HIGH-SPEED TRANSPORTATION

Dallas-Fort Worth

North Central Texas Council of Governments

July 11, 2024 – Regional Transportation Council Workshop

Agenda

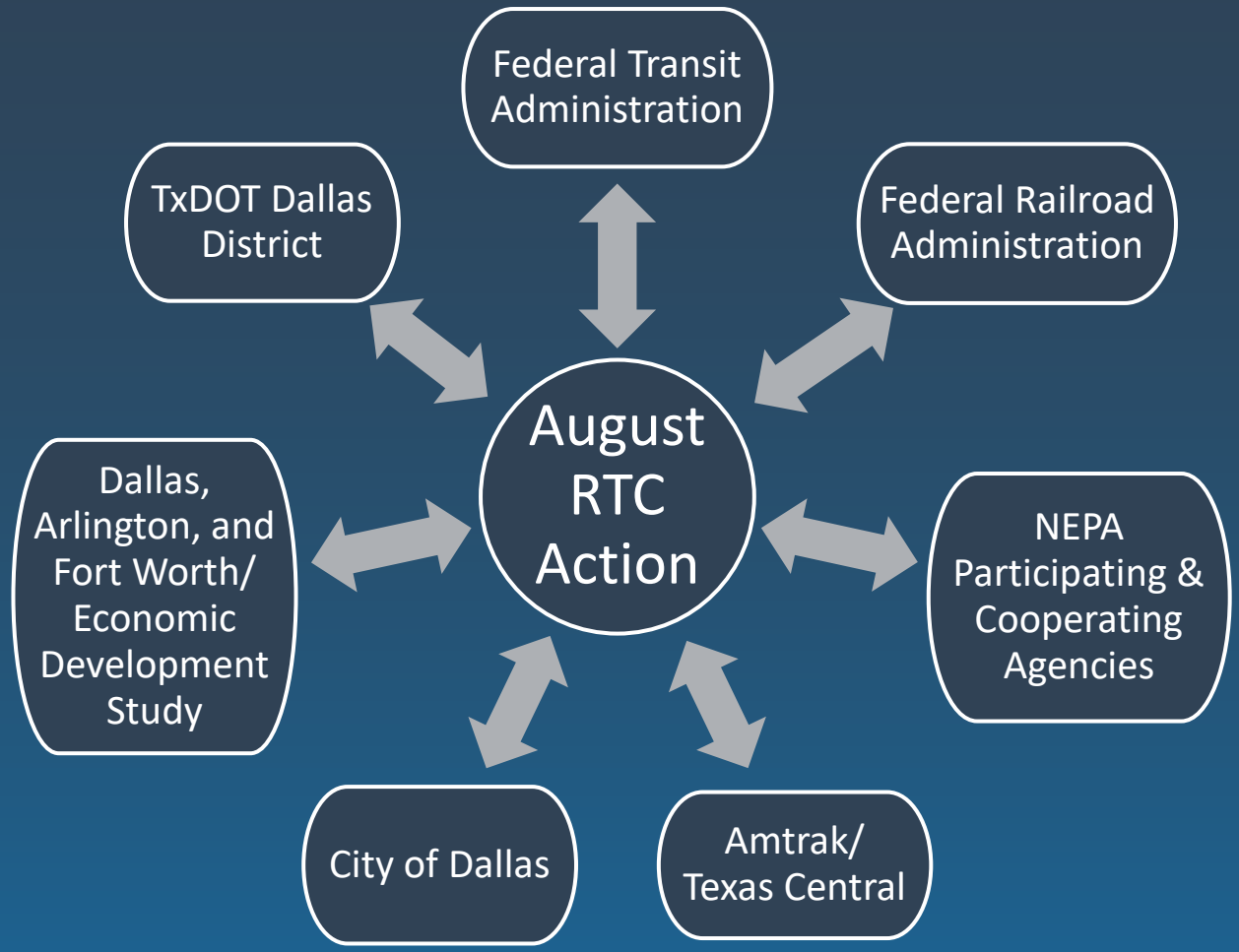
1. Introductions/Context
2. Response to City of Dallas Resolution and Presentation of Alternative High-Speed Rail Route Avoiding Downtown
3. Review of Public Engagement Throughout Study
4. Study Context and Review of Purpose and Need
5. Open Discussion and Lunch

Dallas to Fort Worth High-Speed Rail Corridor Characteristics

"Top 10" High-Speed Rail Corridors in the World

Location	Line	Line Distance (mi.)	Average Line Speed (mph)
China	Beijing - Shanghai	819	143
★ **Texas**	**Fort Worth - Houston**	**271**	**140**
Japan	Tokaido Shinkansen - Nozomi	320	129
France	LGV Sud-Est	266	123
France	LGV Atlantique - Bordeaux	371	122
France	LGV Est (all stops)	273	122
Spain	Madrid - Barcelona	390	122
France	LGV Nord - Calais	209	112
Italy	Turin - Milan	92	97
Germany	Berlin - Hanover	160	93

Effects of July Workshop



Path to July Workshop

3/6/2024 City Council Briefing by NCTCOG and Amtrak

3/22/2024 Dallas City Manager's Meeting

5/15/2024 National High-Speed Rail Conference: Briefing by NCTCOG and Amtrak

6/12/2024 Dallas Resolution

6/13/2024 RTC Decision to Schedule July Workshop

7/11/2024 July Workshop/RTC Decision on How to Advance

Dallas High-Speed Rail Station Planning Background

2016 RTC Resolution and Memorandum of Understanding between RTC and Texas Central

2016 City of Dallas and Texas Central Cooperation Agreement

2017 City of Dallas completed Station Area Zone Assessment (Perkins+Will); led by City of Dallas staff

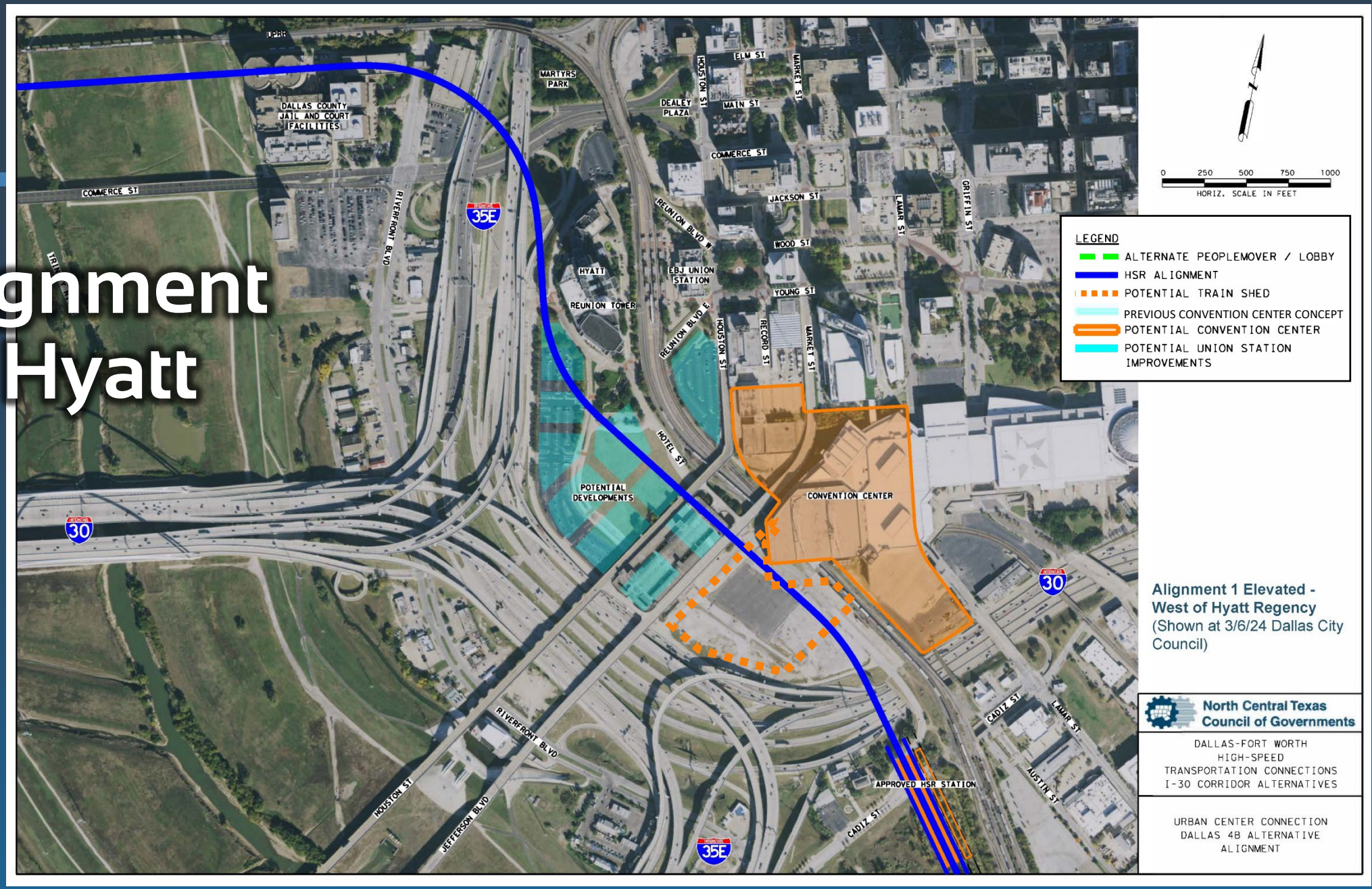
2019 NCTCOG funded Dallas Intermodal Transportation Facility Fatal Flaw Analysis (Lot E Study – LAN); led by City of Dallas staff

2020 Dallas staff provided comments on Draft Environmental Impact Statement for Dallas to Houston High-Speed Rail (including station location)

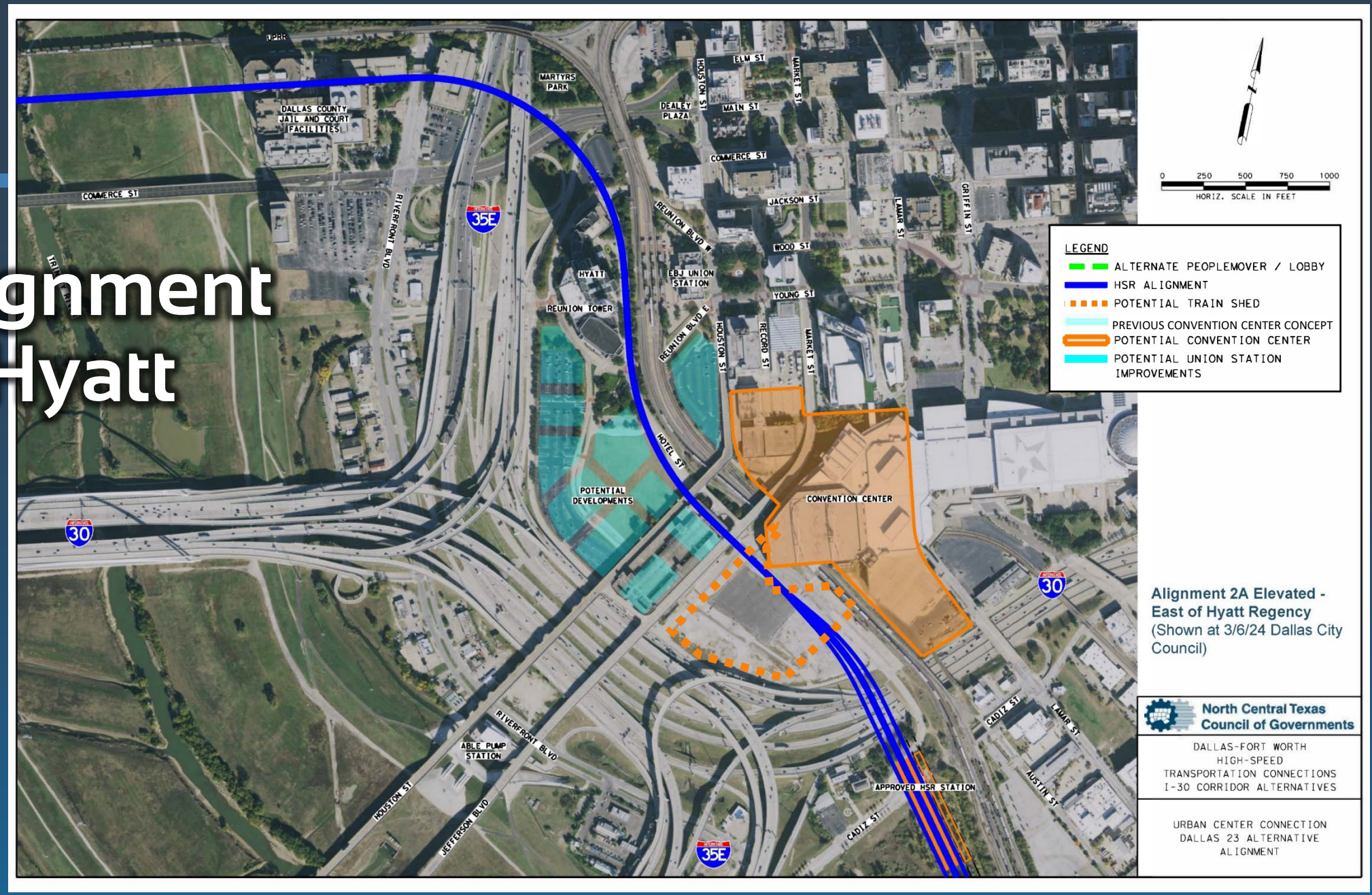
Approved Dallas High-Speed Rail Station with platform at 70'+ above existing ground

