

North Central Texas Council of Governments



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IRVING TO FRISCO PASSENGER RAIL CORRIDOR STUDY

TexITE – Dallas Section

Brendon Wheeler, P.E.

February 11, 2022

Overview

Background and Scope

Station Location and Land Use Analysis

Travel Demand and Ridership

Study Recommendations



Mobility 2045 Transit Recommendations

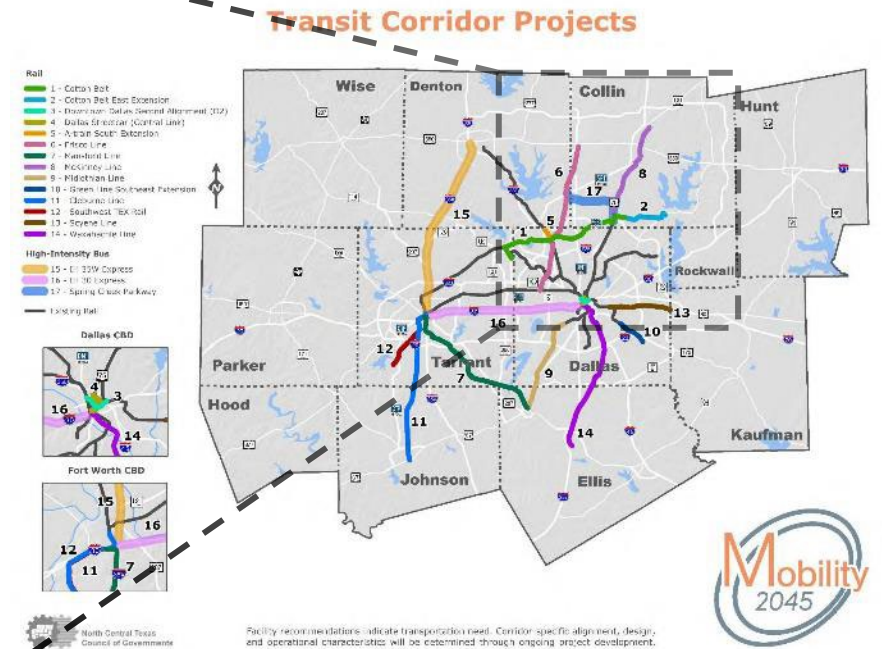
- Rail**
- 1 - Cotton Belt
 - 2 - Cotton Belt East Extension
 - 3 - Downtown Dallas Second Alignment (D2)
 - 4 - Dallas Streetcar (Central Link)
 - 5 - A-train South Extension
 - 6 - Frisco Line
 - 7 - Mansfield Line
 - 8 - McKinney Line
 - 9 - Midlothian Line
 - 10 - Green Line Southeast Extension
 - 11 - Cleburne Line
 - 12 - Southwest TEX Rail
 - 13 - Scyene Line
 - 14 - Waxahachie Line
- High-Intensity Bus**
- 15 - IH 35W Express
 - 16 - IH 30 Express
 - 17 - Spring Creek Parkway
- Existing Rail



Mobility 2045 Future Rail Corridors in Collin County

- 6 - Irving to Frisco Line
- 8 - McKinney Line
- 2 - Cotton Belt East Extension

February 11, 2022



Facility recommendations indicate transportation need. Corridor specific alignment, design, and operational characteristics will be determined through ongoing project development.

Background

Previous Studies:

Regional Rail Corridor Study, NCTCOG (2005)

Frisco Corridor - Conceptual Engineering and Funding Study, NCTCOG (2010)

2040 Transit System Plan – Frisco Corridor Transit Opportunities, DART (2017)

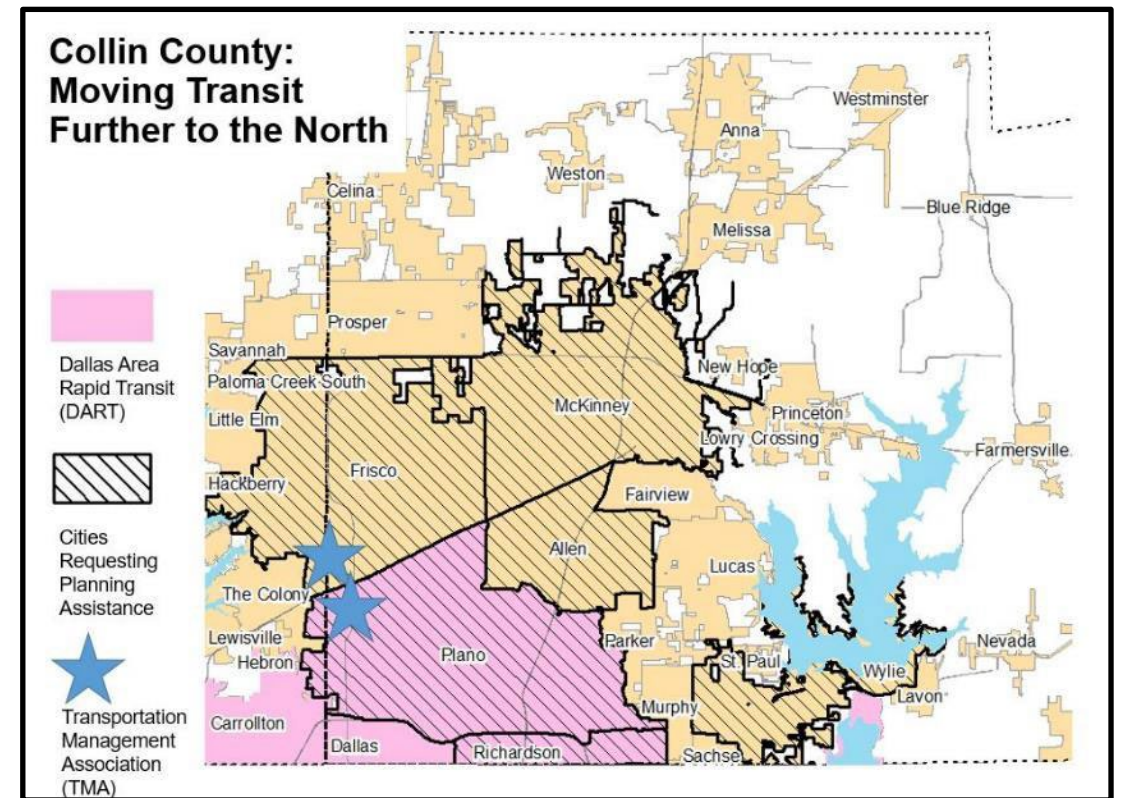
This Study:

