



# FORT WORTH

## HIGH-SPEED RAIL STATION AREA PLANNING STUDY

SEPTEMBER 2017



North Central Texas  
Council of Governments





# ACKNOWLEDGMENTS

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**NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS**  
**CITY OF FORT WORTH**  
**TARRANT COUNTY**  
**FORT WORTH TRANSPORTATION AUTHORITY**  
**DOWNTOWN FORT WORTH, INC.**  
**NEAR SOUTHSIDE, INC.**  
**FORT WORTH HOUSING SOLUTIONS**  
**SUNDANCE SQUARE**  
**FORT WORTH CHAMBER OF COMMERCE**  
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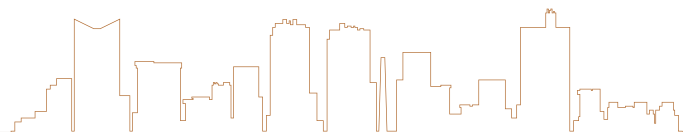
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# EXECUTIVE SUMMARY

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# EXECUTIVE SUMMARY

## PURPOSE OF STUDY

In coordination with its public partners, the North Central Texas Council of Governments (NCTCOG) and its Regional Transportation Council (RTC) have initiated the implementation of high-speed rail (HSR) between Fort Worth and Dallas with three stations including one located in the City of Arlington. Known as the DFW Core Express Service (CES), this initiative was undertaken in line with the *Mobility 2040 Metropolitan Transportation Plan* and the RTC's policy for a one-seat ride and a three-station concept (if HSR service is implemented from Houston to Dallas by the Texas Central Railway with the Japanese Shinkansen N700 technology) and/or from Austin/San Antonio to Fort Worth by another rail developer/operator.

To advance the CES, this study analyzes the most feasible and preferred location for the Fort Worth station in the City's core.

Undertaking the study so that it could be utilized to complete the Environmental Impact Statement (EIS) for the CES, the Team, led by Gateway Planning, undertook the work so that it:

- Builds on the HSR compatible rail alignments into and out of the core of Fort Worth as preliminarily determined viable by NCTCOG staff;
- Effectuates simultaneously (i) the goal of multimodal regional mobility and (ii) local community preferences in terms of maximizing the benefits and minimizing the negative impacts of the substantial facility needed for HSR; and
- Provides further analysis to finalize the DFW Core Express EIS.

The methodology for this study was developed and undertaken with the assumption technology and regulation may change given the absence of domestic analogs for HSR operations. In that context, the methodology entailed the following key steps:

1. Utilizing a Project Review Committee throughout the study process, which included members representing the City of Fort Worth, Tarrant County, the Fort Worth Transportation Authority and North Central Texas Council of Governments;
2. Understanding the options for and implications of the rail alignments that can access the core of Fort Worth and that are compatible with HSR operations;
3. Securing feedback on community goals to develop analysis factors from key representative organizations;
4. Developing an initial set of factors to be utilized for the location narrowing analysis;
5. Determining likely viable station area options;
6. Analyzing the station area options by factor;
7. Finalizing and applying a score to factors to rank the seven station area options, developing a prioritized list;



Fort Worth Intermodal Transportation Center (ITC). Source: FW Chamber

8. Presenting and securing feedback of the factors analysis from the Project Review Committee and representative organizations;
9. Re-calibrating some of the factors and reapplying them in order to finalize the station area recommendation;
10. Presenting the final station area recommendation to the Fort Worth City Council for feedback, which resulted in validation of the final recommendation; and
11. Preparing additional detailed station implementation analysis for the final recommendation as set forth in this final report.



Shinkansen N700 HSR; Image Courtesy of Alamy

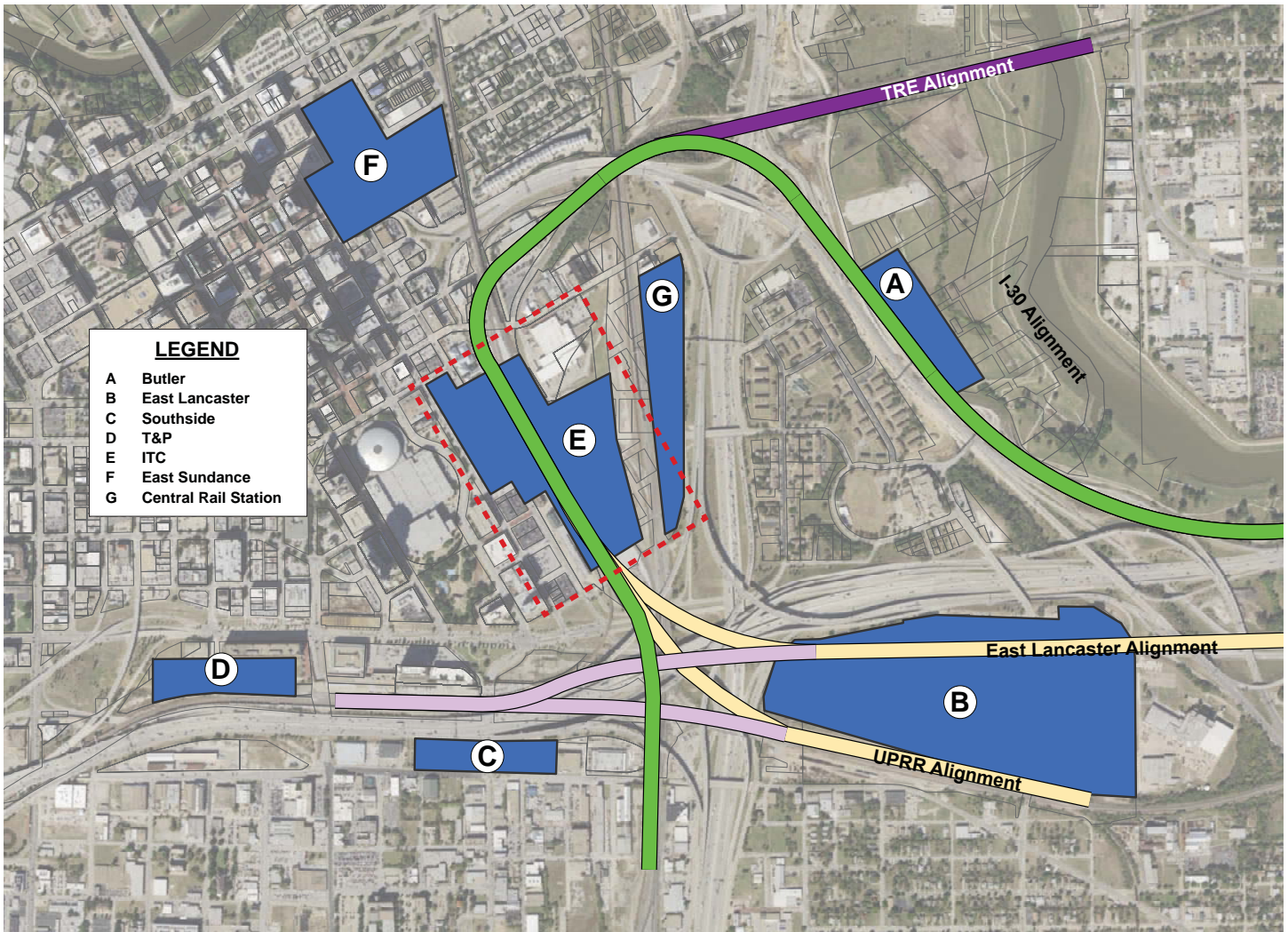


FIGURE 1: FORT WORTH STATION AREA OPTIONS MAP

### RECOMMENDED STATION AREA LOCATIONS

The station area options were identified in a process with NCTCOG staff using the potential rail alignments through the central core of Fort Worth and input from representative organizations. The resulting station area options included Butler Place, East Lancaster, Southside, T&P, ITC, East Sundance and the Central Rail Station (see Figure 1).

Based on the process documented in this report, **the recommended station location is the existing Intermodal Transportation Center (ITC) area in Downtown.** That location is consistent with the most likely HSR alignment into the core of Fort Worth. By bringing the HSR station into this central location significant opportunities arise for Downtown to grow economically and culturally, solidifying its incredibly important role in the region.

Adding HSR service to downtown Fort Worth could also elevate the City of Fort Worth in terms of its international economic development and innovation. Accordingly, the participation of

the City, Tarrant County, Fort Worth Transportation Authority and key organizations in the process lays the groundwork for related long-term economic development possibilities.

By leveraging experience gained in coordinating with NCTCOG and other cities in the anticipated HSR network, Fort Worth can play an indispensable role in the statewide planning effort for a comprehensive HSR system. Fort Worth thereby becomes a central hub for HSR.

To assure a prominent place in the network and realize the associated economic benefits, Fort Worth should develop an economic specialization and brand identity that would attract growth, entrepreneurship, and innovation into downtown based on the emerging global innovative Mobility Technology Sector. That sector includes mobility on-demand services, autonomous vehicles, integrated transit systems, and related smart phone technologies.



# HSR SYSTEM CONTEXT

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# HSR SYSTEM CONTEXT

## THE IMPACT OF POTENTIAL RAIL ALIGNMENTS AND OPERATIONAL SCENARIOS

This section establishes the likely different HSR operational scenarios that will impact the ability to implement the recommended Fort Worth Station, which are being driven by multiple ongoing HSR development efforts. Those efforts are being led by a variety of governmental and private entities and are at varying stages of development (see Figure 2):

- Texas Central Partners (TCP), a private entity, is currently developing a HSR system to operate between downtown Dallas and Houston utilizing the Shinkansen N700 series rolling stock and system technology.
- DFW Core Express Service (CES) is the proposed HSR system between downtown Dallas (sharing a station with the TCP HSR) and downtown Fort Worth with an intermediate stop at a station in Arlington. Multiple public sector agencies are involved in the evaluation of the CES

including the FRA, TxDOT and the NCTCOG.

- Texas-Oklahoma Passenger Rail Study (TOPRS) is an evaluation being conducted by TxDOT for an 850-mile corridor of higher-speed rail service between Oklahoma City to the north through the Dallas-Fort Worth Region, Austin and San Antonio to destinations in south Texas including Laredo, Corpus Christi, and Brownsville.

Those HSR efforts (i) are unfolding independently; (ii) are being developed on varying schedules and timelines; (iii) will potentially employ different rolling stock and system technologies; (iv) will have undefined track alignments and station locations; and (v) may operate independent from one another under different operating scenarios and service schedules. These complexities coupled with the unique nature of implementing HSR service led to this study and its need for an evaluation and analysis of different system integration scenarios to ensure the Fort Worth station location and configuration would allow for various possibilities.

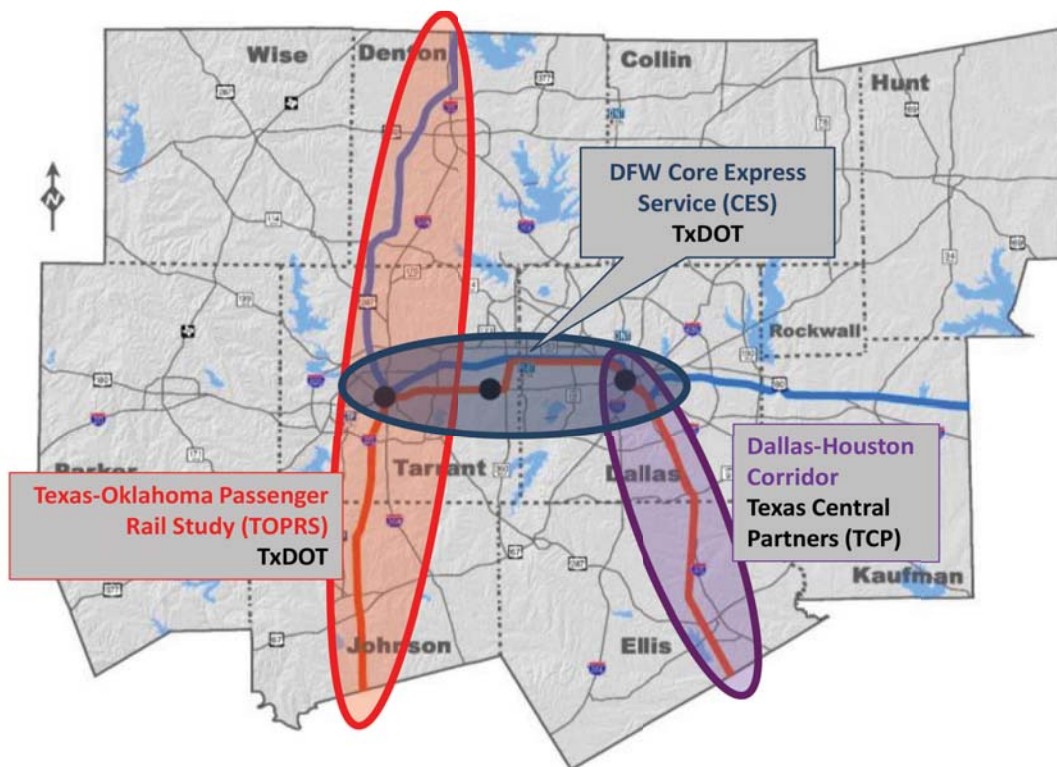


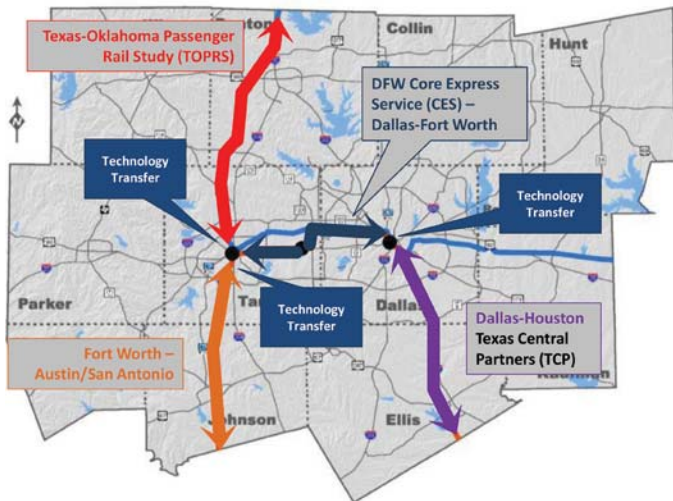
FIGURE 2: TEXAS HIGH-SPEED AND HIGHER-SPEED RAIL DEVELOPMENT EFFORTS MAP



Each scenario below provides (i) a description of alternative HSR system component interactions; (ii) related impacts on track alignment; (iii) the related proposed station configuration; and (iv) additional questions that require further analysis and consideration.

## SCENARIO 1

### *CES HSR from Dallas – Arlington – Fort Worth (No System Integration between TCP, CES, Fort Worth – Austin/San Antonio HSR or TOPRS)*



Under this scenario, the TCP HSR would terminate at the Dallas Station. Passengers would have to transfer to a different platform at the Dallas Station to access the CES train to Arlington or Fort Worth. The Fort Worth Station would be the terminus for the CES. Passengers traveling north to Oklahoma City would have to transfer to a separate platform to access the TOPRS system or south to Austin, San Antonio or beyond would have to transfer to a separate platform to access another HSR technology/system to travel south.

For finalizing the EIS, the following considerations should be evaluated further regarding this scenario:

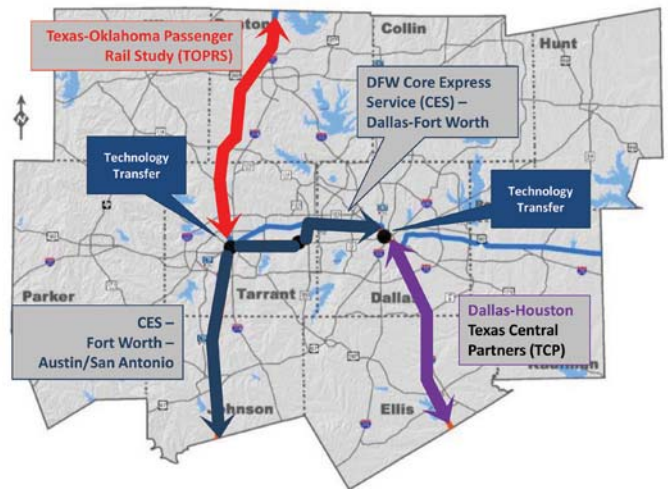
- **Policy Compliance** – This scenario would not meet the policy requirements established in the region’s metropolitan transportation plan, Mobility 2040, requiring a “One Seat Ride” (i.e., not requiring a transfer) for passengers traveling from Houston to San Antonio (through Dallas and Fort Worth).
- **Track Alignment** – Access to the proposed ITC station location by TOPRS from the north should be evaluated carefully as it relates to conflicts with existing infrastructure. While there appears to be no fatal flaws associated with accessing the proposed ITC station location and configuration entering and departing from the north and south, further analysis will be required to identify the most cost-effective alignment.
- **Station Layout and Configuration** – Preliminary layout

and configuration of the proposed station location is included on page 31, as the current Amtrak alignment works at grade with the CES tracks above this alignment. However, a more detailed design process should be performed to determine the most efficient and cost-effective means to implement a “stacked” platform configuration.

- **Operational Efficiencies** – Operating up to four separate HSR systems is inherently inefficient and will have significant impact on ridership/revenue (system transfers), infrastructure and system capital costs (additional platforms, additional rolling stock, redundant facilities, etc.) and operation and maintenance costs.
- **Financial Viability** – The current capital cost estimate to design and construct the CES HSR between Dallas and Fort Worth is approximately \$3 Billion, not including rolling stock and costs to operate and maintain the system. The policy recommendations included in the Mobility 2040 plan for a seamless integration with other planned HSR lines and encouragement of public private partnerships will be important to the development of a viable financial plan. The results of the NCTCOG RFI seeking input from entities regarding potential options for project funding, financing, implementation, and operations for the proposed CES will provide a basis of understanding of how the private industry views the viability of the project.

## SCENARIO 2

### *CES HSR from Dallas – Arlington – Fort Worth (System Integration south from Fort Worth to Austin/San Antonio - No System Integration with TCP HSR or TOPRS)*



Under this scenario, the TCP HSR would terminate at the Dallas Station, just as in Scenario 1, and passengers would have to transfer to a different platform at the Dallas Station to access the CES train to Arlington or Fort Worth. However, there would be no need to transfer trains at the Fort Worth station for those passengers traveling from Dallas past Fort Worth on to Austin or points south. This system integration would simplify

the Fort Worth Station configuration and negate the need for an additional platform (the “stacked” platform concept) as the system technology and operating entity would not change.

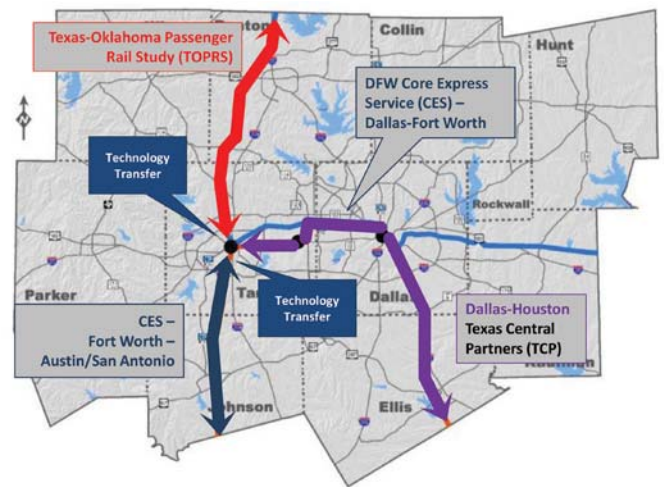
For finalizing the EIS, the following considerations must be further evaluated regarding this scenario:

- **Policy Compliance** – This scenario would require a transfer from the TCP system to the CES system at the Dallas station. However, it is preferable to Scenario 1 as it would allow passengers seamless, uninterrupted HSR service between Dallas to Austin/San Antonio and not require a second transfer in Fort Worth.
- **Track Alignment** – This scenario assumes any connection to the south from the Fort Worth Station would be implemented using the same rolling stock and system technology as the CES. While no fatal flaws appear to exist with accessing the proposed ITC station location and configuration arriving and departing from the south, further analysis will be required to identify the most cost-effective alignment. Furthermore, access to the proposed ITC station location by TOPRS from the north should be evaluated carefully as it relates to conflicts with existing infrastructure.
- **Station Layout and Configuration** – Under Scenario 2, the need for an additional platform to serve a separate/unique rolling stock technology and operating conditions at the Fort Worth Station is not necessary. Eliminating an entire platform (i.e., an additional floor of the station facility) will significantly simplify the design of the station, reduce the scale and visual impact in its downtown Fort Worth context, and create a more efficient facility both operationally and as it relates to the user.
- **Capital Costs** – Eliminating the need for a separate, elevated platform to serve the needs of a distinct technology at the Fort Worth Station under this scenario will significantly reduce the capital cost to design and construct the Fort Worth Station. However, a more detailed analysis will be required to evaluate the operation requirements and conditions (i.e., ridership, headways, level of service, etc.) as an integrated system between the CES and TOPRS may necessitate additional track requirements at the Fort Worth Station. This could increase the length and or width of the platform level to meet those demands.
- **Operational Efficiencies** – Operational integration of the CES between Dallas and Fort Worth and south to Austin/San Antonio will greatly increase the operational efficiency of this part of the system. Reducing the number of transfers required of passengers will have significant impact on ridership/revenue. Furthermore, the reduction in infrastructure and system capital costs (additional platforms, additional rolling stock, redundant facilities, etc.) and operation and maintenance costs associated with this system integration will be achieved. Additional analysis and evaluation to quantify these savings must be performed.
- **Financial Viability** – The policy recommendations included

in the Mobility 2040 plan for a seamless integration with other planned HSR lines and encouragement of public private partnerships will be important to the development of a viable financial plan that integrates CES with an extension south. The results of the NCTCOG RFI seeking input from entities regarding potential options for project funding, financing, implementation, and operations for the proposed CES will provide a basis of understanding of how the private industry views the viability of the project.

### SCENARIO 3

#### *TCP HSR from Houston – Dallas and on to Arlington – Fort Worth (No System Integration w/ HSR south of Fort Worth to Austin/San Antonio or TOPRS)*



Under this scenario, the TCP HSR would terminate at the Fort Worth Station where passengers would have to transfer from the TCP system to a different platform to access the HSR trains to Austin/San Antonio or the TOPRS system to points north of Fort Worth. However, there would be no need to transfer trains at the Dallas Station for those passengers traveling from Houston past Dallas to Arlington or Fort Worth.

For finalizing the EIS, the following considerations should be evaluated further regarding this scenario:

- **Policy Compliance** – This would require a transfer from the TCP system to a different HSR system at the Fort Worth station. However, it is preferable to Scenario 1 as it would allow passengers seamless, uninterrupted HSR service between Houston, Dallas, Arlington and Fort Worth, and not require a transfer in Dallas.
- **Track Alignment** – This scenario assumes that any connection to the south from the Fort Worth Station would be implemented using a different rolling stock and system technology from the TCP system. While no fatal flaws appear to exist with accessing the proposed ITC station location and configuration arriving and departing from

the south, further analysis will be required to identify the most cost-effective alignment. Furthermore, access to the proposed Fort Worth ITC station location by TOPRS from the north must be carefully evaluated as it relates to conflicts with existing infrastructure.

- **Station Layout and Configuration** – Under Scenario 3, there will be a need for an additional platform to serve a separate/unique rolling stock technology and operating conditions at the Fort Worth Station. Preliminary layout and configuration of the proposed station location is included on page 31. A more detailed design process will be necessary to determine the most efficient and cost-effective means to implement the “stacked” platform configuration.
- **Capital Costs** – The need for a separate, elevated platform required for a separate technology from the TCP system at the Fort Worth Station under this scenario will increase the capital cost to design and construct the Fort Worth Station. However, a more detailed analysis will be required to evaluate the operation requirements and conditions (i.e., ridership, headways, level of service, etc.) as an integrated system between the CES and TCP may necessitate additional requirements at the Fort Worth Station. This could increase the length and or width of the platform level to meet these demands.
- **Operational Efficiencies** – Operational integration of the CES and TCP services will greatly increase the operational efficiency of this portion of the system. Reducing the number of transfers required of passengers will have significant impact on ridership/revenue. Furthermore, the reduction in infrastructure and system capital costs (additional platforms, additional rolling stock, redundant facilities, etc.) and operation and maintenance costs associated with this system integration will be achieved. Additional analysis and evaluation to quantify these savings should be performed.
- **Financial Viability** – The policy recommendations included in the Mobility 2040 plan for a seamless integration with other planned HSR lines and encouragement of public private partnerships will be important to the development of a viable financial plan that integrates CES with TCP. The results of the NCTCOG RFI seeking input from entities regarding potential options for project funding, financing, implementation, and operations for the proposed CES will provide a basis of understanding of how the private industry views the viability of the project.





# FACTORS ANALYSIS

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# FACTORS ANALYSIS

## FACTORS DEVELOPMENT

Input from key stakeholders representing Downtown and Near Downtown organizations, as well as Project Review Committee input and professional best practices was utilized to create a comprehensive list of factors to be applied to each station area option. Both quantitative and qualitative, this analysis was utilized to rank the best options for the station location within greater Downtown Fort Worth. 50 initial factors were identified. With stakeholder input, the initial list was consolidated and refined down to 40 factors and integrated into a detailed matrix tool (see Appendices).

The factors were organized into five distinct categories to focus their definitions and to organize their application in terms of: constructibility, functionality, connectivity/mobility, policy and economic opportunity.

A scoring system was then created for each factor from 0 to 4, with 0 representing severe negative implications; 2 representing additional study needs to be undertaken; and 4 indicating the most positive implications. Some factors were also scored based on a 'No' or 'Yes' answer – these were scored using 0 and 4, respectively.

With a possible score of 160, each factor was evaluated on its merit, definition and application. The resulting score of each factor was not weighted, as the use of weighting would indicate a preference for one policy consideration over others. In other words, the scoring reflected an ideal circumstance among all factors and therefore did not require a weighting to achieve a preferred recommendation.

## FACTORS DEFINITIONS

Significant to the application and analysis of the factors, the specific factor definitions determined the quantitative and qualitative scores. The following definitions were utilized.

**Constructibility** refers to those factors related to the ability to physically construct the station and alignment:

- **Alignment Options** refers to the ability of the identified alignment option to facilitate the ingress/egress of the train to the station. This study evaluated three alignment corridors determined to be viable for the CES: Trinity Rail Express (TRE), the I-30 corridor and the UPRR corridor. The UPRR alignment splits to provide options along the UPRR right of way and East Lancaster Avenue coming into Fort Worth (see Figure 1).
- **Vertical Impacts** refers to the location's ability to overcome restrictions (if any) necessitated by the need to acquire air rights above the station location or the approach alignment.

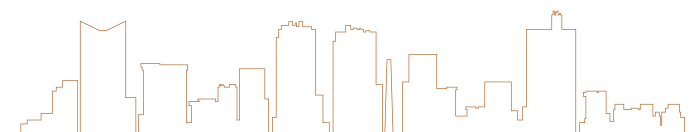
- **Land Availability (Houston to Fort Worth Termination)** refers to land area availability to accommodate the station facility and all necessary infrastructure (including parking, station amenities, core ingress/egress, arrival/departures, etc.) for both the high-speed rail and TOPRS alignment.
- **Land Availability (Houston to Austin/San Antonio with Transfer)** refers to the ability to accommodate the station facility and all necessary infrastructure (including parking, station amenities, core ingress/egress, arrival/departures, etc.) for both the high-speed rail and TOPRS alignment.
- **Land Ownership** refers to the amount of public land available for the station area.
- **Existing Infrastructure Compatibility** refers to a location's lack of conflict with existing infrastructure that may impact the station's location or orientation; this includes conflicts with freight rail, highways, on-system arterials, local arterials, major utilities, TRE or TEXRail.
- **Environmental Justice / Neighborhood Displacement** refers to no displacement on quality of life in terms of conflicts with the local neighborhood (business/community uses and residential) and environment. Neighborhood-level social impacts were analyzed to create an understanding of how the HSR Fort Worth Station and ancillary economic, environmental and connectivity impacts will affect the downtown and near downtown neighborhoods.

**Functionality** refers to those factors related to functional operations of the station:

- **Parking** refers to the location's ability to provide sufficient long-term parking on-site or convenient existing remote or shared parking locations, or the ability to expand parking in the area.

**Connectivity/Mobility** refers to those factors related to station connections to regional and local transportation modes:

- **MTP Policies and Recommendations** refers to the location's ability to enable the design and implementation of a station to meet policy and recommendations of the MTP's one-seat ride policy or system expansion south to Austin/San Antonio.
- **Multimodal Connectivity** refers to the location's ability to enable and enhance multimodal transportation opportunities at or near the station area, as well as consistency with Fort Worth Transportation Authority's



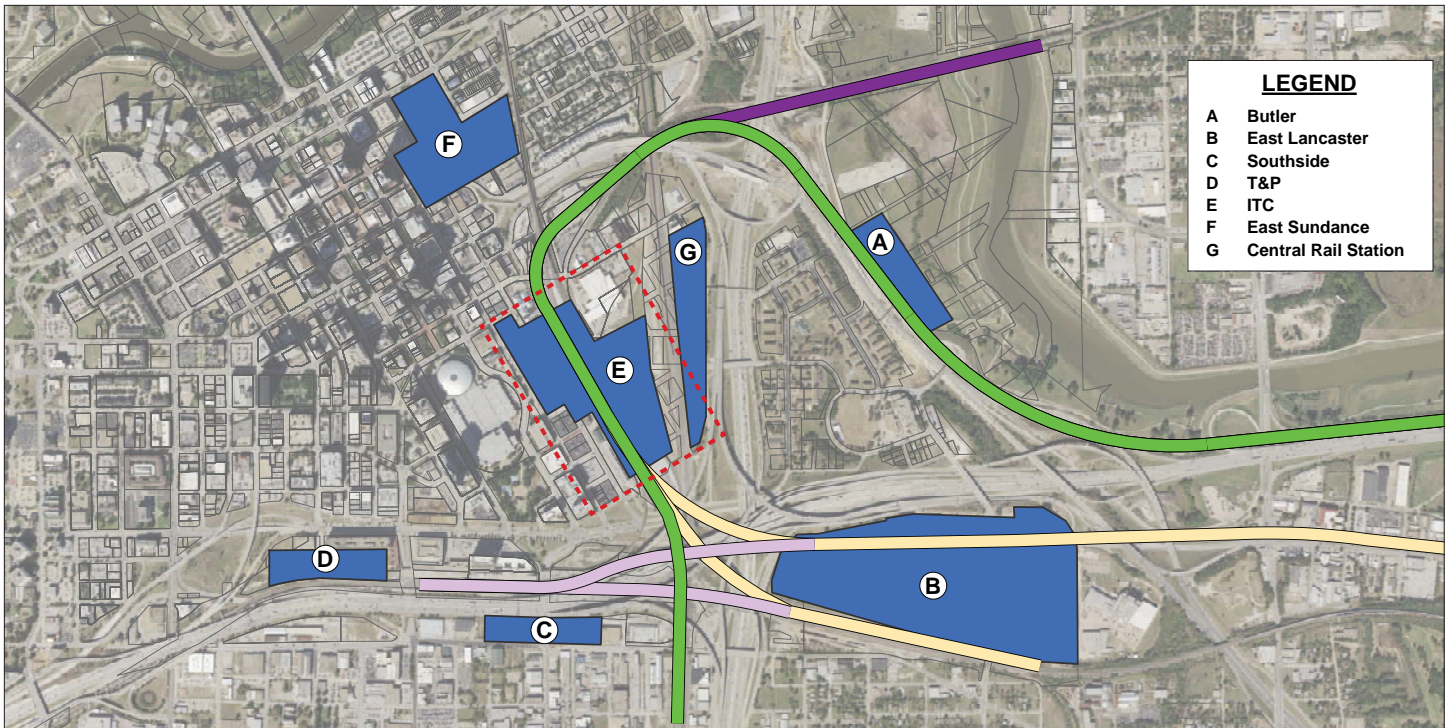


FIGURE 3: STATION LOCATION OPTIONS

master plan. This applies to both regional and local connectivity opportunities.

- **Ingress and Egress** refers to the ability for effective ingress/egress at commute peak hour for automobiles, buses and pedestrians.

**Policy** refers to those factors related to policy implications through adopted plans:

- **Station Area Context** refers to the impact of each station location’s surrounding area for the following factors: Contextually Aligned with Adjacent Historical and Cultural Assets; Visual Impact; Scale Impact; Street Grid Impact; and Regional Priority Eco-System Impact, evaluated as in respect to the Mobility 2040 Regional Ecosystem Framework mapping with low to high impacts for the following criteria: agricultural lands, ecological diversity, ecosystem sustainability, flood zones, impaired water segments, natural areas, rarity, surface water quantity, wetland, and wildlife habitats.
- **Public and Institutional Plan Consistency** refers to if the station location meets any applicable public or institutional plans, or impacts any existing plans.

**Economic** refers to those factors related to economic opportunity and viability of the station and the surrounding community:

- **Front Door** refers to each location’s ability to act as a gateway and improve the potential (e.g. economic, development, etc.) of the surrounding area.

