

# Executive Summary

## Introduction

The proposed United States Highway (US) 290 Corridor project includes roadway improvements along a portion of US 290, Hempstead Road, and associated connections to Interstate Highway (IH) 610 and IH 10 in Harris County, Texas. The US 290 study corridor extends approximately 38 miles from the US 290/IH 610/IH 10 Interchange in Houston northwestward to Farm-to-Market (FM) 2920 near the community of Waller.

Beginning at the western terminus with FM 2920 in the community of Waller and proceeding eastward, US 290 is a limited access roadway with parallel frontage roads along most of its length. The roadway includes main lanes (varying from 2 lanes in each direction in the western portion of the corridor to 5 lanes in each direction in the eastern portion of the corridor), frontage roads (varying from 2 to 3 lanes in each direction from IH 610 to west of State Highway [SH] 6/FM 1960 [west of Mueschke Road there are no frontage roads]), and one managed lane (high-occupancy vehicle [HOV] lane in the center of the roadway from the Northwest Station park and ride lot to the Northwest Transit Center on IH 10 near IH 610). There are two major interchanges along the project corridor: the US 290/Sam Houston Tollway (Beltway 8) Interchange and the US 290/IH 610/IH 10 Interchange. There are numerous intersections with major and minor arterial roadways that provide connections to collectors and local streets serving residences and businesses.

Hempstead Road, which was formerly a Texas Department of Transportation (TxDOT) roadway, is now a City of Houston facility. US 290 has replaced Hempstead Road as the primary travel route in the northwestern portion of Houston; however, Hempstead Road from approximately IH 610 to Beltway 8 (BW 8) continues to be used to service businesses and residences in the local area. Hempstead Road is generally 3 lanes in each direction from IH 610 to Mangum Road and 2 lanes from Mangum Road to west of BW 8.

The Houston-Galveston Area Council (H-GAC), the City of Houston, and Harris County are planning improvements to the network of arterials and collectors throughout the study area, including widening and reconstructing some arterial roads. Several Intelligent Transportation System (ITS) components are operating in the US 290 Corridor, including computerized transportation management system (CTMS), automated vehicle identification (AVI), elements of the HOV system, elements of the park and ride facilities, and Houston TranStar (a central, intermodal transportation control facility).

The Union Pacific (UP) Railroad owns, operates, and maintains a single-track railroad line in the study corridor. The approximately 100-foot railroad right-of-way (ROW) is immediately south of Hempstead Road and immediately south of the US 290 ROW west of BW 8.

The Metropolitan Transit Authority of Harris County (METRO) is the primary transit agency in Harris County. In the study corridor, METRO currently operates eleven bus routes and four primary park and ride lots with a total of 4,415 spaces (Skinner Road, Pinemont, West Little York Road, and the Northwest Station). METRO manages the single-lane, reversible HOV facility located in the center of US 290, which extends from near North Eldridge Parkway to the Northwest Transit Center (at IH 10/IH 610).

The Harris County Toll Road Authority (HCTRA) constructed, manages, and operates BW 8, a toll road around the City of Houston that intersects with US 290 in the study area. HCTRA manages 83 miles of toll roads in Harris County and is currently constructing toll lanes (Katy Toll Road) on IH 10 from IH 610 to SH 6 south of the US 290 Corridor study area.

The proposed project was developed to serve existing and future transportation needs in the US 290 Corridor study area in Harris County, Texas. In general, the proposed project includes the following:

- Additional general-purpose lanes on US 290 and reconstruction of US 290 frontage roads
- Managed lane (toll) facility along Hempstead Road from IH 610 to BW 8, and along US 290 from BW 8 to the future Grand Parkway/SH 99
- Frontage roads along Hempstead Road adjacent to the managed lanes from IH 610 to Beltway 8
- Direct connectors<sup>1</sup> from US 290 to IH 610 and IH 10
- Advanced high-capacity transit (AHCT)<sup>2</sup> corridor reserve along Hempstead Road from IH 610 to BW 8 and along US 290 from BW 8 to the future Grand Parkway/SH 99

The current HOV lane in the center of US 290 would be removed, and US 290 would be widened to provide additional traffic lanes and improved connectors. Managed lanes would be adjacent (to the south) of US 290 from the future Grand Parkway/SH 99 to West Little York Road, and then cross over the railroad track to run adjacent (to the north) of Hempstead Road from West Little York Road to IH 610. The managed lanes would be operated as a toll road. Buses and METROLift vehicles operated by METRO could utilize the managed lanes toll-free, and vehicles with 3 or more persons (except commercial vehicles, some non-METRO buses, and school buses) would be allowed to operate toll-free within peak hours. The proposed Hempstead Road improvements would also include pedestrian and bicycle facilities, and a reserve for future high-capacity transit. Proposed modifications to IH 610 would facilitate

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<sup>1</sup> Direct connectors carry traffic from one roadway to another without requiring vehicles to exit the roadway.

<sup>2</sup> AHCT is a general term used to address the type of transit system that might be implemented in the corridor (light rail transit, bus rapid transit, or some future transit technology).

transitions from IH 610 to US 290, Hempstead Road, and the managed lanes. The proposed modifications would also facilitate transitions from US 290 to eastbound and southbound IH 610, and from Hempstead Road and the managed lanes to northbound and southbound IH 610. In addition, there would also be a direct connector from US 290 to IH 10 that bypasses IH 610, reducing weaving of traffic on IH 610 in that area.

