Overview

As the Metropolitan Planning Organization (MPO) for the Houston-Galveston region, the Houston-Galveston Area Council (H-GAC) is charged with enabling and creating a regional perspective for transportation and mobility. The MPO must examine potential impacts to natural, cultural and socioeconomic resources including Title VI (environmental justice) communities, air and water quality, land use, and vegetation implications at the planning and project development phases for individual transportation projects, and in some cases, networks of free facilities due to requirements of the National Environmental Policy Act (NEPA) of 1969.

In order to maintain mobility in the region the 2035 Regional Transportation Plan (RTP) provides major strategies, which utilized together will preserve needed regional mobility. The RTP recognizes that although the region cannot build itself out of congestion, adding system capacity cannot be avoided and is thus an important strategy for improving mobility. Adding capacity to the roadway network is costly, and with dwindling funding, strategies such as tolled facilities have become an increasingly attractive option as a means of adding capacity to the network. The Houston-Galveston region is now one of the few regions in the country that has or is on the verge of having a regional tolled roadway network. This analysis focuses on a regional tolled roadway network and its cumulative and indirect impacts on the above mentioned resources.

Cumulative impacts may result from individually minor, but collectively significant actions taking place over time. H-GAC plans for regional changes over a long time horizon, 30 years, thus providing a means to assess cumulative impacts to the region. Additionally, indirect effects are typically observed after the action occurs. Consideration of both the indirect and cumulative effects of a regional tolled roadway network is essential to the analysis of tolled facilities as the existence of this type of network can cause long term changes in air and water quality, vegetation, and land use patterns. Air and water quality are most affected by the increase the number of vehicles and non-permeable surface area, respectively. Furthermore, as the regional tolled roadway network increases, the potential for changes in land use also increase. Land use changes often result because the regional tolled roadway network and proposed additions are located outside of the core urban area where development is not yet clearly defined or existing.

Indirect and cumulative impacts from a regional tolled roadway network may also be evident in Title VI populations as these populations are most sensitive to a tolled roadway network in relation to access. Restricting access based on pricing has the potential to create disproportionate adverse effects. This analysis focuses on quantifying the benefits and/or disbenefits to the identified Title VI populations based on accessibility and travel time.

It is also likely that a tolled roadway network will also have an impact on the regional economy as freight and transportation are vital to the health of the economy in the Houston-Galveston region. This analysis concludes that a regional tolled roadway network is not expected to have any significant adverse cumulative or indirect impacts.

Regional Perspective

The freeway and toll road system is a major component of the Houston-Galveston regional transportation system. The freeway/toll road system represents nearly 19 percent of regional lane miles but carries more than 48 percent of vehicle miles traveled. Although growth in vehicle travel may be mitigated by transit system expansion, improved operation of major arterial streets and growth of teleworking and e-business options, regional and state economic growth will require continued expansion of the region's freeway/toll road network.

The Harris County Metropolitan Transit Authority (METRO) is the region's largest transit provider. Its service area encompasses approximately 1,300 square miles. The agency has 100 miles of barrier-separated high-occupancy vehicle (HOV) lanes operating on six freeways that carry 73,000 carpool and vanpool passengers daily.

Inherent to the region's freeways are the high costs of maintenance and improvements. Although they generate few operational costs once constructed, building, maintaining, and expanding freeway facilities is very expensive. Over the last few years, the idea of user-fee based roadways has been growing in acceptance and popularity, and recently the Texas Transportation Commission adopted a favorable toll road policy to promote the study of additional toll roads throughout the state.

The Houston-Galveston region is a national leader in using toll roads as a method of financing facilities and improving mobility for more than two decades. Currently, there are four toll roads in operation - the Hardy, Sam Houston Parkway, Westpark, and Fort Bend Parkway Toll Roads. As shown in Table 1, the system of toll roads and "managed" (High Occupancy Toll) lanes is planned to grow from approximately 289 lane miles today to over 853 lane miles by 2035. In addition to increasing system capacity, the development of managed lanes will provide travel priority for transit buses, carpools, and vanpools on an expanded number of roadways, thereby greatly increasing their attractiveness to commuters and reducing congestion.

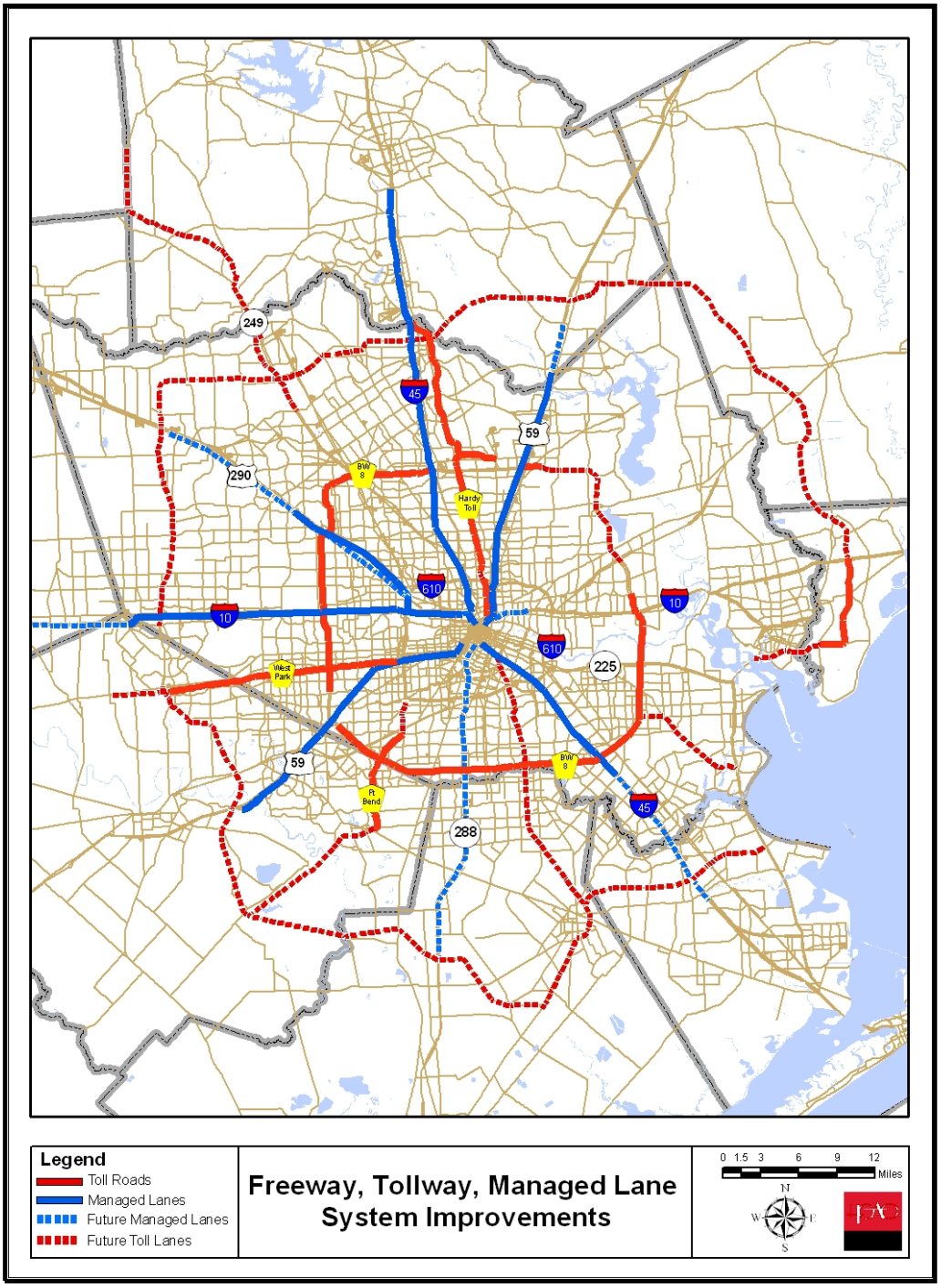
Table 1: Transportation System Expansions (Lane Miles)

	Freeway	**Toll Roads**	HOT Lanes	**Arterial**	**Total Lane Miles**
2009 Network	3,669	658	289	19,955	24,571
2035 RTP	4,339	2,049	853	25,614	32,855

Managed lanes use pricing as a means to manage demand. In essence, during peak periods managed lanes carry vehicles with a certain minimum number of occupants for no or low toll amounts with single occupant vehicles paying a higher toll. This "management" allows for fine tuning of HOV lane eligibility because tolls can be varied to find the appropriate price to generate only sufficient additional demand to utilize any spare capacity. This use of capacity will not slow travel time because the pricing component ensures that the federal requirements regarding HOT lanes with speed limits greater than 50 mph must maintain a speed of 45 mph 90% of the time during peak periods is upheld.

Figure 1, shows the toll and managed lane improvements to the roadway system contained in the fiscally constrained Regional Transportation Plan (RTP) for the year 2035.

Figure 1: Freeway/Tollway/Managed Lane System Improvements



As regional population and employment continues to grow, transit will become an increasingly important tool for improving mobility. Transit is forecast to significantly increase from its current 485,000 daily boardings, to over 725,000 daily passenger boardings by 2035. This significant increase will be attributed to:

- Expansion of transit services (increased bus and rail transit services),
- New transit modes (commuter rail transit and signature express bus service),
- Transit connectivity to multiple employment centers, and
- Coordination of transit services among regional public transportation providers.