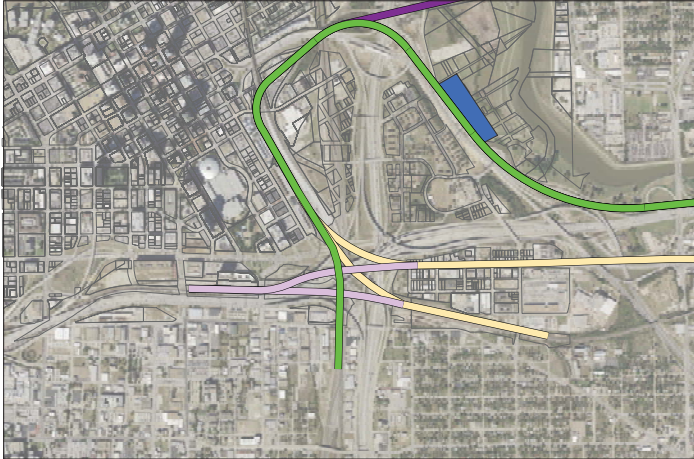
- **Vertical Impacts/Opportunities (Air Rights)** refers to the opportunity to build habitable space above the platform.
- **Passenger Perception** refers to the impact of the station location on high-speed rail users’ visual and overall perception of Fort Worth and the station area.
- **Economic Development** refers to the relative economic development potential of each station location including tourism innovation, primary job creation, and the positioning of Fort Worth to become more economically effective within Texas, the nation and globally; the factor looks at various sub-factors including: support of current and potential new office employment; development; and public and private partnership potential.

## FACTORS APPLICATION

A detailed worksheet (see Appendix) was created to organize the definition, methodology and analysis for each factor, while also facilitating the scoring of each station. The scores

were combined into total scores, producing a ranking for the respective station locations.

### Butler Place



**Constructibility (Score 52 out of 80 Possible):** Relatively uninhibited for Butler Place, constructibility was strongly impacted by alignment options, as this location only sits on half of the alignment options. In addition, the relatively unclear impact on building within the flood plain along the Trinity River was an indicator that land availability may be limited as further environmental review is performed.

**Functionality (Score 2 out of 4 Possible):** Parking is only limited by the extents in which the station would be allowed to build its own parking, considering potential flood plain implications. Shared parking with existing locations are impacted by lack of connectivity to those facilities.

**Connectivity/Mobility (Score 1 out of 24 Possible):** There are few opportunities for connectivity, whether multimodal, regional or local in this location. Access is severely limited due to its location east of the highway.

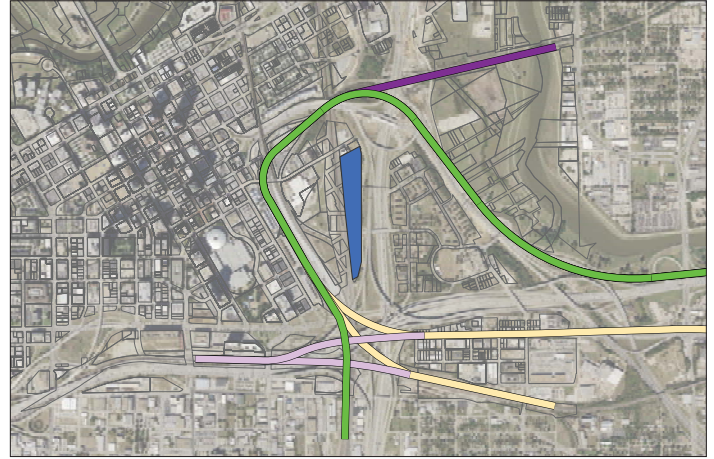
**Policy (Score 18 out of 24 Possible):** Impacts on current plans are limited due to its location outside of many plans in the area. It is unclear the impact of the scale and context due to the unknown development plan within the Butler Place mixed-use development.

**Economic (Score 16 out of 28 Possible):** Limitations on the impact of economics is relative to its access to existing employment and tourism base. Connectivity plays a large role in the success of many of these categories. The development impact for new development is high due to the station's catalytic impact on the Butler Place mixed-use development.

**Total Score - 89**

**Rank - 5th**

### Central Rail



**Constructibility (Score 64 out of 80 Possible):** This station meets all alignment options, though it is restrictive on land availability. There is a concern that the length of the station needed would infringe on rail property and operations. In addition, the land is entirely privately held.

**Functionality (Score 2 out of 4 Possible):** Parking may fit on-site, but access to shared parking would be limited in this location without significant connectivity improvements.

**Connectivity/Mobility (Score 15 out of 24 Possible):** Currently there is no access to Downtown from this location without backtracking through Butler Place. In order to improve access for regional and local connectivity, enhanced bridges would be required to cross rail facilities. Access to interstate is acceptable given its direct adjacency to the freeway.

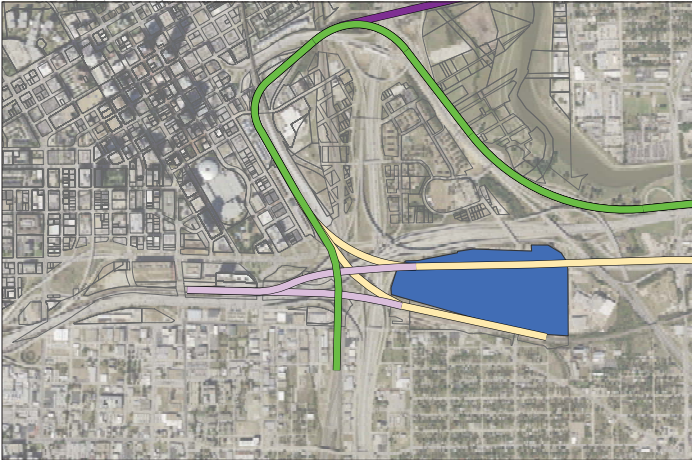
**Policy (Score 24 out of 24 Possible):** This station option does not impose any impact on a current public plan. Development of this station would increase the connectivity options for Butler Place, since it is currently connected to that development and would need to bridge Downtown over to this station.

**Economic (Score 16 out of 28 Possible):** There are development opportunities associated with this station option; however, the access to the ITC and Downtown will be critical in order to realize its full capacity.

**Total Score - 121**

**Rank - 2nd**

## East Lancaster



**Constructibility (Score 44 out of 80 Possible):** The East Lancaster option involves obstacles different from the other locations. It is limited due to alignment options like Butler Place, only available on two alignment options. The land ownership is made up of entirely private land, making assembly an obstacle to construction. In addition, the potential for a significant amount of displacement of services and organizations servicing the homeless would occur along with a number of jobs.

**Functionality (Score 2 out of 4 Possible):** Parking would not be hindered from the availability of land, as private land would just need to be purchased. Shared parking opportunities in the area would be limited.

**Connectivity/Mobility (Score 10 out of 24 Possible):** Though not as restricted at Butler Place, East Lancaster has a significant lack of local connectivity from a multimodal and pedestrian impact consideration. There is bus service, including a FUTA bus rapid transit route; but it does not resolve the lack of regional mobility, and bike and pedestrian connectivity.

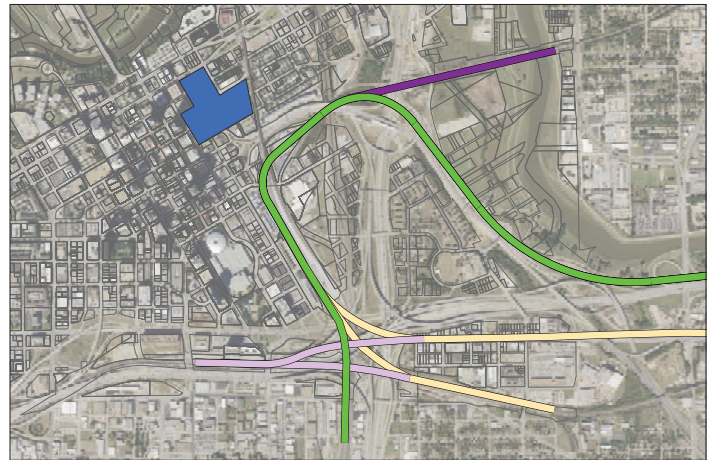
**Policy (Score 22 out of 24 Possible):** The station area does not impose any complications with existing public policy recommendations within the area.

**Economic (Score 4 out of 28 Possible):** There is limited connectivity to existing employment and the downtown tourism base. Development opportunities would result in some development; but heavy improvements in connectivity would be needed to realize a stronger development impact.

**Total Score - 82**

**Rank - 6th**

## East Sundance



**Constructibility (Score 53 out of 80 Possible):** East Sundance meets all alignment options, similar to ITC. Limitations exist for this property on land ownership, as it is all owned by a private entity. Three historic churches at this location would be impacted by the extension of the rail alignments adjacent to these properties.

**Functionality (Score 4 out of 4 Possible):** There are ample parking options via shared, on-site and leasable spaces adjacent to this station area.

**Connectivity/Mobility (Score 19 out of 24 Possible):** This station option does not have regional connections. Locally, there are bike and pedestrian connections, as well as opportunity for bridge connections directly to Panther Island in some fashion.

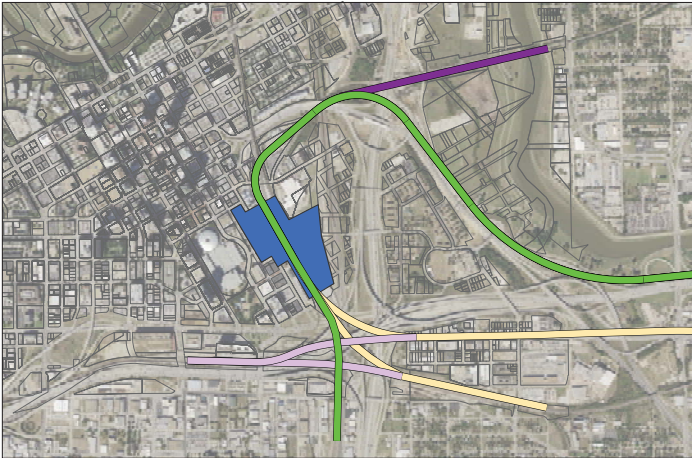
**Policy (Score 14 out of 24 Possible):** Alignment with the current historic churches within the path of the alignment causes a major implication for this station. In addition, its direct adjacency to the Hillside Neighborhood could cause substantial negative impacts to the neighborhood.

**Economic (Score 25 out of 28 Possible):** This station is directly adjacent to Sundance Square and ample employment through pedestrian and bicycle connections. There is little opportunity for new development directly adjacent to the station.

**Total Score - 115**

**Rank - 3rd**

## ITC



**Constructibility (Score 56 out of 80 Possible):** This station location has access to all alignment options and therefore scored well against other stations. Some conflicts with existing businesses could occur, but many can be mitigated through careful design considerations.

**Functionality (Score 4 out of 4 Possible):** There are ample parking options via shared, on-site and leasable spaces adjacent to this station area.

**Connectivity/Mobility (Score 24 out of 24 Possible):** This station has exceptional access and connectivity. Its regional connectivity includes TRE, TEXRail, Amtrak, Greyhound and FWTB bus transit and BRT lines.

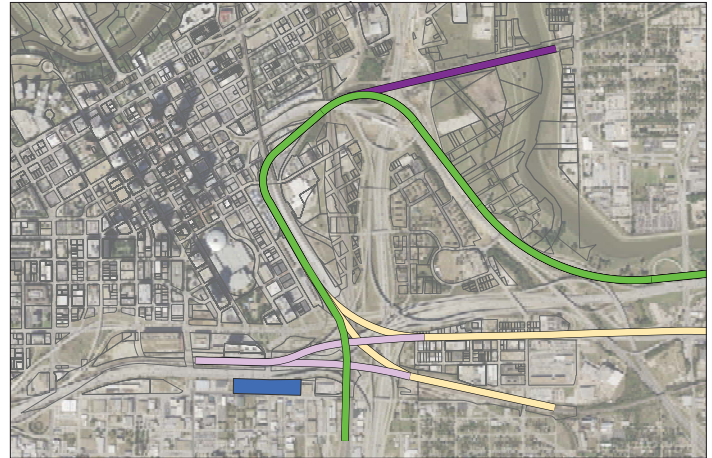
**Policy (Score 16 out of 24 Possible):** Generally, this station location meets expectations for context support and visual impacts, having low impacts on adjacent facilities. This location aligns with the convention center renovation plan. Some of the properties adjacent and within this station area may be historically sensitive and removal of those buildings would not be supported publicly. This can be designed around in order to limit impact on these facilities.

**Economic (Score 27 out of 28 Possible):** Within the Central Business District and within walking distance to Sundance Square, Convention Center and ample employment, this station has the best connection to existing economic drivers. With the underutilized property adjacent to the station area, there are opportunities to grow and catalyze additional development.

**Total Score - 127**

**Rank - 1st**

## Southside



**Constructibility (Score 49 out of 80 Possible):** Southside revealed a limited property availability that restricts the potential for expansion of HSR facilities. Land ownership was a split of publicly and privately owned property.

**Functionality (Score 2 out of 4 Possible):** There are some shared parking opportunities as well as on-site parking potential. Limited expansion potential for this facility encumbered the potential for parking in general.

**Connectivity/Mobility (Score 16 out of 24 Possible):** There is potential for some facility connection for regional mobility through an underground tunnel to the T&P station, with access to TRE and TEXRail. Local connectivity includes bus, bike and pedestrian facilities, including recent upgrades to Main Street which would tunnel directly under the available property.

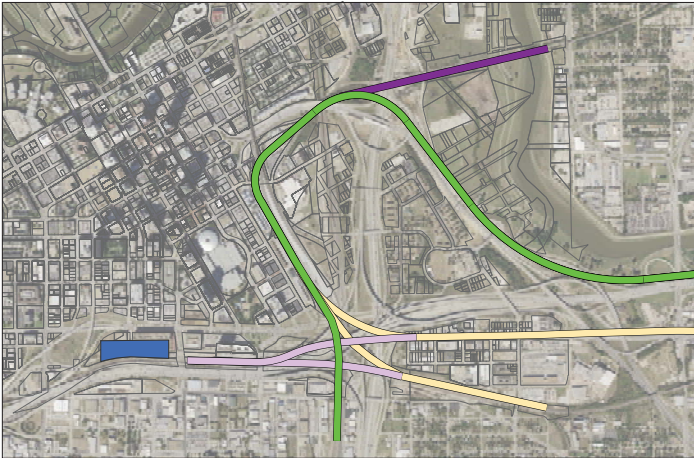
**Policy (Score 18 out of 24 Possible):** Context support generally meets the current policy and momentum for the South Fort Worth area. There may be a conflict with some context, given the large amount of residential being constructed in close proximity.

**Economic (Score 18 out of 28 Possible):** Most property within the vicinity of the station area have been slated for redevelopment, many of which has been catalyzed by new growth in the nearby Medical District. There is clear public support for HSR; but it is unclear whether the local stakeholders would support this type of large facility.

**Total Score - 103**

**Rank - 4th**

## T&P



**Constructibility (Score 30 out of 80 Possible):** Due to a gas well, a slim right-of-way between US Postal Service, UPRR and private ownership, the land availability for the T&P station is not sufficient.

**Functionality (Score 2 out of 4 Possible):** Because of its low land availability, T&P has little opportunity for on-site parking; but it does have access to some shared parking garages and lots.

**Connectivity/Mobility (Score 18 out of 24 Possible):** This location allows for regional access to TRE and TEXRail at grade; but it would need to exercise access agreements in order to achieve access for vehicles, service, or bus. Pedestrian and bicycle access could be achieved through common facilities with TRE and TEXRail station, but it is unclear how those would accommodate HSR traffic.

**Policy (Score 12 out of 24 Possible):** Though this station has little impact on the street grid and environment, there is clear concerns with conflicts with the views from adjacent loft residential. Development of this station would conflict with operations of the U.S. Postal Service facility.

**Economic (Score 16 out of 28 Possible):** There is potential that a HSR station could catalyze the renovation of the T&P Warehouse, as well as attract support from public-private partnerships, since it sits within boundaries of a Tax Increment Reinvestment Zone (TIRZ) and a Public Improvement District (PID). Given the current advancement of development along West Lancaster Boulevard, there is limited property that this station could catalyze directly adjacent.

**Total Score - 78**

**Rank - 7th**

## NARROWING PROCESS

During the process, additional input from the Project Review Committee as well as key stakeholders, was received for the T&P and Central Rail stations. Mostly regarding land availability concerns, this input was used to recalibrate the scoring for each location.

NCTCOG and the Gateway Planning Team undertook an additional fatal flaw analysis of the top three station areas regarding the approach, alignment and station orientation. The ITC, East Sundance and Central Rail station location considerations included:

- The ITC area had enough land to warrant three sub-options, one of which is presented as the preferred option in this report. The other two locations had undesirable conflicts with existing older structures and planned development adjacent to the locations and was not studied further.
- The East Sundance approach alignment for the station would be required to have undesirable implications on three historic structures, posing a major conflict with potential displacement.
- Central Rail had conflicts with the size of the platform required as it borders and potentially conflicts with railroad functions, leaving little room for terminal development. In addition, access to the site is limited, requiring current access to use the Butler Place road network.

## RECOMMENDED LOCATION

Through this additional layer of study and analysis, the preferred location for the Fort Worth station is the ITC area. This location facilitates ease of access to regional and local mobility options and facilitates opportunities to achieve local goals of enhancing existing development and opening new development opportunities.

This location also establishes the Fort Worth station as the only HSR station in the heart of a city's Central Business District within the future statewide system.

## ADDITIONAL ANALYSIS NEEDED

Having selected the ITC station area, the Gateway Planning Team recommends the following additional analysis:

1. What will be the specific siting of the terminal and platform, and what land will be needed?
2. What specific conflicts will arise with utilities, or what additional utilities will be needed?
3. What specific impacts on existing structures and what adjacent development opportunities or conflicts can be expected?
4. How should access to multimodal facilities and parking at the ITC be designed and integrated?





# PROPOSED STATION

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# PROPOSED STATION

## STATION AREA FACILITY SIZE

Initial efforts to program and size a terminal facility started with the idea that the station should fit within the existing block structure of Downtown and the ITC. In addition, the format of the building should be set to allow the existing road network to remain open for vehicular traffic. This will necessitate that the terminal building be sized approximately 200 feet wide by 1000 feet long with a North-South orientation.

With this assumption, only three locations were feasible matches for this scale of building (see Figure 4).

- **Option 1** is located between Calhoun Street and Jones Street. This option includes conflicts with existing structures that may be of historic value. It also utilizes land that is all owned by private entities, placing a strain on land availability.
- **Option 2** is located East of Jones street between the ITC building and the Santa Fe Building (on top of the existing bus transfer area. This option is ideal as it is owned completely

by public entities. It also offers innovative approaches to the terminal and platform, as it directly envelopes multimodal and regional connectivity within the same structure.

- **Option 3** is located East of the current TRE and Amtrak rail alignment. This option has potential for the same innovative terminal and platform layout; however, access is limited. In addition, there are potential conflicts with rail operations and likely need for a large potential utility upgrade on that side of the rail.

Exploration of Option 2 revealed that since the platform will be built to a height of 40 to 60 feet above grade, the ideal platform alignment will be above the existing TRE / TEXRail / Amtrak alignments, with the terminal placed along Jones Street. This configuration allows the terminal building to fit between the ITC and Santa Fe buildings, while maintaining access points and ensuring the bus transfer center is reprogrammed into the terminal building.

This configuration will position the Fort Worth HSR station as a central hub for regional and local transit within the Metroplex.

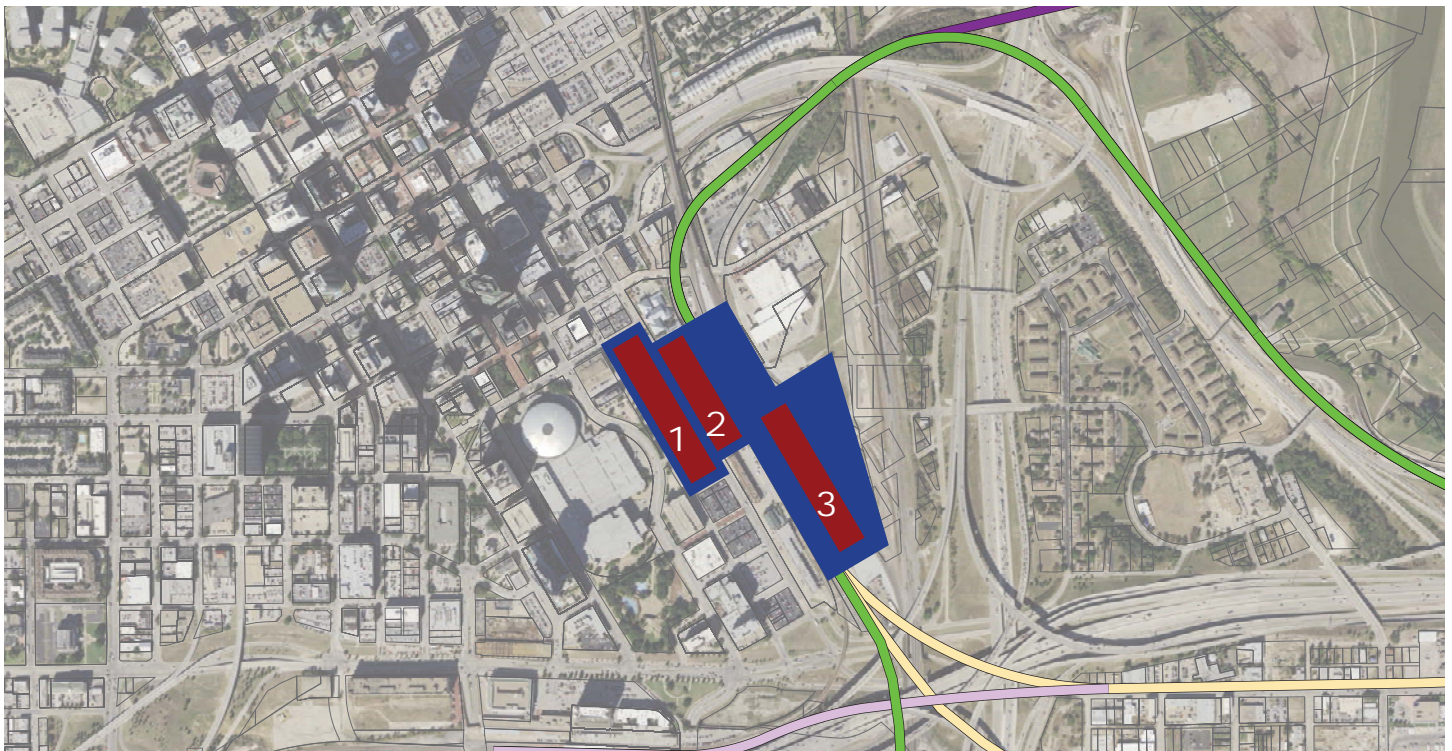


FIGURE 4: STATION LOCATION OPTIONS WITHIN ITC STATION AREA



## LOCATION CONTEXT

Placement of the terminal and platform in a central hub format facilitates current plans of the Convention Center renovations, improved connections of the street grid and planned private development to move forward unhindered.

Alignment of key parcels in relation to the station allows for potential multi-modal bridges and enhancement of existing bridges to connect disparate parcels together in a way that

would be cost prohibitive outside of a larger infrastructure project like HSR.

Those connections will expand revitalization opportunities by allowing for development to move further eastward across existing rail lines, and provide multiple connectivity options for access from Butler Place into Downtown (see Figure 5).

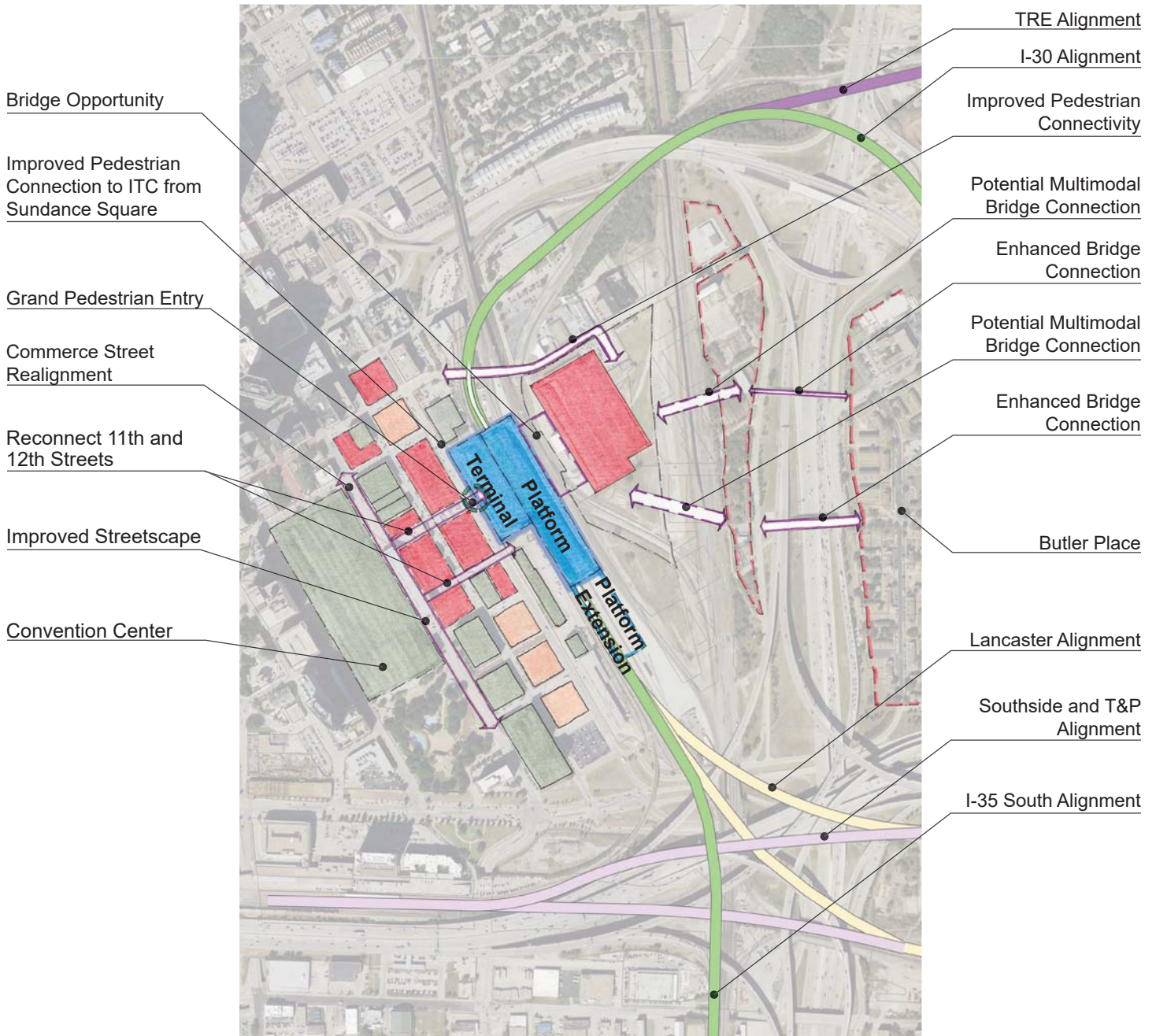


FIGURE 5: STATION CONTEXT PLAN

## TRACK APPROACH ALIGNMENT

The ITC location accommodates all of the viable rail alignment options and would facilitate adjustment of the terminal height according to the final selected rail alignment elevation as needed (see Figure 6). Regardless, there is a preference for the line to swing in from the north of the station (along I-30 or TRE alignments). On the other hand, the southern approach has the potential to be much higher in elevation, causing extensive need for infrastructure that may incur much more cost.

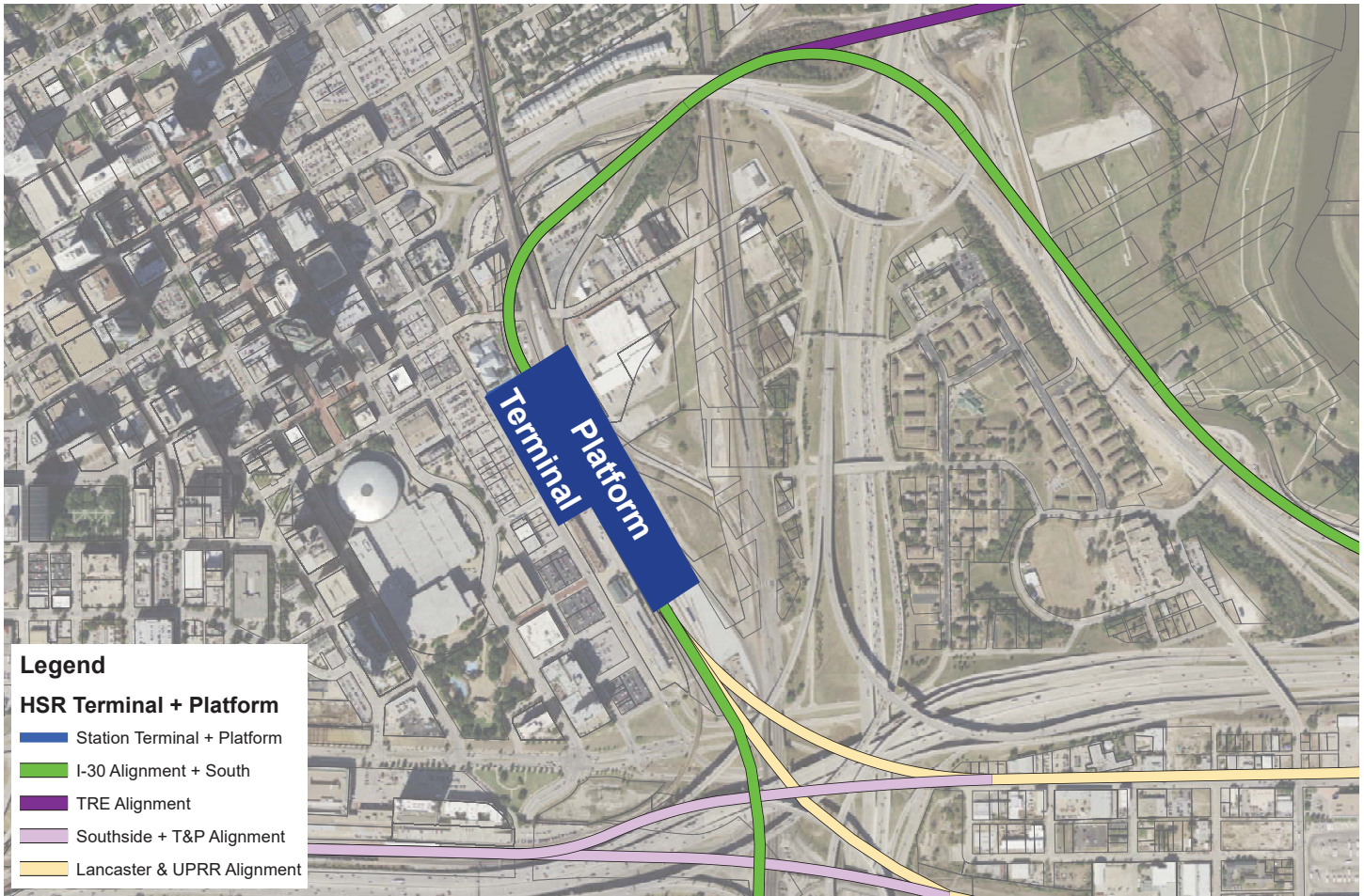


FIGURE 6: ITC TERMINAL AND PLATFORM ALIGNMENT MAP

## RAIL PLATFORM ORIENTATION

Constructing the platform over the existing TRE and Amtrak lines will require access that floats between the existing rail operations and the future platform for HSR. By programming the Terminal for ticketing and waiting at the second level, the access for the platform is positioned directly below the platform.

This second level also serves as the access point for any bridge that would continue east into the central rail areas.

Platform access arrives central to both east-bound and south-bound departures allowing excess rail for storage, maintenance and through-service.

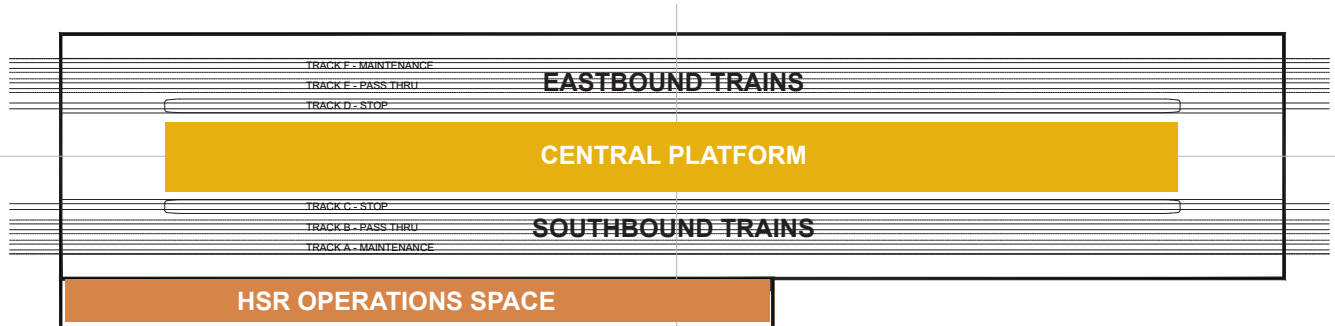


FIGURE 7: PLATFORM PLAN VIEW - LEVEL 3

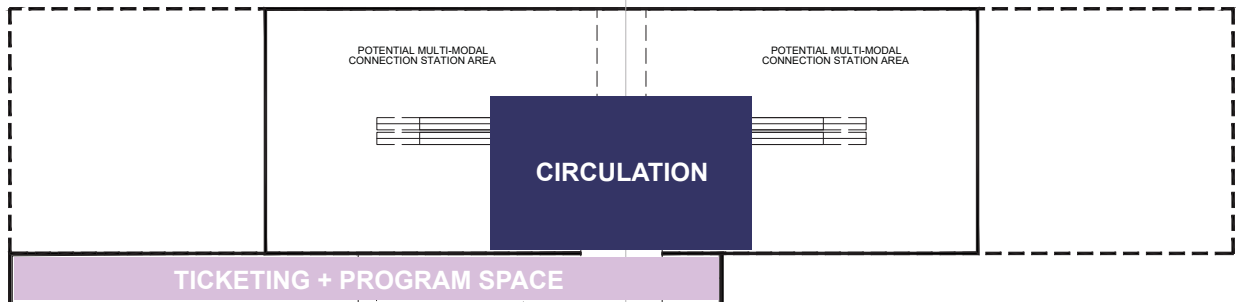


FIGURE 8: PLATFORM ACCESS PLAN VIEW - LEVEL 2



FIGURE 9: TERMINAL AND PLATFORM RELATION

## STATION TERMINAL BUILDING MASSING

An optimal terminal provides opportunities for multiple functions. Placement of the station facility in this context addresses the sidewalk for the ‘front door’ exposure of the pedestrian into Downtown, while also facilitating access for multimodal connections within the ground floor of the terminal.

