

Densifying Houston: mapping \$2 billion of freeway improvement



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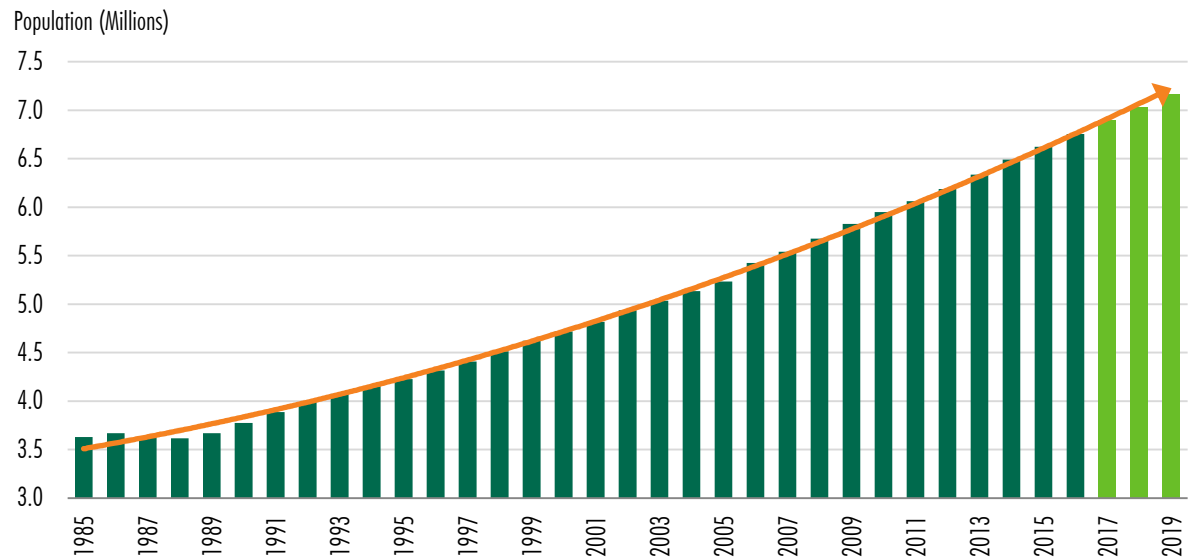
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EXECUTIVE SUMMARY

- Interstate 45 (IH-45) is one of the top 10 most travelled stretches of roadway in Texas. With population surging in Houston, highway improvements are necessary for both current and future traffic flow. For the 150,000 employees working in Downtown Houston, the IH-45 improvement project will eventually ease lengthy commute times by removing the Pierce Elevated and shifting IH-45 to run alongside Interstate 69 (IH-69).
- The Interstate 610 West Loop (IH-610) is the second most used freeway in Texas, particularly at the intersection of IH-610 and IH-69, seven miles west of Downtown. Studies indicate that widening connectors between these two highways will help traffic flow through the heavily trafficked Galleria-area exits. Fully funded construction could begin as soon as fall 2017.
- For the Texas Medical Center, five miles south of Downtown, the Highway 288 project will have a significant impact on growing medical facilities. Medical professionals and patients will have improved access to and around the world's largest medical complex with additional connectors and managed toll lanes.
- While the majority of construction will take place inside the IH-610 Loop, the Hardy Toll Road Downtown Connector and final sections of the Grand Parkway are vital transportation projects that target suburban mobility. This four-lane toll managed development will assist Houstonians who have longer commutes around the city, and will support global supply and logistics operations.

Over the past five years, Houston has added 700,000 residents, which translates to strengthening residential and retail markets but creates exacerbating traffic conditions. Last year, commuters on average spent between 51 – 121 hours stuck in road congestion, according to studies by INRIX and TomTom, respectively. CBRE Research identified five significant transportation projects, totaling approximately \$2 billion worth of investment, which will greatly expand mobility around Houston.