The 2035 METRO Long Range Plan (shown in the map below) is an iterative process incorporating the 2025 METRO Solutions Plan and future mobility needs identified in regional planning efforts. METRO's 2035 Long Range Plan recommends significant expansion of the current transit system and includes a network of integrated high capacity transit facilities on major travel corridors. This plan also identifies significant service expansions beyond the METRO service area. New improvements scheduled for implementation through the year 2035 include high occupancy tolls, a new intermodal terminal, park-n-ride facilities, and several new high capacity transit corridors throughout the region. Additional key elements of the METRO Solutions plan include:

- 89 miles of fixed guideway transit – LRT
- 84 miles of CRT
- 40 miles of Signature Bus

Demographics

The following information and projections provide an overview of H-GAC demographics at the regional level. The 2000 population of the Houston-Galveston region is over 4.5 million people, which includes eight counties and covers more than 7,000 square miles. Several counties in the region are listed among the top ten for growth in the nation having experienced double-digit population growth for over a decade. Significant investments have been made to the regional transportation system, such as the expansion of our major highways and our toll road systems. The region is anticipated to grow by more than 3 million new residents by 2035. Table 2, below, shows the projected demographic changes expected in the region by 2035.

Table 2: Projected Demographic Changes in H-GAC Region 2000-2035

H-GAC Region	2000	2035	% change
Population	4,669,571	8,835,000	89.20
Households	1,639,401	3,302,013	101.40
% Minority	52.10	68.97	16.87
% Non-minority	47.80	31.02	-16.87
% Zero-Auto Households	8.28	14.10	5.82

Year 2000 Source: U.S. Census Bureau

As can be seen in Table 3, significant changes in the distribution of household income are also projected to occur in the H-GAC region between 2000 and 2035. This analysis divided household income into five groups: 0 to $15,000; $15,000 to $30,000; $30,000 to $50,000; $50,000 to $75,000; and $75,000 and above. The income figures are presented in 1995 base year dollars since the travel demand model is estimated based on the 1995 household survey. These income figures will be updated to incorporate the 2008-2009 household survey when available. The current (year 2000) household income distribution has the least percentage of households in the lowest income quintile ($0 to $15,000) and the highest percentage of households in the highest income quintile ($75,000 and above).

The projection for year 2035 shows this distribution reversing, with the highest income quintile having the lowest household percentage share, and the lowest income quintile the second highest household percentage share. While the percentage of households within the middle quintile ($30,000 to $50,000) is projected to increase by 2035, the largest projected increase is in the lowest quintile. These projections indicate that overall wealth, as indicated by income, will decrease in the future. This shift in the percentage of the populations within income quintiles indicates a potential change and possible increase in future TITLE VI zones.

Table 3: Percent of Households in H-GAC Region within Income Categories

Household Income (1995 $)	2000*	2035	% change
$0 to $15,000	14.31%	18.07%	3.79%
$15,000 to $30,000	18.32%	21.60%	3.28%
$30,000 to $50,000	22.27%	24.41%	2.14%
$50,000 to $75,000	18.91%	19.03%	0.12%
$75,000 and above	26.19%	16.89%	-9.30%

*Year 2000 Source: U.S. Census Bureau

CUMULATIVE REGIONAL EFFECTS

Air Quality

The Clean Air Act Amendments of 1990 (CAAA) require transportation plans, programs, and projects in nonattainment areas, which are funded or approved by the Federal Highway Administration (FHWA) or Federal Transit Administration (FTA), to conform to the State Implementation Plan (SIP). This ensures that transportation plans, programs, and projects do not produce new air quality violations, worsen existing violations, or delay timely attainment of the National Ambient Air Quality Standards (NAAQS).

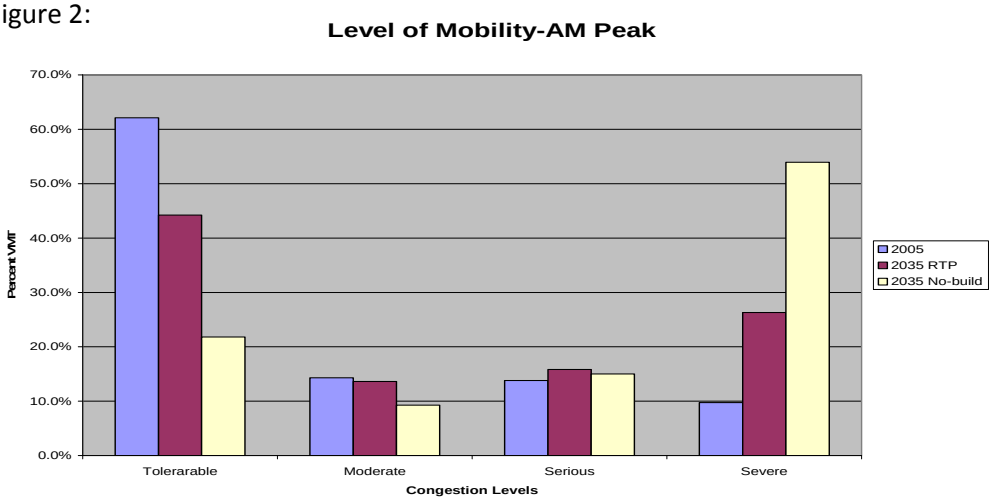
Under the Clean Air Act, the Environmental Protection Agency (EPA) established criterion called the National Ambient Air Quality Standards (NAAQS) to determine the health threat of criteria pollutants, generally located within Consolidated Metropolitan Statistical Areas (CMSAs). If a CMSA has a health threat it is designated as a 'non-attainment' area until compliant. The Houston-Galveston Area is in non-attainment for the 1997 8-hour Ozone standard, and it has been classified as "severe".

Transportation conformity is an analytical methodology that establishes the connection between projected on-road emissions from the RTP and the known reductions in the motor vehicle emission budget from the State Implementation Plan. Through the process of transportation conformity, the RTP uses the SIP on-road mobile strategies and air quality targets to demonstrate if the RTP complies with the federal air quality requirements. Vehicle emissions resulting from the implementation of transportation projects in the 2035 RTP cannot exceed emission budgets established by the SIP. The Houston-Galveston region must demonstrate that the 2008 - 2011 Transportation Improvement Plan (TIP) and the long-range plan (2035 RTP) result in less volatile organic compounds (VOC) and nitrogen oxides (NOx) than established and approved by EPA for the base year and each horizon year. On September 7, 2007, the Federal Highway Administration certified that the 2035 RTP and the 2008 – 2011 TIP, as revised, conformed to the requirements of the State Implementation Plan for the Houston-Galveston ozone nonattainment area.

The Level of Mobility (LOM) was developed to illustrate the degree of congestion on roadways within the region. The LOM is comparable to the standard engineering Level of Service (LOS) measure which is based on volume-to-capacity (V/C) ratios. The table below shows the relative distribution of morning peak period congestion levels for the current and future systems as a percentage of vehicle miles

traveled in each LOM category. There will be an increase in regional congestion levels if the forecasted growth occurs. The most significant changes would be at the low end of the range (tolerable congestion levels) and high end (severe) congestion levels, between the current system performance and a future scenario without the RTP projects (the no-build). The projects in the RTP would reduce the percentage of severely congested VMT in the morning peak period, from about 50% to less than 30% compared to a No-build scenario.

Figure 2:



The additional introduction of priced facilities into the existing roadway network would not cause any cumulative impacts to air quality. Moreover, a regional priced roadway system provides additional travel capacity to the roadway network which allows a greater flow of traffic throughout the region, decreasing the amount of cars traveling at lower speeds or idling conditions. This would result in less fuel combustion and lower emissions including Mobile Source Air Toxins (MSATs), Carbon Monoxide (CO), and Ozone. As noted in the direct, indirect, and project level cumulative analysis discussions, EPA's vehicle and fuel regulations, coupled with fleet turnover, are expected to result in substantial reductions of on-road emissions, including MSATs, CO and ozone precursors.

Water Quality

The Houston-Galveston region has an abundance and variety of water resources and includes rivers, lakes and bays, among others. The Texas Commission on Environmental Quality (TCEQ), along with the Clean Rivers Program and numerous local agencies, is responsible for monitoring all major bodies of water and reporting those conditions in a biennial Texas Water Quality Inventory report. Section 303(d) of this report details those water bodies TCEQ has identified as impaired due to water contamination.

The 303(d) list identifies several major water systems as impaired with pollutants and bacteria in the Houston-Galveston Transportation Management Area (TMA). A majority of the waterways located in the Trinity-San Jacinto Coastal Basin, San Jacinto River Basin, San Jacinto-Brazos Coastal Basin, Brazos-Colorado Coastal Basin, including bays and estuaries that flow to the Gulf of Mexico, are impaired and included in the 303(d) list. The construction of the proposed priced facility system would cross and

impact the above mentioned water bodies at multiple locations and could cause water quality impacts. The increase of impervious square footage from adding capacity to the roadway network greatly increases non-point source pollution and the potential to cause further impairment to the region's waterways.

As stated previously, TCEQ regulates water quality through Storm Water Pollution Prevention Plans (SWP3), Municipal Separate Storm Sewer Systems (MS4), and Best Management Practices (BMPs). All construction of the priced facilities in the RTP would follow these water quality regulations that would aid in preventing further pollution to these impaired waters and to waters that are not impaired. Additionally any indirect land use development that would occur from the construction of these facilities would follow TCEQ's regulations for water quality through SWP3 and MS4. Although overall impacts cannot be avoided, the above mentioned mitigation techniques will ensure that the regional priced facility network would not have a significant cumulative impact to water quality.

Vegetation

Prairies, Wetlands, Bottomland Forests, Upland Forests, and Riparian Corridors ecosystems are all located in the Houston region. Each of these resources serves particular functions and provides vital functions such as flood protection, air quality, water quality and wildlife habitat. Protection of these natural resources that contribute to our region's quality of life is an important priority when planning for our region's future growth and transportation requirements, a desire that was strongly echoed at the Envision Houston Region workshops and forums.

