



Dallas-Fort Worth
CLEAN CITIES

Electric Vehicle and Natural Gas Vehicle Data Collection Projects

Amy Hodges,
Senior Air Quality Planner

Regional Freight Advisory
Committee Meeting
May 19, 2020

Driving Electrification Through the Power of Data



Electric Vehicle Widescale Analysis for
Tomorrow's Transportation Solutions

www.ewwatts.org



\$4M Department of Energy (DOE) Award for National Project Led by Energetics



Collect real-world use data from 1,600 plug-in electric vehicles (PEVs) and 10,000 charging stations nationwide



Validate, clean, anonymize (remove all personally identifiable information), analyze, and summarize data



Share aggregated data with DOE and national laboratories



Share public summaries throughout project; anonymized public dataset at end of 2022

EV WATTS PROJECT TEAM

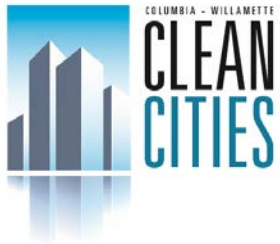


Project Lead

Clean Cities Coalition
Admin. Lead



Implementation Partners



Kansas City Regional



Dallas-Fort Worth
CLEAN CITIES

Clean Cities



Driving Electrification Through the Power of Data

DFW CLEAN CITIES ROLE



**Dallas-Fort Worth
CLEAN CITIES**

Awarded as Regional Project Partner

One of Ten Clean Cities Partnering Nationwide

Goals:

Gather and Secure Regional Data Partner Commitments from Organizations, Fleets, and Projects Representing a Variety of Applications

Monitor and Facilitate Additional Data Collection Over Project Years

Disseminate Study Results and Individual Fleet Analysis Reports



Driving Electrification Through the Power of Data

PEV AND CHARGING STATION DATA COLLECTED

Vehicles

- All-electric and plug-in hybrid electric vehicles
- Light-, medium-, and heavy-duty vehicles
- Trip-level, longitudinal vehicle data (from telematics)

Charging Infrastructure

- AC Level 2 and DC fast charge
- Various sites: corridors, workplace, multi-unit dwellings, curbside, fleet, commercial, etc.
- Session-level or interval-level data



Variety of geographic areas, climates, and topography



Driving Electrification Through the Power of Data

BECOME A REGIONAL EV WATTS DATA PARTNER

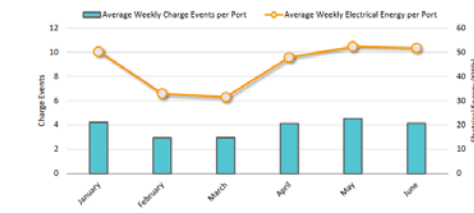
To Become a Data Partner You Must Have One or More of the Following:

- PEVs
 - Have Telematics that Tracks Trip Level, Longitudinal Data
 - OR, Willing to Install Free Data Loggers on Your Vehicle
- Charging Stations that Track Session Level or Interval Level data

Participating Fleets Will Receive:

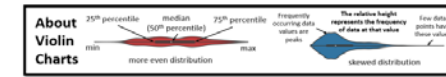
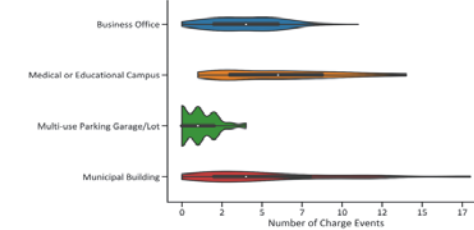
- Individualized Reports and Trend Analysis

Level 2 Port Utilization



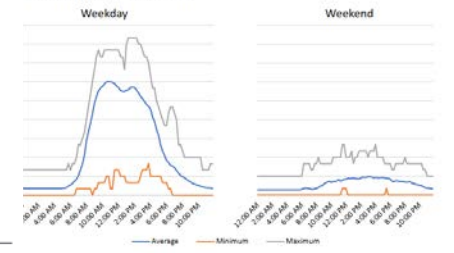
Level 2 Weekly Charging Events by Venue Type

Stations at municipal building experience the broadest range of utilization levels, but stations at Medical or Educational Campus locations have the highest median of charging events per week.

