



MEMO

To: Loyd Smith, PE
Assistant County Engineer
Harris County Engineering Department (HCED)

From: Geoff Carleton, AICP
Sr. Principal, Traffic Engineers, Inc.

CC: Brannan Hicks, PE – HCED Tina Liu, PE – HCED
Kelsey Walker, TEI

Date: November 5, 2020

Re: Review of TxDOT Responses to HCED DEIS Comments

This memo summarizes TEI's review of the responses provided by TxDOT to the comments submitted by the Harris County Engineering Department (HCED) on the Draft Environmental Impact statement (DEIS) for the North Houston Highway Improvement Project (NHHIP). TxDOT's comment responses were documented in a table in the *Final Environmental Impact Statement for North Houston Highway Improvement Project, Houston District: Volume III (FEIS)* from August 2020. Comments provided on the DEIS Technical Reports were also reviewed; typically, these comments were similar to comments on the DEIS and have been consolidated in the review.

The goal of this review is to determine whether TxDOT's FEIS adequately addresses HCED's comments on the DEIS and fully document the impacts of the proposed highway project and any proposed mitigation. Potential HCED (or County) requests for commitments from TxDOT related to the responses and possible mitigation are summarized at the end of this memo.

Approach

For each comment HCED submitted to TxDOT, TEI reviewed TxDOT's response to determine if the comment was adequately resolved. Comment responses were then placed in one of three buckets:

- Resolved: Responses provide adequate information to support HCED or note that the comment was informational with no action requested.
- Partially Resolved: Responses address some part of the comment but do not fully address other parts.
- Not Resolved: Responses do not adequately address the comment or do not provide sufficient detail to enable an acceptable determination of project impacts. In a few cases, the responses in the FEIS appear to misunderstand the intent or the exact location referred to in the comment.

A summary table of HCED comments, TxDOT responses, TEI's assessments of the responses, and any other findings related to the comment are included with this memo in **Attachment A**.

Findings

- **Resolved comments:** This category includes TxDOT commitments to match requested turnout widths for roadways on the Harris County Road Log that will intersect the proposed project frontage roads. It also includes a commitment to not impact American Statemen Park.
- **Partially Resolved Comments**
 - **Blue Bell Road:** TxDOT commits to building a highway overpass and diamond interchange at Blue Bell Road, providing four lanes for Blue Bell Road under IH 45. TxDOT does not commit to building a left turn lane on the Blue Bell approaches at this interchange, and asserts that this would require ROW acquisition outside of the scope of the project. Left turn lanes on Blue Bell will likely be required for this intersection to operate effectively, and their omission leaves operational issues for HCED to address as part of a future project.
 - **Harris County Property on Nance Street:** TxDOT commits to coordination with Harris County on the project design near 2202 Nance Street to minimize impacts from the proposed drainage pump station on Harris County Property. Project schematics still show a detention basin so future designs will need to be monitored to minimize impacts and secure mitigation.
 - **Existing Trail under US 59 on the east side of Downtown:** TxDOT states the trail will be maintained (with some impacts during construction). The proposed alignment is not shown on TxDOT's schematics so it is unclear how this will be accomplished, especially given that the new street configuration and ramps in the northeast part of Downtown will disrupt the existing trail alignment. The proposed trail alignment should be clarified and confirmed.
- **Not Resolved:** The key comments that remain unresolved are related to traffic operations and connectivity of the highway ramps and local streets in the north and northeast parts of Downtown. These ramps and streets (included in Segment 3 of the NHHIP project) provide access to a significant number of Harris County buildings in the Downtown area, including the County Courthouse/Criminal Justice Complex on the north side of Downtown which serves people from across Harris County.

- The FEIS provides minimal data on the operations and safety impacts of traffic changes to local streets and ramp configurations. Requesting more detailed traffic analysis is recommended to understand the full environmental, traffic, safety, and accessibility impacts caused by the highway project on local streets. The lack of detailed traffic analysis makes assessing the full impact of the proposed changes to local street circulation impossible and does not seem to be in the spirit of the EIS process. The traffic modeling approach is poorly documented in the FEIS and does not appear to follow best practices recommended in NEPA guidance on traffic modeling and documentation of approach and results. A review of the NHHIP FEIS's adherence to NEPA guidance is included in **Attachment B**.
- TxDOT's responses note several times (Comment 551 and others) that "TxDOT is coordinating and will continue to coordinate with the City of Houston regarding local street connections." Follow up requests with the City of Houston indicate they have not received any more detailed information about proposed local street operations.
- The FEIS comment responses noted that a Vissim model was developed (Comment 175) but no supporting data was provided. Results of this modeling in north and northeast Downtown would be beneficial to understanding project impacts on access to Harris County facilities.
 - Comment responses state that "TxDOT is coordinating and will continue to coordinate with the City of Houston to accommodate the City's future expansion of San Jacinto Street." (Comment 551). While this is a directionally positive statement, the most current FEIS schematics (December 2019) do not show San Jacinto extending to connect to or across the highway frontage roads on the north side of Downtown. Today, San Jacinto acts as a major connection between the I-10 East Freeway and Downtown; the street connects directly to and from ramps in both directions. The City of Houston's Major Thoroughfare & Freeway Plan also includes a proposed extension of San Jacinto Street/Jackson Street to Fulton Street in the Near Northside.
 - The NHHIP project would move the highway alignment further north – where it no longer intersects with the existing terminus of San Jacinto Street – and the schematics do not show San Jacinto being extended to meet the new freeway. The only existing street extending to the freeway from the current terminus of San Jacinto in this area would Walnut Street. There is a street labeled Naylor

Street in the NHHIP schematic but according to Harris County Appraisal District the alignment appears to be entirely on private right of way. Both Walnut Street and the segment labeled Naylor Street are narrow alley-like corridors that primarily function as driveways to local buildings.

- The schematics show both Walnut street and Naylor connecting only to the eastbound frontage road, whereas San Jacinto currently extends across the highway to the westbound frontage road (Providence Street) and beyond. While it would be possible to extend San Jacinto to meet both frontage roads (crossing the proposed highway), this does not seem to be included in the project design or budget, nor does it show how this would work with a proposed San Jacinto underpass connection to the northside. This extension would also likely require acquisition of right-of-way that does not appear to have been documented in the FEIS. Extending San Jacinto to the westbound frontage road and also to the Near Northside should be considered as part of the design and implementation of Segment 3.

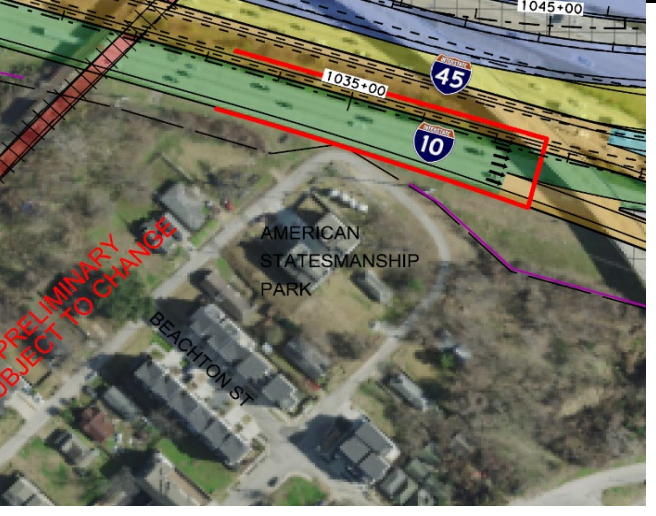
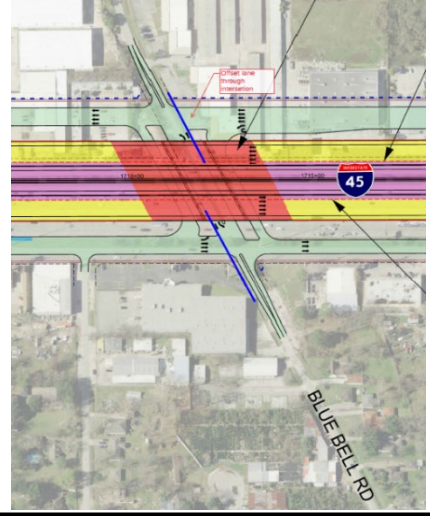