Completed in conjunction with Collin County Transit Study

Project Advisory Committee

Monthly

Public Officials, City and County Staff, Transit Agencies, and BNSF



Study Scope

Station location refinement

- 24 possible locations

- 12 selected for ridership modeling

Station area land use analysis

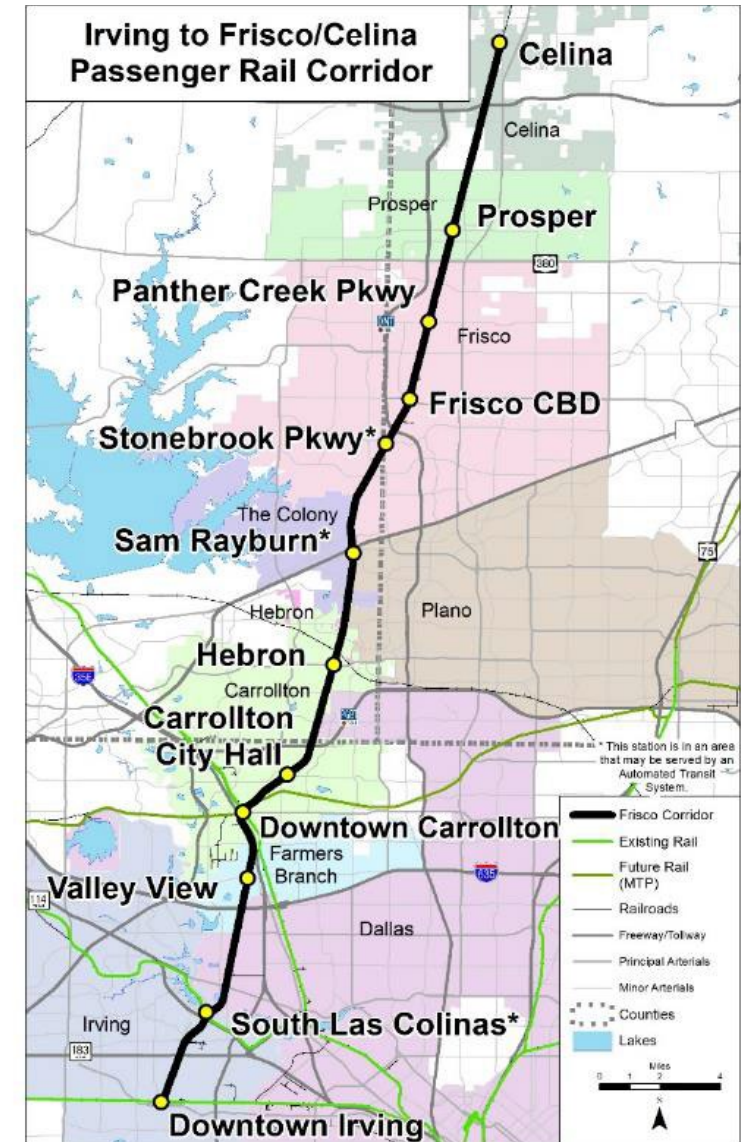
Extension north to Prosper and Celina

Travel demand / ridership forecasting

- Interlining analysis

People Mover/Automated Transportation System (ATS) connections

Cost analysis, funding, and governance/operations management



Corridor Statistics

Rail Technology: Modern DMU (TEXRail/Cotton Belt/A-Train)

37 miles in length

\$1.5 billion estimated capital cost (\$40 million per mile)

