

2022 METROPOLITAN TRANSPORTATION PLAN



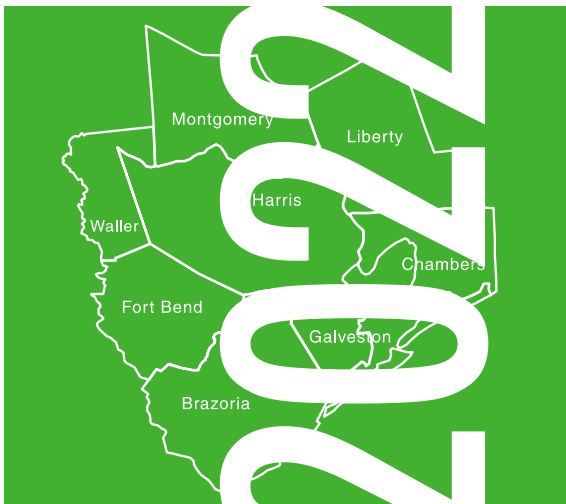
MTP

Houston—Galveston Transportation Management Area



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

Adopted February 25, 2000



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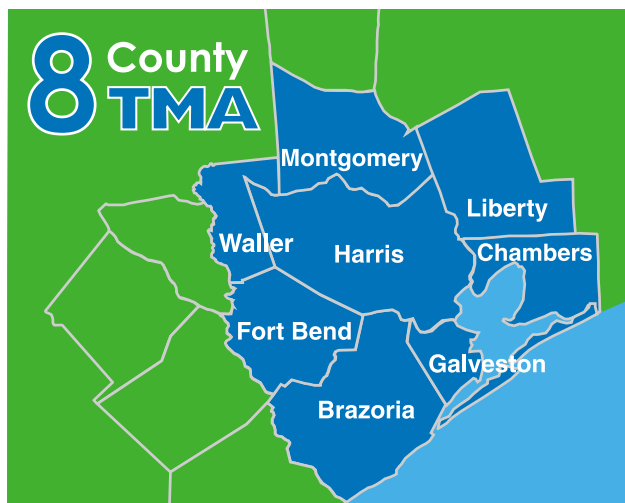
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THE 2022 MTP

The 2022 MTP is the Houston-Galveston region's Metropolitan Transportation Plan (MTP). The MTP is a strategic planning document designed to identify and address the transportation needs of the region through the year 2022. It is a **multimodal plan** that describes needed improvements for modes as diverse as cars, trucks, public transit, bicycles, and pedestrian. As such, the MTP forms the **basis for transportation planning** activities within the region and determines the nature of the future transportation system.



The purpose of the 2022 MTP is to define the goals, identify the needs, and recommend strategies for improving the regional transportation system. The transportation needs addressed in the MTP include traditional topics such as improving mobility, preserving existing infrastructure, and enhancing safety as well as related strategic needs such as supporting goods movement and improving air quality.

The 2022 MTP is a **cooperative venture** that begins with a shared vision. Its development progresses with the analysis of needs and investigation of the best solutions. This evaluation leads to public adoption of affordable strategies best meeting the region's mobility, economic development and environmental goals. The MTP is the result of interagency consultation between federal, state and local governments and transportation agencies as well as users of the transportation system. In order to financially balance expected transportation costs and funding, the 2022 MTP has prioritized its recommended transportation investments.

INITIATIVES

- Light Rail System from Downtown to Astrodome
- 1,046 new freeway lane miles
- 234 new tollway lane miles
- 3,285 new arterial lane miles
- 226 new HOV lane miles
- 17,821 new park-and-ride spaces
- 413 new freeway traffic management lane miles
- 3,000 intersections with signal improvements
- 391 new miles of bicycle and pedestrian routes

The area covered by the 2022 MTP includes eight counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller. This region is designated as the Houston-Galveston Transportation Management Area (TMA).

Cooperation, consultation and coordination form the cornerstone of regional transportation planning. All of the region's major transportation providers and the general public are involved in the process. The agency responsible for coordinating transportation planning in the TMA is the metropolitan planning organization (MPO). H-GAC is the state appointed MPO for the region. H-GAC provides technical analyses and planning for the region. All regional plans, projects and programs, however, must be approved by the Transportation Policy Council (TPC).

The MTP is both a product and a driving force of the planning process. It incorporates the plans and programs developed by many agencies and local governments into one comprehensive plan. The Transportation Improvement Program (TIP) defines the implementation schedule for the first three years of the MTP. The regional TIP is included in the State TIP.