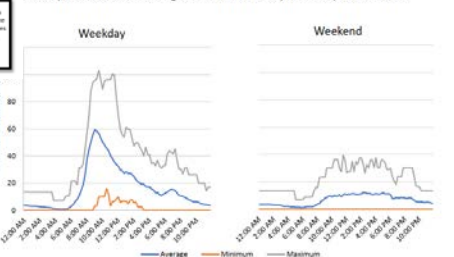


Impacts due to Level 2 Charging Use

Ability: Percentage of active charging ports in use across the time of day for weekdays and weekends. n is considerably higher during weekdays.



Total Charging Demand: Total power draw (calculated using average power per charging event for the duration) from all stations in the Program across the time of day for weekdays and weekends.



Dallas-Fort Worth
CLEAN CITIES

Contact cleancities@nctcog.org To Become a Data Partner

ENERGETICS

A Division of Akimeka, LLC



Driving Electrification Through the Power of Data

NGV UP-TIME

Natural Gas Vehicle U.P.-T.I.M.E. Analysis
*U p d a t e d P e r f o r m a n c e T r a c k i n g
I n t e g r a t i n g M a i n t e n a n c e E x p e n s e s*

<https://www.cleanfuelsohio.org/ngv-uptime>

NATURAL GAS VEHICLE U.P.-T.I.M.E. ANALYSIS



\$500k Department of Energy (DOE) Award for National Data Collection Project Led by Clean Fuels Ohio



Quantify differences in maintenance costs between diesel and natural gas vehicles (NGVs)



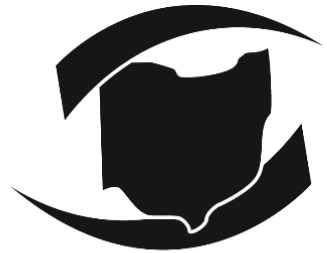
Determine maintenance cost changes/improvements of newer generation NGVs compared to older generation NGVs



Capture impacts of different technology solutions and best practices that impact/reduce maintenance costs

NGV U.P- T.I.M.E PROJECT TEAM

Project Lead



Clean Fuels Ohio

Major Project Participants



Dallas-Fort Worth
CLEAN CITIES



TULSA
CLEAN CITIES



DFW CLEAN CITIES ROLE



**Dallas-Fort Worth
CLEAN CITIES**

Awarded as Regional Project Partner

One of Five Clean Cities Partnering Nationwide

Goals:

Recruit Fleet Data Partners

Facilitate Execution of Data Sharing Agreements

Disseminate Study Results and Individual Fleet Analysis Reports

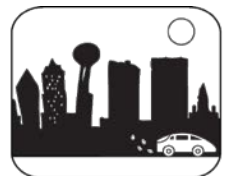
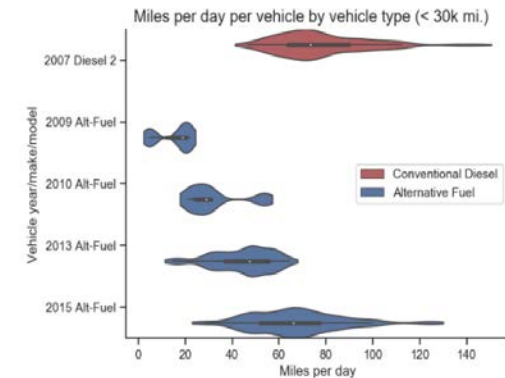
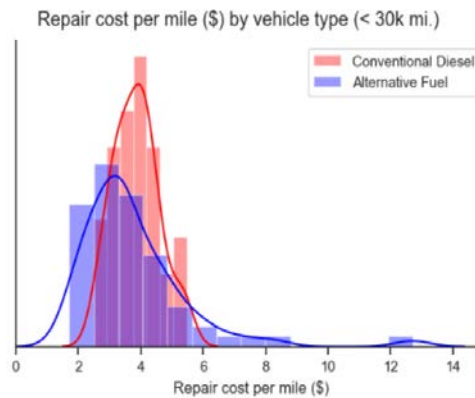
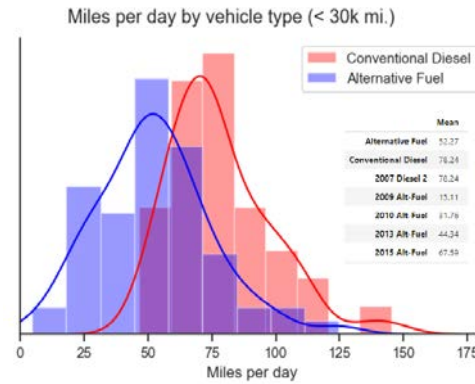
BECOME AN NGV U.P.-T.I.M.E DATA PARTNER