Image Credit: Texas Central

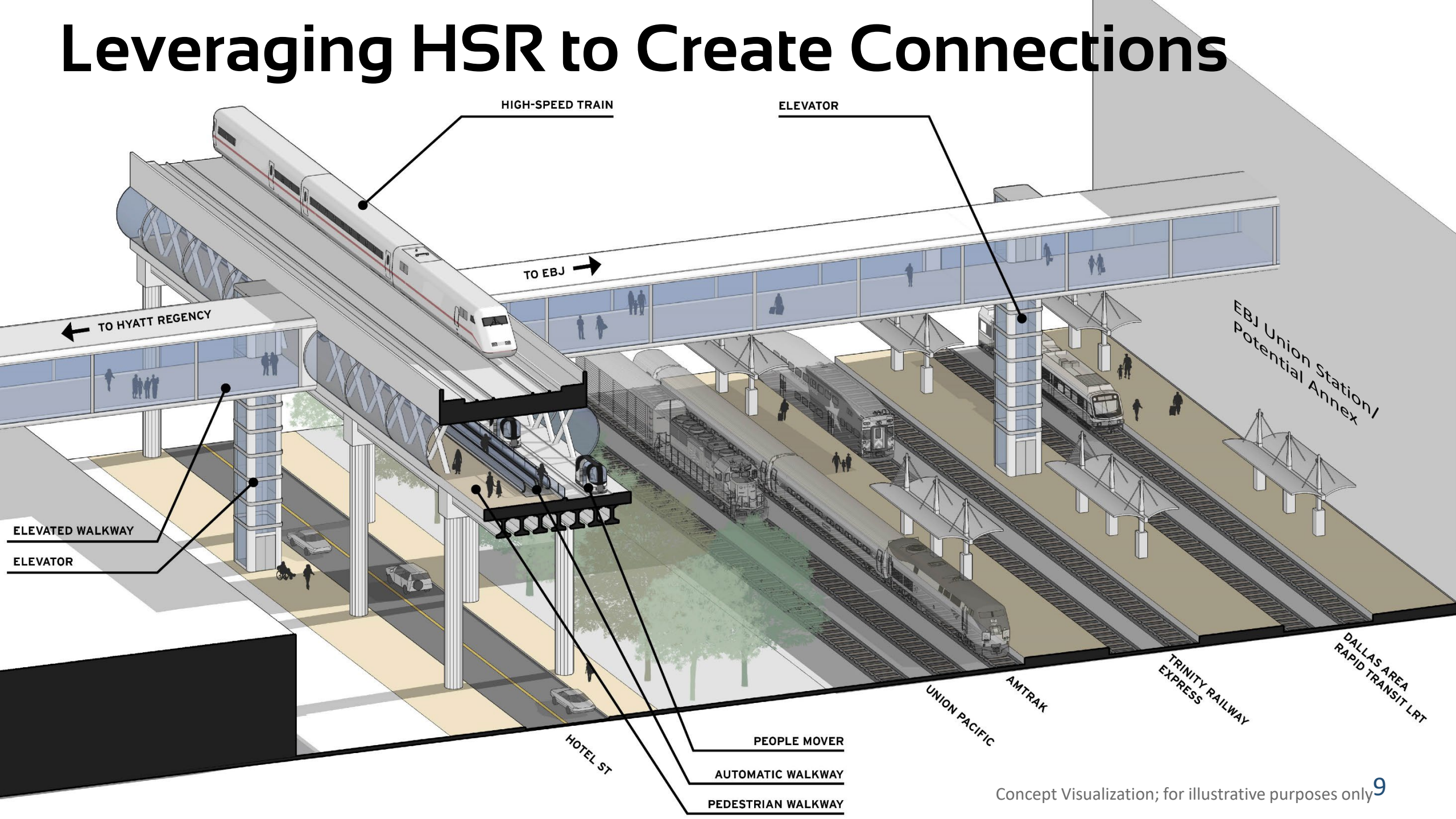
HSR Alignment West of Hyatt



HSR Alignment East of Hyatt



Leveraging HSR to Create Connections

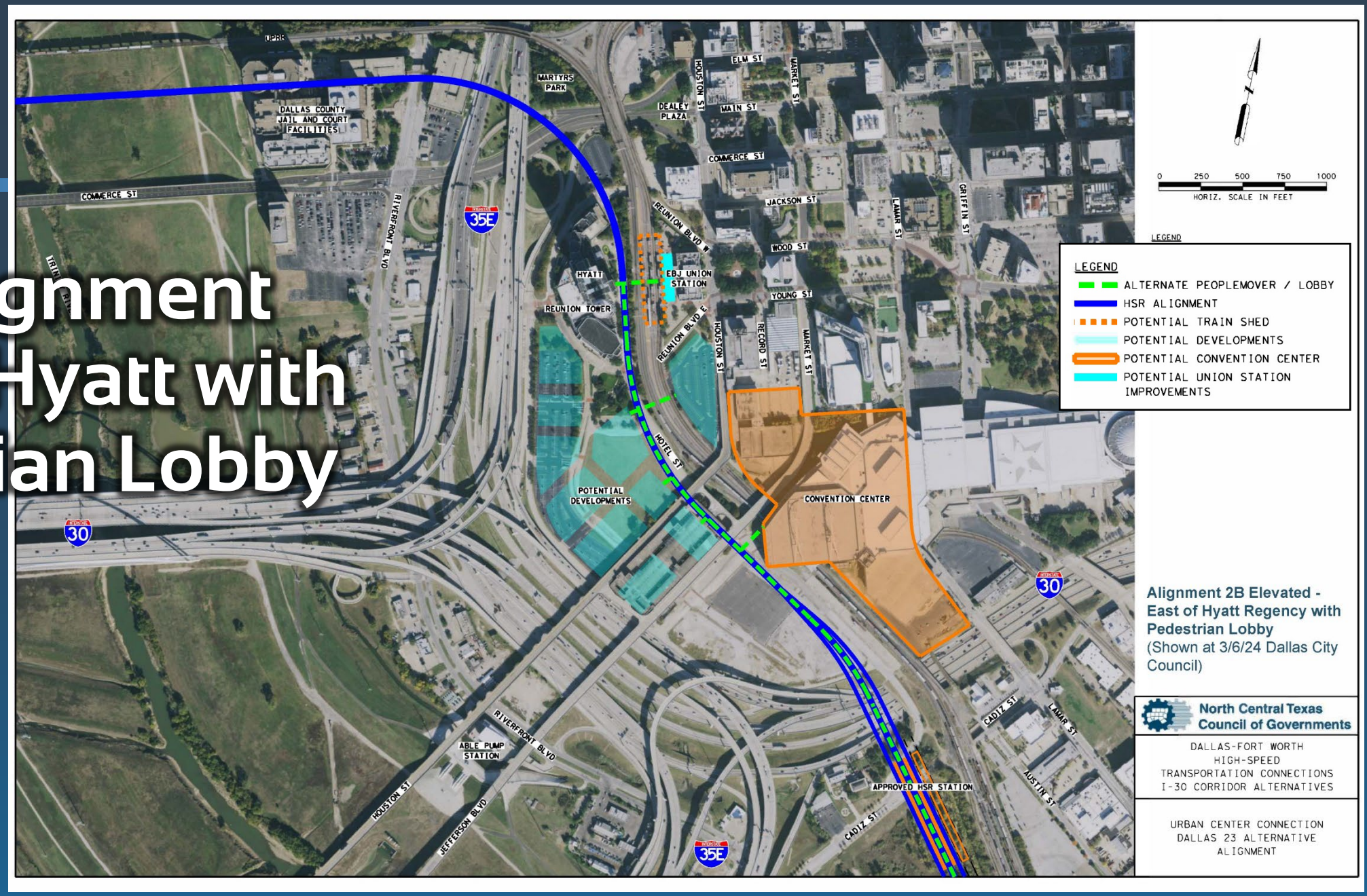


Concept Visualization; for illustrative purposes only

Leveraging HSR to Create Connections

Concept Visualization; for illustrative purposes only

HSR Alignment East of Hyatt with Pedestrian Lobby

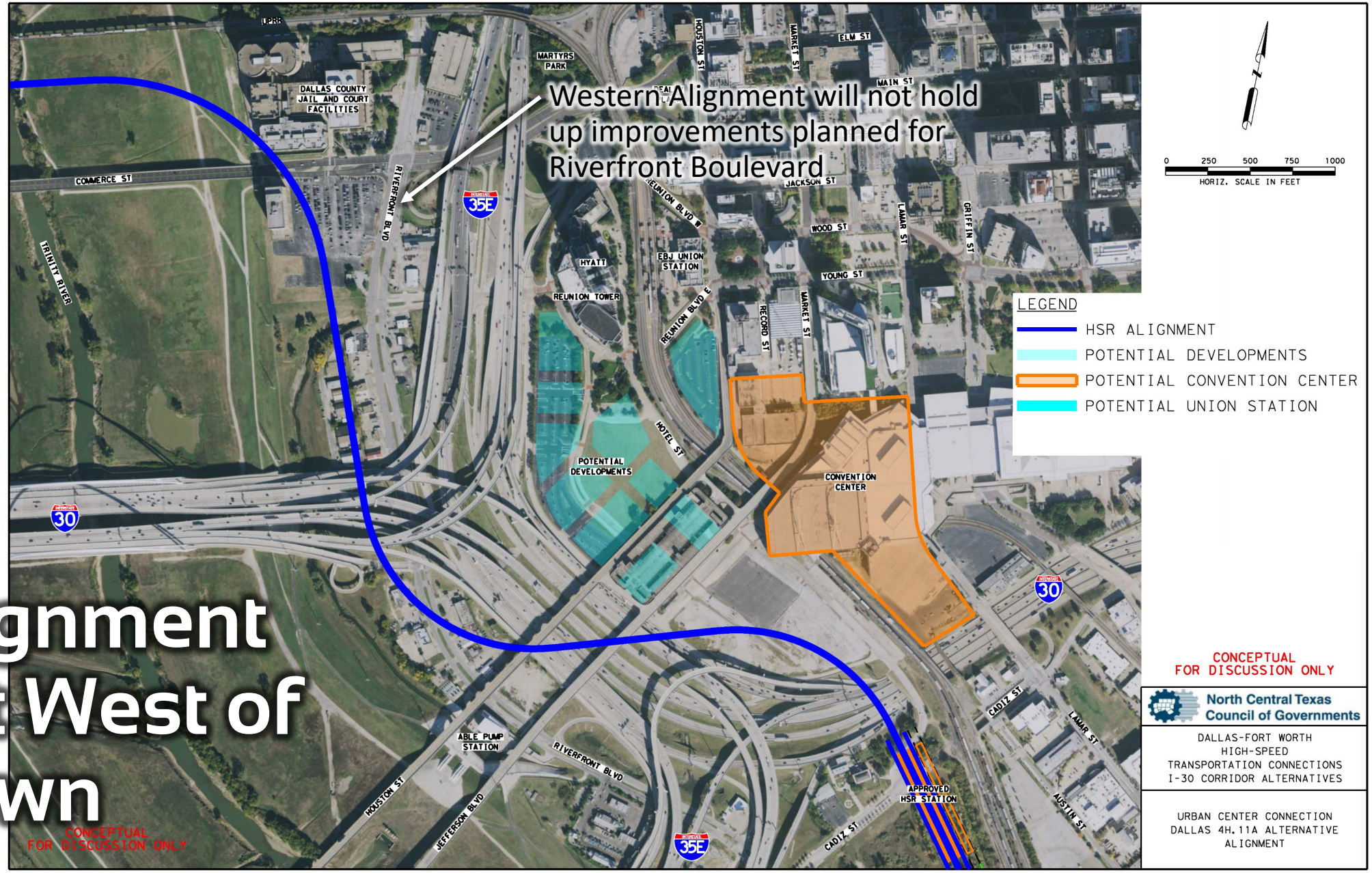


Potential Connections between Points of Interest in Downtown Dallas

	Connections between Points of Interest	**2B.** *Elevated* - East of Hyatt Regency Hotel with Pedestrian Lobby (Shown at 3/6/24 Dallas City Council)	Family of Elevated Alignments West of Downtown (7/11/24 RTC Workshop)
6	Hyatt Regency Hotel to Union Station	✓	⊗
5	Convention Center to Union Station	✓	⊗
4	Convention Center to Convention Center Hotels	✓	⊗
3	High Speed Rail to Union Station	✓	⊗
2	High Speed Rail to Convention Center Hotels	✓	⊗
1	High Speed Rail to Convention Center	✓	?

Note: Connections between points of interest considered to be direct, air conditioned/comfortable, and ADA accessible

HSR Alignment Concept West of Downtown



Review of Public Engagement Throughout Study

Public and Agency Engagement

Over 300 meetings held since 2020

- Public meetings and open houses
- Technical Working Group meetings
- Federal and state coordination, monthly FTA/FRA meetings
- Technology Forum and one-on-ones with providers
- Transportation agencies and railroads
- Study area cities
- Elected officials
- Stakeholder interviews
- Community groups and organizations

Public and Agency Engagement

Official Project Public Meetings – 14

- Virtual meetings in September 2020 (2), January 2021 (2), May 2021 (2)
- In-person open houses in October 2021 (4), August/September 2023 (4): Dallas, Grand Prairie, Arlington, Fort Worth

NCTCOG Hybrid Public Meetings (5) in February 2021, December 2022, April 2023, October 2023, May 2024

Elected Official Briefings (2) – January 2021, May 2021

All public meeting documents are available online at www.nctcog.org/dfw-hstcs under Presentations and Public Outreach Efforts

Additional Engagement

DFW High-Speed Update Newsletter

- Latest updates on progress
- Includes upcoming events for the public to attend

Online Speaker Request Form

Staff continue to present to community groups and organizations


DFW HIGH-SPEED UPDATE

WINTER 2023

Your High-Speed Rail; Your Input.

To engage the community and collect input on the Dallas-Fort Worth High-Speed Transportation Connections Study, open houses were held in Fort Worth, Arlington, Grand Prairie, and Dallas this fall. More than 200 people attended, and the presentations and meeting materials are available on the website of the North Central Texas Council of Governments (NCTCOG) at nctcog.org/dfw-hstcs.

"Our goal continues to be hearing the community's thoughts and concerns. Listening carefully affirms our direction for a successful completion of Phase 2," said Ian Bryant, AICP, HNTB Project Manager.

"We heard several common themes at each open house, and we are using community input to bolster our understanding of how this project could be successful," Bryant continued.

Expressing diverse opinions during the open houses, attendees commented on the proposed I-30 alignments, economic development opportunities, environmental effects, traffic congestion, and right-of-way acquisition.

Phase 2 public comments are varied. Open house participants in the study area see the potential of a high-speed rail system providing energy-efficient public transit as an alternative to personal vehicles.

Laura from Dallas shared concerns about the effects of construction on ecosystems like the Trinity River. Beth from Fort Worth supports the project but is concerned about flooding and water quality.

"Environmental considerations are being addressed in depth during documentation for the National Environmental Policy Act (NEPA), a requirement of this federally funded initiative," said Dan Lamers, PE, NCTCOG Senior Project Manager.

NEPA considers the potential effects a project may have on the environment or community and proposes mitigation measures as needed. Learn more about NEPA here.

See Community, pg. 2

Let Your Voice Be Heard!
Let's Talk About Travel Across DFW. We Want Your Feedback!
www.nctcog.org/dfw-hstcs

PROJECT Contacts

Dan Lamers, PE
NCTCOG Senior Project Manager
dlamers@nctcog.org

Rebekah Gongora
NCTCOG Communications Manager
682-433-0477
rgongora@nctcog.org

Ian Bryant, AICP
HNTB Project Manager
ibryant@HNTB.com

Fall 2023 open house locations

DFW HIGH-SPEED UPDATE

Phase 2 Public Comment Topics

*Comments are tallied based on the topic selected by the commenter. Comments were categorized as "other" when the commenter designated theirs as such or did not select a category. Some comments are tallied under multiple categories.

Phil from Fort Worth wants to reduce the number of gas-powered vehicles on the road and supports this "visionary project for sustainable development."

Michael from Arlington noted, "the environmental impact of taking cars off the road would much outweigh any construction impacts from this rail line."

Arlington North Central Texas Council of Governments open house

The project team is also studying enhanced connections from the proposed Dallas high-speed rail station to Dallas Union Station, which would provide easy access to DART rail and bus networks connecting the greater Dallas area. A station location is also planned in the Arlington entertainment district.

The majority of the alignment (see pg. 4) is within the I-30 right-of-way, with portions of the track elevated, tunneled, or trenched/at-grade. "We are closely examining each piece of the alignment and proposing station locations and track elevations that would most benefit the community. Looking at the big picture of a regional transportation asset such as this is a core charge of NCTCOG," said Lamers.

Access the **open house report online** to read the complete list of public comments and responses.

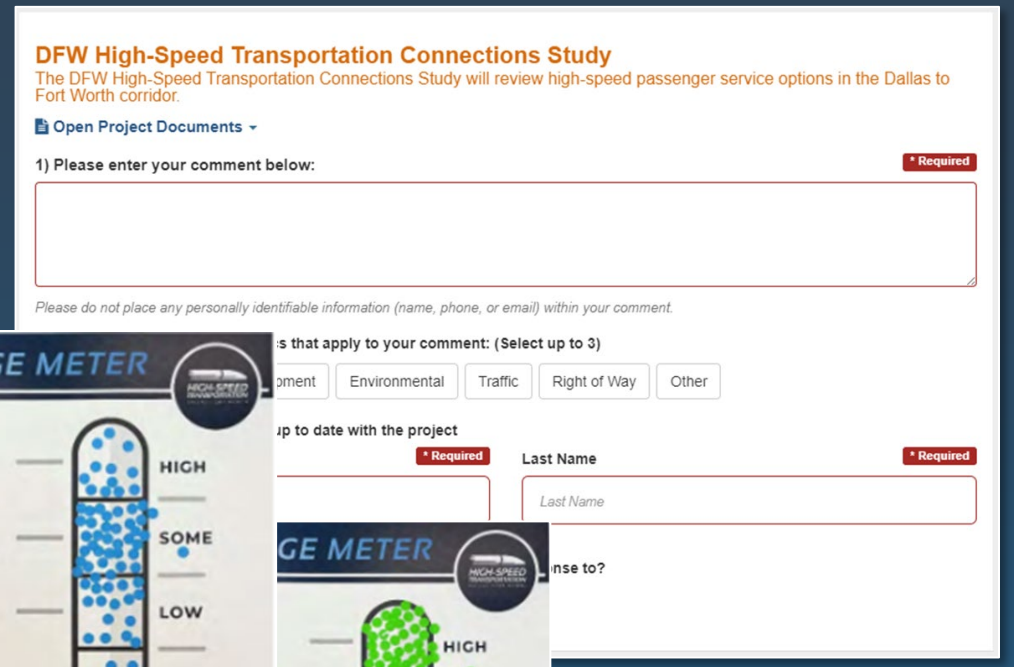
Public Comments

- General comment form online asks for zip code, topic
- Online mapping tool asked for feedback on areas of significance and concern
- 263 total comments to date

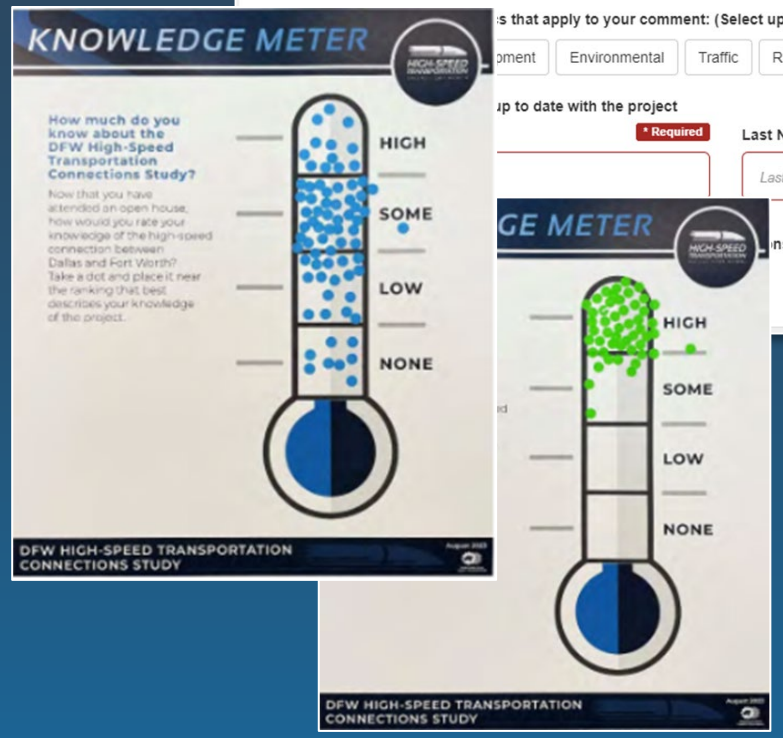
  Not in favor – 2%

- FAQs and responses to questions from previous meetings available

  www.nctcog.org/dfw-hstcs see under Project Information (FAQs); Presentations and Public Outreach Efforts (Open House Summary)



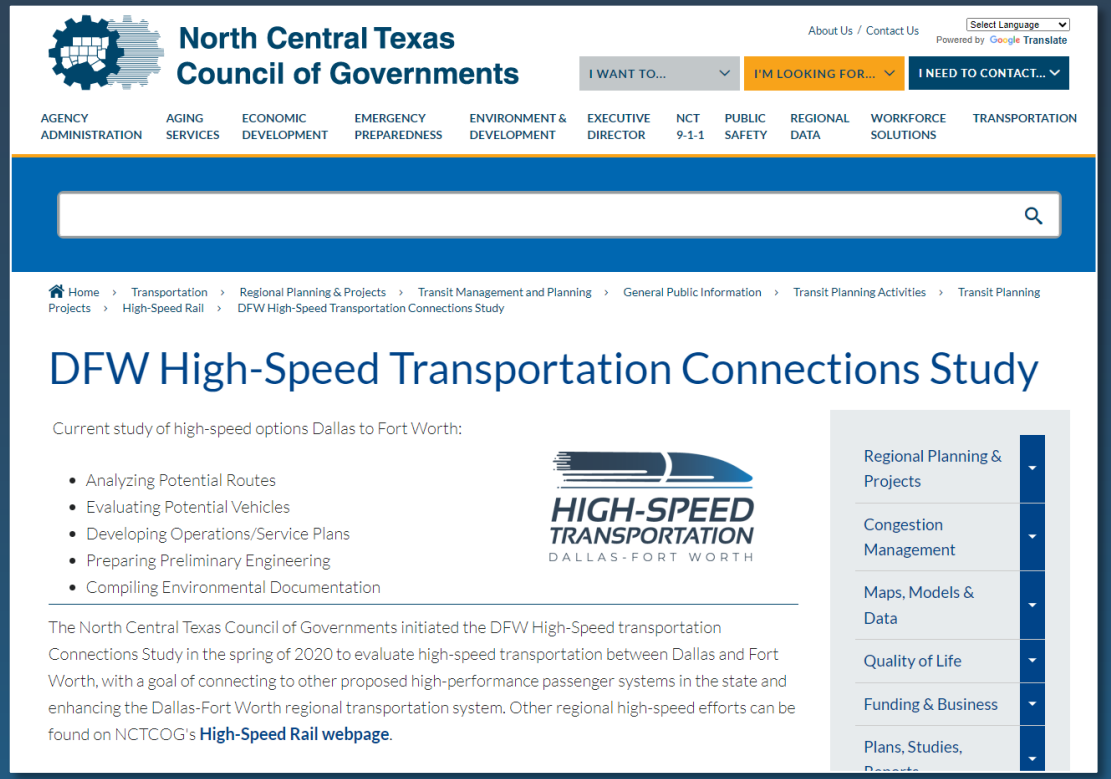
Example of comment form



Knowledge meter before and after 2023 open house

Project Information

- Project information online in English and Spanish
- Sign up for project notices
- View future public meeting dates
- Request a speaker
- Provide comments or questions:
  - Electronic comment form online
  - In writing to DFW-HSTC Study, P.O. Box 5888, Arlington, Texas 76005
  - Email: HST_DFW@nctcog.org

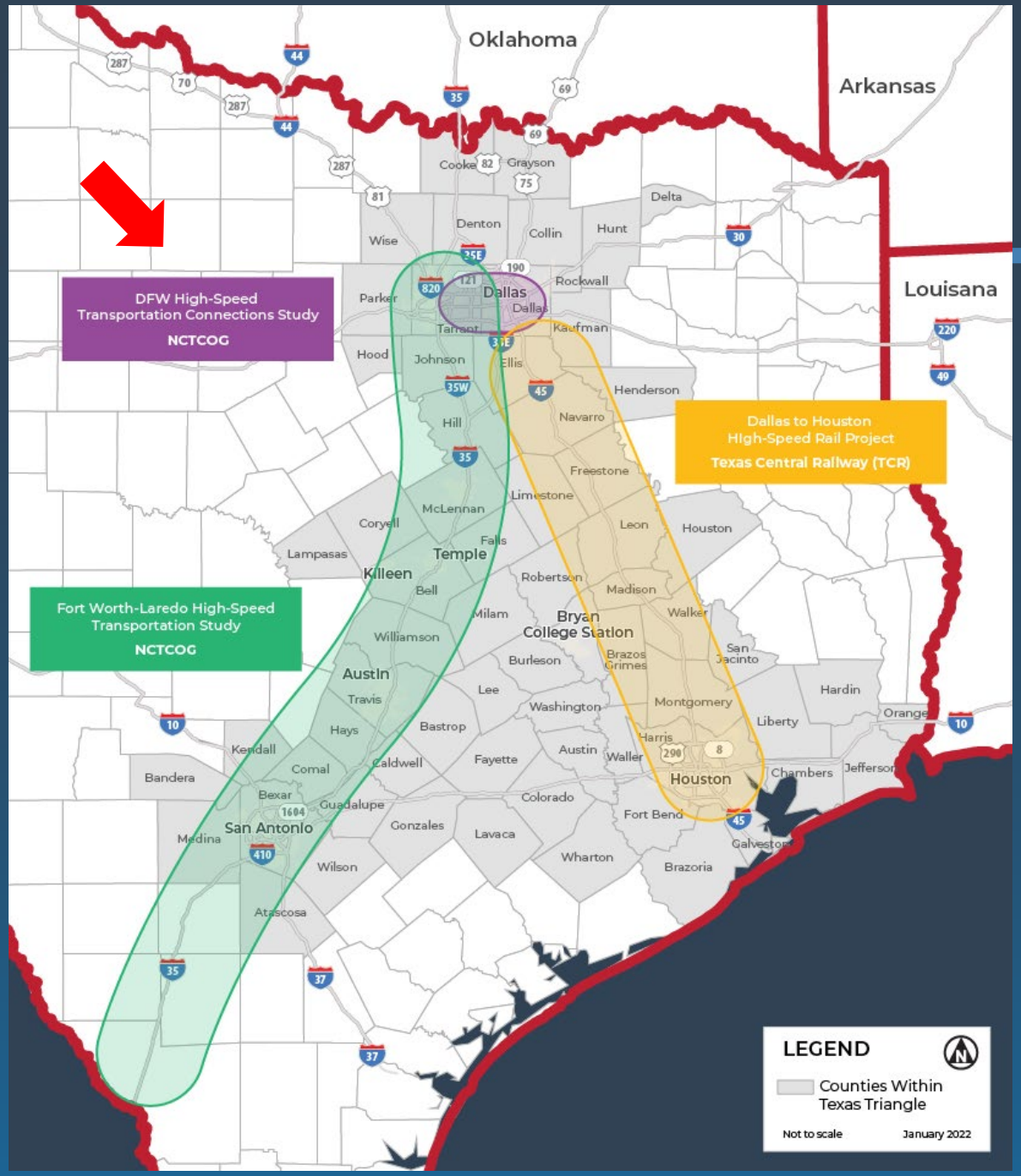


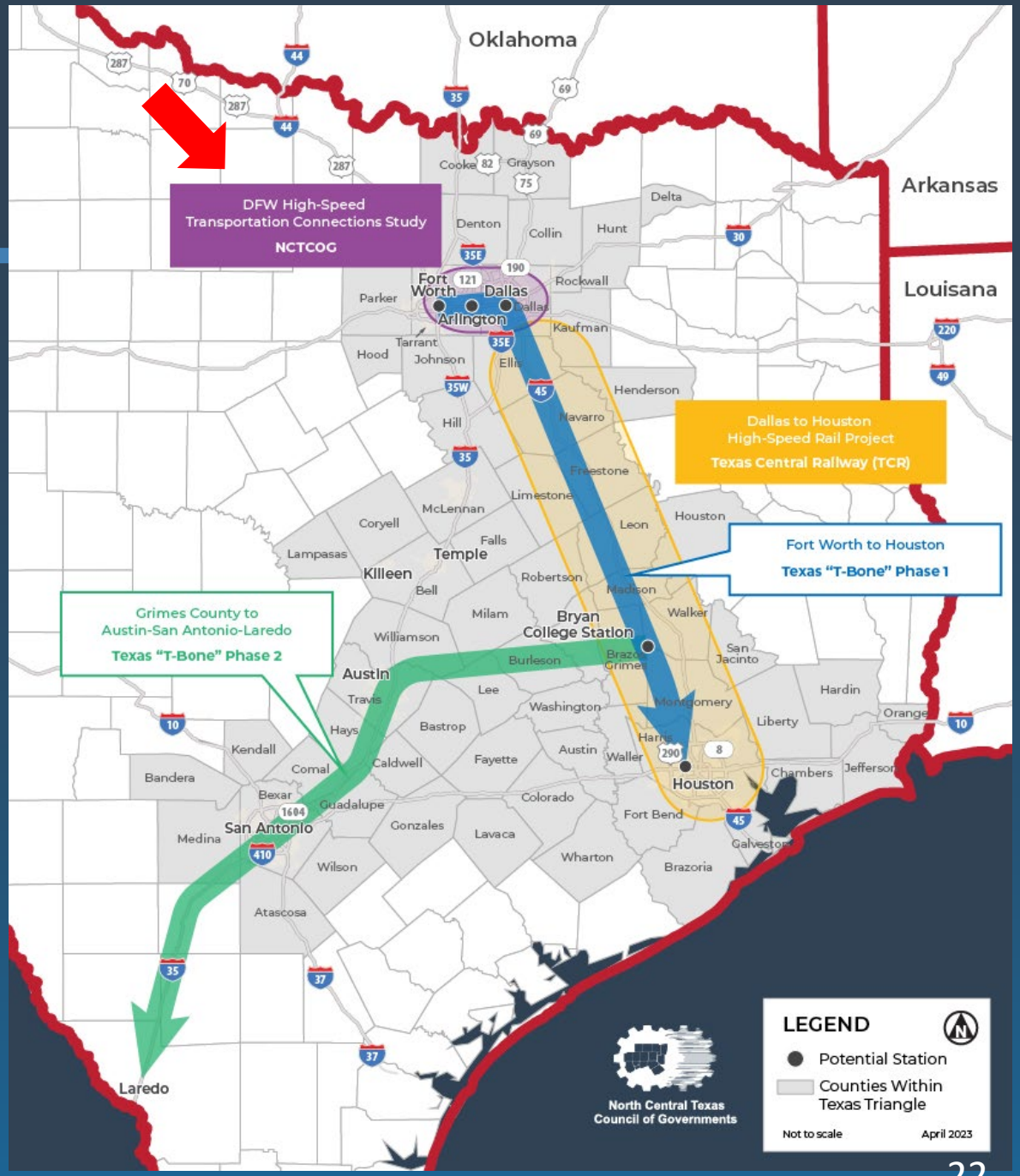
Project Website: www.nctcog.org/dfw-hstcs