In summary, the terminal building provides for:

- At-grade bus, on-demand car service, bike, and pedestrian access with a meaningful focus of pedestrian oriented frontage along the public street;
- Incorporated HSR functions for successful access and safety protocols that will be essential for running of the system;
- Retail and restaurant services both in the waiting area and along the public street;
- Direct access to and from TRE, TEXRail and Amtrak;
- Office functions at the platform level; and
- Potential for public-private partnership projects above the terminal such as private office rentals or other uses.

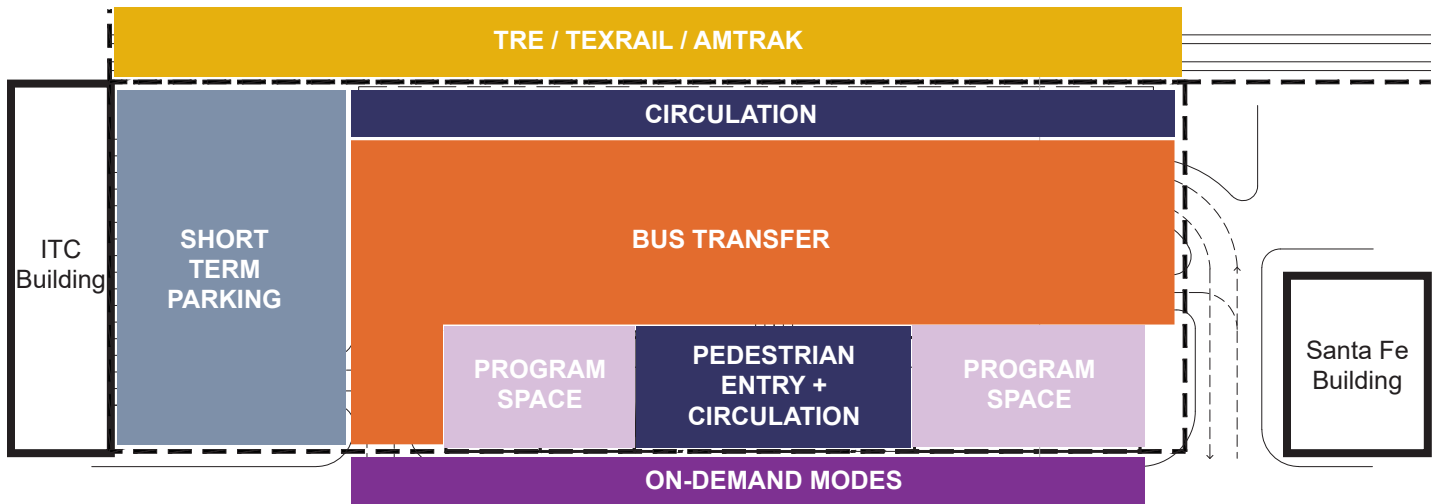


FIGURE 10: GROUND FLOOR ACCESS FOR MULTIMODAL CONNECTIONS

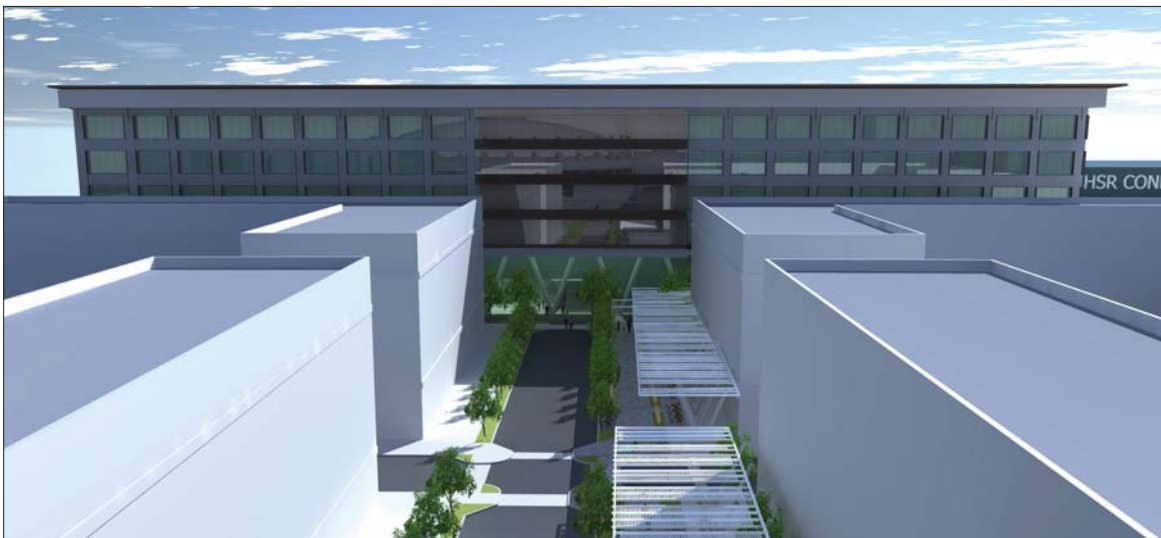


FIGURE 11: TERMINAL PEDESTRIAN FRONT DOOR

## PARKING NEED + MANAGEMENT

When introducing a destination, such as a new High-Speed Rail (HSR) Station, parking is a factor requiring thorough vetting to ensure the functionality and long-term sustainability of the project. In Fort Worth and the surrounding communities, automobiles are a necessary part of daily life. While advancements are being made in the way that people commute daily, such as ride-share and commuter rail, initial thoughts on parking at the HSR station drove the analysis to assume a large parking demand.

However, the Gateway Planning Team determined that alternatives to just assuming massive parking make sense given that:

- **It is the only station along the TCP and CES that sits within the boundaries of a Central Business District.** This circumstance opens up avenues of shared parking considerations and pedestrian access to jobs, employment and tourism activities.
- **It serves as the central station for regional and local mobility in Fort Worth and Tarrant County.** The service of every major transit line in the County, multimodal technology and potential last-mile connections are inside or directly adjacent to the terminal building.
- With appropriate policy alignment, **it could serve the technology advancement of on-demand and autonomous vehicle industries** to the extent that no traveler should need on-site long-term parking options.
- **Lifestyle choice for walkable, urban would decrease the dependency of personal vehicles**, with growing demand and options for vehicle technology. This provides a direct alternative for expensive land area being used for unprofitable parking stalls and structures.

Case studies in Florida and California led this analysis to determine that with these major considerations, there is little need to provide substantial long-term parking in station programming for HSR. In that context, there is still a need for TEXRail long-term airport parking accommodations and shared parking considerations for employees, short-term visitors and potential privately leased space at the HSR station.

Utilizing the ITC as the general location of the HSR station presents many opportunities for parking (see Figure 12). Various options that have been included in the conceptual plans include parking within the terminal and negotiating shared parking on adjacent city blocks.

A combination of options should be considered, as it is not anticipated that one single option will be sufficient for everyday user needs.

### *Terminal Parking*

Due to being in the central business district, the cost of acquiring land for parking may prove to be a financial challenge.

To assess the cost-benefit, on-site parking options should be considered very carefully.

It is not recommended that all parking should be accommodated underground on the station site if that is a viable option, as it should be combined with other parking options to deliver needed parking.

There are specific challenges that come with underground parking such as waterproofing of the structure, designing the structure to be able to accommodate the rail load above, soil movement, constructibility under an existing rail yard, ventilation of the underground structure, and long term maintenance. While there are likely design solutions for each of these challenges, they may introduce significant cost into the project and should be carefully considered.

Whether below grade or in structure, parking always faces specific challenges that should be carefully considered such as the effect on the architecture, ventilation of the terminal and parking, constructibility, and maintenance.

### *Shared Parking*

There are currently many existing surface parking and structured parking locations within a five-block reach of the ITC. While most of these existing parking options are privately owned and maintained, there may be options to negotiate shared parking agreements with these private owners, specifically those that are new developments on current parking lots adjacent to the HSR station site.

There are some existing shared parking agreements in Downtown that could be modified to include parking for the ITC. While negotiating to utilize existing parking locations is a viable option, there is also an opportunity with the many other surface parking lots within the five-block reach of the ITC to be incorporated into a “district” parking strategy. For example, a combined parking strategy could be facilitated for the Convention Center Hotel, any adjacent office or residential development and the FWTA operations.



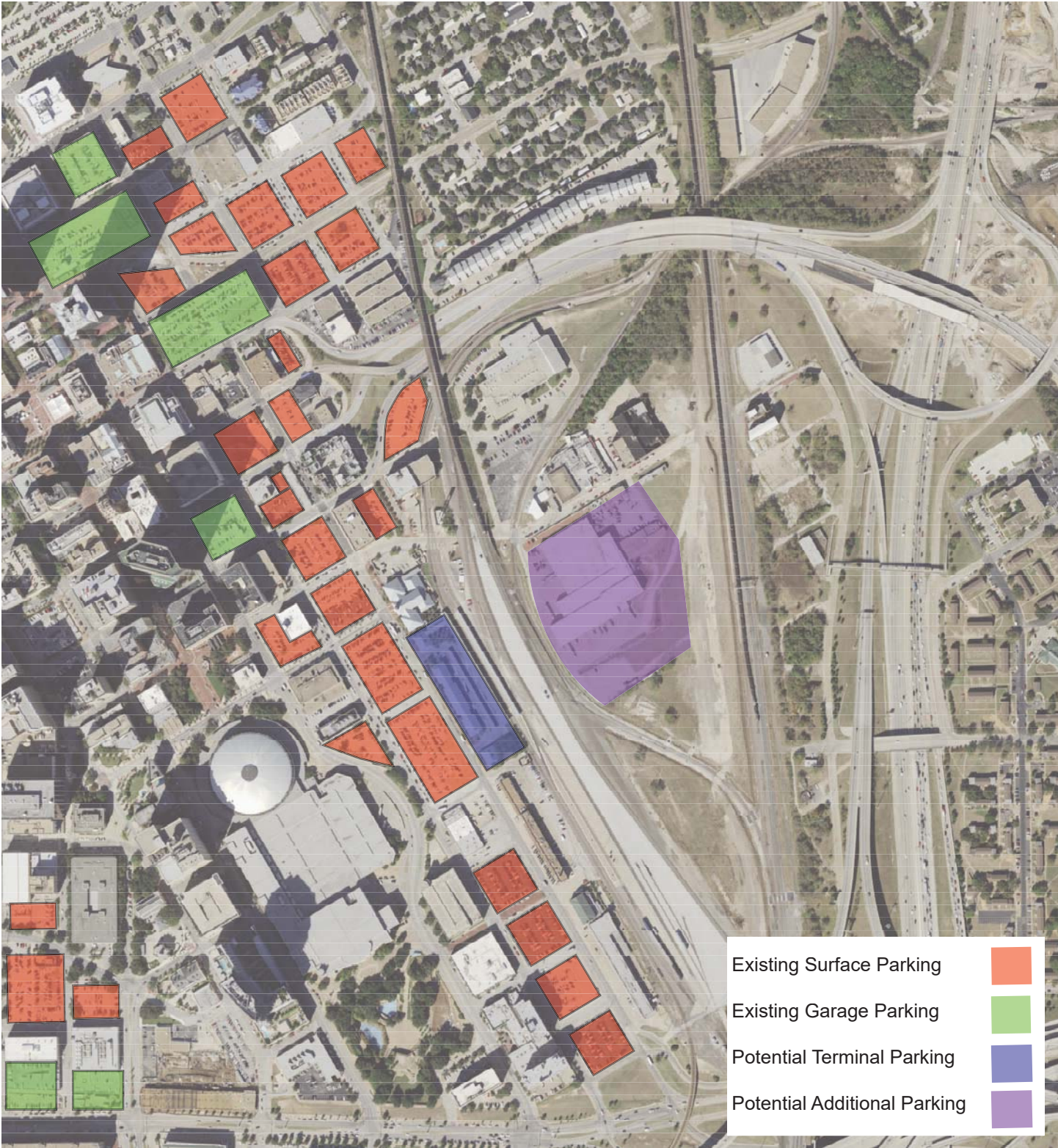


FIGURE 12: PARKING DIAGRAM



# STATION IMPACTS

## REDEVELOPMENT OPPORTUNITIES

Adjacent and surrounding properties have been analyzed for redevelopment potential as the station is developed. These redevelopment opportunities could include parking lots and other infill sites, or underutilized existing buildings and structures around the station area.

The redevelopment opportunities identified below recognize the areas where development projects are already planned in order to ensure potential development sites are realistic (see Figure 13). The terminal and platform proposed at the ITC utilize only publicly owned property; so all privately held

property within the station area will benefit from potential complementary development opportunities.

For example, development could occur on the properties that lie between Butler Place and the HSR station where, today, not much is anticipated. As discussed above, introducing multimodal connections through the HSR station program could enhance the potential for large-scale redevelopment.

This would increase the land available for CBD development by nearly 30 acres and increase the potential for success of the Butler Place redevelopment through enhanced bridge crossings.

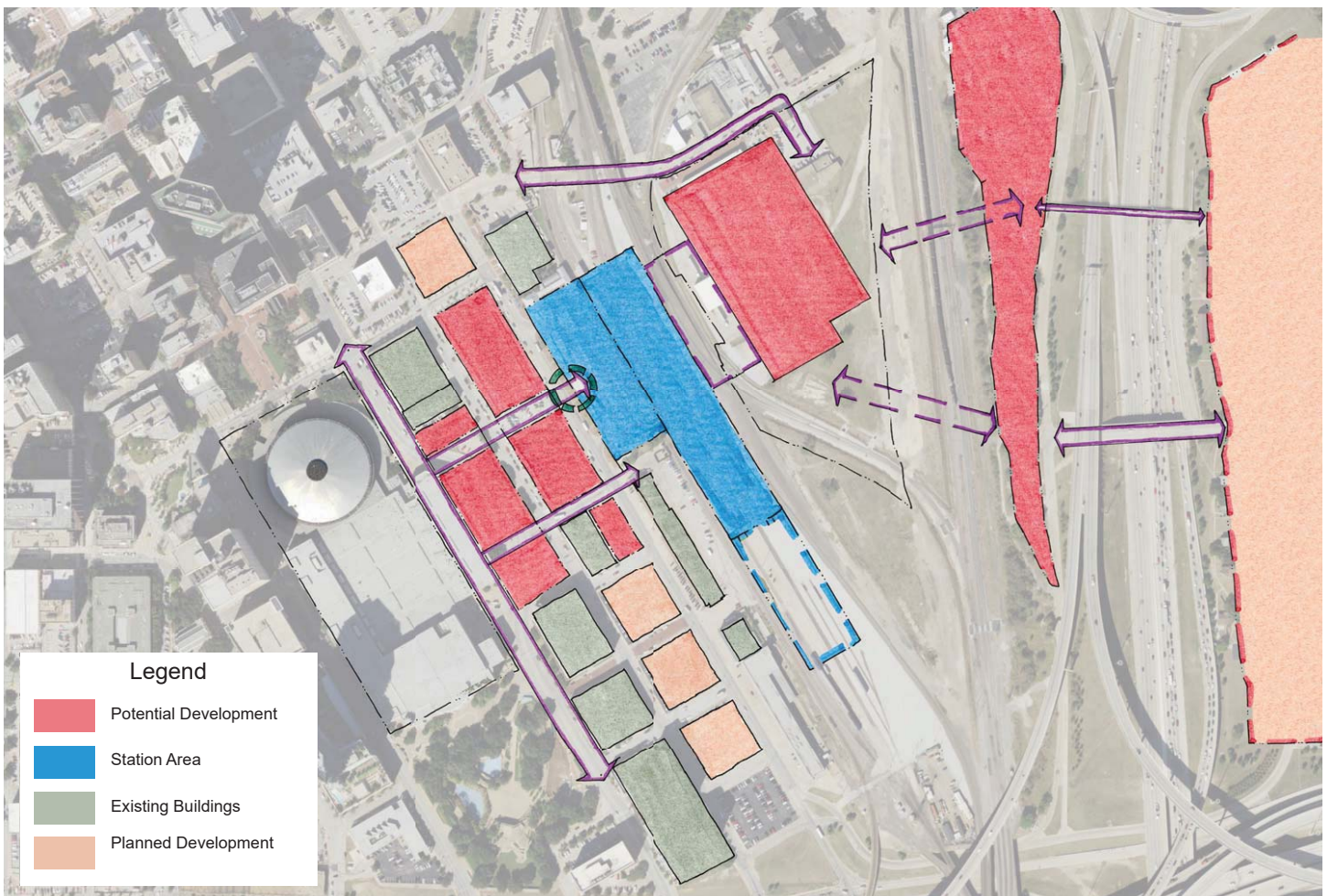


FIGURE 13: REDEVELOPMENT OPPORTUNITIES



## TRAFFIC IMPACTS

When evaluating the terminal design, it will be necessary to understand primary and secondary access points under many conditions, including day-of-week and time-of-day contexts. This analysis should be performed as a multi-modal exercise. The key will be to understand clear pedestrian entrances, versus other transportation needs.

Conflicts may arise when evaluating any increased demand on bus systems around and within the terminal. Understanding this dilemma, there will be an opportunity to separate loading for local buses from express and regional. Local bus loading performs well on local streets, whereas the other bus systems will perform well at a transfer terminal. This express bus terminal could be located at the ground floor of the HSR Terminal for ease of transfer from the buses to other regional and interstate travel as shown in Figure 10.

Additional conflicts may also arise from new technology and on-demand modes of automobiles. As discussed earlier, planning for that advanced vehicular travel will enhance the viability of the HSR by advancing the number of ways that a traveler can gain access to the HSR.

When a station area site is selected, it is recommended that a detailed analysis of traffic impacts be undertaken that includes:

- Long-term and short-term parking needs;
- Station access and service needs; and
- Joint development needs for traffic.

Traffic impacts should also be weighed with the potential for disruptive technology at the time that disruptive technology is incorporated into the system.

## ACCESS AND EGRESS

The ITC offers an amazing location within Fort Worth's CBD with access to the interstate system (I-30 and I-35W), major arterials such as US 280/US 287, SH 121, SH 199 and local downtown streets that include Commerce Street, Houston Street, West 6th and W 7th Streets and Lancaster Avenue.

Under the HSR Terminal and platform concept, CES operations are anticipated to be elevated a minimum of 40 to 60 feet to provide separation and clearance over cross streets, overpasses, the interstate system and the rail trackways. Preferred alignments for CES have the advantage of providing a north-south platform alignment that correspond with the existing ITC functionality and the surrounding local street network. With this arrangement, the existing downtown street grid can remain intact for access and egress to the new station and associated development.

In summary, the following network provides tremendous access: Jones Street is currently the main entrance into the ITC. It is a one-way north movement that pairs with Calhoun Street as a one-way south through the station area. The pair feeds into 6th and 7th Streets, a one-way east/west pair to the north of the ITC that feeds into the SH 199 and US 280 arterials. US 280 connects to

the interstate system with access ramps to I-35W and I-30. To the south of the ITC, Jones and Calhoun Streets feed into West Lancaster Avenue and ultimately into the interstate system.

With anticipated improvements to the Convention Center site, the 11th and 12th Street connections will facilitate the distribution of traffic to and from the station. Nevertheless, it is expected that with increased traffic volumes, the circulation patterns around the station will need to be studied to determine if the one-way in, one-way out system will continue to be the most effective for the future development program of the HSR station.



Source: Fort Worth Chamber

## MULTIMODAL CONNECTIVITY

### Regional Connectivity

The ITC Station location is currently served by the Trinity Railway Express (TRE), regular FWTA bus transit service, Amtrak and Greyhound (see Figure 14). In the future, the ITC Station will be served by TEXRail (currently under construction). Current FWTA master plan includes a planned FWTA Bus Rapid Transit (BRT) system arriving into downtown Fort Worth from East Lancaster and currently shown as running parallel to the UPRR alignment up to the I-30/I-35 interchange connecting to ITC via Jones Street. This planned BRT system would arrive at the regional bus transfer area, as depicted in Figure 10.

Within this current operational context, the HSR station location was evaluated on whether it enables and enhances multimodal transportation connections and opportunities on a regional level at or near the station and it is consistent with Fort Worth Transportation Authority (FWTA) Master Plan. The regional connections that were considered include the: Trinity Railway Express (TRE), TEXRail and the regional Bus/BRT system (FWTA and Greyhound). Amtrak was not considered as a viable regional connection due to relative infrequency of

service as it performs today. However, with TOPRS, the Amtrak line would become a valued asset to regional and interstate transportation from the HSR station.

The DART system does not serve the study area. The DART rail system (including the future Cotton Belt commuter rail system) is accessible via a transfer from the TRE in Downtown Dallas and TEXRail at the DFW Airport (future).

### Local Connectivity (Last-Mile)

The HSR station was also evaluated on whether it enables and enhances multimodal transportation connections and opportunities on a local level (i.e., the “last mile connection”) at or near the station area and it is consistent with the FWTA Master Plan. The local connections considered were: people mover, on-demand travel (taxis, Uber, Lyft), hike/bike trails, and cycling (see Figure 15).

The ITC Station location is currently served by FWTA bus service, on-demand travel (taxis, Uber, Lyft), bike lanes and a bike share station. It is anticipated that FWTA bus service and on-demand travel would be able to continue to operate at

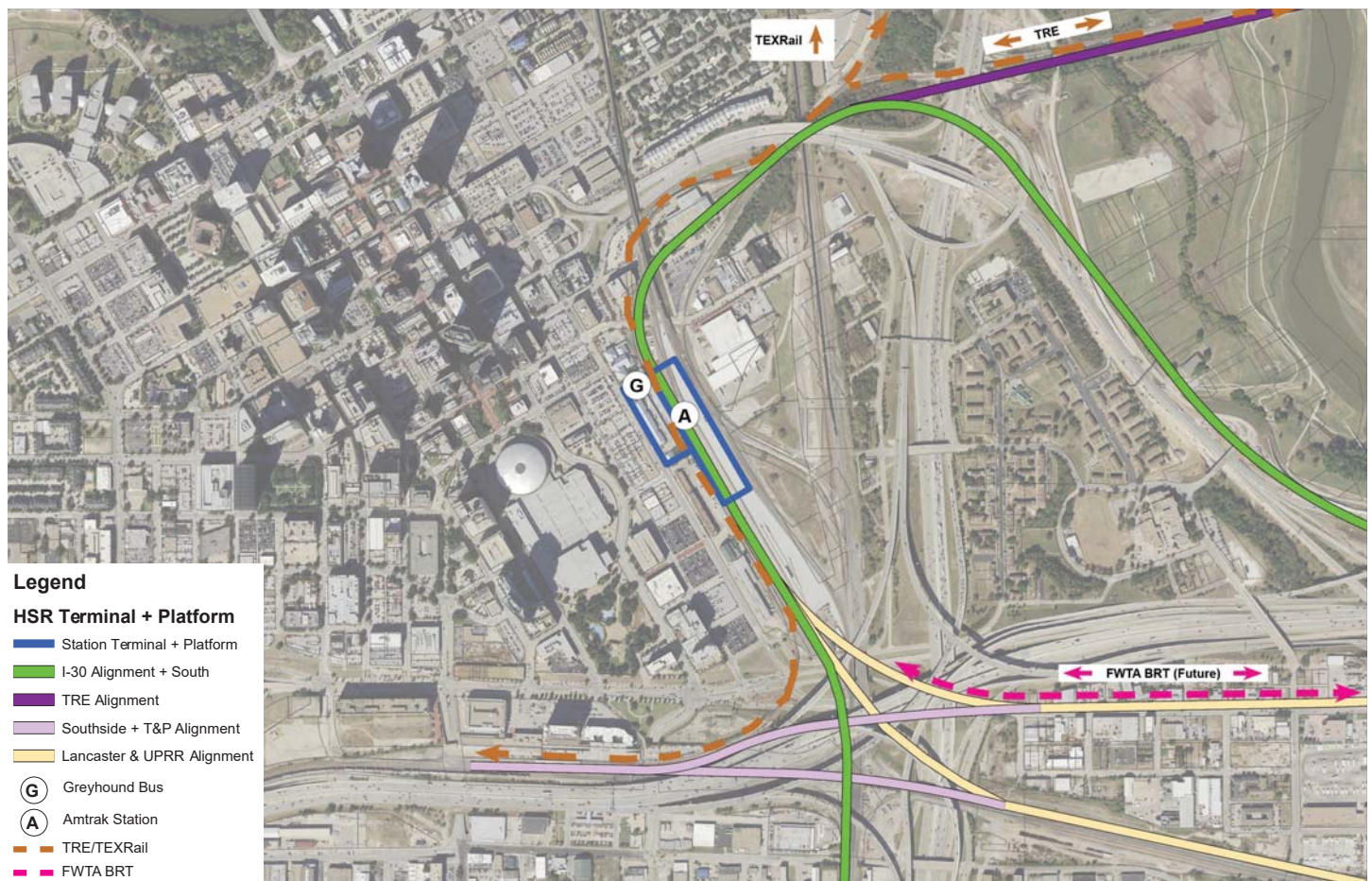


FIGURE 14: REGIONAL CONNECTIVITY MAP

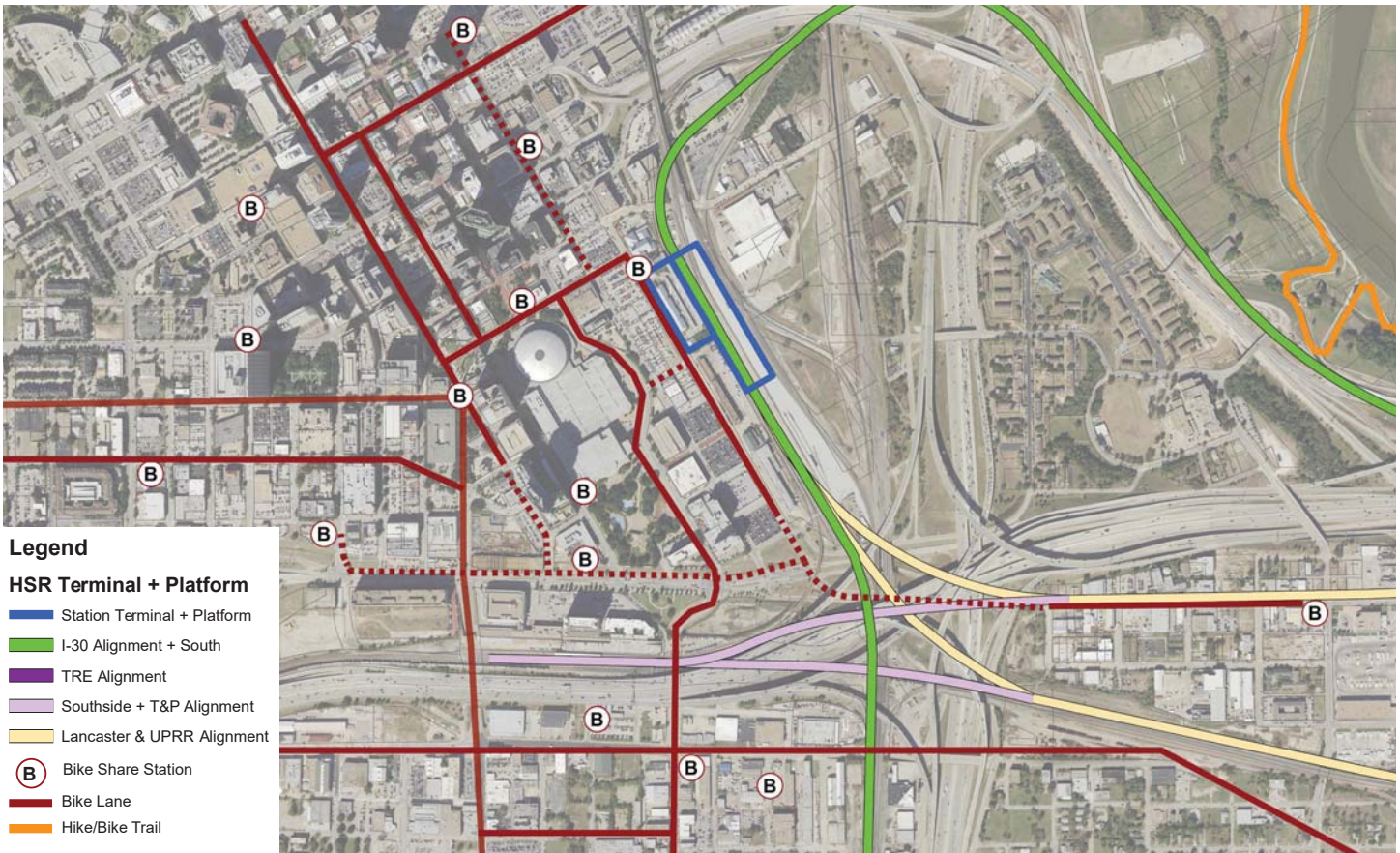


FIGURE 15: LOCAL CONNECTIVITY

ground level to/from the ITC station in the combined future HSR Station complex. In this context, the existing FWTA bus routes serving the existing ITC station would need to be considered for revision and/or additional bus routes.

Currently, there is a bike lane running along Jones Street adjacent to the ITC station and a bike share station located at the ITC station. It is anticipated that the existing bike lanes will either be changed and/or extended in the vicinity of the future HSR Station complex.

In addition, enhancements of bike share capacity will be needed. This could include electric enhanced bikes, GPS enabled systems and potential for bike stations beyond the central core of Fort Worth.

As automated people mover systems (APM) are considered for last-mile connections, it is anticipated that any APM route would be located in a dedicated right-of-way along the east side of the proposed HSR Terminal at the platform access level. This would relieve Jones Street of additional multimodal capacity needs. Alternately, the APM could be integrated into a future transit-oriented development directly adjacent to the HSR station.

It is anticipated that any APM alignment through the core

area of downtown Fort Worth would not be desirable due to the structural needs of the system and conflicts with the street network. However, it is anticipated that any future APM alignment could be extended northward outside the core area to connect with remote parking facilities, existing or planned developments around Downtown, including Panther Island to the north. Many of these APM considerations are also applicable to any future streetcar, if ever implemented, within the Downtown area.

## P3 + JOINT USE OPPORTUNITIES

Implementation of HSR with a proposed station at the ITC offers a host of advantages and benefits. As discussed earlier, one advantage is the opportunity for the ITC station in Downtown Fort Worth to become a major hub of multimodal movement and a catalyst for transit-oriented development. However, such an opportunity can only be realized if the economic realities of funding the capital and operation and maintenance costs of a multi-billion-dollar infrastructure project, including the ITC Station and surrounding development potential.

This section (i) outlines the differences between the P3 delivery model and Joint Development opportunities and their benefits; and (ii) identifies a variety of finance and delivery options that should be further analyzed to determine the best opportunities to accelerate delivery, reduce the risk to the public sector, lower total life-cycle facility costs, and/or create additional value capture and asset monetization opportunities.

### *P3 versus Joint Development*

A joint development project often combines the development of transit and non-transit projects, and, in most circumstances, includes the participation of a private entity. P3s are essentially a form of procurement. Unlike conventional methods of contracting for new construction, in which discrete functions are divided and procured through separate solicitations, P3s entail a single private entity, typically a consortium of private companies, assuming responsibility and financial liability for performing all or a significant number of functions in connection with a project. In transferring responsibility and risk for multiple project elements to the private partner, the project sponsor relaxes its control of the procurement, and the private partner receives the opportunity to earn a financial return commensurate with the risks it has assumed. Thus, while a joint development project may include coordination between and the sharing of responsibilities by public and private entities, it is not a P3. A project sponsor, however, may use a P3 to procure services from a private partner in a joint development project.

One of the primary benefits of joint development is revenue generation for the transit system, such as income derived from rental or lease payments, as well as private sector contributions to public infrastructure. Other benefits include shared costs, efficient land use, reduced distance between transportation and other activities, economic development, increased transit ridership, and improved transit connectivity.