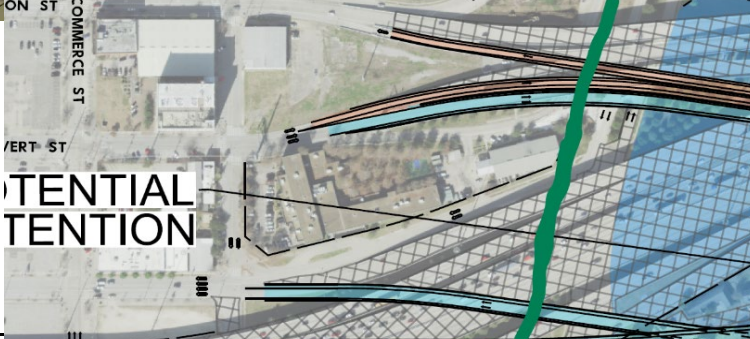

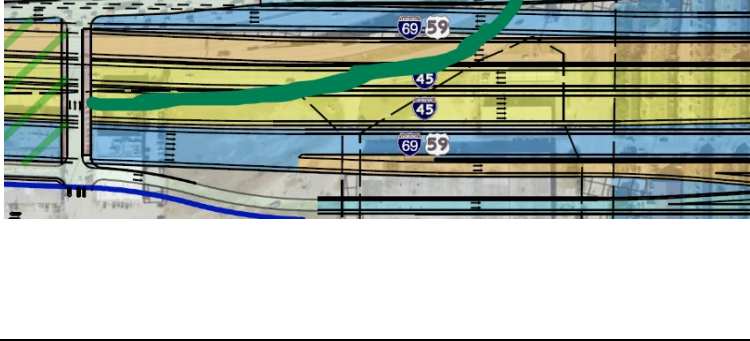
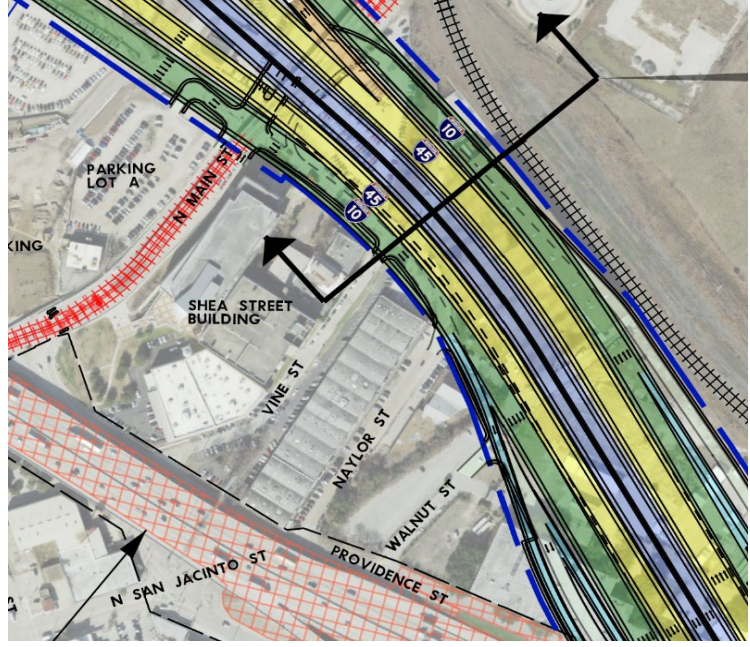

Potential Commitment Requests

Below are several potential requests for commitments that Harris County could make to TxDOT prior to the issuance of a Record of Decision (ROD):

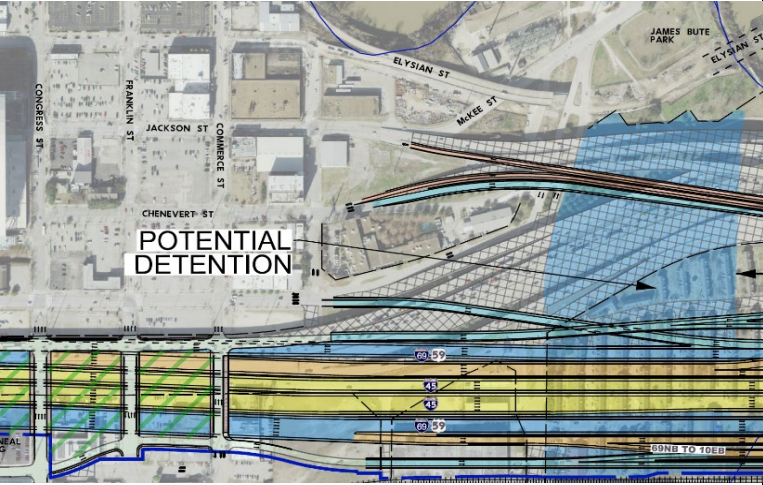
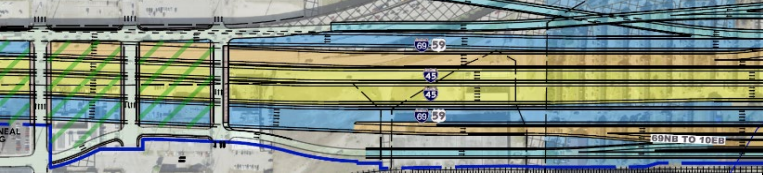
- Bring the roadway in front of American Statement Park to standard if impacted by adjacent freeway construction.
- Construct the Blue Bell Road approaches to the IH 45 frontage roads with left turn lanes, including required ROW acquisition and traffic signal installation.
- Confirm alignment for maintaining the existing trail underneath US 59 on the east side of Downtown and commit to making that connection in the future design.
- Provide more detailed analysis that substantiates the statements made in the FEIS about traffic flow, impacts on local traffic, and safety. This should include Vissim modeling results for existing and proposed conditions in the north and northeast parts of downtown where access to Harris County facilities will be impacted. If significant impacts are shown through review of the modeling TxDOT should commit to defining an approach to mitigate these impacts.
- Provide more detailed documentation of the assumptions, decisions on approach, and outcomes of the traffic modeling done for the project as outlined in Attachment B comparing the FEIS to NEPA Traffic Modeling Guidance.

- Construct local streets, including San Jacinto Street, north of Downtown, that will be required to be reconstructed or extended due to realignment of the highway. At minimum, San Jacinto should be extended to meet the westbound highway frontage road. The commitments should also include the acquisition of any necessary right-of-way to extend San Jacinto to, or beyond, the westbound frontage road.
 - Given the negative impacts that the freeway realignment's new elevated structures and disconnected local street network will have on the Near Northside neighborhood, an additional commitment request could be for TxDOT to construct the extension of San Jacinto Street across the highway and under the Freight Main segment of the Terminal Subdivision. This would connect San Jacinto to Fulton Street at Burnett Street, as shown in the City of Houston Major Throughfare and Freeway Plan. This would provide a high-quality, grade-separated connection to most of the Harris County facilities on the north side of Downtown. Constructing the extension as a part of NHHIP will reduce mobilization and construction impacts. It will likely be much easier to mobilize and construct the proposed San Jacinto underpass as a phase while the adjacent highway is also being constructed, rather than trying to construct it in the future when there will be an active highway elevated overhead.