THE VISION

A "vision" is a statement of the **preferred future** or outcome for a group. It defines the ultimate goal that a group would like to attain and, as such, it serves to guide the actions of the group. In the most difficult times, the vision should serve as the foundation that allows the group to work together for that common purpose.



The 2022 MTP is primarily the product of a **three-phased public involvement process** that includes public outreach meetings in the early, intermediate, and final stages of plan development. The process reflects the education, outreach, and participation goals outlined in H-GAC's Public Involvement Plan. Public outreach in the development of the MTP included numerous public meetings, the distribution of newsletters, press releases and advertisements involving diverse media.

In October and November 1998, H-GAC hosted a number of public meetings to obtain comments on an update to the VISION 2020 MTP. The meetings were held in Houston, Galveston, Baytown, Angleton, Conroe, and Sugar Land. The results of the meetings were presented in the Fall 1998 and Winter 1999 issue of *The Vision* newsletter. Additional meetings were held June 9, 1999 and February 8, 2000. To further **public involvement**, H-GAC conducted two public opinion surveys in early 1999. Revised goals for the MTP were developed based upon these public meetings and from public opinion surveys.

VISION

The Houston-Galveston Regional Metropolitan Transportation Plan will enhance mobility by providing an efficient, affordable, safe, and environmentally responsible transportation system for both people and goods.

THE GOALS

Reflecting the desire to provide an alternative to the dependency on autos, a truly **multi-modal transportation system** will give system users a choice among travel modes that best suit their travel needs. Increased use of public transportation, carpooling, bicycling and walking will promote alternative modes that could help the region meet its air quality goals. Seamless connections that allow for the easy transfer between alternative modes, such as bikeways and bus routes, are necessary for an efficient multimodal system.

Coordinating land use and transportation development promotes an efficient, environmentally sensitive transportation system. Transportation services and facilities of the future must encourage complementary development patterns.

The transportation system must contribute to improving **regional air quality**. The 2022 MTP aggressively supports implementation of expanded public transportation, ridesharing and other transportation control measures designed to mitigate growth in vehicle travel and vehicle emissions. In addition, the project development process requires consideration of other environmental concerns such as the preservation of wetlands and the abatement of noise pollution.

MTP GOALS

- Increase the number of travel choices for people and freight movement
- Adequately maintain current roads and transit services
- Safe and secure movement of people and commodities
- Promote coordinated land use and transportation development
- Improve access to and connections within transportation system
- Efficient movement of people and goods
- An environmentally responsible system
- Active citizen involvement
- A cost effective and affordable transportation system

POPULATION AND EMPLOYMENT

Population and employment are two of the **principal factors** that influence **transportation system use**. Population determines the demand for transportation services and facilities. The distribution of population and employment determines travel patterns by establishing where many trips will originate and terminate. The location of persons and jobs also determine the preferred mode of travel. Areas with concentrated population may depend on mass transit, walking, or bicycling while low density population areas might depend on automobiles or commuter transit.

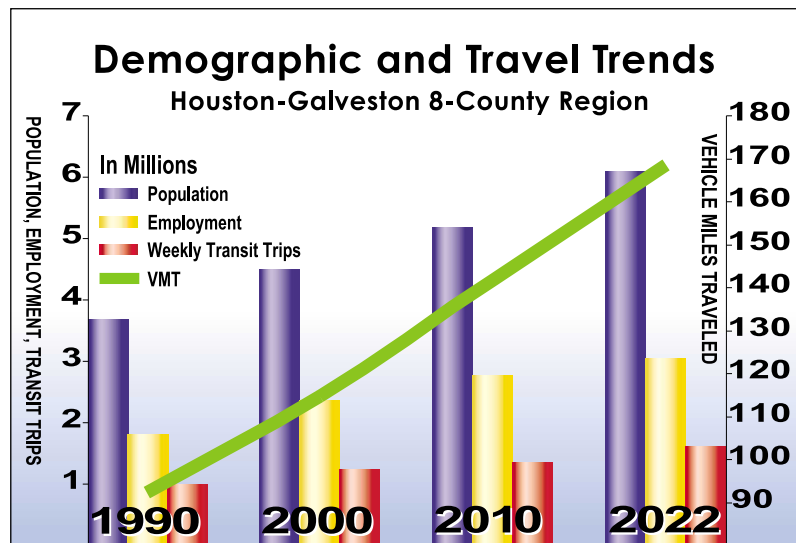


Household population is expected to grow at an average annual rate of 1.62 percent. By 2022, the region's **population** will reach **6.1 million**. Harris County will lead the eight-county area in total population growth, capturing 54 percent of the regional population growth. However, counties adjacent to Harris County will experience much greater percentage increases with Fort Bend, Montgomery and Waller more than doubling in population over the next two decades.