This Draft Environmental Impact Statement (DEIS) has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, and in accordance with NEPA regulations issued by the Council on Environmental Quality (CEQ)(40 Code of Federal Regulations [CFR] 1500-1508) and Federal Highway Administration (FHWA) regulations and policies (23 CFR 771). The information presented in this Executive Summary is discussed in more detail in later sections of this DEIS.

### **Why was this DEIS prepared?**

Following the requirements of NEPA, the FHWA, in coordination with TxDOT, has prepared this DEIS to assess the potential effects (impacts) of the proposed project. The DEIS details the process through which the project was developed, provides a detailed description of the proposed project, the need for and purpose of the proposed project, the reasonable alternatives identified, the affected environment, and the analysis of the anticipated beneficial and adverse environmental effects. Based on the evaluation of alternatives, FHWA and TxDOT identified a recommended alternative. The public and other agencies will have an opportunity to review and comment on this DEIS. FHWA and TxDOT will consider input from the public and other agencies to identify a preferred alternative to be evaluated in more detail in a Final Environmental Impact Statement (FEIS).

### **Why is the US 290 Corridor project needed?**

The proposed transportation improvements are needed to address the following transportation issues in the US 290 Corridor:

- US 290 and Hempstead Road are severely congested, primarily during peak travel times
- The roadway congestion causes undesirable operational levels of service (LOS) and mobility, and unsafe driving conditions
- Portions of the US 290 roadway do not meet current roadway design standards
- The roadway does not provide adequate capacity for future traffic demands

**What is the purpose of the US 290 Corridor project?**

The purpose of the proposed project is to reduce traffic congestion in the US 290 Corridor within Harris County, improve LOS and mobility on US 290 and Hempstead Road, and bring the roadway facilities up to current design standards, all of which would help to improve safety.

**What are the logical termini for the US 290 Corridor project?**

Logical termini are defined by FHWA as (1) the rational endpoints for a transportation improvement, and (2) the rational endpoints for a review of environmental impacts. The logical termini for the proposed US 290 Corridor transportation improvements are FM 2920 and IH 610.

**What parts of the project would be tolled?**

The four-lane, two-way managed lanes would be tolled. The managed lanes would be located along Hempstead Road from IH 610 to BW 8, and along US 290 from BW 8 to the future Grand Parkway/SH 99. Not all vehicles would pay a toll; vanpools and carpools with 3 or more persons would be free, except for commercial vehicles. In addition, METRO buses would not be tolled.

**Why would parts of the project be tolled?**

According to the Houston-Galveston Area 2025 Regional Transportation Plan (RTP), expected future revenue for transportation improvements will not keep pace with future demand. Due to limited growth in traditional funding, fuel taxes along with toll roads will play a strategic role in improving the transportation system in the region. The expansion of roadways, transit services, and transit facilities included in the 2025 RTP is limited by estimates of actual funds available to support their construction, operation, and maintenance, and available funding will not address all congestion in the region. If the 2025 RTP did not include new roads financed by user tolls, the H-GAC predicted that congestion would increase by 26 percent.

Toll revenue from the proposed managed lanes would be used to pay for construction, operation, and maintenance of the toll facility. According to the 2025 RTP, surplus toll funds, if available, would be used for other regional transportation needs.

**What process is being used to study the US 290 Corridor improvements?**

The US 290 Corridor Environmental Impact Statement (EIS) is being prepared in accordance with the requirements for environmental impact statements established by the CEQ and in accordance with FHWA regulations and related guidance. NEPA requires and FHWA is committed to the examination and avoidance of potential impacts to the social and natural environments when considering approval of proposed transportation projects. In addition to evaluating the potential environmental effects, transportation needs of the public must also be

considered to reach a decision that is in the best overall public interest. The FHWA NEPA project development process is an approach to balanced transportation decision-making that takes into account the potential impacts on the human and natural environments and the public's need for safe and efficient transportation.

### **Why was a Major Investment Study (MIS) conducted prior to this DEIS?**

The MIS was conducted in compliance with the requirements for major transportation investments established by the 1991 Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the 1990 Clean Air Act (CAA) Amendments.

### **What modes of transportation were considered in the MIS?**

During the MIS, alternative modes<sup>3</sup> of travel were studied, including freeway, streets and highway, various types of transit, transportation system management (TSM)<sup>4</sup> strategies, and transportation demand management (TDM)<sup>5</sup> strategies. H-GAC's Transportation Policy Council (TPC), which is the local Metropolitan Planning Organization (MPO), approved and adopted a locally preferred modal alternative in 2003. The locally preferred alternative transportation modes recommended by the MIS study team and adopted by the TPC included additional general-purpose lanes on US 290, a managed facility along the Hempstead Road Corridor from IH 610 to near the future Grand Parkway/SH 99, additional general-purpose lanes with curb and gutter in each direction along Hempstead Road, AHCT along the Hempstead Road and US 290 Corridor from IH 610 to near the future Grand Parkway/SH 99, Transportation System Management (TSM)/TDM/ITS<sup>6</sup> improvements, bicycle and pedestrian improvements, and frontage roads in each direction along US 290.