Fleet Type: Freight and Goods Movement

Vehicle Types: Medium- and Heavy-Duty
Natural Gas and Diesel

Repair Data to Provide: Cost, Frequency,
and Type

Participating Fleets Will Receive:
Study Analysis – Aggregate Data
Individualized Analysis of Their
Operation



Dallas-Fort Worth
CLEAN CITIES

Contact Cleancities@nctcog.org To Participate



Clean Fuels Ohio

FOR MORE INFORMATION



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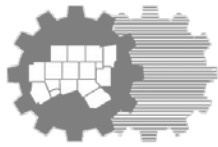
Automating Freight and Delivery

North Central Texas Council of Governments
Automated Vehicle Program

Thomas Bamonte, Senior Program Manager
Clint Hail, Transportation Planner

Regional Freight Advisory Committee
19 May 2020

Technology Developments



Last-mile goods delivery





Automated freight





Autonomous urban air transport



BELL APT
AUTONOMOUS POD TRANSPORT



Automation in the Supply Chain



Automated yard ops



Automated long-haul



Automated factories and DCs



Delivery automation

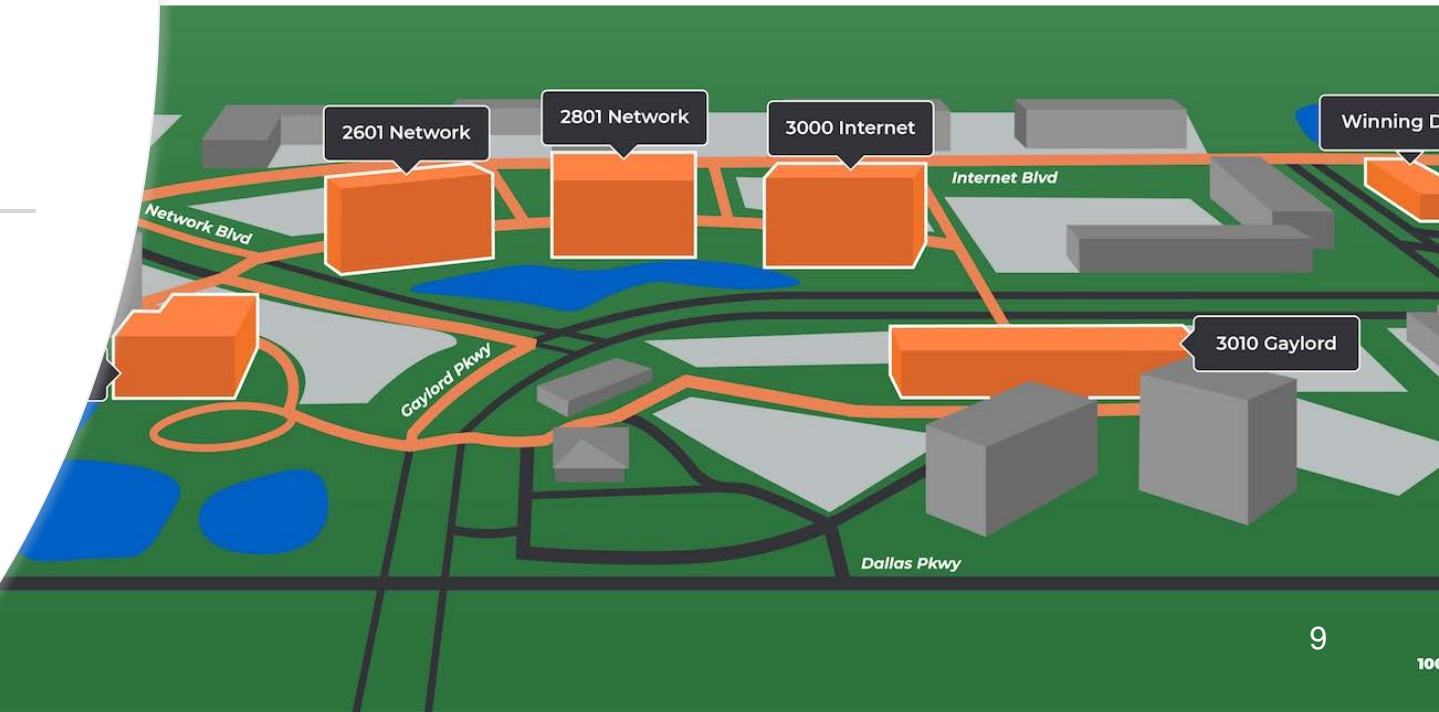


Regional Developments

Arlington

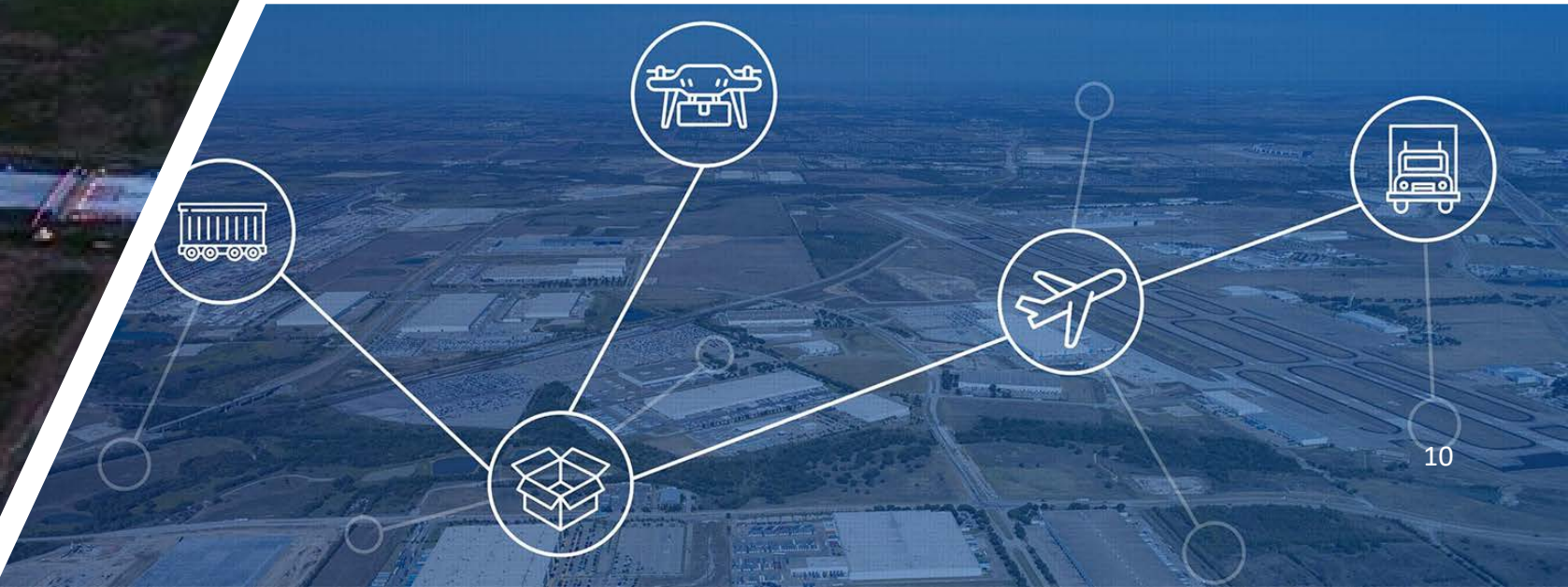


Frisco





Alliance Mobility Innovation Zone



Automated Freight in North Texas



Hyperloop





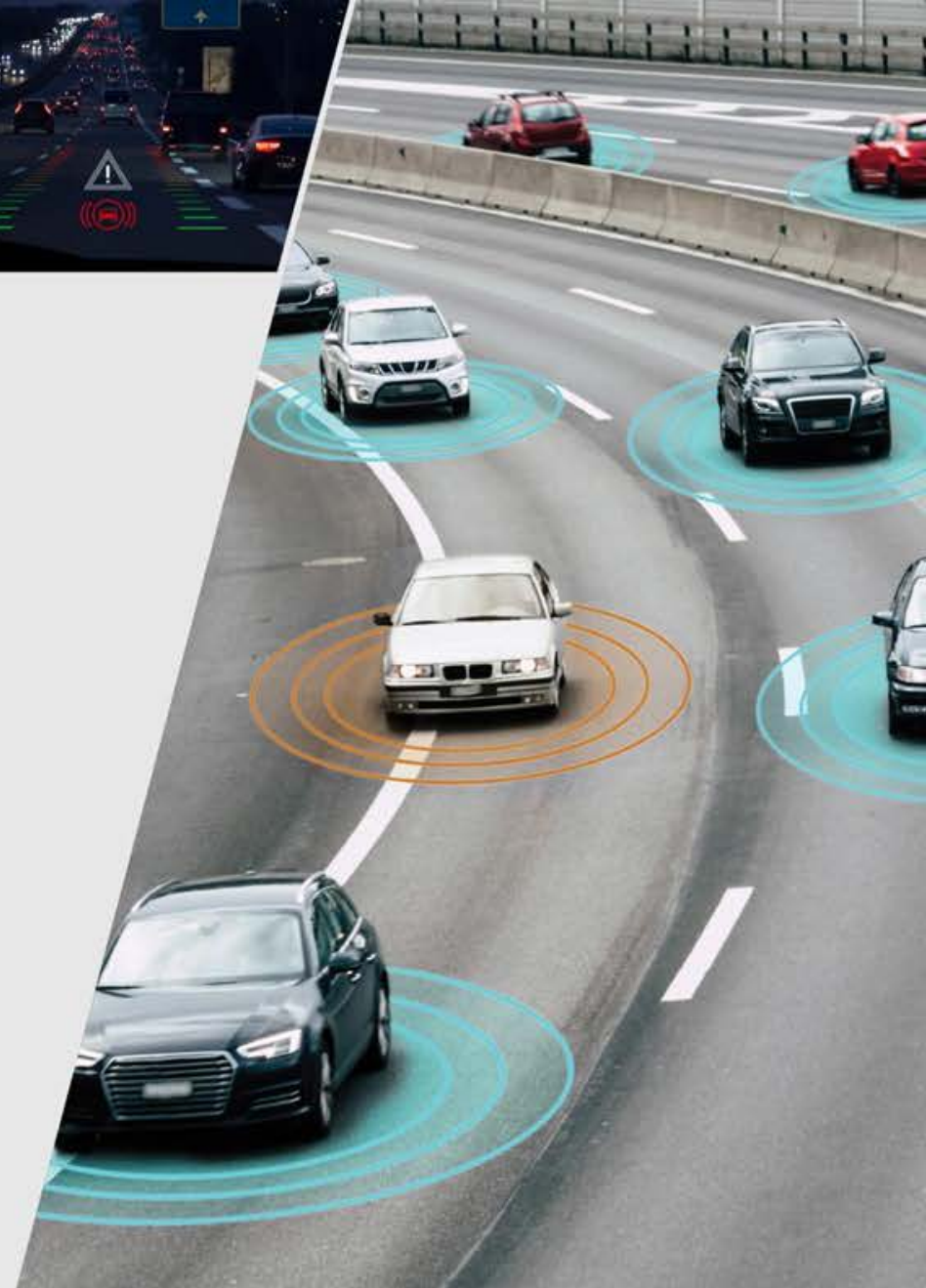