The employment forecast reflects similar growth increase to the population forecast.

Employment will grow at an annual average rate of 1.38 percent, reaching approximately **three million** by 2022. Harris County will remain the predominant location for jobs, capturing 31,700 (or 72 percent) of the anticipated 43,900 jobs added annually. However, the fastest employment growth will occur in Fort Bend and Montgomery with increases of over 180 percent through 2022.

One notable trend reflected in the employment forecast is that the inner urban area, **inside IH 610**, of Harris County will attract significant new employment, with **more than 217,500 new jobs** by 2022. Growth within the CBD will exceed 1,600 additional jobs per year. This forecast is based upon trends seen since 1990 and major redevelopment activities that have recently been initiated.



A key indicator of travel demand is **vehicle miles traveled (VMT)**. VMT is expected to reach 168 million miles on typical weekdays by 2022, an **increase of 82 percent** since 1990. The growth in VMT can be attributed to several factors including population, job and income growth, access to motor vehicles, residential and job location changes. By 2022, public transportation will carry almost one and one-half million riders per work week.

BICYCLE AND PEDESTRIAN SYSTEM

Bicycling and walking have numerous benefits: an opportunity for exercise, congestion reduction on roadways, and quiet, pollution free transportation. Local citizens have shown an increased interest in bicycling, and their efforts have culminated in the development of several local bicycle plans, most notably the City of Houston's Comprehensive Bikeway Plan adopted September 1993 and H-GAC's **Regional Bicycle and Pedestrian Plan (RBPP)**, adopted April 1996.

The RBPP includes an overview of bicycle and pedestrian modes of travel, maps of existing and planned facilities, recommended design standards, and a guide for local jurisdictions interested in developing a bicycle and/or pedestrian plan. The focus of the RBPP is to build on the funded projects with the construction of new bikeways. Existing bicycle and pedestrian plans of the counties, municipalities, and master planned communities in the region form the core of the RBPP. Approximately **\$86 million** worth of bicycle and pedestrian projects drawn from the RBPP, are included in the 2022 MTP.



GOODS MOVEMENT

Trucks, trains, ships and airplanes involved in cargo operations are vital components of the national and regional transportation mix. The movement of goods within the Houston-Galveston region is made possible by an extensive intermodal network that connects the region's port and manufacturing facilities to distribution routes. There are **71 intermodal facilities** of regional significance in the Houston-Galveston TMA which include commercial airports, ports, truck/rail terminals, pipeline terminals, an Amtrak station, intercity bus terminals, public transit centers, and ferries.



Improved access to the region's airports and seaports is needed to enhance the efficient movement of people and goods throughout the region. Among the intermodal recommendations in the MTP are direct connectors from US 59 and the Hardy Toll Road to BW 8 that will improve access to George Bush Intercontinental Airport. Other improvements include **expansion of seaport operations** in Houston, Texas City, Freeport and Galveston. As Reflected in these and other intermodal projects, the 2022 MTP supports improved port access as a key to continued regional economic development.

TRANSIT SYSTEM

Five public transit agencies serve the region. The Harris County Metropolitan Transit Authority (METRO) is the largest transit agency, providing **fixed route and paratransit services to 15 cities** including the City of Houston. Brazos Transit System (BTS) operates public transit services in Montgomery, Liberty and Chambers Counties. The City of Galveston operates a municipal transit system, Island Transit. Connect Transportation, operated by the Gulf Coast Center, Colorado Valley