As growth and development are part of our region's future, it is not feasible that every environmental parcel will be able to be conserved. However, it is feasible that the region identifies and works to conserve those areas that have the most significant ecology. H-GAC identified areas of concern that are distinct environmental resources within the H-GAC region for special consideration in the transportation planning process. However, the identification is not intended to be used for project-level screening. The results are intended to be used for long-range planning purposes and screening to identify areas in which future transportation projects or development may potentially impact these sensitive resources. In addition, the identified environmental resources are areas in which mitigation efforts may be focused.

In some instances disturbing natural resources may be unavoidable for regionally significant projects or projects located on facilities that are multiple-lane, limited access facilities, such as highways and tollways. Due to their scale, regionally significant projects potentially have a larger impact on the environment than a local project and therefore were closely examined. Currently, projects within the 2035 RTP are individually subject to environment requirements but have no mechanism for cumulatively identifying or mitigating environmental impacts. At the project level, the Texas Department of Transportation (TxDOT) Houston District can mitigate for loss of vegetation with the Texas Parks and Wildlife Department, and wetlands mitigation would occur through the permitting process under the jurisdiction of the U.S. Army Corps of Engineers. Locally, cities can also curb vegetation loss by implementing measures to protect vegetation areas.

Impacts to vegetation will undoubtedly occur from the priced facility system. However, as these impacts are best regulated at the project level, region-wide impacts on vegetation would be minimal from toll network facilities.

Land Use

While we can increase system capacity, manage demand, and improve the efficiency of the existing system, the strategy with potentially the most effect upon improving mobility and quality of life is the strategy of connecting transportation and land use. Land use has a direct impact on the ability of the region's transportation system and agencies to deliver a variety of travel choices. The 2035 RTP has shown that sustained major investments in roadway capacity will only moderate, and will not eliminate the level of future traffic congestion; however, substantial mobility gains are possible through better coordinated land use and transportation planning.

The Envision Houston Region process was initiated by the Houston-Galveston Area Council and its partners to engage residents in a discussion of the region's future growth and development. The process focused on land use and transportation alternatives. Citizen input from workshops was used to develop growth scenarios representing two different types of alternative development patterns. The objective was to provide information on the projected impacts of the alternatives and to highlight the difference between the two growth scenarios developed from the workshops and the Base Case or traditional growth scenario. Table four (4) shows the statistics produced through the analysis of each scenario. Brief descriptions of each scenario are below.

- Scenario A: (fiscally Constrained 2035 RTP network) denotes the current growth and development pattern for the Houston Region, based on H-GAC's 2035 demographic forecasts. It is characterized by low-density housing development in currently undeveloped portions of the region with mixed-use development along major roadways. Jobs are concentrated in the central business district, and several other employment centers are scattered throughout the region.

- Scenario B: indicates the workshop participants' ideal growth pattern, adjusted to the *regional forecast* of household and job growth. This scenario is characterized by development along major roadways, in a radial pattern, creating centers at major intersections.

- Scenario C: signifies the workshop participants' ideal growth pattern, adjusted to the forecast of household and job *growth by county*. This scenario clusters mixed-use development in satellite cities and along major roadways in a radial pattern. Satellite employment centers emerge throughout the region.

Table 4: Alternative Growth Scenarios

Data of Interest	Scenario A	Scenario B	Scenario C
Transit Boardings	758,000	+10%*	+ 20%*
Vehicle Miles Traveled	248M	- 7%*	- 7%*
Vehicle Hours Traveled	7M	- 16%*	- 15%*
NOx Emissions	46.58	46.43	43.74
VOC Emissions	50.72	48.65	47.65

*Denotes change over Scenario A

These results reinforce the public's intuitive notions about coordinated transportation and land use planning. H-GAC has identified a three-pronged land use and transportation coordination strategy that calls for the creation of bicycle and pedestrian friendly Centers; establishment of better Connections between the centers, and designs based on the Context of the surrounding land uses. This "3C's" strategy, in addition to enhancing mobility choices, is expected to produce economic, environmental and "quality of place" benefits for the region.

In order to integrate the 3C's concepts into regional transportation planning, H-GAC has identified the following five strategies:

1. Coordinate transit and roadway planning to connect existing and planned centers with the region's multi-modal transportation network,
2. Promote roadway designs appropriate for the context of the surrounding community to ensure safe, convenient travel choices for all user modes,
3. Coordinate transportation improvements and private sector development efforts to promote projects that combine sustainable mobility and economic benefits,
4. Help fund local planning studies to assist in the development of centers and,
5. Provide funding support for infrastructure projects that enhance connections within and between centers.

In addition to expanding the regional transit system, transit ridership and efficiency can be improved by coordinating transit and land use. Development along transit lines that increases density and integrates transit with the development can make transit more accessible and decrease the need for single-occupancy vehicle trips. Recommended strategies include:

- Promote community design that provides convenient access to transit systems:
- Promote transit-oriented development investments around regional transit facilities:
- Enhance access opportunities for the transportation disadvantaged

These land use/transportation coordination tools are tools that can be used in the H-GAC region to reduce the need for additional infrastructure, including utilities, transportation, water, toll facilities, etc) for the region. Without sustainable land use, the addition cost of new infrastructure items will increase beyond the current estimated costs.

The current future roadway facility outlined in the fiscally constrained 2035 RTP (Scenario A, above) is in support of the predicted land use changes and growth in the region. To meet the demand of the expansive growth and changes to land use from development, the aim of the 2035 transportation network is to supply the transportation portion of infrastructure requirements for the expanding growth and development. Current and future predicted available funds from the federal government for transportation alone will not be able meet the demands for the transportation infrastructure needed to support the predicted changes. Toll roads and managed lanes are methods that the RTP employs to ensure the transportation demands from future growth are met based on limited transportation funds.

The proposed 2035 toll network may affect land use within the MPO boundaries by creating land development opportunities. However, the toll network is only one factor in creating favorable land development conditions; other prerequisites for growth in the region include demand for new development, favorable local and regional economic conditions, adequate utilities, and supportive local land development policies. The proposed 2035 toll network as currently envisioned may, with the right conditions, help influence and facilitate the additional planned regional land use conversion, redevelopment, and growth.

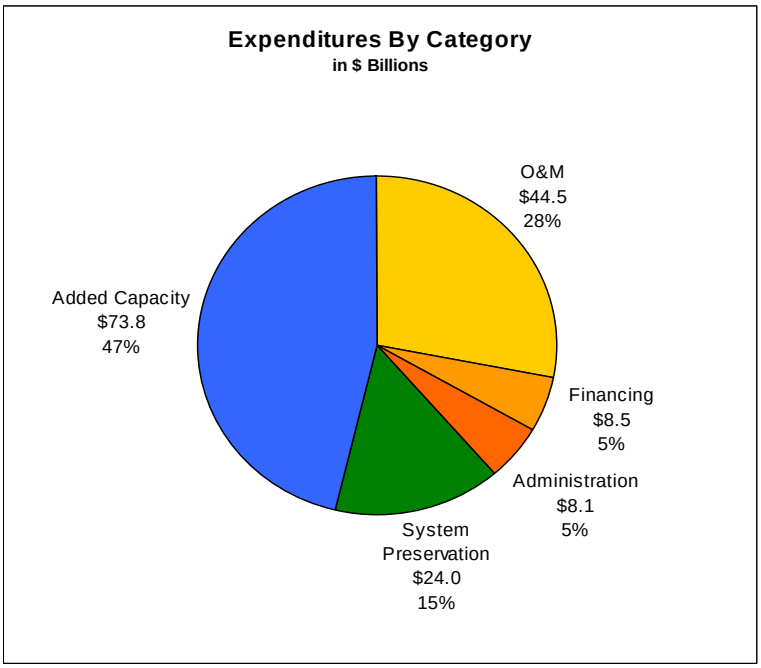
Economic

In 2006 H-GAC completed an extensive financial survey that included local governments and agencies with significant expenditures on the transportation network and services. The result is a more complete understanding of how much, by whom, and where transportation dollars are being spent. The results indicate a significant undercounting in previous plans (based on preliminary results) of the contribution by local governments on transportation investments. However, for the purposes of fiscal constraint, this undercounting is neither surprising nor alarming because a large portion of local transportation investment is done on local street networks that are not included in the RTP because they are not considered to be of regional significance. Fiscal constraint is demonstrated for the regionally significant transportation projects.

This financial summary is different from one in past Plans in that it conforms to new federal regulations requiring the expression of future costs and revenues in year-of-expenditure dollar values, that is, the effects of inflation must be included. The rate of inflation from 1996-2005 years has been, on average, 2.53%. Another innovation is attempt at expressing the costs of projects in terms of their total costs, including the costs of right-of-way, realignment of utilities, and engineering costs, all of which are paid for from statewide accounts, as opposed to federal or state dollars that are directly apportioned to the Houston-Galveston area.