Study Context and Review of Purpose and Need

Milestones Leading to NCTCOG HSR Study

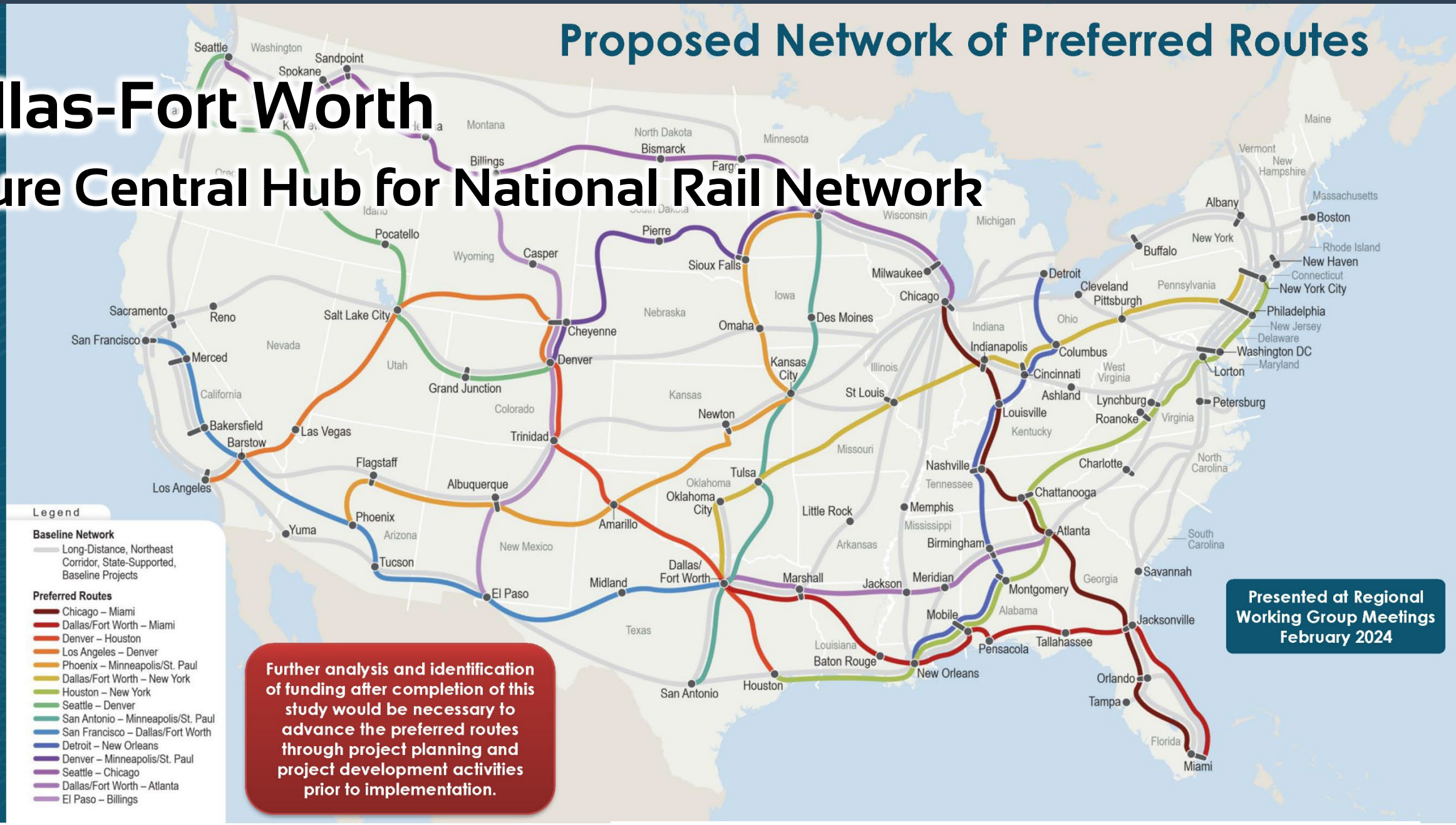
- Texas Central advanced Dallas to Houston (c. 2014)
- RTC passed resolution supporting “one-seat” ride and three station concept; included in Mobility 2040 (2016)
- TxDOT/FRA completed Texas-Oklahoma Passenger Rail Study and Alternatives Analysis for DFW Core Express Service (2017)
- Station Area Studies for Dallas, Arlington, Fort Worth (2017)
- NCTCOG initiated Dallas-Fort Worth High-Speed Transportation Connections Study (2020)


DFW High-Speed Transportation Connections Study
NCTCOG
Dallas to Houston High-Speed Rail Project
Texas Central Railway (TCR)
Fort Worth-Laredo High-Speed Transportation Study
NCTCOG
Oklahoma
Arkansas
Louisana
Dallas
Houston
San Antonio
Austin
Killeen
Temple
Bryan College Station
LEGEND
Counties Within Texas Triangle
Not to scale
January 2022


DFW High-Speed Transportation Connections Study
NCTCOG
Dallas to Houston High-Speed Rail Project
Texas Central Railway (TCR)
Fort Worth to Houston
Texas "T-Bone" Phase 1
Grimes County to Austin-San Antonio-Laredo
Texas "T-Bone" Phase 2
Oklahoma
Arkansas
Louisana
Fort Worth
Arlington
Dallas
Houston
San Antonio
Austin
Killeen
Temple
Bryan College Station
Laredo
North Central Texas Council of Governments
LEGEND
Potential Station
Counties Within Texas Triangle
Not to scale
April 2023

Dallas-Fort Worth

Future Central Hub for National Rail Network

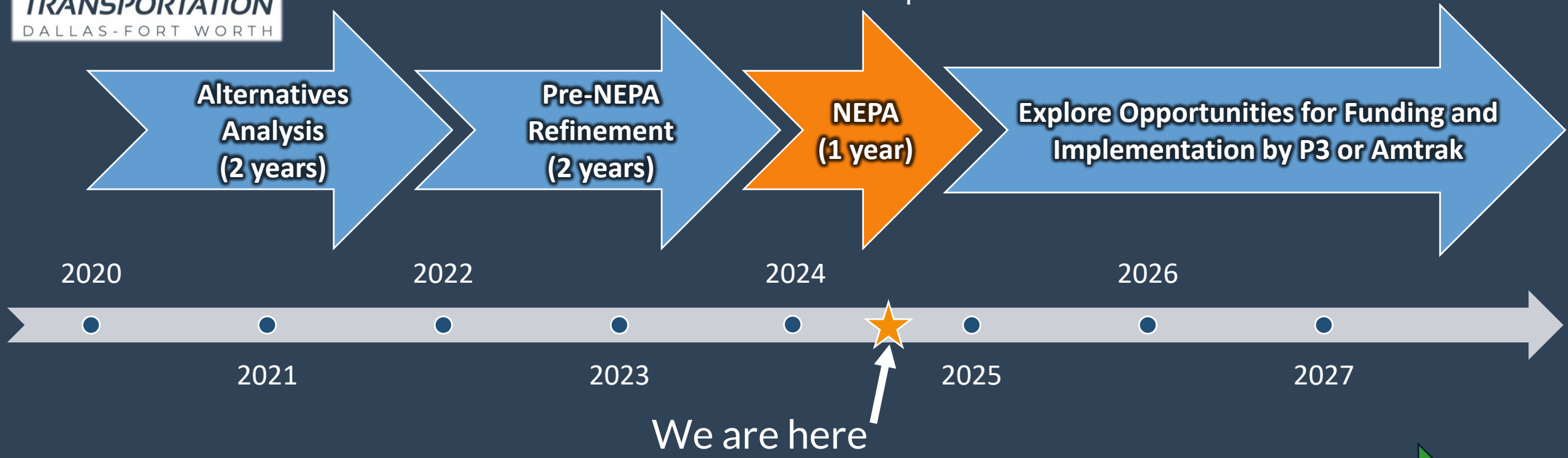


U.S. Department of Transportation
Federal Railroad Administration

*Potentially 6 new long-distance routes through Dallas-Fort Worth identified in FRA's Long-Distance Service Study

Federal Transit Administration Process

NCTCOG Focus:
Public-Private Partnerships



Federal Railroad Administration Process

NCTCOG Focus:
Federal Funding

*NEPA: National Environmental Policy Act

Dallas-Fort Worth High-Speed Transportation Connections Study

Study Purpose

- **CONNECT** Dallas-Fort Worth to other proposed high-performance passenger systems in the state (Texas Triangle)
- Obtain federal **ENVIRONMENTAL APPROVAL** of the viable alternative

RTC P21-01 Policy (2021) reaffirmed support for:

- One-Seat Ride
- Three Station Concept

We are here

Study Phases

✓ ***Phase 1***: **Alternatives Analysis**

- Alignments and Modes
- RTC advances IH 30 Corridor through Policy P21-01

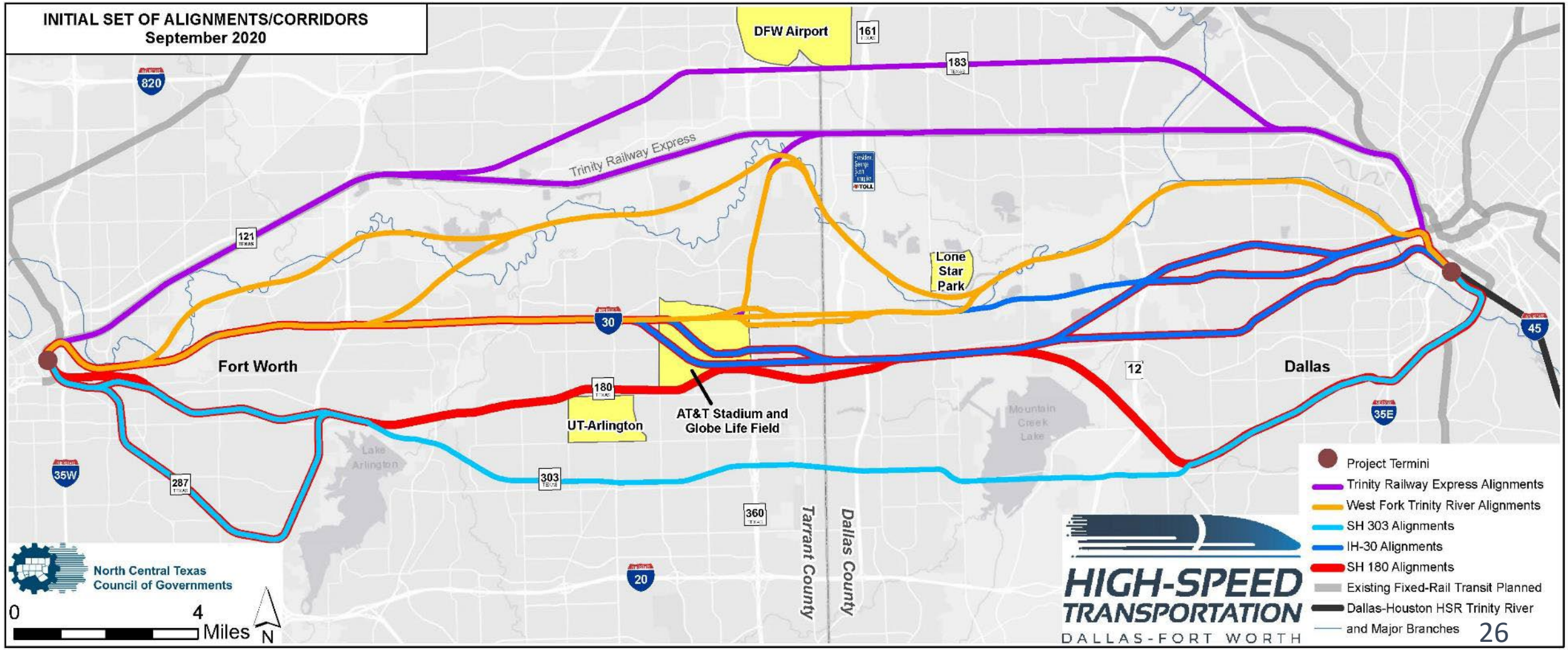
✓ ***Phase 2***: **Pre-NEPA Refinement**

- Alignment Refinement
- Urban Connections Screening

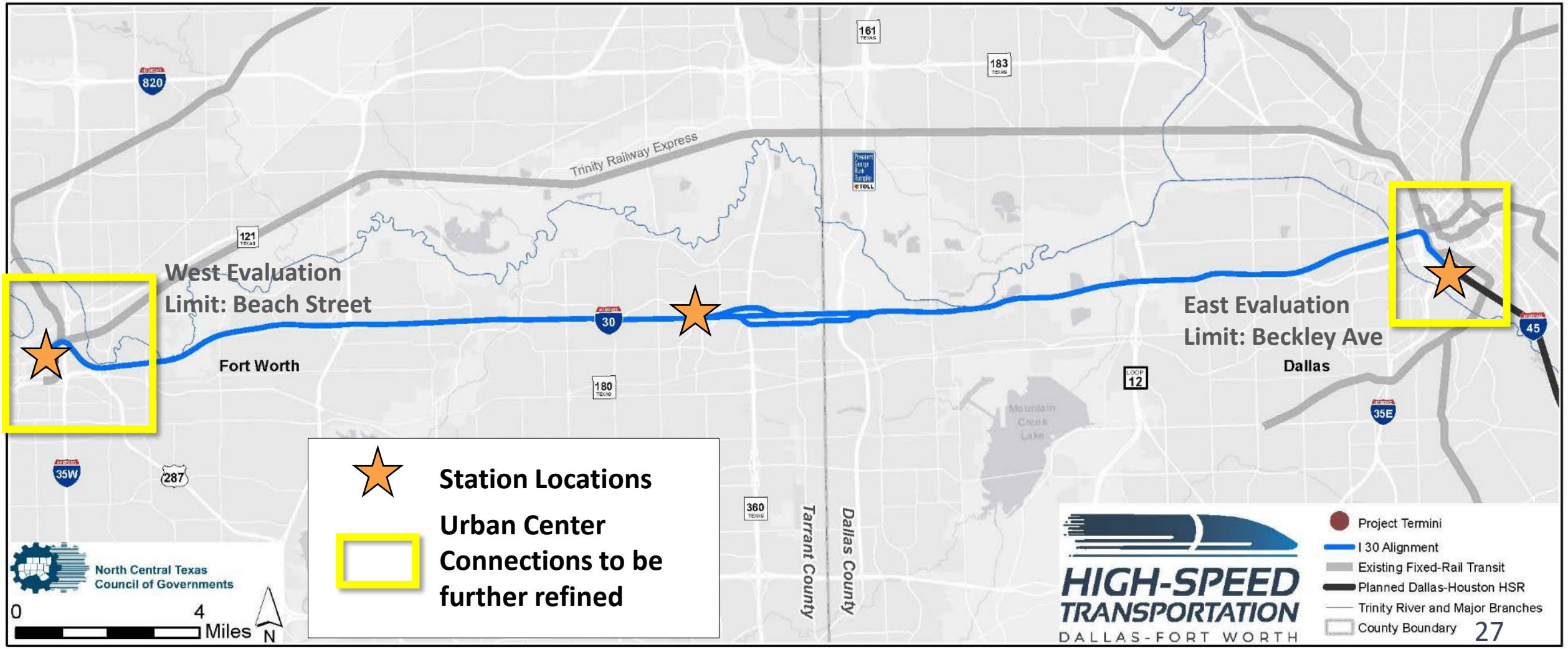
Phase 2: **NEPA**

- Preliminary Engineering
- Environmental Documentation

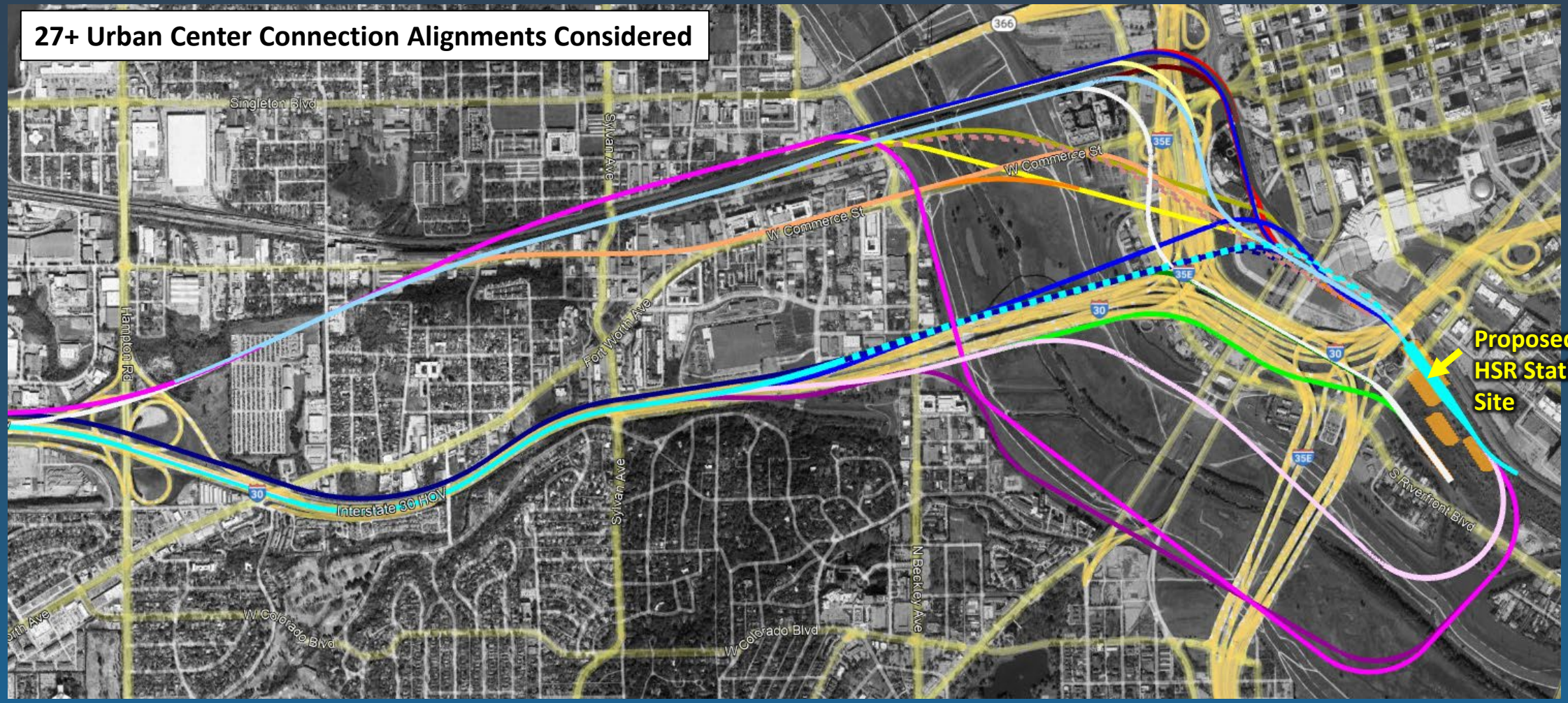
Initial Set of Alignments/Corridors (Fall 2020)



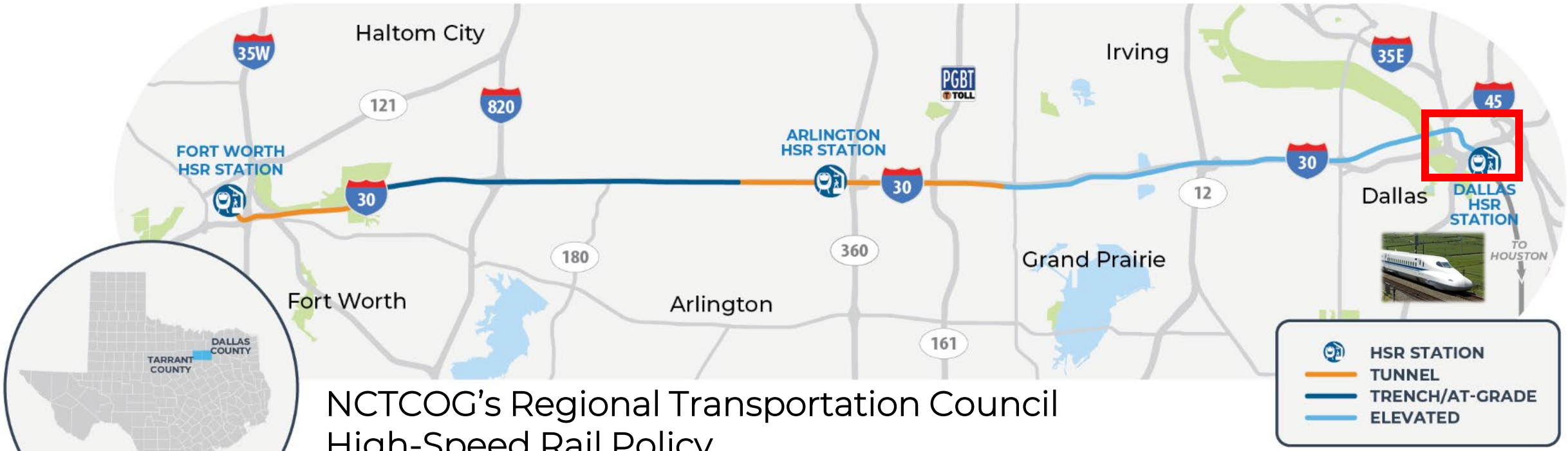
Phase 1 Results – Alignments (Summer 2021)



Example Urban Center Connections (September 2021 - Dallas)



Alignment for NEPA Review (Early 2024)