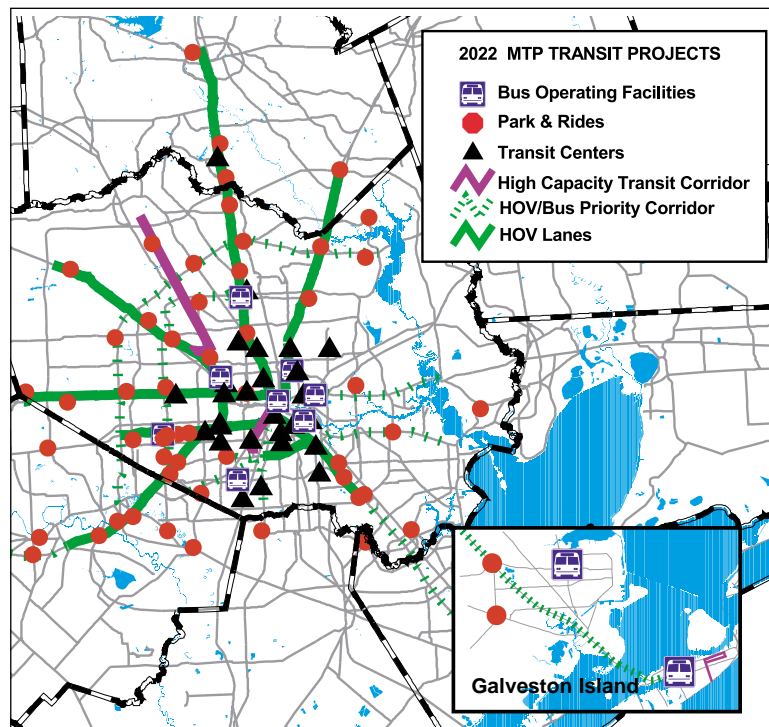
Transit, and Brazos Transit provide demand-response services in suburban and rural areas of Brazoria, Chambers, Galveston, Liberty and Waller Counties.

METRO's "recommended" concept for future service continues the expansion of its local and express bus services and adds the **first light-rail service between Downtown and the Astrodome**. Its 2022 plan continues an emphasis on HOV lane expansion supported by new and expanded park-and-ride lots, new transit centers to provide better connec-

tivity between routes, and new local routes. METRO will also expand its bus technology, passenger amenity and bus operating facility programs.

BTS will expand its commuter service from park-and-ride lots in Montgomery County to areas inside Harris County. In Galveston County, the existing trolley system will be extended to provide service along Seawall Boulevard to the University of Texas Medical Center. Thirteen new park-and-ride lots are planned to support HOV lane extensions in Brazoria, Fort Bend Galveston and Waller Counties. **Pilot transit service** is being initiated in Clear Lake, North Houston, Westchase, Galleria and Waller County.

2022 MTP Transit Projects



MANAGING THE TRANSPORTATION SYSTEM

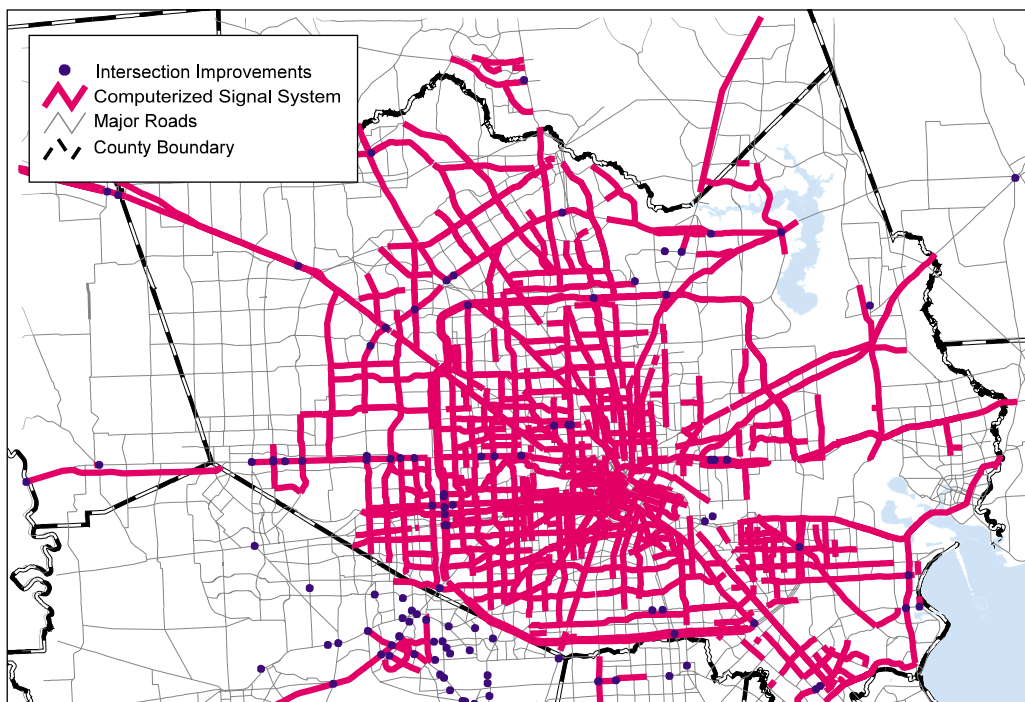
One objective of the 2022 MTP is to define strategies that reduce existing traffic congestion and prevent its occurrence in areas that are currently not congested. Implementation of a congestion management system (CMS) is one means of achieving this objective. A CMS is an ongoing process designed to systematically evaluate, select, and implement cost-effective strategies to manage new and existing transportation facilities called **Transportation Control Measures** (TCMs).