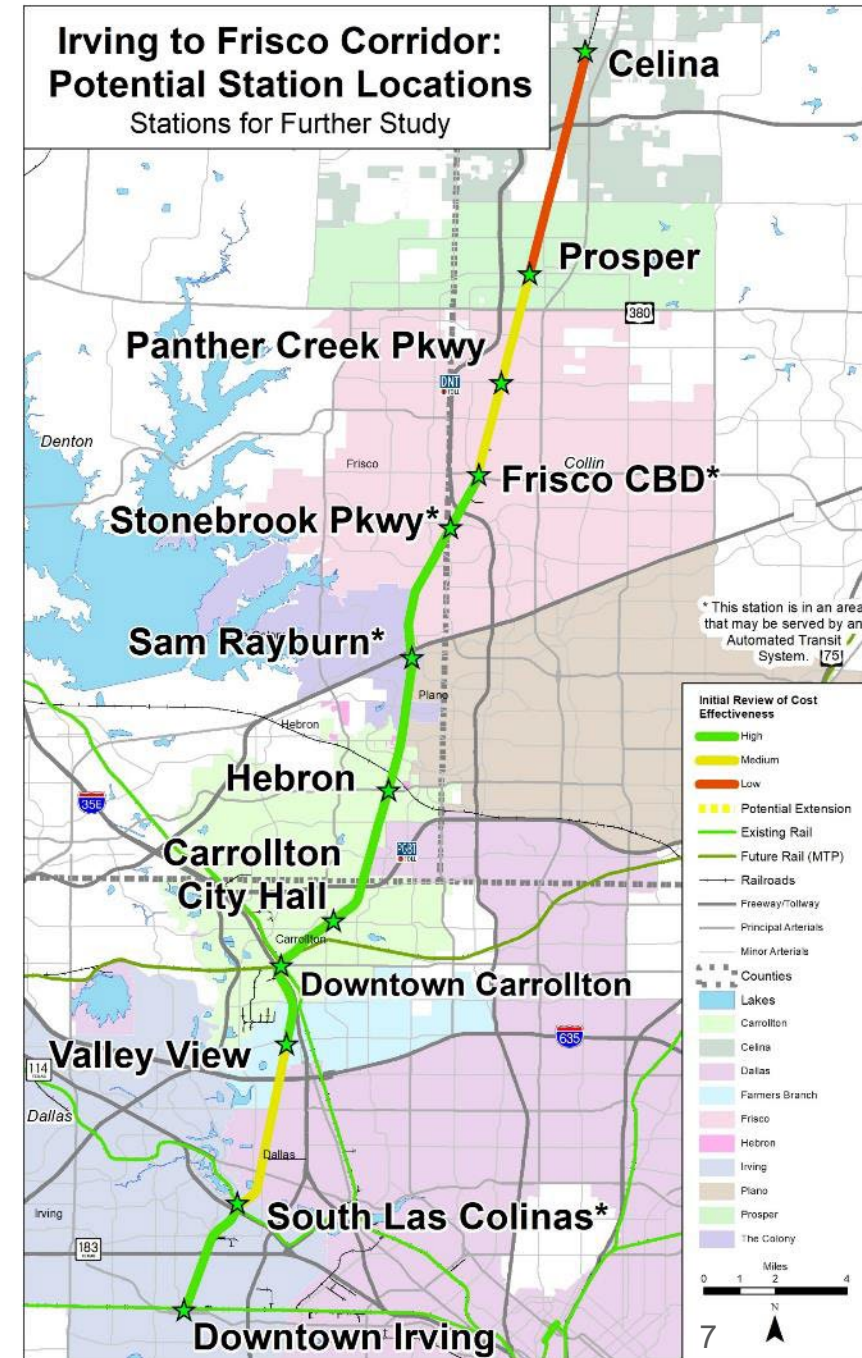
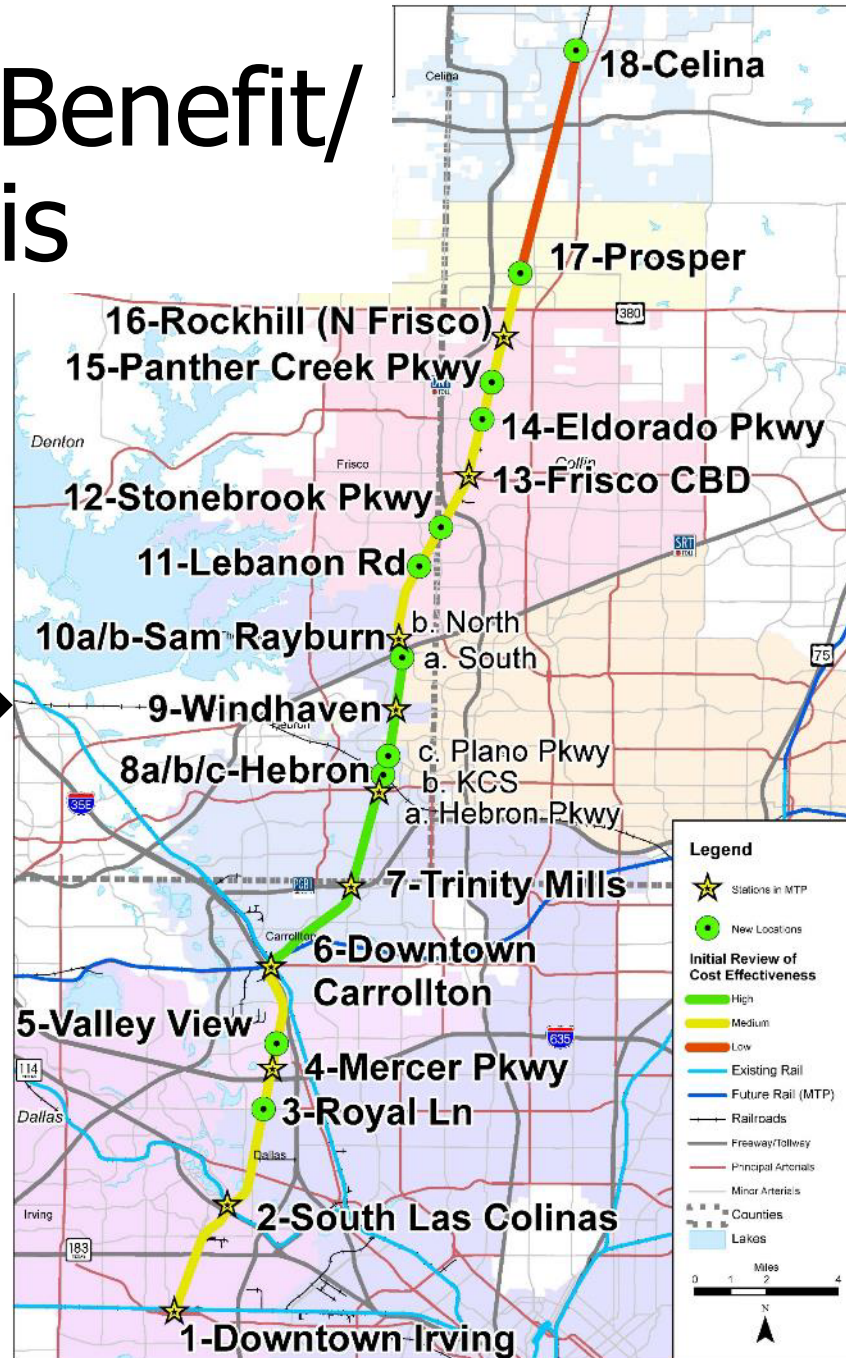
\$24 million estimated annual operating/maintenance cost