Joint development is considered a value capture strategy because the benefits created by the final transportation improvements are “partially captured” to support the development in the first place. Joint development typically comes in four forms:

1. The leasing of land parcels, development rights or unimproved space (land, air, or subsurface) from the transit agency to private developers or commercial tenants;
2. Incentive-based agreements in the form of density bonuses, additional floors, or additional floor-area ratio (FAR) to developers in exchange for a transit improvement;
3. Connection fee programs, where a private tenant pays for the right to connect to a transit project, paid through a one-time fee or annual connection charge; and
4. Mutual sharing of construction costs between the public and private entities.

There are four major benefits to joint development: enhanced property values, increased revenues, increased transit ridership, and improved urban form.

BENEFITS	CHALLENGES
Accelerated delivery	Project still requires public funds
Provides for appropriate risk allocation	Overlapping authorities (City, FWTA, TxDOT, FRA, etc.)
Provides budget predictability	Limited local P3 track record
Provides incentive based payment	HSR integration and liability risk
Potentially reduces capital and/or O&M costs	Governance structure relative to regional politics
Leverage private sector expertise to extract greater value from assets	Relating the Station ownership/operation structure to the rest of the Texas HSR system
Cap credit impact	

TABLE 1: P3 DELIVERY BENEFITS + CHALLENGES

## SOCIAL AND ENVIRONMENTAL OPPORTUNITIES

HSR located at the ITC provides more opportunities for neighborhood advancement than just economic development. The HSR station terminal will serve as a means to solve decades-long issues with connectivity to disparate neighborhoods adjacent to downtown. Due to the eastern edge of downtown being wrapped by rail and highways, the current neighborhood services and affordable housing have been disconnected with limited access in any form.

With the terminal positioning on the eastern edge, it strengthens the funding gap of providing realistic connectivity from Butler Place and East Lancaster to Downtown and the regional job market. The terminal will house a hub for all regional transit in the DFW Metroplex and having the ability for these residents to walk to this transit hub will encourage greater advancement for these individuals and families.

Butler Place is slated for redevelopment into a mixed-use, mixed-income development. The way to see this be successful will be through proper connectivity using crossings that bridge the wide gap of infrastructure between it and the HSR Terminal. Figure 16, illustrates the opportunities to bridge and connect once undevelopable lands to eventually create a direct connection to Downtown and the HSR Terminal.

## REGULATORY AND POLICY

Fortunately, there are not any direct regulations that prohibit the development of the HSR Terminal and functions. The Downtown zoning allows for ample development potential in and around the HSR Terminal site.

There should be amendments to various plans in Downtown, specifically the Downtown Master Plan. Key amendments will recognize this study as a feasible option for a future HSR station and establish that future development, City programs and investment, and economic development opportunities should be evaluated on potential for coordination on this project.

Recognition should also reflect the opportunity for connectivity to Butler Place and other disconnected property in East Downtown in order to plan ahead for this expansion of the Central Business District. Providing meaningful thought and care to the needs of this area of Downtown will help with the potential success that should be realized by developments being undertaken in these neighborhoods.

City of Fort Worth, Fort Worth Transportation Authority, Tarrant County and North Central Texas Council of Governments must continue to coordinate their transit desires and recognize the future of technology within their systems. In order to stay ahead, no new idea should be discounted. Plan to be flexible with development and not let decisions today limit the potential for the future.

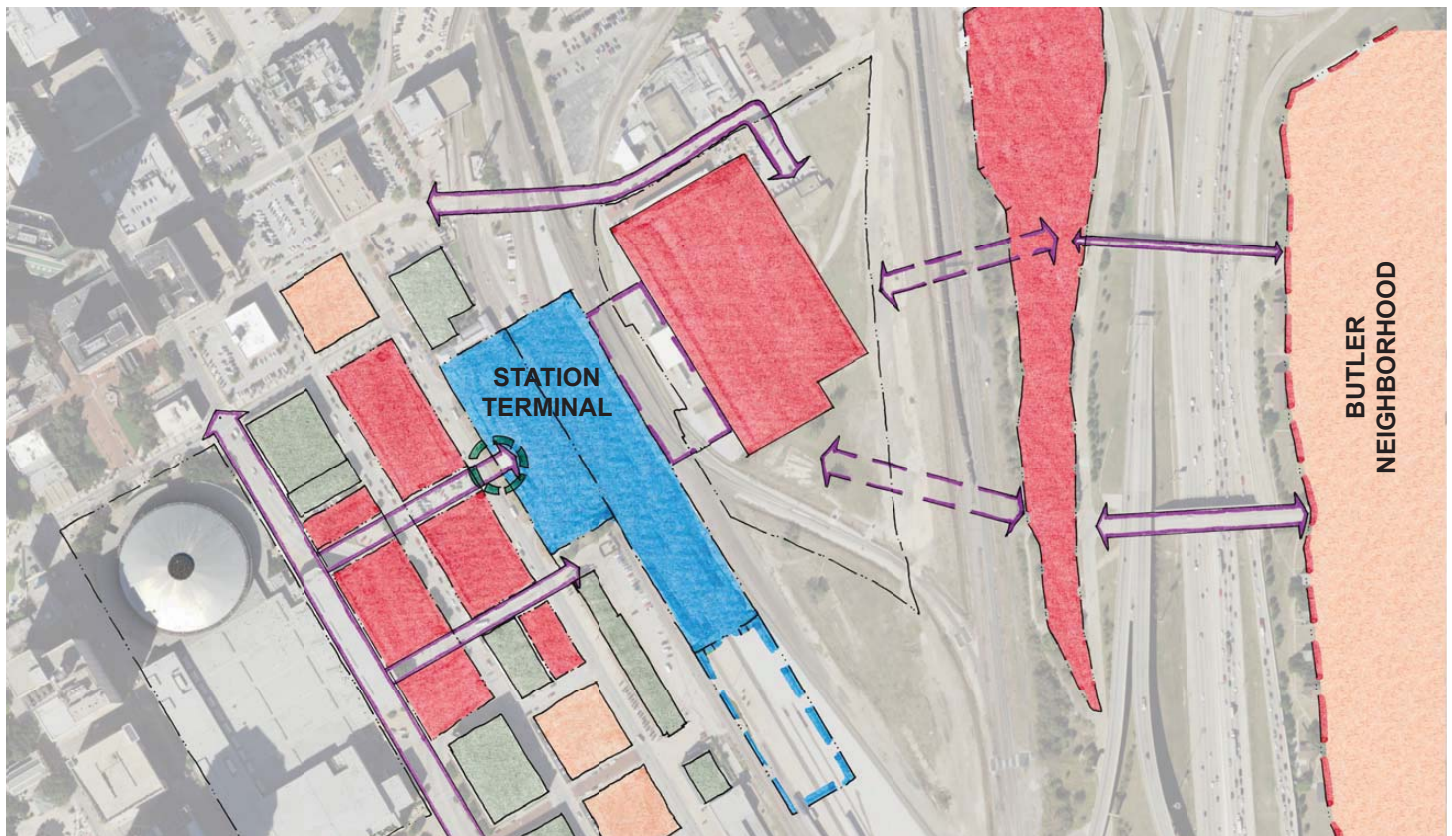


FIGURE 16: NEIGHBORHOOD CONNECTIONS





# **ECONOMIC OPPORTUNITY**

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# ECONOMIC OPPORTUNITY

The economic development opportunity of HSR can be powerful. Thus, this final section explores how innovations in transportation and related technologies can be understood and harnessed by Fort Worth to position the City as the State's central HSR Station and thereby to apply those innovations in the HSR context to city building as a global demonstration.

## BRINGING THE POWER OF THE STATE'S ECONOMIES CLOSER

Increasing connection and trade benefits everyone – it is one of the few areas where economists are in consensus. Whether connecting continents, countries, metropolitan regions, or individual cities, more trade creates closer relationships, increasing economic growth and raising quality of life. Local businesses grow with access to more customers in new markets. Innovation accelerates as experts meet and interact with their counterparts in other cities. Travel increases, expanding food, accommodation, and tourism companies. From carts to ships, to railroads and interstates, and on to HSR, transportation has been integral to accelerating trade and growing economies.

Underlying the relationship between transportation and trade is the time-cost of distance. Physical distance limits trade and interaction, as the amount of time and money it takes to travel personally or to ship and deliver goods increases with distance. Today's communication technologies make it possible to "meet" by phone and video, instantaneously, across the globe. Yet businesses are physically closer to each other and are still more likely to interact, and more frequently. Every day, all over the world, people embark on business trips, proving the enduring social and economic value of in-person relationships. Distance still matters, and economics still involve the time-cost of distance.

Texas is no exception. Interstate highways and frequent flights have tied together Texas's major cities; yet a business trip from Fort Worth to Houston still requires consideration. Attending a meeting in Houston, Austin or San Antonio still has significant opportunity costs. The value of time spent in a meeting must exceed the value of that same amount of time staying at the office. The potential sales from a business trip must be large enough to justify spending on airfare, cabs, meals, and possibly a hotel room. Comparing the cost and value of a day trip to another city to the savings and productivity of staying at home is the time-cost of distance (The Declining Cost of Distance, Harris & Kimson 2016).

Today, it takes approximately five hours to drive from Fort Worth to Houston, or about four hours to fly (including trips to/from airports and time spent waiting and boarding). A downtown-to-downtown HSR connection would reduce travel time to about two hours (90 minutes of travel plus 30 minutes getting to/

from the stations). High-speed rail would enable travelers to visit Houston, return, and even spend a couple of hours in the office, all in one business day.

This dramatic potential reduction in the time-cost of distance between Texas cities would promote more in-person interactions, business relationships, and trade between cities. Local businesses could expand by finding more clients, experts, and ideas as they interact more with customers and suppliers in other cities. A HSR network would likely accelerate economic development and job creation benefiting Fort Worth, the cities it connects with, and Texas as a whole.

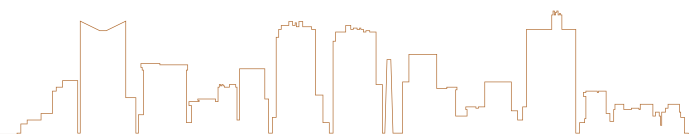
## FORT WORTH'S STRENGTHS

Texas is widely known for economic growth, job opportunities, and a low cost of living. Houston is strongly associated with the Energy sector; Austin with Software and Technology; and Dallas with its Financial sector. Fort Worth, however, is more diversified. While diversification insulates Fort Worth's economy from booms and busts of particular sectors, diversification may also be perceived as a challenge. Local entrepreneurship through expanding innovation networks to foster more small businesses or attracting relocating companies could be accelerated with a refined economic development focus and industry specializations. The opportunity of HSR could be a catalyst for advancing this opportunity focus.

This requires looking carefully at Fort Worth's current economic and employment patterns to be realistic about which economic sectors and commercial industries both have a current base and are poised to grow. In any region, some sectors will be small and growing while others will be large and mature, and still others in decline. Initial analysis shows these relationships in Figure 15.

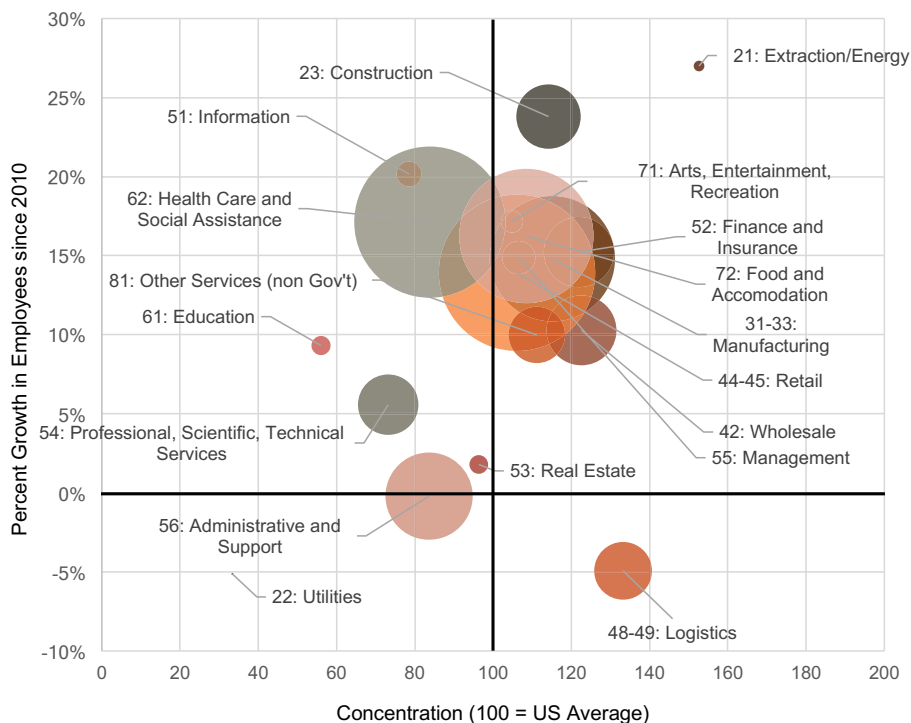
The chart compares the sectors of Fort Worth's regional economy based on employment, categorized using the North American Industrial Classification System (NAICS) established by the U.S. Census Bureau. The chart compares growth (estimated jobs added since 2010) and concentration (estimated percent of employees in the sector compared to the US percent of employees in the sector), while the bubble size represents estimated current employees.

For example, a higher percentage of people are employed in Logistics companies (classified under NAICS codes 48-49, Transportation and Warehousing) which has a high concentration of 132 (Fort Worth devotes 32% more of its



**UP & COMING**  
**Above average growth; below average concentration**  
 Industries in this quadrant are in a growth phase, building on a critical mass of talent before reaching saturation.

**OFF-RADAR**  
**Below average growth and concentration**  
 Industries in this quadrant are generating much activity. There is often a tiny pool of specialized talent but companies can be protected from competition.



**ACTIVE**  
**Above average growth and concentration**  
 These industries often represent the market's specialization(s), with the deepest talent pools and brightest growth forecasts. Competition is often fierce, placing growth pressure on wages.

**MATURE**  
**Below average growth; above average concentration**  
 Industries are either very large and experiencing slow growth on a percentage basis, or simply decreasing in competitiveness to other, "hotter" markets.

FIGURE 17: FORT WORTH NAICS2 QUADRANT GRAPH

workers to Logistics than US average). However, the number of jobs in that sector has decreased by 5% since 2010, and it is a relatively small employer overall, compared to other sectors of the regional economy. Compare this to Health Care and Social Assistance (NAICS 52), which has grown by 17% since 2010 but still employs a lower-than-average share of the region's work force. This suggests as an example that, despite employing many people, this sector still has room to grow.

This analysis validates that no single sector of Fort Worth's regional economy has a concentration at or above 200 (double the national average), which suggests Fort Worth lacks a specialization or "economic brand." By comparison, Houston's Energy sector (NAICS 21) has a concentration of 398 (Mining, Extraction, Oil, and Gas companies make up four times the share of Houston's economy than the average U.S. city), and Austin's Technology sector (NAICS 51) has a concentration of 192.

HSR connections from Downtown Fort Worth to the other major Texas cities would have a significant effect on the state's economy. The industries and businesses most likely to adapt to the dramatic decrease in the time-cost of distance are those that are (i) located close to the proposed station downtown at the ITC; (ii) can connect to new customers, suppliers, and experts in the highly concentrated industries of Houston, San Antonio, and Austin; and (iii) are in a growth phase without already having a high concentration (see Figures 16-18).

Based on these criteria, the sector best positioned for growth acceleration due to HSR is Management, Scientific, and

Technical Services (NAICS 54). This sector includes lawyers, architects and engineers, geological surveyors, business consultants, real estate brokers, marketing and advertising, as well as finance and insurance professionals.

The Professional and Technical Services sector is particularly suited for downtown development. These industries are office-based, and grow faster as the networks connecting them to each other intensify. These companies' highly skilled and well-compensated employees are increasingly demanding a short commute with non-car options, walkable urban living, and jump at new high-rise apartments developed downtown. This would create a positive feedback loop where more housing would create demand for more office which would create demand for more housing. Additionally, HSR would enable businesses in this sector to pursue larger Texas markets.

### STRATEGIC CONNECTIONS

The Professional, Scientific, and Technical Services sector (NAICS 54) connects to all other sectors of the economy, offering their services, products, and expertise to customers in every industry. High-speed rail connection to the other major cities in Texas will increase statewide market access for Professional and Scientific service providers in Fort Worth. In each city, specific services and experts will find new customers according the prevalent industries and sectors in each market (for example, professional services with specific products geared toward manufacturing processes will find great opportunity in San Antonio). To understand how the

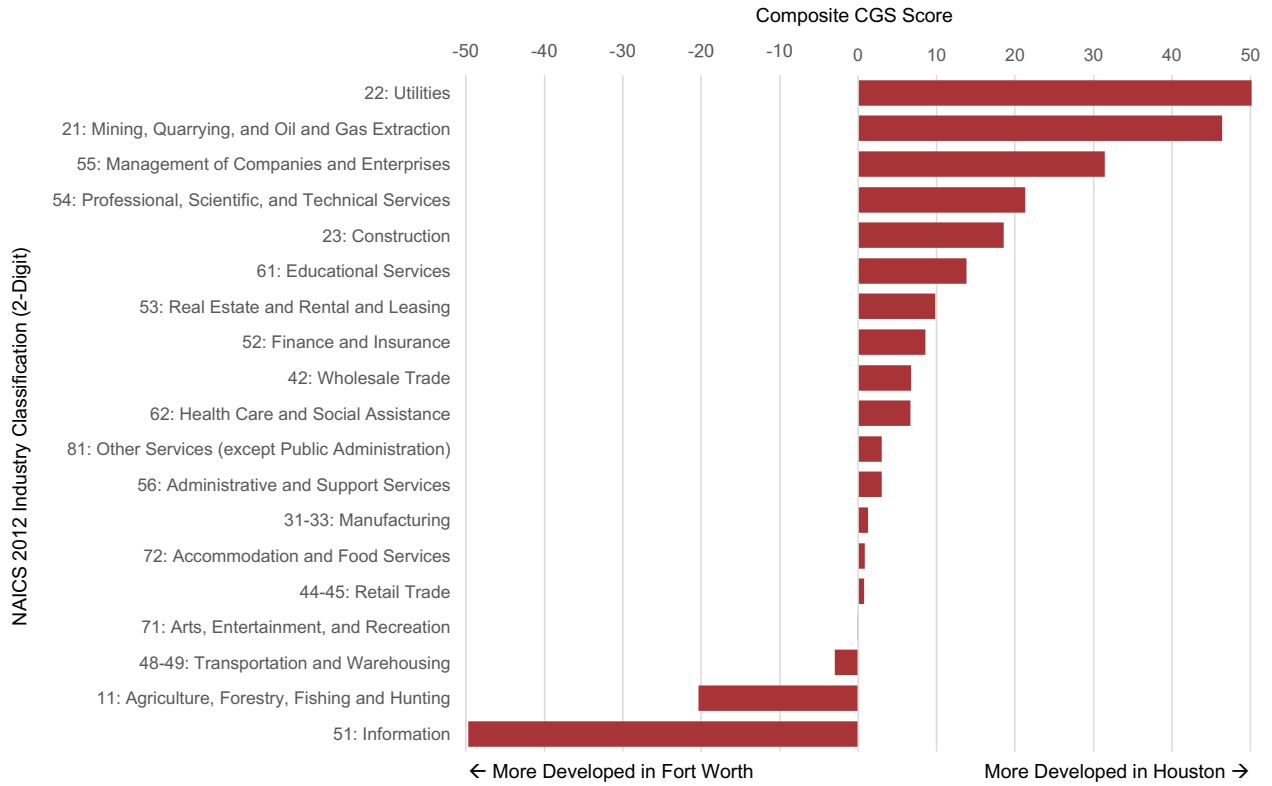


FIGURE 18: FORT WORTH - HOUSTON NAICS2 COMPARISON

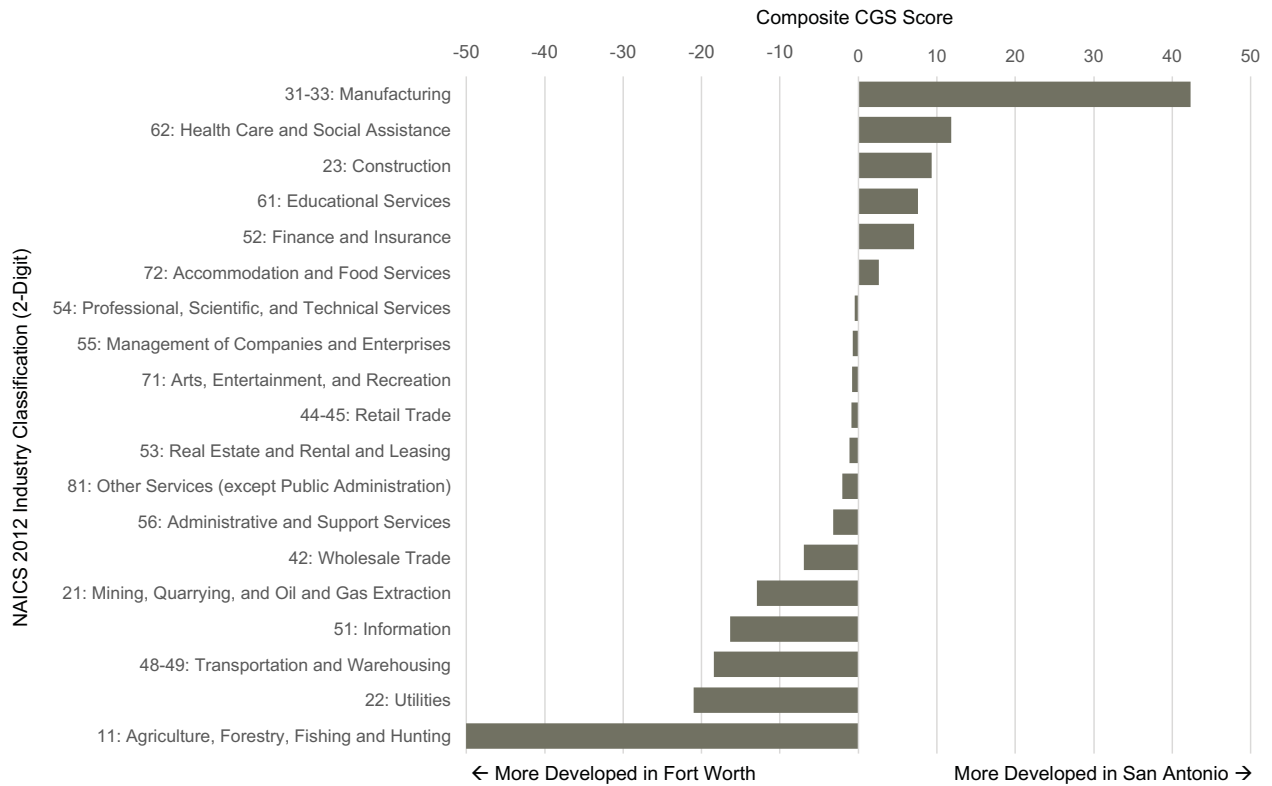


FIGURE 19: FORT WORTH - SAN ANTONIO NAICS2 COMPARISON

specific industries within the sector might grow, analysis of the regional economies in Houston, San Antonio, Austin, and Dallas will clarify how they are likely to interact.

Houston’s specialization in the Energy sectors (NAICS 21 Oil and Gas Extraction and NAICS 22 Utilities) is well known, comprising Houston’s industrial brand in the U.S. and abroad. Figure 16 illustrates which sectors are more developed in Houston than they are in Fort Worth, based on comparing the concentration, growth, and size of each sector between cities.

The “Composite CGS Score” combines three comparative measurements of concentration, growth, and size. The Growth indicator measures change in employees in the sector from 2010 to 2015. The Size indicator compares how many people are employed in a sector in Fort Worth versus Houston. The Concentration indicator compares the relative share of employees devoted to a given sector in both cities.

Fort Worth is indexed against the indicator for the same sector in Houston. If a sector is growing twice as fast in Houston as it is in Fort Worth, the growth index would be +100. If a sector is growing twice as fast in Fort Worth as it is in Houston, the growth index would -100. Sectors growing at the same rate in both cities would index 0. The same method is applied to the Size and Concentration indicators, creating a total, composite score with a possible range from -100 (more developed in Fort Worth) to +100 (more developed in the comparison city).

The results of this analysis suggest that technical and scientific services companies in Fort Worth (such as engineers, surveyors, consulting geologists, patent and IP attorneys) with expertise in the kinds of services that energy industry companies need stand to benefit from being able to get to Houston more frequently and easily.

In San Antonio, companies in the Manufacturing sectors (NAICS 31-33) are larger and more concentrated than manufacturers in Fort Worth, as indicated in Figure 17. This suggests that the Fort Worth professional and technical services firms assisting manufacturers with finances, processes, strategies, and engineering will benefit the most from a direct, high speed connection to San Antonio.

Austin is best known for its tech sector (NAICS 51), but also has a well-developed Professional and Technical Services sector (NAICS 54). As indicated in Figure 18, Fort Worth firms servicing tech firms may find new customers in Austin. However, the Austin market might also function as a source of suppliers, vendors, specialists, and experts, in addition to being a market for new customers.

A HSR system is likely to have a strong impact on Fort Worth’s regional economy. In particular, businesses in the Professional, Scientific, and Technical Services sector of the economy are well positioned for growth. This sector is already growing in Fort Worth, but it still employs a lower-than-average share of the Region’s

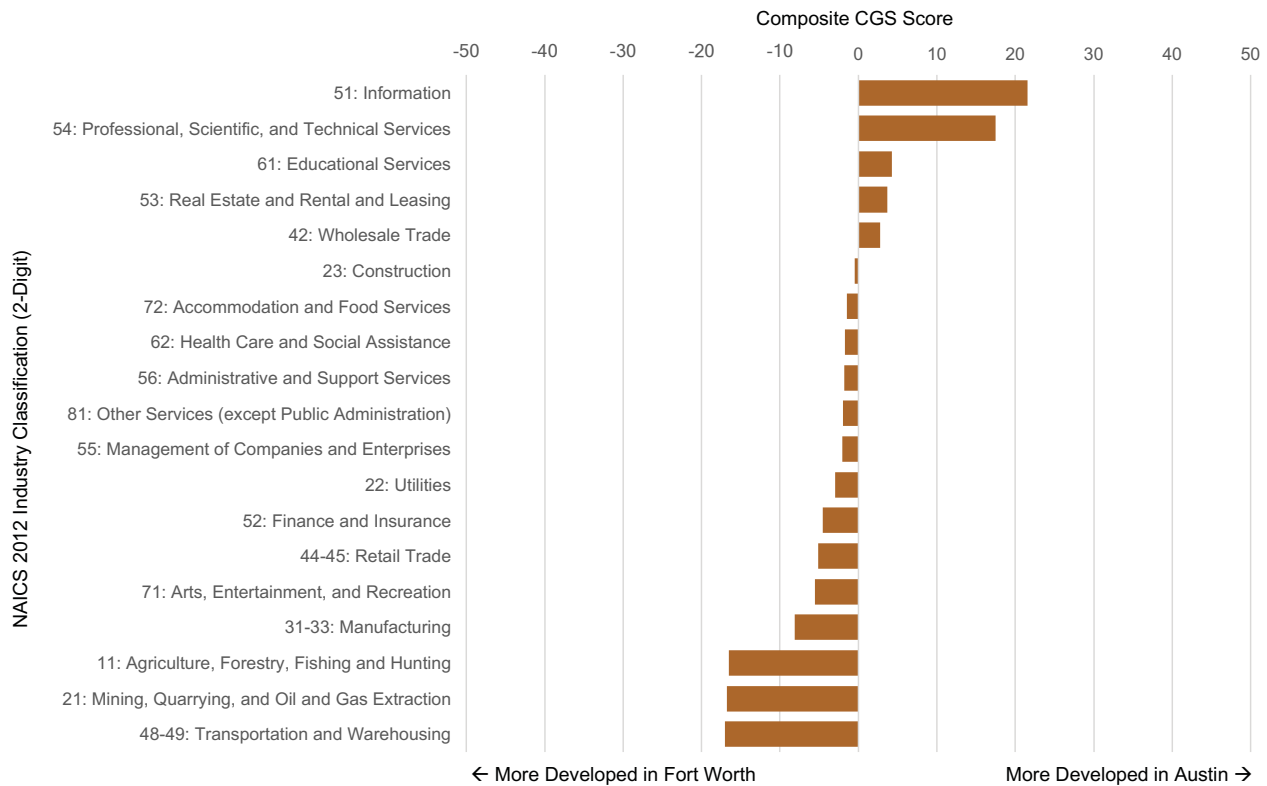


FIGURE 20: FORT WORTH - AUSTIN NAICS2 COMPARISON

overall economy. This sector is highly diversified, and will take advantage of Fort Worth's position in the center of the high-speed network and its adjacency to Irving, Dallas and the corporate cluster north of Dallas in Richardson, Plano and Frisco.

In summary, businesses that create services and provide expertise in energy (green and fossil), as well as energy finance and utility marketing, will benefit from the connection to Houston's economy. Firms that analyze and improve manufacturing processes, design, product marketing, and accounting will benefit from access to San Antonio. Firms that work with and for software and related technology will benefit from improved connectivity to Austin.

## **HSR CAN BE THE MEANSTO EXPAND THE ECONOMIC DEVELOPMENT AND TOURISM DISCUSSION**

Proactive participation in high-speed rail planning will place Fort Worth in an advantageous position. The proposed network could strengthen Fort Worth's place in statewide markets, and a downtown station creates a focal point for the City to organize further planning and economic development efforts. Advancing this opportunity assumes enhanced coordination and synchronization of disparate policy arenas such as economic development, land use, vision planning, and infrastructure development.

Economic development efforts benefit from enhanced branding and clear vision. Just as aspiring technology moguls move to Austin, an enhanced industry brand for Fort Worth would attract companies and talent. As people and companies grow, that brand would build on itself, in turn attracting even more companies and talent. This opportunity can also provide fiscal benefits in terms of broader city policy. For example, by refining its industrial specialization through a refinement of the comparative analysis described above, Fort Worth could be even more strategic on its spending on incentives and tax breaks to lure companies, instead growing its economy organically from its existing base.

The promise of HSR also provides an impetus to build on the integrated vision for Downtown and the Panther Island / Central City Area. With millions of visits a year, Sundance has established a strong base for central Fort Worth along with the Cultural District. Focusing investments further to attract skilled workers, entrepreneurs, and young professionals eager to participate in the urban renaissance already well underway can create a virtuous circle to attract even more professionals and companies. In this regard, Fort Worth can leverage the HSR planning process as a focal point around which to organize an expanded downtown economic development strategy.

## **A MOBILITY ECOSYSTEM AS AN ECONOMIC DEVELOPMENT FOCUS**

One opportunity for an enhanced focus that can take advantage of the comparative industry analysis could be in the "mobility sector" as an industry specialization. This focus could not only take advantage of the growth potential of the Management, Scientific and Technical industry category and related professions, but advancing the "mobility sector" for

an opportune industry focus could also enhance Fort Worth's quality of life in real time. In other words, the development in Fort Worth of new economy and place-based technologies in the "mobility sector" can be applied locally to enhance quality of life. Those applied opportunities can be directly applied to the HSR system including innovations in mobility on demand and eventually autonomous vehicle interface.

The Mobility sector, however, is more than self-driving cars. There are already a number of cities (Detroit, Pittsburgh, Austin, San Jose) attempting to make autonomous vehicles into their regional specialization, seeking to attract software and car engineers. But viewing self-driving cars as their own technology sector is short-sighted and self-limiting: the coming transportation revolution is more than designing and manufacturing vehicles.

The big leap from transportation to Mobility occurs as these diverse technologies and business sectors combine, become intertwined, and produce something entirely new. The opportunity of HSR in Fort Worth connecting Texas' regions creates an even more compelling context for this potential leap.

Mobility will mean people seamlessly switching from train to car to bicycle based on fleets of shared vehicles. Companies working on road infrastructure and sensors; mobile data and apps, GPS monitors and weather sensors communicating directly with each other; servers and artificial intelligence managing massive amounts of real-time information and integrating transporting people and goods into an entire platform: Mobility as a Service – Mobility as an integrated economic sector. No city has yet organized to claim Mobility as its economic specialization.

Fort Worth is well-positioned to take the lead in Mobility innovation. Bell Helicopter, headquartered in Hurst, is at work on autonomous aircraft that could transport goods and people. Mercedes-Benz, actively competing in self-driving cars, has expanded its investment in its facilities in Grapevine. Lockheed-Martin has a major presence in Fort Worth, and military technologies have a long history of making their way into the civilian mainstream. Texas Christian University has a well-established department of engineering with relationships with many of those companies. In addition, the University of Texas at Arlington offers a cooperative research approach within its engineering college that can be expanded. In the context of the growing Professional and Technical Services sector discussed above, those companies and institutions of higher education could collectively advance a platform for an innovative and high-growth Mobility ecosystem.

The promise and implementation of HSR can play a major role in developing a "mobility sector" economy, especially as the station area becomes a major point of entry and an enhanced center for business and leisure travelers. As Fort Worth will occupy a central node in the network (and potentially the meeting point between two privately constructed lines), the Region will gather experts and innovators from all over Texas, and local companies will be able to access customers and markets for their products. A software innovator in Austin,

a green energy researcher in Houston, an automobile technologist in Grapevine and a software designer in Fort Worth: Fort Worth can become the central meeting point in this potential industry ecosystem.