Transportation system management (TSM) tools are among the TCMs emphasized in the MTP. They provide relatively low-cost options for reducing congestion. TSMs include a variety of Intelligent Transportation System (ITS) options such as changeable message signs and camera surveillance on freeways.

The Houston-Galveston TMA is one of four regions designated by Congress as an **ITS Priority Corridor**. The cornerstone of ITS deployment is the new regional transportation management center, known as Houston TranStar. It is designed to coordinate the collection, processing, and dissemination of traffic information on the region's freeways and HOV lanes, and in the future, many major thoroughfares.

The region's largest transportation providers have developed traffic signal coordination and synchronization plans for many of the major thoroughfares within Harris County. These systems are collectively referred to as the **Regional Computerized Traffic Signal System** (RCTSS). The RCTSS program designed by Harris County, City of Houston, Texas DOT, and METRO include signal synchronization at more than 3,000 individual intersections. Over time, this system will be expanded to include major thoroughfares in the adjacent counties.

2022 MTP TCM/RCTSS PROJECTS



ROADWAY IMPROVEMENTS

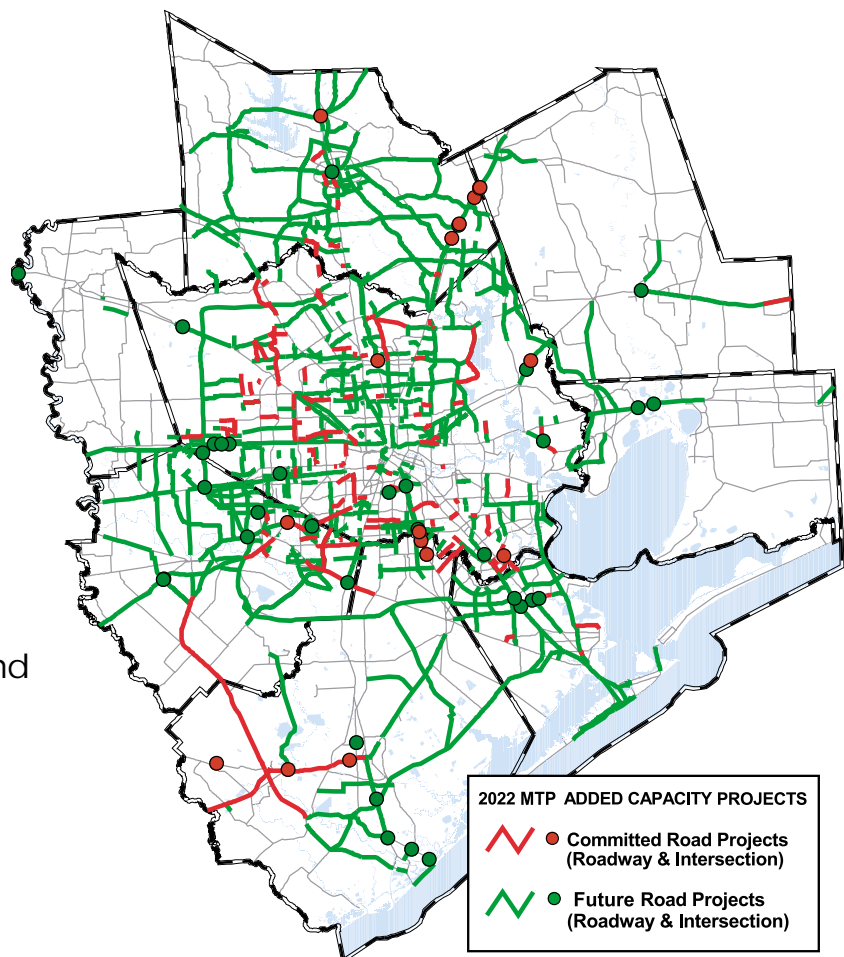
The 2022 MTP identifies **roadway widening and new roadway projects** that will be needed as the region's population grows and today's undeveloped areas become residential, business and commercial centers. The roadway system in the urban core of the region will also need to be upgraded as redevelopment takes place.