### **What alternatives were considered in this DEIS?**

The alternatives considered in this DEIS include various configurations of the locally preferred modal alternative identified in the MIS; alternative alignments for proposed improvements along US 290, Hempstead Road, and IH 610 (to provide for direct connectors); and the No Action (No

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<sup>3</sup> A mode is the system for carrying transit passengers described by specific ROW, technology, and operational features.

<sup>4</sup> TSM is a set of transportation policies or strategies aimed at reducing traffic congestion and improving roadway mobility without major capital expenditures to increase physical roadway traffic capacity.

<sup>5</sup> TDM is defined as strategies that are designed to reduce the number of vehicles on roadways, particularly during peak travel periods.

<sup>6</sup> ITS is the application of advanced technologies (such as computerized systems) to improve the efficiency and safety of transportation systems.

Build) alternative. The alternative alignments for proposed improvements are described in this DEIS as the “Build Alternatives.”

### **How were alternatives developed?**

The development of alternatives was accomplished in several steps. The MIS process implemented in 1999 for the US 290 Corridor provided a focused analysis and extensive evaluation of mobility needs, identified a set of multimodal options to address problems and needs throughout the corridor, developed measures of benefits, identified costs and impacts, and allowed for a comprehensive analysis and evaluation of options. Four rounds of public meetings were held during the study, which concluded in 2003. A summary of the alternatives analysis conducted during the MIS is in *Section 2.2.1* of this DEIS. The MIS recommended a locally preferred modal alternative. Starting from the basic configuration of the modes of travel and the number of lanes defined in the MIS, different arrangements of freeway, frontage roads, managed lanes, high-capacity transit corridor, and the existing UP freight rail corridor were developed and evaluated during the DEIS. These alternatives were refined to develop a more limited number of viable alternatives. Following the presentation of the alternatives at public scoping meetings in August 2003, and review of comments from the public, alignment alternatives for proposed improvements to US 290, Hempstead Road, and IH 610 were developed for more detailed evaluation. Alternatives were presented at public meetings in March 2004. These alternatives continued to be refined and evaluated, and additional alternatives were developed. Throughout the development of alternatives, efforts were made to avoid potential impacts to existing residential, commercial, and public properties, and other developed areas. Four alternatives were developed for the US 290 portion of the project. Five alternatives were developed for the Hempstead Road Corridor. Three alternatives were developed for IH 610 to integrate with the US 290 and Hempstead Road alternatives. The US 290, Hempstead Road, and IH 610 alternatives are evaluated at a comparable level of detail in this DEIS. Based on environmental, planning, and engineering considerations, and public and agency input, a Recommended Alternative was identified for the US 290, Hempstead Road, and IH 610 areas of the project.

### **How is the No Build alternative defined?**

The No Build alternative in this DEIS assumes that the proposed US 290 Corridor project would not be constructed, and other roadway projects currently planned and programmed for the study area, such as TSM and other interim projects planned for US 290, would be constructed. Under the No Build alternative, potential direct, indirect, and cumulative effects of those projects would be evaluated under separate environmental studies by project proponents, as required.

**How were the project alternatives evaluated?**

In the MIS, alternatives were evaluated based on transportation needs, goals, and objectives of the study corridor. Evaluation measures included public safety; mobility; transit; social, economic, and environmental impacts; air quality; and maximized use of the existing ROW. The locally preferred modal alternative was selected based on cost, constructability, environmental impacts, and construction staging. An analysis of the potential environmental effects of the alternatives was performed for this DEIS. The No Build alternative was also evaluated.

**What effect would the alternatives have on land use?**

Additional ROW would be required for all alternatives. The ROW that would be acquired is currently in a variety of land uses, including residential, agricultural, business (commercial and industrial), vacant, and undeveloped. The total additional ROW would be approximately 450 to 600 acres, depending on the alternative selected. Acquisition of additional ROW would convert the current land use to roadway, displacing residents, businesses, and portions of undeveloped properties needed to construct the proposed improvements. A portion of the proposed additional ROW along US 290 from FM 2920 to Telge Road contains prime farmland soils. The proposed project ROW could convert up to approximately 100 acres of prime farmland. The No Build alternative would not involve the acquisition of additional ROW.

**What effect would the alternatives have on housing, neighborhoods, and community cohesion?**

All of the proposed US 290, Hempstead Road, and IH 610 build alternatives would require residential, business, public facilities, utilities, and other relocations. Acquisition of ROW along US 290 and Hempstead Road would displace between 29 and 96 single-family residences, and between 98 and 206 multi-family residential units, respectively, depending on the alternative selected. Single-family residences that could be displaced are primarily in Langwood and Forest Pines neighborhoods, and several mobile home communities could be impacted. The multi-family units that could be displaced are in Creekwood, Vintage, Wynnewood at Wortham, and Pitner Northwest Corner apartment complexes. Based on current listings, sufficient single-family and multi-family housing exists in the study area to accommodate residential relocations that would result from implementation of any of the build alternatives. Although some homes would be displaced, the proposed project would not separate or isolate any residential neighborhoods or communities.