Beyond the physical arrangement of blocks and building around the Fort Worth HSR Station, incorporating Mobility into the vision for downtown includes the technological realm. Imagine software systems allowing people to summon, utilize, and coordinate multiple forms of transportation, such as the various train services, shared bicycles, self-driving cars, and potentially even flying taxi drones. The companies that invent and refine these innovative systems will have specific requirements and desires for office space and office locations: flexible space for research and development; access to test courses for vehicles; and perhaps even rooftop landing platforms. A vision for a Mobility economy must take into account how (and where) Mobility industries and companies will maintain the servers, towers, and communications hardware that will make the applications work, as well as and where and what kind of office and testing spaces they'll require.

The Mobility brand could further reshape downtown infrastructure as it becomes a place to prototype and test innovative forms of transport. As San Francisco was the first market for Uber and AirBnB, downtown Fort Worth could be a testing ground for delivery robots, helicopter drones, powered bicycles, and smart people movers, designed and manufactured by Fort Worth companies.

This underscores the leaping vision because, by the time a HSR station is actually constructed, the shift in mobility technology and service integration will have radically changed. For example, the functionality and number of parking spaces needed at the station surely will be reduced. Similar transformative technologies have already made an impact in Fort Worth. For example, by the time the final construction documents were prepared and used for the Chisholm Trail Parkway, the project partners had eliminated the previously planned wide gantry of toll booths and the resulting substantial negative impact on the surrounding neighborhoods as toll tag technology made those toll booths obsolete.

A focus on Mobility innovation also can increase accessibility and opportunity for all people, inclusive of those with limited income, physical disabilities, language barriers, and other limitations to access. This will require the ability to gauge what the future will look like; the ability to plan for when the future incorporates things seemingly disconnected today; and the ability to steer policies, innovations, and outcomes toward increasing equity, inclusion, and access.

Whether equity considerations or simply improving overall quality of life, the public realm downtown will continue to be significantly implicated: adding sensors to lampposts, repaving streets in experimental materials, testing new materials in benches and fountains, or adding infrared to streetlights. It would mean rethinking wayfinding and pedestrian safety: with unfamiliar vehicles about, communicating safety and timing in crossing streets will be important for both humans and

autonomous vehicles. Integrating infrastructure planning into the Mobility brand will mean planning for a new era of sensors, materials, and networks; it will also mean planning for flexibly re-adapting and rearranging access and services.

Adapting infrastructure for new vehicle types leaves out the most important part of downtown: its people. Beyond simply getting new office and apartments built, zoning and land use will play a significant role in both promoting and recruiting Mobility companies and employees. Land use planning could include provisions such as automatically triggering lower parking ratios if and when private car ownership drops permanently, or establishing collective pick-up/drop-off areas for car sharing services instead of requiring each building to add one. Development requirements may start to include bike sharing racks, vehicle charging bays, or even landing pads. Taking the Mobility sector into account for land use planning means balancing future requirements for new building/transport interfaces (as technology moves us beyond parking ramps) with planning and coordinating where it makes sense to have collective points where trains, bikes, drones, and self-driving cars will interact with the people who will use them. The promise of HSR implicates all of this.

Finally, an economic development policy of making Fort Worth the Mobility capital of America would both focus and broaden the City's and Region's economic development efforts. While the Mobility theme provides clear direction, corporate recruitment efforts could reach across sectors as they are currently defined (manufacturing, information, professional and scientific services, transportation), including any company that might tie into the Mobility ecosystem. Instead of focusing on recruiting in a narrow category (such as call centers or e-commerce warehouses), a policy around Mobility would allow economic developers to both work on wide-ranging companies but demonstrate a broad, supporting economy will help both startups and relocating companies increase their growth. Developing a Mobility sector also requires devoting significant resources to incubating existing local startups and working to develop networks that help them connect to each other. In this context, the Mobility effort could leverage Fort Worth's position in the state's HSR network to recruit people and companies from across Texas and the country as Downtown becomes an innovation center for tying together new technologies in transportation, telecommunications, and software to design the smart city of the future. As the city of the future, Fort Worth would be able to direct and accelerate economic growth for decades to come.

## NEAR TERM OPPORTUNITIES

Fort Worth, Tarrant County, TxDOT and the FWTA have developed extensive land use, multimodal, transit, and active transportation policies to set the stage for HSR connections with other existing and planned transportation investments. In that context, the City and those other entities can be proactive coordinated partners in the unfolding Mobility-as-a-Service (MaaS) universe. The private sector—locally



such as Mercedes, Bell and others—may take the lead in bringing innovative services and products to general users. Nevertheless, the public sector can facilitate the creation of platforms and policies to promote those innovative multi-modal options so that they can compete and thrive as mainstream options in a world that today is set up for driving as the only convenient choice.

Recognizing that transportation can function more like a utility than a mode, DART has recently initiated a federal Mobility on Demand (MOD) grant to convert their Go-Pass application to a MOD platform to enable riders easy, real-time viewing and pairing of all mobility options available for his or her desired trip. Facilitated by the MOD application, customers can select and pay for their desired mobility option(s) from destination to destination. DART's initiative is mirroring and advancing efforts such as those in the European Union, where air, train, auto, bus and bike services are packaged into a dynamic pricing and time of service platforms.

Fort Worth and the FWTA could investigate expansion or parallel implementation of this technology focus building on policy already adopted in the FWTA Master Plan. Packaging air, train, auto, carpooling, on-demand transit and bike services into a single interface that allows consumers to directly compare and purchase mobility services via smart phones could be Fort Worth's opportunity to venture into Maas for its residents and businesses seeking to advance innovation-based economic development.

In cooperation with NCTCOG, Tarrant County and the Fort Worth Transportation Authority, Fort Worth should initiate participation in a data sharing effort and platform structuring strategy to take advantage of technological opportunities arising from MaaS and MOD platforms. Proactive efforts now will enable Fort Worth and those agencies to control and direct their role effectively in emerging partnerships across the DFW region and the State.



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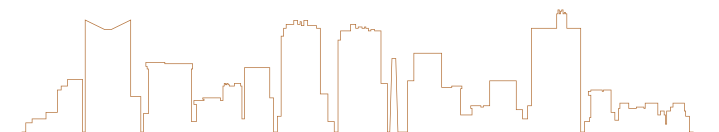
# APPENDICES

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# FACTORS MATRIX

FACTOR	CATEGORY	DEFINITION	SCORING APPLICATION	BUTLER	EAST LANCASTER	SOUTHSIDE	T&P	ITC	EAST SUNDANCE	CENTRAL RAIL STATION
<b>Alignment Options</b>	Constructibility	The ability of the identified alignment options to facilitate the ingress/egress of the train to the station.								
I-30 / I-35 South			Yes = 4 No = 0	4	0	0	0	4	4	4
I-30 / West			Yes = 4 No = 0	4	0	4	4	4	4	4
TRE / I-35 South			Yes = 4 No = 0	0	0	0	0	4	4	4
TRE / West			Yes = 4 No = 0	0	0	4	4	4	4	4
UP / I-35			Yes = 4 No = 0	0	4	4	4	4	4	4
UP / West			Yes = 4 No = 0	0	4	4	4	4	4	4
<b>Vertical Impacts (Permitted Rights + Physical Capacity)</b>	Constructibility	Ability to overcome restrictions (if any) necessitated by the need to acquire air rights above the station location or the approach alignment.	No Conflicts = 4 Requires Additional Study = 2 High Conflicts = 0	4	4	2	2	2	2	2
<b>Land Availability (Houston to Fort Worth Termination)</b>	Constructibility	Land area available to accommodate the station facility and all necessary infrastructure (including parking, station amenities, core ingress/egress, arrival/departures, etc.)								
HSR Only			Available Today = 4 Requires Additional Study = 2 No Availability = 0	2	4	2	0	4	2	4
HSR and TOPRS			Available Today = 4 Requires Additional Study = 2 No Availability = 0	2	2	2	0	4	2	4
<b>Land Availability (Houston to Austin/ SA with Transfer)</b>	Constructibility	Land area available to accommodate the station facility and all necessary infrastructure (including parking, station amenities, core ingress/egress, arrival/departures, etc.)								
HSR Only			Available Today = 4 Requires Additional Study = 2 No Availability = 0	2	4	2	0	4	2	4
HSR and TOPRS			Available Today = 4 Requires Additional Study = 2 No Availability = 0	2	2	2	0	4	2	4
<b>Land Ownership</b>		Amount of public land available for station.	100% Public = 4 75% Public = 3 50% Public/Private = 2 75% Private = 1 100% Private = 0	4	0	2	0	0	0	0



FACTOR	CATEGORY	DEFINITION	SCORING APPLICATION	BUTLER	EAST LANCASTER	SOUTHSIDE	T&P	ITC	EAST SUNDANCE	CENTRAL RAIL STATION
<b>Existing Infrastructure Compatibility</b>	Constructibility	Does not conflict with existing infrastructure that may impact the station location/orientation								
Freight Rail			No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0	4	4	4	0	2	2	0
Highway			No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0	2	2	0	0	0	0	0
On-System Arterial			No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0	2	2	2	0	2	2	2
Local Arterial			No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0	4	4	2	2	2	2	4
Major Utilities		Water, wastewater, sanitary sewer, franchise utilities, etc.	No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0	4	0	2	2	2	2	4
TRE			No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0	4	4	4	2	2	4	4
TexRail			No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0	4	4	4	2	2	4	4
<b>Environmental Justice / Neighborhood Displacement</b>	Constructibility	No displacement on quality of life in terms of conflicts with the local neighborhood (business/community uses and residential) and the environment.	No Displacement = 4 Insignificant Displacement = 3 Some Displacement = 2 Significant Displacement = 1 Full Displacement = 0	4	0	3	4	2	3	4
<b>Parking</b>	Functionality	Ability to provide sufficient long-term parking (of at least 3,000) on-site or convenient existing remote or shared parking locations, or ability to expand parking in area.	Sufficient; Expansion Potential = 4 Requires Additional Study = 2 Insufficient; No Expansion = 0	2	2	2	2	4	4	2
<b>MTP Policies + Recommendations</b>	Connectivity/ Mobility	Location enables the design and implementation of a station to meet policy and recommendations of the MTP below (i.e., one seat ride or system expansion south to Austin/San Antonio, etc.).								
One Seat Ride			Yes = 4 Requires Additional Study = 2 No = 4	0	2	2	2	4	2	2
<b>Multimodal Connectivity</b>	Connectivity/ Mobility	Location enables and enhances multimodal transportation opportunities at or near the station area, and consistency with Fort Worth Transportation Authority Master Plan.								
Regional Connectivity		Consistent with MTP and provides regional connections.	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0	0	1	1	4	4	2	3

FACTOR	CATEGORY	DEFINITION	SCORING APPLICATION	BUTLER	EAST LANCASTER	SOUTHSIDE	T&P	ITC	EAST SUNDANCE	CENTRAL RAIL STATION
Local Connectivity		"Last Mile," people mover, autonomous vehicles, on-demand travel, walkability, trails, cycling, etc.	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0	1	1	2	4	4	4	3
<b>Ingress and Egress</b>	Connectivity/ Mobility	Location enables effective ingress/egress at commute peak hour for automobiles, buses and pedestrians.								
Automobiles			Yes = 4 Requires Additional Study = 2 No = 4	0	2	4	1	4	4	3
Buses			Yes = 4 Requires Additional Study = 2 No = 4	0	3	3	3	4	3	2
Pedestrians			Yes = 4 Requires Additional Study = 2 No = 4	0	1	4	4	4	4	2
<b>Station Area Context</b>	Policy	Impact of station on each location's surrounding area.								
Contextually Aligned with Adjacent Historical + Cultural Assets		Does it contextually align with adjacent historical and cultural assets based on asset mapping and local plans?	Yes = 4 Requires Additional Study = 2 No = 4	2	4	4	0	2	2	4
Visual Impacts		Does not cause barriers to currently highly-regarded vistas and views.	Yes = 4 Requires Additional Study = 2 No = 4	2	4	4	0	2	2	4
Scale Impact		Is there a negative scale impact and is it capable of mitigation?	No Impact = 4 Some Impact, Mitigation = 3 Requires Additional Study = 2 Many Impacts, No Mitigation = 1 Major Impacts = 0	4	2	2	-	2	2	4
Street Grid Impact		Does not cut off street grid in the station location.	Yes = 4 Requires Additional Study = 2 No = 4	4	4	4	4	4	4	4
Regional Priority Ecosystem Impact		Does it impact groundwater, the Trinity River, wetlands, watershed features, open space, or undeveloped land?	Yes = 4 Requires Additional Study = 2 No = 4	2	4	4	4	4	2	4
<b>Public + Institutional Plan Consistency</b>	Policy	Does station meet any applicable public or institutional plans (e.g., land use) or impact the plan?	Yes = 4 Requires Additional Study = 2 No = 4	4	4	2	2	2	2	4
<b>Front Door</b>	Economic	Each location's ability to act as a gateway and improve the potential (e.g., economic, development, etc.) of the surrounding area.	Yes = 4 Requires Additional Study = 2 No = 4	0	0	2	2	4	4	2
<b>Vertical Impacts/Opportunities (Air Rights)</b>	Economic	Are there opportunities to build habitable space above the station platform?	Yes = 4 Requires Additional Study = 2 No = 4	4	0	4	4	4	4	2
<b>Passenger Perception</b>	Economic	Impact of station location on HSR users' visual and overall perception of Fort Worth and station area.	Very Positive = 4 Positive = 3 Neutral = 2 Negative = 1 Very Negative = 0	2	0	2	2	3	3	2

FACTOR	CATEGORY	DEFINITION	SCORING APPLICATION	BUTLER	EAST LANCASTER	SOUTHSIDE	T&P	ITC	EAST SUNDANCE	CENTRAL RAIL STATION
<b>Economic Development</b>	Economic	Evaluation of the relative economic development potential of each station location, including tourism, primary job creation; and position Fort Worth to be more economically effective within Texas, nationally and/or globally.								
Support of Current + Potential New Office Employment		Direct cause of sustained and new investment within a quarter mile of the station area.	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0	1	0	2	2	4	4	3
Development Potential		Development potential in the immediate vicinity of the station location.	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0	3	2	3	1	4	3	2
Partnership Potential (Public)		Does location provide partnership potential with public entities, such as hospitality, tourism, etc. including the opportunity for joint development (e.g., future convention center expansion)?	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0	3	1	3	3	4	3	2
Partnership Potential (Private)		Does location provide partnership potential with private entities such as hospitality, retail, residential, commercial etc., including the opportunity for joint development?	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0	3	1	2	2	4	4	3
<b>TOTAL</b>				<b>89</b>	<b>82</b>	<b>103</b>	<b>78</b>	<b>127</b>	<b>115</b>	<b>121</b>



FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Alignment Options — 1-30 / I-35 South	Gateway Planning Group / TFIC	Yes = 4 No = 0

### FACTOR DEFINITION

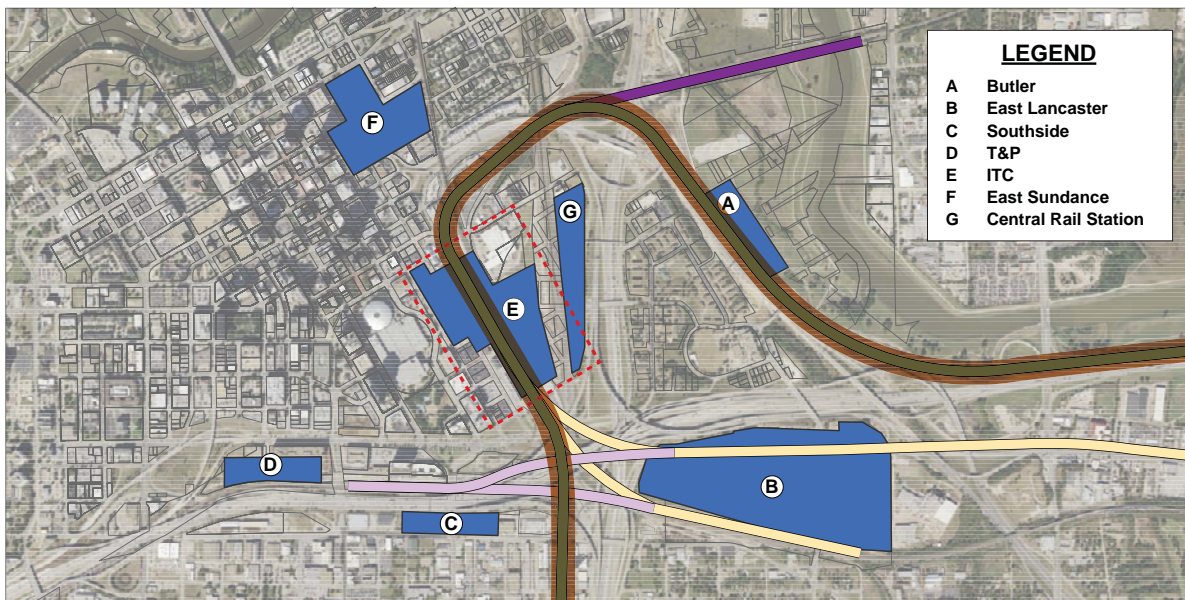
The ability of the identified alignment options to facilitate the ingress/egress of the train to the station.

### SCORING

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	0	0	0	4	4	4

### DESCRIPTION OF EVALUATION METHODOLOGY

The attached map identifies the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine whether the proposed track alignment coming into Fort Worth from the east along the I-30 corridor and then departing out of Fort Worth along the I-35 South corridor is feasible or not.



### ANALYSIS AND CONCLUSIONS

<b>Butler</b>	The station is accessible with an alignment coming into Fort Worth along the I-30 corridor. A station at Butler allows for an alignment leaving Fort Worth south along the I-35 corridor.
<b>East Lancaster</b>	The station is not accessible with an alignment coming into Fort Worth along the I-30 corridor.
<b>Southside</b>	The station is not accessible with an alignment coming into Fort Worth along the I-30 corridor.
<b>T&amp;P</b>	The station is not accessible with an alignment coming into Fort Worth along the TRE corridor and continuing to head South.
<b>ITC</b>	The station is accessible with an alignment coming into Fort Worth along the I-30 corridor. A station at ITC allows for an alignment leaving Fort Worth south along the I-35 corridor.
<b>East Sundance</b>	The station is accessible with an alignment coming into Fort Worth along the I-30 corridor. A station at East Sundance allows for an alignment leaving Fort Worth south along the I-35 corridor.
<b>Central Rail Station</b>	The station is accessible but this is dependent on the curvature of the approach in order to be brought into the station area.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Alignment Options — 1-30 / West	Gateway Planning Group / TFIC	Yes = 4 No = 0

### FACTOR DEFINITION

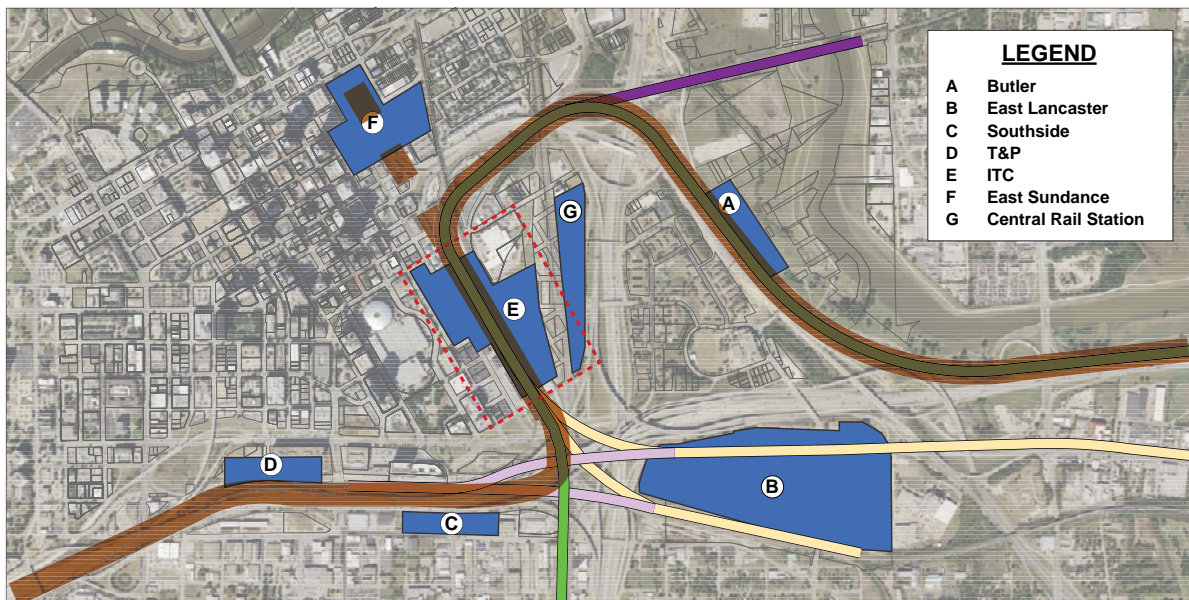
The ability of the identified alignment options to facilitate the ingress/egress of the train to the station.

### SCORING

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	0	4	4	4	4	4

### DESCRIPTION OF EVALUATION METHODOLOGY

The attached map identifies the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine whether the proposed track alignment coming into Fort Worth from the east along the I-30 corridor and then departing out of Fort Worth to the west continuing along I-30 and eventually to Chisholm Trail is feasible or not.



### ANALYSIS AND CONCLUSIONS

<b>Butler</b>	The station is accessible with an alignment coming into Fort Worth along the I-30 corridor. A station at Butler allows for an alignment leaving Fort Worth to the west.
<b>East Lancaster</b>	The station is not accessible with an alignment coming into Fort Worth along the I-30 corridor.
<b>Southside</b>	The station is accessible with an alignment coming into Fort Worth along the I-30 corridor. A station at T&P allows for an alignment leaving Fort Worth to the west.
<b>T&amp;P</b>	The station is accessible with an alignment coming into Fort Worth along the I-30 corridor. A station at T&P allows for an alignment leaving Fort Worth to the west.
<b>ITC</b>	The station is accessible with an alignment coming into Fort Worth along the I-30 corridor. A station at T&P allows for an alignment leaving Fort Worth to the west.
<b>East Sundance</b>	The station is accessible with an alignment coming into Fort Worth along the I-30 corridor. A station at T&P allows for an alignment leaving Fort Worth to the west.
<b>Central Rail Station</b>	The station is accessible but this is dependent on the curvature of the approach in order to be brought into the station area.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Alignment Options — TRE / I-35 South	Gateway Planning Group / TFIC	Yes = 4 No = 0

### FACTOR DEFINITION

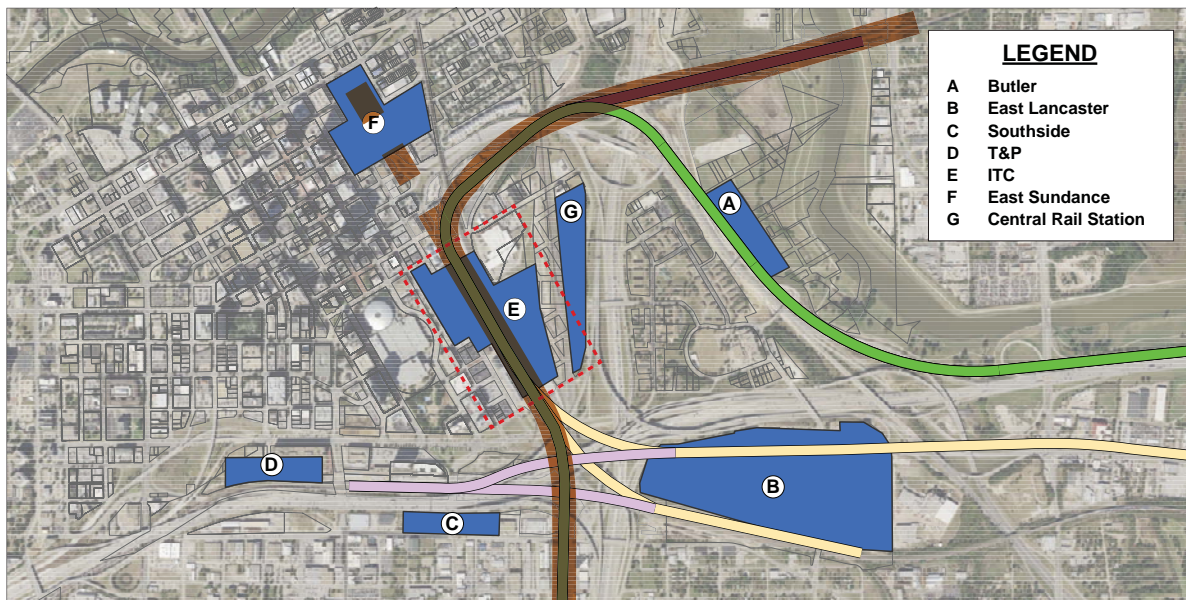
The ability of the identified alignment options to facilitate the ingress/egress of the train to the station.

### SCORING

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	0	0	0	4	4	4

### DESCRIPTION OF EVALUATION METHODOLOGY

The attached map identifies the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine whether the proposed track alignment coming into Fort Worth from the east along the TRE corridor and then departing out of Fort Worth along the I-35 South corridor is feasible or not.



### ANALYSIS AND CONCLUSIONS

<b>Butler</b>	The station is not accessible with an alignment coming into Fort Worth along the TRE corridor.
<b>East Lancaster</b>	The station is not accessible with an alignment coming into Fort Worth along the TRE corridor.
<b>Southside</b>	The station is not accessible with an alignment coming into Fort Worth along the TRE corridor.
<b>T&amp;P</b>	The station is not accessible with an alignment coming into Fort Worth along the TRE corridor and continuing to head South.
<b>ITC</b>	The station is accessible with an alignment coming into Fort Worth along the TRE corridor. A station at ITC allows for an alignment leaving Fort Worth along the I-35 south corridor.
<b>East Sundance</b>	The station is accessible with an alignment coming into Fort Worth along the TRE corridor. A station at East Sundance allows for an alignment leaving Fort Worth to the west.
<b>Central Rail Station</b>	The station is accessible but this is dependent on the curvature of the approach in order to be brought into the station area.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Alignment Options — TRE / West	Gateway Planning Group / TFIC	Yes = 4 No = 0

**FACTOR DEFINITION**

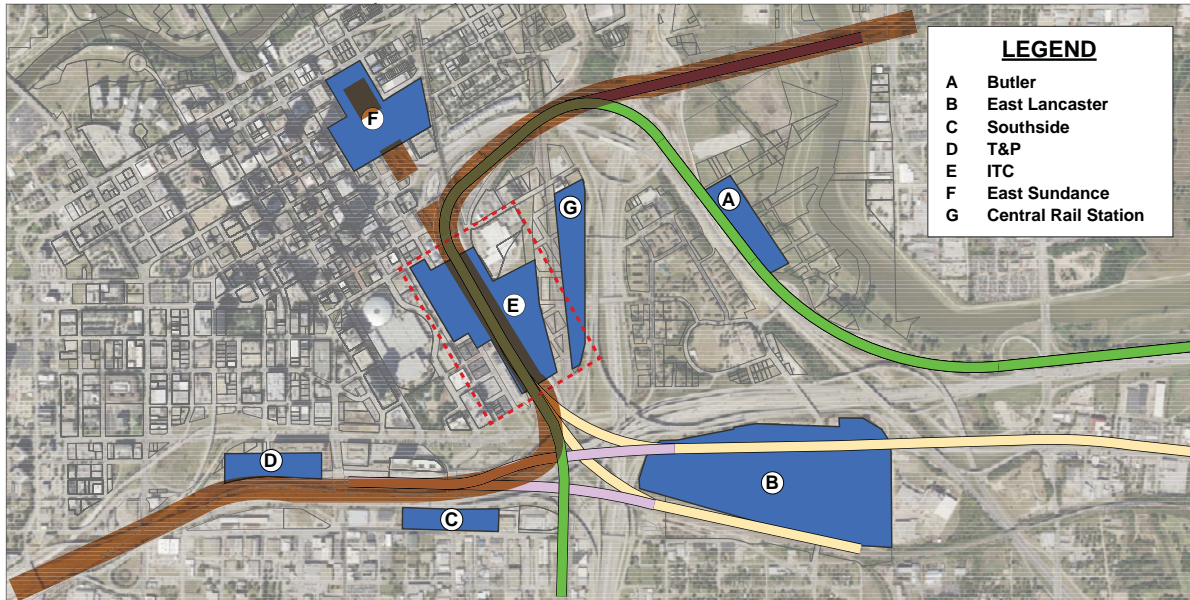
The ability of the identified alignment options to facilitate the ingress/egress of the train to the station.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	0	4	4	4	4	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

The attached map identifies the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine whether the proposed track alignment coming into Fort Worth from the east along the TRE corridor and then departing out of Fort Worth to the west continuing along I-30 and eventually to Chisholm Trail is feasible or not.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	The station is not accessible with an alignment coming into Fort Worth along the TRE corridor.
<b>East Lancaster</b>	The station is not accessible with an alignment coming into Fort Worth along the TRE corridor.
<b>Southside</b>	The station is accessible with an alignment coming into Fort Worth along the TRE corridor. A station at T&P allows for an alignment leaving Fort Worth to the west.
<b>T&amp;P</b>	The station is accessible with an alignment coming into Fort Worth along the TRE corridor. A station at T&P allows for an alignment leaving Fort Worth to the west.
<b>ITC</b>	The station is accessible with an alignment coming into Fort Worth along the TRE corridor. A station at ITC allows for an alignment leaving Fort Worth to the west.
<b>East Sundance</b>	The station is accessible with an alignment coming into Fort Worth along the TRE corridor. A station at East Sundance allows for an alignment leaving Fort Worth to the west.
<b>Central Rail Station</b>	The station is accessible but this is dependent on the curvature of the approach in order to be brought into the station area.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Alignment Options — UP / I-35 South	Gateway Planning Group / TFIC	Yes = 4 No = 0

### FACTOR DEFINITION

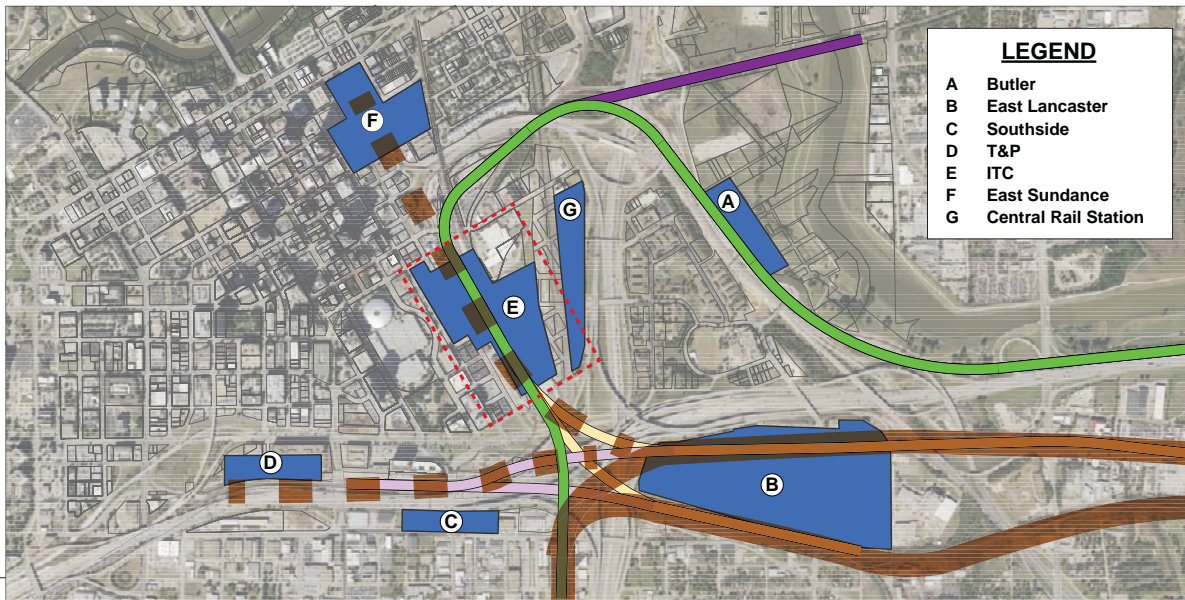
The ability of the identified alignment options to facilitate the ingress/egress of the train to the station.

### SCORING

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	4	4	4	4	4	4

### DESCRIPTION OF EVALUATION METHODOLOGY

The attached map identifies the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine whether the proposed track alignment coming into Fort Worth from the east along the UP corridor and then departing out of Fort Worth along the I-35 South corridor is feasible or not.