In order to identify roadway improvements needed through 2022, a roadway "congestion" analysis was conducted early in the plan development process. This roadway congestion analysis compares congestion levels at each of the transportation conformity milestone years, 2000, 2007, 2015 and 2022. The year 2000 roadway network includes existing roadways plus those expected to be constructed by the end of the year 2000. These roadway networks include the financially constrained program of roadway projects that are planned through the milestone year. The deficiency analyses for all years is based on expected growth in population and employment.

2022 MTP New or Widened Roadway Projects

Today congestion costs are estimated at \$1.9 billion per year. Serious and severe levels of future congestion will be great despite the 2022 MTP's recommendations for increased public transportation and traffic management.

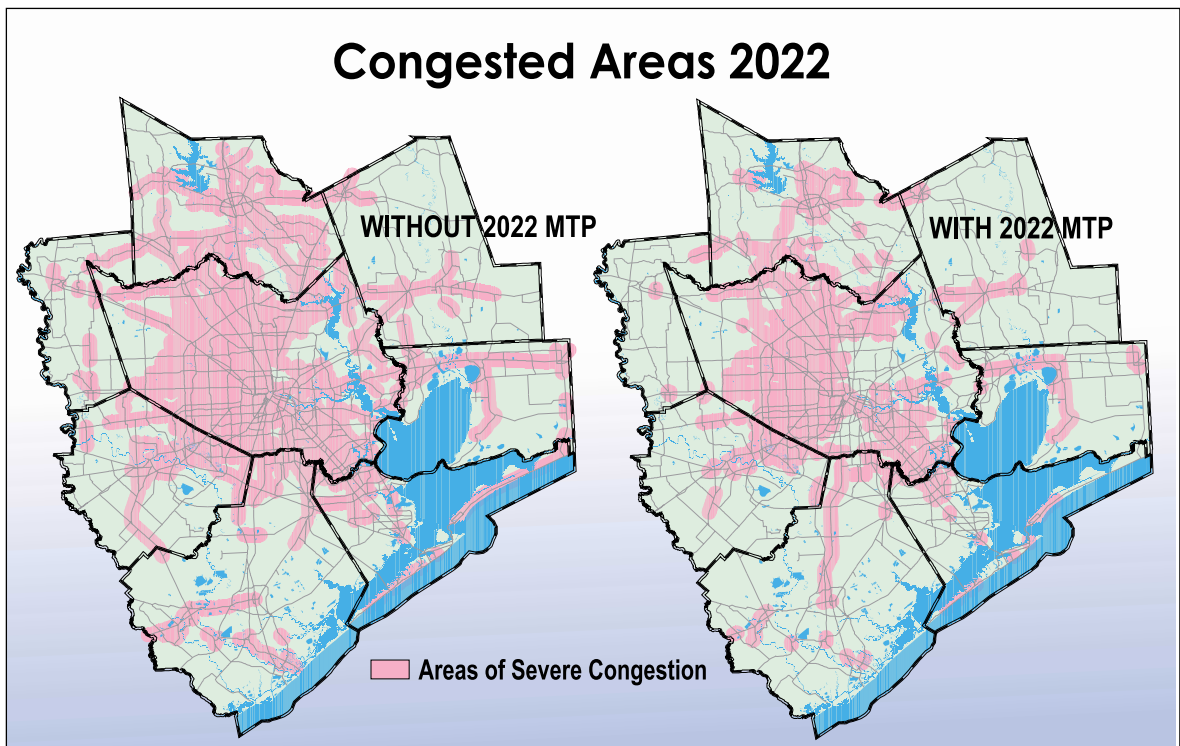
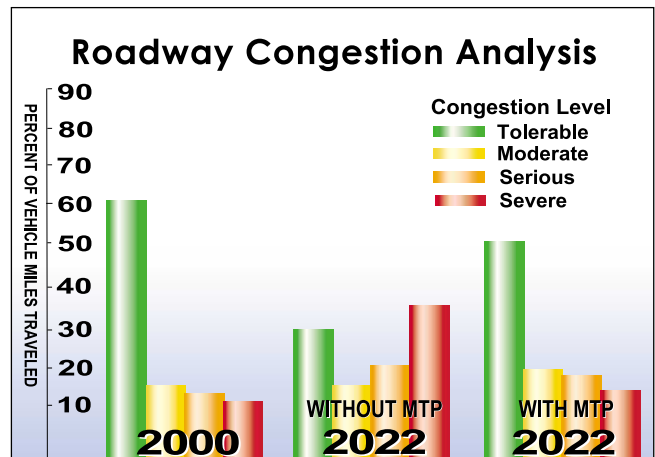


SYSTEM PERFORMANCE

A comparison of the areas experiencing severe congestion in 2000 and 2022 was used to evaluate the impact of the 2022 MTP. Today, **severe congestion** afflicts approximately **one-third** of the TMA.