Level of Service: 20 minute peak/60 minute off peak frequency

Estimated Ridership: 17,000 – 24,000 riders per weekday*

Poor Man's Benefit/ Cost Analysis

Original Corridor with
Potential Stations
June 18, 2020 PAC



SH 121 Station / Legacy Area

Preferred Location: South side of SH 121/Sam Rayburn Tollway

Access to Legacy West via Headquarters Drive

Adjacent to Grandscape development

Land Use Analysis

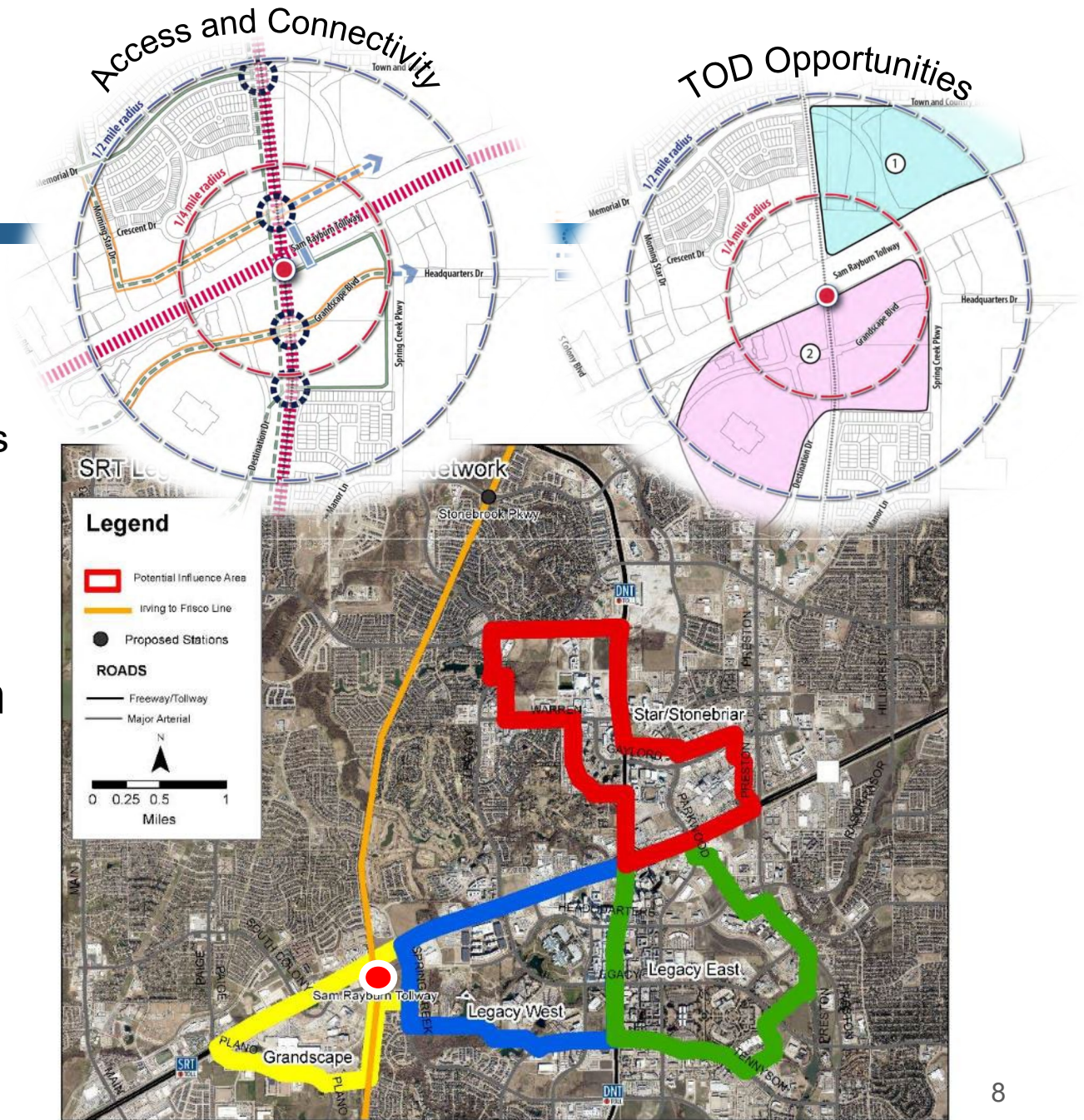
Automated Transportation System

Demand analysis

Grade separated – retrofit design

Regional connection / development circulator

Consolidated parking strategy



Downtown Carrollton Hub

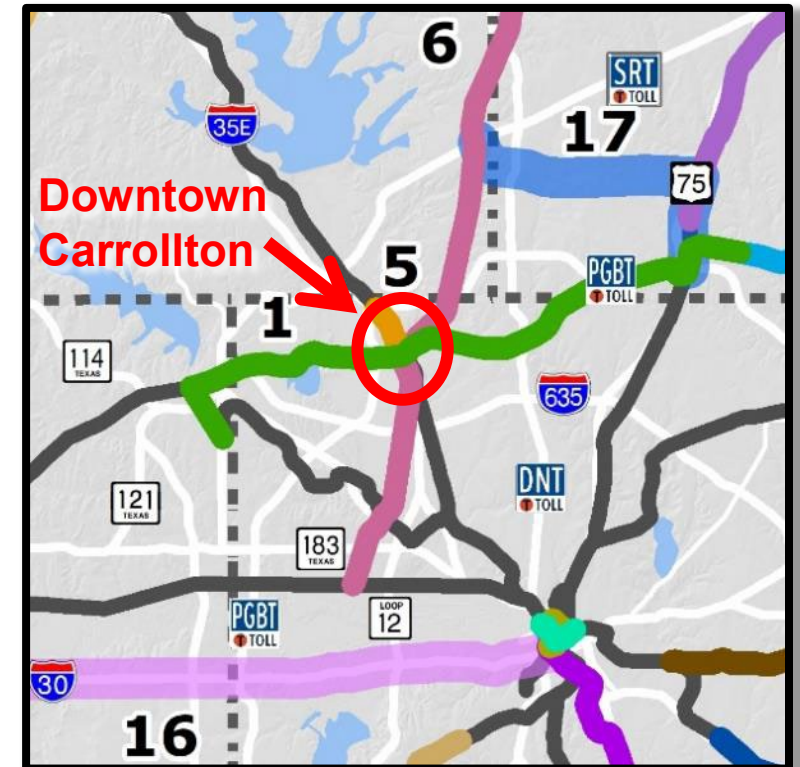
Downtown Carrollton – unique nexus:

- A-Train
- Green Line
- Silver Line
- Irving to Frisco Corridor

Comparable station “activity” to other high-performing stations in the region

“Activity” includes:

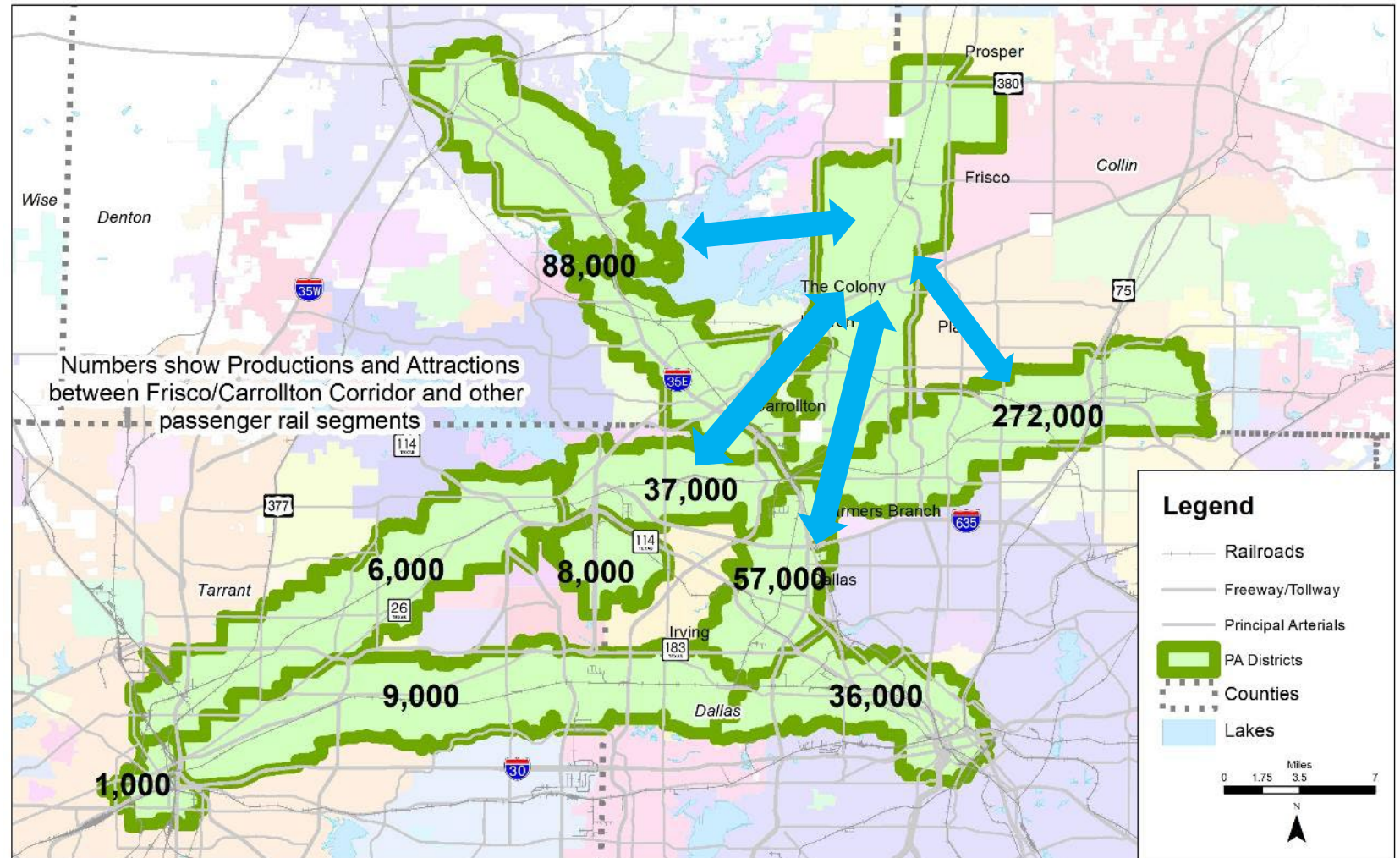
- Boardings (ons)
- Alightings (offs)
- Transfers



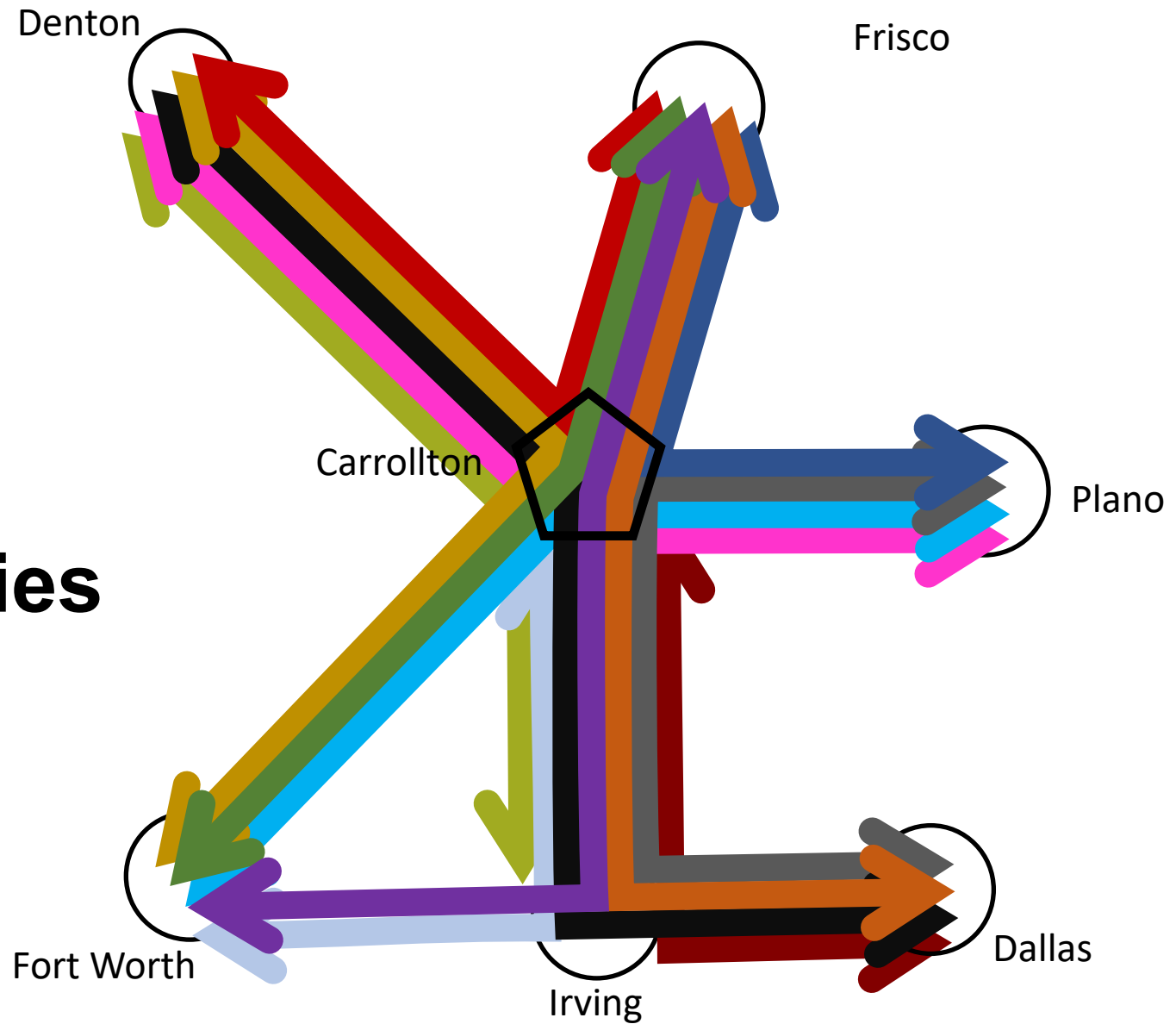
Productions & Attractions To/From Frisco-Carrollton Segment