Figure 1. Houston MSA Population Growth



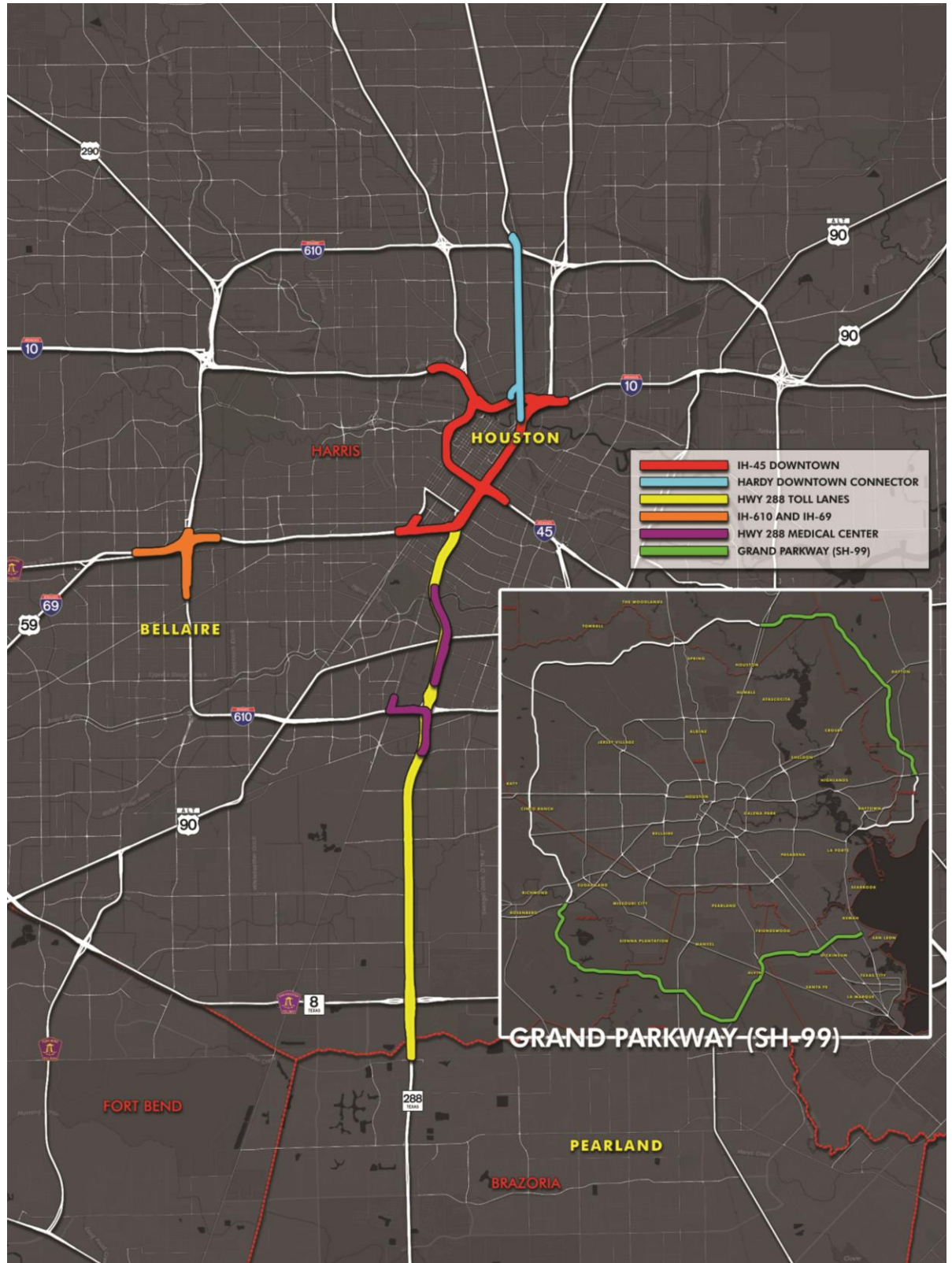
Source: U.S. Census Bureau, 2017.

REDRAWING DOWNTOWN HOUSTON—INTERSTATE 45

Currently, 150,000 employees make their way into Downtown Houston every work week; many face lengthening commute times due to the convergence of the metro’s three most traveled freeways in and around the Central Business District (CBD). The North Houston Highway Improvement project that extends from the Sam Houston Tollway to Downtown will be constructed in three segments. The IH-45 Downtown segment will realign the north/southbound freeway to run parallel with IH-69. Although the IH-45 realignment is still in the planning and approval phases, the estimated cost of this segment is \$1.15 billion (and rising). Construction is expected to begin in late 2021.

The effects of shifting IH-45 to the east side of Downtown will impact commuters and significantly change the surrounding submarkets and neighborhoods. Without the physical barrier of the Pierce Elevated, Midtown will be more connected to the CBD and a proposed elevated green space, much like Klyde Warren Park in Dallas, could connect emerging EaDo with Downtown.