NCTCOG's Regional Transportation Council High-Speed Rail Policy

- One-Seat Ride
- Three Station Concept

Supplemental Materials

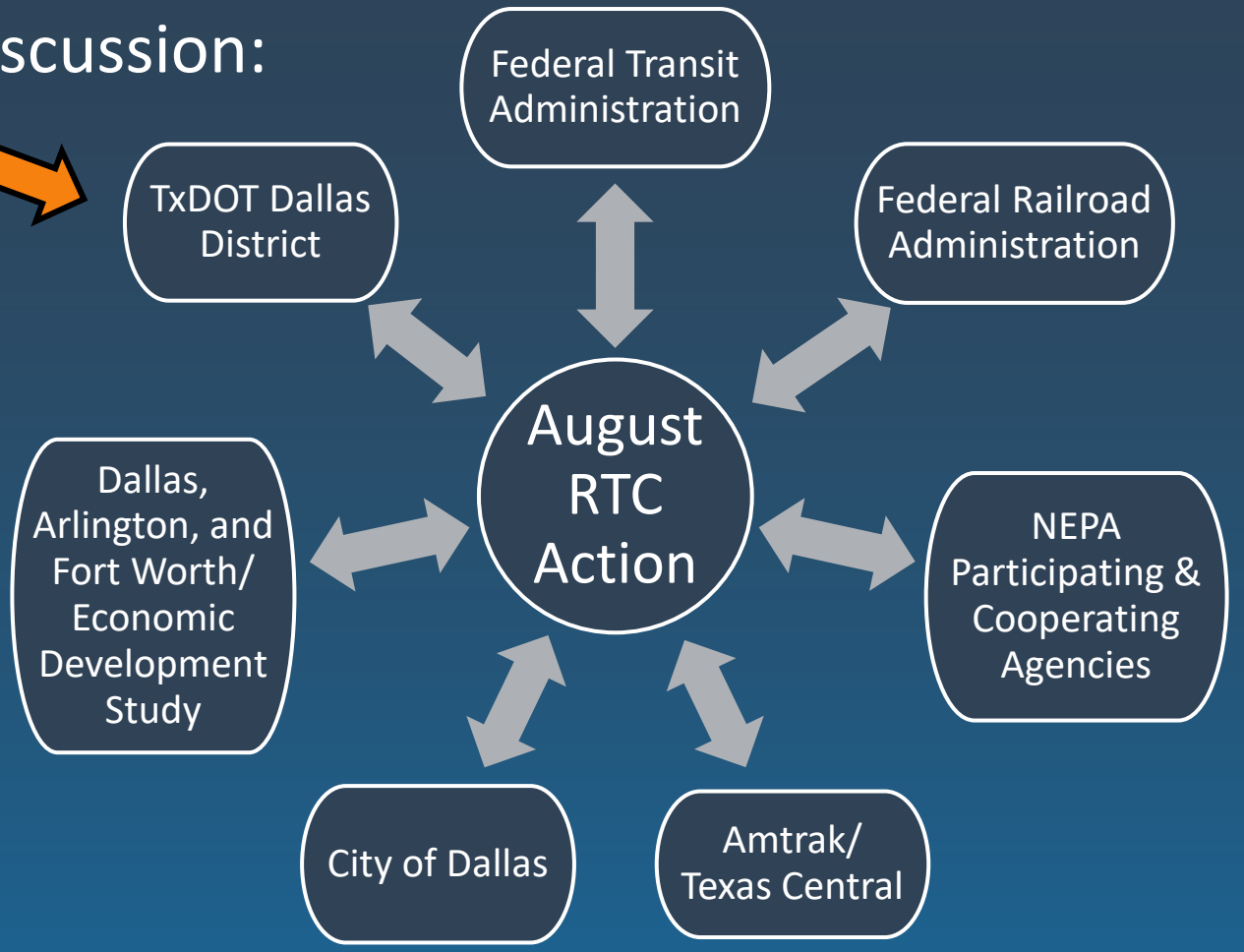
Under newly added “RTC Workshop July 2024” banner on www.nctcog.org/dfw-hstcs:

- Today’s Agenda and Presentation Slides
- Information on Elected Official Briefings
- 3/6/2024 Presentation to Dallas City Council
- Dallas Alignment Whitepapers
- Past Resolutions and Policies
- Responsive Information to Public Comments and City of Dallas Questions

Path Forward

Following result of today's discussion:

- Project team meetings
- Public Meeting (hybrid)
- August RTC Action on Next Steps



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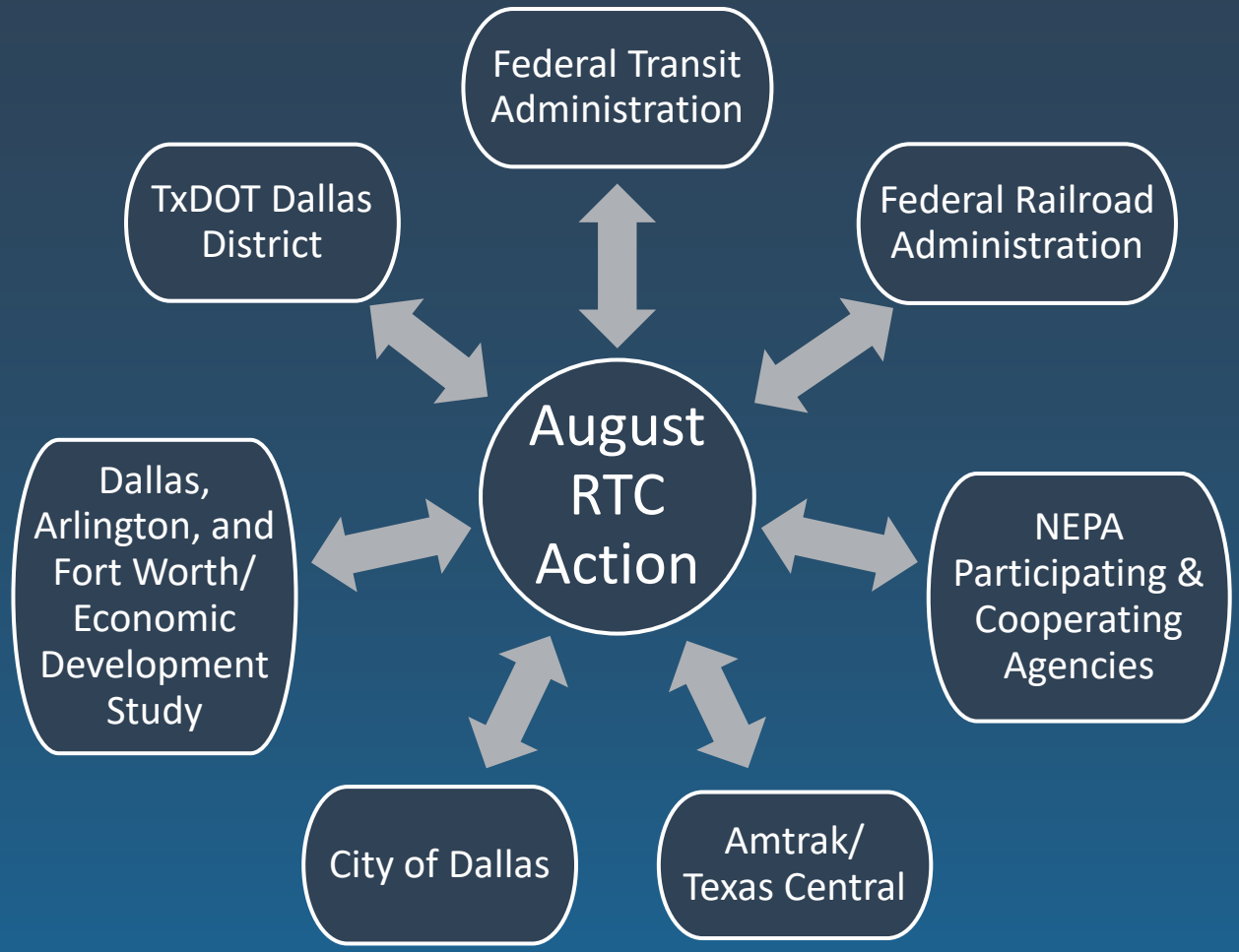

Supporting Information

Dallas to Fort Worth High-Speed Rail Corridor Characteristics

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Dallas to Fort Worth High-Speed Rail Corridor Characteristics

What are expected travel times along corridor? Can it really get to "high" speed?

Yes – "high" speed is defined as over 125 mph

Fort Worth to Dallas

Express Run: Max Speed = 160 mph, 21-minute travel time
Arlington Stop: Max Speed = 160 mph, 25-minute travel time

Dallas to Houston

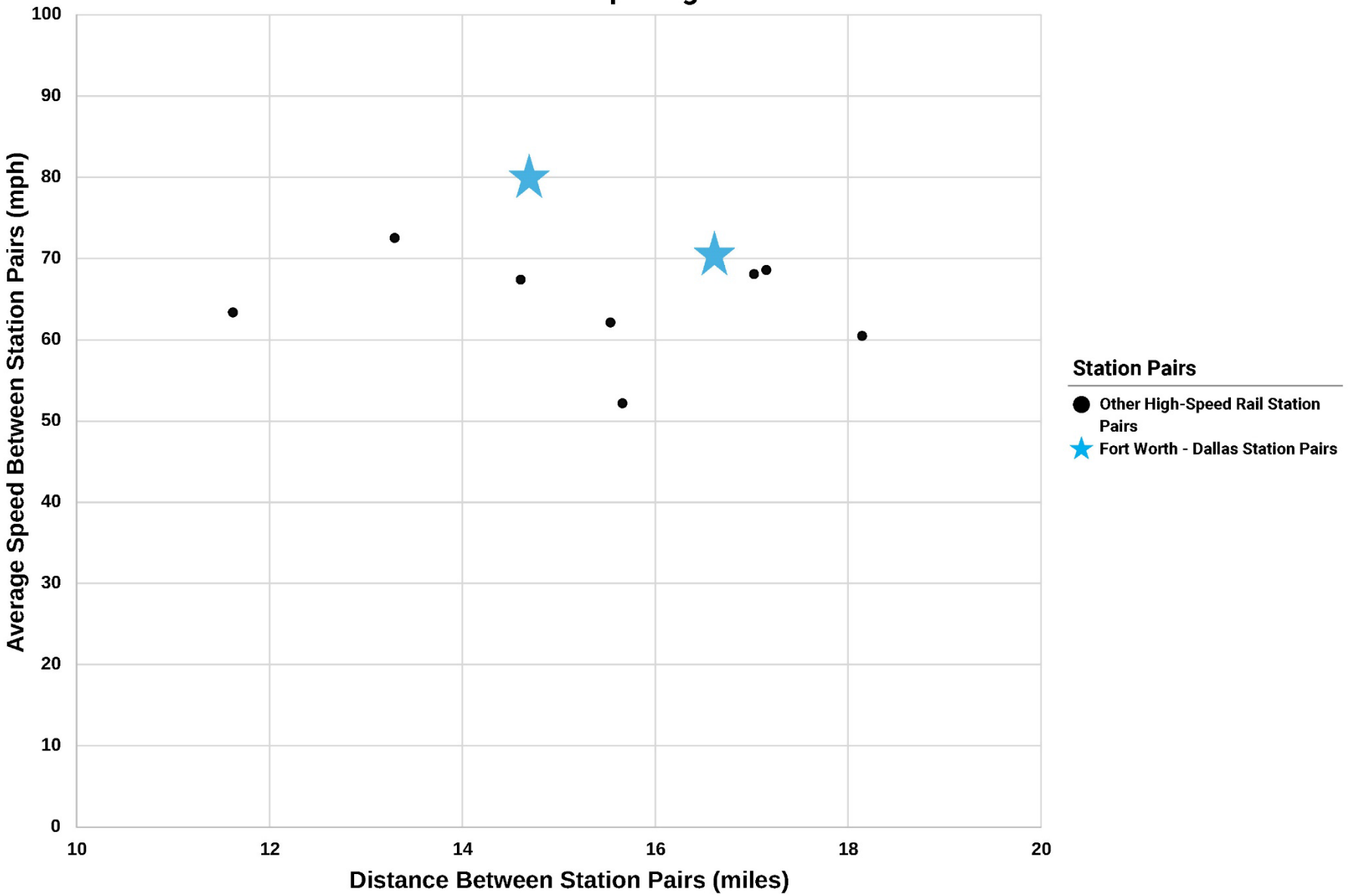
Max Speed = 200+ mph, 90-minute travel time

*Fort Worth to Houston**

Max Speed = 200+ mph, approximately 2-hour travel time

*With stop in Arlington and Grimes County

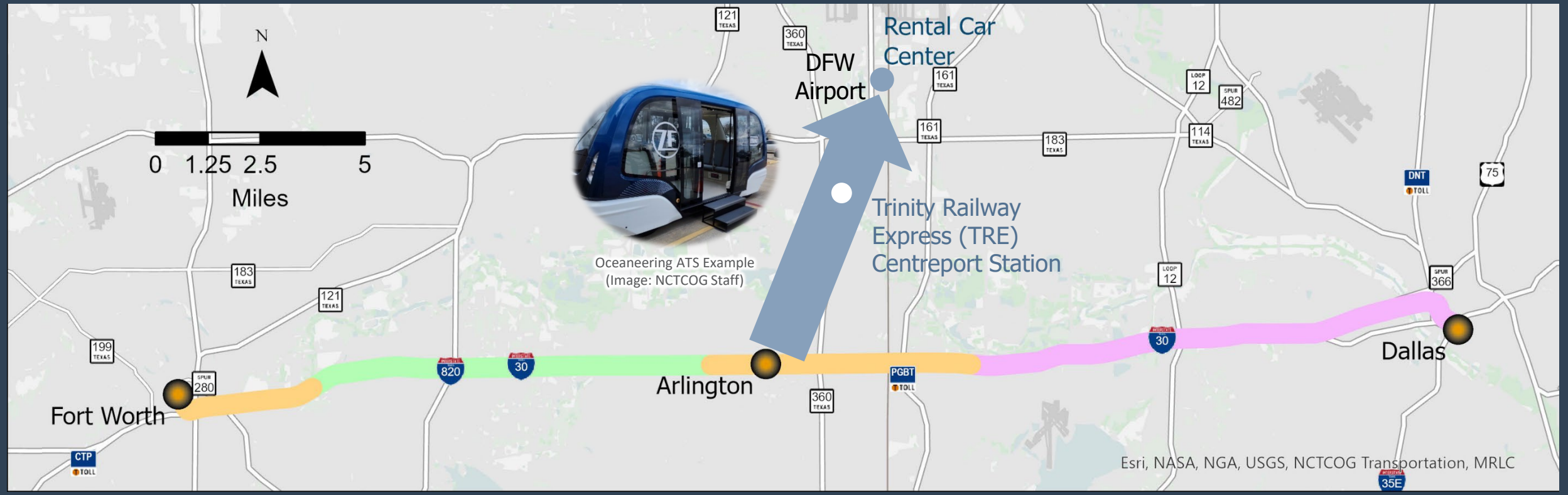
Comparing High-Speed Rail Station Pairs: 10 International Examples with Similar Spacing



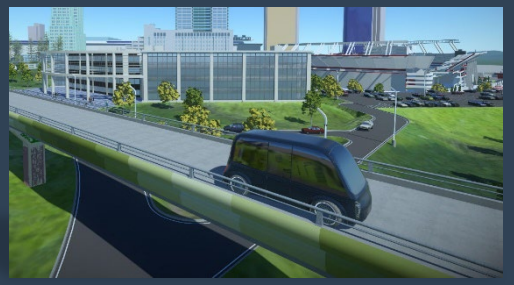
Notes:

- The station pairs shown are located in Japan, Germany, and Italy.

Arlington HSR-Airport ATS[1] Link



[1] Automated Transportation System (ATS) recommendation provides dedicated connectivity between proposed HSR Station, TRE Centreport Station, and DFW Airport



Airport Link Stations
Airport Link
High Speed Rail Stations

High Speed Rail
Elevated
Trench/At-Grade
Tunnel

Explanation of DFW Growth Visualization

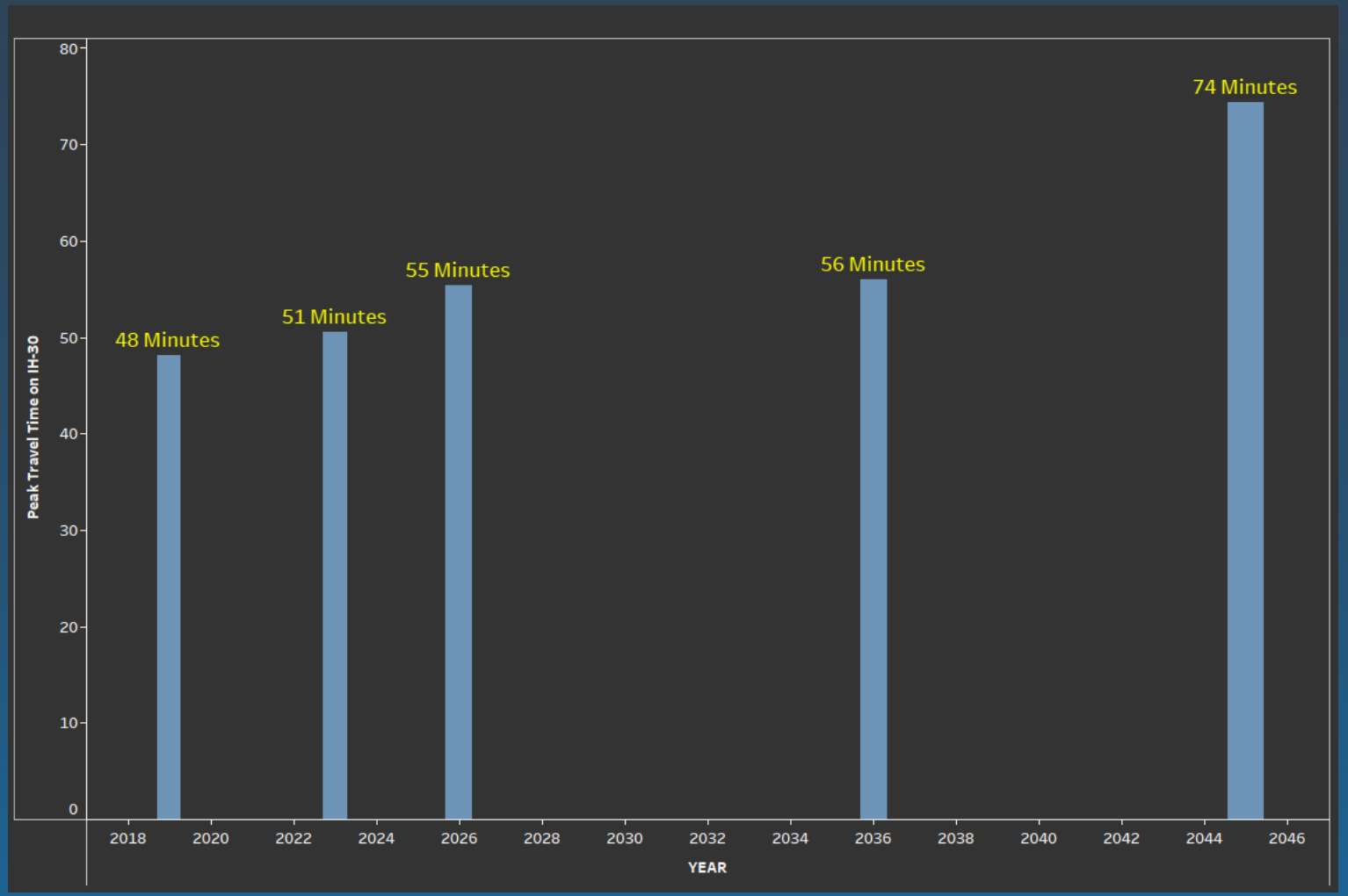
Focused on TRE and HSR

Model and Data Development

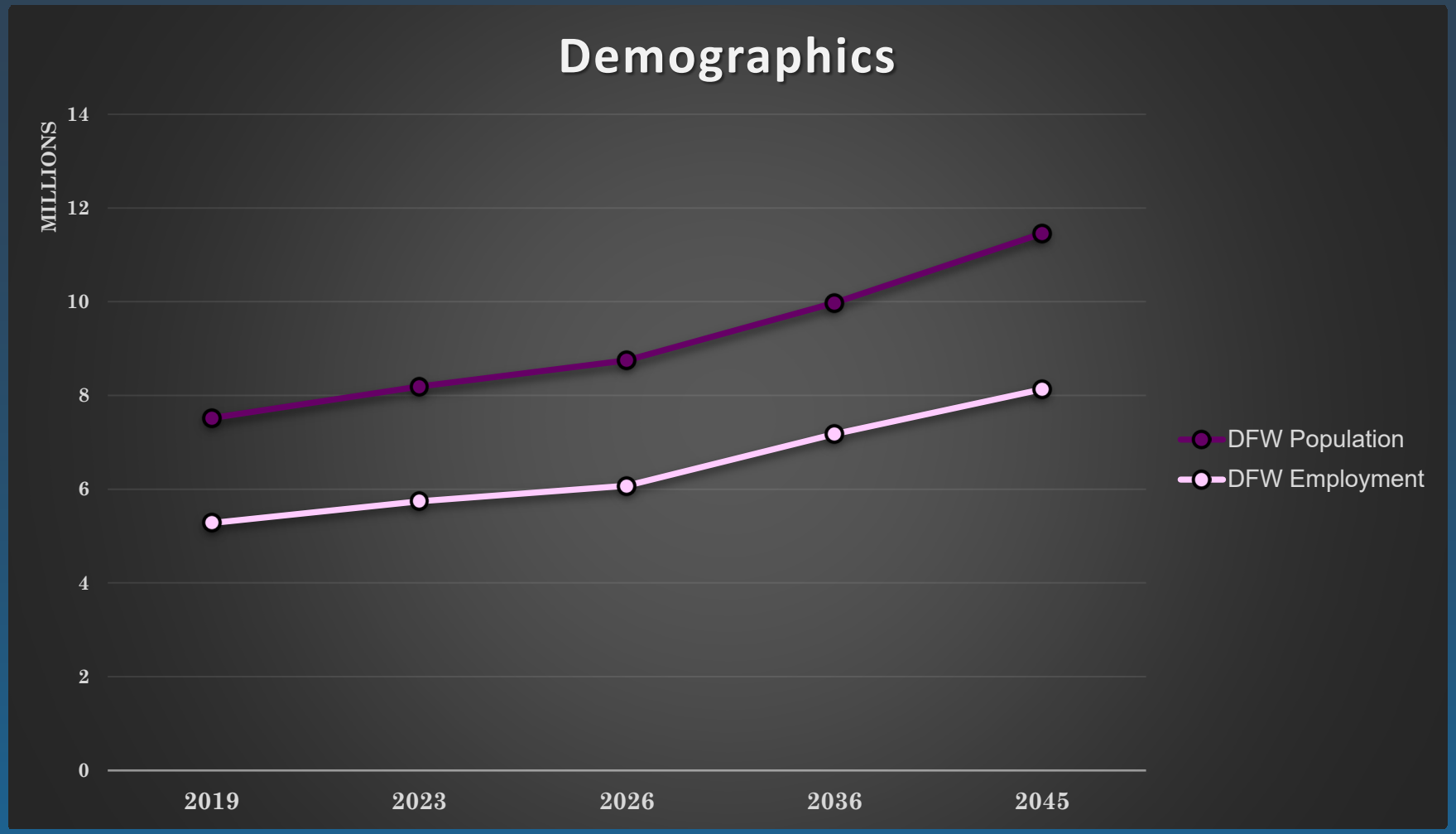
DFW Regional Growth - 2019 to 2045

- Rush hour travel times on IH 30 between two CBDs are significantly longer
- DFW's demographics increase dramatically for both Population and Employment
- Roadway congestion gets worse
- TRE ridership increases continuously
- Introduction of HSR in 2045 will not impact TRE's service since they serve different markets

