HIGH-SPEED TRANSPORTATION
Dallas-Fort Worth

5.19.21 and 5.20.21 Public Meeting #3
Agenda

• Study Overview ......................................................... Brendon Wheeler, NCTCOG
• Public and Agency Engagement ......................... Rebekah Hernandez, NCTCOG
• Analysis Update .......................................................... Chris Masters, HNTB
• Phase 1 Recommendations .......................... Ian Bryant, HNTB
• Next Steps .............................................................. Ian Bryant, HNTB
• Public Comments ......................................................... All
Study Overview
Evaluate high-speed transportation alternatives (both alignments and technology) to:

- Connect Dallas-Fort Worth to other proposed high-performance passenger systems in the state
- Enhance and connect the Dallas-Fort Worth regional transportation system
The study area traverses:
• Dallas and Tarrant Counties
• Dallas, Irving, Cockrell Hill, Grand Prairie, Arlington, Pantego, Dalworthington Gardens, Hurst, Euless, Bedford, Richland Hills, North Richland Hills, Haltom City, and Fort Worth
• Over 230 square miles
Phased Approach

Phase 1 – Alternative Development
- Public and Agency Engagement
- Alternative Development
- Alternative Screening

Goal for Phase 1: Identify technologies and alignments to be carried into Phase 2

Phase 2 – Engineering & Environmental
- Conceptual Engineering
- National Environmental Policy Act Documentation and Approval
- Preliminary Engineering
- Financial and Project Management Plans
- Public and Agency Engagement

Goal for Phase 2: Federal environmental approval of alignment & technology
## Evaluation Methodology

### DFW HIGH-SPEED TRANSPORTATION CONNECTIONS STUDY

#### PHASE 1

<table>
<thead>
<tr>
<th>INITIAL ALTERNATIVES</th>
<th>EVALUATION OF ALTERNATIVES</th>
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<tbody>
<tr>
<td>Identify &amp; Develop Initial Alternatives</td>
<td>Level 1 (Purpose &amp; Need)</td>
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<tr>
<td></td>
<td>Evaluate adherence to Purpose &amp; Need for each alternative</td>
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<tr>
<td></td>
<td>43 alignments and 5 technologies</td>
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<tr>
<td></td>
<td>Level 2 (Fatal Flaw &amp; Ranking)</td>
</tr>
<tr>
<td></td>
<td>Evaluate alternatives for fatal flaws and rank remaining alternatives</td>
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<tr>
<td></td>
<td>23 alignments and 4 technologies</td>
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#### PHASE 2

<table>
<thead>
<tr>
<th>ALTERNATIVES CARRIED FORWARD</th>
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<tr>
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<tr>
<td>Draft Environmental Document</td>
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</tbody>
</table>

Ongoing Public, Stakeholder, and Agency Engagement
Phase 1: Level 1 Alignments
Phase 1: Level 2 Alignments
Phase 1: Level 3 Alignments
Modes of Transportation

- Conventional
- Higher-Speed
- High-Speed
- Maglev
- Hyperloop
- Emerging Technologies

Imagery provided by NCTCOG Staff, Schon Noris Photography, Texas Central Partners, Ren Long/China Features Photos, AECOM, Virgin Hyperloop
Modes of Transportation

- Conventional
- Higher-Speed
- High-Speed

Imagery provided by NCTCOG Staff, Schon Noris Photography, Texas Central Partners, Ren Long/China Features Photos, AECOM, Virgin Hyperloop
Public & Agency Engagement Update
Completed Public and Agency Engagement (2020-2021)

Over 90 meetings held so far

• Public meetings
• Technical Work Group
• Federal and State Coordination
• Technology Forum & one-on-ones with providers
• Transportation Agencies and railroads
• Study area cities
• Elected officials
• Resource agencies
• Community groups and organizations

Thank you for your participation in our previous meetings!

You can find responses to questions and comments from previous meetings and a FAQs document at our project website: www.nctcog.org/dfw-hstcs >> Project Information
Other Engagement Activities

DFW High-Speed Update

Monthly Newsletter

• Latest updates on progress
• Upcoming events for the public to attend
• Publishes last Friday of the month
• Sign up at: https://bit.ly/2RaZ3Ju
Other Engagement Activities

• Allows the public to review all Level 3 alignments
• Asking for feedback on areas of significance and concern
• PIMA link
Additional Outreach

• Public Meeting comment period open until June 18, 2021!
• Project team is available to speak at events or to groups within the project study area.
• Please contact us with any additional meeting requests or outreach suggestions!