Attachment A - Review of TxDOT responses to Harris County Engineering Department comment to the DEIS for the NHHIP

Comment Number	Commenter Name	Date Received	Source	Comment Topic	TxDOT Response	Status	Design Changes/Notes	Images	Images
551	Harris County Engineering Department	7/27/2017	Email	1. Impacts to Harris County Roads. In Segment One, Harris County maintains the following roadways on the west side of I 45 intersecting the southbound I 45 frontage road: West Gillespie Road Winding Bayou Trace Greens Landing Drive West Road Blue Bell Road	Comment noted.	Resolved	Informational: No change requested		
551	Harris County Engineering Department	7/27/2017	Email	1. Impacts to Harris County Roads At West Gillespie Road, we request that the concrete pavement turnout be designed to accommodate the greater of either the existing roadway width or the ultimate street width of 41 feet.	Concur. The pavement widths are adjusted on the final schematic	Resolved	Design to be updated to match Harris County request		
551	Harris County Engineering Department	7/27/2017	Email	1. Impacts to Harris County Roads The turnouts at Winding Bayou, Greens Landing and West should match the existing roadway widths.	Concur. The pavement widths will be adjusted on the final schematic.	Resolved	Design to be updated to match Harris County request		
551	Harris County Engineering Department	7/27/2017	Email	2. Direct Impacts to Harris County Owned Property We have identified two Harris County tracts that are immediately adjacent to the proposed improvements, both located in Segment Three. American Statesmanship Park is located along the western ROW line of the I 10 / I 45 interchange. The schematic drawings show a relatively small ROW acquisition that certainly affects Bingham Street, the public street providing access to the site. It is not clear whether ROW acquisition will also include a portion of the adjacent Harris County park tract. In either case, we request that TxDOT take additional steps to coordinate with Harris County Precinct Two during the environmental clearance process and during the design and construction phases. Steps to mitigate impacts to the park site may be required.	The Preferred Alternative would not impact the American Statesmanship Park tract. In the responses to Technical report comments TxDOT added: No right-of-way is proposed to be acquired from the American Statesmanship Park tract. The December 2019 Draft Community Impacts Assessment Technical Report and 2019 design schematics mistakenly showed an aesthetic wall in a location that would block the view of the park and is not proposed. This was preliminarily shown to meet criteria for inclusion in the project, TxDOT recognized that it would impact the view of the park and is not proposed. This will be revised in the final technical report and the schematics. TxDOT is continuing to develop and design this project and will continue to coordinate with Harris County during design and construction.	Resolved	Comment notes American Statesman Park is not impacted. It does not reference Bingham Street. From a review of the schematic, Bingham appears to remain in place. Some impact to Bingham Street seems likely through construction phase due to proximity of proposed retaining wall for the freeway. It is currently a 12' asphalt roadway.		
551	Harris County Engineering Department	7/27/2017	Email	1. Impacts to Harris County Roads In coordination with the City of Houston, in 2016 Blue Bell Road was designated as a collector street on the Houston Major Thoroughfare and Freeway Plan. We are pleased to see a proposed I 45 overpass with a diamond intersection and U turns. These improvements will reduce congestion at adjacent major thoroughfare intersections with I 45 and will provide valuable cross access to the neighborhoods east and west of I 45. However, the schematic at Blue Bell Road shows only one eastbound lane and one westbound lane passing under the I 45 bridge, without a dedicated left turn lane in either direction. This design is typical at rural underpasses with low volumes. To accommodate expected traffic demand and to reduce signal delays, we request that the Blue Bell Road cross section be revised to at least four lanes under I 45. The turnouts and the connecting roadways to the east and the west should also be widened to match, with multiple lanes approaching the intersection from the east and west.	The addition of a dedicated left turn lane would require acquisition of additional ROW along Blue Bell Rd. approaching I 45. Knowing Harris County will be expanding Blue Bell Rd. in the future, we have updated the schematics to four lanes under I 45.	Partial Resolve	Blue Bell Road widened underneath freeway to four lanes (One through and one left turn are shown in schematic); Intersection approach of Blue Bell are shown as two lanes. This design would result in an offset for the through lanes on Blue Bell of perhaps as much as one full lane until Blue Bell approaches could be widened. This offset should be addressed in final design to allow separation of through and left turn movements. HCAD shows Blue Bell having ~60' ROW and if additional ROW is required to make this transition safe and maintain room for sidewalks, this seems like it should be TxDOT's responsibility.		
551	Harris County Engineering Department	7/27/2017	Email	2. Direct Impacts to Harris County Owned Property We have identified two Harris County tracts that are immediately adjacent to the proposed improvements, both located in Segment Three. Nance Street Parking Lot The other directly impacted Harris County property is located at 2202 Nance Street (HCAD # 027111000001), which is adjacent to the westbound I 10 to southbound I 69 direct connector. Harris County currently operates a satellite parking facility for its employees on this tract. Last month Commissioners' Court authorized funding for expansion of the facility, which will be proceeding through design and construction without delay. The plans accommodate piers for HCIRA's proposed Hardy Toll Road bridge, which is currently designed to be constructed overhead. The northwest corner of the Nance property is shown on the project schematic drawings as a proposed ROW acquisition serving a relocated I 10/I 69 direct connector to be built as an overhead bridge. Nance Street is proposed to be terminated with a cul-de-sac requiring a small secondary ROW acquisition along our tracts northern border. To minimize damages to the County facilities, we request that TxDOT adjust the design of the proposed detention pond to be constructed under the adjacent structures in the I 10 / I 69 interchange. Creating level areas under the ramp instead of a sunken detention pond opens up options for TxDOT and the County to work together toward an equitable solution that will minimize the loss of parking spaces. Similarly, exploring an alternative layout for the Nance Street cul de sac could lessen impacts to our access and circulation driveways within the site.	In the updated drainage study completed in 2019, the detention ponds under the connectors have been removed. However, now a pump station is planned under the connectors. TxDOT will coordinate with Harris County during the design phase as the drainage is finalized to minimize the impact to the planned offsite parking site.	Partial Resolve	The Dec 2019 Schematic still shows Potential Detention Pond over part of the 2202 Nance parcel, so does not align with TxDOT's comment response. Schematic also does not show proposed design for termination of Nance. The comment appears addressable through coordination in the design phase.		
551	Harris County Engineering Department	7/27/2017	Email	Significant Indirect Impacts to the County Courthouse / Criminal Justice Complex on the North Side of Downtown C. The surface street configuration at the northeast corner of downtown near I 69 has negative impacts to drivers arriving or departing the eastern corner of the north end of downtown. Finally, we note that there is an existing hike bike trail under I 69 between Commerce and Runnels, providing a connection between the East End, Runnels Street, McKee Street, Blue Park and the Buffalo Bayou trails. (Much of the trail was constructed by Harris County and is maintained by the City of Houston.) The proposed design should include an off road hike bike trail with equivalent accessibility and connectivity.	The NHHIP will accommodate the existing trail alignment. There may be temporary detours during construction, but the current trail will be accessible as it is today after construction.	Partial Resolve	TxDOT states the trail is to be maintained (with some impacts during construction). Alignment is not shown on schematic so it is not clear how this will be accomplished. Need to clarify 1) if/how trail will cross new ramps into Downtown to connect to Commerce; animation makes crossing of US 59S off ramp to downtown look difficult on current alignment, 2) if trail is crossing this ramp, could Runnels also cross to connect to the frontage road, and 3) route of trail along freeway and current alignment will be impacted by freeway main lanes transitioning from below grade to elevated through this section. New alignment will likely be required and should be confirmed.		
551	Harris County Engineering Department	7/27/2017	Email	Significant Indirect Impacts to the County Courthouse / Criminal Justice Complex on the North Side of Downtown C. The surface street configuration at the northeast corner of downtown near I 69 has negative impacts to drivers arriving or departing the eastern corner of the north end of downtown. Similarly, Harris County recommends further analysis of apparent access and circulation deficiencies related to the closure of Runnels Street and the reconfiguration of ramps connecting to the new southbound frontage road, Hamilton Street, Chenerevert Street and Jackson Street. We believe there are a number of potential design improvements with significant benefits and a relatively low cost. They include: • Adding a connection between Ruiz and the southbound frontage road • restoring two lanes of southbound McKee Street transitioning to Jackson Street where a ramp is being removed • adding a direct connection between southbound McKee and the southbound I 69 frontage road via existing Runnels pavement	1. Ruiz St. cannot be extended across I 69 due to the vertical transition of the exit ramp from I 69 that becomes the new Hamilton St. 2. TxDOT is coordinating and will continue to coordinate with the City of Houston regarding local street connections. 3. Runnels St. cannot be extended across I 69 due to the vertical transition of the highway from below grade to elevated, and cannot be extended below I 69 within the proposed ROW of the project. An alternative east-west route is using Navigation Blvd. to Commerce St., then west on Commerce St. to Downtown. 4. Based on public input, the ramp to Chenerevert St. has been removed; the proposed SH 288 managed lane ramps will terminate into the SH 288 general purpose lanes and would not directly connect to Chenerevert St.	Not Addressed or Not Resolved	TxDOT response notes why requested connections cannot be made. Response misunderstands the request related to Chenerevert (confusing it with Midtown section of Chenerevert near 288). Schematic appears to maintain access to McKee from Chenerevert via roadway segment in front of Center for Sobriety. Response also seems to misunderstand request for Runnels connection to SB frontage road. This SB frontage road starts at Commerce so would like to clarify Harris County comment.		
551	Harris County Engineering Department	7/27/2017	Email	3. Significant Indirect Impacts to the County Courthouse / Criminal Justice Complex on the North Side of Downtown C. In Segment Three, we have a number of concerns regarding access and connectivity between the proposed freeways and the north side of downtown. Harris County government owns multiple facilities on the north side of downtown, providing vital public services and serving as a workplace for several thousand employees. Currently, the existing North San Jacinto Street connection to I 10 provides a primary point of access to some 15,000 vehicles per day accessing the County complex and other destinations in downtown. It is evident that this access as well as the connectivity to the larger freeway network from the north side of downtown will be negatively impacted by the proposed project.	TxDOT is coordinating and will continue to coordinate with the City of Houston to accommodate the City's future expansion of San Jacinto Street. Support columns for the elevated I10 main and express lanes	Not Addressed or Not Resolved	TxDOT comment response is cut off in the PDF; Based upon review of the Dec 2019 Design Schematic, San Jacinto Street is not shown connecting to IH-10 frontage roads and it is not clear what is proposed between the existing terminus of San Jacinto and the realigned IH-10 frontage roads. Worth requesting clarification again. Seems that is TxDOT is planning to relocate freeway they should be responsible for extending San Jacinto and clearly showing conceptual plan to do so. The TxDOT Animation for the schematic appears to show San Jacinto connecting the eastbound frontage road of IH 10 but not the westbound. Westbound traffic that currently uses San Jacinto to enter downtown from the existing IH 10 frontage road (Providence Street) would access San Jacinto by making a U-Turn prior to Main Street. The exact design near Main Street is difficult to clearly see in the schematic but this U-Turn will likely operate at a lower level of service with more weaving conflicts than existing. Request TxDOT to provide detail traffic modeling for this area.		