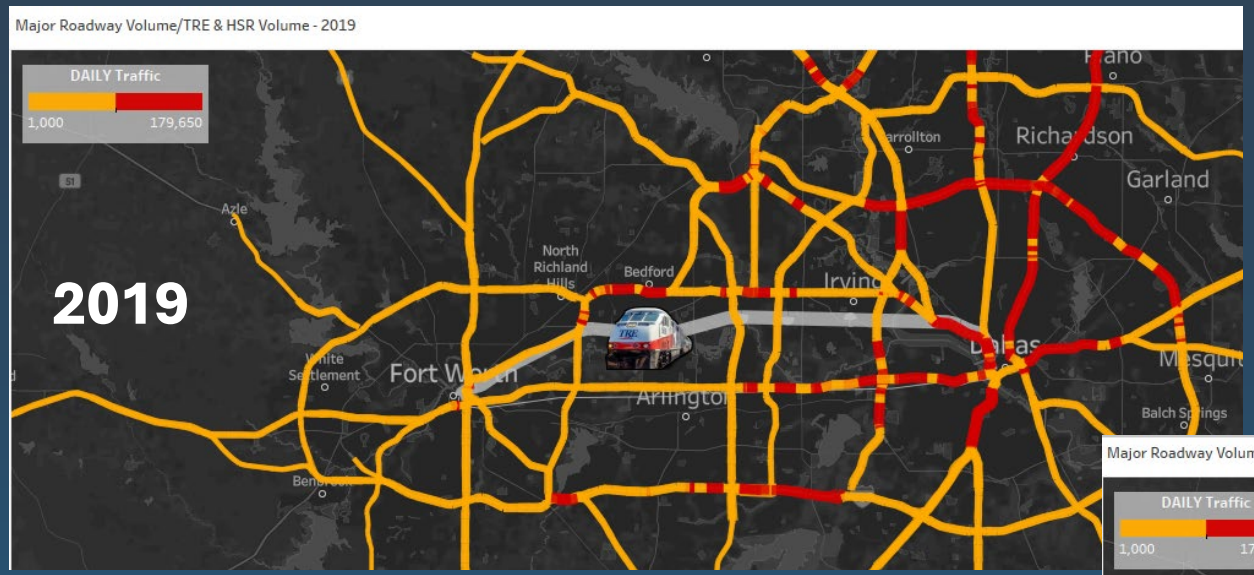
Rush Hour Travel Times on IH 30 between two CBDs are Significantly Longer

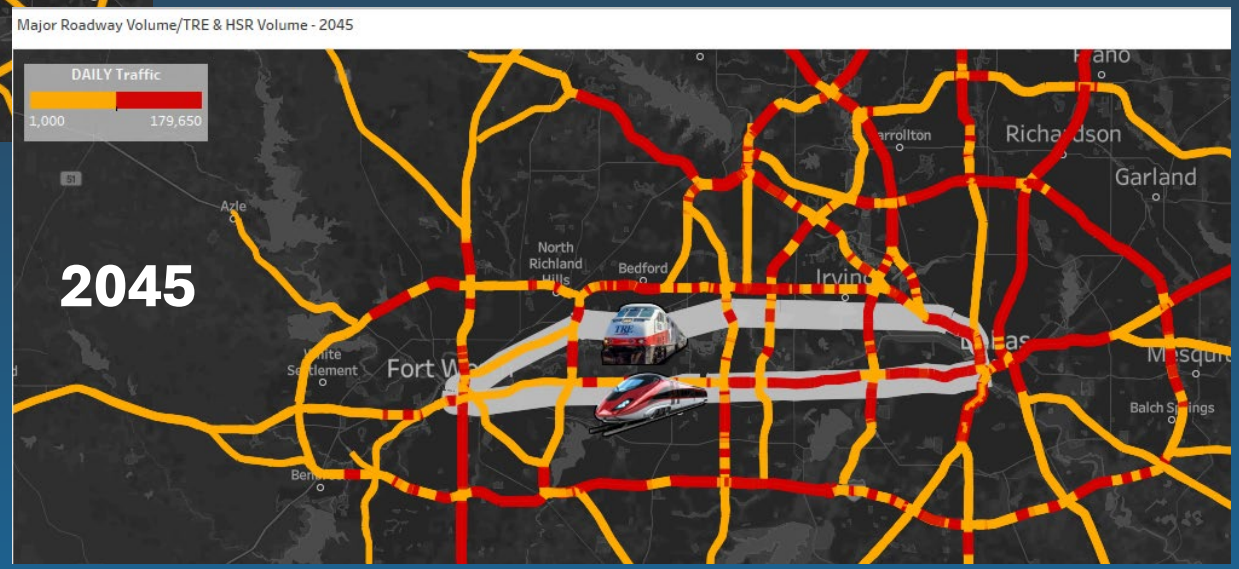


DFW's Demographics Increase Dramatically for both Population and Employment

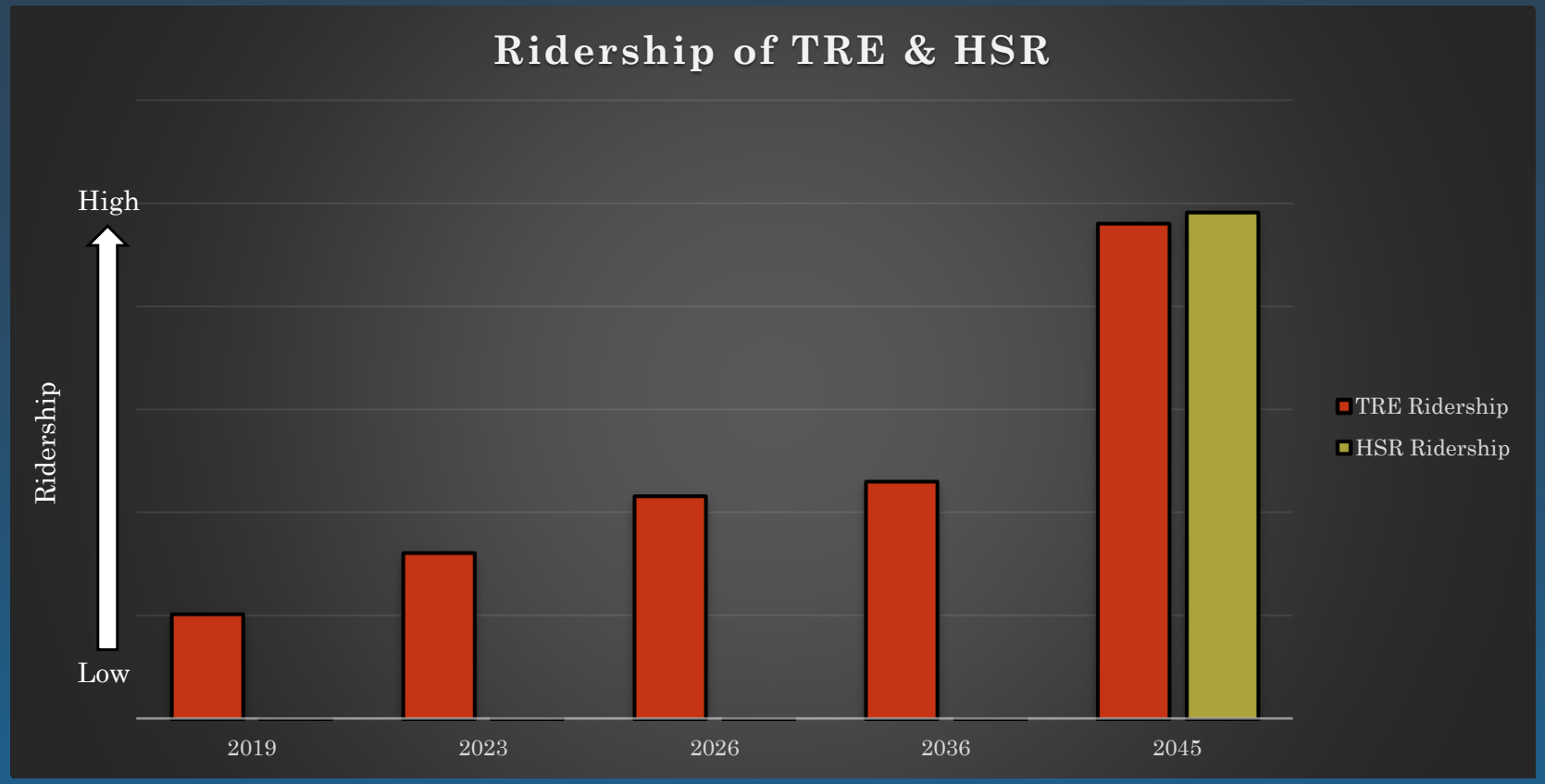


Roadway Congestion Gets Worse





TRE Ridership Increases Continuously and HSR Will Not Impact TRE's Ridership



Why Not Upgrade the TRE?

HIGH-SPEED TRANSPORTATION
DALLAS-FORT WORTH

Upgraded TRE

Max Speed: Less than 125 mph (at-grade service limited by FRA regulation)

End-to-End Travel Time: Slightly longer than High-Speed Rail

Competes for capacity in busy corridor with varying speeds; dedicated track requires significant additional right-of-way

At-grade crossings introduce safety and reliability risk

Violates “one-seat” ride purpose; significant transfer delay (see Dallas Alignment Whitepapers)

High-Speed Rail in IH 30 Corridor

Max Speed: 160± mph (based on corridor geometry)

End-to-End Travel Time: 21 minutes express and 25 minutes with Arlington stop

Leverages existing IH 30 highway corridor to minimize impacts and additional right-of-way needs

Grade-separated and fully dedicated corridor prioritizes safety and reliability

Best serves intercity market with continuous service from Dallas-Fort Worth region to Houston and beyond with “one-seat” ride

For additional information, refer to Why the TRE Cannot be Repurposed for High-Speed Rail whitepaper on the project website: www.nctcog.org/dfw-hstcs >> Project Information

TxDOT/FRA: DFW Core Express Alternatives Analysis Study

Link to Study

- Alternatives Analysis completed in 2017
- Study unable to advance beyond Alternatives Analysis due to federal funding lapse
- NCTCOG commented (4/20/2017) on final results, expressing concerns/disappointment in:
  - Lack of cooperation and partnership with local governments
  - Limited alignment evaluation (majority of alternatives focused on differing speeds, not differing corridors)
  - Regional one-seat ride policy not honored
  - Unproven ridership forecasting methodology

Value of Time in Transit: In-Vehicle vs. Out-of-Vehicle

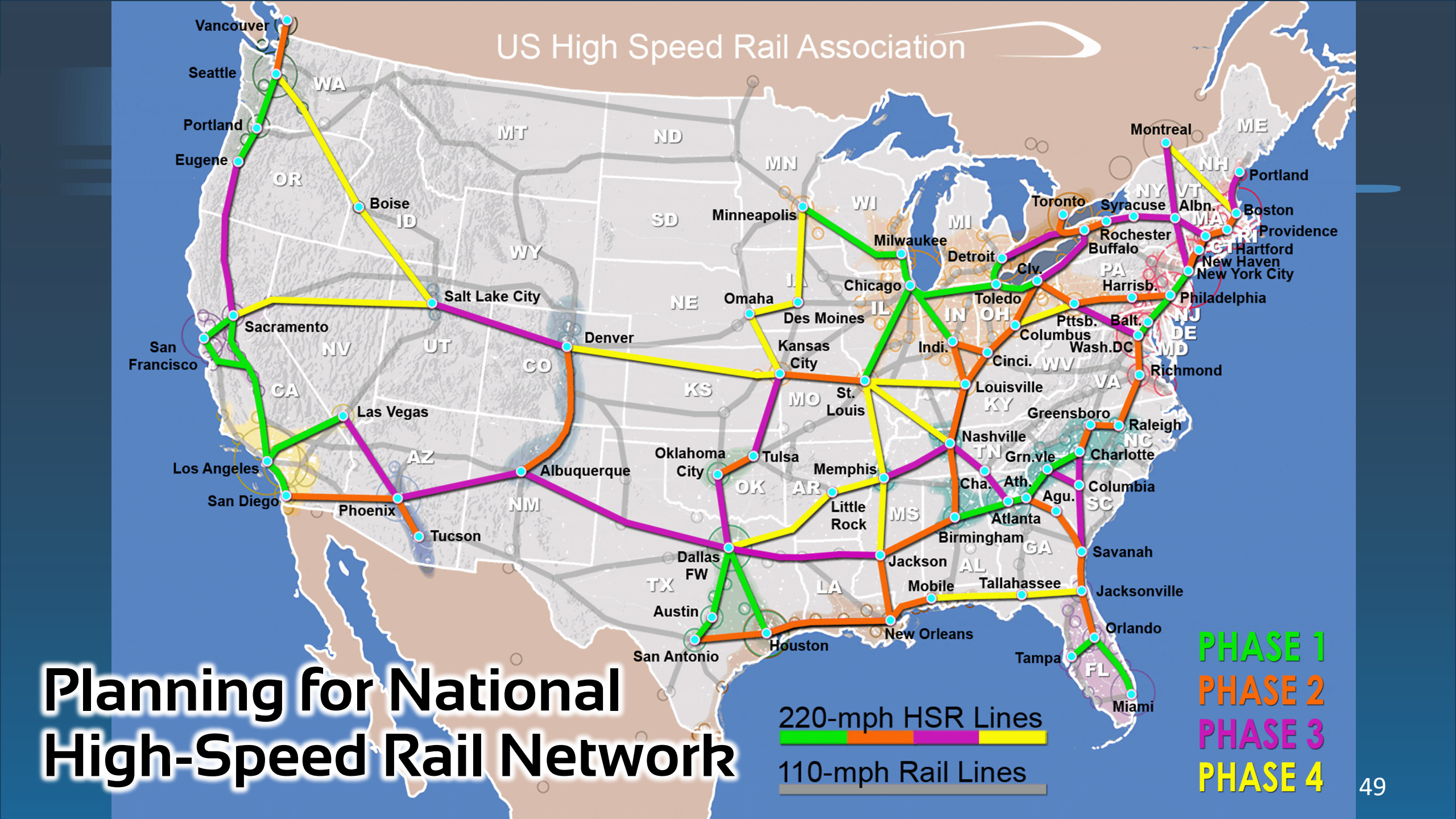
Related to Option 4 – Subway Alignment Coterminus with Approved Dallas High-Speed Rail Station – in Dallas Alignment Whitepapers

- Estimated time for passengers to transfer between train at elevated platform (approximately 75 feet above grade) and subway train at tunnel platform (100+ feet below grade) is 20 minutes (measured between arrival and departure of trains)
- 20-minute transfer time translates to 40-minute penalty for passengers

  "Transit riders are very sensitive to out-of-vehicle time. Among various types of out-of-vehicle time, waiting time is the most onerous factor for transit users (Cervero 1990). In practice, the rule of thumb is that walking and waiting time are valued twice as much as in-vehicle time…"

Iseki, H.; Taylor, B.; and Miller, M. (2006). The Effects of Out-of-Vehicle Time on Travel Behavior: Implications for Transit Transfers. Submitted to CALTRANS.

Dallas Alignment White papers and additional information can be found on the project website: www.nctcog.org/dfw-hstcs


US High Speed Rail Association
Vancouver
Seattle
Portland
Eugene
Boise
Salt Lake City
Sacramento
San Francisco
Las Vegas
Los Angeles
San Diego
Phoenix
Tucson
Albuquerque
Denver
Oklahoma City
Tulsa
Dallas FW
Austin
San Antonio
Houston
Kansas City
Omaha
Des Moines
Minneapolis
Chicago
St. Louis
Memphis
Little Rock
Jackson
New Orleans
Milwaukee
Detroit
Toledo
Cleveland
Columbus
Cincinnati
Indianapolis
Louisville
Nashville
Birmingham
Atlanta
Mobile
Tallahassee
Jacksonville
Orlando
Tampa
Miami
Savannah
Charlotte
Greensboro
Raleigh
Richmond
Washington DC
Baltimore
Philadelphia
Harrisburg
Pittsburgh
Buffalo
Rochester
Syracuse
Albany
Toronto
Montreal
New York City
New Haven
Hartford
Providence
Boston
Portland
WA
OR
CA
NV
ID
MT
WY
UT
AZ
CO
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OH
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TN
AL
GA
FL
SC
NC
VA
WV
PA
NY
VT
NH
ME
MA
RI
CT
NJ
DE
MD
Planning for National High-Speed Rail Network
220-mph HSR Lines
110-mph Rail Lines
PHASE 1
PHASE 2
PHASE 3
PHASE 4

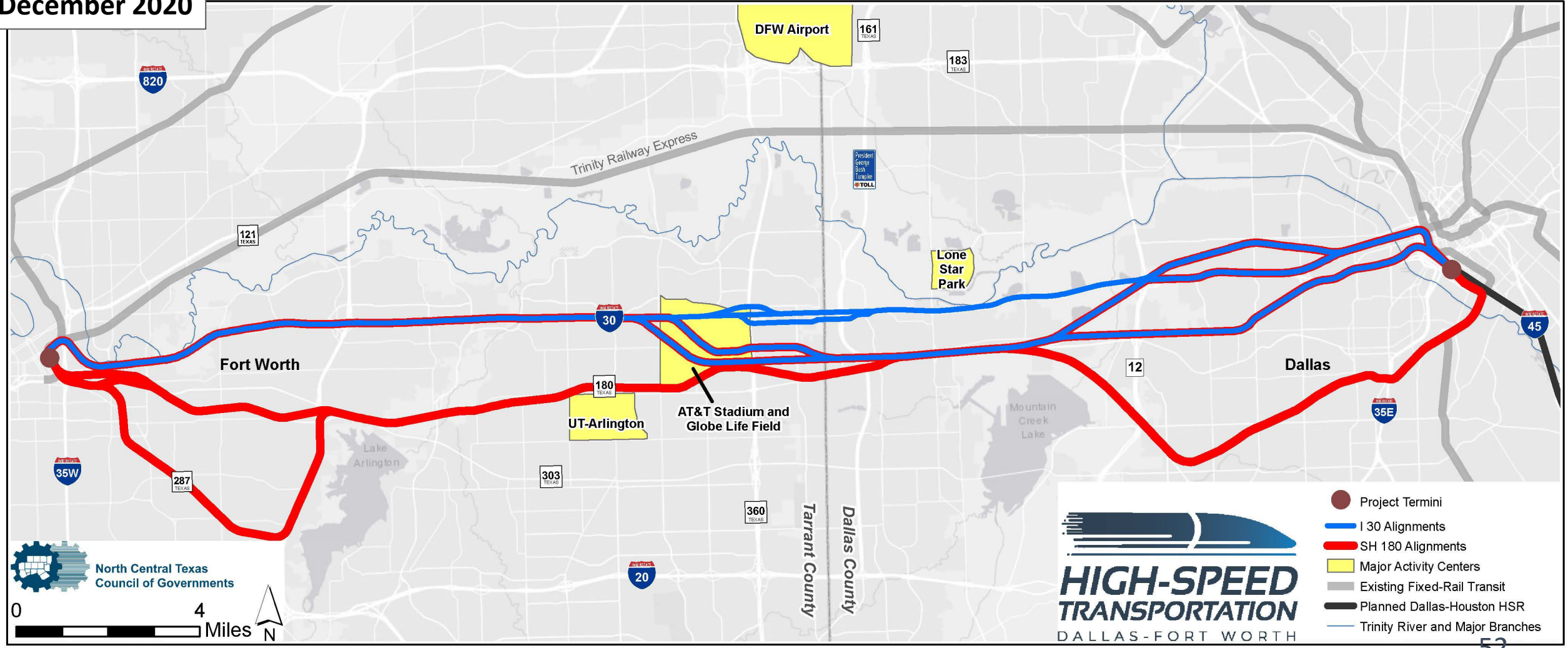
Alignment Screening

Initial Set of Alignments/Corridors

September 2020

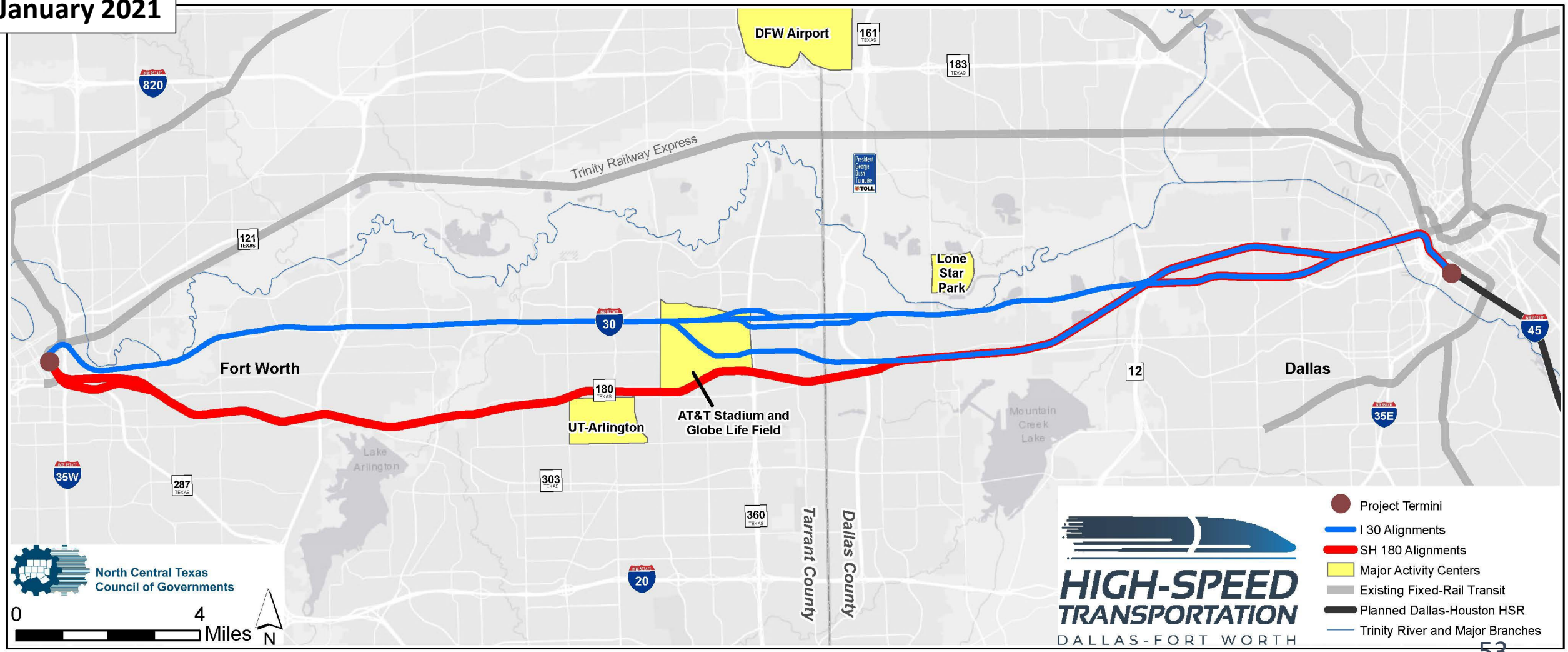
Alignment/Corridor Recommendations Based on Level 1 Screening