Figure 2. Metro Houston planned freeway improvements



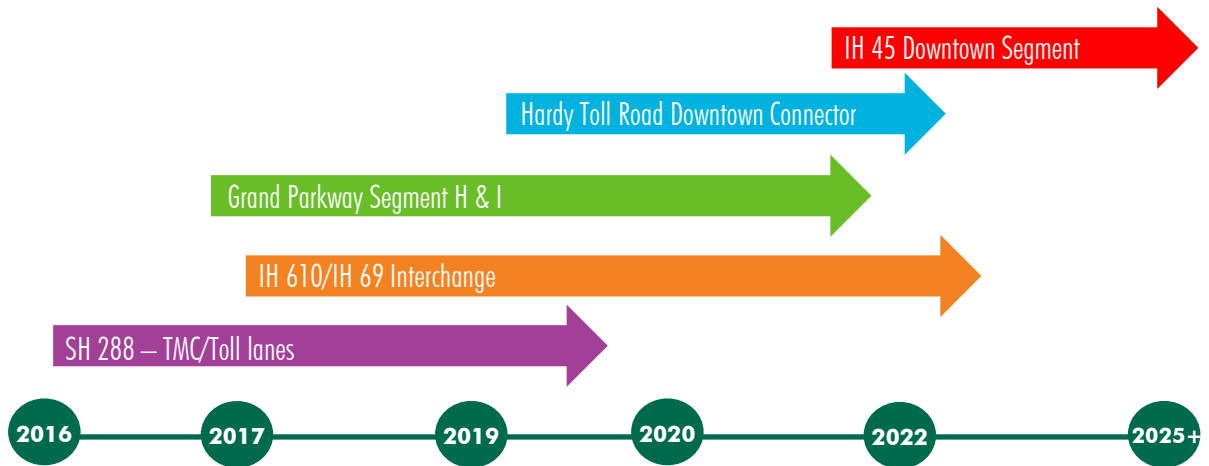
Source: Texas Department of Transportation, Harris County Toll Road Authority, 2017.

DECONGESTING THE WEST LOOP—IH-610/IH-69

For years, the IH-610/IH-69 interchange has been the most congested stretch of freeway in Texas, since IH-69 provides access to Inner Loop communities, Downtown, and the heavily traveled Galleria area. IH-610 encircles central Houston, providing access to Interstate 10, Memorial Park, and the City of Bellaire.

The proposed improvements consist of reconstructing the entire interchange and main lane bridge, and adding a ramp via Westheimer Road to IH-69 southbound. As the city densifies, especially within the boundary of the IH-610 Loop, this intersection will increasingly benefit surrounding retail and the 34 million sq. ft. office market. Improved mobility within the Galleria/Uptown area is considered crucial for the office market to remain relevant for future tenants. The estimated cost of this project is \$310 million, and construction is set to begin in fall 2017.

Figure 3. Transportation Project Timeline



Source: Texas Department of Transportation, Harris County Toll Road Authority, 2017.

IMPROVING TEXAS MEDICAL CENTER (TMC) MOBILITY—HIGHWAY 288

As one of the primary economic drivers in Houston, the Texas Medical Center (TMC) is home to 54 medical and educational institutions and serves 10 million patients annually. Over recent years, the major hospital systems located within the TMC have invested billions in expanded medical and research facilities. As the TMC grows as a business district serving an ever-increasing number of patients, more acute congestion is expected, creating a need for infrastructure expansion.

The impact of this project extends from Brazoria County to Downtown with the main focus of improving access to the TMC. The two-phase project underway includes dedicated connectors from SH 288 into the TMC as well as managed toll lanes from

IH-69 to Brazoria County south of Houston. Construction is slated to be complete mid-2019 with an expected project cost of \$12 million.

MAKING CONNECTIONS—HARDY TOLL ROAD DOWNTOWN CONNECTOR

The Hardy Toll Road begins far north of central Houston near The Woodlands and terminates at North IH-610. The Downtown connector, a 3.6-mile stretch of highway, will have four toll lanes intended to reduce congestion on IH-69, IH-45, and IH-610 freeways. The Downtown Connector will provide commuters with a 25-mile direct link from Downtown Houston north to Bush Intercontinental Airport (IAH) and The Woodlands. This project is estimated to cost over \$400 million and will be completed by the Harris County Toll Road Authority.

GRAND PARKWAY EXPANSION CONTINUES

When completed, the Grand Parkway will form a 180-mile loop encircling the Greater Houston metro—Houston's third concentric loop. In 2016, the northern sections opened connecting Highway 290 to IH-69, providing unprecedented access to fast growing housing and commercial communities in North Houston. The increased mobility is spurring tremendous residential, multifamily and retail development along the new sections of road.

Similar positive results are expected for the sections that are yet to be completed, including the segments on the 37 miles on the northeast side from IH-69 to SH 146 in Baytown. This segment will link far northeast Houston with the Port of Houston; construction is anticipated to begin in late-2017. The proposed 54 miles of southern segments will reach from IH-69 to SH 288 in Sugar Land, east through Brazoria and Fort Bend Counties before finally terminating in Galveston County.

CONCLUSION: HIGHWAY IMPROVEMENTS INVESTMENT IN HOUSTON'S FUTURE

While the construction of Houston's major freeways might be a temporary inconvenience, the improvements are expected to accommodate the projected traffic flows of 2040. The Texas Department of Transportation is aiming to tackle these largest bottlenecks now in order to secure funding for the state's most congested freeways through a program called Texas Clear Lanes. These key infrastructure improvements will pave the way for easier access to industrial warehouse/distribution, commercial retail, multifamily and office building and campus sites. As the city densifies and demographics shift toward an urban lifestyle while expanding in the outlying residential areas, Houstonians will be spending less time on the road and more time in mixed-use developments.

Houston drivers—relief is on the way.

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