



Alternatives to NHHIP in Houston

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INTRODUCTION

TxDOT has proposed the North Houston Highway Improvement Project (NHHIP) in the effort to alleviate traffic congestion. The major improvements include: two managed lanes (i.e., HOV) in both directions and reroute in Downtown Houston. Details about this plan are available online in youtube entitled “Houston North Freeway Improvement Project”. The project will take about 7 years to build upon approval and cost \$7-10 billions.

H-GAC has identified I45 as the only hurricane evacuation route to the north for millions residents spreading from Houston to Galveston. The reroute of NHHIP will be located under the grade at George R Brown Center along with I69 and jeopardize its evacuation function. Due to widening and reroute, the project will displace schools, churches, residents and businesses. The main improvement seems to be the two managed lanes through which METRO can provide Bus Rapid Transit (BRT) between Houston International Airport (IAH) and Downtown. Is there any alternative to the proposed plan? With this question in mind, the author has toured the area and proposed two potential alternatives for consideration.

ALTERNATIVE 1: USING HARDY TOLL ROAD

Hardy Toll Road extends currently from I610 North Loop to Spring with a branch dedicated to IAH. Extension from I610 North Loop to Downtown is underway and expected to complete in three years. Since this toll road is underused, one lane in each direction could be dedicated for Bus Rapid Transit (BRT) between IAH and Downtown. The cost to make Hardy Toll Road ready for BRT and connections to new transit centers is well below \$1 billion.

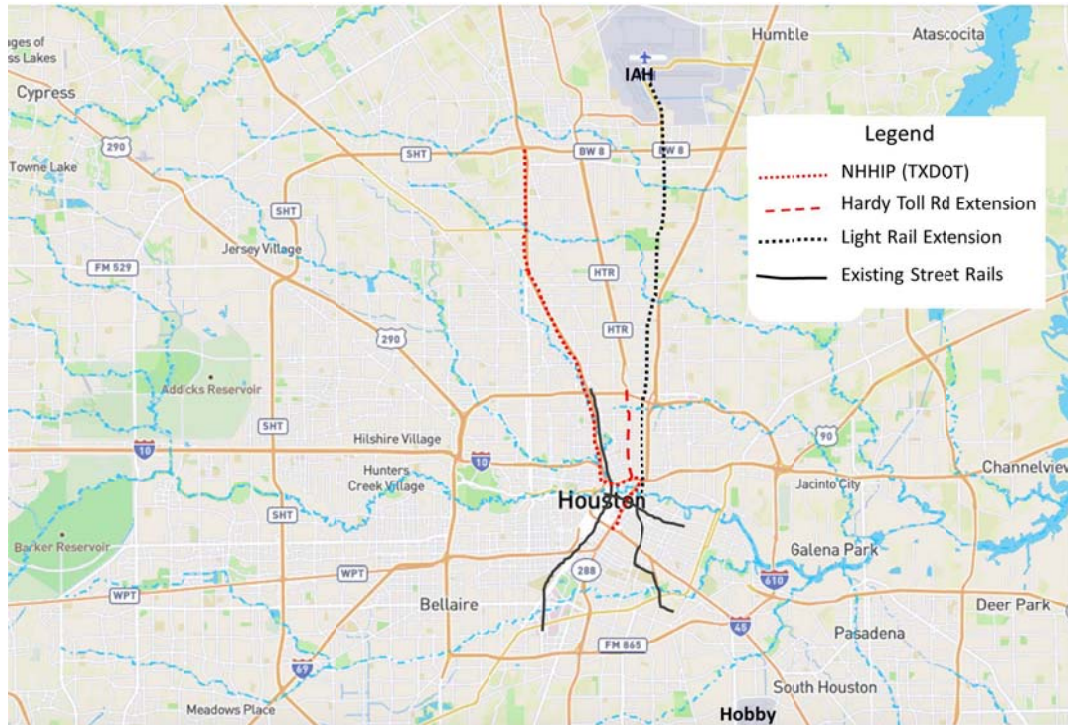
ALTERNATIVE 2: LIGHT-RAIL ALONG JFK BLVD, BENTLEY ST AND JENSEN DR.