All US 290 alternatives would require relocations of two churches (St. Peter's Anglican and St. Aidan's Episcopal), a pipeline transfer facility, an area with Exxon Mobil pipeline equipment, and a United States Army Reserve Center. Hempstead Road Alternatives HR-A, HR-B, HR-C and HR-D would displace the Iglesia Pentecostes Mission Church. Alternatives HR-C and HR-E would require the relocation of the Christ Family Church.

No residential, business, or other relocations would be required as a result implementing the No Build alternative, thus there would be no direct impacts to area housing or housing availability. The No Build alternative would not directly affect neighborhoods or community cohesion within the study area; however, as the population increases in neighborhoods adjacent to the US 290 study area, traffic would increase in these neighborhoods. Additional development associated with increased population and employment in the vicinity of the proposed project and the Houston region would cause increased traffic congestion and reduced mobility. A long-term indirect effect of the No Build alternative to nearby neighborhoods, communities, and the traveling public would be the continued reduction below the desired LOS of roadways in the US 290 study area.

### **What effect would the alternatives have on economic activity, employment, and income?**

Construction of any of the proposed build alternatives would have direct and indirect effects on local, regional, and state employment, output, and income. Direct effects include those arising from purchases made by the new construction sector. Direct costs include wages and salaries paid to workers directly engaged in construction of the proposed project, as well as capital costs for equipment, materials, and supplies during construction. A direct adverse impact to employment and income would result from the displacement of businesses necessary for additional ROW acquisition. Under the No Build alternative, employment at currently established businesses would be expected to remain stable or possibly change based on market factors rather than construction of the proposed project. Some additional short-term employment opportunities and income may be generated for any currently planned improvements to roadways within the study area; however, the increase in employment would not be as extensive, or be for as long a time period, as for the proposed build alternatives.

Long-term economic effects of the proposed project for any of the build alternatives would include the permanent removal of taxable property due to ROW acquisition from the tax rolls of local governments and school districts. However, the overall economic growth anticipated for the area would likely be economically beneficial in the long term as development activities continue and property values increase. Under the No Build alternative, there would be no ROW acquisition and private property would not be removed from the tax rolls of local government entities and school districts.

### **What effect would the alternatives have on community and public resources?**

Some of the proposed build alternatives would require displacement of churches and a Houston Police Department garage. Access to community and public facilities would be maintained during construction activities. Police, fire, and medical services would use information provided by TxDOT to plan emergency routes during construction. After construction, the improved roadways would operate at a better LOS, which would improve access for emergency vehicles.

In the long term, the No Build alternative would adversely affect the traveling public's access to community resources such as churches, cemeteries, and parks due to the projected decrease in LOS of roadways in the US 290 study area.

### **What effect would the alternatives have on Environmental Justice populations?**

Of the 52 block groups located within or adjacent to the US 290, Hempstead Road and IH 610 portions of the proposed project, 24 of the block groups have a high minority population (i.e. more than 50 percent) and one block group (5216.00:1) has a high minority and low-income population.

In the long term, the entire community, including minority and low-income populations, would benefit from the proposed project. Benefits include decreased traffic congestion, improved mobility, and creation of short- and long-term jobs resulting from the implementation of the proposed project. The proposed project would (1) preserve a transit corridor, which would be used to serve the future needs of all residents, including low-income and minority populations; (2) reconstruct Hempstead Road to provide improved traffic flow for all residents, including low-income and minority populations; (3) construct tolled/managed lanes in the middle of Hempstead Road to provide added capacity; and (4) reconstruct US 290 and access roads with added capacity. US 290 would remain a controlled access and non-tolled facility available to low-income and minority populations and is generally less than one mile from the proposed managed lanes. Hempstead Road would also remain free. Public transportation, i.e. METRO buses, would be permitted to use the tolled/managed lanes. This would benefit low-income and minority populations as well as households without access to vehicles who chose to use public transportation for commuting.

The Hempstead Road alternatives include pedestrian and bicycle facilities along the length of Hempstead Road. Construction of the proposed pedestrian and bicycle facilities would serve as a valuable connecting hike and bike thoroughfare between existing bike routes and trails, benefiting all members of the community including minority, low-income and people without access to vehicles. A designated facility for pedestrians and bicycles would be safer than the existing condition. In the Hempstead Road Corridor, an area with demonstrated need for these facilities, the proposed hike and bike facilities would help meet needs of the local community for alternatives to motorized vehicle transportation.

The proposed project would require relocation of some community resources (including residences, churches, and businesses). There may be short-term, localized effects to air quality (e.g., increase in dust) and noise levels (e.g., generated by construction equipment and activities) in the immediate area adjacent to the project during construction; however, these effects would be temporary and would not be selectively limited to minority and low-income communities, but would potentially affect all residential communities located in the immediate area adjacent to the proposed project.

While individual minority and low-income persons may be affected by the proposed project, implementation of the proposed project would not cause disproportionate adverse impacts specific to any minority or low-income individual or population.