551	Harris County Engineering Department	7/27/2017	Email	<p>3. Significant Indirect Impacts to the County Courthouse / Criminal Justice Complex on the North Side of Downtown. Additional local street improvements, as well as modified or additional freeway access ramps, should be added to the TxDOT project, not left to local agencies and impacted landowners to sort out on their own.</p>	<p>The proposed design would maintain connectivity between Northside and the Central Business District. All of the existing streets connecting the Northside to Downtown would remain and accommodations would be made for a future San Jacinto St. connection. Improvements also include railroad underpasses at McKee St. and Jensen Dr.</p>	Not Addressed or Not Resolved	<p>TxDOT comment does not directly address some of the impacts as Harris County's comment is about more than Northside to Downtown connections. For example, the elimination of direct San Jacinto access from the IH 10 westbound frontage road(Providence Street) is a meaningful change in access.</p> <p>Previous Harris county comments were not explicitly addressed Including:</p> <ul style="list-style-type: none"> • The I 10 westbound exit ramp to the surface street network has been relocated to east of the Hardy Street / McKee Street one way pair, which will require all exiting vehicle to immediately pass through a traffic signal or all way stop sign control at each of the two intersections. • From there, a surface street / frontage road extends westbound to a turnaround near Main Street, then continues back to the east on the south side of the proposed freeway. This could be intended to maintain access to southbound North San Jacinto Street, except that no connection to North San Jacinto Street is shown as being part of the project. • Similarly, there is no apparent westbound connection route between the I 10 westbound exit ramp and Main Street. • A proposed entrance ramp to I 10 westbound is located just west of McKee Street, similar to the existing layout. However, this ramp no longer provides access to I 45 northbound. • In the other direction, traveling from downtown to the East Freeway, there is currently an eastbound entry ramp onto I 10 located just a few feet from the north end of North San Jacinto Street. The apparent new route to the East Freeway entry ramp at Waco will be two miles in length via the proposed Rothwell extension under I 69, with traffic signals at multiple locations along the way. (Assuming surface street connectivity near North San Jacinto is restored as recommended above.) Alternatively, a proposed eastbound I 10 ramp located between Main Street and North San Jacinto Street could be accessed via a nearly one mile counterclockwise loop on the proposed frontage roads. 		
551	Harris County Engineering Department	7/27/2017	Email	<p>3. Significant Indirect Impacts to the County Courthouse / Criminal Justice Complex on the North Side of Downtown and A. Freeway and local street access to North San Jacinto Street, North Main Street, McKee Street and Hardy Street is either eliminated or left to other agencies to complete. The schematic is not sufficiently developed to fully understand the negative impacts of changes to the local street in the "warehouse district" near the I 10 / North San Jacinto intersection. A set of one way frontage roads are shown adjacent to the proposed freeway between Main Street and the McKee Street/Hardy Street one way pair, but there is incomplete definition of local street network restoration that must be included in TxDOT's construction in order to maintain connectivity to downtown via Main Street and North San Jacinto Street. The schematic drawings merely show existing TxDOT roadways at the north end of North San Jacinto Street being designated as "surplus ROW". Thus only the removal of vital connecting roadways is indicated, with the result that existing Main Street, North San Jacinto, Vine Street, Walnut Street, Nance Street and other roadways in that area are shown as unconnected street segments. This is not a sufficient level of project definition to ensure all impacts are evaluated and mitigated.</p>	<p>The proposed design would maintain connectivity between Northside and the Central Business District. All of the existing streets connecting the Northside to Downtown would remain and accommodations would be made for a future San Jacinto St. connection. Improvements also include railroad underpasses at McKee St. and Jensen Dr.</p>	Not Addressed or Not Resolved	<p>No additional clarification provided as part of FEIS.</p>		