This alternative uses JFK Blvd., Bentley St and Jensen Dr to establish light rail tracks between IAH and Downtown. To reduce the impact to residents and normal traffic at the street level, the tracks could be built under the streets. This option offers safe and frequent light rail services, attractive to both the commuters from the north and travelers through IAH. Many commuters can park their cars at readily available parking lots around the airport and take the light rail to Downtown. In addition, travellers from south of I10 may come to Downtown and take the light rail to IAH once the express transit services to Downtown are established according to MetroNext.



COMPARISON

Figure 1 shows NHHIP route and two alternative routes. Detailed comparison is listed in Table 1.



(Courtesy of Houston Parks Board for Background Map)

Table 1 Comparison among Three Routes for IAH-Downtown Transit

Route	Hardy Toll Road (Bus Rapid Transit)	JFK-Bentley-Jensen (Light Rail Transit)	NHHIP (I45 & Reroute) (Bus Rapid Transit)
Pathway	Dedicated lanes	Dedicated tracks	Managed lanes(shared)
Length (mile)	17	15	20
Cost (in billions)	<\$1	~\$2	\$7-10
Time to Build	3 years	<5 years	7 years
Social Impact	Minor	Minor	Displace local schools, business, residents, etc
Environmental Impact	Minor when electric vehicles are used	None	Major with more air pollution
Economical Impact (neglect CAPEX)	Break even with autonomous vehicles	Could make a million dollars per year	Could lose a million dollars per year
Accessibility	Difficult	Easy with more stops	Difficult



The NHHIP route will have the longest distance and take much more time to build. Despite the \$7 billions cost or more, the NHHIP will not be ready for the World Cup in 2026 and the managed lanes do not reach the IAH neither. On the other hand, both alternatives will save at least \$5 billions, have minimum impacts to local residents and businesses, and will be ready for the 2026 World Cup. The Hardy Toll Road alternative is the quickest and easiest way to establish the IAH-Downtown public transit.

The light rail option could go mostly under the streets and offer more stops with easy access. It will connect Tidwell Transit Center and perhaps a couple of new transit centers (e.g., one at Beltway 8, one at 610 North Loop). It will revitalize the surrounding areas with business (e.g., hotels, restaurants) and apartment complex. Based on the success in other populated cities (e.g., Skytrain in Vancouver BC), the light rail option is the most environmentally friendly and effective way to alleviate traffic congestion. When built under the grade, it can also divert water and mitigate flood in the area during extreme weather.

SUMMARY

To slow down the climate change, reduce the air pollution and alleviate traffic congestion, high-capacity public transit is the only way out for the Greater Houston region. Residents in the region and visitors need a high-capacity transit option between Houston international airport and Downtown. Among the three options discussed, the BRT along Hardy Toll Road route can establish the IAH-Downtown transit with minimum cost and time, while LRT along the JFK-Bentley-Jensen route is the most environmentally friendly and safest way to alleviate Houston traffic congestion along the North Freeway. Both alternatives have shown tremendous advantages over the NHHIP and should be taken into consideration. Between these two, the light rail option will attract more ridership with easier access and stations connecting to existing and future transit centers of Metro. It will revitalize the surrounding area at an affordable price.

RECOMMENDATION

H-GAC has approved the \$100 millions in preliminary funding to secure \$1.2 billions TxDOT funds. When the funds are made available for the mobility in the region, they could be used to upgrade the existing I45 to the highest safety standard as possible, including flood resilience that keeps the I45 open all times. The funds could also go to improving flood resilience of I10 that was flooded repeatedly in recent years. If possible, these funds could help IAH-Downtown light rail track that is a truly game-changer for the Greater Houston Region, especially when the flood mitigation function during extreme weather is incorporated.