Rebekah Hernandez
Communications Manager
682.433.0477
rhernandez@nctcog.org
Stay Connected to DFWHSTC

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

For future meeting dates, please monitor the project website.
Analysis Update

• Developed constraints maps and conceptual design for remaining alignments
• Purpose of initial design is to inform the Level 3 Screening only; actual alignments are not defined until Phase 2
• Technology Forum
  ▪ Purpose: Solicit information from high-speed transportation technology professionals to inform technology screening and design
  ▪ Technology Scan (November 2020)
  ▪ Industry Workshop (December 2020)
  ▪ One-on-One Meetings (January – April 2021)
  ▪ Independent Review (March – April 2021)
IH 30 Options for Further Refinement

**IH 30 West**
Opportunity to reconstruct freeway

A) Redesign freeway to incorporate HST System as integrated corridor
B) Design HST System along periphery of existing freeway to avoid infrastructure conflicts

**IH 30 East**
No additional major improvements planned

A) Design HST System within managed lanes footprint
B) Design HST System along periphery of existing freeway to avoid infrastructure conflicts
Design Update

Urban Center Connection Concepts
Urban Center Connection Options

- Urban center connections not evaluated in Phase 1: Level 3 Screening; will be evaluated in Phase 2
- Similar urban center connection configuration for all alignment alternatives
- Collaborate with TxDOT, cities, relevant jurisdictions, and stakeholders
- Develop consolidated list of pros and cons for each connection concept
Preliminary Urban Connection Concepts

Fort Worth

Dallas

Central Station

Proposed HSR Station Site

I-30

Commerce St
Type of factors to be considered during urban connection concept evaluation in Phase 2

- Impacts upon existing and planned transportation infrastructure
- Impacts upon existing and planned developments
- Environmental considerations
- Adverse visual impacts
- Adverse effects to high-speed corridor capital, operations, and maintenance costs
- Economic development opportunities
High-speed stations typically much larger than commuter/light rail stations

- Large economic development impact potential
- High-density developments surrounding stations
- Serve as huge multimodal hubs for entire regions

Source: Mark Rowse, and Winson Wong, South China Morning post, 2019

Turkey HSR Ankara Station

Source: edilon/sedra, 2016.

Virgin Hyperloop Concept Station

Source: Virgin Hyperloop

Hong Kong HSR West Kowloon Station

Source: Mark Rowse, and Winson Wong, South China Morning post, 2019

Hyperloop TT Concept Station

Source: Hyperloop TT
Phase 1 Recommendations
## Phase 1: Level 3 Screening Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Potential water body &amp; floodplain impacts</td>
<td>Total length (linear feet) of alignment that crosses a water body or floodplain</td>
</tr>
<tr>
<td>Potential wetland impacts</td>
<td>Total acres of wetland within the proposed right-of-way</td>
</tr>
<tr>
<td>Existing structures that could be impacted by the potential right-of-way</td>
<td>Number of potential structures displaced (houses, outbuildings, business, public buildings, billboards, etc.)</td>
</tr>
<tr>
<td>Potential parks/public recreation area impacts</td>
<td>Total acres of parks and public recreational areas within proposed right-of-way</td>
</tr>
<tr>
<td>Potential historic resources impacts</td>
<td>Number of national and state historic sites potentially impacted</td>
</tr>
<tr>
<td>Noise &amp; Vibration - # of receptors</td>
<td>Number of sensitive receptors (residences, educational facilities, hospitals, childcare facilities, senior housing, theaters) within 500 feet (250 feet on each side of centerline)</td>
</tr>
<tr>
<td>Visual/Aesthetics - # of receptors</td>
<td>Number of sensitive receptors (historic neighborhoods, historic places, cultural landmarks or districts, parks and open space) within 500 feet (250 feet on each side of centerline)</td>
</tr>
<tr>
<td>Vertical profile</td>
<td>Does the known profile of the alignment create opportunity for the possible use of multiple high-speed transportation modes?</td>
</tr>
<tr>
<td>Constructability/Operability</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
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</tr>
<tr>
<td>Required non-public right-of-way</td>
<td>Total distance of new or non-public right-of-way needed</td>
</tr>
<tr>
<td>Potential adverse impacts to transportation systems during construction</td>
<td>Potential adverse impacts to existing transportation systems during construction</td>
</tr>
<tr>
<td>Potential opportunity to improve transportation systems</td>
<td>Potential opportunity to improve safety, capacity, and/or state of good repair of existing transportation systems during construction</td>
</tr>
<tr>
<td>Technology Maturity (Safety Systems)</td>
<td>Technology Readiness Levels (TRLs) for safety systems requirements including emergency response, ventilation, fire life safety, etc.</td>
</tr>
<tr>
<td>Technology Maturity (Operations Systems)</td>
<td>Technology Readiness Levels (TRLs) for operational systems requirements including signaling, autonomous vehicle operations, control systems, etc.</td>
</tr>
<tr>
<td>Technology Maturity (Revenue Operation)</td>
<td>Number of routes (10+ miles) currently in revenue operation in the world</td>
</tr>
<tr>
<td>Potential to serve as an extension to planned high-speed systems</td>
<td>Ability of a mode to serve as an extension to planned high-speed systems assuming specific chosen technology, equipment, and specifications are appropriately compatible</td>
</tr>
<tr>
<td>Potential Adverse Impacts to Transportation Systems</td>
<td>Are there any potential adverse impacts to existing transportation systems due to mode-specific operations or maintenance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital (Construction) Cost</td>
<td>Rough order of magnitude construction cost for structure, ancillary facilities, maintenance facilities and vehicles, per mile</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Time</td>
<td>Running time between Dallas and Fort Worth under an express scenario</td>
</tr>
<tr>
<td>Vertical Profile</td>
<td>How well can each technology accommodate higher grades?</td>
</tr>
<tr>
<td>Max Curve Speed</td>
<td>Theoretical design speed at which a mode is able to travel through curves in the alignment</td>
</tr>
</tbody>
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Phase 1: Level 3 Alignments