Travel demand projections shown (productions & attractions) are representative of **all** trips, not just transit trips

Regions shown in green (PA Districts) are 2-mile buffers around segments of the Regional Rail network

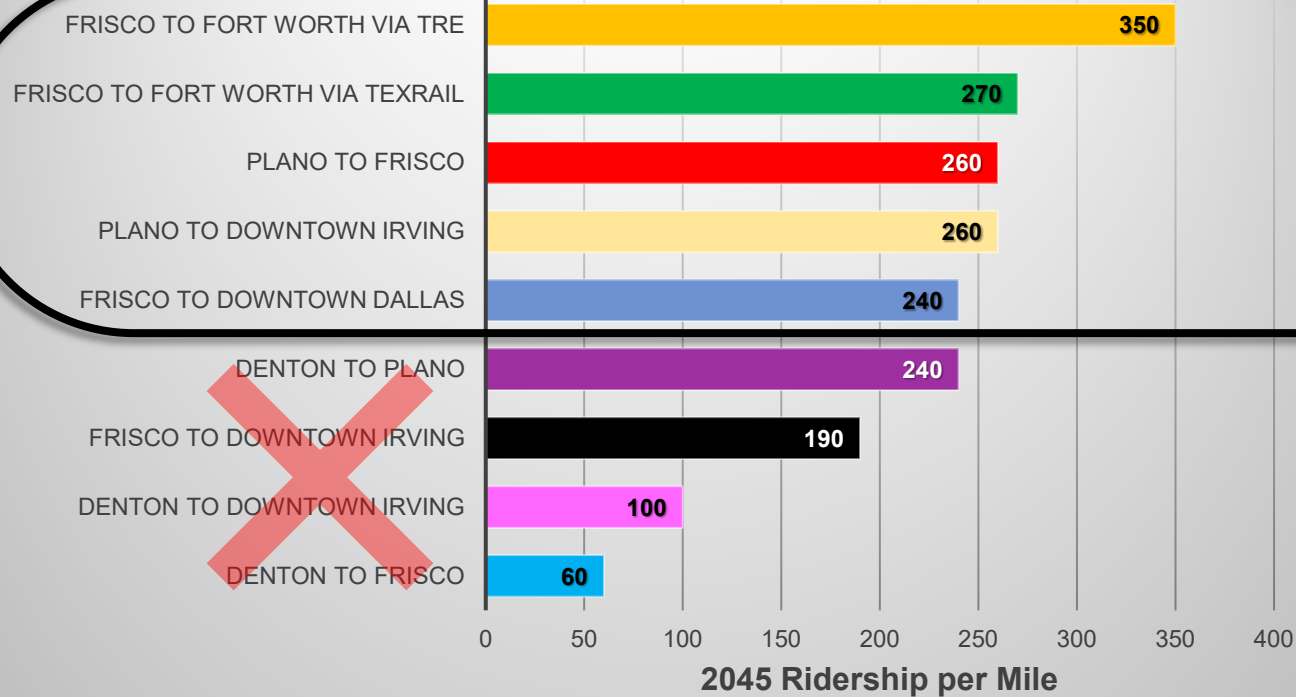


Interlining Opportunities

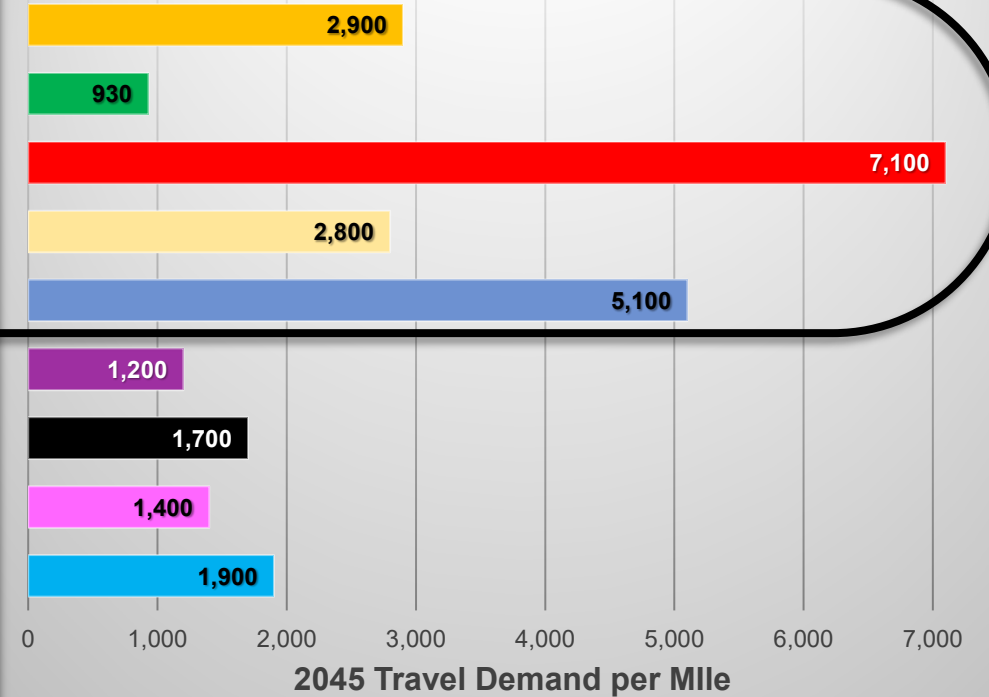


Initial Analysis Technique Comparison

Interlining Route Ridership per Mile



Travel Demand per Mile

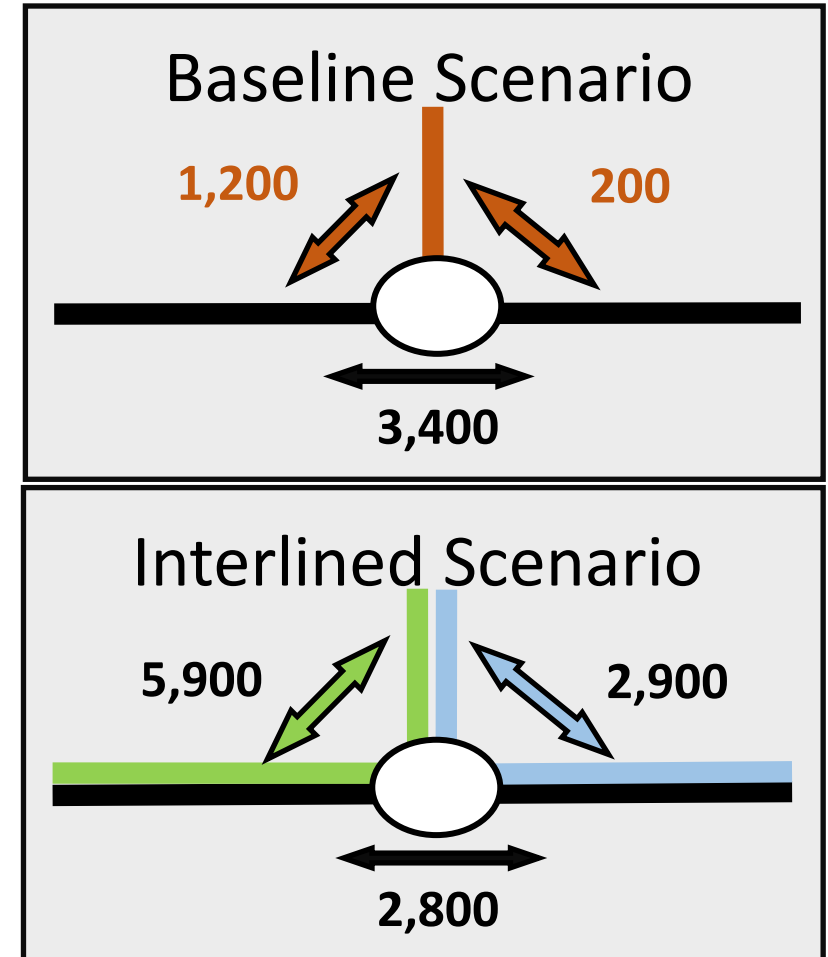


Trips That Benefit from Interlining: Irving Wye