### ANALYSIS AND CONCLUSIONS

<b>Butler</b>	The station is not accessible with an alignment coming into Fort Worth along the UP corridor.
<b>East Lancaster</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at East Lancaster allows for an alignment leaving Fort Worth along the I-35 south corridor.
<b>Southside</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at Southside allows for an alignment leaving Fort Worth along the I-35 south corridor.
<b>T&amp;P</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at T&P allows for an alignment leaving Fort Worth along the I-35 south corridor.
<b>ITC</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at ITC allows for an alignment leaving Fort Worth along the I-35 south corridor.
<b>East Sundance</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at East Sundance allows for an alignment leaving Fort Worth along the I-35 south corridor. There is a consideration for the crossing of the 287 interchange at Downtown.
<b>Central Rail Station</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at Central Rail Station allows for an alignment leaving Fort Worth along the I-35 south corridor.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Alignment Options — UP / West	Gateway Planning Group / TFIC	Yes = 4 No = 0

**FACTOR DEFINITION**

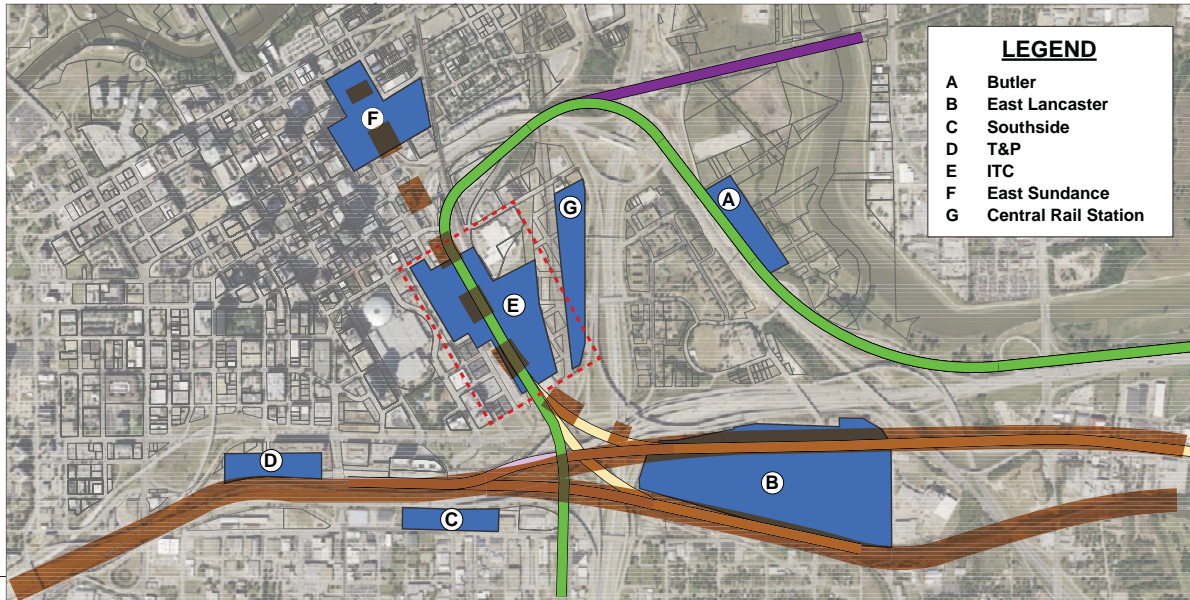
The ability of the identified alignment options to facilitate the ingress/egress of the train to the station.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	4	4	4	4	4	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

The attached map identifies the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine whether the proposed track alignment coming into Fort Worth from the east along the UP corridor and then departing out of Fort Worth to the west continuing along I-30 and eventually to Chisholm Trail is feasible or not.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	The station is not accessible with an alignment coming into Fort Worth along the UP corridor.
<b>East Lancaster</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at East Lancaster allows for an alignment leaving Fort Worth to the west.
<b>Southside</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at Southside allows for an alignment leaving Fort Worth to the west.
<b>T&amp;P</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at T&P allows for an alignment leaving Fort Worth to the west.
<b>ITC</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at ITC allows for an alignment leaving Fort Worth to the west.
<b>East Sundance</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at East Sundance allows for an alignment leaving Fort Worth along the I-35 south corridor. There is consideration for the crossing at the 287 interchange at Downtown.
<b>Central Rail Station</b>	The station is accessible with an alignment coming into Fort Worth along the UP corridor. A station at Central Rail Station allows for an alignment leaving Fort Worth to the west.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
<b>Vertical Impacts (Permitted Rights + Physical Capacity)</b>	IEA / Martinez Geospatial	No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0

**FACTOR DEFINITION**

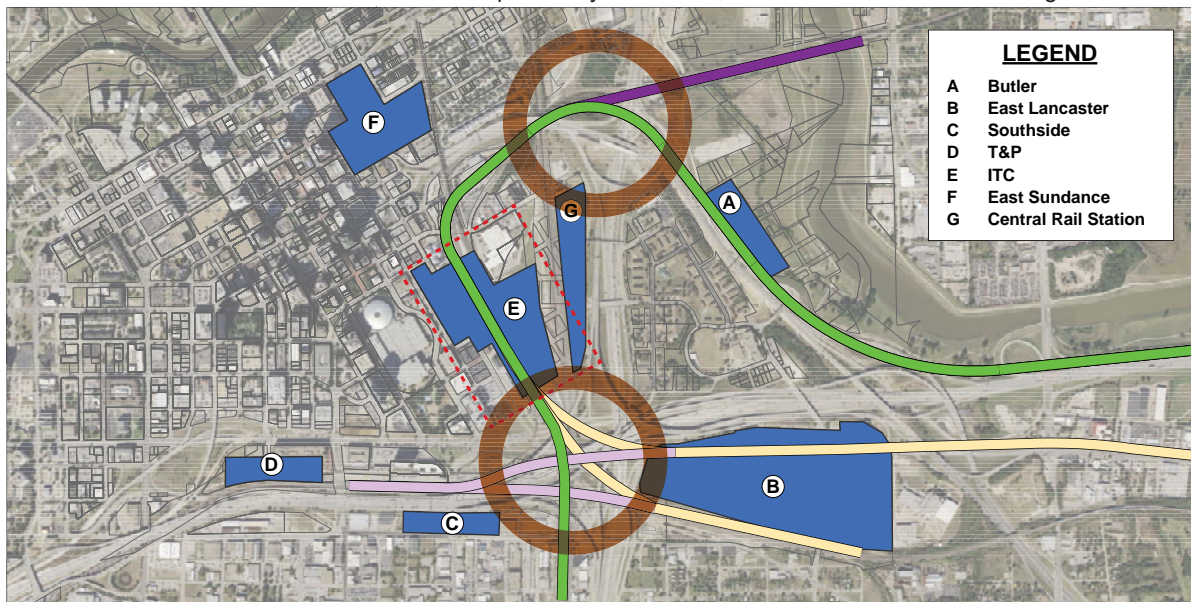
Ability to overcome restrictions (if any) necessitated by the need to acquire air rights above the station location or the approach alignment.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	4	2	2	2	2	2

**DESCRIPTION OF EVALUATION METHODOLOGY**

With the need to cross I-35 / I-30 and UP in multiple locations, there will be additional research required on an amount of crossing elements required within the preferred station area. The two stations that do not require a crossing of major infrastructure will not need additional review. The vertical clearances for all stations specifically are similar, the direct conflicts are with alignments to the station.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	The station has no vertical impacts and is accessible without an alignment crossing over major infrastructure.
<b>East Lancaster</b>	The station has no vertical impacts and is accessible with one crossing over the 280 Spur in the station area.
<b>Southside</b>	Station requires additional study and crosses major rail and highway infrastructure.
<b>T&amp;P</b>	Station requires additional study and crosses major rail and highway infrastructure.
<b>ITC</b>	Station requires additional study and crosses major rail and highway infrastructure.
<b>East Sundance</b>	Station requires additional study and crosses major rail and highway infrastructure.
<b>Central Rail Station</b>	Station requires additional study and crosses major rail and highway infrastructure.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Land Availability (HOU to FW Termination) HSR Only	Gateway Planning Group / TY Lin / Pacheco Koch	Available Today = 4 Requires Additional Study = 2 No Availability = 0

**FACTOR DEFINITION**

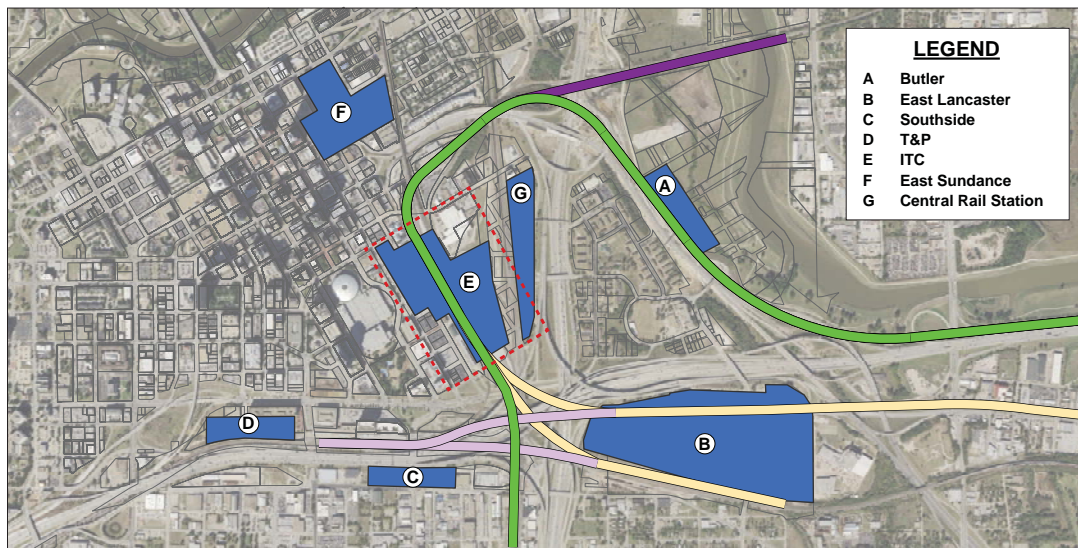
Land area availability to accommodate the station facility and all necessary infrastructure (including parking, station amenities, core ingress/egress, arrival/departures, etc.)

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	4	2	0	4	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Factor includes HSR only and is based on the land required by evaluation of programmed space needed within the station, fitting roughly a 200 FT by 1000 FT boundary area.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Land available by the estimated minimum space is adequate. Expansion may be limited by flood plain.
<b>East Lancaster</b>	Land available by the estimated minimum space is adequate.
<b>Southside</b>	Land available by the estimated minimum space is adequate. Expansion may be limited by existing structures to the west and south of the station area.
<b>T&amp;P</b>	Land is constrained by the UP property and railways, gas well and lack of minimum 200 FT between existing structures and I-30. The area at T&P station would need to float over the existing rail operations and therefore limit the base plan for a station to be executed.
<b>ITC</b>	Land available by the estimated minimum space is adequate. Approach and departure limited in option on the west due to proposed plans within the path of arrival/departure, not limited in options in the center and east. Central option is limited by a historic building. East option is not limited for program space.
<b>East Sundance</b>	Land available by the estimated minimum space is adequate. Expansion limited by existing buildings.
<b>Central Rail Station</b>	Land available by the estimated minimum space is adequate.



FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Land Availability (HOU to FW Termination) HSR + TOPRS	Gateway Planning Group / TY Lin / Pacheco Koch	Available Today = 4 Requires Additional Study = 2 No Availability = 0

**FACTOR DEFINITION**

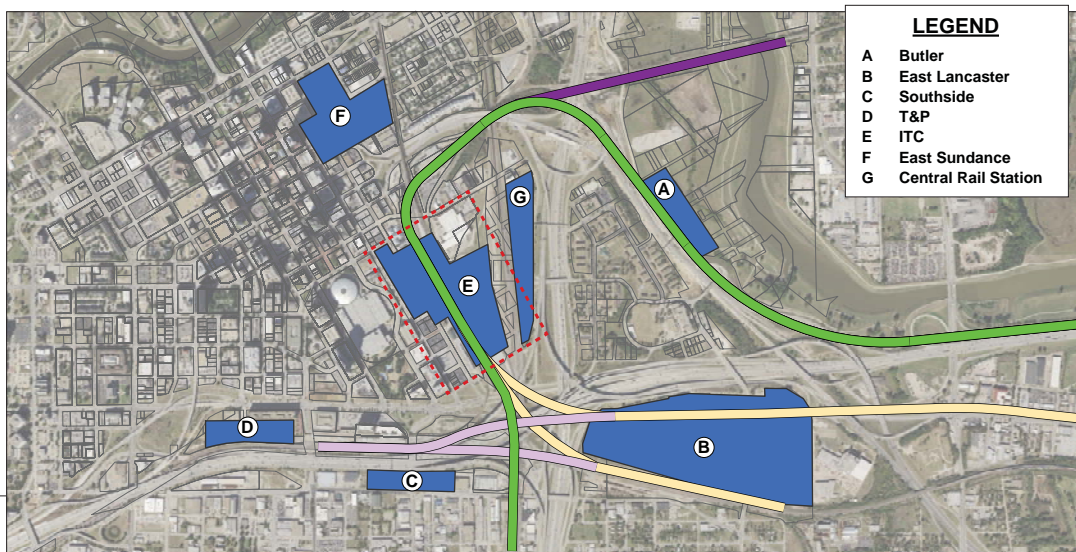
Land area availability to accommodate the station facility and all necessary infrastructure (including parking, station amenities, core ingress/egress, arrival/departures, etc.)

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	2	2	0	4	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Factor includes HSR only and is based on the land required by evaluation of programmed space needed within the station, fitting roughly a 200 FT by 1000 FT boundary area. There is no change in the amount of land required for addition of TOPRS as this has been programmed to included as an additional floor within the 200 FT by 1000 FT footprint.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Land available by the estimated minimum space is adequate. Expansion may be limited by flood plain. May not be a viable option for TOPRS route.
<b>East Lancaster</b>	Land available by the estimated minimum space is adequate. May not be a viable option for TOPRS route due to turn around time from station.
<b>Southside</b>	Land available by the estimated minimum space is adequate. Expansion may be limited by existing structures to the west and south of the station area.
<b>T&amp;P</b>	Land is constrained by the UPRR property and railways, gas well and lack of minimum width of 200 feet between existing structures and I-30. The area at T&P would need to float over the existing rail operations and therefore limits the base plan for the station.
<b>ITC</b>	Land available by the estimated minimum space is adequate. Approach and departure limited in option on the west due to proposed plans within the path of arrival/departure, not limited in options in the center and to the east. Central option is limited by a historic building. East option is not limited for program space.
<b>East Sundance</b>	Land available by the estimated minimum space is adequate. Expansion limited by existing buildings. May not be a viable option for TOPRS route due to turn around time from station.
<b>Central Rail Station</b>	Land available by the estimated minimum space is adequate.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Land Availability (HOU to SA Transfer) HSR Only	Gateway Planning Group / TY Lin / Pacheco Koch	Available Today = 4 Requires Additional Study = 2 No Availability = 0

**FACTOR DEFINITION**

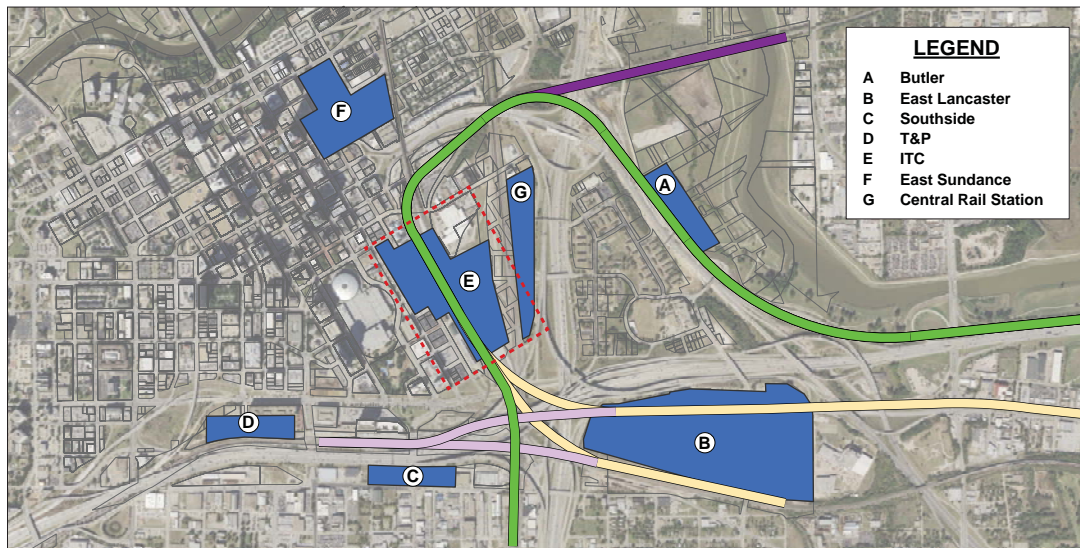
Land area availability to accommodate the station facility and all necessary infrastructure (including parking, station amenities, core ingress/egress, arrival/departures, etc.)

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	4	2	0	4	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Factor includes HSR only and is based on the land required by evaluation of programmed space needed within the station, fitting roughly a 200 FT by 1000 FT boundary area. The requirement for accommodation of a second technology (requiring the transfer) will result in the need for an additional story, but not require additional land.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Land available by the estimated minimum space is adequate. Expansion may be limited by flood plain.
<b>East Lancaster</b>	Land available by the estimated minimum space is adequate.
<b>Southside</b>	Land available by the estimated minimum space is adequate. Expansion may be limited by existing structures to the west and south of the station area.
<b>T&amp;P</b>	Land is constrained by the UP property and railways, gas well and lack of minimum 200 FT between existing structures and I-30. The area at T&P station would need to float over the existing rail operations and therefore limit the base plan for a station to be executed.
<b>ITC</b>	Land available by the estimated minimum space is adequate. Approach and departure limited in option on the west due to proposed plans within the path of arrival/departure, not limited in options in the center and east. Central option is limited by a historic building. East option is not limited for program space.
<b>East Sundance</b>	Land available by the estimated minimum space is adequate. Expansion limited by existing buildings.
<b>Central Rail Station</b>	Land available by the estimated minimum space is adequate.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Land Availability (HOU to SA Transfer) HSR + TOPRS	Gateway Planning Group / TY Lin / Pacheco Koch	Available Today = 4 Requires Additional Study = 2 No Availability = 0

**FACTOR DEFINITION**

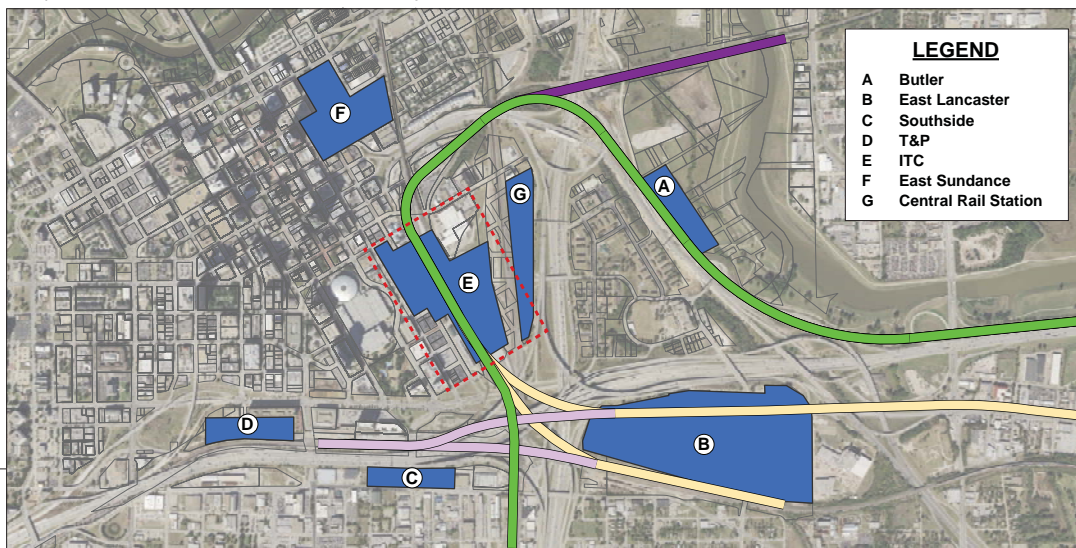
Land area availability to accommodate the station facility and all necessary infrastructure (including parking, station amenities, core ingress/egress, arrival/departures, etc.)

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	2	2	0	4	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Factor includes HSR only and is based on the land required by evaluation of programmed space needed within the station, fitting roughly a 200 FT by 1000 FT boundary area. There is no change in the amount of land required for addition of TOPRS as this has been programmed to be included as an additional floor within the 200 FT by 1000 FT footprint. The inclusion of two types of HSR technologies (requiring a transfer) will also require an additional story, but has been determined to not require additional land.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Land available by the estimated minimum space is adequate. Expansion may be limited by flood plain. May not be a viable option for TOPRS route.
<b>East Lancaster</b>	Land available by the estimated minimum space is adequate. May not be a viable option for TOPRS route due to turn around time from station.
<b>Southside</b>	Land available by the estimated minimum space is adequate. Expansion may be limited by existing structures to the west and south of the station area.
<b>T&amp;P</b>	Land is constrained by the UPRR property and railways, gas well and lack of minimum width of 200 feet between existing structures and I-30. The area at T&P would need to float over the existing rail operations and therefore limits the base plan for the station.
<b>ITC</b>	Land available by the estimated minimum space is adequate. Approach and departure limited in option on the west due to proposed plans within the path of arrival/departure, not limited in options in the center and to the east. Central option is limited by a historic building. East option is not limited for program space.
<b>East Sundance</b>	Land available by the estimated minimum space is adequate. Expansion limited by existing buildings. May not be a viable option for TOPRS route due to turn around time from station.
<b>Central Rail Station</b>	Land available by the estimated minimum space is adequate.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Land Ownership	Gateway Planning Group / Pacheco Koch	100% Public = 4 75% Public = 3 50% Public/Private = 2 75% Private = 1 100% Private = 0

**FACTOR DEFINITION**

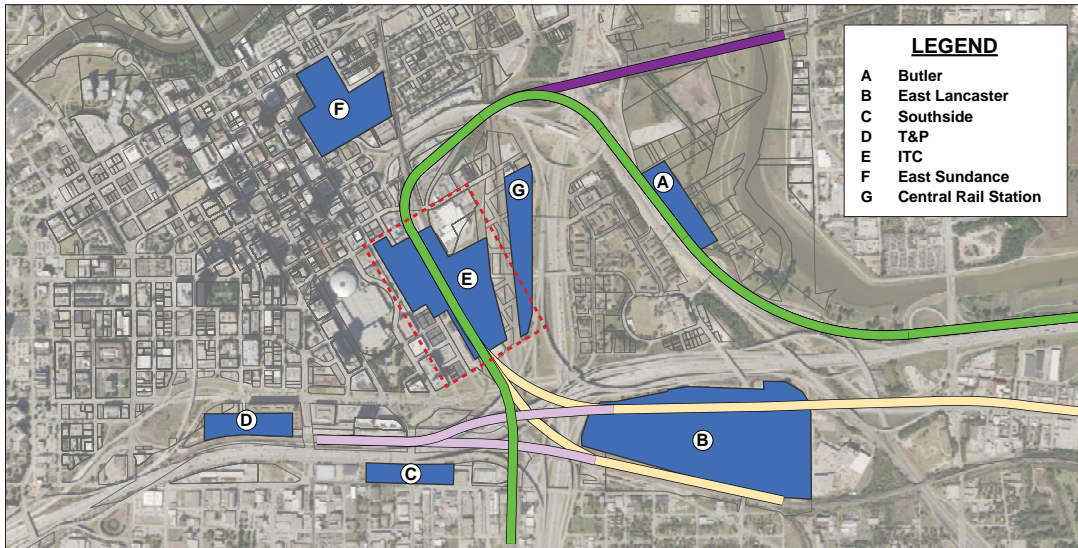
Land ownership breakdown between public versus private for the areas identified as available land.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	0	3	0	0	0	0

**DESCRIPTION OF EVALUATION METHODOLOGY**

Factor studies via City of Fort Worth online GIS platform the various station locations and their various ownership percentage.



**ANALYSIS AND CONCLUSIONS**

Butler	Public - 100%; Private - 0%
East Lancaster	Public - 0%; Private 100%
Southside	Public - 50%; Private - 50%
T&P	Public 0%; Private - 100%
ITC	Public 0%; Private - 100%
East Sundance	Public 0%; Private - 100%
Central Rail Station	Public 0%; Private - 100%

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Existing Infrastructure Compatibility - Freight Rail	IEA, Inc.	No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0

**FACTOR DEFINITION**

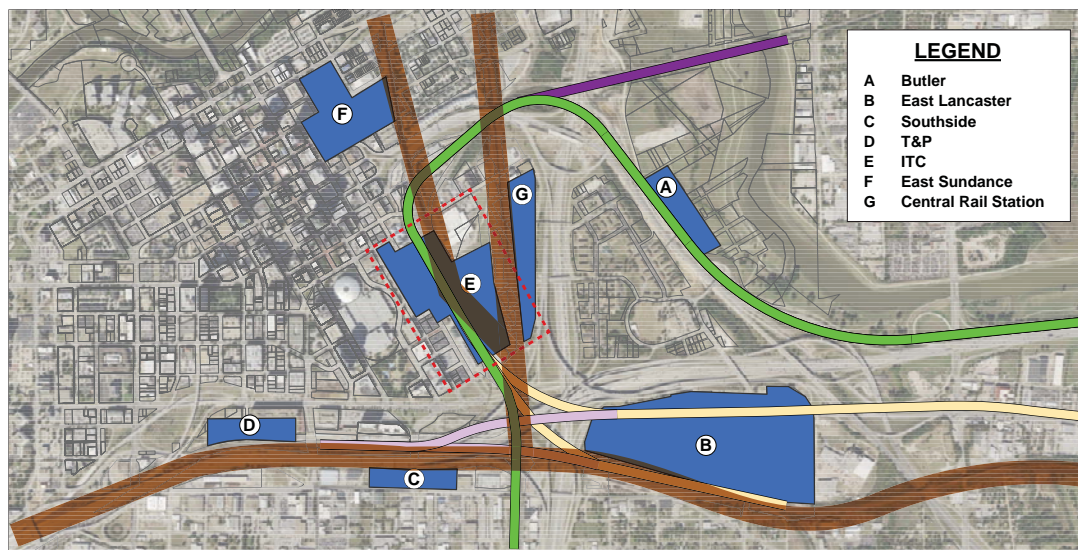
Does not conflict with existing infrastructure that may impact the station location/orientation.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	4	4	0	2	2	0

**DESCRIPTION OF EVALUATION METHODOLOGY**

NCTCOG provided the attached map that identified the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine proximity and potential conflict to the existing local freight rail system.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	The station is not located near any existing rail corridors.
<b>East Lancaster</b>	The station can be located where it is not situation near any existing rail corridors.
<b>Southside</b>	The station is not located near any existing rail corridors.
<b>T&amp;P</b>	The station is located along a UPRR rail corridor.
<b>ITC</b>	The station could be located along a spur of the UPRR rail corridor.
<b>East Sundance</b>	The station could be located along a spur of the UPRR rail corridor.
<b>Central Rail Station</b>	The station is located along the central rail corridor of UPRR and FWWR.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Existing Infrastructure Compatibility - Highway	IEA, Inc.	No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0

**FACTOR DEFINITION**

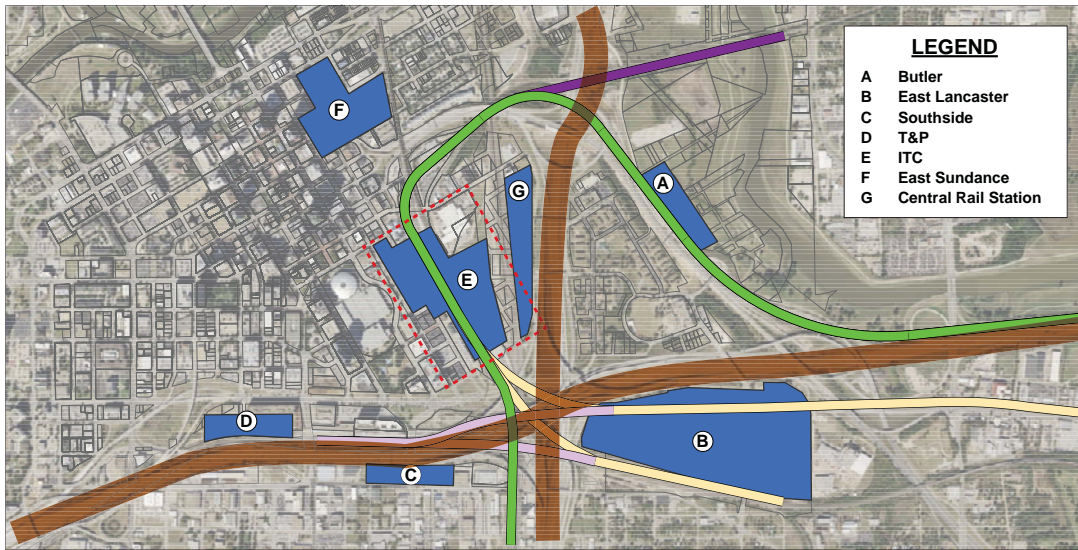
Does not conflict with existing infrastructure that may impact the station location/orientation.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	2	0	0	0	0	0

**DESCRIPTION OF EVALUATION METHODOLOGY**

NTCOG provided the attached map that identified the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine proximity and potential conflict to the existing local highway system.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	The station does not directly impact the highway system, but the extension of the rail line to TOPRS or Austin would require crossing of the interstate.
<b>East Lancaster</b>	The station does not directly impact the highway system, but the extension of the rail line to TOPRS or Austin would require crossing of the interstate.
<b>Southside</b>	The station would directly impact the highway system.
<b>T&amp;P</b>	The station would directly impact the highway system.
<b>ITC</b>	The station requires crossing of the interstate system.
<b>East Sundance</b>	The station requires crossing of the interstate system.
<b>Central Rail Station</b>	The station requires crossing of the interstate system.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Existing Infrastructure Compatibility - On System Arterial	IEA, Inc.	No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0

**FACTOR DEFINITION**

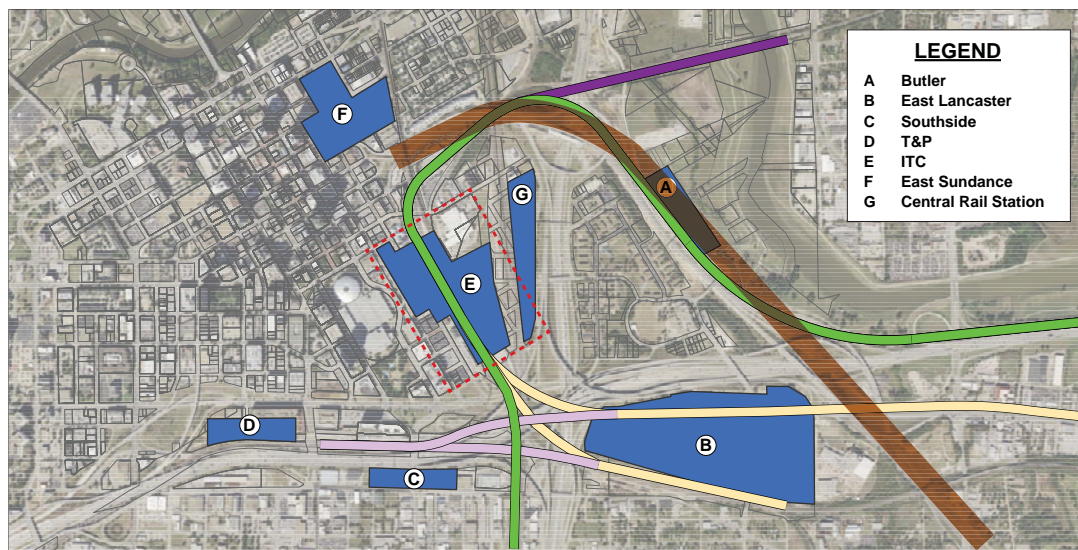
Does not conflict with existing infrastructure that may impact the station location/orientation.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	2	2	0	2	2	2

**DESCRIPTION OF EVALUATION METHODOLOGY**

NCTCOG provided the attached map that identified the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine proximity and potential conflict to the existing on-system arterials.



**ANALYSIS AND CONCLUSIONS**

Butler	This station could directly impact the on-system arterials (280 Spur) by proximity.
East Lancaster	The station does directly impact the on-system arterials (280 Spur) but could utilize the existing UPRR crossing.
Southside	The station does directly impact the on-system arterials (280 Spur) but could utilize the existing UPRR crossing.
T&P	The station does directly impact the on-system arterials by proximity and crossings (multiple directions).
ITC	The station could directly impact the on-system arterials by crossings (280 Spur).
East Sundance	The station could directly impact the on-system arterials by crossings (280 Spur).
Central Rail Station	The station could directly impact the on-system arterials by crossings (280 Spur).

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Existing Infrastructure Compatibility - Local Arterial	IEA, Inc.	No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0

**FACTOR DEFINITION**

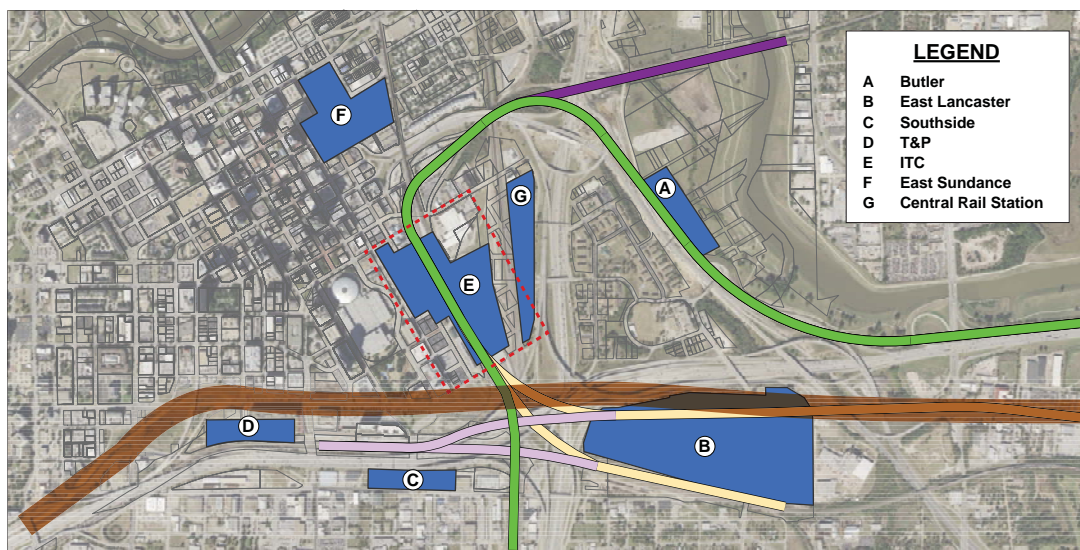
Does not conflict with existing infrastructure that may impact the station location/orientation

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	4	2	2	2	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

NCTCOG provided the attached map that identified the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine proximity and potential conflict to the local arterial system.