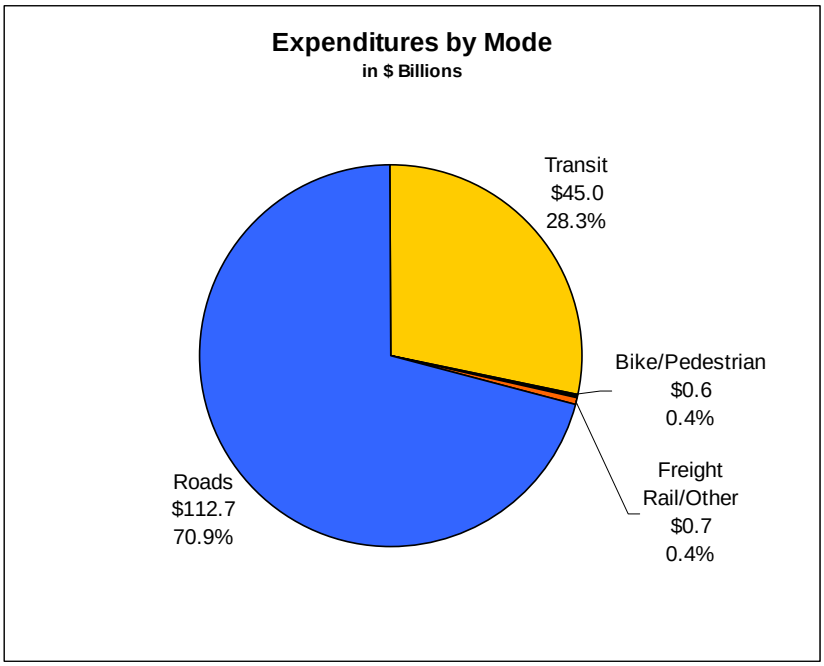
Expenditures. Expenditures on the transportation network include building new and improving existing roadways and transit lines (added capacity), operating the network and maintaining it in good repair (Operations & Maintenance), reconstructing existing facilities when it has reached the end of its useful life (System Preservation), financing costs associated with debt incurred for transportation projects

(Financing), and wages and salaries paid to various staff of the roadway and transit agencies (Administration). Total Estimated Expenditures 2035: $158.9 Billion.

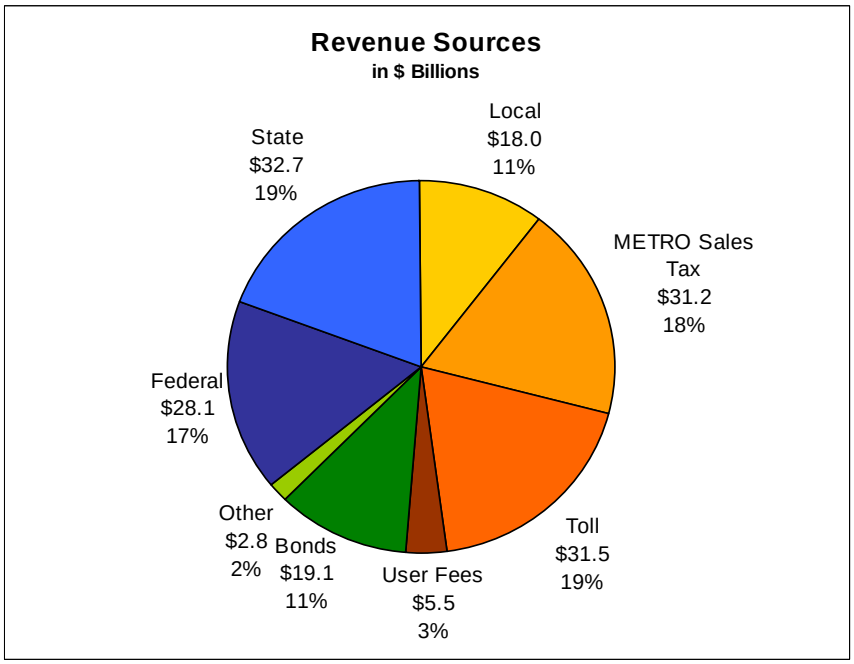


For the next several years the region is expecting to continue the trend of expanding the transportation network through added capacity projects, for example, the expansion of I-10 West and the creation of new rail and guided rapid transit lines. However, in the 2006 edition of the *Texas Metropolitan Mobility Plan* prepared by H-GAC, findings indicate that added capacity projects will decrease in spending relative to system preservation costs. Not only will there be a larger network to maintain in the future, but also system preservation efforts are currently under-funded. In the future, more revenues will be needed for system preservation to prevent further deterioration of roadway surfaces.

When examined by mode of travel (roadway, transit, or bicycle), nearly 71% of all expenditures are for roadway projects that support the automobile. In a region known for its dispersed suburbanized housing, this percentage is not unusual. However, over the last several years transit investments have increased dramatically, and this trend is expected to continue.



Revenues. The estimated total revenue available for the 2035 RTP is $168.9 Billion. These revenues come from a variety of federal, state, and local sources. Among the federal sources is the federal gas tax, and programmed funds from the Federal Highway Administration and the Federal Transit Administration. State sources include the motor fuel tax, vehicle registration fees, pass-through financing agreements, and other state allocations. Local sources include property and sales taxes collected by the cities and counties, toll revenues, bonds, and user fees from transit agencies. As a group, the local sources provide the greatest amount of revenues for the RTP.



It is particularly important to note that the region's reliance on toll receipts to fund the RTP is growing each year. New toll roads, such as the SH 99-Grand Parkway, as well as managed lanes, such as the High Occupancy Toll (HOT) Lanes currently being constructed on I-10 West, are scheduled to come on line in the next 30 years. Although the Harris, Fort Bend, Brazoria and Montgomery County Toll Road Authorities are not obligated to spend tolling receipts on non-toll transportation projects, in the past they have reinvested all toll-generated revenues into the toll and connecting roadway road systems.

Title VI (Environmental Justice)

Methodology

The unit used for this analysis is the traffic analysis zone (TAZ). The TITLE VI traffic analysis zones (TITLE VI zone) are selected based on the Census 2000 block groups that contain 51 percent or greater minority and low-income populations[1]. A TAZ is recognized as a TITLE VI zone if 50 percent its area is covered by TITLE VI block groups.[2]

As shown in Table 5, in the year 2000 approximately 31 percent of the H-GAC regional population has been identified as being within TITLE VI zones, which represents approximately 46 percent of the total number of Traffic Analysis Zones in the 8-county region. This equates to 1,383 of the total 3,000 traffic analysis zones are considered to be environmental justice TAZs. As can be seen in Figure 3, there are significant TITLE VI communities located in throughout the H-GAC region, but the majority of TITLE VI communities are located within Harris County and generally clustered within the Sam Houston Toll Road. Figure 3 also shows a subset of the TITLE VI zones that have minority or low-income population that are greater than 51 percent of the total TAZ population.

Table 5: Distribution of TITLE VI/EJ Communities in H-GAC Region

	Population 2000	% of Total	# of TAZ	% of Total
Total Population within TITLE VI zones	1,634,500	31.3	1,383	46.1
Total Regional Population	5,214,051	100.0	3,000	100.0

[1] Low-income households equal $21,350. This number is base on the 2005-2007 American Community Survey by the US Census Bureau.

[2] A Title VI TAZ is based on the area coverage of low-income and/or minority block groups, not on total population of the TAZ.

ANALYSIS APPROACH

This analysis addresses the potential impacts of tolled facilities on accessibility by analyzing their impacts on the travel time choices of the persons residing in TITLE VI zones and Non-TITLE VI zones. The introduction of tolled facilities will generally result in a travel time benefit (i.e., a travel time savings) to those who choose to use the facilities (both TITLE VI and non-TITLE VI users). It is a user decision whether or not to use one of the proposed new tolled facilities. From a TITLE VI perspective, it appears the issue should be whether the introduction of the proposed tolled facilities is expected to have a significant and/or disproportionate adverse impact on the TITLE VI population. This issue is addressed by analyzing forecasted trips made by the TITLE VI population that are "candidate" trips for the new tolled facilities.

Two networks were used for purposes of these analyses: 2035 RTP build and 2035 No- Build Managed Road. Figure 4 shows the full extent of the toll and managed lane system as contained in the fiscally constrained 2035 RTP. As shown in Figure 5, the no-build network is essentially the fiscally constrained 2035 RTP network with the existing plus committed managed lane system; the Katy Freeway high-occupancy-toll-lanes are included since this facility is due to open in 2009.

Analysis Assumptions and Limitations

The region's travel demand models do not provide a means for tracking travel at an individual household level, but do provide a means for tracking travel at a zonal level. For purposes of the analyses, the zones are specified as either Title VI zones, (i.e. EJ zones) or non-Title VI zone, (i.e. non-EJ zones) based of the socioeconomic characteristics of the zonal populations. Some regional travel models employ a generalized cost assignment procedure for toll analyses. The H-GAC models perform toll analyses at the mode choice level. Hence, the H-GAC travel model uses a multi-class assignment procedure rather than a generalized cost procedure.

The mode choice models are applied by trip purpose. For the mode choice toll analyses, two travel time estimates are developed from each zone to all other zones: 1) the travel time using both toll and non-toll links (commonly referred to as "toll path" travel times) , and 2) the travel time using only non-toll links (commonly referred to as the "free path" travel time). In the mode choice model, if the toll path does not offer a shorter travel time between two zones than the free path travel time, the trip is not consider a candidate for using a toll facility. If a trip can save travel time using a toll path over a free path then it is considered a "candidate" trip. Of course, not all candidate trips will choose to use a tolled path. The probability of a candidate trip using a tolled path is a function of a number of variables such as the magnitude of the potential travel time savings, the toll costs and the income characteristics of the zones residents. Aspects of this approach are employed in the analyses presented in this report.

In mode choice model applications, there is a single highway network which is used to estimate the travel times for toll paths and free paths. For the regional toll analyses, there are two networks: the "Build" network (i.e., the forecasted roadway network containing the subject toll facilities) and the "No-build" network (i.e., the network containing all the forecasted roadways except the subject toll facilities). Existing and committed toll facilities are contained in both networks. In this analytical

setting, simply comparing the toll path versus free path option will not identify the candidate trips for only the new toll facilities being studied. Indeed, such a grouping would include trips using both existing and proposed toll facilities.