**What effect would the alternatives have on pedestrian and bicycle facilities?**

Between SH 6/FM 1960 and IH 610, sidewalks would be constructed parallel to the proposed US 290 frontage roads. All proposed build alternatives for Hempstead Road include pedestrian and bicycle facilities that would intersect other bike lanes and sidewalks. Construction of the proposed pedestrian and bicycle facilities would serve as a connecting hike and bike facility between existing bike routes and trails. Providing a designated facility for pedestrians and bicycles would be safer than the existing condition.

For the No Build alternative, additional pedestrian or bicycle facilities would be developed by other projects or other entities. Without the proposed US 290 Corridor project, traffic and congestion would increase on US 290 and Hempstead Road, and pedestrians and cyclists would experience more difficult travel conditions in the area.

**What effect would the alternatives have on air quality?**

The proposed project would reduce traffic congestion, and although traffic is expected to increase in the future, potential impacts to air quality would be partly offset by reductions in vehicle emissions, as newer vehicles with more effective pollution controls replace older vehicles. Overall emissions of pollutants from vehicles are expected to decrease in the future due to rapidly improving fuel, vehicle technology, and the turnover in motor vehicles between those years. Therefore, it is expected that air quality would improve in the area with or without the proposed project.

**Is the proposed project consistent with local and state air quality plans?**

The proposed action is not consistent with the area's financially constrained 2025 Regional Transportation Plan, proposed by the H-GAC and approved by the FHWA on June 3, 2005, as conforming to the State Implementation Plan (SIP). This proposed project now extends 10 lanes beyond BW 8 to Jones Road. The draft financially constrained long-range 2035 Regional Transportation Plan and the 2008-2011 Transportation Improvement Program currently being prepared by the H-GAC will be amended or updated to reflect the extension of 10 lanes. The FHWA is expected to make a conformity determination for these documents in the spring or summer of 2007, and the State Transportation Improvement Program conformity determination is expected in the fall of 2007. TxDOT and FHWA will not take final action on this environmental document until after the pending TIP and RTP are finalized and found to conform to the SIP and the project is consistent with the conforming plans.

**What effect would the alternatives have on noise?**

A preliminary noise analysis indicates that all the proposed build alternatives would result in noise impacts. Also, the noise abatement measures most likely to be incorporated into any of the proposed build alternatives would be the construction of noise abatement barriers for residential neighborhoods aligned parallel and adjacent to the proposed US 290 improvements. Specific noise impacts and an evaluation of noise abatement for the preferred alternative will be included in the FEIS.

**What effect would the alternatives have on water resources?**

It is not anticipated that any of the proposed build alternatives would impact groundwater or surface water resources. The proposed project would be in compliance with the Texas Pollutant Discharge Elimination System (TPDES) permit issued for the project, and best management practices (BMP) would be implemented and maintained to reduce the potential for the introduction of sediment and erosion materials into area streams.

The proposed project would not adversely impact the base flooding elevations to a level that would violate applicable floodplain regulations and ordinances. Proposed roadway drainage facilities would permit conveyance of the 100-year flood without causing major impacts to the main lanes of the proposed roadways, streams, or adjacent properties. Fill placement in the floodplain would be mitigated with equivalent floodplain storage in the vicinity of the proposed project.

Construction of any of the proposed build alternatives would result in impacts to waters of the United States, including wetlands, regulated by the U.S. Army Corps of Engineers. A preliminary estimate of wetlands within the ROW of the proposed alternatives is approximately 50 acres, based on National Wetlands Inventory (NWI) mapping, limited site reconnaissance, and aerial photograph interpretation. It is likely that some wetlands could be avoided, which would be assessed during preparation of the FEIS.

**What effect would the alternatives have on vegetation and wildlife?**

To the extent practicable, impacts to vegetation associated with communities such as forests and wetlands would be avoided. However, it is likely that the majority of vegetation within the limits of the ROW of any of the proposed build alternatives would be impacted. The majority of the vegetation impacts would occur to agricultural and pastureland communities. Removal of vegetation within the proposed ROW would impact wildlife, biomass, nutrient cycling, and visual aesthetics. For the no build alternative, no additional ROW or added roadway capacity would be required that would affect vegetation.

Construction of the proposed roadway would result in the loss of wildlife habitat such as abandoned and/or active agricultural land, riparian corridors, woodlots, and wetlands. Wildlife

inhabiting areas of proposed additional ROW acquisition would be permanently displaced, but likely would assimilate into the surrounding areas. No major long-term effects to wildlife in the urban and residential areas are expected.

#### **What effect would the alternatives have on threatened and endangered species?**

Two endangered or threatened species have been identified as potentially occurring in the study area: the Texas prairie dawn (*Hymenoxys texana*) and the smooth green snake (*Liochlorophis vernalis*). The proposed US 290 and Hempstead Road alternatives pass through areas of Harris County that have suitable soils for the federal-listed endangered Texas prairie dawn plant but these areas have been disturbed by urbanization and farming, which likely removed the site-specific conditions necessary for the plants. A desktop and pedestrian review for the Texas prairie dawn was performed for the study corridor, and no Texas prairie dawn plants were observed, nor was suitable habitat observed. The proposed project would have no effect on the Texas prairie dawn. The smooth green snake is a state-listed threatened species that could occur within the US 290 study area. Field investigations for the smooth green snake will be conducted during preparation of the FEIS. Direct impacts to threatened or endangered species would not occur for the No Build alternative.