**ANALYSIS AND CONCLUSIONS**

Butler	The station does not directly impact the local system.
East Lancaster	The station does not directly impact the local arterial system is located along the UPRR corridor.
Southside	The station does directly impact the local arterial system by crossings and potential cut-offs.
T&P	The station does directly impact the local arterial system by crossings and potential cut-offs.
ITC	The station does directly impact the local arterial system by crossings and potential cut-offs.
East Sundance	The station does directly impact the local arterial system by crossings and potential cut-offs.
Central Rail Station	The station does not directly impact the local arterial system but could to provide access into the station.



FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Existing Infrastructure Compatibility - Major Utilities	IEA, Inc.	No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0

**FACTOR DEFINITION**

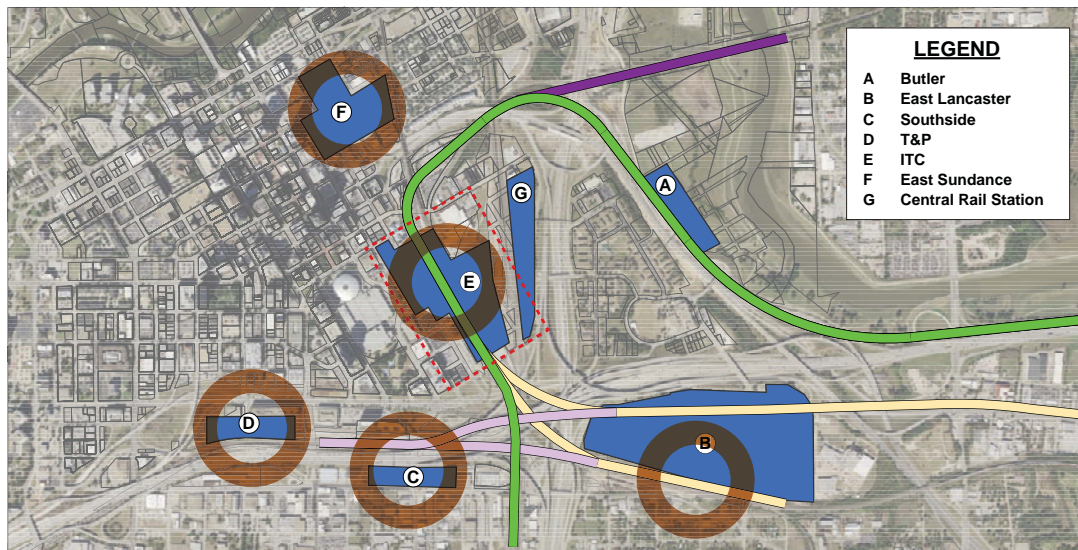
Does not conflict with existing infrastructure that may impact the station location/orientation.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	0	2	2	2	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

NCTCOG provided the attached map that identified the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine proximity and potential conflict to known major utilities or utility corridors.



**ANALYSIS AND CONCLUSIONS**

Butler	The station is not in close proximity to known major utilities.
East Lancaster	The station is close to a cell tower and probable water/sewer lines.
Southside	The station is in an urbanized area with overhead electric and probable water/sewer lines.
T&P	The station is in an urbanized area with overhead electric and probable water/sewer lines.
ITC	The station is in an urbanized area with overhead electric and probable water/sewer lines.
East Sundance	The station is in an urbanized area with overhead electric and probable water/sewer lines.
Central Rail Station	The station is not in close proximity to known major utilities.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Existing Infrastructure Compatibility - TRE	IEA, Inc.	No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0

**FACTOR DEFINITION**

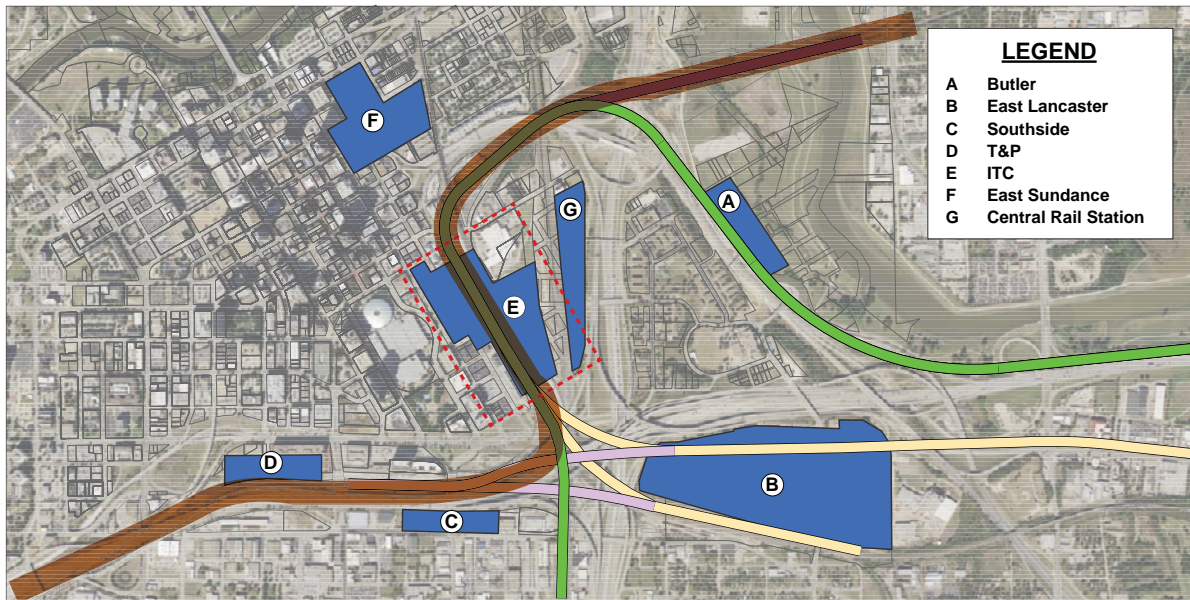
Does not have a permanent conflict with existing TRE infrastructure that may impact the station location/orientation.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	4	4	2	2	4	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

NCTCOG provided the attached map that identified the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine proximity and potential conflict to the existing TRE rail.



**ANALYSIS AND CONCLUSIONS**

Butler	The station is not located near the TRE rail line or station.
East Lancaster	The station is not located near the TRE rail line.
Southside	The station is not located near the TRE rail line.
T&P	The station is located near the TRE rail line with potential for impact to the station.
ITC	The station is located near the TRE rail line with potential for impact to the station.
East Sundance	The station is not located near the TRE rail line.
Central Rail Station	The station could be located near the TRE rail line.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Existing Infrastructure Compatibility - TEXRail	IEA, Inc.	No Conflicts = 4 Requires Additional Study = 2 High Conflict = 0

**FACTOR DEFINITION**

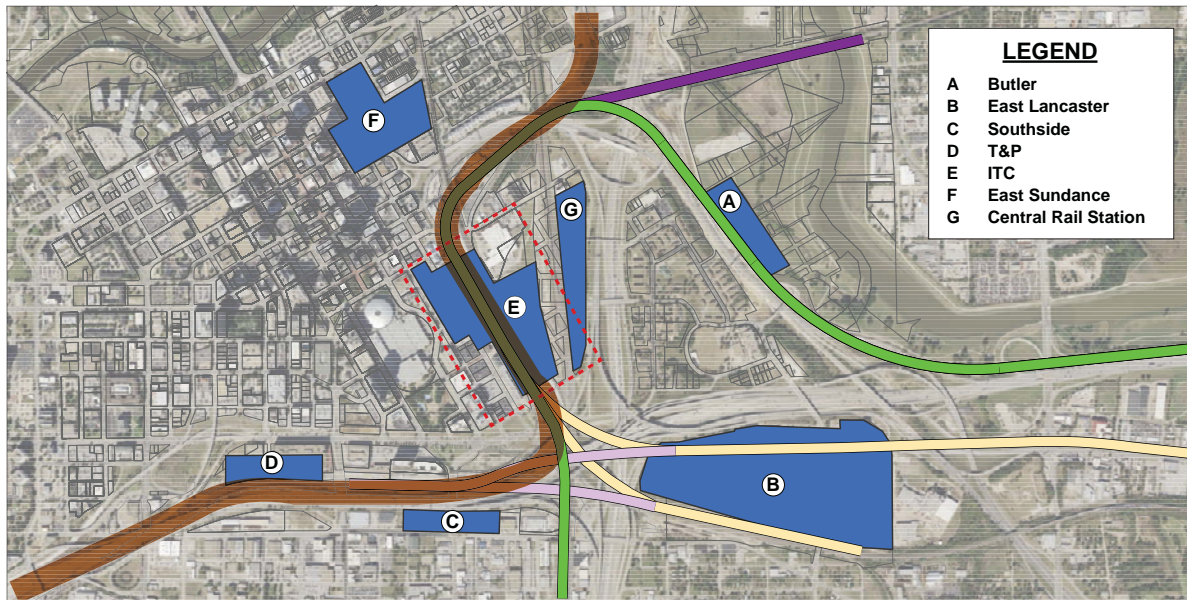
Does not have a permanent conflict with existing TEXRail infrastructure that may impact the station location/orientation.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	4	4	2	2	4	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

NCTCOG provided the attached map that identified the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine proximity and potential conflict to the proposed TEXRail system.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	The station is not located near the TEXRail corridor.
<b>East Lancaster</b>	The station is not located near the TEXRail corridor.
<b>Southside</b>	The station is not located near the TEXRail corridor.
<b>T&amp;P</b>	The station could be located near the TEXRail corridor with potential for impact to the station.
<b>ITC</b>	The station could be located near the TEXRail corridor with potential for impact to the station.
<b>East Sundance</b>	The station is not located near the TEXRail corridor.
<b>Central Rail Station</b>	The station is not located near the TEXRail corridor.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Environmental Justice/ Neighborhood Displacement	Gateway Planning Group / TFIC	No Displacement = 4 Insignificant Displacement = 3 Some Displacement = 2 Significant Displacement = 1 Full Displacement = 0

**FACTOR DEFINITION**

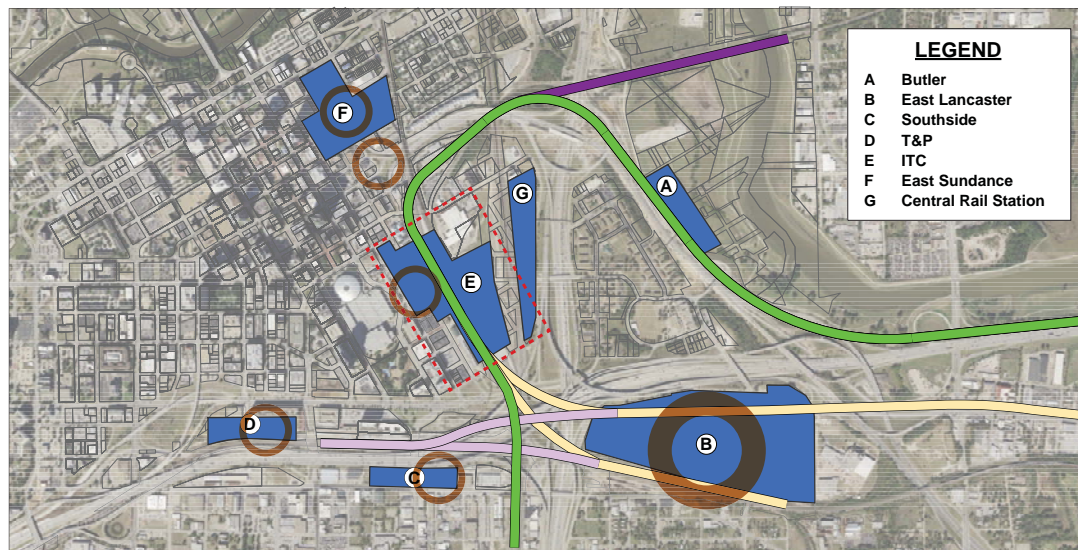
No displacement on quality of life in terms of conflicts with the local neighborhood (business/community uses and residential) and the environment.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	0	3	4	2	3	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Determined to be significant versus insignificant based on the need to remove existing buildings within the land available.



**ANALYSIS AND CONCLUSIONS**

Butler	Land is vacant, but in the floodplain.
East Lancaster	Potentially significant displacement of services, including Presbyterian Night Shelter, Logistics and transport parking, jobs and other structures.
Southside	Some business displacement (one building).
T&P	Adjacent to vacant older buildings/structures, but no displacement. Disruption of US Postal Service operations
ITC	Some business displacement (several small buildings in west option; one building is historic on the central option). The east option has no impacts.
East Sundance	Some business displacement (one building). Route extension has additional impacts on historic structures
Central Rail Station	Land/buildings are vacant.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Parking	Gateway Planning Group / PK TY Lin / Lea + Elliott / O'Brien	Sufficient; Expansion Potential = 4 Requires Additional Study = 2 Insufficient; No Expansion = 0

### FACTOR DEFINITION

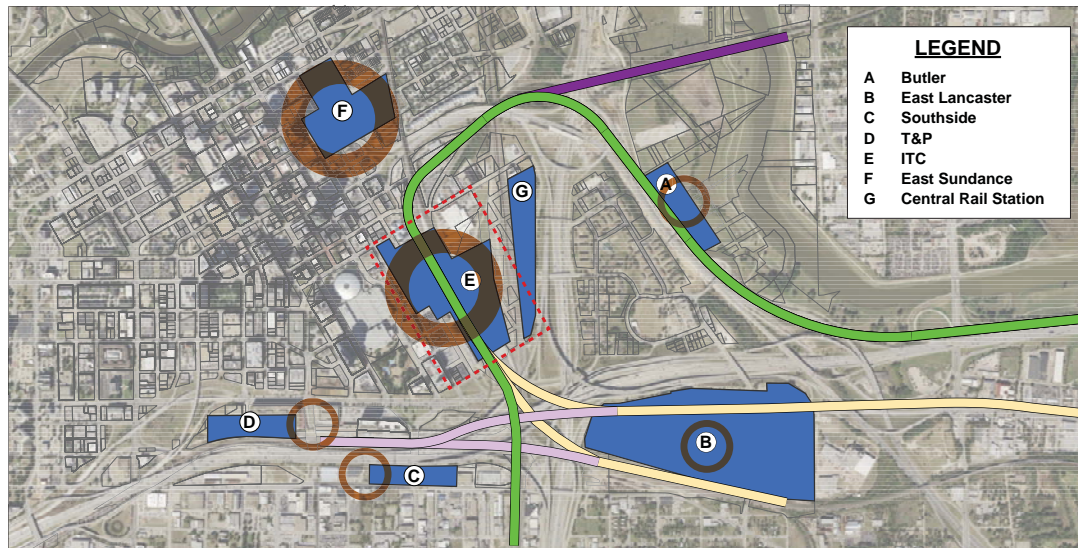
Ability to provide sufficient long-term parking (of at least 3,000) on-site or convenient existing remote or shared parking locations, or ability to expand on-site.

### SCORING

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	2	2	2	4	4	2

### DESCRIPTION OF EVALUATION METHODOLOGY

Availability of land for expansion of parking and/or access and connectivity to shared parking within the area.



### ANALYSIS AND CONCLUSIONS

<b>Butler</b>	Land is in floodplain, needs additional study on parking capacity for expansion, potential for shared parking with future redevelopment of Butler Place.
<b>East Lancaster</b>	No shared parking opportunities. Some potential for parking expansion.
<b>Southside</b>	No expansion possible, some shared parking opportunities.
<b>T&amp;P</b>	Some parking expansion into TxDOT property. Some shared parking options with future parking of T&P warehouse. Limited by gas well.
<b>ITC</b>	Ample shared parking opportunities, expansion available for additional parking. Strong potential for underground parking to add to on-site and expansion of parking needs.
<b>East Sundance</b>	Ample shared parking opportunities, expansion available for additional parking. Strong potential for underground parking to add to on-site and expansion of parking needs.
<b>Central Rail Station</b>	Ample area for expansion of additional parking, access required for connection to shared parking.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
MTP Policies + Recommendations - One Seat Ride	Gateway Planning Group / TFIC	Yes = 4 Requires Additional Study = 2 No = 0

**FACTOR DEFINITION**

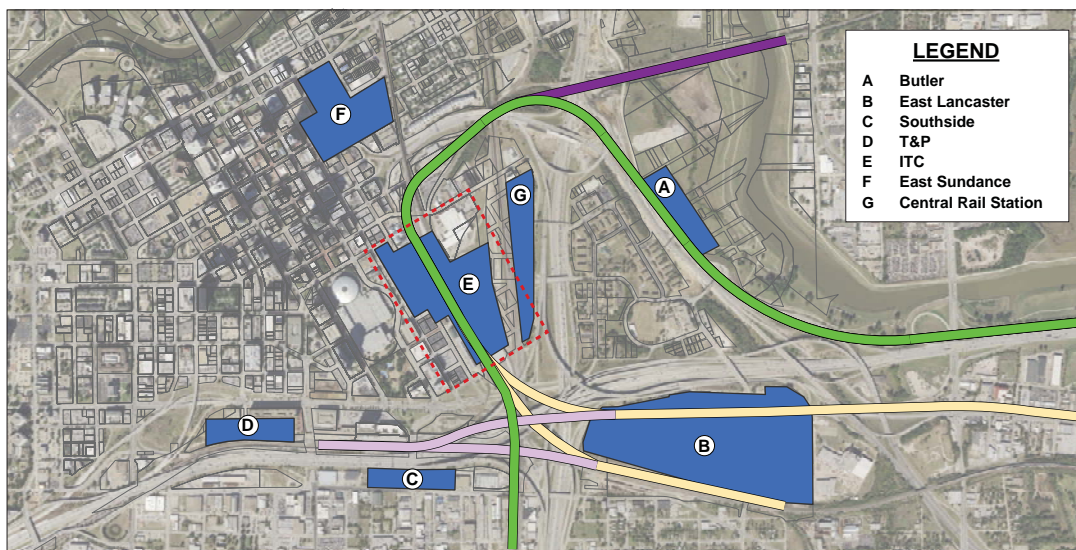
Location enables the design and implementation of a station to meet policy and recommendations of the MTP for the one seat ride.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	2	2	2	4	2	2

**DESCRIPTION OF EVALUATION METHODOLOGY**

Aligning with the station locations and the ability to help/hinder the option to include one seat ride. Assuming that the train can approach and depart in multiple directions, the focus would be on alignment and the ability to connect south and east.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Station can accommodate a one seat ride if the train continues to follow the TRE line through the ITC station and southward. Requires additional cost and pushes the alignment into ITC, making Butler an unnecessary station location. With that cost, ITC would likely defeat the purpose of the Butler Station.
<b>East Lancaster</b>	Assuming that the turn of the train can move southward, this location can accommodate the one seat ride. Additional alignment study for turn allowances required.
<b>Southside</b>	Train would be required to continue west or go south, or depart the same direction as approach to turn and head south. Additional analysis required to check feasibility.
<b>T&amp;P</b>	Train would be required to continue west to go south, or depart the same direction as approach to turn and head south. Additional analysis required to check feasibility.
<b>ITC</b>	Meets one seat ride requirements on both directions.
<b>East Sundance</b>	Turn considerations may make this unfeasible for the TRE and I-30 alignments. UP and East Lancaster alignments are more feasible.
<b>Central Rail Station</b>	Turn considerations may make this unfeasible for the TRE and I-30 alignments. UP and East Lancaster alignments are more feasible.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Multimodal Connectivity - Regional	Lea + Elliott, Inc.	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0

**FACTOR DEFINITION**

Location enables and enhances multimodal transportation opportunities at or near the station area and is consistent with Fort Worth Transportation Authority’s master plan. Consistent with the MTP and provides regional connections.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	1	1	4	4	2	3

**DESCRIPTION OF EVALUATION METHODOLOGY**

NCTCOG provided the below map that identified the track alignment options coming into and out of Fort Worth. Based on these options, each potential station location was evaluated to determine whether the location enables and enhances multimodal transportation opportunities on a regional level. The regional connections that were considered are: Trinity Railway Express (TRE); TEXRail; and the regional bus/BRT system (FWTA and Greyhound/Trailways). AMTRAK was not considered as a viable regional connection due to relative infrequency of service. The DART system does not serve the study area. The DART rail system (including the future Cotton Belt commuter rail system) is accessible via a transfer from the TRE in downtown Dallas and TEXRail at DFW Airport (future). The TOPRS rail system was not considered as it only has one stop in the region.

Evaluation Criteria		Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
Multi-Modal Connectivity - Regional	TRE	✘	✘	✘	●	●	■	▲
	TEXRail	✘	✘	✘	●	●	■	▲
	Regional Bus/BRT	■	●	●	●	●	■	▲

**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	The station is not near the TRE and TEXRail and is separated by two highways. Regional bus service is not available.
<b>East Lancaster</b>	The station is not near the TRE and TEXRail and is separated by two highways. It is near a future regional BRT route shown in the FWTA master plan.
<b>Southside</b>	The station is not near the TRE and TEXRail and is separated by two highways. Regional bus service is not available.
<b>T&amp;P</b>	The station is an existing TRE station, FWTA bus transit center and a future TEXRail station; it would provide good regional connectivity.
<b>ITC</b>	The station is an existing TRE station, FWTA bus transit center and a future TEXRail station; it would provide good regional connectivity.
<b>East Sundance</b>	The station is near the ITC station of TRE, FWTA bus transit center, and a future TEXRail station.
<b>Central Rail Station</b>	The station is near the ITC station of TRE, FWTA bus transit center, and a future TEXRail station.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Multimodal Connectivity - Local	Lea + Elliott, Inc.	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0

**FACTOR DEFINITION**

Location enables and enhanced multimodal transportation opportunities at or near the station area and is consistent with Fort Worth Transportation Authority master plan. Offers connections to “Last Mile,” people mover, autonomous vehicles, on-demand travel, walkability, trails, cycling, etc.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
1	1	2	4	4	4	3

**DESCRIPTION OF EVALUATION METHODOLOGY**

NCTCOG provided the below map that identified the track alignment options coming into and out of Fort Worth. Based on these options each potential station location was evaluated to determine whether the location enables or enhances multimodal transportation opportunities on a local level. The local connections considered were: people mover; autonomous vehicles (AVs); on-demand travel; walkability; trails; and cycling. On-demand travel was deemed possible at all stations.

Evaluation Criteria		Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
Multi-Modal Connectivity - Local	People mover	■	■	▲	●	●	●	●
	Autonomous vehicles	●	●	●	●	●	●	●
	On-demand travel	●	●	●	●	●	●	●
	Trails, cycling	■	▲	●	●	●	●	■

**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	The station location is near the Trinity River hike and bike trail, but cut off from most major downtown activity centers by two highways. It scores low on people mover and average on AVs, walkability, trails and cycling.
<b>East Lancaster</b>	The station’s location south of I-30 and east of I-35 does not provide good local connections. It scores low on people mover, walkability, trails and cycling; and average on AVs.
<b>Southside</b>	The station’s location south of I-30 and east of I-35 does not provide good local connections. It scores low on people mover, walkability, trails and cycling; and average on AVs.
<b>T&amp;P</b>	The station location’s proximity to major downtown activity centers would provide good location connection opportunities. It scores high on all connections.
<b>ITC</b>	The station location’s proximity to major downtown activity centers would provide good location connection opportunities. It scores high on all connections.
<b>East Sundance</b>	The station location’s proximity to major downtown activity centers would provide good local connection opportunities. It scores high on all connections. In addition, the proximity to future services/connections including the Panther Island pedestrian bridge and water taxis that serve the Stockyards is favorable.
<b>Central Rail Station</b>	The station location’s proximity to major downtown activity centers would provide good local connection opportunities but would require further study. It scores high on people mover, AVs and walkability; and average on trails and cycling due to it being somewhat near the Trinity Trail on Panther Island.



FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Ingress and Egress - Automobiles	Pacheco Koch / IEA / TY Lin	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0

**FACTOR DEFINITION**

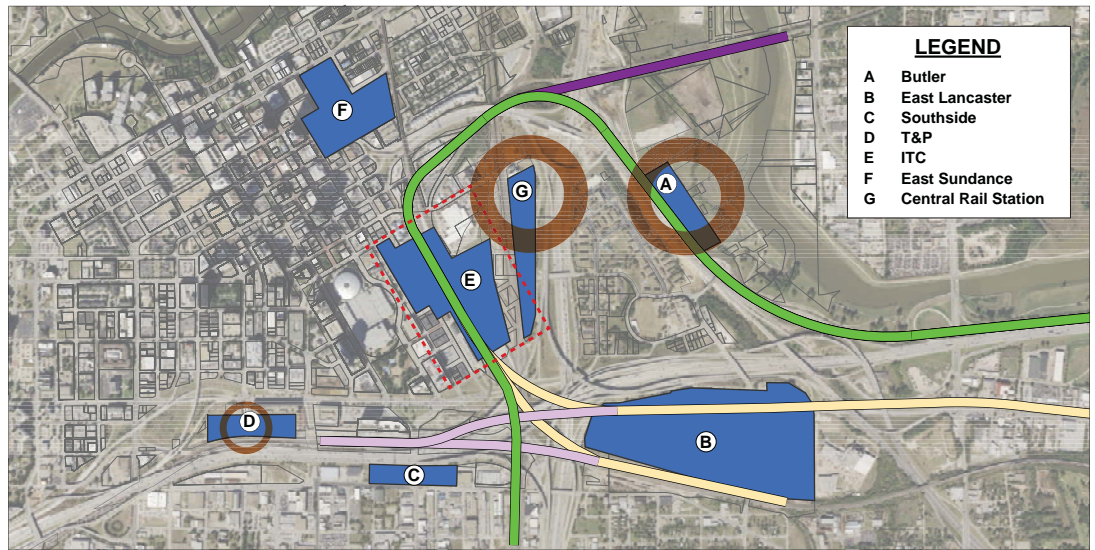
Location enables effective ingress and egress at commute peak hour for automobiles.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	2	4	1	4	4	3

**DESCRIPTION OF EVALUATION METHODOLOGY**

Current or potential of having effective ingress and egress of automobiles to the station parking areas. The graphic shows major and minor conflicts.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Access from the adjacent road networks (TxDOT or City) is either limited or non-existent. If expansion of network proves to be possible, ingress and egress points would be limited.
<b>East Lancaster</b>	Location is within a few blocks of a major thoroughfare, but ingress and egress points would be limited.
<b>Southside</b>	Can access from CBD, Southside and has multiple points of ingress and egress.
<b>T&amp;P</b>	Near CBD, but access from the west is limited. Must be intimately familiar with the area to be able to navigate effectively. Limited number of ingress/egress points.
<b>ITC</b>	Ample points of ingress/egress. Simple navigation to and from.
<b>East Sundance</b>	Ample points of ingress/egress. Simple navigation to and from.
<b>Central Rail Station</b>	Access from adjacent road networks (TxDOT or City) is limited or non-existent. Potential exists to make roadway connections in this area.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Ingress and Egress - Buses	Pacheco Koch / IEA / TY Lin	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0

**FACTOR DEFINITION**

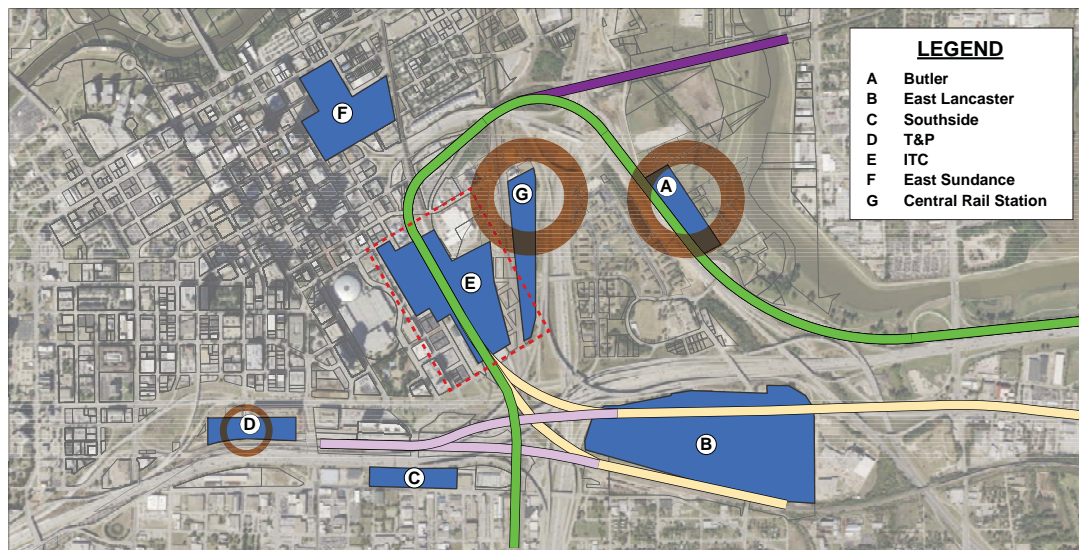
Location enables effective ingress and egress at commute peak hour for buses.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	3	3	3	4	3	2

**DESCRIPTION OF EVALUATION METHODOLOGY**

Current or potential of having effective ingress and egress of bus routes to the station areas. The graphic shows major and minor conflicts.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Access from the adjacent road networks (TxDOT or City) is limited or non-existent. If expansion of network proves to be possible in this area, ingress and egress points would be limited.
<b>East Lancaster</b>	Location is within a few blocks of major thoroughfare. Existing bus routes in the area are vast. Limited ingress and egress points would not have negative effect on bus access.
<b>Southside</b>	Existing park and ride in the area promotes easy access for buses.
<b>T&amp;P</b>	Proximity to T&P Station and existing bus routes promotes easy access.
<b>ITC</b>	Existing city bus routes and Greyhound bus routes promote easy access.
<b>East Sundance</b>	City bus routes exist in close proximity promoting easy access.
<b>Central Rail Station</b>	Access from the adjacent road networks (TxDOT or City) is limited or non-existent. Potential exists to make roadway connections in this area or integrate with ITC location with pedestrian connectivity.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Ingress and Egress - Pedestrians	Pacheco Koch / IEA / TY Lin	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0

**FACTOR DEFINITION**

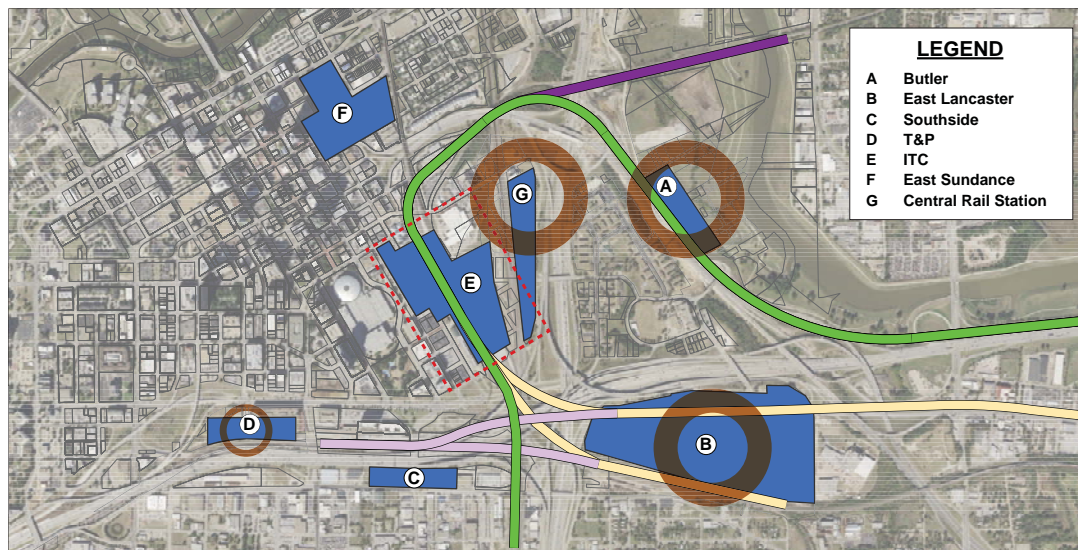
Location enables effective ingress and egress at commute peak hour for pedestrians.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	1	4	4	4	4	2

**DESCRIPTION OF EVALUATION METHODOLOGY**

Current or potential of having effective ingress and egress of pedestrians to the station location. The graphic shows major and minor conflicts.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Limited options for pedestrian access, except from Butler. Pedestrian access from Trinity Trail system, but this is not likely to be used by ridership.
<b>East Lancaster</b>	Location is separated from CBD with no good pedestrian access to surrounding areas.
<b>Southside</b>	Pedestrian connection exists on South Main underpass as well as pedestrian connection under I-30 from T&P Station.
<b>T&amp;P</b>	Proximity to T&P Station and CBD make for easy pedestrian access. Bike share is in close proximity.
<b>ITC</b>	Close proximity to CBD.
<b>East Sundance</b>	Close proximity to CBD.
<b>Central Rail Station</b>	No connection to CBD due to existing rail locations that are not conducive to pedestrian traffic. Potential to integrate with ITC location with pedestrian connection.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Station Area Context - Contextually Aligned with Adjacent Historical and Cultural Assets	Gateway Planning Group / Livable Plans + Codes / Pacheco Koch	Yes = 4 Requires Additional Study = 2 No = 0

**FACTOR DEFINITION**

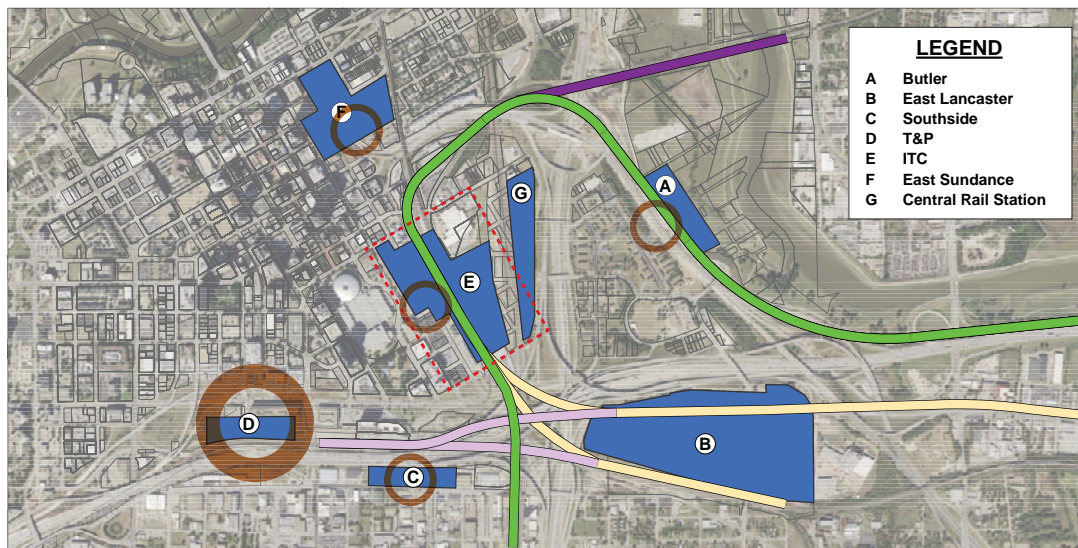
Does the station contextually align with adjacent historical and cultural assets based on asset mapping and local plans?