To focus on candidate trips for the new toll facilities, the travel time for toll paths in the Build network is compared to the toll path travel time in the No-build network. The trips from Title VI zones are stratified as either candidate trips or non-candidate trips using the data from the two networks. Likewise, the trips produced by the Non-Title VI zone are similarly stratified. Stated differently, the trips for a given trip purpose is segmented into four groups:

1. Trips produced by Title VI zones that are classified as "Candidate" trips
2. The remaining trips produced by Title VI zones that are classified as "Non-Candidate" trips
3. T rips produced by non- Title VI zones that are classified as "Candidate" trips
4. The remaining trips produced by non-Title VI zones that are classified as "Non-Candidate" trips

Using toll path travel times and free path travel times from the Build and the No-build networks, there are four travel times for each trip, (i.e. 1. Build network-toll path option, 2. Build network-free path option 3. No-build network- toll path option and 4. No-build network – free path option). By computing the average trip lengths for each of the options, the impacts of the two networks on the choice options can be quantified, compared and analyzed.

Using this approach, the results allow the comparison of the toll and free path options for each network for each segmentation of trips. Clearly the implementation of new toll facilities should be expected to benefit those who might chose to use a toll facility. Of perhaps more interest is determining if there are any expected overall dis-benefit to those who might chose not to use a toll facility or that are not candidates for using one of the new toll facilities.

One of the interesting side benefits of the approach used is that it calls attention to the fact that there will be some potential travel time savings realized for trip makers who chose not to use a toll facility. These time savings would be expected to accrue from the reduced congestion on free facilities due to trips diverted to toll facilities.

These analyses are regional level analyses and focus on average regional results. Such analyses do not isolate any zone specific analyses or the impacts in the immediate proximity of the new proposed facilities. These impacts were addressed by the analyses performed for the individual facilities. Indeed, the purpose of these analyses are to determine if there are any cumulative regional impacts to the EJ populations represented by the zones designated as EJ zones.

Figure 3: H-GAC Region with TITLE VI Communities of Concern

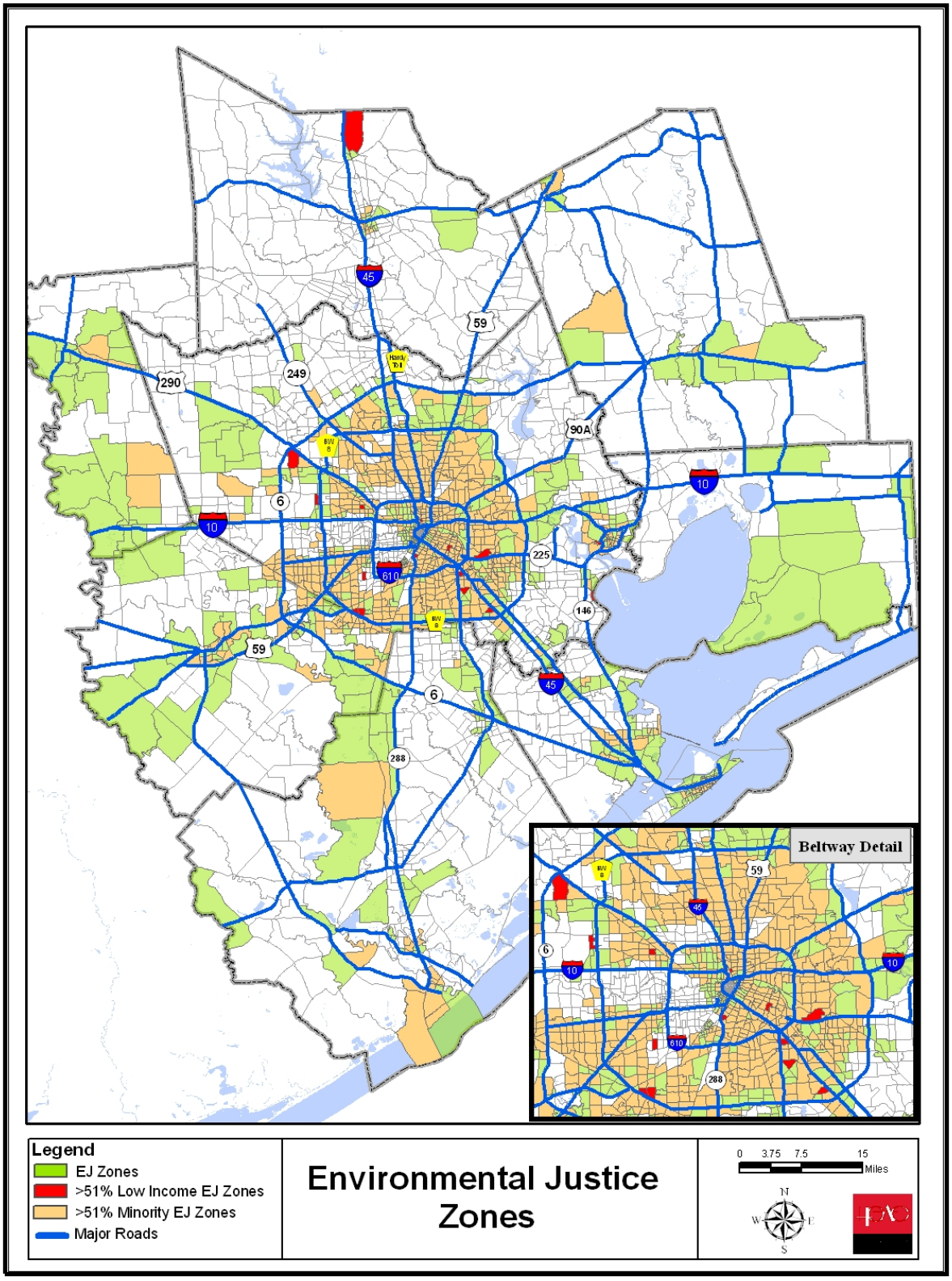


Figure 4: 2035 RTP Managed Road System

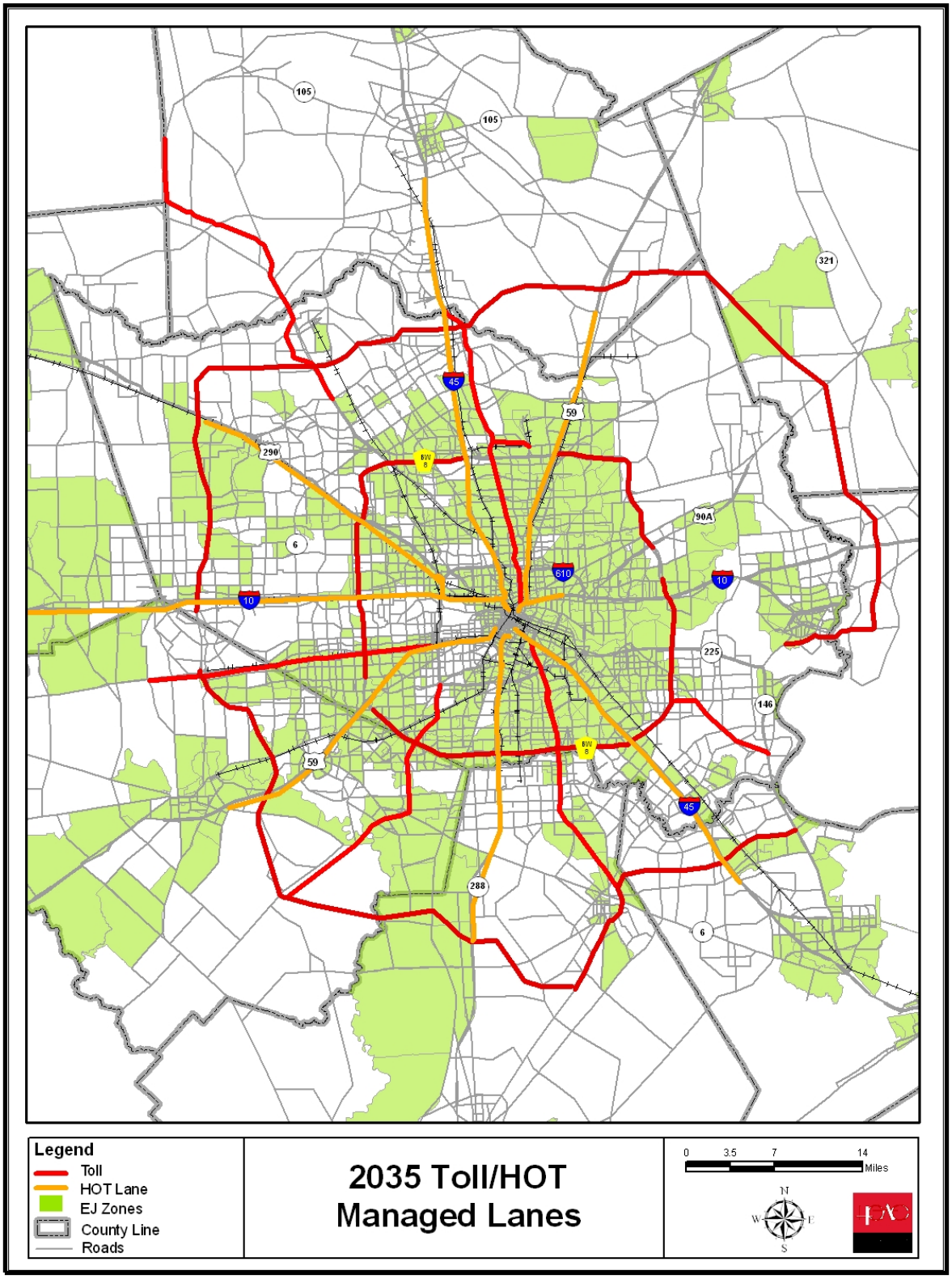
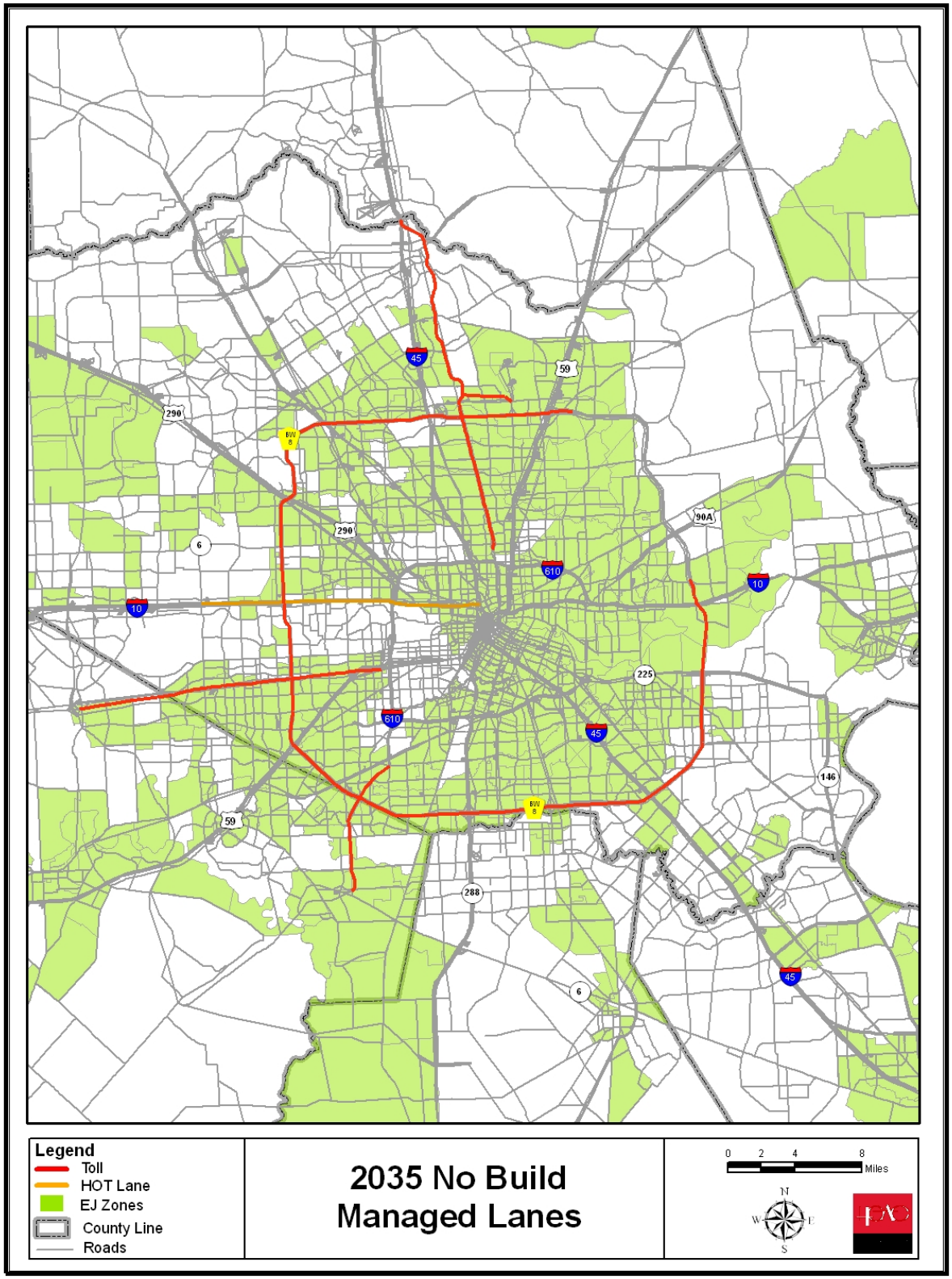