551	Harris County Engineering Department	7/27/2017	Email	<p>Significant Indirect Impacts to the County Courthouse / Criminal Justice Complex on the North Side of Downtown B. The I 10 ramp configuration near North San Jacinto Street has negative impacts to drivers accessing the regional freeway system.</p> <p>Additional evaluation should be conducted to ensure TxDOT has fully mitigated traffic and travel time impacts to the 15,000 drivers using North San Jacinto Street every day.</p> <p>We believe such an analysis will show the need for improvements to the proposed freeway design to mitigate the impact of the apparent removal of the many connecting roadways and the freeway ramps serving northern downtown and the North San Jacinto Street/ North Main Street/ McKee Street portals into downtown Houston.</p>	<p>TxDOT is coordinating and will continue to coordinate with the City of Houston to accommodate the City's future expansion of San Jacinto Street. Support columns for the elevated I 10 main and express lanes and I 45 main lanes will be positioned to accommodate the northward extension of San Jacinto Street. The proposed design would maintain connectivity between Northside and the Central Business District. All of the existing streets connecting the Northside to Downtown would remain and accommodations would be made for a future San Jacinto St. connection. Improvements also include railroad underpasses at McKee St. and Jensen Dr. The proposed design would minimize impacts in the historic warehouse district.</p>	Not Addressed or Not Resolved	See above comments. Detailed traffic analysis is recommended to understand full environmental, traffic and accessibility impacts caused by the highway project on local street	
551	Harris County Engineering Department	7/27/2017	Email	<p>Significant Indirect Impacts to the County Courthouse / Criminal Justice Complex on the North Side of Downtown C. The surface street configuration at the northeast corner of downtown near I 69 has negative impacts to drivers arriving or departing the eastern corner of the north end of downtown.</p> <p>Congress, Franklin and Commerce Streets are vital access routes to the County Courthouse Complex. Ruiz Street is also a significant collector street route to several facilities.</p> <p>There are significant issues with lane balance, roadway capacity and incomplete design development where these streets intersect north south streets at I 69, including existing Hamilton Street, the proposed southbound frontage road and the proposed St. Emanuel northbound connections to I 69 and I 10.</p>	<p>TxDOT is coordinating and will continue to coordinate with the City of Houston regarding local street connections.</p>	Not Addressed or Not Resolved	No significant change from DEIS; Request detailed traffic study to understand full environmental, traffic and accessibility impacts caused by the highway project on local street network	
551	Harris County Engineering Department	7/27/2017	Email	<p>Significant Indirect Impacts to the County Courthouse / Criminal Justice Complex on the North Side of Downtown C. The surface street configuration at the northeast corner of downtown near I 69 has negative impacts to drivers arriving or departing the eastern corner of the north end of downtown.</p> <p>The most significant of these is an apparent reduction of the capacity of Franklin Street, the sole eastbound roadway providing direct access from the eastern part of the Courthouse area across I 69 to the East End (via Navigation) and to ramps leading to the freeway network to the north. The negative effect is compounded by a missing design for the reconfigured Franklin Street intersection with St. Emanuel Street.</p> <p>Currently there are three eastbound lanes of Franklin Street passing under I 69, two through lanes and a dedicated left turn lane. It appears that only two eastbound through lanes are provided in the schematic design prepared by TxDOT, creating the appearance that Franklin Street will connect only to Navigation Boulevard. This would be a result with excessive negative impacts to all drivers in the area.</p> <p>The schematic shows proposed Franklin Street construction will end short of the St. Emanuel intersection, where eastbound drivers will expect to make a left turn to access the freeway entrance ramps to the north. In its current configuration, however, a raised median serves to prohibit those eastbound left turns.</p> <p>There are clearly fundamental deficiencies in the Franklin street design details. These should be reevaluated and corrected.</p>	<p>TxDOT is coordinating and will continue to coordinate with the City of Houston regarding local street connections.</p>	Not Addressed or Not Resolved	No significant change from DEIS; Request detailed traffic study to understand full environmental, traffic and accessibility impacts caused by the highway project on local street network. The intersection of San Jacinto and Franklin is included in the schematic.	
551	Harris County Engineering Department	7/27/2017	Email	<p>Significant Indirect Impacts to the County Courthouse / Criminal Justice Complex on the North Side of Downtown B. The I 10 ramp configuration near North San Jacinto Street has negative impacts to drivers accessing the regional freeway system.</p> <p>Currently, the North San Jacinto route into downtown easily connects to multiple freeways via the Main Street/ North San Jacinto/ Nance Street ramps on I 10. The ramps being proposed to serve this area do not provide equivalent access.</p> <p>A few examples (an incomplete list):</p> <ul style="list-style-type: none"> • The I 10 westbound exit ramp to the surface street network has been relocated to east of the Hardy Street / McKee Street one-way pair, which will require all exiting vehicle to immediately pass through a traffic signal or all-way stop sign control at each of the two intersections. • From there, a surface street / frontage road extends westbound to a turn-round near Main Street, then continues back to the east on the south side of the proposed freeway. This could be intended to maintain access to southbound North San Jacinto Street, except that no connection to North San Jacinto Street is shown as being part of the project. • Similarly, there is no apparent westbound connection route between the I 10 westbound exit ramp and Main Street. • A proposed entrance ramp to I 10 westbound is located just west of McKee Street, similar to the existing layout. However, this ramp no longer provides access to I 45 northbound. • In the other direction, traveling from downtown to the East Freeway, there is currently an eastbound entry ramp onto I 10 located just a few feet from the north end of North San Jacinto Street. The apparent new route to the East Freeway entry ramp at Waco will be two miles in length via the proposed Rothwell extension under I 69, with traffic circling at multiple locations along the way. A surface street connection near North San Jacinto Street would be a more direct route. 	<p>TxDOT is coordinating and will continue to coordinate with the City of Houston to accommodate the City's future expansion of San Jacinto Street. Support columns for the elevated I 10 main and express lanes and I 45 main lanes will be positioned to accommodate the northward extension of San Jacinto Street. Proposed access improvements include grade separating Rothwell St. and Providence St. under the UPRR and H&T railroads, so that eastbound and westbound traffic between Jensen Dr. and Main St. would no longer cross the tracks at grade.</p>	Not Addressed	See above; Comment not directly addressed.	

Attachment B - Comparing the NHHIP FEIS with Interim Guidance on the Application of Travel and Land Use Forecasting in NEPA

The following compares the documentation and analysis provided in the FEIS for the North Houston Highway Improvement Project (NHHIP) with Interim Guidance on the Application of Travel and Land Use Forecasting in NEPA. As noted in the NEPA website (https://www.environment.fhwa.dot.gov/nepa/Travel_LandUse/travel_landUse_rpt.aspx), following this guidance is recommended but not required of an FEIS process. In general, if guidance is not followed, documentation of why that decision was made is advised.

Topic	NEPA Guidance	FEIS Assessment	Recommendation
Model Scope	<p>Section: Executive Summary</p> <p>It is crucial to scope the forecasting effort to meet the project analysis, decision-maker and stakeholder needs in the study area. For this reason, it is useful to begin the forecasting process by understanding the requirements of the study and anticipating decision-maker and stakeholder interests with respect to forecasting.</p>	<p>Given the City and County have requested but not received detailed model analysis for the project, and there is limited documentation of the approach our outputs of the modeling effort, the scope does not appear to have been clearly defined at the project outset or at any point of the project. The FEIS Comment Response mentions a VISSIM model which should be provided.</p> <p>Given the number of claims in the FEIS that lack supporting data and documentation, it is not clear that the preferred alternative meets decision-maker & stakeholder needs.</p>	<p>Request results of the microsimulation modeling and a commitment to support mitigation of impacts that result from that detailed analysis.</p>
Documentation	<p>Section: 2.2.7</p> <p>It is important for the study team to produce documentation that describes their review of the tools that they choose to use to support their analysis, and to document any updates or improvements that they identified as necessary for the analysis.</p> <p>It is also important for the study team to focus this documentation on the needs and scale of the analysis that they are undertaking. The MPO or DOT that maintains the regional travel demand model is likely to publish a calibration report that can be referenced to demonstrate that the model is calibrated at a regional level; however, this report is unlikely to deal specifically with calibration for the study area for a particular project. Therefore, it falls to the study team to demonstrate that the travel demand model is adequately calibrated in their study area.</p>	<p>The documentation provided in the FEIS for travel modeling is very thin. Given its importance in the criteria for project selection and the estimation of benefits, significantly more documentation should have been provided.</p> <p>Given the scale and complexity of the project, it would be beneficial to conduct a peer review of the analysis to confirm assumptions and approach.</p>	<p>Request FEIS provide detailed documentation of modeling approach, rationale for choice of tools and study area, assumptions and calibrated/verified/risk-adjusted outputs.</p> <p>The Study Team may have addressed many of the issues noted here but the lack of documentation makes it impossible to determine.</p> <p>Request a formal peer review of the travel demand modeling analysis.</p>

	<p>Other elements to consider for inclusion in the documentation are:</p> <ul style="list-style-type: none"> ▪ Demonstration that the tools have the capability to forecast the range of policies that will be developed in the alternatives analysis ▪ Discussion of the appropriateness of using new or advanced methods that might be considered a departure from typical practice, given the context of the application ▪ Results of any peer reviews or an explanation detailing why no peer review was required. 		
<p>Calibration & Validation</p>	<p>Section: 2.2.2</p> <ul style="list-style-type: none"> - Calibration, where adjustments are made to the model so that current observed conditions in the study area are reasonably reproduced, ensures that the travel model's forecasts are built on a foundation that is a good representation of existing travel characteristics. - Validation, where the sensitivity of the model to changes in inputs and assumptions is tested, ensures that the travel model responds reasonably to transportation system changes and will have the ability to produce forecasts. 	<p>The FEIS briefly notes that calibration occurred but there is no documentation of the results or how closely calibrated the model is to base year conditions. Calibration check would include:</p> <ul style="list-style-type: none"> - Review of trip generation particularly at key generators in the study area - Detailed inspection of modeled origin–destination patterns in the study area to demonstrate that they compare closely to observed travel within and through the study area - Careful comparison of point-to-point travel times or speeds on individual road segments, to demonstrate that the model responds appropriately to changing traffic volumes - Comparison of modeled traffic volumes with traffic counts both for individual roadway segments and at more aggregate levels such as throughout the study area - Network checks to identify coding errors in, for example, posted speeds and capacities. <p>These checks and their results have not been documented in the FEIS. Without</p>	<p>Request results of the calibration for the sub-area model for the NHHIP. If no sub-area model is provided, request documentation as to why. Request documentation on regional model calibration.</p> <p>Request model validation including sensitivity analysis for range of traffic and land use assumptions.</p>