December 2020



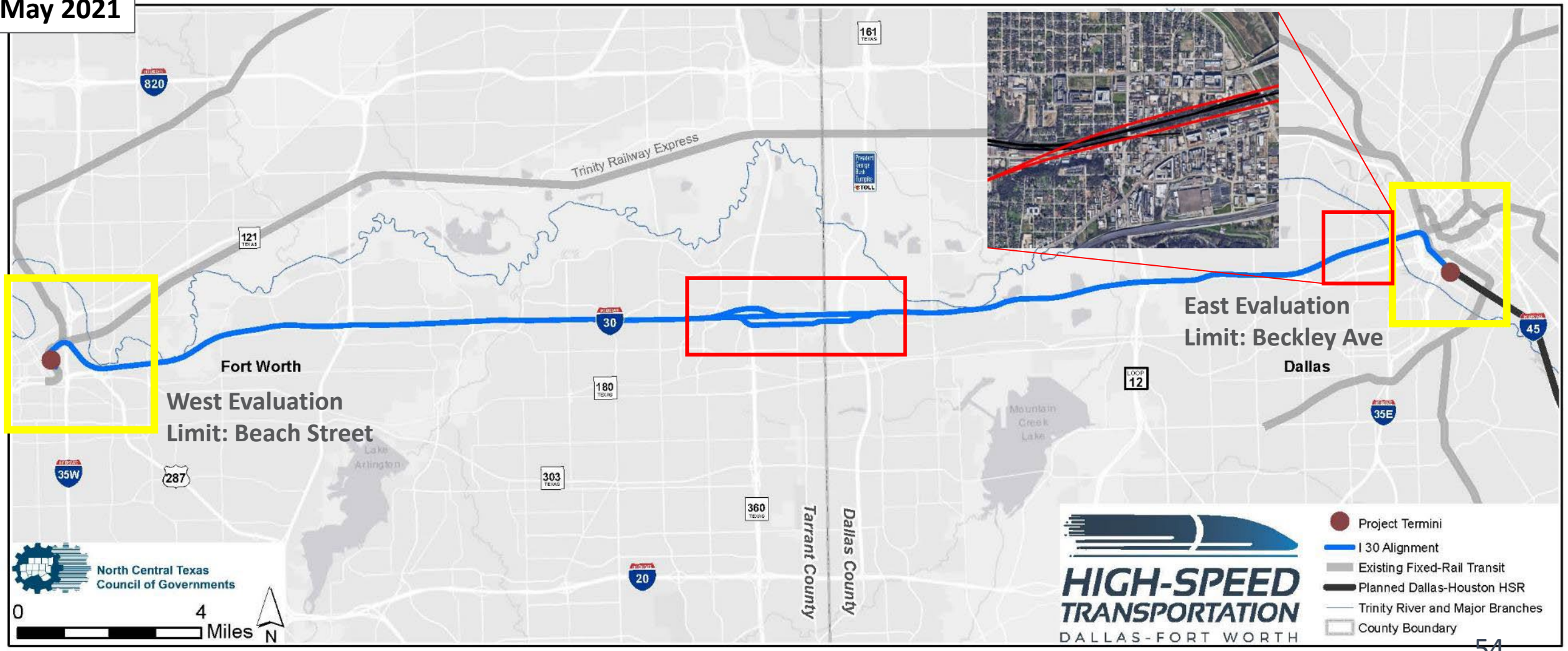
Alignment/Corridor Recommendations Based on Level 2 Screening

January 2021

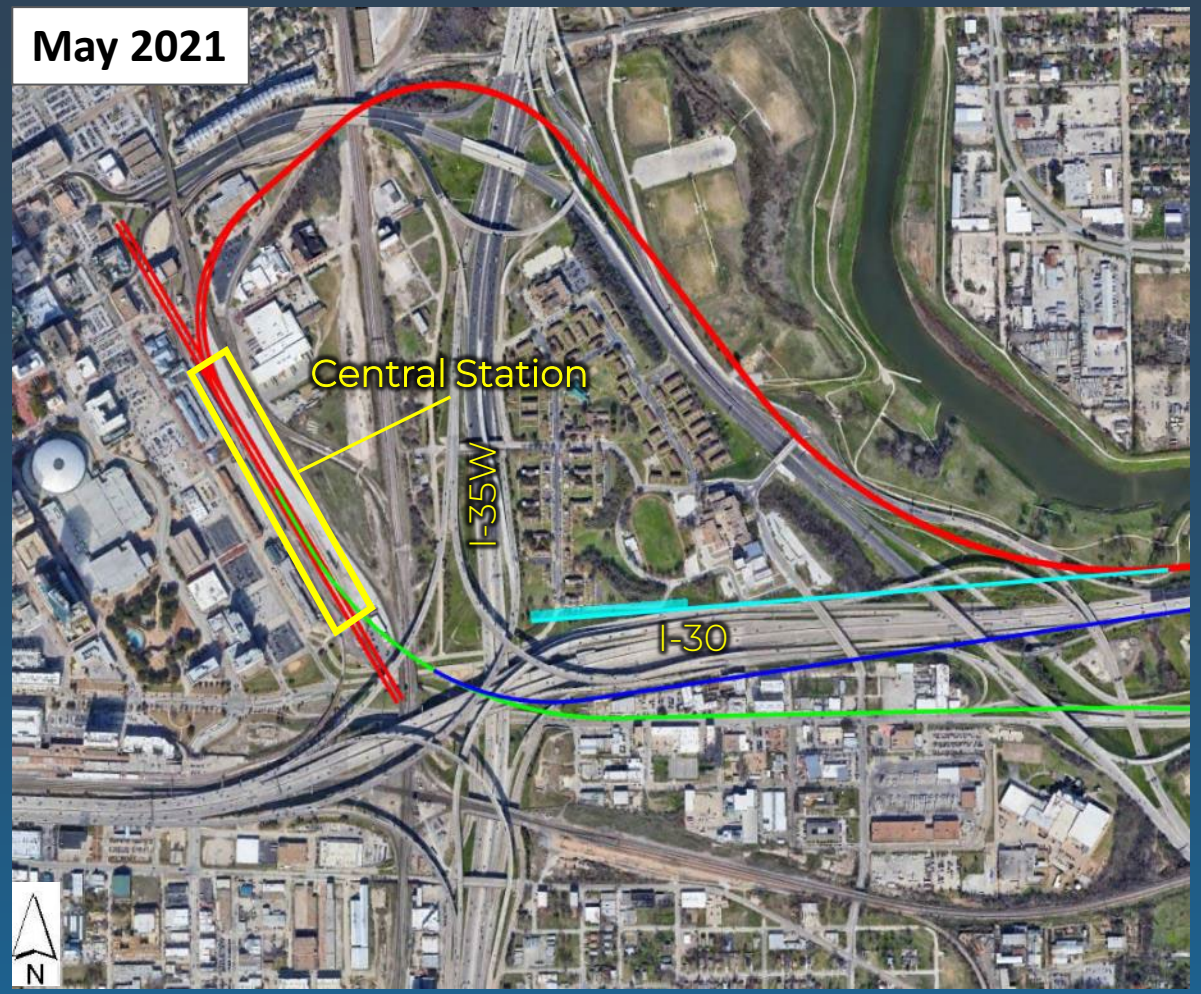


Recommended Phase 1 Alignments

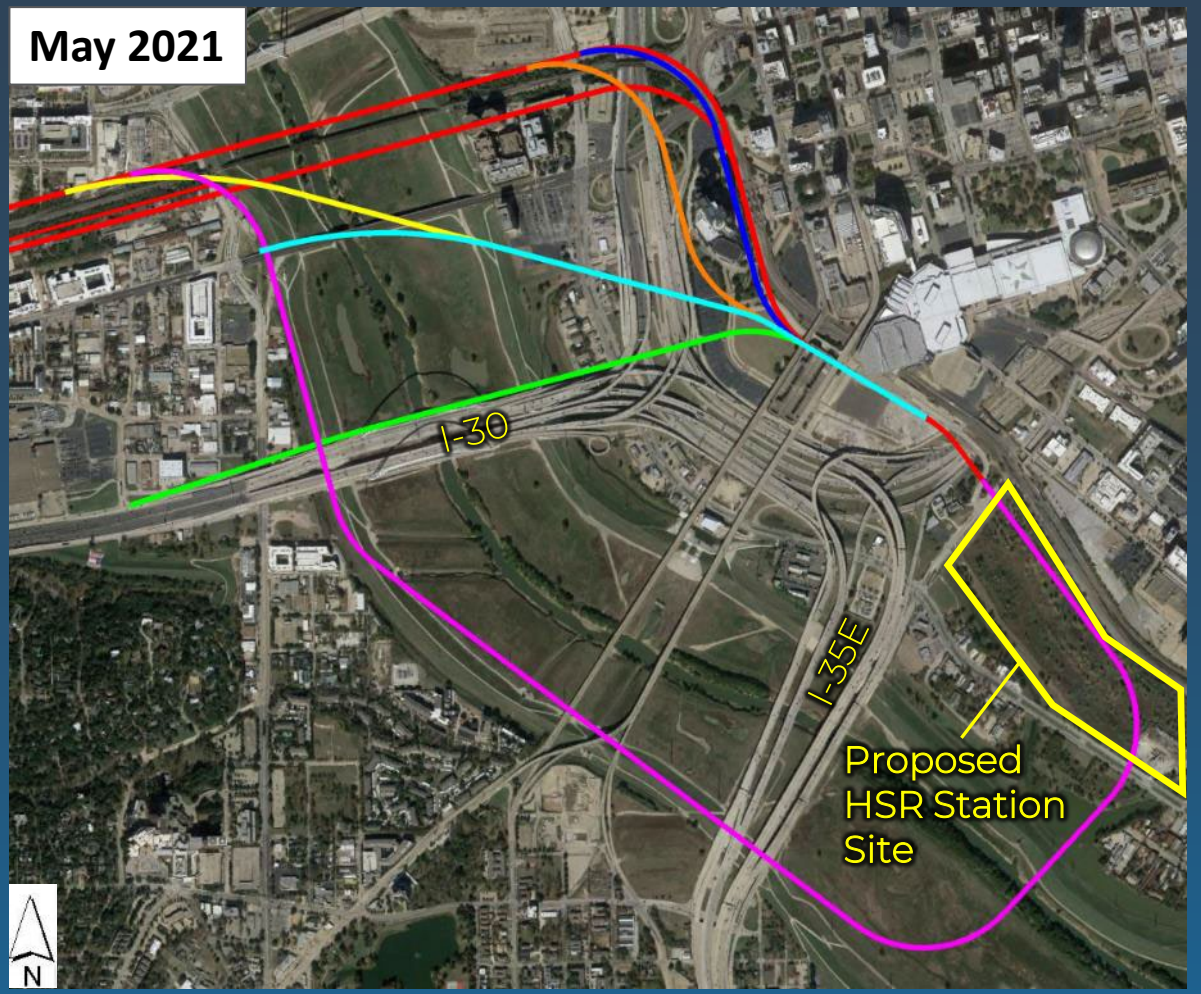
May 2021



Preliminary Urban Connection Concepts



Fort Worth

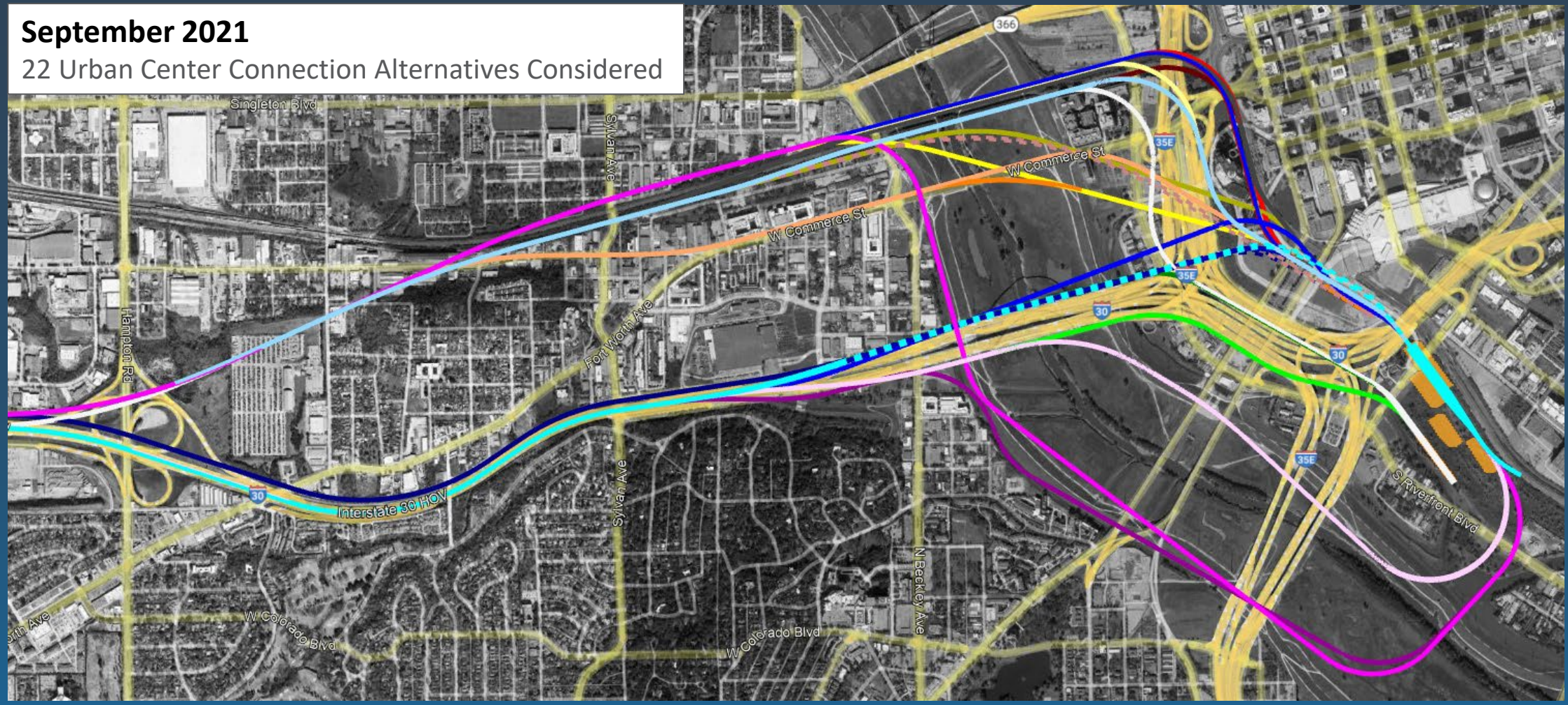


Dallas

Dallas Urban Center Connections

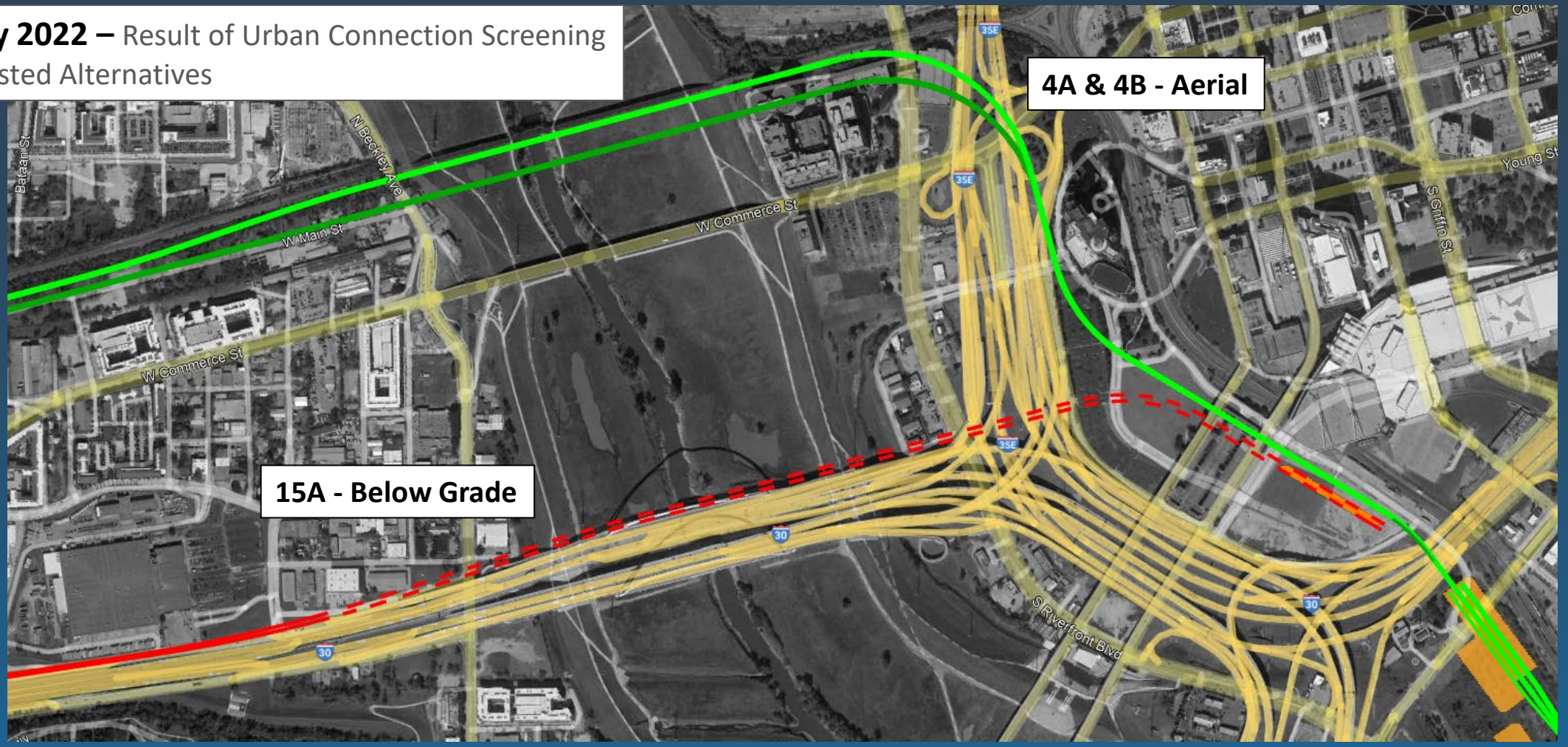
September 2021

22 Urban Center Connection Alternatives Considered



Dallas Urban Center Connections

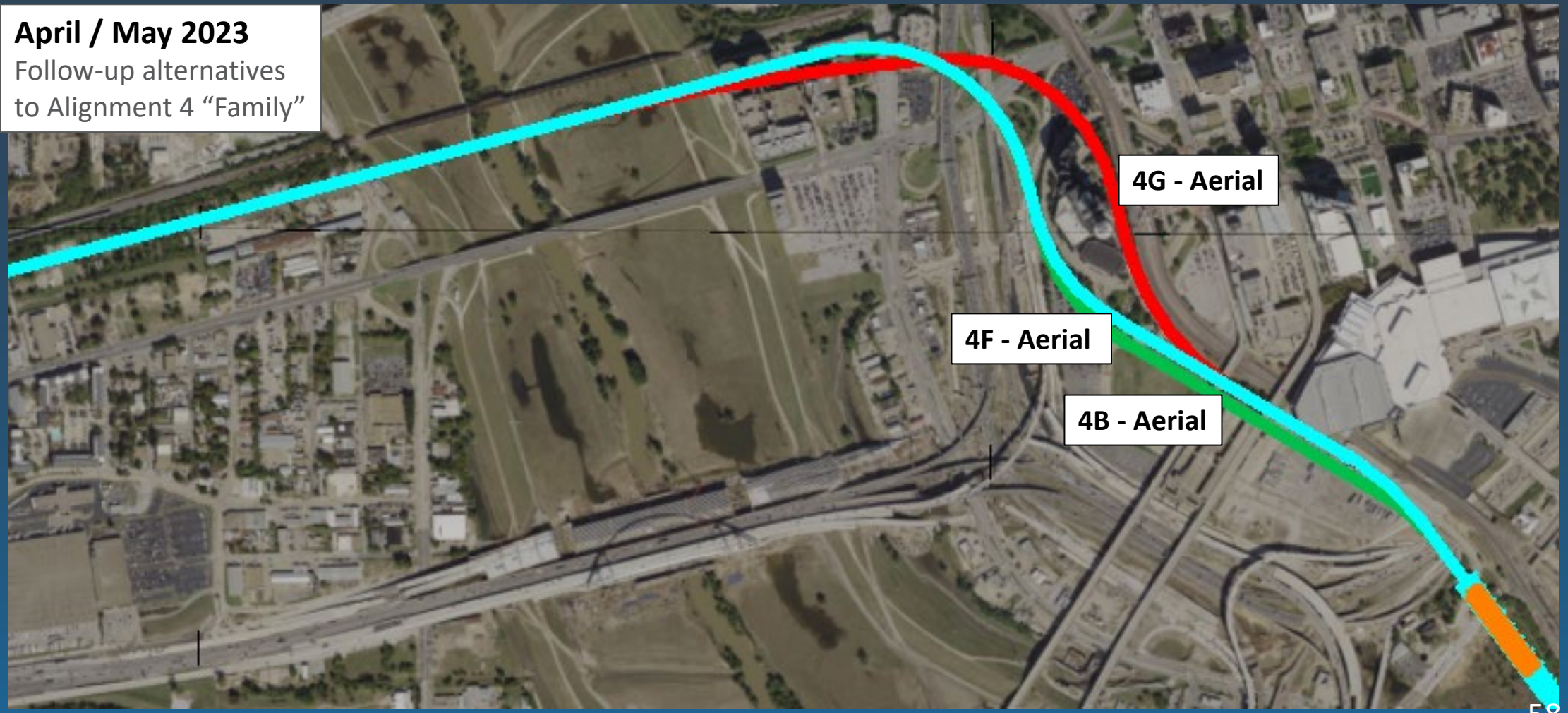
February 2022 – Result of Urban Connection Screening
2 Short Listed Alternatives