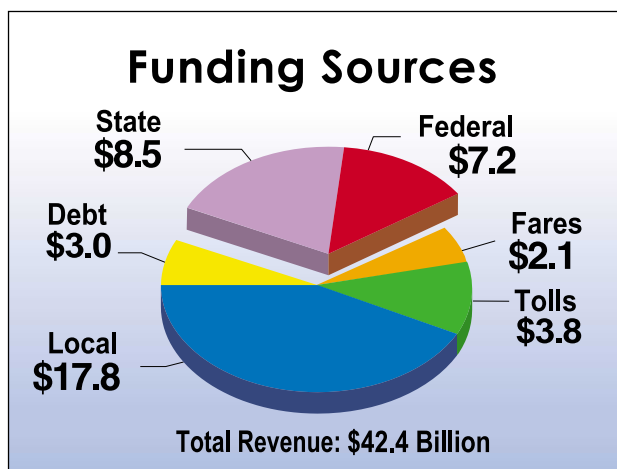
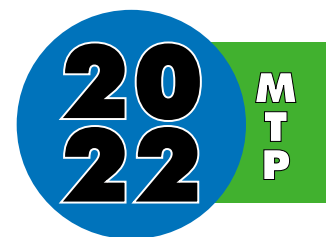
If no transportation projects are completed beyond 2000 and population and employment increase at projected rates, much of the region will be severely congested by 2022. Travel demand will far exceed the capacity of the system to cope with it. The overburdened transportation system will deteriorate far more rapidly due to overuse, further contributing to travel delays.

Throughout the region, the 2022 MTP will prevent some increases in severe levels of congestion by 2022. However, it will not eliminate congestion. The northern and western areas of the region and parts of Galveston and Brazoria Counties will continue to experience increasing travel delays along certain major thoroughfares. The financial reality is that **substantial additional investment will be needed** to achieve tolerable to moderate levels of congestion throughout the region.

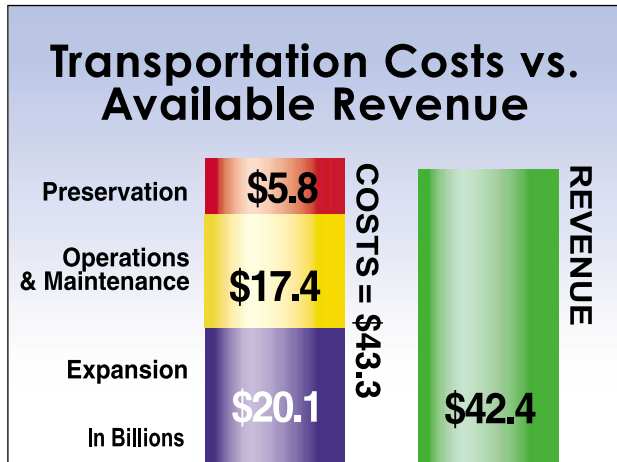


FINANCING THE MTP

In order to evaluate the financial feasibility of the 2022 MTP transportation needs, an analysis was undertaken of the region's projected transportation finances. Future costs required to maintain, operate and grow the region's transportation system were compared to projected revenues. Based on past funding trends, almost **\$43 billion of transportation revenue** is expected from all sources. Over 60 percent of this revenue will be generated by local governments and transportation agencies.



During the 2000-2022 time period, the total **projected cost** of the region's transportation system is also just under **\$43 billion**. Of this, \$17.4 billion is required to operate and maintain the system, \$5.8 billion is required for capital preservation, and \$20.1 billion is required to complete planned system expansions. Projected MTP revenues will only be realized should the transportation policy initiatives shown below succeed.



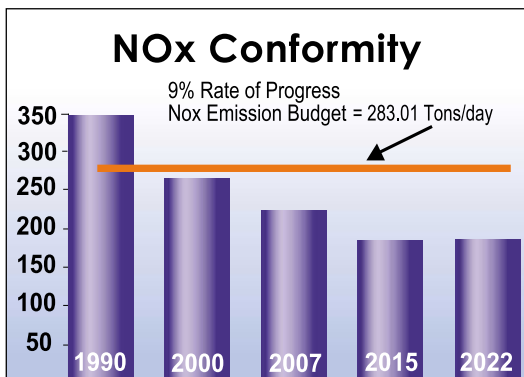
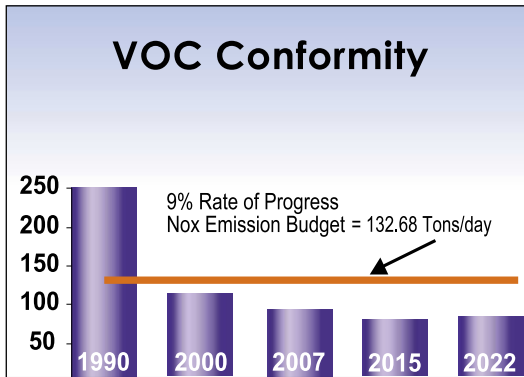
POLICY