		<p>understanding the assumptions and calibration results, it is difficult to assess how useful or accurate the projected travel time for the recommended project impact might be or if there are errors in assumptions.</p> <p>The FEIS notes the recommendation for managed lanes was validated but does not document if or how the travel model itself was validated. Traffic Noise model was also noted to be validated.</p>	
Reasonableness	<p>Section: 2.2.2</p> <ul style="list-style-type: none"> - Reasonableness checks are additional tests of a model's forecasting performance, including evaluating the travel model in terms of acceptable levels of error and its ability to perform according to theoretical and logical expectations. The checks help to ensure that the model tells a coherent story about travel behavior. 	<p>As the analysis of the future year "No Build" conditions analysis shows travel time significantly slower than walking or similar transit trips, the model does not seem to meet the guidance on reasonableness (See Section 1 following this Table for more details).</p> <p>Mode splits would likely be significantly different given these travel times assumptions. The theoretical benefits or the project are likely overstated.</p>	<p>Request documentation of reasonableness of model, especially for the "No Build" Scenario. Request more detail from travel time matrix (e.g., for METRONext, before/after travel times were documented for 30 specific trip pairs) comparing existing travel time, no build travel time, preferred alternative travel times with exact trip origin destinations.</p> <p>Also request detailed assumptions about mode share and land use in each alternative analyzed.</p>
Microsimulation	<p>Section: 2.4.5</p> <p>While developing future-year forecasts, the study team may determine that the regional travel model lacks enough detail for the level of analysis required. In such a case, a sub-area model and analysis may be needed. This would involve the use of a model based on Highway Capacity Manual (HCM) methods or a microsimulation model. A sub-area analysis may also be warranted if the validation of the regional model is poor in the sub-area or if the regional model is too coarse in the sub-area. The best time to develop a sub-area model is at the beginning of the project development process while the regional model is being reviewed and calibrated, when it is simpler to create additional detail in the regional model (e.g., TAZ splits and new roadway links) that will be useful in a refined sub-area model."</p>	<p>For a project with as much potential impact as the NHHIP, microsimulation would provide a better assessment the true impact of the proposed change. This is especially true given the complicated intersections proposed in or near downtown and the likely changes in traffic patterns on local streets. A Vissim model and a "detailed model" are mentioned in the FEIS Comment Response document but no details on the traffic modeling scope, approach, or output are provided in the FEIS.</p> <p>The lack of detailed traffic modeling of local streets likely underestimates impacts of intersection operations caused by the expanded freeway capacity increasing downstream traffic volumes. This is likely most acute in and around Downtown where</p>	<p>Request results of the microsimulation model, especially in locations requested as part of comments on DEIS including</p> <ul style="list-style-type: none"> - San Jacinto access to downtown, - Ramp operation for ingress/egress into NE Downtown, - Operations near Polk and St Emanuel/Hamilton including the Lamar U-Turn and freeway off-ramp, and - IH-10 HOV Access into and out of Downtown.

		<p>connectivity is impacted, but likely impacts other adjacent intersections.</p> <p>Some concepts in the schematic included with the FEIS do not seem to make sense or rely on other future projects. One example is HOV connections on IH 10. Three lanes are proposed to merge to one lane over a short distance creating a bottleneck from day one of implementation. More detailed modeling would help address these issues and clarify actual impacts.</p>	
Sub Area Model	<p>Section: 2.4.5 While developing future-year forecasts, the study team may determine that the regional travel model lacks enough detail for the level of analysis required. In such a case, a sub-area model and analysis may be needed. This would involve the use of a model based on Highway Capacity Manual (HCM) methods or a microsimulation model. A sub-area analysis may also be warranted if the validation of the regional model is poor in the sub-area or if the regional model is too coarse in the sub-area. The best time to develop a sub-area model is at the beginning of the project development process while the regional model is being reviewed and calibrated, when it is simpler to create additional detail in the regional model (e.g., TAZ splits and new roadway links) that will be useful in a refined sub-area model.</p>	<p>The documentation in the FEIS appears to only show impacts at the regional model level (e.g., the Air Quality analysis). Given the varied and detailed impacts to communities along the corridor, a sub-area model providing greater detail would be beneficial if not required.</p>	<p>Request model analysis at the sub-area level with both the travel demand model and microsimulation. If no sub-area model was developed, request rational for why that decision was made.</p>
Confidence	<p>Section: 2.4.4 For estimates of forecasts, substantial uncertainties include, but are not limited to, the following: population and employment forecasts, housing trends and costs, global and local economic conditions, other planned transportation improvements, time-of-day assumptions, parking prices, fuel prices, and long-term changes in vehicle technology. Obviously, the further the forecasting horizon is from the current year and the larger and more complex the alternatives that are being analyzed, the greater the level of uncertainty may be. To separate the various sources of uncertainty, it is suggested that the lead agencies identify the principal drivers of changes in traffic volumes through an incremental buildup of the forecasts for an alternative.</p>	<p>No assessment of confidence in the forecast or buildup of assumptions was provided in the FEIS.</p> <p>For example, traffic projections for the first three years of the 2015-2040 analysis period are already below the forecast shown in the FEIS. (See Section 3 below) This should be reflected in the risk factors that could influence the projections.</p>	<p>Request FEIS provide buildup of assumptions and an assessment of risk factors to significant errors in the projections.</p>

<p>Land Use Impacts</p>	<p>Section: 4.1.3.2 1. Sierra Club, Ill. Chapter v. U.S. Dep't of Transp., 962 F. Supp. 1037, 1043 (N.D. Ill. 1997) Challengers alleged that the use of the same land use forecast for the build and no build scenarios prevented a rational analysis of alternatives. The Court agreed, stating that...the final impact statement in this case relies on the implausible assumption that the same level of transportation needs will exist whether or not the tollroad is constructed....The result is a forecast of future needs that only the proposed tollroad can satisfy. As a result, the final impact statement creates a self-fulfilling prophecy that makes a reasoned analysis of how different alternatives satisfy future needs impossible.</p>	<p>The FEIS provides a section on Induced Growth. It finds that the project will likely only induce additional growth relative to existing trends in locations in and near downtown and in a small 0.25 mile band along IH 45 up to Beltway 8. There are no assumptions for induced growth beyond the Beltway. Based on previous radial highway widening projects, such as the widening of IH 10W, the assumption is questionable.</p>	<p>Request detailed assumptions about land use in each alternative analysis and why no induced growth was assumed to occur beyond Beltway 8.</p>
<p>Induced Demand</p>	<p>Section: 2.4.6.3 One of the most controversial issues with regard to forecasting as part of the NEPA process is that of induced demand. While there are limits and complex factors in reality and every corridor is unique to some degree, it is important for transportation analyses to consider the significance of induced demand. Induced demand is the volume of traffic that is drawn to a new or expanded road by providing additional capacity. This induced demand comes from a number of sources, including trips diverted from other routes, discretionary trips that might not have been made without the service improvement, and improved access to employment and other activity location choices.</p>	<p>There is incomplete documentation of induced demand in the FEIS document. While induced growth is mentioned, development growth is only one factor in assessing overall demand. The corridor is likely to draw additional trips diverted from other routes and discretionary trips that might not have been made without the service improvement. These components of induced demand are not mentioned.</p>	<p>Request the FEIS specifically assess the potential impacts of induced demand on traffic volumes both on the highway, and on local street links where added freeway capacity may induce additional trips.</p>
<p>Transit</p>	<p>Section: 2.2.4.3 Transit provides important mobility benefits in congested corridors throughout the country and it is often necessary in a major NEPA study with highway alternatives to consider the potential benefits of upgrading transit services.</p>	<p>No alternatives with dedicated transit lanes were considered.</p>	<p>Request for project to be reevaluated to include dedicated transit options including those outlined in the Mayor's Letter.</p>
<p>Forecasting Build Up of Assumptions</p>	<p>Section: 2.2.2 Forecasting buildup to understand how the different model inputs contribute to changes from the base year to the forecasting year. It is useful to isolate and understand changes in travel patterns and congestion in a corridor that are due to land use growth</p>	<p>No documentation of the buildup of assumptions was included in the FEIS. This makes the summarized assumptions and outputs more difficult to assess for credibility. It also makes it more difficult to understand the factors that most influence the projections.</p>	<p>Request detailed buildup of project assumptions for traffic model.</p>