West Evaluation Limit: Beach Street

East Evaluation Limit: Beckley Ave
Phase 1: Level 3 Alignment Recommendations

• Highest ranked IH 30 Alignments
  ▪ Fewest existing structures and parks/open spaces within proposed right-of-way
  ▪ Lowest potential noise & vibration impacts
  ▪ Least amount of non-public right-of-way required
  ▪ Lowest potential adverse impact to existing transportation infrastructure

• Recommend to carry these alignments into Phase 2
Recommended Phase 1 Alignments
Phase 1: Level 3 Mode
Recommendations

• Highest ranked: High-Speed Rail and Hyperloop
  ▪ High-Speed Rail scores high across all technology maturity criteria
  ▪ Hyperloop scores high in travel time, vertical profile, and max curve speed, and has the lowest potential adverse impact to existing transportation systems from operations and maintenance activities
  ▪ Maglev capital cost is cost-prohibitive
• Recommend to carry only High-Speed Rail and Hyperloop into Phase 2
## Technology Readiness Levels

<table>
<thead>
<tr>
<th>Basic Research</th>
<th>Applied Research</th>
<th>Development</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Basic principles and research.</td>
<td>4 Components validated in a laboratory environment.</td>
<td>6 Prototype demonstrated in relevant environment.</td>
<td>9 Technology refined and adopted.</td>
</tr>
<tr>
<td>2 Application formulated.</td>
<td>5 Integrated components demonstrated in a laboratory environment.</td>
<td>7 Prototype demonstrated in operational environment.</td>
<td></td>
</tr>
<tr>
<td>3 Proof of concept.</td>
<td></td>
<td>8 Technology proven in operational environment.</td>
<td></td>
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</tbody>
</table>

- **Hyperloop**
- **High-Speed Rail**
Technology Readiness

- Technology Readiness Levels
  - Hyperloop – Technology Readiness Level 6
  - High-Speed Rail – Technology Readiness Level 9
- Advancing proven (High-Speed Rail) and evolving (Hyperloop) technologies
- Project schedule allows time for technology advancement
- Hyperloop technology is advancing rapidly
Potential Typical Sections

Infrastructure characteristics of High-Speed Rail and Hyperloop
Next Steps
Next Steps: Phase 1 Wrap-up

• Continue to accept public comments on the Phase 1 results and recommendations through June 18, 2021

• Continued coordination with:
  ▪ Federal Transit Administration and Federal Railroad Administration
  ▪ Cities and transportation providers
  ▪ Study area stakeholders
  ▪ Federal and State resource agencies

• Requesting Regional Transportation Council Approval of Phase 1 Recommendations (July 8, 2021)
Summer 2021 Engagement

• Targeting outreach to community groups in the remaining alignment corridors

  Please contact us if you want us to speak to your group

• Open Houses

  ▪ In-person events that will allow people to ‘walk through’ Phase 1 studies before beginning Phase 2
  ▪ In development to ensure safety protocols will be managed
Next Steps: Phase 2 Elements

- Two-year timeframe anticipated (August 2021 – August 2023)
- Environmental document in accordance with National Environmental Policy Act
- Preliminary Engineering
- Financial and Project Management Plans
- Public, Stakeholder, and Agency outreach
Phase 2 Schedule – 24 Months

Pre-NEPA Activities
- Class of Action Determination
- Scoping

Develop 15% design
- Field studies
- Develop draft NEPA document

Public Scoping Meetings

Public Hearings

Publication of NEPA document
- Public & Agency comment period

Review comments & identify preferred alternative
- Develop 30% design
- Develop final NEPA document

Publish final NEPA document
- NEPA decision
Public Comment

How to provide comments

At the public meeting
- Click “Join the Podium”
- Enter and submit question or comment
- Comment will be read aloud

Before/after public meeting
- Go to project website at www.nctcog.org/dfw-hstcs
- Click on “submit a comment”
- Or click on “Give input through online mapping” to give a location-specific comment

Your input is extremely important!

Deadline for comments is June 18, 2021
Thank you for your interest and time!

Online Comment Form and Project Information:
www.nctcog.org/dfw-hstcs

General Questions:
Email HST_DFW@nctcog.org