- Increase state share of federal highway and transit revenue
- Reduce diversion of gas tax for other uses
- Ensure state fuel tax keeps pace with inflation
- Maintain fair share of state revenue to the region
- Increase toll financing for new freeway projects

AIR QUALITY

One of the most studied and regulated environmental impacts of transportation is air pollution. Emissions from vehicles include a variety of pollutants including volatile organic compounds (VOCs) and nitrogen oxides (NOx). Ground-level ozone, the major constituent of smog, is formed when VOCs and NOx react with sunlight. The Houston-Galveston TMA is a **severe non-attainment area** for ground-level ozone. Therefore, the transportation system must do its part to attain national air quality goals by reducing vehicle emissions.

H-GAC has adopted a leadership role in developing a regional consensus for future air quality plans and a set of Clean Air Principles to guide future action on air quality issues. In addition to the Regional Air Quality Planning Committee, current programs include Clean Air Action, Area Emission Reduction Credit Organization (AERCO), Greater Houston Area Clean Cities Coalition and Commute Solutions.



The analysis thus supports a finding that 2022 MTP will not only meet, but will exceed current air quality improvement goals for the Houston-Galveston TMA.

TRANSPORTATION CONFORMITY

Transportation conformity demonstrates the MTP's compliance with state air quality requirements. The conformity analysis conducted for 2022 MTP shows that transportation improvements will result in vehicle emissions reductions below those required in the state air quality implementation plan. The conformity analysis also demonstrates that the transportation investments, strategies, and programs contained in the MTP support the timely implementation of transportation control measures (TCMs) that will reduce traffic congestion and vehicle emissions. Therefore, the **2022 MTP will not increase** the number or severity of ozone exceedances in the eight-county region.

The 2022 MTP meets the current budget requirement, a maximum of 132.68 tons of VOC per day and a maximum of 283.01 tons of NOx per day, for each milestone year examined. The estimated vehicle emissions incorporate the expected impact of an aggressive commitment to implementation of TCMs and other emission reduction measures found in the 2022 MTP. By 2022, these measures are expected to reduce VOC emissions by approximately 1.65 tons per day and NOx emissions by 1.24 tons per day.

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The preparation of this document was financed in part through grants from the U.S. Department of Transportation under Section 112 of the 1973 Federal Aid Highway Act and Section 8(d) of the Federal Transit Act of 1964, as amended. The United States Government assumes no liability for its contents or use thereof.

ABOUT H-GAC

The Houston-Galveston Area Council is the region-wide voluntary association of 149 local governments and local elected officials in the 13-county Gulf Coast Planning region of Texas. Its service area is 12,500 square miles containing almost 4.3 million people.

H-GAC's mission is to serve as the instrument of local government cooperation, promoting the region's orderly development and the safety and welfare of its citizens. It is the regional organization through which local governments consider issues and cooperate in solving areawide problems. Through H-GAC, local governments also initiate efforts in anticipating and preventing problems before they become unmanageable.

H-GAC is governed by a Board of Directors composed of 33 local elected officials, who serve on the governing bodies of member local governments. Board members are designated annually by the local governments they represent.

About 500 people from all parts of the 13-county region serve on committees that advise the H-GAC Board on a wide range of programs. A professional staff of just over 100 assists the organization in fact finding and problem solving and carries out policies of the Board.

TRANSPORTATION DEPARTMENT

Since 1974, H-GAC has served as the Metropolitan Planning Organization (MPO) for transportation planning in the urbanized areas of the Houston-Galveston Transportation Management Area (TMA). H-GAC's transportation department is responsible for the regional planning process for all modes of transportation in the eight-county TMA. The department provides technical support and staff assistance to the Transportation Policy Council and its Technical Advisory Committee. In addition, the department provides technical assistance to the local governments in planning, coordinating, and implementing transportation decisions.

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Or visit one of the following websites:

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www.cleanairaction.org
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