	<p>versus transportation system expansion. Other inputs that may be important in a corridor include assumptions related to external trips and special generators. This series of tests could easily be conducted using the long-range transportation plan model inputs. Section 2.4.2 discusses the importance of the study team explicitly defining and documenting the future no-build highway (and transit) networks. Understanding the impact of planned changes to the transportation system is an important element of the forecasting buildup</p>		
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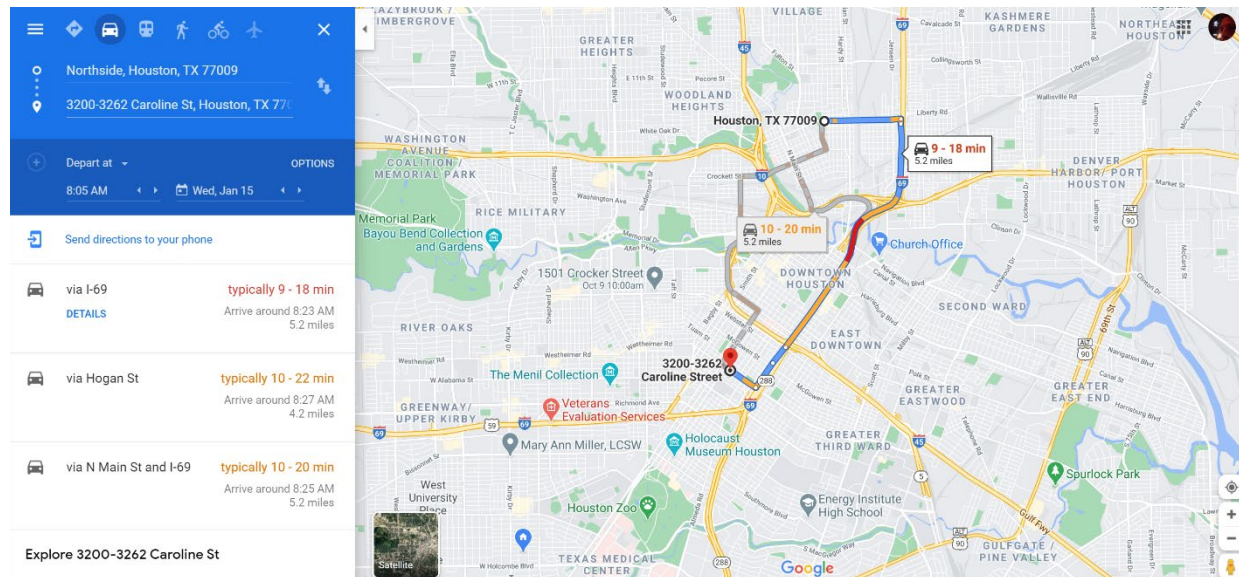
Section 1) The reasonableness test for travel time assumptions does not appear to be met

The FEIS does not include any microsimulation of traffic impacts or intersection capacity analysis of the impact of a widened freeway on local streets. The only traffic impacts seem to be measured through the use of a regional travel demand model. The time saving benefits of the recommended option vs. the No Build are likely overstated.

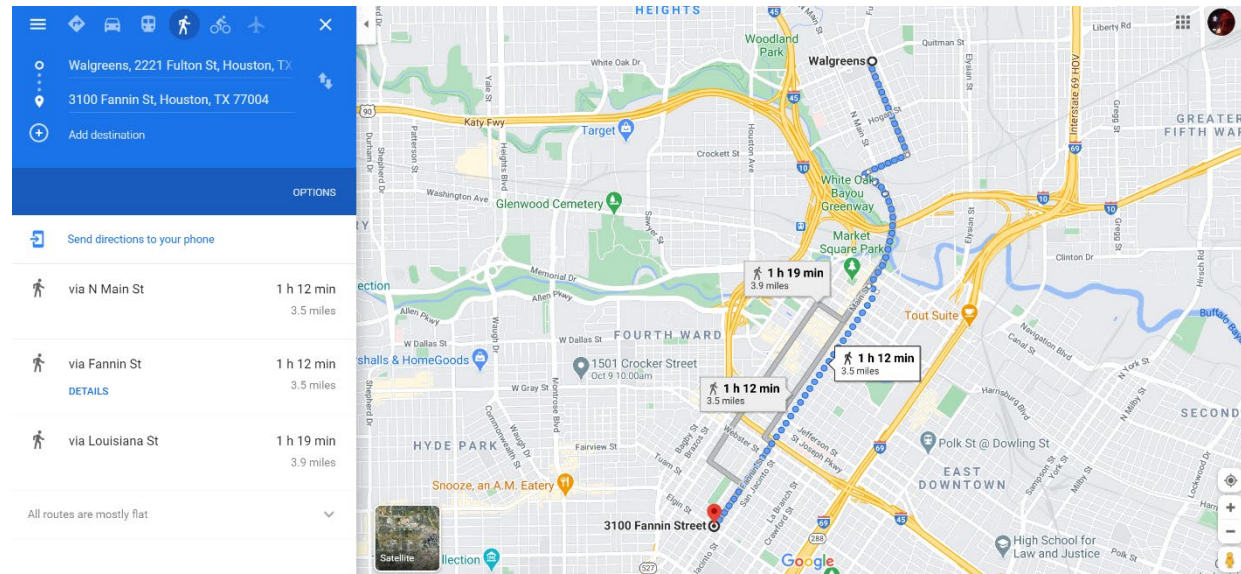
- a. From NEPA (https://www.environment.fhwa.dot.gov/nepa/Travel_LandUse/travel_landUse_rpt.aspx#12-2-2-Calibration-Validation-and-Reasonableness-Checking-of-Travel-Models) The calibration, validation, and reasonableness checking of travel models constitute an important and necessary sequence of steps that are taken to prepare a travel model for making reasonable forecasts.
 - i. Calibration, where adjustments are made to the model so that current observed conditions in the study area are reasonably reproduced, ensures that the travel model’s forecasts are built on a foundation that is a good representation of existing travel characteristics.
 - ii. Validation, where the sensitivity of the model to changes in inputs and assumptions is tested, ensures that the travel model responds reasonably to transportation system changes and will have the ability to produce forecasts.
- b. The travel demand model does not appear to meet the reasonableness test. The model does not accurately capture the impact on total trips and trip mode split caused by delay assumptions and likely significantly overstates project benefits.
 - i. The estimated travel times for no build are not reasonable;
 - 1. Examples of these trips are shown in the Travel Time Table below which was provided in the [NHHIP Project Facts & Highlights](#).

Start-End Locations	Travel time in opening year if no NHHIP	Travel time with NHHIP	Reduction in travel time with NHHIP	Cumulative time savings (hours/year) ⁴
Airline/Crosstimbers to Convention Center (morning)	77 minutes	19 minutes	75%	251
Near Northside to Midtown (morning)	103 minutes	16 minutes	84%	377
Third Ward to I-610 (afternoon)	75 minutes	18 minutes	76%	247
Memorial Park to EaDo (afternoon)	64 minutes	17 minutes	73%	294
Fifth Ward to Downtown (afternoon)	36 minutes	14 minutes	61%	95

2. As driving trip speeds drop significantly, driving trip demand will also decline or people will choose different, faster modes to make their trip; Travel Demand Models often do not factor this into the modeling assumptions accurately.
- ii. The H-GAC Travel Demand Model typically does not include detailed assumptions for mode choice and alternate mode networks, especially around choices to walk and bike.
 1. The travel times shown for the NHHIP assume trip times that are longer than actual walking trips would be. When travel times are this long, it typically means people would choose other routes or modes or choose to not make a particular trip at a given time of day.
 2. This assumption inflates the perceived benefit of the project. The model does not seem accurately calibrated to account for these issues.
- iii. An example of this is the trip shown in the Travel Time Table from Near Northside to Midtown.
 1. This trip is assumed to take 103 minutes in the No Build and 16 minutes with the NHHIP.
 2. Because exact locations are not provided by the Table, we can compare at a trip from the intersection of Fulton at Quitman in Near Northside to the intersection of Caroline at Elgin in Midtown which are both central to their respective districts.
 3. Existing driving trip travel times from Google Maps in January 2020 are estimated to take 9-18 minutes and cover a distance of 5.2 miles. As the crow fly distances between these two points is 3 miles.