(53) 73631_Downtown Dallas Concepts_20220111.kmz

Dallas Urban Center Connections

April / May 2023
Follow-up alternatives to Alignment 4 “Family”

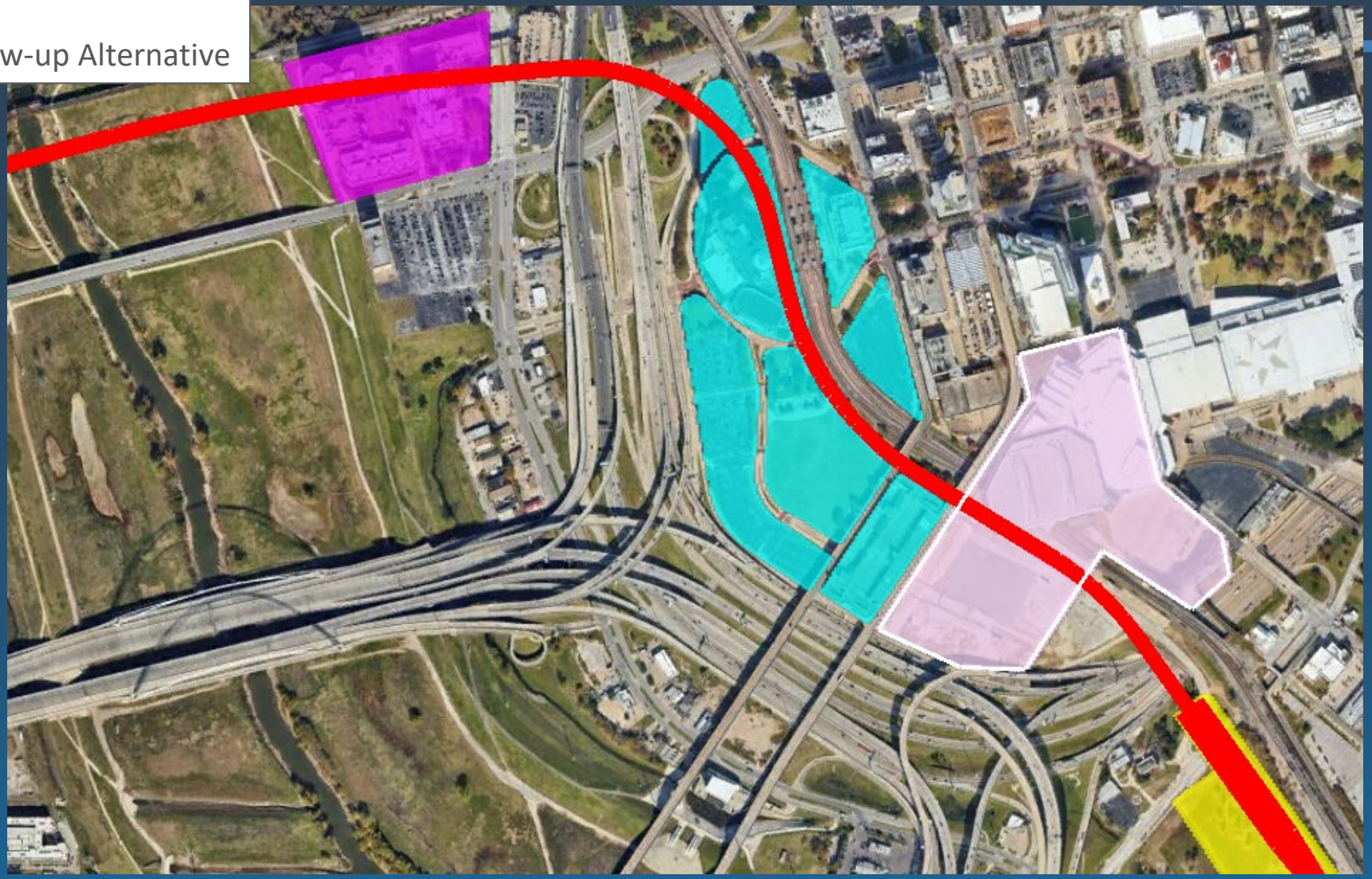


(81) 73631_DAL4G_20230503.kmz, 73631_DAL4F.1_20230427.kmz

Pedestrian Opportunity

June 2023
Dallas Workshop Follow-up Alternative

Pedestrian Opportunity



73631_DAL4G.2_20230627.kmz

City of Dallas Council Meeting 3/4/24

Dallas High-Speed Rail (HSR) Questions (Alternative Alignments)

Were the Following Alignments Reviewed? ***Yes***

Alignments Previously Rejected; Requested to Review

- **3.** *Elevated* – Use of Existing Rail Corridor East of Hotel Street
- **4.** *Subway* – Coterminous with Approved Dallas HSR Station
- **5A.** *Elevated*/**5B.** *Subway* – Different Station Location
- **6.** *At-Grade* – Upgraded Trinity Railway Express (TRE)
- **7.** *Elevated* – Trinity Railway Express (TRE) Corridor

Alignments Previously Recommended for NEPA

- **1.** *Elevated* – West of Hyatt Regency Hotel
- **2A.** *Elevated* – East of Hyatt Regency Hotel

New Alignments Recommended to Review

- **2B.** *Elevated* – East of Hyatt Regency Hotel with Pedestrian Lobby
- **2C.** *Elevated* – East of Hyatt Regency Hotel with Pedestrian Lobby and Pedestrian Cap

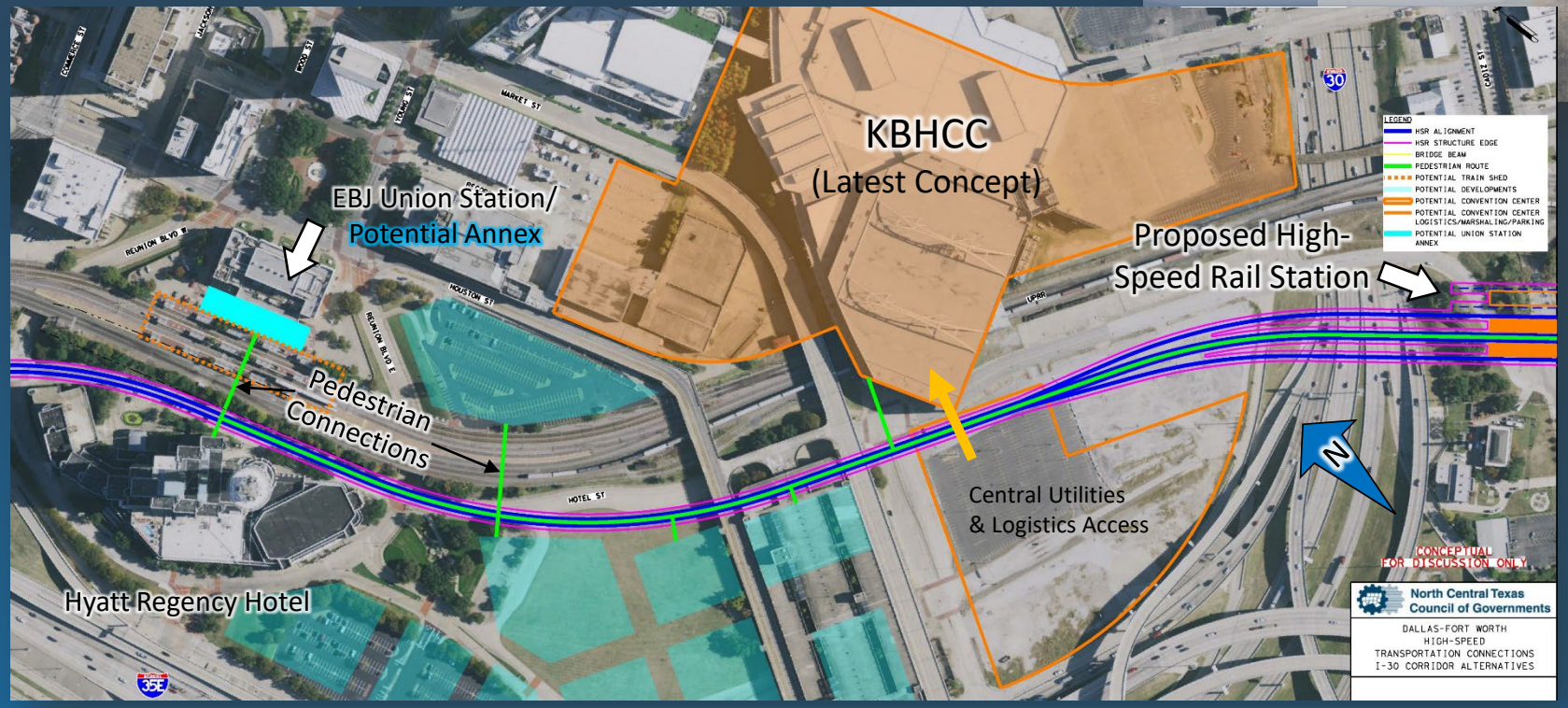
* Alignments recommended for advancement into NEPA

Alignments Previously Recommended for NEPA

2B. Elevated – East of Hyatt Regency with Pedestrian Lobby

Alignment recommended for advancement into NEPA

NO FATAL FLAW; FAVORED OPTION



- Aligns along Hotel Street and adjacent to existing rail corridor
- Provides direct pedestrian connectivity opportunity between approved HSR station, EBJ Union Station, KBHCC, and other developments

Favored Option 2B for NEPA Advancement

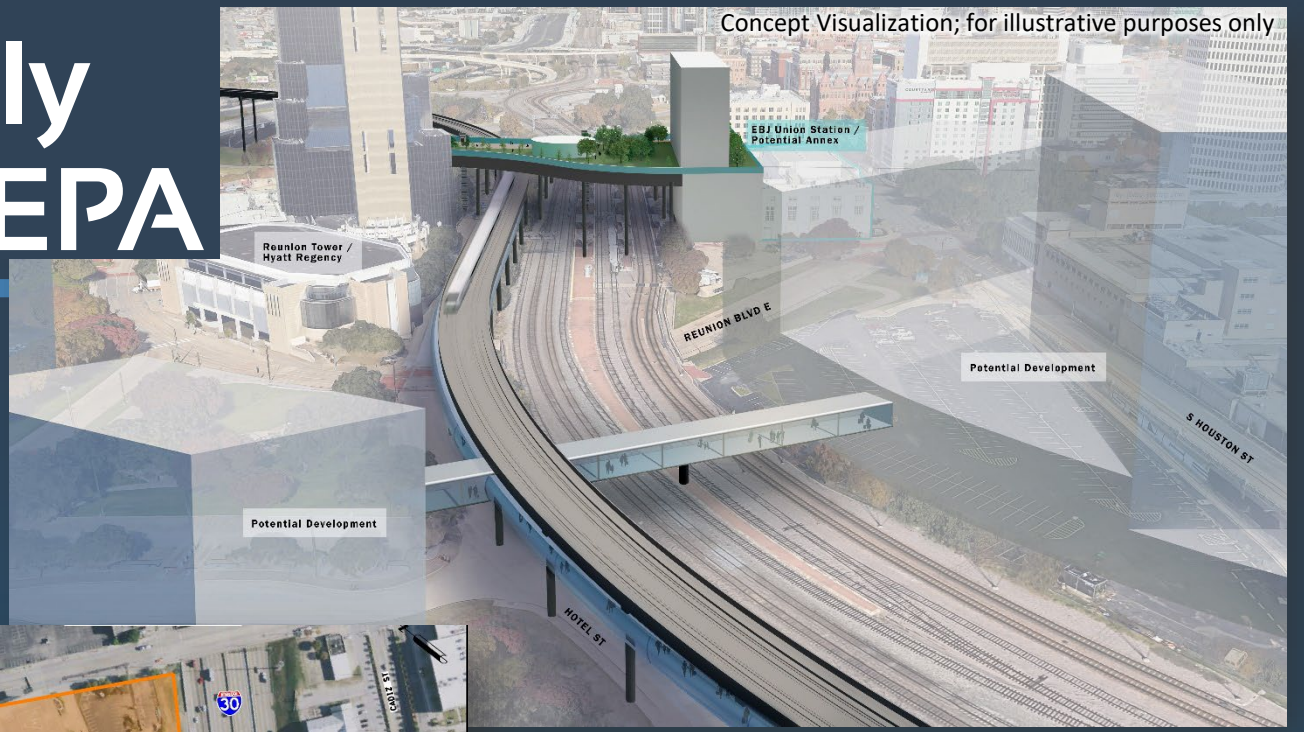
Concept Visualization; for illustrative purposes only

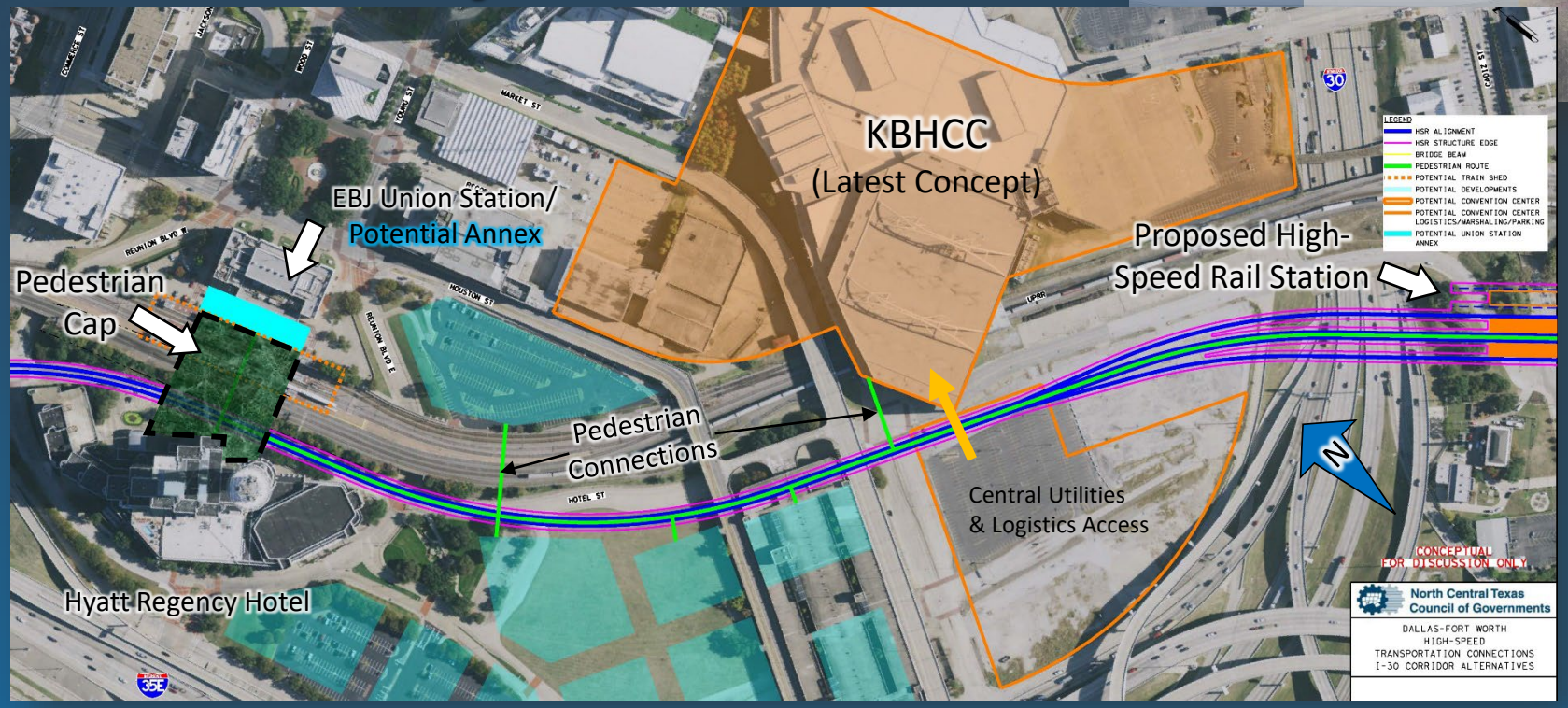
Alignments Previously Recommended for NEPA

2C. Elevated – East of Hyatt Regency with Pedestrian Lobby and Pedestrian Cap

Alignment recommended for advancement into NEPA

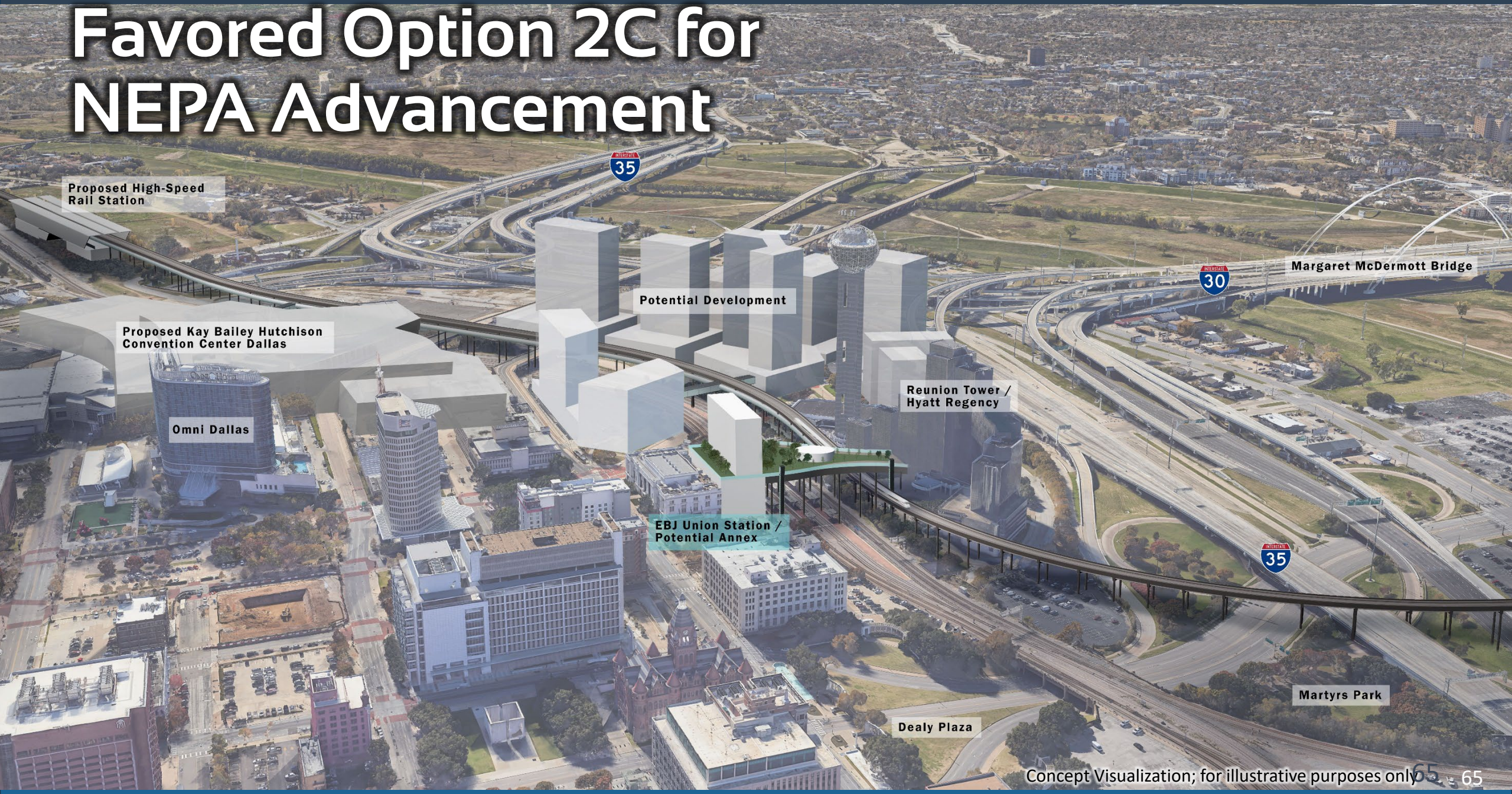
NO FATAL FLAW; FAVORED OPTION





- Aligns along Hotel Street and adjacent to existing rail corridor
- Provides direct pedestrian connectivity opportunity between approved HSR station, EBJ Union Station, KBHCC, and other developments
- Provides Pedestrian Cap/Deck Plaza over HSR to improve viewshed

