Regional Commuter Rail Feasibility Study

Summary Report

February 2015

An Assessment of ROW, Track Alignment and CBD Access

Prepared by

Kimley-Horn

TranSystems

QUADRANT CONSULTANTS, INC.
Introduction

The Houston Region is approaching capacity constrained operating conditions on much of the area’s freeway and toll road system during peak travel periods. With continued growth in population and freight rail activity, the Gulf Coast Rail District (GCRD) has initiated further review of long distance commuter rail options in the Houston region.

Previous studies of Houston commuter rail focused on use of the existing freight rail network. Given the region’s strong growth, the Class I railroads indicated that moving freight through the existing freight rail network precludes any further consideration of adding passenger trains on the same tracks.

A 2013 workshop hosted by GCRD and facilitated by the Texas Transportation Institute evaluated the options for commuter rail. This effort involved a cross-section of planning and engineering staff from a number of local agencies and municipalities. The conclusion of the workshop was that the most promising alternative was to examine the feasibility of creating new rail infrastructure on new right-of-way adjacent to the existing freight rail network. This Feasibility Study was performed to specifically address this conclusion from the workshop.

Corridors

Three freight rail corridors that had been studied previously were selected for further review.

- **US290/Hempstead**  
  (UPRR Eureka Subdivision)

- **Westpark**  
  (abandoned UPRR Bellaire Subdivision)

- **US90A**  
  (UPRR Glidden Subdivision)

This study assumes that new track and ROW would be dedicated to heavy rail transit service, likely Federal Railroad Administration (FRA) compliant passenger trains. Planning and designing for these heavy commuter rail trains will allow this new passenger rail network to also serve conventional Amtrak trains and certain classes of higher-speed intercity trains.

The GCRD has separately analyzed alternative routes for long-distance commuter rail trains to access Downtown from the northwest. Moving trains through the most densely developed sections of the City near Downtown poses significant challenges that will be expensive to address. This study concluded that it is feasible to connect to the Downtown CBD. Long distance routes could also terminate near other regional activity centers such as the Texas Medical Center or Uptown/Galleria as a first phase of development.
Hempstead Corridor

This study determined that it is feasible to create a commuter rail line in new ROW beside the Union Pacific Railroad (UPRR) Eureka Subdivision along US 290 and Hempstead Highway. Construction of the almost 46 miles of commuter rail track on new ROW in this corridor is estimated to cost approximately $1.7 billion.

The Hempstead corridor extends along US 290 from IH-610 through the cities of Jersey Village, Waller, Prairie View, and Hempstead. An eastern terminus is assumed to be near the Northwest Mall and IH-610.

TxDOT’s project to expand US 290 identified 50’ of ROW for High Capacity Transit (HCT). This ROW was included in the US 290 Environmental Impact Statement (EIS) and served as the basis for the GCRD feasibility analysis. HCT ROW identified in the EIS is located on the north side of the freight rail tracks between IH-610 and Beltway 8, and on the south side of the freight rail tracks between Beltway 8 and Grand Parkway. Beyond TxDOT project limits, through west Harris County and Waller County, the south side of the existing freight rail tracks was deemed to be the most feasible for commuter rail.

- Hempstead corridor commuter rail line can be built at-grade. Avoiding extensive elevated structures makes this corridor less complicated and less expensive to construct per mile than other routes studied.

- TxDOT has initiated study of this rail corridor for intercity rail service to Austin. The corridor has also been identified as a potential route for the privately-funded High Speed Rail (HSR) connection to Dallas.

- Commuter rail could operate below elevated HSR tracks in a stacked configuration.

HEMPSTEAD
Baseline Cost $1,680,600,000
Length 45.56 Miles
Westpark Corridor

This study determined that it is feasible to create a commuter rail facility within the undeveloped portion of the former railroad ROW along the Westpark corridor. Construction of the almost 27 miles of commuter rail track in this corridor is estimated to cost approximately $1.5 billion.