Figure 5: 2035 No-Build RTP Managed Road System



A key focus of this analysis is to determine if the "free" path travel time under the Build scenario is significantly greater than the "free" path travel time under the No-Build scenario for the TITLE VI and Non-TITLE VI zones. These analyses show the expected travel time benefits that may be realized by TITLE VI and Non-TITLE VI zone residents if they chose the pay options for their travel
Trips were divided into Home-Based-Work (HBW) and Home-Based Non-Work (HBNW), and for both TITLE VI zones and Non-TITLE VI zones that can save highway travel time by using one of the new proposed toll facilities. For a given trip purpose, the forecasted person travel was divided into four (4) market segments for analysis:

1. Trips produced by a TITLE VI zone that are candidates for using one of the proposed new toll facilities (i.e., that could save travel time by electing to use one of the proposed new tolled facilities for their scheduled travel).
2. Trips produced by a TITLE VI zone that are not candidates for using one of the proposed new toll facilities (i.e., that could not save travel time by electing to use one of the proposed new tolled facilities for their scheduled travel).
3. Trips produced by a Non-TITLE VI zone that are candidates for using one of the proposed new toll facilities (i.e., that could save travel time by electing to use one of the proposed new tolled facilities for their scheduled travel).
4. Trips produced by a Non-TITLE VI zone that are not candidates for using one of the proposed new toll facilities (i.e., that could not save travel time by electing to use one of the proposed new tolled facilities for their scheduled travel).

As mentioned in the discussion of the approach, the objective of the TITLE VI analysis is to quantify the impacts of the Build and the No-Build options on the travel time of potential users. Examination of these results will show whether the introduction of the proposed new tolled facilities is expected to generally have a significant and/or disproportionate negative impact on the TITLE VI population of the region.

FINDINGS

Home-Based Work Trips

Table six (6) presents the number of Year 2035 HBW trips and their expected average trip length (ATL) for free and tolled path options under both the Build and No-Build Alternatives. The travel times are based upon AM peak period congested travel times. TITLE VI and Non-TITLE VI population trips are each segmented into two (2) separate sub-groups:

1. Those trips that can save travel time by using a toll facility; these trips are essentially trips that are "candidate trips" for using a toll facility.
2. Those trips that cannot save travel time by using a toll road; these trips are essentially "non-candidate trips" for using a toll facility. Consequently for purposes this analyses, only the free path will be examined for these trips.

The following summarizes the findings presented in Table six:

- *Stratification of HBW Trips:* Of the 5,880,052 HBW trips forecasted, 2,662,297 (45 %) are produced by TITLE VI zones while 3,217,755 (55%) are produced by the Non- TITLE VI zones. For the TITLE VI zones 1,174,455 (44%) were identified as trips that could save travel time using one of the proposed new toll facilities. For the Non-TITLE VI zones 1,590,356 (49%) were identified as trips that could save travel time by using one of the proposed new toll facilities.

- *Candidate Toll Trips have Longer ATL:* For both TITLE VI and Non- TITLE VI zones, the trips that can save travel time by using a new toll facility have a longer average trip length than those that cannot save travel time. Toll roads, like normal freeways, are designed to serve longer trips. Hence, trips that can save significant time using such facilities exhibit a longer average trip length. A large majority of the shorter trips simply do not have a path that can save time using one of the proposed toll facilities and hence are included in the subset of trips that cannot save travel time.

- *Differences in the ATL of Toll Options versus ATL of Free Options for TITLE VI Zones:* Under the Build Network alternative, the 1,174,445 HBW trips produced by TITLE VI zones that can save travel time by using the new toll facilities have an average trip length under the toll path choice option of 38.59 minutes as compared to an average trip length for the free choice option of 42.87 minutes. In essence, the average toll path option is 4.28 minutes shorter than the free path option for the Build network. Under the No-Build network, these same 1,174,445 HBW trips would have an average trip length of 43.36 minutes for the toll path option and 45.19 minutes for the free path option. Obviously, the additional new toll facilities result in there being more opportunities for travel time savings using toll facilities under the Build Alternative than under the No-Build alternative for the TITLE VI zone trips that can potentially save travel time by using the new toll facilities.

- *Differences in the ATL of Toll Options versus ATL of Free Options for Non-TITLE VI Zones:* Under the Build Network alternative, the 1,590,356 HBW trips produced by Non-TITLE VI zones that can save travel time by using the new toll facilities have an average trip length under the toll path choice option of 50.76 minutes as compared to a trip length for the free path choice option of 56.51 minutes. In essence, the average toll choice option is 5.75 minutes shorter than the free path option for the Build network. Under the No-Build network, these same 1,590,356 HBW trips would have an average trip length of 59.51 minutes for the toll choice option and 61.56 minutes for the free option. As with the TITLE VI zones, the additional new toll facilities result in there being more opportunities for travel time savings using toll facilities under the Build Alternative than under the No-Build alternative for the Non-TITLE VI zone trips that can potentially save travel time by using the new toll facilities. The differences in the potential travel time savings for the Non-TITLE VI zones versus the TITLE VI zones is largely related to their proximity to the proposed new toll facilities.