Favored Option 2C for NEPA Advancement



Concept Visualization; for illustrative purposes only

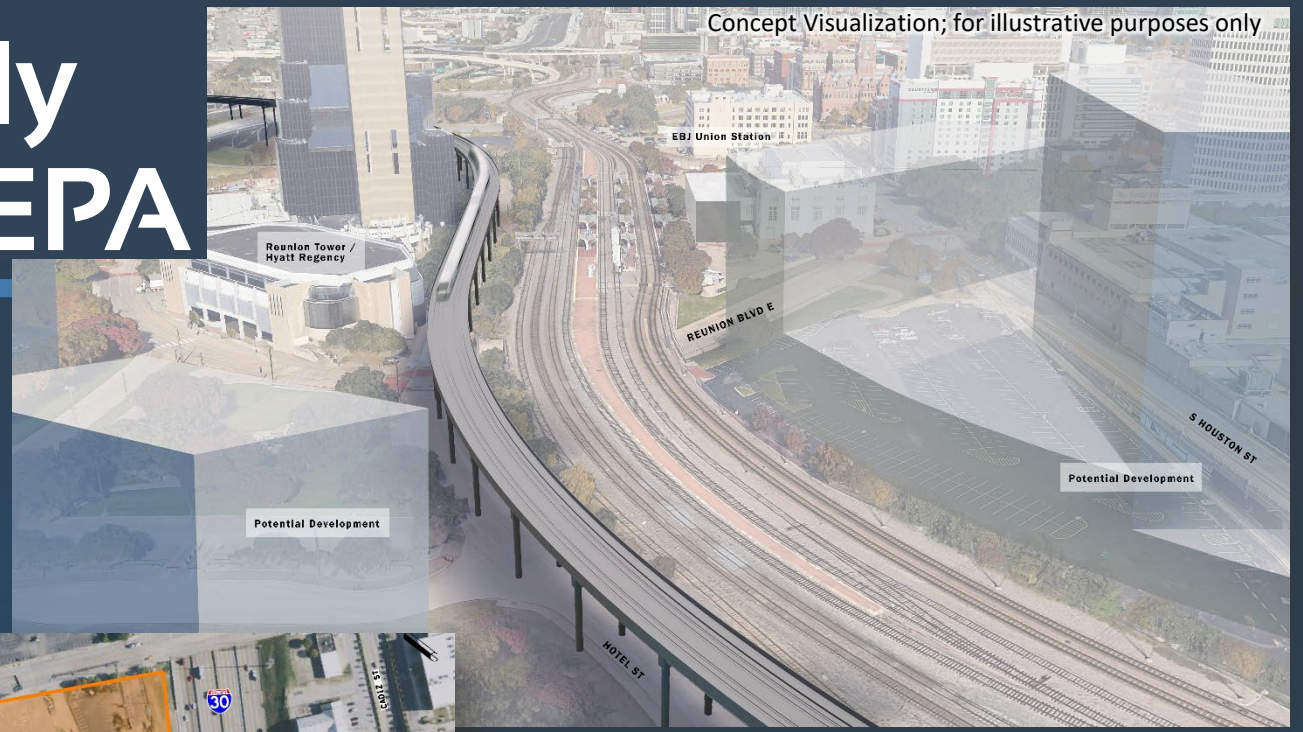
65

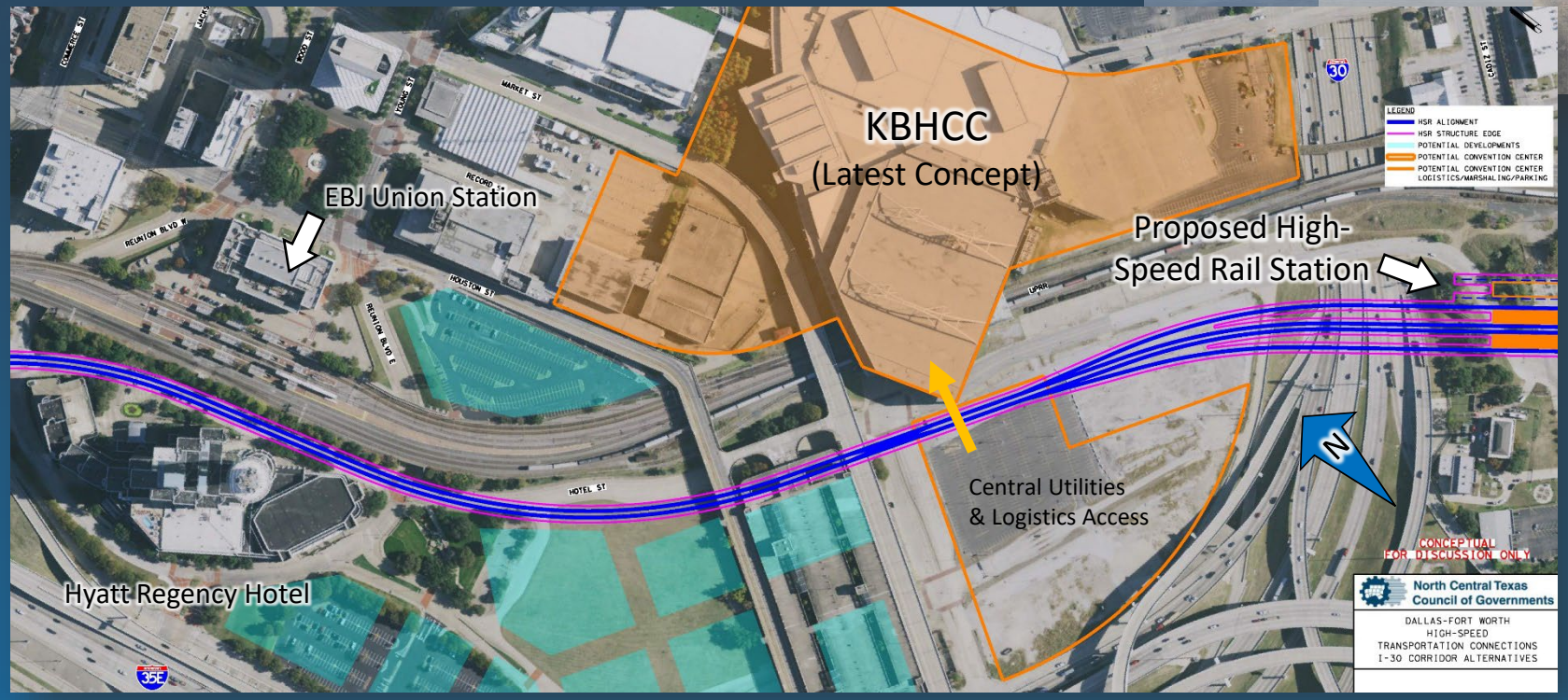
Alignments Previously Recommended for NEPA

2A. Elevated – East of Hyatt Regency

NO FATAL FLAW

Alignment recommended for advancement into NEPA



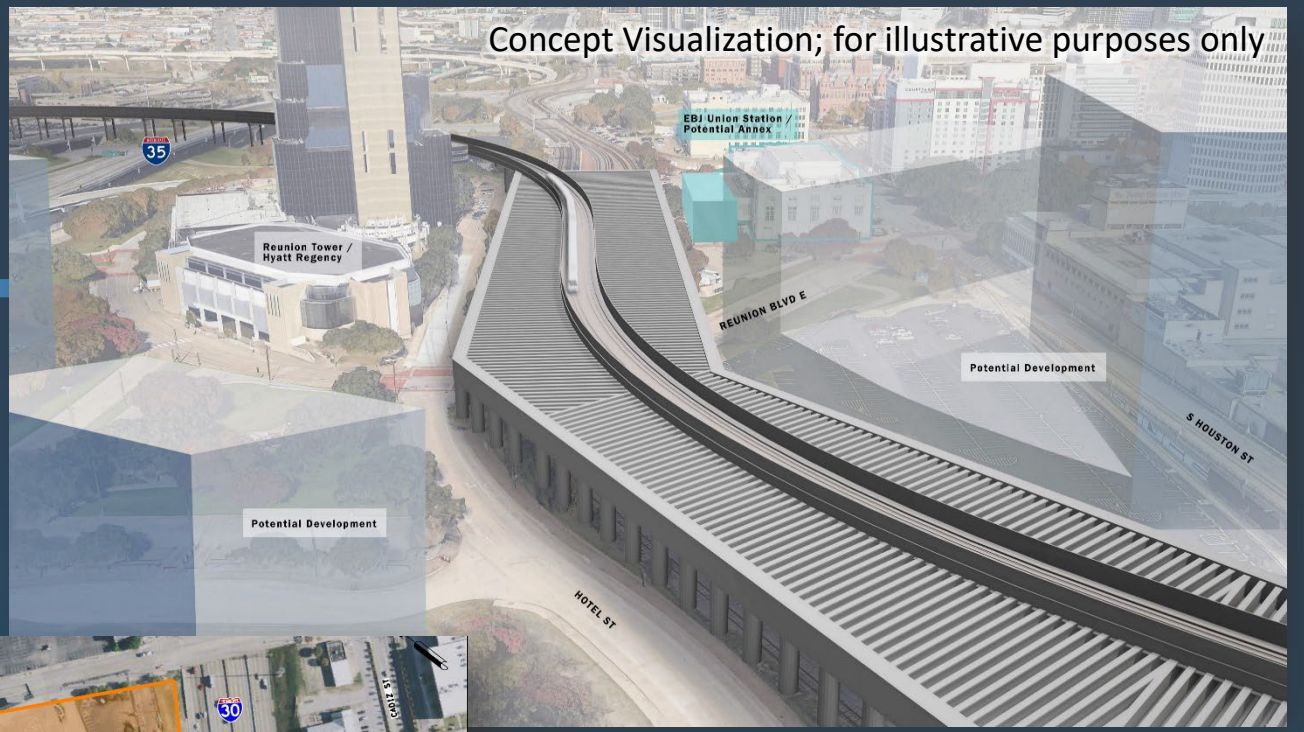


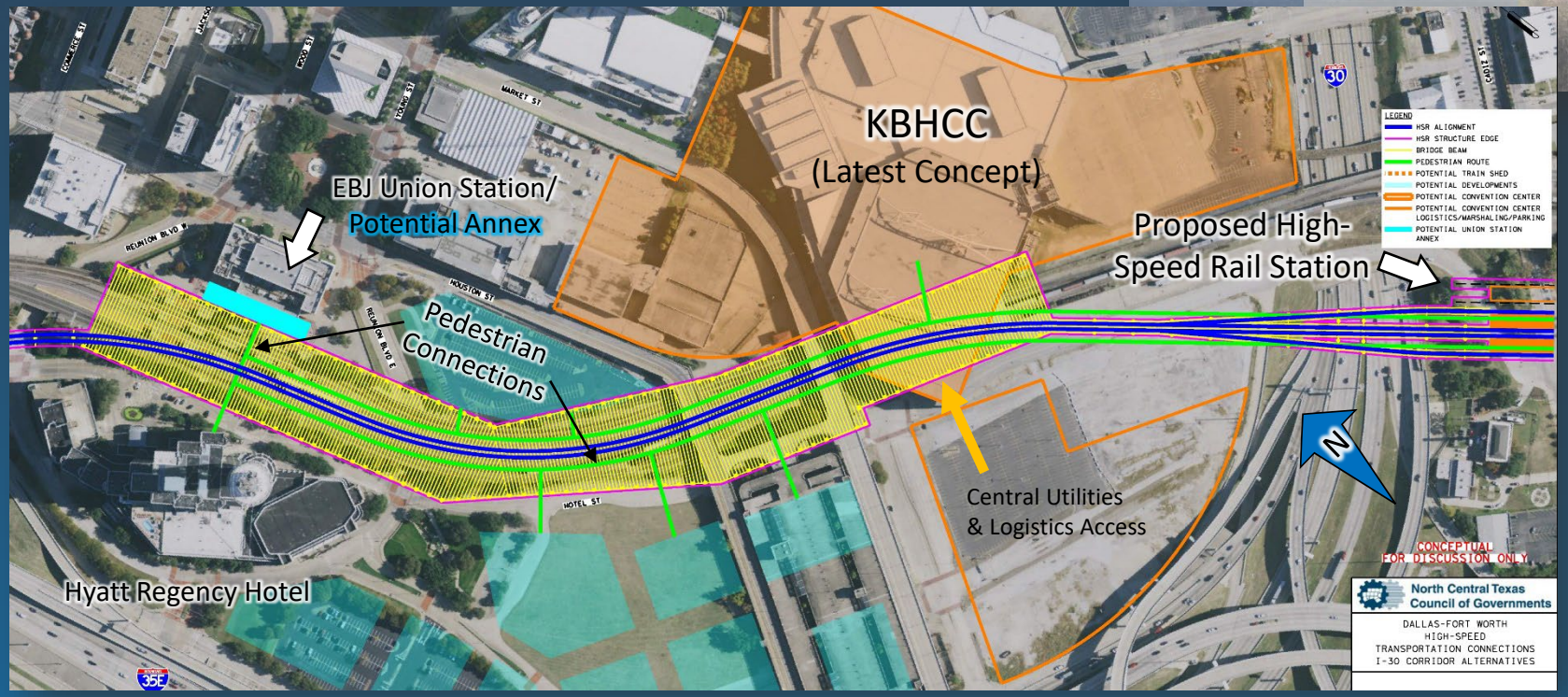
- Requires no changes to approved Dallas HSR station location
- Aligns along Hotel Street and adjacent to existing rail corridor
- Similar alignment to 2B and 2C alternatives

Alignments Previously Rejected; Requested to Review

3. Elevated – Use of Existing Railroad Corridor East of Hotel Street

FATAL FLAW





- Corridor actively used for passenger and freight rail service
- Requires massive pergola structure overshadowing streetscape
- Significant engineering challenges; loses seamless lobby extension

Alignments Previously Rejected; Requested to Review

4. Subway – Coterminous with Approved Dallas High-Speed Rail Station

FATAL FLAW

- Approx. 185’ (17 stories) vertical transfer adds 20+ minute delay
- Delay equivalent to 40-minute travel time penalty (waiting time vs. time-in-transit perceived differently)
- Violates Regional Transportation Council Policy – *not* a “one-seat” ride*

* “One-seat” ride references a direct trip provided by a single transit service that requires no transfers for passengers to reach their final destination; potential ridership drops precipitously with service requiring

Approved Dallas high-speed rail station with platform at 70’+ above existing ground

Image Credit: Texas Central

5A. Elevated/5B. Subway – Different Station Location

FATAL FLAW

- Amtrak proceeding with environmentally cleared station location for Dallas to Houston HSR
- Transfer penalty worse than Alternative **4**
- Violates Regional Transportation Council Policy – *not* a “one-seat” ride*

Alignments Previously Rejected; Requested to Review

6. At-Grade – Upgraded TRE

FATAL FLAW

- Competes for capacity in active corridor and likely fatal flaw in sharing infrastructure
- "At-grade" service sets highest speed of corridor at 125 mph and cannot meet HSR standards of safety and reliability
- Cannot meet travel time goal of approximately 20 minutes due to geometry of corridor
- Violates Regional Transportation Council Policy – *not* a "one-seat" ride*

7. Elevated – TRE Corridor

FATAL FLAW

- Grade-separated tracks would require new right-of-way next to existing tracks/right-of-way
- Significant number of displacements expected
- Creates similar issue in downtown Dallas as Alternative **3** (use of existing rail corridor)
- Significant public opposition
- Violates Regional Transportation Council Policy – *not* a "one-seat" ride*

* "One-seat" ride references a direct trip provided by a single transit service that requires no transfers for passengers to reach their final destination; potential ridership drops precipitously with service requiring a transfer(s)

Benefits of High-Speed Rail to Land Development

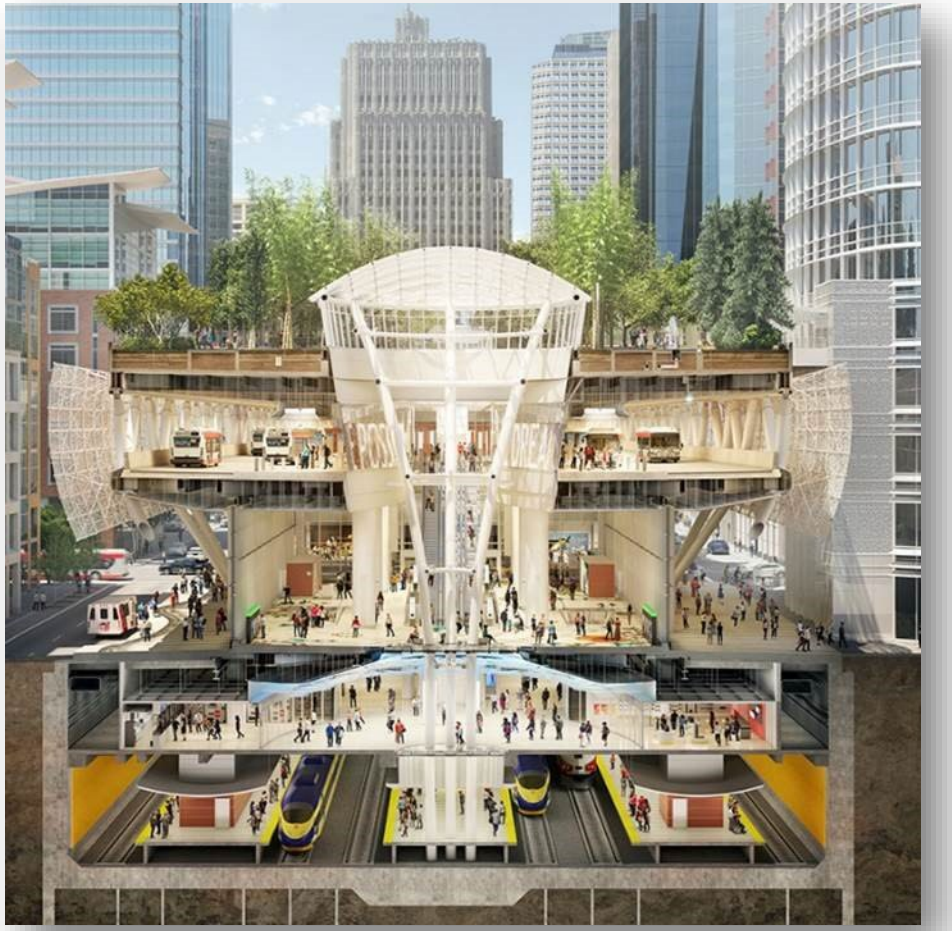
Questions:

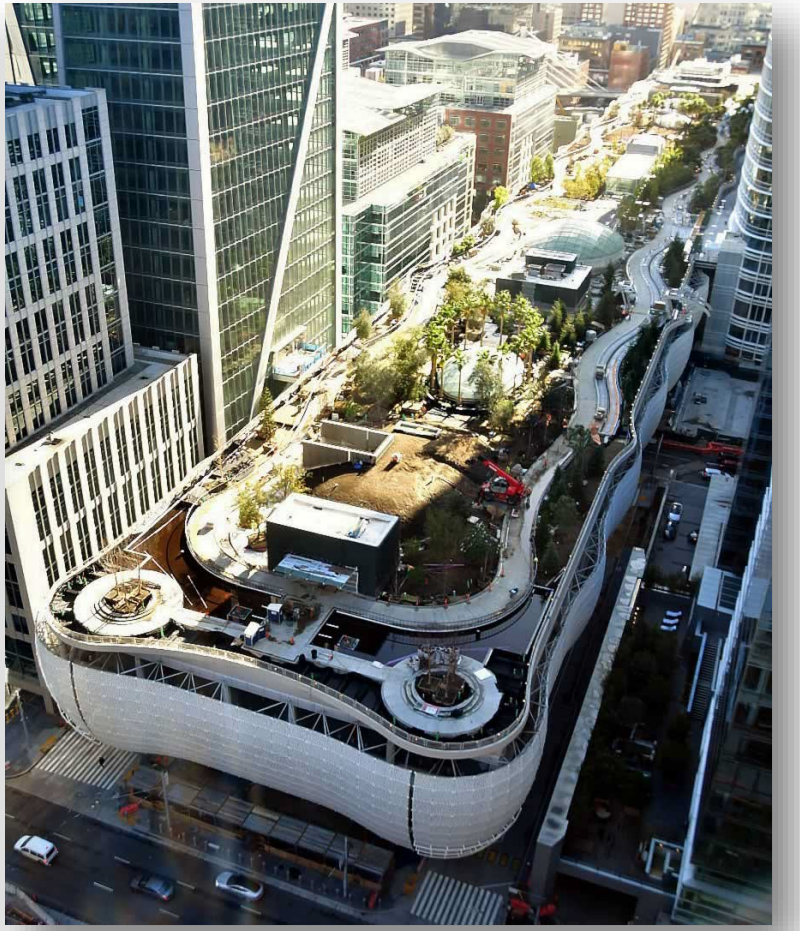
What density of development does a high-speed rail station attract and what is the effect on land values?

What markets will it serve?

Density Increase Near High-Speed Rail

- Greater Density
- Higher Towers
- More Buildings
- Integrated Mixed Use
- Skywalks (e.g., Dubai, Toronto, Chicago)
- Higher Employment Growth
- Faster Population Growth
- GDP 1-3% Nationwide in China





Source: Transbay Program media gallery, 2023

San Francisco Salesforce Transit Center

Property Value Increase in High-Speed Rail Markets

Greatest Value Near Station (50%-100%)

Citywide Property Value Increase (6%-14%)

Extent of Value Capture

- 20-minute walking distance plus regional rail plus light rail plus bike commuters (up to 18 miles)

Dallas HUB/Convention Center adds to Market Segmentation

High “Speed” Rail by Country

HSR Systems Commonly Studied by Literature and their Top Speeds

Country	Train Name	Top Speed (mph)
China	Shanghai Maglev	286
China	CR Harmony and CR Fuxing	217
Germany	DB ICE	217
France	SCNCF TGV	199
Japan	JR Shinkansen	199
Spain	Renfe AVE 103	193
South Korea	Korail KTX-Sancheon	190
Italy	Trenitalia Frecciarossa 1000	190
Taiwan	Taiwan HSR	185

Source: The 10 fastest high-speed trains in the world - Railway Technology (railway-technology.com)

Travel Demand Markets for High-Speed Rail Dallas-Arlington-Fort Worth (Business, Recreational, Entertainment)

1. HSR to Houston, Austin, and San Antonio (reduced/inefficient parking in downtown Dallas)
2. Egress/Access to Dallas Fort Worth International Airport (no second transfer)
3. Fast Travel within Region of 12.4 M in 2050 (currently 8.2M)
4. Better Connection to HUB (at-grade AMTRAK, Streetcar, Light Rail, and Regional Rail)
5. Better Access for Conventions
6. Better Access for Special Events, including Fair Park