#### **What effect would the alternatives have on historic and archeological resources?**

There are no National Register of Historic Places (NRHP) properties, State Archeological Landmarks (SALs), or Recorded Texas Historic Landmarks (RTHLs) that have been previously documented within the area of potential effect of the proposed project. A survey and evaluation of both archeological and historic-age resources will be performed during the FEIS to determine if resources could be directly or indirectly affected by the proposed project.

#### **What effect would the alternatives have on hazardous materials?**

All of the proposed build alternatives would affect sites that have been identified as having potential for hazardous materials. The proposed project would require the demolition and/or relocation of buildings, and demolition and reconstruction of bridges that may contain asbestos materials. If needed, remedial action would occur prior to or during construction, and use of appropriate management measures would limit the potential for adverse impacts to soil, water, groundwater, air, and from human exposure. Additional studies will be conducted during preparation of the FEIS to identify potential hazardous materials on property proposed to be acquired.

#### **What effect would the alternatives have on visual and aesthetic qualities?**

Visual and aesthetic impacts of the proposed project would primarily result from changing views by adding lanes to US 290, Hempstead Road, and IH 610. The similarity of the proposed build alternatives for US 290 would result in comparable visual and aesthetic impacts to existing

visual resources. Over the long term, continued development in the western portion of the study area would make it more difficult for roadway users to experience scenic rural views.

### **What would be the construction effects of the proposed project?**

All of the proposed build alternatives would result in construction impacts, which may include temporary degradation of air, noise, and water quality; the temporary disruption of traffic for residents, businesses, and travelers; the stockpiling and disposal of construction materials and waste; the use of borrow areas and the construction and use of haul roads; and the temporary disruption of utilities. Construction activities would affect the residents of the proposed project area and those traveling in the vicinity; however, the construction impacts would be temporary. The No Build alternative would not result in construction impacts, except for those that would result from other projects already planned and programmed in the proposed project area.

### **What would be the indirect effects of the alternatives?**

Indirect effects are defined as those that "...are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems."

Currently planned land development projects in the northwest Harris County area are expected to continue as planned, however the rate would be indirectly influenced by the proposed project. Future development plans would be based upon developer expectations of transportation improvements to the corridor and would be accelerated by improved transportation infrastructure. It is generally known that development tends to follow established infrastructure patterns and in turn, infrastructure (e.g. transportation improvements) follows development. Some indirect land use changes could occur as a result of the proposed project in the vicinity of Hempstead Road and US 290 from BW 8 eastward. Land use impact associated with the proposed project would be minor in comparison to the impacts of other current and reasonably foreseeable projects in the RSA.

Properties that are adjacent to land that would be acquired for additional roadway ROW may redevelop and/or change use as access changes to proposed US 290 and Hempstead Road transportation facilities. Therefore, the proposed project would have some unquantifiable indirect impact to land use in those areas.

Construction of the proposed projects would have indirect beneficial effects on local, regional, and state employment. Indirect impacts include those arising from purchases made by the new construction sector. The estimated indirect statewide economic gain of construction of the proposed project would be between \$13 billion - \$16 billion.

As discussed in *Section 1*, a long-term indirect effect of the No Build alternative to several neighborhoods or communities and the traveling public would be the continued reduction below the desired LOS of roadways in the US 290 study area. Without the proposed project, development associated with increased population and employment in the vicinity of the proposed project and the Houston region would cause increased traffic congestion and reduced area mobility. With the No Build alternative, congestion would be expected to worsen and there would be more vehicles on the existing roadways, which would adversely affect the visual quality of the roadway from adjacent lands.

### **What would be the cumulative effects of the alternatives?**

Cumulative effects are defined as "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." Cumulative impacts include the direct and indirect impacts of a project together with the reasonably foreseeable future actions of others.

Cumulative impacts were evaluated for the following resources/issues: land use, communities/quality of life, water resources, wetlands, vegetation, and waters of the United States. For each resource/issues, a specific resource study area (RSA) was identified for the analysis.

The proposed project would cause some indirect changes to land use and directly convert approximately 560 acres of land to roadway ROW. Direct impacts within the RSA as a result of other planned private development include more than 12,000 acres. The land use impact associated with the proposed project would be minor in comparison to the impacts of other current and reasonably foreseeable projects in the RSA.

It would be expected that overall positive cumulative impacts to employment and income would result from construction of the proposed project and other roadway projects in the RSA. The proposed construction expenditures for materials and labor would have indirect and other induced effects on local, regional, and state employment, output, and income.

Some designated bikeways are along roadways in the area, and the proposed project would provide sidewalks along US 290 frontage roads from IH 610 to SH 6 and a hike and bike facility along Hempstead Road. TxDOT and other agencies, such as H-GAC and Harris County, are considering expanding pedestrian and bicycle facilities along roadways and other features. Additionally, existing and newly constructed neighborhoods may provide new bicycle and pedestrian facilities in the RSA. As areas become more densely populated, pedestrian and bicycle facilities are anticipated to be more widely used and expanded in the future. The cumulative impact to pedestrian and bicycle facilities would be beneficial.