The Westpark corridor ROW extends from the southern edge of the Uptown/Galleria District, to the City of Fulshear.

This corridor includes 100’ of ROW that METRO purchased from Southern Pacific Railroad (SPRR). METRO sold 50’ of the right of way to Harris County for construction of the Westpark Tollway. METRO retains control of the remaining 50 foot right of way that is within Harris County. METRO is in the process of selling the segment which extends into Fort Bend County to the Fort Bend County Toll Road Authority (FBCTRA).

Commuter rail could operate at-grade within most of the Harris County portion of the Westpark corridor. There are options for how the commuter rail track could be constructed west of the Grand Parkway depending on final design of the FBCTRA project. This Fort Bend portion of the Westpark corridor could be either a double-track or single-track configuration, and it could involve either an aerial or at-grade alignment.

- Preliminary plans by the FBCTRA show 26’ available for rail. Final design of the Westpark Tollway extension will determine whether a double track commuter rail facility must be on aerial structure through Fort Bend County.
- With zero freight rail operations in the corridor there are no potential conflicts.
- Environmental issues associated with construction in public ROW are limited.
- The Westpark commuter rail line would serve the Westchase and Uptown/Galleria activity centers.
- An eastern terminus is possible at either the planned Bellaire/Uptown Transit Center or the Hillcroft Transit Center.
This study determined it is feasible to build a commuter rail facility line within new ROW adjacent to the UPRR freight rail line located along US 90A. Construction of the 44 miles of commuter rail track in this corridor is estimated to cost approximately $2.25 billion.

The US 90A corridor extends from the Texas Medical Center area to the western Fort Bend County line and passes through Missouri City, Stafford, Sugar Land, Richmond, and Rosenberg.

A majority of the proposed route follows the UPRR Glidden Subdivision on the north side of the existing freight rail tracks. On the eastern end, the proposed commuter rail line follows the freight rail east along Holmes Road and turns north to run between Almeda Road and the freight line to a proposed terminus near the Texas Medical Center and NRG Park. Future study must determine the exact location of a terminal station in the Texas Medical Center/NRG Stadium area.

- The US 90A corridor includes several segments that will require elevated structure, including crossing over US 90A, UPRR freight rail tracks, several local thoroughfares and freight rail spurs. Some residential properties along US 90A will also be impacted.
- In Rosenberg, portions of the alignment are elevated to cross above the 1st Street overpass, as well as the junction of the BNSF, UPRR and KCS freight rail lines.
- The Sugar Land section has an aerial segment that crosses over the access roadways to the NALCO industrial complex, then descending to pass under SH 6.
- Any commuter rail line must cross the Brazos River on a major new bridge structure.
- Passage at-grade near the end of the Sugar Land Airport runway clear zone must obtain FAA concurrence.
Downtown Access

This study also evaluated possible routes into Downtown Houston from the north via the BNSF Houston Subdivision that approaches Houston following SH 249 outside Beltway 8, then inside the Beltway turns to run east following W. 34th Street. Alternative routes were studied that entered Downtown from the west. Previous studies by the Houston-Galveston Area Council (H-GAC) focused on possible routes into Downtown from the northwest along the UPRR Eureka Subdivision (US 290/Hempstead Highway) and the southeast along the UPRR Galveston Subdivision (SH 3).

This Commuter Rail Feasibility Study performed a high level assessment of eight possible routes. From the original eight routes, three most promising routes were further refined with conceptual layouts and cost estimates. The study found that the three most promising routes for new track where passenger trains can approach the Downtown Amtrak Station without impeding existing freight rail operations are all feasible.
Freight Network Improvements

In all options studied, the final approach to Downtown would require commuter rail trains to travel along the freight rail segment called the Passenger Main. These freight tracks served the original passenger terminal for Houston and continue to be used for freight rail operations. Freight rail capacity improvements may be required to shift freight activity from the Passenger Main to the Freight Main along Winter Street.

