

IH 45 (NORTH FWY)

Beltway 8 (Sam Houston Tollway) to IH 610 (North Loop)

Current Conditions

From IH 610 North to Beltway 8 (Sam Houston Tollway), IH 45 is a 9-lane section with four general purpose lanes in each direction and a one-lane reversible High Occupancy Vehicle (HOV) lane in the middle. Traffic on IH 45 loosely follows a traditional inbound/morning and outbound/evening congestion pattern, though both directions experience significant slowdowns during the evening peak period.

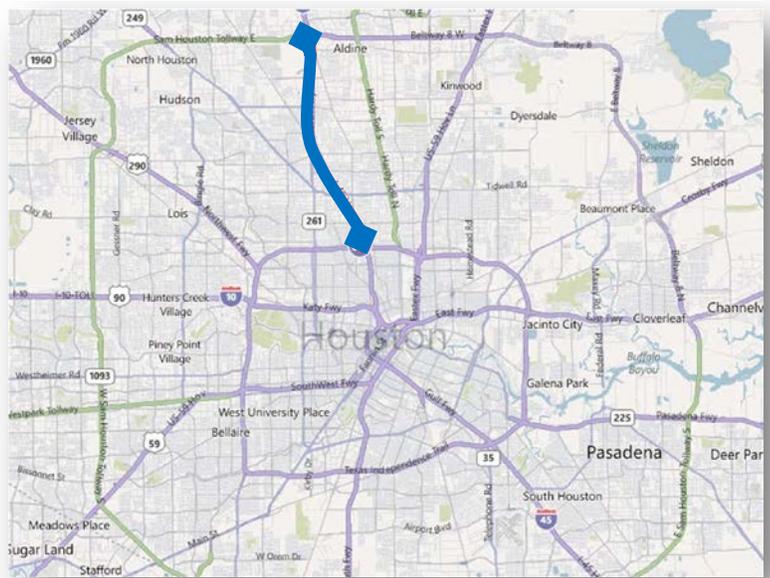
- Segment Length: 9.3 miles.
- Road Type: 9-lane divided freeway.
- Annual Hours of Delay: 4,217,000.
- Texas Congestion Index: 1.65.
- Commuter Stress Index: 1.96.

Intelligent Transportation Systems (ITS) improve freeway operations and increase motorist awareness; ITS infrastructure along this corridor includes:

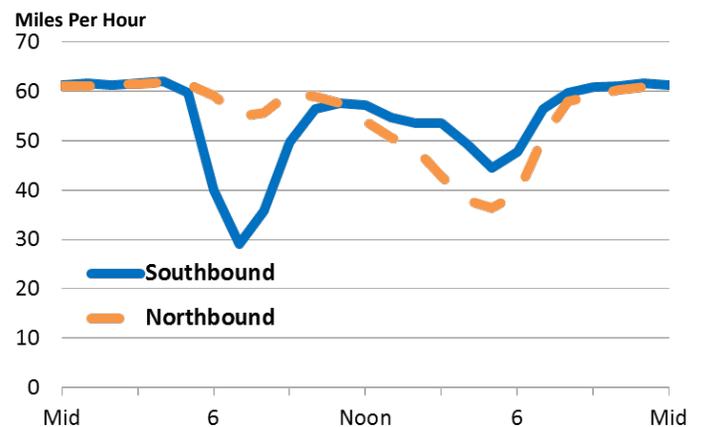
- Travel time monitoring system covering the entire segment.
- 13 CCTV cameras to aid incident management.
- Two radar-based vehicle volume and speed detection locations.
- Four dynamic message signs.
- 17 flow signals.

Possible Congestion Causes

The IH 45 corridor was originally built in 1963. The first HOV lane was a temporary experiment opened in 1979; the success of that lane led to a barrier-separated HOV lane in 1982. This segment of IH 45N serves as a through route for major activity centers including downtown Houston, the Texas Medical Center, University of Houston, Texas Southern University, and the Port of Houston to the south, and, the George Bush Intercontinental Airport, the Woodlands, and the Greenspoint area to the north of the corridor. This freeway segment also serves



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| 2010 Rank: 1 | 2013 Rank: 10 |
| Annual Hrs of Delay/Mile: | 456,000 |
| Congestion Time: | 10 Hours |
| Annual Cost of Delay: | \$90.6 Million |
| Average Daily Traffic: | 235,000 Vehicles |



pass-through traffic for motorists traveling north to/from South Houston and Galveston to/from Dallas. Some causes for congestion in this segment include:

- High travel demand (traffic volumes), which extends beyond typical peak hours.
- Narrow lanes and no inside shoulder reduce the road capacity.

- Older ramp design and absence of frontage roads at and near the interchange of IH 610 North and IH 45.
- Short (¼ to ½ mile) ramp spacing.
- Major interchanges at both ends of the segment.
- Northbound left-hand entry of Shepherd on-ramp and HOV exit ramp to mainlanes combined with right hand exit to Gulf Bank Drive in a short distance causes weaving across all lanes and traffic slowdowns.