The proposed project would (1) preserve a transit corridor, which would be used to serve the future needs of all residents, including low-income and minority populations; (2) reconstruct Hempstead Road to provide improved traffic flow for all residents, including low-income and minority populations; (3) construct managed lanes in the middle of Hempstead Road to provide added capacity; and (4) reconstruct US 290 and access roads with added capacity. All users of the roadway, including minority and low-income individuals and populations, would be able to use Hempstead Road and US 290, both non-tolled facilities. US 290 would both have added capacity and be a comparable controlled access facility to the tolled/managed lanes along Hempstead Road. US 290 is generally less than one mile from the proposed tolled/managed lanes. The proposed project would add roadway capacity in the corridor, which would benefit the traveling public, communities, low-income and minority individuals and populations by improving the roadway LOS and providing congestion relief. Additionally, during emergency evacuations, the tolled facility would be available as a free travel route for all persons, including low-income and minority populations. The cumulative impact of new and improved transportation facilities in the Houston region would be improved mobility for all populations.

Transportation improvement projects in the region include highway, road, bridge, or overpass construction, reconstruction, widening, or upgrades to accommodate current and projected traffic in the area. In addition, emergency evacuation plans in the Houston-Galveston region include contraflow lanes. The cumulative impact of new and improved transportation facilities in the Houston region would be improved traffic flow and reduced travel times for the public, communities in the RSA, and emergency vehicles. In the long term, the No Build alternative would cause an increase in future traffic congestion, which would increase travel times for all vehicles and reduce public safety, resulting in impacts to quality of life for communities in the RSA.

Due to an increase in land development in the RSA and surrounding areas, water quality has become a concern. The increase in development creates new sources for point and non-point pollution, such as potential contaminants into the area via household chemicals, domestic pet waste, and pollutants from automobiles. During construction, exposed soil could run off into streams and increase turbidity and sediment loading downstream. The roadway would cause an increase in storm water runoff due to an increase in impermeable cover, and the runoff could contain oil and grease constituents which could be carried to water bodies outside of the roadway.

Within the wetlands RSA, approximately 7,896 acres (an average of 464 acres per year) of wetlands have been lost since 1989. The proposed project would impact up to approximately 46 acres of wetlands. Any wetlands lost as a direct impact of the proposed US 290 project would be mitigated, and therefore the cumulative impact would be minor. If development continues at its pace of the last 10 years, 464 acres of wetlands per year will be filled or impacted in the RSA, based on the NWI and aerial photography analysis. The continued

degradation and loss of wetlands in the RSA would be expected with the build and No Build alternatives. The majority of the vegetation within the RSA has been impacted by urbanization or farming practices. All the vegetation that would be impacted by the proposed project is either contained within an urban environment or exists as abandoned farmland/ranchland. No quantifiable cumulative impact to waters of the United States is expected.

### **How was the public involved in the study and how was input obtained?**

The purpose of the agency and public involvement program for the US 290 MIS was to promote open, proactive communication with agencies, the public, and stakeholders in the corridor. As part of the agency and public involvement program, the MIS project team developed a public education campaign. The campaign described regional transportation issues and related air quality plans. Included in the campaign were newsletters, public meetings, special presentations, and a website. During the MIS, TxDOT coordinated with Steering and Advisory Committees and the public to obtain input regarding the US 290 Corridor project need and purpose, goals, alternatives, and potential project impacts. The Steering Committee was comprised of agency and government representatives. The Advisory Committee was comprised of elected officials and their staff, school districts, economic development organizations, and agencies.

A series of four public meetings were held to inform the public of the project purpose, process, progress, and solicit public input regarding the MIS. At the meetings, exhibits providing information about the study area were available for review and were staffed by project team members to answer questions from the public. At each meeting, attendees were provided with a questionnaire to provide feedback and comments about the corridor to the MIS project team. In addition to the public meetings held for the MIS, local community and business groups invited the MIS project team to make presentations.

The purpose of the public involvement activities during the DEIS process was to ensure every reasonable opportunity to participate was made available to interested citizens, civic groups, organizations, and public officials. Since initiation of the DEIS, three rounds of public meetings were held to provide updates about the study and to solicit input. Comments received at these meetings and through mail, telephone calls, and e-mail aided in development of the US 290 Corridor project. The following public meetings were conducted during the development of this DEIS:

- August 2003 – Three public meetings were held to introduce the proposed project and the initial study area, and to solicit comments
- March 2004 – Three public meetings were held to provide study updates, present alternatives, and solicit comments

- October 2005 – Three public meetings were held to provide study updates, present the build alternatives and the recommended alternative, and solicit comments

Efforts to inform and accommodate persons who speak English less than “very well”, which are considered Limited English Proficient (LEP) populations, included publications in smaller area newspapers (including Spanish-language papers), bilingual publication in the Houston Chronicle, as well as bilingual newsletter/announcements sent to over 5,000 area residents, businesses, agencies, elected officials, media, and others. Target areas included areas with identified LEP populations, and low-income and minority census tracts in the vicinity of the project area. Spanish speaking TxDOT representatives were available at all public meetings. In addition to communication already mentioned, the public meeting notices were posted on the project website and highway signs.