The capacity improvements considered as part of the implementation of commuter rail to Downtown are:

- Construct double track from Studemont to Tower 26 east of IH 45.
- Grading for a triple track along the segment.
- Approximately $71 million of capital improvements (ROW and track) would be necessary over a length of 2.7 miles.
- Capital cost estimates for all three potential commuter rail routes from the BNSF Houston Subdivision to the Amtrak station include the cost of Freight Main capacity improvements.

**FREIGHT MAIN**

Baseline Cost
$70,900,000
Length
2.70 Miles
Route #1 HCTRA

It is feasible to build double-track commuter rail on new ROW that accesses Downtown from the north following the proposed Hardy Toll Road extension. The estimated capital cost to buy ROW and construct the dedicated track and structures is approximately $559 million.

Assuming access from the BNSF Houston Subdivision near Antoine and W. 43rd Street, commuter trains would travel the following route.

- Eastbound, the route follows along the south side of the BNSF freight rail corridor near W. 34th Street. Commuter rail would turn south along the west side of the future HCTRA Hardy Toll Road Extension ROW.
- The northern approach to Downtown reaches the Amtrak station by connecting to the northeast end of the UPRR Passenger Main through Downtown.

Unique characteristics of this HCTRA Route #1 option include:

- Most of this alignment has track at-grade.
- This route is longest in length but lowest in cost.
- There are single family residences that will be impacted along this route.
- The CenterPoint power line ROW that follows W. 34th Street would run between the freight rail and new commuter rail ROW. New at-grade roadway crossings would be required for this option.
Route #7 Terminal

It is feasible to build double-track commuter rail on new ROW that accesses Downtown from the west alongside the UPRR Terminal Subdivision. The estimated capital cost is approximately $785 million.

Assuming access from the BNSF Houston Subdivision near Antoine and W 43rd Street, commuter trains would travel the following route.

- Outside of IH 610, the route travels south along the east side of Mangum Road and Post Oak Road.
- Inside of IH 610, the UPRR freight tracks would be relocated north onto new ROW adjacent to the existing tracks. The existing tracks could then serve commuter rail trains.
- The commuter rail route travels east into Downtown by running on the south side of the relocated UPRR Terminal freight rail line until it reaches the UPRR Passenger Main near Studemont for its final approach to the Amtrak Station site.

Unique characteristics of the Route #7 Terminal option are as follows:

- Elevated structures may be required along Mangum Road.
- Tracks would be primarily at-grade between Post Oak Road and Downtown for Amtrak station, with several elevated structures to cross over the freight tracks and I-10.
- Passes near the METRO Northwest Transit Center where transit connections are possible.
It is feasible to build a double-track commuter rail line elevated along IH-10 from IH-610 to Houston Avenue. The estimated capital cost for this option is approximately $930 million.

Assuming access from the BNSF Houston Subdivision near Antoine and 43rd Street, commuter trains would travel the following route.

- Route #7A is identical to the Route #7 Terminal outside of IH-610.
- Inside IH-610, the route turns to run along the center of IH-10 east to Houston Avenue on an elevated structure.
- Leaving IH-10, the elevated track turns south along the east side of Houston Avenue to reach the Passenger Main.

Unique characteristics of Route #7A-IH 10 are as follows.

- Elevated structures would be necessary over much of the route.
- Alignment along the center of IH-10 is difficult to construct; however, it would impose the least impact on residences along the corridor, and would minimize freight rail operational impacts.
- This route has the shortest length but the highest cost.
Conclusions

Creation of long distance commuter rail service that connects into the heart of Houston and Harris County from the surrounding counties of Waller and Fort Bend is feasible in new ROW adjacent to existing freight rail. This type of heavy passenger train would be new to the Houston-Galveston region, and the lines would serve the long distance commuter trips that occur during the peak morning and evening drive times when traffic congestion is at its worst. The new commuter rail lines can be built and operated with minimal impact on existing freight rail operations. Access to the Downtown Amtrak station could have significant ROW impacts and more detailed study should be performed to identify opportunities to minimize impacts. A Downtown connection will create a connected network that will foster the highest ridership.