have been employed in the current conformity analysis.

C) The Texas Natural Resource Conservation Commission (TNRCC) is responsible for putting SIP budgets together. H-GAC is charged with demonstrating conformity based on whatever budget is in the SIP created by TNRCC.

- 2) Delays in compliance with Clean Air Act deadlines have affected the reliability of the Transportation Conformity Process.
 - A) EPA’s Adequacy Finding for Transportation Conformity purposes of the 1998 ROP/SIP did not comply with EPA regulations and guidance.
 - B) By conditionally approving the 1999 ATT/SIP, EPA has effectively extended the conformity compliance deadlines and delayed substantive compliance under the CAA.

Response:

A) H-GAC cannot address issues with EPA actions.

B) “

- 3) Lacking a timely and approved motor vehicle emission budget, the Conformity Determination should be based on the build/no build analysis.
 - A) The 1999 Houston/Galveston ATT/SIP was found to be inadequate for Transportation Conformity Purposes.
 - B) The Build/No Build analysis is appropriate when a timely and approved motor vehicle emissions budget is not available.

Response:

A) Texas submitted to EPA on May 19, 1998 a 9% Rate of Progress (ROP) SIP and an Attainment Demonstration (AD) SIP. The 9% ROP portion of the SIP contained a motor vehicle emission budget (MVEB); the AD portion did not. EPA determined the May 19, 1998, 9% ROP MVEB adequate on October 15, 1999. EPA determined that the May 19, 1998 AD is inadequate for transportation conformity purposes on December 7, 1999 because it does not contain any VOC or NOx budgets.

B) A Build/No Build analysis was not required in this case, because an adequate MVEB exists, as explained above.

- 4) Alternatively, the Conformity Determination must be deferred until the Environmental Protection Agency approves or disapproves the current motor vehicle emissions budget by May 31, 2000.

Response: See above explanation to comment 3A.

Comments from David Marrack

- 1) The Conformity Analysis fails to demonstrate that VMT and/or Toxic Air Pollutants (TAP) emission reductions will be achieved by any, or all, of the proposed highway construction proposals and related actions considered.

Response: It is outside the realm of conformity to analyze the impact of the MTP and TIP on emissions of Toxic Air Pollutants. It is indisputable that TAPs are an important public health issue and should be dealt with on a regional level. However, an ambient air quality standard for TAPs does not currently exist.

The growth in VMT in many large metropolitan areas, including Houston, is a function of several inter-related factors including (but not limited to) suburban development patterns, more women in the labor force and higher employment rates. In a growing area such as Houston, the development of a more balanced transportation system is a desirable goal. Such a system may have an impact on the growth of regional VMT after many years. However, it seems that the recent experience in many of the large and growing cities in the United States is that VMT growth is still outpacing the capacity of the transportation systems even in cities with mature mass transit systems. The good news is that in the cities with mature mass transit systems, commuters are provided with an alternative travel mode that will reduce the number of automobiles on the roads. Some of the Transportation Demand Management activities in the 2022 MTP, such as transit expansion, carpooling, vanpooling, and telecommuting will reduce VMT but on a smaller scale.

Email Comments on the Conformity Analysis:

Comment 1: Opposition to the inclusion of the Grand Parkway and the Westpark Toll Road in the current MTP and CD. These highway projects and other proposed expansion projects will destroy much of our best remaining green space and wildlife habitat, increase flooding from run-off, and destroy rural communities and farmland.

Response: The Grand Parkway will provide another route for Hurricane Evacuation Purposes and also provide an alternate route for crosstown travel in the areas it is planned. The Westpark Toll Road should help alleviate some of the traffic congestion on Westheimer, Bellaire and other parallel roadways, thereby improving mobility. Since it would be a tolled facility the primary users would generate a significant portion of the funding for the construction.

The Conformity Analysis is specifically for motor vehicle emissions, which is an air quality issue. Individual roadway projects which significantly impact the environment trigger an environmental impact statement, which addresses issues beyond air quality such as wildlife habitat, flooding, and land use.

Comment 2: We need a transportation system that significantly reduces air emissions, vehicle congestion, and vehicle miles traveled. People must have real choices and alternatives to one-person/one-car travel. A majority of our transportation dollars should NOW be spent for genuine alternatives like light rail, commuter rail, vanpools, bicycle lanes, etc.

Response: Many of the major transportation facilities in the Houston area were constructed more than 20 years ago and simply have to be re-constructed. A major portion of the costs for the MTP 2022 are to maintain the existing infrastructure. Programs to expand transit, bicycle and pedestrian facilities, and carpool and vanpooling programs are included in the MTP. Additional revenues will be needed to fund the expansion of Light Rail beyond the Main Street corridor or to fund the development of Commuter Rail in this region. Those options are being explored by METRO in their 2025 Transit Plan which will be incorporated into the next update to the MTP which is currently scheduled to be completed by the end of this year.

Comment 3: The current effort to determine air emissions from proposed road expansion projects is flawed. Transportation planners use outdated vehicle travel data and unrealistically low freeway speeds. Air pollution measurements, from freeways and inside vehicles, which would document what people actually breathe are not collected and used. Modeling of air pollution from vehicles needs to be entirely rethought.

Response: The models used to estimate transportation related emissions are developed by EPA with auxiliary models developed by the Texas Transportation Institute (TTI). The emission analysis methods are consistent with the best planning practices for large urbanized areas, as stipulated in the conformity regulations. EPA and other agencies are aware of the limitations of the emission models, which can only accommodate speeds up to 65 miles per hour. Future versions of these models will be able to accommodate higher speeds.

Comment 4: Currently the general public has too little say in how transportation dollars are spent. Special interests have enormous leverage and are able to influence the system to suit their needs. The region's broader long term interests regarding air quality, preservation of open space, and real public transit are not being met.

Response: Active Public Involvement is encouraged in the Transportation Planning Process. In fact there were a series of Public Meetings held in various locations. A Public Opinion Survey was completed and more than 800 respondents provided guidance in refining the MTP goals, etc. We welcome ideas to improve our public outreach efforts.