An extensive mailing list was developed during the MIS, and was updated throughout the project development process. Meeting notices and newsletters containing information about study issues, alternatives, and project schedule were provided to those on the mailing list, including landowners in the vicinity of the proposed project, local elected officials, agencies, federal agencies, school districts, railroad companies, businesses, community organizations, civic groups, media, utility providers, and others. During the MIS and DEIS preparation, TxDOT met with community associations and civic clubs, churches, chambers of commerce, business owners, developers, and others to discuss the proposed project. More information on these meetings is in *Section 8* of the DEIS.

### **What agencies were involved in the study and how was input obtained?**

The MIS Steering Committee was comprised of representatives from TxDOT, H-GAC, METRO, FHWA, Federal Transit Authority (FTA), Texas Commission on Environmental Quality (TCEQ), U.S. Fish and Wildlife Service (USFWS), Harris County, and City of Houston. The Advisory Committee was comprised of elected officials and their staff, school districts, economic development organizations, the U.S. Army Corps of Engineers, Harris County Flood Control District, HCTRA, H-GAC, TxDOT, FHWA, and others. Meetings were held during the MIS process to provide information and solicit input from these committees.

Prior to the initial public scoping meetings, coordination meetings were held with federal and state resource and regulatory agencies and government representatives to initiate early involvement in the environmental study and to solicit input regarding the DEIS. The agencies invited were the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Department of Agriculture Natural Resources Conservation Service, USFWS, Texas Parks & Wildlife Department, Texas General Land Office, Texas Historical Commission, and TCEQ. Invited government representatives included Harris County, the City of Houston, Jersey Village, State of Texas, U.S. Congress, METRO, H-GAC, HCTRA, FHWA, and others. The agencies

and government representatives were also invited to all subsequent public meetings. Coordination will continue during the preparation of the FEIS.

### **How did public involvement influence the process?**

During preparation of this DEIS, there have been many opportunities for public and agency comments on the planning process, engineering and environmental concerns, and the alternatives analysis process. The primary issues raised were drainage/flooding, traffic congestion, local access, mass transit, tolling, displacements, air pollution, water quality/contamination, safety, noise, aesthetics and the potential construction schedule. Also, issues raised by the public and agencies during the MIS that was conducted prior to the preparation of this DEIS were considered during the development of proposed alternatives. TxDOT and FHWA have attempted to address all of these issues in the development and evaluation of alternatives for the proposed project.

### **In summary, what were the results for the alternatives evaluation and which alternative was identified as the Recommended Alternative?**

The No Build alternative would not meet the need and purpose of the proposed US 290 Corridor project. Other planned transportation projects would not provide sufficient capacity for the existing or predicted future traffic on US 290 and Hempstead Road, and therefore congestion would be expected to increase if the No Build alternative were selected. The LOS of the roadways would continue to decrease, with resulting adverse effects on mobility and traffic safety. The design upgrades for US 290 are not proposed to be implemented by any other planned or programmed projects. For these reasons, the No Build alternative is not the Recommended Alternative.

The primary difference among the proposed US 290 build alternatives is the potential impact from ROW acquisition and the resulting displacement of existing businesses, residences, and other land uses. Alternative 290-D is the Recommended Alternative because it minimizes displacements and property acquisition. Alternative 290-D includes additional general-purpose lanes on US 290 (main lanes and frontage roads), with managed lanes and the AHCT corridor located south of the UP railroad from approximately BW 8 to FM 2920.

Five proposed build alternatives were developed for the Hempstead Road Corridor. Following further analysis of the proposed build alternatives and coordination with HCTRA, alternative HR-E is identified as the Recommended Alternative for the Hempstead Road Corridor. This alternative includes at grade managed lanes, reconstruction of Hempstead Road on either side of the managed lanes, a hike and bike facility, and the AHCT corridor located north of the roadway between BW 8 and IH 610.

Three alternatives were developed for the proposed IH 610 improvements. The Recommended Alternative is 610-C. This alternative minimizes ROW acquisition and would facilitate the various main lane and managed lane traffic movements at the IH 610, US 290, and Hempstead Road interchange. This alternative includes a direct connector from US 290 to IH 10 that bypasses IH 610, thereby reducing weaving of traffic on IH 610 in that area.

The Recommended Alternatives for US 290, Hempstead Road, and the IH 610 areas of the project corridor were presented at public meetings in October 2005, and are evaluated in this DEIS at the same level of detail as the other build alternatives.

### **What will happen next in the process?**

The approved DEIS has been made available to the general public and provided to public agencies. During the comment period, TxDOT will hold a public hearing in the vicinity of the study corridor. The alternatives evaluation and Recommended Alternative will be presented, and comments from the public will be solicited. All comments received during the public hearing comment period will be reviewed. Substantive comments will be considered during continued project development and the preparation of the FEIS. The FEIS will include a summary of and response to substantive comments received from agencies and the general public.

The current schedule anticipates that the FEIS would be completed in late 2007 or early 2008 and would be made available to interested parties for review. Following review of the FEIS, the FHWA may issue a Record of Decision (ROD). The ROD would identify the selected alternative, present the basis for the decision, identify the alternatives considered, specify the "environmentally preferable alternative," and provide information on the adopted means to avoid, minimize, and compensate for environmental impacts.

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