Projects in Progress or Completed

Incident Clearance

SAFEClear, the City of Houston’s rapid clearance program, provides quick response and towing of crashed and disabled vehicles, reducing secondary crashes and congestion. More than 60 private contractor tow trucks rapidly respond to all incidents (approximately two-thirds of incidents were detected by the roving tow trucks and 90 percent were detected and cleared within 20 minutes by SAFEClear). However, effectiveness of this program was reduced in summer 2010 when city budget cuts caused a \$50 fee to be instituted for the previously free tows. Average incident clearance time (from tow authorization to clear) increased from 14 minutes in 2010 to 27 minutes in 2011.

TxDOT, METRO, and Harris County operate fewer than a dozen Motorist Assistance Program (MAP) pick-up trucks as a free assistance program to provide minor aid to stranded motorists. It also reduces traffic congestion and improves highway safety.

A heavy tow truck contract allows quick removal of large trucks. There is a policy that does not hold TxDOT liable for damage to products that are removed from the roadway in such an event.

Houston TranStar traffic and emergency management center is the coordination hub for all incident management. Traffic incidents are detected, verified, and the public is notified through its ITS system. Dispatch and response is sent via coordination of the various agencies.

Travel Options

The Houston-Galveston Area Council’s (H-GAC) Commute Solutions program funds, promotes, and provides administrative support to various commute alternative projects. The program provides public education to commuters and employers about available commuting options in the region and on the benefits of using alternative transportation modes. The Commute Solutions program also provides literature and public outreach on carpooling, vanpools, transit, guaranteed ride home, teleworking, alternate work schedules, and parking management.

Shared Commuting

NuRide is an online rideshare marketing program that provides ride matches and rewards users for recording their alternative commute trips (i.e., ridesharing, bus, rail, telecommute, walk, bike, and compressed work week). The H-GAC NuRide program is the nation’s largest ridematching rewards program, with over 17,100 registered riders. Since its inception in June 2005, the program has resulted in 3.32 million fewer car trips, 79.42 million fewer miles driven, and the saving of 3.86 million gallons of gas.

Biking and walking trips account for 4.2 percent of alternative commute trips recorded on NuRide during 2011.

METRO operates the STAR Vanpool program serving more than 700 routes and is ranked as the second largest vanpool program nationally by passenger trips and the third largest vanpool program nationally by passenger miles in the 2011 APTA Fact Book.

Flexitime

Many employers offer flexible work schedules, with around 350 employers participating annually in the Flex in the City Program.



Incentive Driven TDM Programs

Many large companies in the Texas Medical Center, the Energy Corridor, and downtown subsidize all or part of their employees' vanpool or transit commuting costs.

Twenty-five companies are voluntarily participating in the Commute Champion Program enabling H-GAC to document emission reductions related to their commuter benefits. Additionally 38 companies and 17 local governments are participating in the Clean Air Champion Program in which they voluntarily provide information enabling H-GAC to document their proactive efforts to decrease emissions.

Teleworking

Approximately 2.9 percent of the trips recorded by the NuRide program are telecommutes.

Guaranteed Ride Home Programs

The GRH program provides emergency rides home to transit and rideshare users to address one of the main concerns of those who leave their car at home. All registered users of METRO

bus and STAR vanpool riders, registered TREK Express users, and Fort Bend County Transit users have access to three free rides home per calendar year.

Houston Area Transit Service

METRO provides local and express bus service via 97 routes, serving approximately 208,200 average daily boardings (weekday - FY 2012). METRO also operates 32 park-and-ride routes serving approximately 29,200 average daily boardings (weekday - FY2012). METRO operates light rail transit along a 7.5-mile section serving downtown, the Texas Medical Center, and the Reliant Center with 38,100 average daily boardings (weekday - FY2012).

There are also six transit services that have received funding through the Commuter and Transit Services Pilot Program, with a seventh service set to begin in February 2012.

Corridor Transit Service

Along the IH 45 North Corridor, METRO has 12 routes to downtown and one route to Greenway Plaza/Uptown. Combined, these routes carry

approximately 25,583 average daily boarding (weekday – FY2012). Woodlands Express operates four park-and-ride lots, serving passengers from 5:30 a.m. to 9:00 p.m.

The North Red Line light rail project is under construction and scheduled to open in 2014. The project will extend 5.1 miles parallel to North Freeway from downtown to Northline Transit Center north of Crosstimbers. The rail line is ultimately planned to extend to Bush Intercontinental Airport.

HOV/HOT Lanes

The North Freeway HOV lane has been converted to a High Occupancy Toll (HOT) lane by METRO. Single occupant vehicles (SOVs) are allowed to use the HOT lane for a toll during certain periods of the morning and evening peak. In the morning, inbound SOVs can use the HOT lane from 5:00 a.m. to 7:00 a.m. and then from 8:00 a.m. to 11:00 a.m. on weekdays. In the evening, outbound SOVs can use the HOT lane from 1:00 p.m. to 5:00 p.m. and then from 6:00 p.m. to 8:00 p.m. on weekdays. In addition to carpools and vanpools, 11 bus routes use this portion of the HOV lane and carry approximately 22,817 average daily boardings.