Baseline scenario requires transfer to move between TRE corridor and Irving-to-Frisco corridor

No transfers required in Interlining scenario

Strongest desire for trips between North (Irving/Frisco) and West (Fort Worth) legs



Ridership Forecasting Results

Interlining

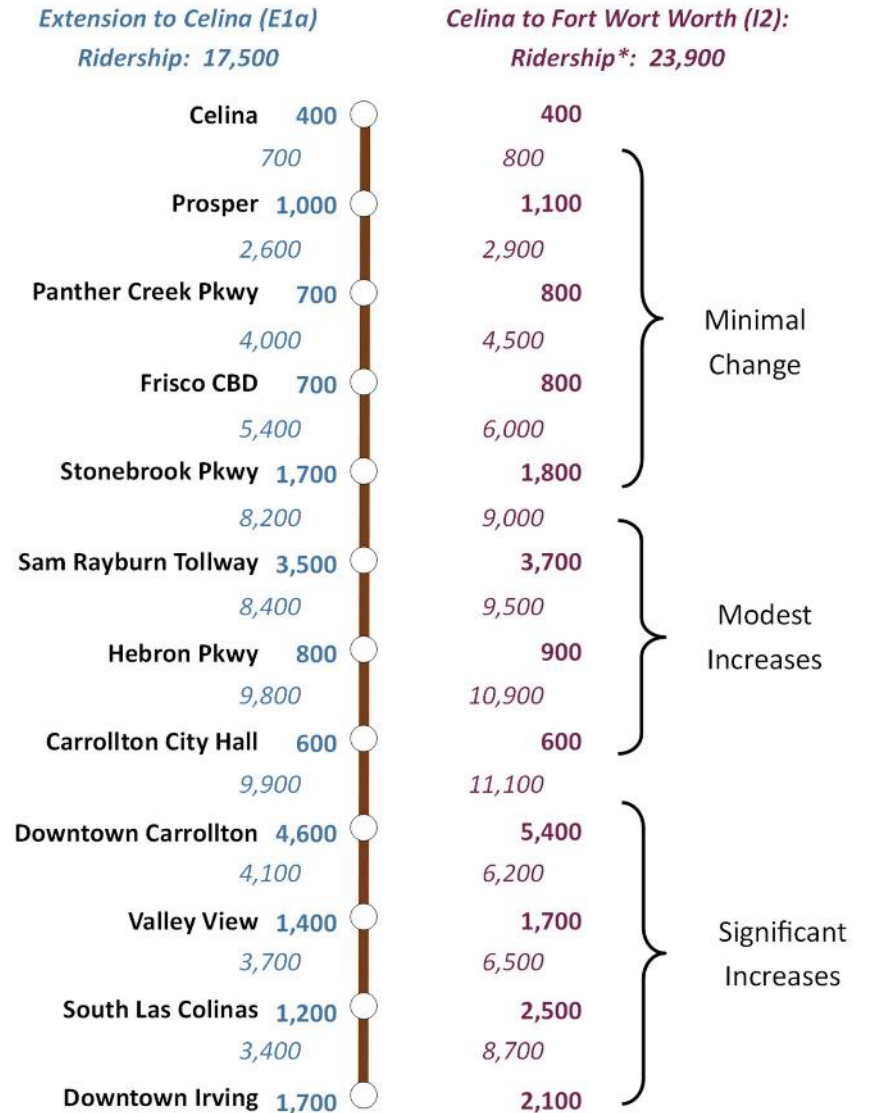
Highest ridership if interlined with west (Fort Worth) leg of TRE

Significantly increases ridership on Irving to Carrollton segment

Corridor Termini

Southern: Downtown Irving (Fort Worth via TRE)

Northern: Celina



*Total Ridership on the Frisco-to-Celina portion of the line only.