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	4	2	2	2	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Evaluation on the local context of the station areas and evaluating the historic building placement, size and prominence in regards to the station area potential size and placement. The graphic shows major and minor conflicts.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Historic aspects of this area is assumed to be embraced with the redevelopment into a mixed-income community. The scale and character is unknown, potential for conflicts with that context.
<b>East Lancaster</b>	Little to no historical or cultural assets in this station area. Station aligns.
<b>Southside</b>	Medical district and new development matches the scale and is preserving some character in the area. The station would need to address Main Street as a cultural asset with the station being located directly over the corridor.
<b>T&amp;P</b>	Potential major conflicts with T&P Lofts and T&P Warehouse. Also, potential disruption of operations for the U.S. Postal Service. Additional study required.
<b>ITC</b>	Potential for disruption of Santa Fe building, available means to work around the property so as not to disrupt the integrity of the structure.
<b>East Sundance</b>	Adjacent buildings are modern structures with 40 story heights. Approach may conflict with existing historic church and other buildings along the 280 Spur.
<b>Central Rail Station</b>	Little to no historical or cultural assets in this station area. Station aligns.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Station Area Context - Visual Impacts	Gateway Planning Group / Livable Plans + Codes / Pacheco Koch	Yes, No Barrier Created = 4 Requires Additional Study = 2 No, Barrier Created = 0

**FACTOR DEFINITION**

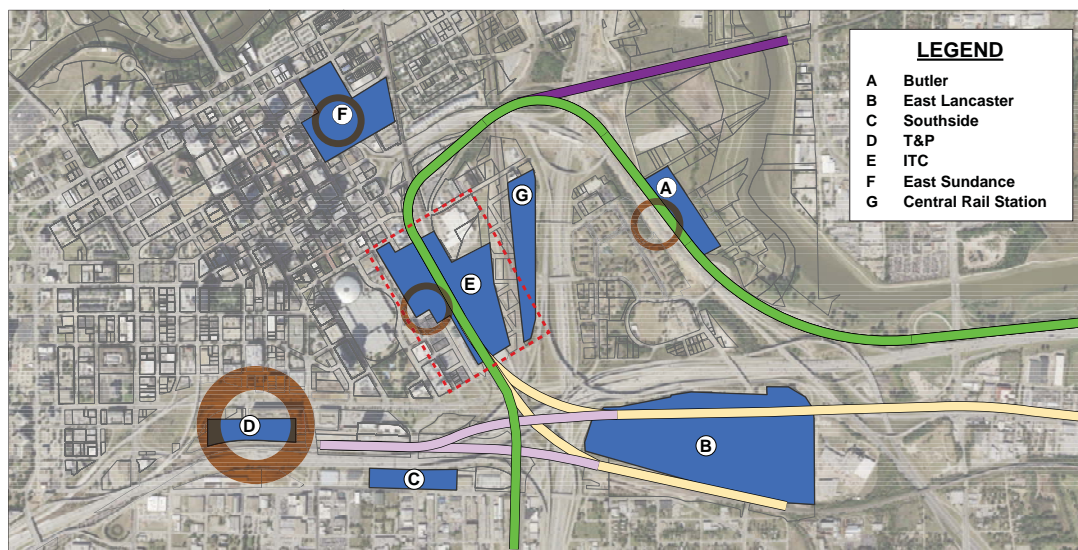
Does not cause barriers to currently highly-regarded vistas and views.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	4	4	0	2	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Based on the placement and size of the potential station, evaluation on the potential impacts it could cause for current and planned structures in the station areas. The graphic shows major and minor conflicts.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Potential to block currently unrealized views of the Trinity River for future mixed-income development.
<b>East Lancaster</b>	No visual impacts.
<b>Southside</b>	Potential to serve as a buffer for the medical district from the raised segment of I-30.
<b>T&amp;P</b>	Potential major conflicts with T&P Lofts and T&P Warehouse.
<b>ITC</b>	Potential to serve as a backdrop/buffer for ITC from UPRR and I-35W for the east side of the station area. The west and central side of the station area has potential to block views of the ITC structure and Santa Fe building from regular east-west corridors.
<b>East Sundance</b>	Approach may conflict with views of existing historic church and other buildings along 280 Spur.
<b>Central Rail Station</b>	No visual impacts.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Station Area Context - Scale Impact	Gateway Planning Group / Livable Plans + Codes / O'Brien Architects	Yes, No Barrier Created = 4 Requires Additional Study = 2 No, Barrier Created = 0

**FACTOR DEFINITION**

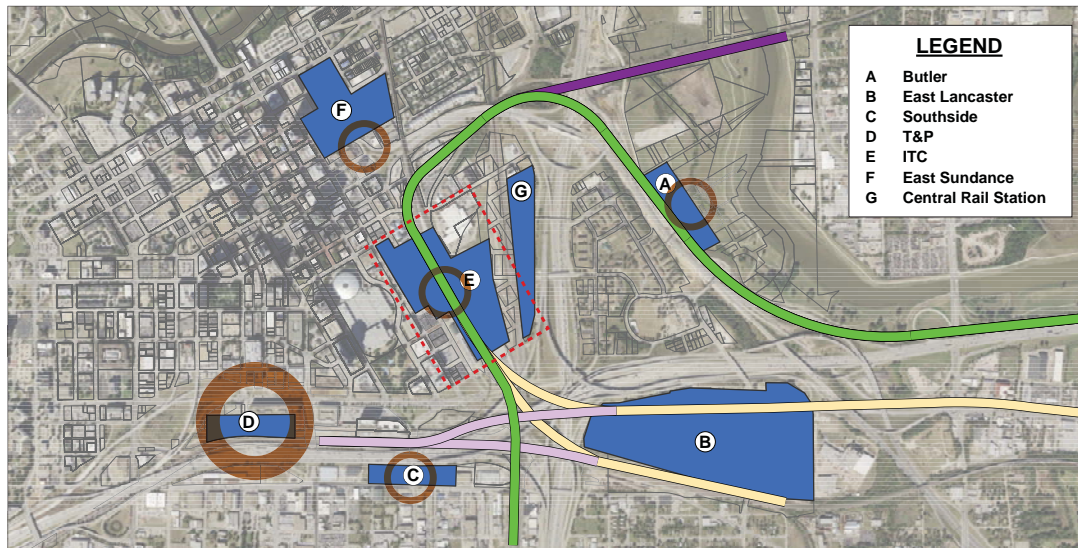
Is there a negative scale impact and is it capable of mitigation?

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	4	4	0	2	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Evaluation on whether the potential to four to seven story station height and mass (200 FT by 1000 FT long) causes a conflict with the scale of the context around the station area. The graphic shows major and minor conflicts.



**ANALYSIS AND CONCLUSIONS**

Butler	Potential to block currently unrealized views of the Trinity River for future mixed-income development.
East Lancaster	No visual impacts.
Southside	Potential to serve as a buffer for the medical district from the raised segment of I-30.
T&P	Potential major conflicts with T&P Lofts and T&P Warehouse.
ITC	Potential to serve as a backdrop/buffer for ITC from UPRR and I-35W for the east side of the station area. The west and central side of the station area has potential to block views of the ITC structure and Santa Fe building from regular east-west corridors.
East Sundance	Approach may conflict with views of existing historic church and other buildings along 280 Spur.
Central Rail Station	No visual impacts.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Station Area Context - Street Grid Impact	Gateway Planning Group / Pacheco Koch / O'Brien Architects	Yes = 4 Requires Additional Study = 2 No = 0

**FACTOR DEFINITION**

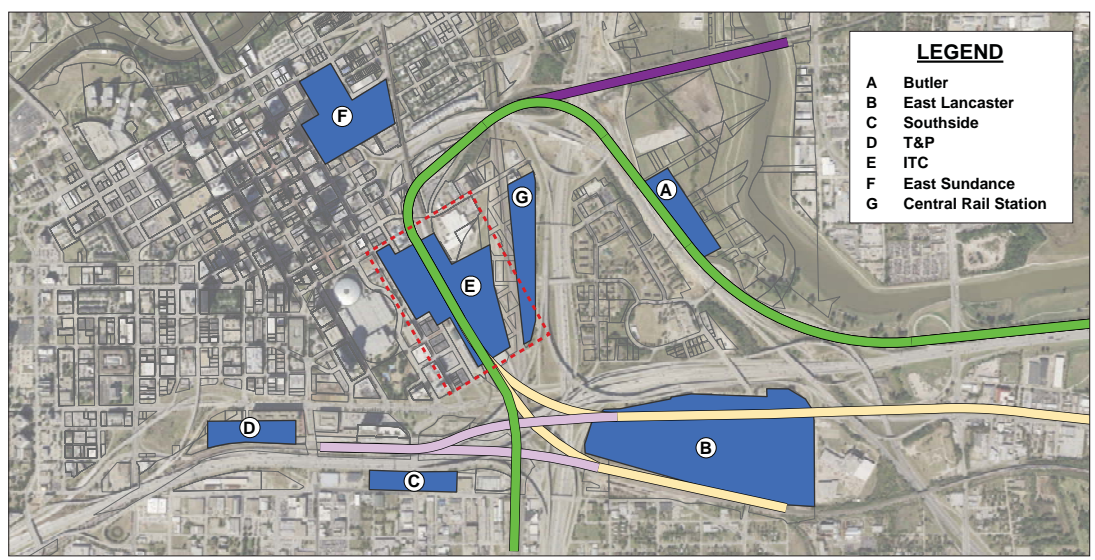
Does not cut off the street grid at the station location.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	4	4	4	4	4	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Evaluation on the potential for the street grid to be interrupted within the station area. Station was designed to incorporate the street grid along the ground level of the station, much like the parking garages already in Downtown and at Sundance Square.



**ANALYSIS AND CONCLUSIONS**

Butler	No street grid interruption.
East Lancaster	No street grid interruption.
Southside	No street grid interruption. Main Street is tunneling under UPRR and I-30 at this location and would continue under the station as it lies today.
T&P	No street grid interruption.
ITC	No street grid interruption. Station planned for layout on three city blocks with complete pass through for current street grid.
East Sundance	No street grid interruption. Station planned for layout on three city blocks with complete pass through for current street grid.
Central Rail Station	Some roadway interruptions, but none are part of a consistent grid system.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Station Area Context - Regional Priority Ecosystem Impact	IEA, Inc.	Yes = 4 Requires Additional Study = 2 No = 0

**FACTOR DEFINITION**

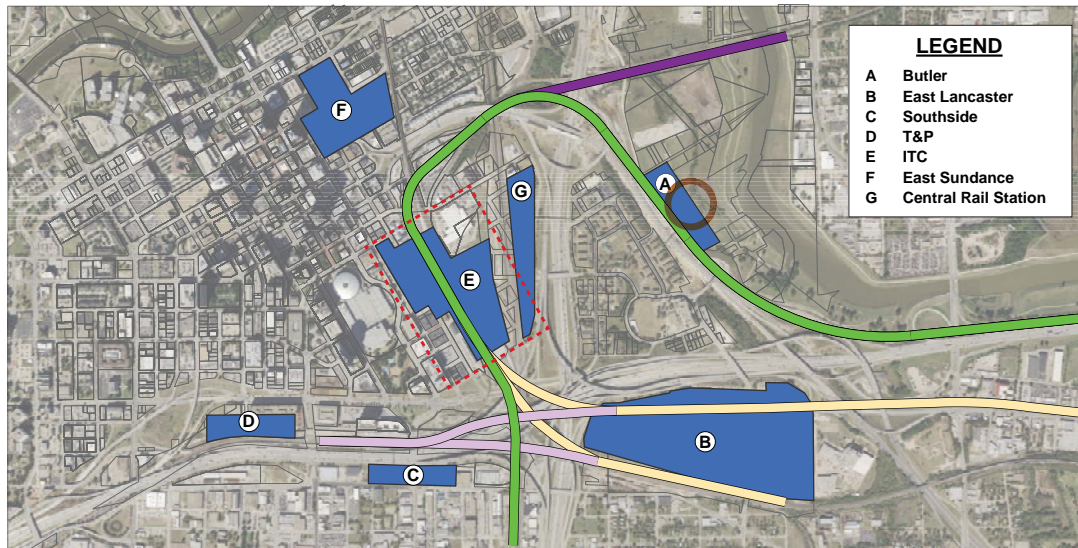
Does it impact groundwater, the Trinity River, wetlands, other watershed features, open space or undeveloped land?

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	4	4	4	4	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

The below map represents a composite scoring of Agricultural Lands, Diversity, Ecosystem Sustainability, Flood Zones, Impaired Water Segments, Natural Areas, Rarity, Surface Water Quantity, Wetlands and Wildlife Habitat from NCTCOG's Mobility 2040 Plan.



**ANALYSIS AND CONCLUSIONS**

Butler	Lowest composite scoring range, mid-level flood plain impacts.
East Lancaster	Lowest composite scoring range.
Southside	Lowest composite scoring range.
T&P	Lowest composite scoring range.
ITC	Lowest composite scoring range.
East Sundance	Lowest composite scoring range, mid-level flood plain impacts.
Central Rail Station	Lowest composite scoring range.



FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Public and Institutional Plan Consistency	Livable Plans + Codes / Gateway Planning Group	No Impact = 4 Requires Additional Study = 2 Yes, Impact = 0

**FACTOR DEFINITION**

Does station meet any applicable public or institutional plans (e.g. land use) or impact the plan?

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	4	2	2	2	2	4

**DESCRIPTION OF EVALUATION METHODOLOGY**

Evaluated all the available public and institutional plans and studies that were readily available through the City and other online sources. Many of them contain overarching policies as it relates to land use, transit and transportation integration.

**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	No direct impact with the neighborhood redevelopment plan for Butler, but possibility to connect over 280 Spur (look at Butler Place ULI Study).
<b>East Lancaster</b>	No direct impact with the Caville Place Neighborhood Transformation Plan (2013), but the plan area is immediately south of the rail corridor and the station.
<b>Southside</b>	The Vickery/South Main TOD Study (ULI, 2014) envisioned a TOD on one of the blocks. Additional review of this study needed to incorporate any relevant recommendations and ideas.
<b>T&amp;P</b>	Lancaster Redevelopment Vision - Significant residential development planned in the adjoining blocks. One of the station location blocks is slated for residential development under the Lancaster plan.
<b>ITC</b>	The FWTA Master Plan and Convention Center Plans (for the west ITC location) will have to be looked at in closer detail to coordinate with the ultimate vision for the area. Also need to look at the Downtown Fort Worth Plan 2023 for any recommendations for these “edge areas.”
<b>East Sundance</b>	Review the Downtown Fort Worth Plan 2023 for any recommendations for this area.
<b>Central Rail Station</b>	No direct reference in any plan or policy document, but review the Downtown Plan and the Butler Place Plan for connectivity recommendations across the rail line and across I-35W.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Front Door	O'Brien Architects / Gateway Planning Group	Yes = 4 Requires Additional Study = 2 No = 0

**FACTOR DEFINITION**

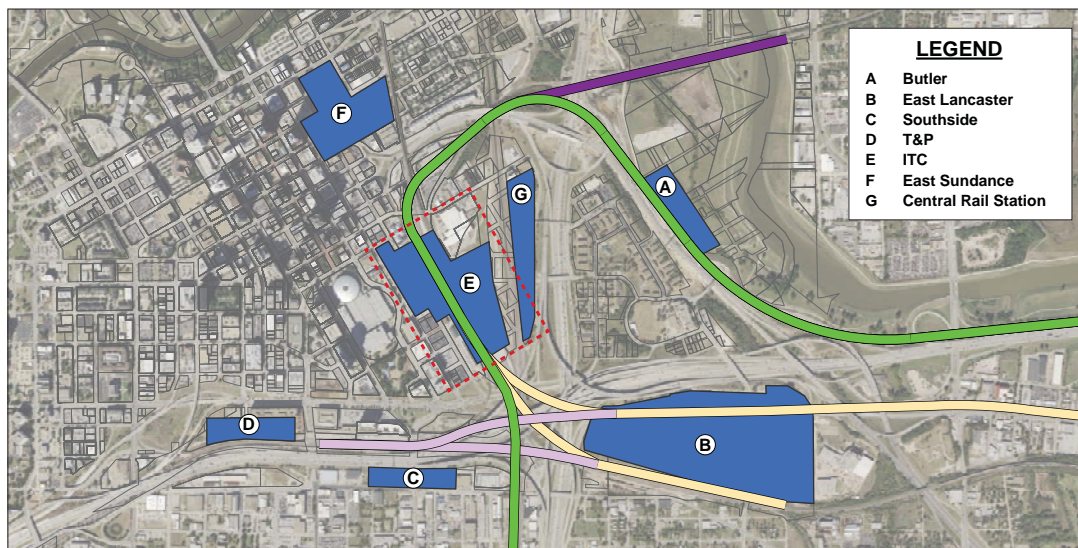
Each location's ability to act as a gateway and improve the potential (e.g., economic, development, etc.) of the surrounding area.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
0	0	2	2	4	4	2

**DESCRIPTION OF EVALUATION METHODOLOGY**

Qualitative evaluation of the area around the station and how the station could increase the area's potential for economic development.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	One sided potential for gateway impact; crossing of 280 Spur additional obstacle for influence.
<b>East Lancaster</b>	Existing location is disconnected from the rest of the economic development clusters and the impact of the station could have a limited impact without having the connectivity to existing economic development.
<b>Southside</b>	Connected to downtown employment through the T&P and Main Street tunnels. More impact on the visibility and gateway to the medical district than the tourism districts.
<b>T&amp;P</b>	Station is hidden behind existing buildings and could have a general impact on the surrounding areas.
<b>ITC</b>	Direct connection to existing employment and tourism base allows for gateway to be influenced by existing market, but also serves as redevelopment catalyst for adjacent vacant parcels.
<b>East Sundance</b>	Direct connection to existing employment and tourism base allows for gateway to be influenced by existing market, but also serves as redevelopment catalyst for adjacent vacant parcels.
<b>Central Rail Station</b>	Some obstacles for connecting to the existing economic development drivers, but still able to influence the adjacent development.

FACTOR NAME		TEAM MEMBER(S)		SCORING CRITERIA		
Vertical Impacts/Opportunities (Air Rights)		Gateway Planning Group / TFIC		Yes = 4 Requires Additional Study = 2 No = 0		
FACTOR DEFINITION						
SCORING						
Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
4	0	4	4	4	4	2
DESCRIPTION OF EVALUATION METHODOLOGY						
Availability and potential need to go vertical due to values, compact development area and/or context for development.						
ANALYSIS AND CONCLUSIONS						
Butler	Ability and likelihood to utilize vertical opportunities due to placement in the floodplain.					
East Lancaster	Limited need to go vertical due to adjacent land value, likely would not be utilized or needed.					
Southside	Ability and likelihood to utilize vertical opportunities due to compact area for development.					
T&P	Ability and likelihood to utilize vertical opportunities due to compact area for development.					
ITC	Ability and likelihood to utilize vertical opportunities due to compact area for development.					
East Sundance	Ability and likelihood to utilize vertical opportunities due to compact area for development.					
Central Rail Station	Ability and likelihood to utilize vertical opportunities due to compact area for development. Land adjacent does not provide ideal context to exercise vertical opportunity.					

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
Passenger Perception	Gateway Planning Group / TFIC	Very Positive = 4 Positive = 3 Neutral = 2 Negative = 1 Very Negative = 0

**FACTOR DEFINITION**

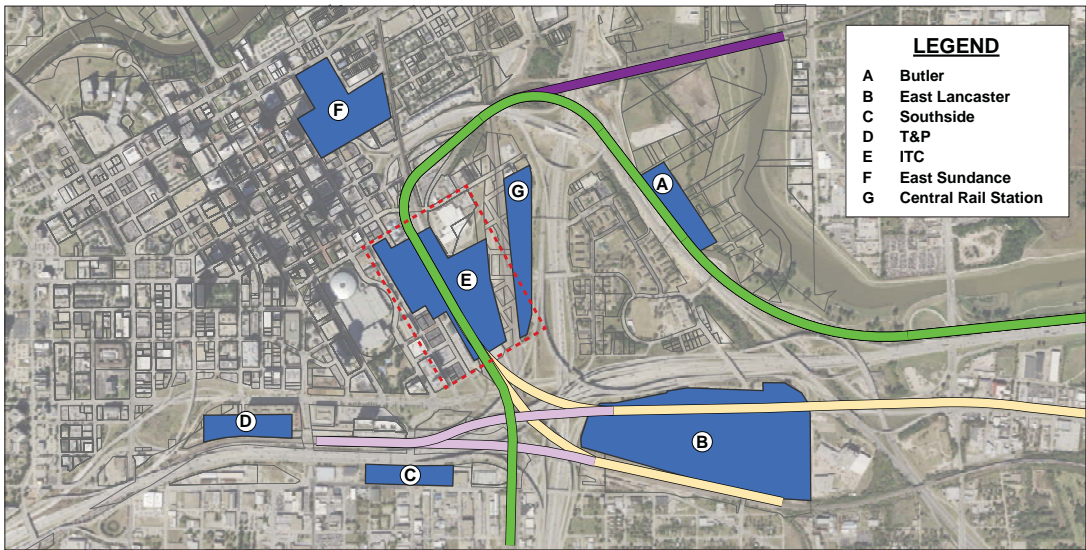
Impact of station location on HSR user’s visual and overall perception of Fort Worth and the station area.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
2	0	2	2	3	3	2

**DESCRIPTION OF EVALUATION METHODOLOGY**

Qualitative evaluation of the area around the station and how the station could increase the area’s potential for economic development.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Great view of the Trinity River. Development context is very industrial. Butler Place development is still too new to know the potential for its development.
<b>East Lancaster</b>	Not an ideal location to show the best perception of Fort Worth. A very industrial area.
<b>Southside</b>	Strong location, still in development with many new medical-oriented projects. Not a strong tourism location, currently.
<b>T&amp;P</b>	Still in fluctuation with T&P Warehouse. The backside of the T&P Lofts, U.S. Postal Service, and I-30.
<b>ITC</b>	Potential and planned development will create a better perception of the area. The ITC and Santa Fe buildings are prominent structures with easy access to Convention Center and Sundance Square.
<b>East Sundance</b>	Potential and planned development will create a better perception of the area. The adjacency to Sundance Square and the potential access to Panther Island/Trinity River are opportunities.
<b>Central Rail Station</b>	Sides are I-35W and UPRR with a distance to cover to get Downtown. Land is available to create the required connections.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
<b>Economic Development - Support of Current + Potential New Office Employment</b>	Gateway Planning Group / TFIC / Toyon Group	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0

**FACTOR DEFINITION**

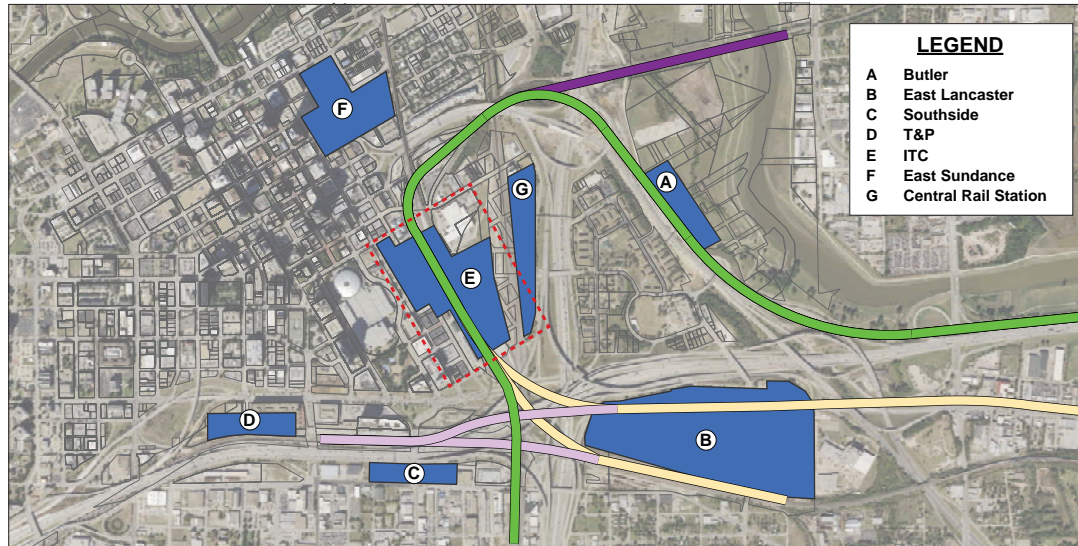
Direct cause of sustained and new investment within 1/4 mile of station area.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
<b>1</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>3</b>

**DESCRIPTION OF EVALUATION METHODOLOGY**

Relative distance to existing employment and potential land adjacent for future employment. Typical office employment wants to be within the first few hundred feet of a station to promote the walkable nature of the office users.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Great distance from the existing employment; potential for new employment.
<b>East Lancaster</b>	Distance from existing office employment; low potential for new development.
<b>Southside</b>	Support for existing employment, specifically the medical district. Low potential for more employment to be catalyzed.
<b>T&amp;P</b>	Support for existing employment, specifically medical district and downtown. Low potential for more employment to be catalyzed.
<b>ITC</b>	Strong support for existing employment in downtown and potential for catalyzing additional employment development.
<b>East Sundance</b>	Strong support for existing employment in downtown and potential for catalyzing additional employment development.
<b>Central Rail Station</b>	Strong support for existing employment in downtown and potential for catalyzing additional employment development.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
<b>Economic Development - Development Potential</b>	Gateway Planning Group / TFIC / Toyon Group	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0

**FACTOR DEFINITION**

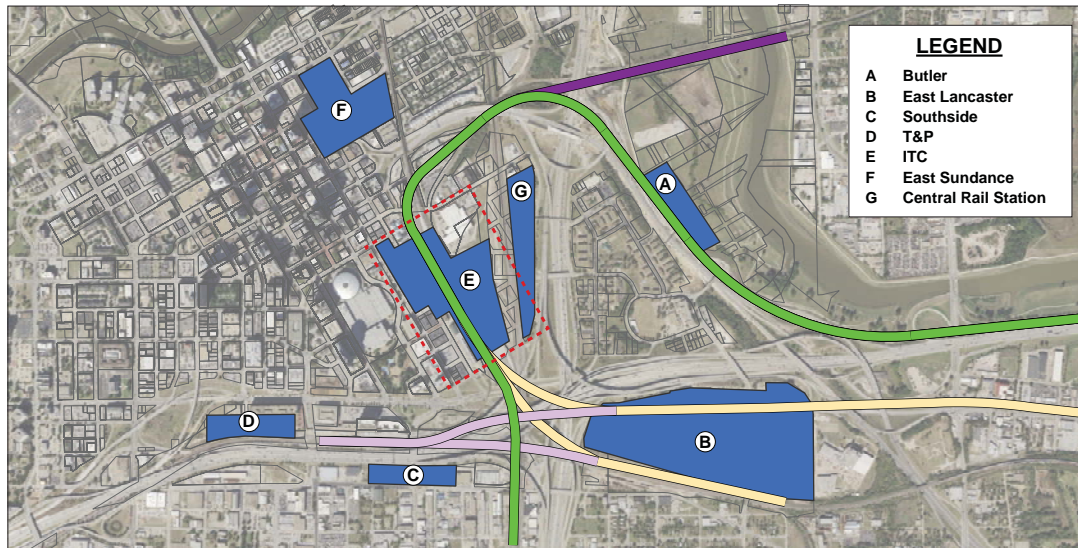
Development potential in the immediate vicinity of the station location.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>2</b>

**DESCRIPTION OF EVALUATION METHODOLOGY**

Development potential based on land availability adjacent to the station and the context of the development in the area.



**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Mixed-use, mixed-income development in the works. Strong opportunity for development.
<b>East Lancaster</b>	Land available, however, context and disconnection to economic drivers limits potential.
<b>Southside</b>	Strong potential to catalyze redevelopment with the area along with current medical development.
<b>T&amp;P</b>	Limited space for development.
<b>ITC</b>	Development land available and prime market/location for development.
<b>East Sundance</b>	Development land available and prime market/location for development.
<b>Central Rail Station</b>	Strong potential to catalyze development, disconnected from the main economic drivers, land limited due to UPRR ownership.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
<b>Economic Development - Partnership Potential (Public)</b>	Gateway Planning Group / TFIC / Toyon Group	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0

**FACTOR DEFINITION**

Does the location provide partnership potential with public entities, such as hospitality, tourism, etc., including the opportunity for joint development (e.g., convention center expansion).

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
<b>3</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>2</b>

**DESCRIPTION OF EVALUATION METHODOLOGY**

Analysis on whether the public/institutional entities within the area play an active role in the support of the location.

**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Active support for redevelopment in the area. No existing Public Improvement District.
<b>East Lancaster</b>	Support entity unknown. No existing Public Improvement District.
<b>Southside</b>	Strong entity with Fort Worth South, Inc. and Fort Worth Transportation Authority. TIF structure in place.
<b>T&amp;P</b>	Strong entity with Fort Worth South, Inc. and Fort Worth Transportation Authority. TIF structure in place.
<b>ITC</b>	Strong entity with Fort Worth South, Inc. and Fort Worth Transportation Authority. TIF/PID structure in place.
<b>East Sundance</b>	Strong entity with Downtown Fort Worth, Inc. TIF/PID structure in place.
<b>Central Rail Station</b>	Strong entity with Downtown Fort Worth, Inc. TIF structure in place.

FACTOR NAME	TEAM MEMBER(S)	SCORING CRITERIA
<b>Economic Development - Partnership Potential (Private)</b>	Gateway Planning Group / TFIC / Toyon Group	Excellent = 4 Good = 3 Neutral = 2 Poor = 1 Very Poor = 0

**FACTOR DEFINITION**

Does the location provide partnership potential with private entities, such as hospitality, retail, residential, commercial, etc., including the opportunity for joint development.

**SCORING**

Butler	East Lancaster	Southside	T&P	ITC	East Sundance	Central Rail Station
<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>2</b>

**DESCRIPTION OF EVALUATION METHODOLOGY**

Analysis on whether the private entities within the area play an active role in the support of the location.

**ANALYSIS AND CONCLUSIONS**

<b>Butler</b>	Active support for redevelopment in the area. New private partner for redevelopment.
<b>East Lancaster</b>	Support entity unknown.
<b>Southside</b>	Limited private involvement in the station area. Private owners support redevelopment initiatives in this medical district area.
<b>T&amp;P</b>	Limited private involvement in the station area.
<b>ITC</b>	Support from private land ownership in the area. Active investment in redevelopment in close vicinity. Sundance Square is privately maintained.
<b>East Sundance</b>	Support from private land ownership in the area. Active investment in redevelopment in close vicinity. Sundance Square is privately maintained.
<b>Central Rail Station</b>	Support from private land ownership in the area.