Table 6: 2035 HBW Person Trips

			AM Peak Average Trip Length (ATL) in minutes for Free Path and Tolled Path Options under the Build and No-Build networks			
			Build Network		No-Build Network	
Production zones	Segmentation of 2035 HBW Person Trips by potential time savings	Number of 2035 HBW Person Trips	ATL using a Toll path	ATL using a Free Path	ATL using a Toll path	ATL using a Free Path
EJ Zones	Trips that can save 0+ minutes using a new toll facility	1,174,445	38.59	42.87	43.36	45.19
	Trips that cannot save 0+ minutes using a new toll facility	1,487,852	20.81	20.89	21.66	21.76
Non-EJ zones	Trips that can save 0+ minutes using a new toll facility	1,590,356	50.76	56.51	59.51	61.56
	Trips that cannot save 0+ minutes using a new toll facility	1,627,399	23.4	23.46	24.61	24.7

Table 7: Differences in Average Trip Lengths for 2035 HBW Person Trips

			Differences in AM Peak Average Trip Lengths (ATL) in minutes	
Production Zones	Segment of 2035 HBW Person Trips by potential time savings	Number of 2035 HBW Person Trips	Differences in ATL for Toll Path Options (No-Build ATL - Build ATL)	Differences in ATL for Free Path Options (No-Build ATL - Build ATL)
EJ Zones	Trips that can save 0+ minutes using a new toll facility	1,174,445	4.77	2.32
	Trips that cannot save 0+ minutes using a new toll facility	1,487,852	0.85	0.87
Non-EJ zones	Trips that can save 0+ minutes using a new toll facility	1,590,356	8.75	5.05
	Trips that cannot save 0+ minutes using a new toll facility	1,627,399	1.21	1.24

Table seven (7) compares the differences in the ATLs for the toll options under the Build Alternative versus the No-build Alternative. The following summarizes the results presented in Table 7:

- *Differences in ATL for Toll Path Options for both TITLE VI and Non-TITLE VI zones:* As expected, the implementation of additional toll facilities in the Build Alternative results in an overall benefit by reducing ATL's for the toll path options for both TITLE VI and Non-TITLE VI zones. For the candidate trips that can save travel time by using the new toll facilities, the TITLE VI zones ATL for the toll options was reduced by 4.77 minutes and the Non-TITLE VI zones were reduced by 8.75 minutes. While both TITLE VI and Non-TITLE VI zones benefit, the differences in the ATLs for the Toll options is smaller for the TITLE VI zones than for the Non-TITLE VI zones. As

previously noted previously, the TITLE VI zones are generally more centrally located and, hence, are not located as close to many of the proposed new toll facilities as the non-TITLE VI zones.

- *Differences in ATL for Free Path Options for both TITLE VI and Non-TITLE VI zones:* The implementation of additional toll facilities in the Build Alternative also results in an overall benefit by reducing ATL's for the free path options for both TITLE VI and Non-TITLE VI zones. For the candidate toll trips that can save travel time by using the new toll facilities, the TITLE VI zones ATL for the free path options was reduced by 2.32 minutes and the Non-TITLE VI zones were reduced by 5.05 minutes. While both TITLE VI and Non-TITLE VI zones benefit, the differences in the ATL's for the free path options are smaller for the TITLE VI zones than for the Non-TITLE VI zones. The free paths near the proposed toll facilities receive the greatest benefit in reduced congestion due the diversion of trips to the new toll facilities. As previously mentioned, the TITLE VI zones are generally not located as close to the proposed new toll facilities as the non-TITLE VI zones, hence, the non-TITLE VI zones receive a greater benefit since there are more non-TITLE VI trips being made in the travel corridors served by the proposed new toll facilities.

- *Both TITLE VI and Non-TITLE VI zones benefit from Build Alternative:* From a TITLE VI perspective, perhaps the most important observation is that ATL for both toll path options and free paths are reduced under the Build alternative for both TITLE VI and Non-TITLE VI zones. Therefore these analyses did not find any significant and/or disproportionate adverse impacts on the ATL of the choice options for the TITLE VI zones; in fact, these results show that both TITLE VI and Non-TITLE VI zones realize an overall benefit from the proposed new toll facilities in the Build Alternative.

Home-Based Non-Work Trips

Table eight (8) presents the number of Year 2035 HBNW trips and their expected ATL for free and tolled path options under both the Build and No-Build Alternatives. Since most of the HBNW trips do not occur during the peak traffic periods, the travel times based on the 24-hour speeds were used for these analyses. The 24-hour speeds are generally considered to represent typical off-peak speeds. Therefore, the 24-hour travel times are used by the H-GAC's HBNW mode choice model rather than the peak travel times. Again, the TITLE VI and Non-TITLE VI population trips are each segmented into two separate sub-groups:

1. Those trips that can save any travel time by using a toll facility (i.e., essentially trips that are "candidate trips" for using a toll facility) and;
2. Those trips that cannot save any travel time by using a toll road. Most of these trips don't have a minimum time path that would use any toll facility. There are some trips in this group that do not have a toll path and hence are unable to be toll users. These trips are essentially "non-candidate trips" for using a toll facility. Hence, for purposes of the TITLE VI analyses, only the free path travel times will be examined for these trips.

The following summarizes the findings presented in Table 8:

- *Stratification of HBNW Trips:* Of the 13,406,929 HBNW trips forecasted, 6,354,734 (i.e., 47 % of the region's HBNW trips) are produced by TITLE VI zones and 7,052,195 (i.e., 53% of the region's HBNW trips) are produced by the Non-TITLE VI zones. For the TITLE VI zones, 960,791 (i.e., 15% of the TITLE VI trips) were identified as trips that could save travel time by using one of the proposed new toll facilities. For the Non-TITLE VI zones, 1,235,114 (i.e., 18% of the Non-TITLE VI trips) were identified as trips that could potentially save travel time by using one of the proposed new toll facilities.

- *Candidate Toll Trips have Longer ATL:* For both TITLE VI and Non-TITLE VI zones, the trips that can save travel time by using a new toll facility have a longer average trip length than those that cannot save travel time. Toll roads, like normal freeways, are designed to serve longer trips. Hence, trips that can save significant time using such facilities exhibit a longer average trip length. A large majority of the shorter trips simply do not have a path that can save time using one of the proposed toll facilities and hence are included in the subset of trips that cannot save travel time.

- *Differences in the ATL of Toll Options versus ATL of Free Options for TITLE VI Zones:* Under the Build Network alternative, the 960,791 HBNW trips produced by TITLE VI zones that can save travel time by using the new toll facilities, have an average trip length under the toll path choice option of 26.14 minutes as compared to a trip length for the free choice option of 28.94 minutes. In essence, the average toll path option is 2.80 minutes shorter than the free path option for the Build network. Under the No-build network, these same 960,791 HBNW trips would have an average trip length of 27.66 minutes for the toll path option and 29.18 minutes for the free path option. Obviously, the additional new toll facilities result in there being more opportunities for travel time savings using toll facilities under the Build Alternative than under the No-build alternative for the TITLE VI zone trips that can potentially save travel time by using the new toll facilities.

- *Differences in the ATL of Toll Options versus ATL of Free Options for Non-TITLE VI Zones:* Under the Build Network alternative, the 1,235,114 HBNW trips produced by Non-TITLE VI zones that can save travel time by using the new toll facilities have an average trip length under the toll path choice option of 31.09 minutes as compared to a trip length for the free path choice option of 33.29 minutes. In essence, the average toll choice option is 2.20 minutes shorter than the free path option for the Build network. Under the No-build network, these same 1,235,114 HBNW trips would have an average trip length of 36.57 minutes for the toll choice option and 36.85 minutes for the free option. As with the TITLE VI zones, the additional new toll facilities result in there being more opportunities for travel time savings using toll facilities under the Build Alternative than under the No-build alternative for the Non-TITLE VI zone trips that can potentially save travel time by using the new toll facilities. The differences in the potential travel time savings for the Non-TITLE VI zones versus the TITLE VI zones is largely related to their proximity to the proposed new toll facilities.

Table 8: 2035 HBNW Person Trips

			24-Hour Average Trip Length (ATL) in minutes for Free Path and Tolled Path Options under the Build and No-Build networks			
			Build Network		No-Build Network	
Production zones	Segmentation of 2035 HBNW Person Trips by potential time savings	Number of 2035 HBNW Person Trips	ATL using a Toll path	ATL using a Free Path	ATL using a Toll path	ATL using a Free Path
EJ Zones	Trips that can save 0+ minutes using a new toll facility	960,791	26.14	27.66	28.94	29.18
	Trips thatcannot save 0+ minutes using a new toll facility	5,393,943	12.94	12.97	13.28	13.31
Non-EJ zones	Trips that can save 0+ minutes using a new toll facility	1,235,114	31.09	33.29	36.57	36.85
	Trips thatcannot save 0+ minutes using a new toll facility	5,817,081	14.98	15.01	15.69	15.72

Table 9: Differences in Average Trip Lengths for 2035 HBNW Person Trips

			Differences in 24-Hour Average Trip Lengths (ATL) in minutes	
Production Zones	Segment of 2035 HBNW Person Trips by potential time savings	Number of 2035 HBNW Person Trips	Differences in ATL for Toll Path Options (No-Build ATL - Build ATL)	Differences in ATL for Free Path Options (No-Build ATL - Build ATL)
EJ Zones	Trips that can save 0+ minutes using a new toll facility	960,791	2.8	1.52
	Trips that cannot save 0+ minutes using a new toll facility	5,393,943	0.34	0.34
Non-EJ zones	Trips that can save 0+ minutes using a new toll facility	1,235,114	5.48	3.56
	Trips that cannot save 0+ minutes using a new toll facility	5,817,081	0.71	0.71

Table nine (9) compares the differences in the ATLs for the toll options under the Build Alternative versus the No-Build Alternative. The following summarizes the results presented in Table 9:

- *Differences in ATL for Toll Path Options for both TITLE VI and Non-TITLE VI zones:* As expected, the implementation of additional toll facilities in the Build Alternative results in an overall benefit by reducing ATL's for the toll path options for both TITLE VI and Non-TITLE VI zones. For the candidate trips that can save travel time by using the new toll facilities, the TITLE VI zones ATL for the toll options was reduced by 2.80 minutes and the Non-TITLE VI zones were reduced by 5.48 minutes. While both TITLE VI and Non-TITLE VI zones benefit, the differences in the

ATL's for the Toll options is smaller for the TITLE VI zones than for the Non-TITLE VI zones. As previously noted the TITLE VI zones are generally more centrally located and, hence, are not located as close to many of the proposed new toll facilities as the non-TITLE VI zones

- *Toll Path Option Benefit for Build Alternative for Both TITLE VI and Non-TITLE VI zones:* From an TITLE VI perspective, perhaps the most important observation is that ATL for toll path options are reduced under the Build option for both TITLE VI and Non-TITLE VI zones. Hence these analyses did not find any significant and/or disproportionate negative impacts on the ATL of the toll path options for the TITLE VI zones. Indeed, these results show that both TITLE VI and Non-TITLE VI zones realize an overall benefit from the proposed new toll facilities in the Build Alternative

Latent demand is essentially unrealized demand of travel due to constraints of the roadway network that becomes realized when improvements to the network are made, and can show increases in traffic on capacity-enhanced networks. The travel demand model used in this analysis uses an equilibrium assignment that disperses any latent demand throughout the toll and non-toll network, thus reducing the overall congestion in the region. This is evident by observing the changes in VMT and VHT in the build scenario, which includes the regional tolled roadway network. As seen in Table ten (10), below, the daily vehicle miles traveled decreases by over 1.5 million miles in the Build scenario versus No-Build. Furthermore, daily vehicle hours traveled decreases by 6 percent for the region when the network is fully built out. This gives evidence that the 2035 roadway network with toll facilities will improve overall system performance and provide travel time savings to both TITLE VI and Non-TITLE VI populations.