Planning Efforts to Date

Bottleneck Removal

Preliminary engineering is being conducted for transportation management improvements in various locations along IH 45. This includes restriping shoulders to add auxiliary lanes and two direct connectors at North Shepherd Drive, bottleneck removal and traffic flow improvement projects between West Road and North Shepherd Drive, and exit ramp relocation at northbound Gulf Bank.

IH 45 Expansion

TxDOT is holding public scoping meetings to conduct the IH 45 North Environmental Impact Statement (EIS) Study for the North Houston Highway Improvement Project (<http://www.ih45northandmore.com/news.aspx>) that involves the evaluation of:

- IH 45 North from the US 59/SH 288 interchange to Beltway 8 North.
- Hardy Toll Road from IH 610 North to Beltway 8 North.
- Portions of the IH 10, US 59, and SH 288 freeways around downtown.

This project is a result of a comprehensive planning study conducted for the North Hardy Corridor that evaluated various transit strategies prior to evaluating the highway component.

Transit options that were identified for this corridor include:

- Light rail transit service from downtown to Crosstimbers (phase I – under construction).
- Light rail transit service from Crosstimbers to George Bush Intercontinental Airport (planned).
- Two-way express bus service along IH 45 in the reconstructed two-way managed lanes (being studied).

The highway component of the IH 45 North improvement project is proposing the reconstruction and capacity increases to the IH 45/IH 610 North Loop interchange. The project also includes the construction of four managed lanes from downtown to north of Beltway 8.

The Hardy Toll Road is being considered for extension southward by the Harris County Toll Road Authority (HCTRA) from its current terminus at IH 610 to downtown. This project will also construct direct connectors to US 59.

Smart Street Improvements are planned, but unfunded, along North Shepherd Drive from Veterans Memorial to IH 610.

Next Steps

Downtown Redesign Planning Study

In addition to several short and long term planned projects described above, three separate multimodal transportation corridor feasibility studies that have the potential to impact operations on IH 45 are planned to be conducted in 2019. These study limits are:

- IH 45 North from US 59 to Beltway 8 North.
- SH 288 from US 59 to CR 60 in Angleton.
- US 59 South from Spur 527 to IH 45 including the interchange of SH 288.

It is recommended that these three studies be combined into one comprehensive study. The scope of the study should include all freeway routes within Loop IH 610. This comprehensive study should be started as soon as possible.

Phase 1 of this proposed comprehensive study has been included under the currently-underway IH 45 EIS study. The results of the Phase 1 effort will identify origin-destination patterns for the downtown freeways within the IH 610 Loop which will be used to develop solutions and alternatives to mitigate congestion along multiple freeway corridors.

Support for Aggressive Incident Management

The Motorist Assistance Program has operated a few vehicles to assist with minor repairs and stalled vehicles for 20 years. SAFEClear, the City of Houston's rapid clearance program that implemented performance driven tow services (tow trucks have to reach incident site in six minutes), has been very successful since 2005 in reducing incident clearance times and improving safety. Crash reductions of between 10 percent and 15 percent were reported for the first four years of the program. Recent funding cuts have mandated that motorists have to pay for the tow, and the tows have been made optional. The number of tows has, therefore, been reduced by 60 percent to 70 percent. Dedicated funding resources or a different operating strategy should be found for programs such as SAFEClear to advance incident management strategies.

Regional stakeholders are in the process of exploring new and different funding sources and operating strategies for a region-wide incident management program.

Extension of the Hardy Toll Road

The Hardy Toll Road extension will provide a direct link to downtown for the current Hardy

Toll Road and is expected to reduce congestion on IH 45. The project will be completed in two phases. Phase I will relocate the Houston Belt and Terminal rail lines and construct overpasses at Quitman and Collingsworth. Rail line relocation is underway and expected to be complete in 2014. Phase II of the project will construct toll lanes. The project implementation schedule should be monitored, and if HCTRA's plans change, there may be a need for additional actions.

Feasibility Study for Implementation of Active Traffic Management Strategies

Improving the operation of the existing freeway allows the greatest return on the roadway investment. A study should be conducted to identify freeway locations that can benefit from operational treatments such as dynamic rerouting, dynamic traveler information, and variable speed limits.

Evaluation of Travel Option Strategies

A feasibility study to examine potential benefits and implementation strategies for travel options in the corridor should be conducted. These strategies include, but are not limited to, flex-time, carpooling, and employer sponsored vanpooling, transit, and parking incentives.

Mobility Improvements to Significant Parallel Streets

This early action feasibility study would identify mobility improvements along major streets in the IH 45 corridor in order to create viable alternate routes. These mobility improvements would include capacity increases (where possible) and operational treatments including active traffic management strategies such as signal re-timing, dynamic rerouting using improved surface streets, and traveler information.

The IH 45 EIS study is expected to identify potential strategies for mobility improvements along parallel routes.