Original Analysis per June 18, 2020 PAC

POOR MAN'S BENEFIT/COST RATIO TABLE Irving to Frisco Passenger Rail Corridor

Link	Station		Distance (miles)	Average Link Cost	Link Weekday	Link Cost per Weekday Rider
	From	To		(Distance * Unit Cost, \$ millions)	Ridership Volume	
1	Celina	Prosper	6.4	\$245	700	\$350,000
2	Prosper	North Frisco	1.8	\$68	1,700	\$40,000
3	North Frisco	Downtown Frisco	4.0	\$153	3,400	\$45,000
4	Downtown Frisco	Sam Rayburn	4.8	\$184	7,000	\$26,300
5	Sam Rayburn	Windhaven	2.1	\$79	8,100	\$9,800
6	Windhaven	Hebron	2.3	\$90	9,100	\$9,900
7	Hebron	Trinity Mills	2.7	\$105	9,500	\$11,100
8	Trinity Mills	Downtown Carrollton	3.1	\$120	9,800	\$12,200
9	Downtown Carrollton	Mercer Parkway	3.0	\$116	3,600	\$32,200
10	Mercer Parkway	South Las Colinas	4.0	\$156	3,400	\$45,900
11	South Las Colinas	Downtown Irving	3.3	\$127	3,400	\$37,400

Lowest Cost Per Weekday Rider
Intermediate Cost Per Weekday Rider
Highest Cost Per Weekday Rider

Notes: Stations (minus Prosper and Celina) and Demographics based on Mobility 2045 (full commuter service). Unit Cost determined from TEXRail capital cost divided by its length; approx. \$39 million/mile.

February 11, 2022

Updated Analysis per January 21, 2021 PAC

POOR MAN'S BENEFIT/COST RATIO TABLE Irving to Frisco Passenger Rail Corridor

Link	Station		Distance (miles)	Average Link Cost	Link Weekday	Link Cost per Weekday Rider
	From	To		(Distance * Unit Cost, \$ millions)	Ridership Volume	
1	Celina	Prosper	6.4	\$245	800	\$306,300
2	Prosper	Panther Creek Parkway	3.1	\$120	2,900	\$41,400
3	Panther Creek Parkway	Frisco CBD	2.6	\$100	4,500	\$22,200
4	Frisco CBD	Stonebrook Parkway	1.6	\$62	6,000	\$10,300
5	Stonebrook Parkway	Sam Rayburn	3.8	\$147	9,000	\$16,300
6	Sam Rayburn	Hebron	3.8	\$147	9,500	\$15,500
7	Hebron	Carrollton City Hall	3.9	\$151	10,900	\$13,900
8	Carrollton City Hall	Downtown Carrollton	1.8	\$69	11,100	\$6,200
9	Downtown Carrollton	Valley View Lane	2.3	\$89	6,200	\$14,400
10	Valley View Lane	South Las Colinas	4.8	\$185	6,500	\$28,500
11	South Las Colinas	Downtown Irving	3.3	\$127	8,700	\$14,600

Lowest Cost Per Weekday Rider
Intermediate Cost Per Weekday Rider
Highest Cost Per Weekday Rider

Notes: Stations and Link Weekday Ridership based on Interlining Scenario I2 (Interlining west leg of TRE with Irving to Frisco Line; east leg of TRE is separate service); Demographics based on Mobility 2045. Unit Cost determined from TEXRail capital cost divided by its length; approx. \$39 million/mile.

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Recommendations: Irving to Frisco Passenger Rail Corridor

Phased Approach

Supply-side approach coordinated with BNSF

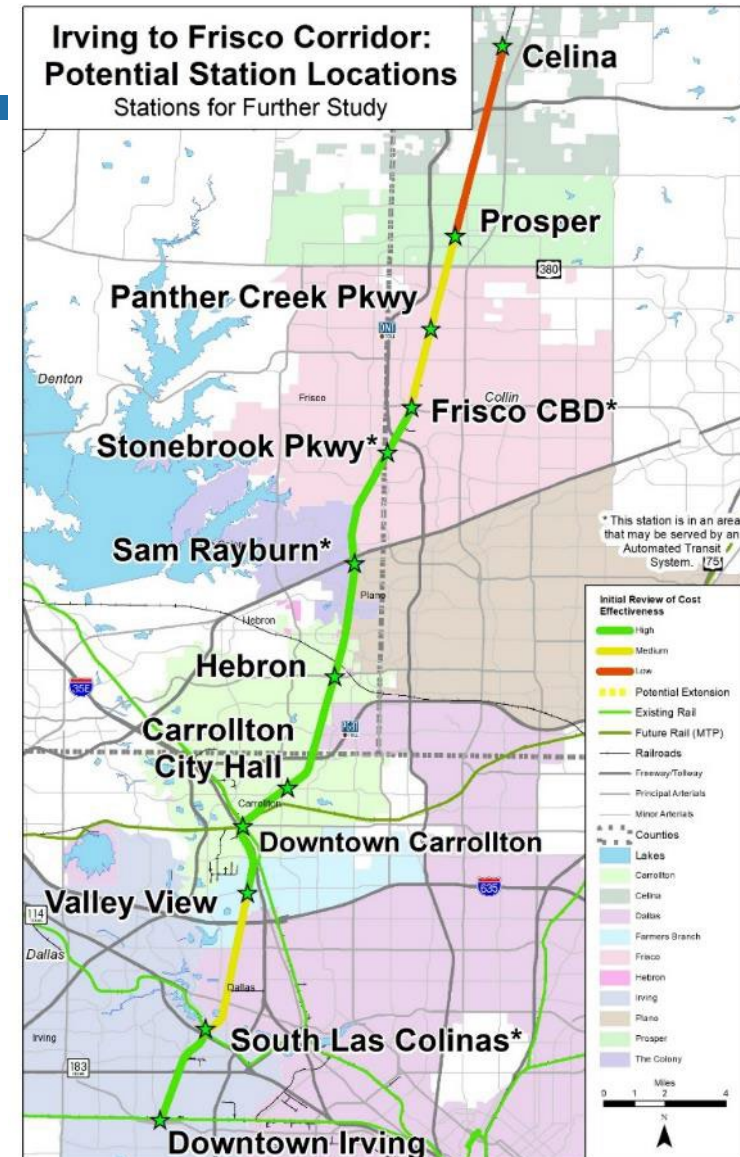
Advance planning with TxDOT and BNSF for “Poor Man’s Rail”

Incorporate recommendations into Mobility Plan Update

Interline with west leg of TRE

Northern limits extended to Celina

Continued coordination among county, cities, and transit agencies



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www.nctcog.org/ccts

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