Table 10: Regional VMT and VHT

	Build	No Build
Daily VMT	273,566,820	275,140,200
Daily VHT	8,027,063	8,563,797
AM VMT	54,441,814	54,624,299

Overall Toll Network Findings

For HBW and HBNW trips, TITLE VI population trips that are candidate toll users are benefited by the introduction of the new toll facilities in terms of both the toll and free path travel times. Equally important, TITLE VI population trips that are not candidate toll users benefit by the introduction of the new toll facilities as the free path travel time average trip length is reduced between the No-Build and Build scenarios. As such, TITLE VI populations experience an overall benefit under the Build Alternative for their HBW and HBNW travel.

Although TITLE VI zones spread throughout the region, they are generally clustered within Beltway 8 and are not in close proximity to the majority of future toll facilities as the Non-TITLE VI zones are. Consequently, as the ATL of the TITLE VI zones are less than the ATL of non-TITLE VI zones, the TITLE VI zones cannot derive as much travel time savings as the longer trips from Non-TITLE VI zones. However, this analysis did not explicitly examine the impact on average trip length. As shown in Figure 6, the significant amount of future transit improvements are targeted at TITLE VI zones; the ATLs for the populations within those zones will tend to improve due to increased access to improved transit facilities.

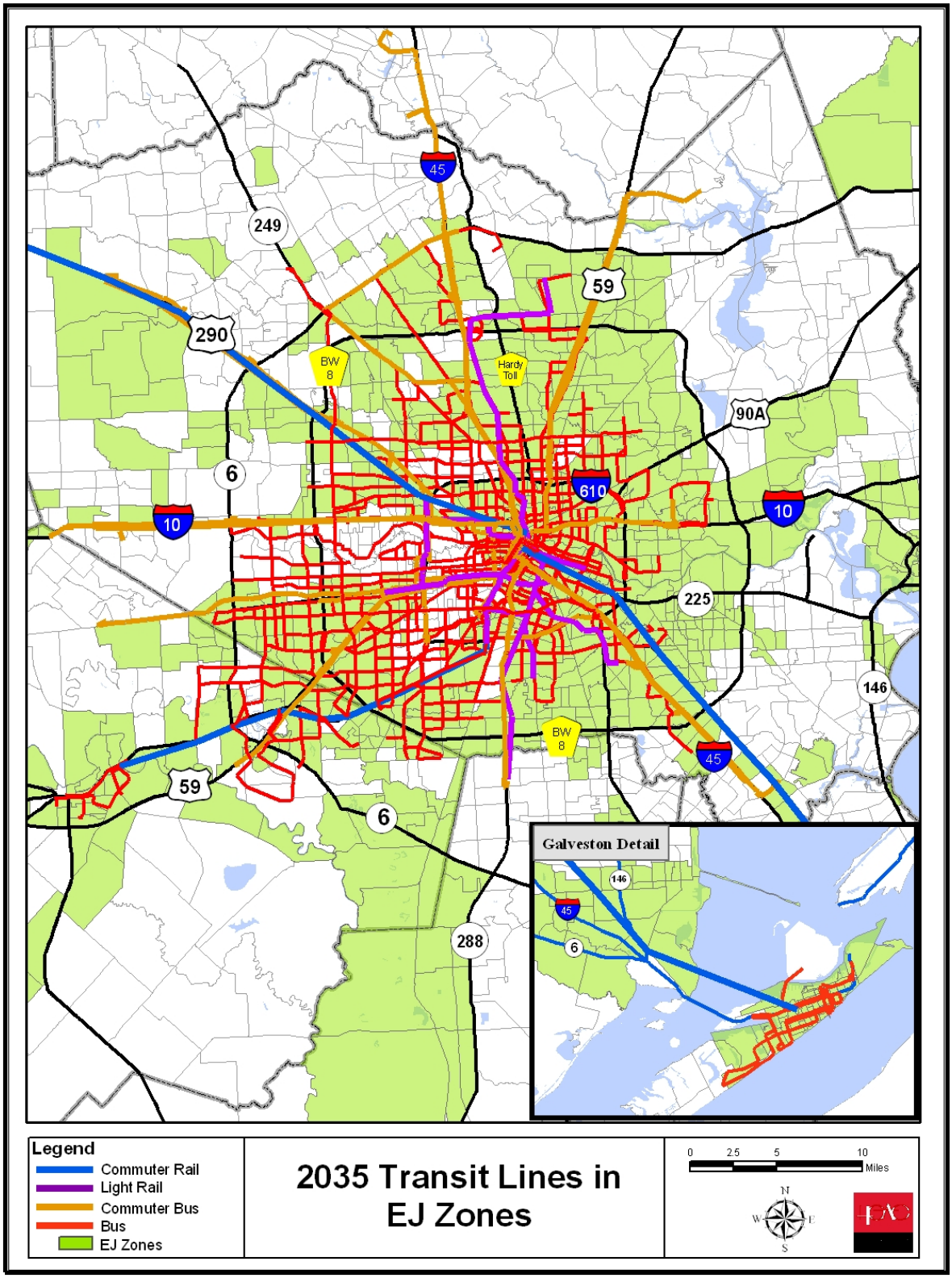
Although TITLE VI populations will see an increase in spending for toll facilities, the entire region will also see an increase in spending and usage as the toll and managed lane system expands. Both TITLE VI and Non-TITLE VI populations will benefit greatly from future toll facilities. In fact, the 2035 RTP relies heavily on toll funding to finance a significant portion of future added capacity projects, both free and toll. Additionally, for both populations who choose to use non-toll options, the Build scenario for 2035 will provide a roadway network that will operate at better traffic conditions than the No-Build scenario and would provide an increased benefit for those users over the No-Build scenario.

An analysis was also conducted to determine the annual financial burden of utilizing the toll road system for HBW trips. The analysis assumed a 2035 toll rate per mile of 19.96 cents (current toll rate of 10 cents per mile with an annual escalation rate of 2.5 percent). In addition the analysis assumed that an average HBW trip length is 23.30 miles and the SOV user makes 250 round-trips per year using the toll facility. Under this scenario, the annual cost would be approximately $2,325 per year. However, the accrual cost should be substantially less since the likelihood of a trip using only tolled facilities is diminutive.

Based on the previous discussion and analysis, the Build scenario for the 2035 RTP would not cause cumulative disproportionately high and adverse effects on any TITLE VI population as per Executive Order 12898 regarding environmental justice.

The results of the analysis suggest that although most of the new toll facilities are not being implemented in TITLE VI zones, TITLE VI targeted populations will enjoy benefits the of future toll facilities. It is important to note that future toll facilities are generally not being proposed in TITLE VI zones because those zones are largely inside the urban core. The costs of right-of-way acquisitions, community disruption, etc. make those locations prohibitive. However, it is important to note that much of the proposed light rail and bus improvements in the region are being implemented in the TITLE VI zones identified in this analysis, thereby improving mobility for those populations.

Figure 6: 2035 Transit System



This analysis only sought to determine whether a disproportionate travel time savings benefits or disbenefits are accruing to TITLE VI and Non-TITLE VI populations. In no way does this analysis replace the work required in the project development phase of a project per the National Environmental Policy Act of 1969 (NEPA). The potential impacts of the actual placement of superstructures and their attendant entry and exit ramps on communities and public health will still be the focus of any TITLE VI analysis of toll facilities in the future.

Conclusion

The regional priced facility system would cause minor impacts to some of the resources discussed in this analysis. Regional mitigation for some of these resources is addressed by the H-GAC. As part of 2035 *RTP*, H-GAC address two issues related to air quality and environmental justice populations. The Transportation Planning Process, at a regional level, provides ways to minimize any potential impacts that could occur. The priced facility projects would be included in the STIP/TIP and MTP, and the STIP/TIP and MTP would conform to the SIP. This assurance addresses each project is in compliance with the TIP/STIP and the MTP for air quality under the CAA and environmental justice under Title VI of the Civil Rights Act of 1964 and Executive Order 12898.

Although land use impacts cannot be mitigated at a regional level, they can be mitigated and/or controlled at the municipality level because these entities have direct control over land use. However, the MPO can aid in land use impact avoidance at the regional level by only funding transportation projects consistent with the regional vision and by working with municipalities to address regional infrastructure changes in their comprehensive plans. State and federal regulatory agencies that have direct jurisdiction over natural and cultural resources would be responsible for requiring avoidance, minimization, and mitigation from any entity whose proposed project (transportation or other type) has a direct impact to any of these resources on their project.