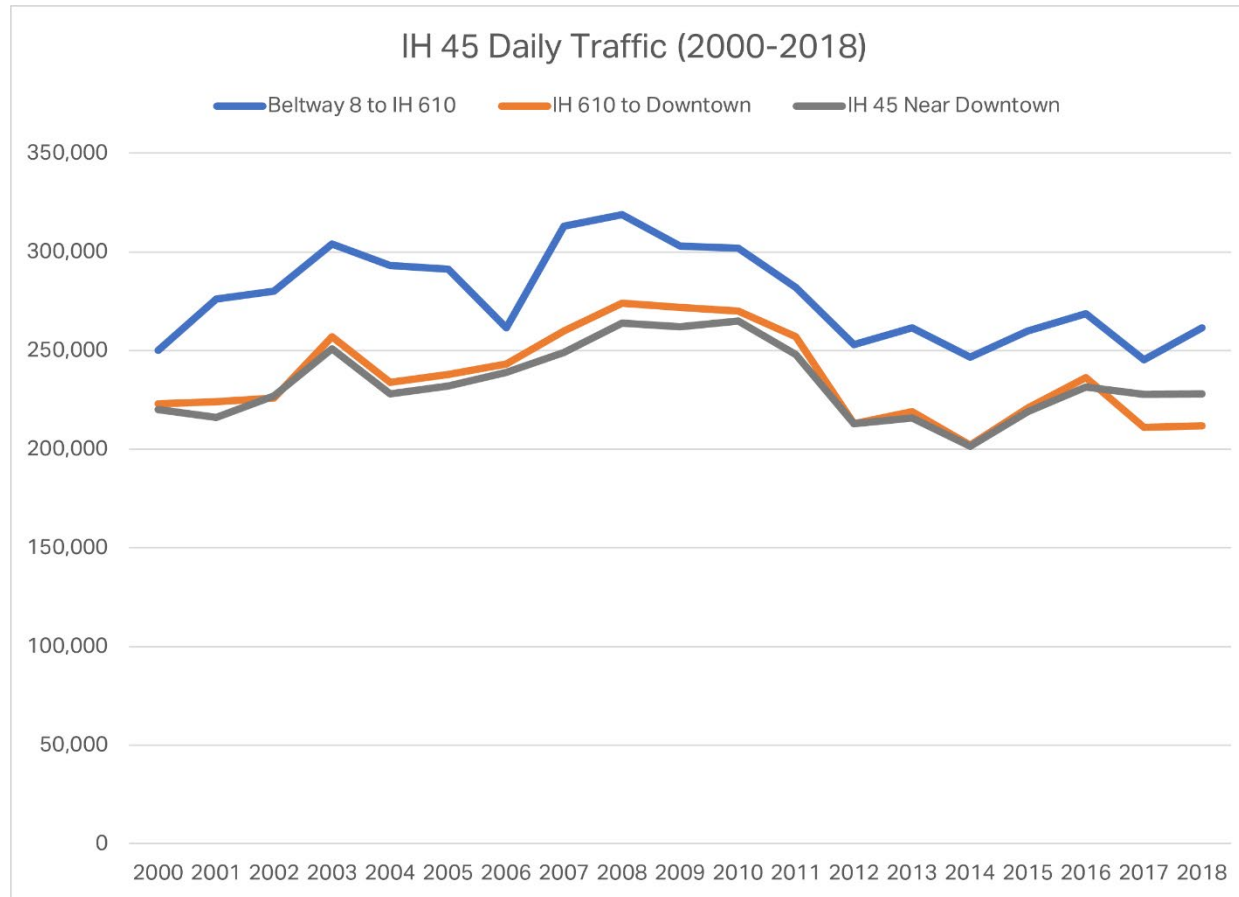
4. The No Build travel time assumption of 5.2 miles in 103 minutes would imply a travel speed of 3 mph.
5. According to Google Maps, making this trip via walking would take 31 minutes less (72 minutes vs. 103 minutes).



6. Taking this trip by METRO's Red Line LRT would take 29 minutes (14 minutes walking, 15 minutes riding on the train)
 7. Clearly fewer people would make this trip at his time via driving if these were the choices.
 8. This is one trip example, but these assumptions appear to show up repeatedly in the modelling for NHHIP and show how the travel time benefits are likely significantly overstated by the model.
 9. It is also interesting that with years of planning, these are the five trip pairs that have been selected to highlight the project benefits. It would be logical to highlight trips that show a real benefit from the \$7b+ investment but based on example trips these are appear overstated and unreasonable.
- c. The FEIS States "In addition to overall travel demand, congestion is intensified by bottlenecks, merging traffic, and weaving to access entrance and exit ramps. Bottlenecks are segments of a road where there is a change in traffic capacity, such as the loss of a lane, which can cause traffic to slow and create additional delays."
- i. The FEIS clearly does not address where the preferred alternative design creates these conditions on local streets only highway segments such as where freeway ramps enter the downtown street grid along St Emanuel.

Section 2) Base line model Assumptions for traffic growth have not been supported by actual data.

a. Traffic volumes on IH 45 have been essentially flat for two decades; (Source: TxDOT Statewide Planning Map Data)



- i. Beltway 8 to IH 610 (0.2% Compound Annual Growth Rate (CAGR))
- ii. IH 610 to Downtown (-0.3% CAGR)
- iii. IH 45 at Downtown (0.2% CAGR)

b. Population in the Houston region has grown 1.7-2.1% over a similar time 2000-2018 time period. (Source: H-GAC Regional Demographic Snapshot)

- i. H-GAC 8-County Region Population
 - 1. 2000: 4.6 Million
 - 2. 2018: 6.7 Million (2.1% CAGR)
 - ii. Harris County Population
 - 1. 2000: 3.4 Million
 - 2. 2018: 4.6 Million (1.7% CAGR)
- c. Traffic volumes growth on parallel roadways is also flat so there is not apparent spillover traffic due to congestion on IH 45. Only Airline Drive has seen growth at or above population growth rates. Many other locations have seen traffic decline. (Source: City of Houston GIMS)
- i. Airline near Tidwell
 - 1. 2012 ADT – 20,336
 - 2. 2016 ADT – 22,295 (2.3% CAGR)
 - ii. Airline near North Main
 - 1. 2011 ADT – 10,802
 - 2. 2019 ADT – 13,172 (2.5% CAGR)
 - iii. Fulton near Collingsworth
 - 1. 2009 ADT – 7,706
 - 2. 2018 ADT – 7,251 (-0.7% CAGR)
 - iv. Kuykendahl near Greens
 - 1. 2010 ADT – 22,656
 - 2. 2019 ADT – 19,052 (-2.0% CAGR)
 - v. Veterans Memorial South of 249
 - 1. 2010 ADT – 18,986
 - 2. 2017 ADT – 18,265 (-0.6% CAGR)
 - vi. Veterans Memorial at Dewalt
 - 1. 2010 ADT – 18,697
 - 2. 2017 ADT – 16,526 (-1.7% CAGR)
- d. FEIS Traffic projections assume significant growth in daily demand.
- i. The average daily traffic volumes on IH 45 on the segments from US 59/I-69 to I-10 (Downtown area) and I-610 to Beltway 8 North are projected in the FEIS to increase up to approximately 40 percent between 2015 and 2040. The average daily traffic volume on IH 45 between IH 10 and IH 610 is projected to increase up to approximately 15 percent during the same period.
 - 1. This means that the FEIS assumes:
 - a. IH 45 (Beltway 8 to IH 610) will increase from a 2000-2018 CAGR of 0.2% to 1.4% CAGR for 2015 to 2040.
 - b. IH 45 (IH 610 to Downtown) will increase from a 2000-2018 CAGR of -0.3% to 0.6% for 2015 to 2040
 - c. IH 45 adjacent to Downtown (Pierce Elevated) will increase from a 2000-2018 CAGR of 0.2% to 1.4% 2015-2040

2. These all represent an assumption of significant changes in traffic volume growth at a time when travel patterns are changing, and pandemic impacts may change the nature of work for years to come.
3. The assumption of growth can already be challenges as 2018 is three years into the FEIS projected traffic period and traffic volumes are lower than the FEIS projected growth rates on all three segments. 2015-2018 growth rates are:
 - a. Beltway 8 to IH 610: 0.2%
 - b. IH 610 to Downtown: -1.4%
 - c. IH 45 at Downtown: 1.3%
4. Based on the existing available data, the assumptions used to justify the need to expand the freeway are questionable and support the need to look at other options to improve mobility in the corridor with lesser impacts on adjacent communities.