SMU®



UNIVERSITY OF
TEXAS
ARLINGTON

North Texas Center for Mobility Technology

Connected Freight Vehicle Developments

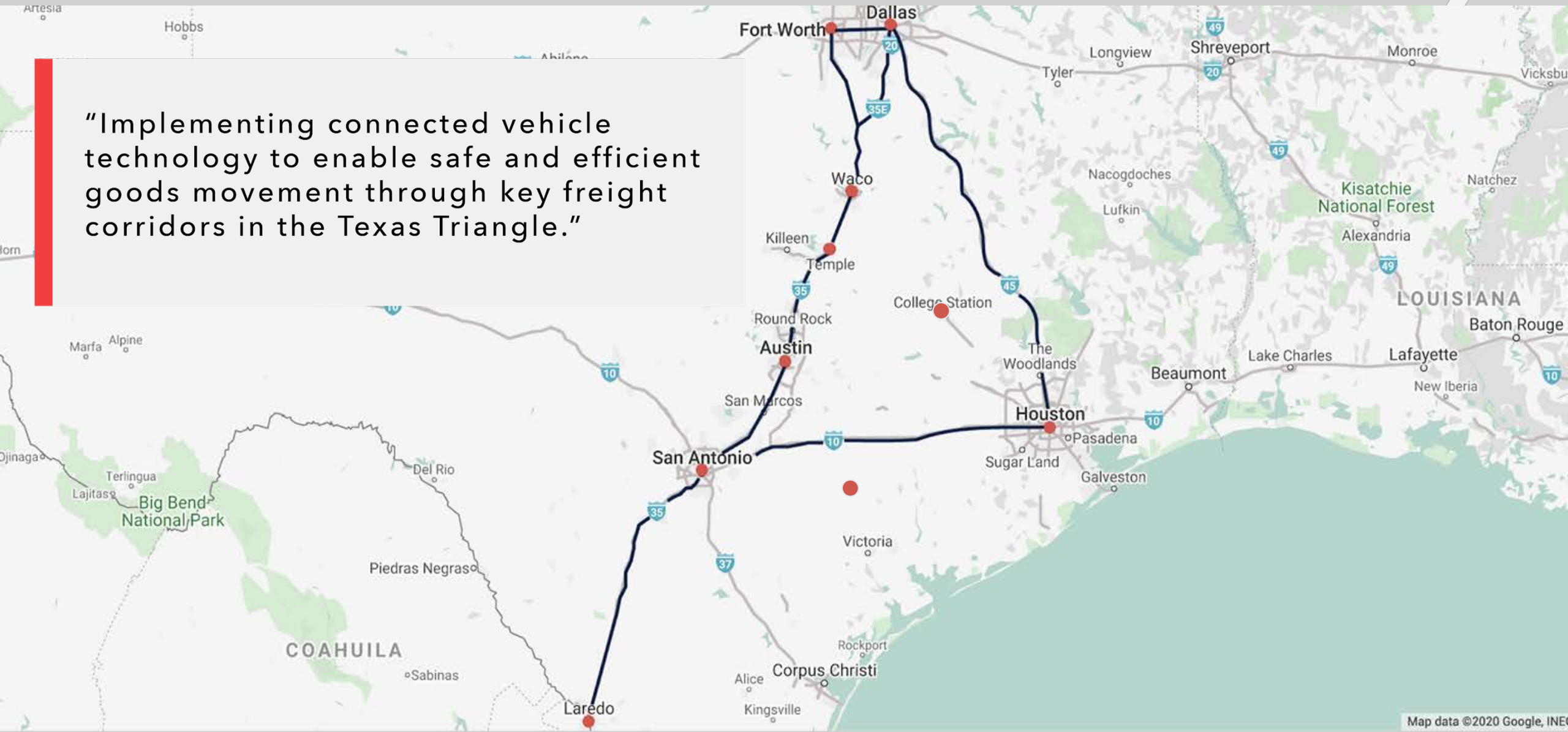


Texas Connected Freight Corridors (TCFC)

Task II Kickoff Meeting



“Implementing connected vehicle technology to enable safe and efficient goods movement through key freight corridors in the Texas Triangle.”



Map data ©2020 Google, INE



BENEFITS



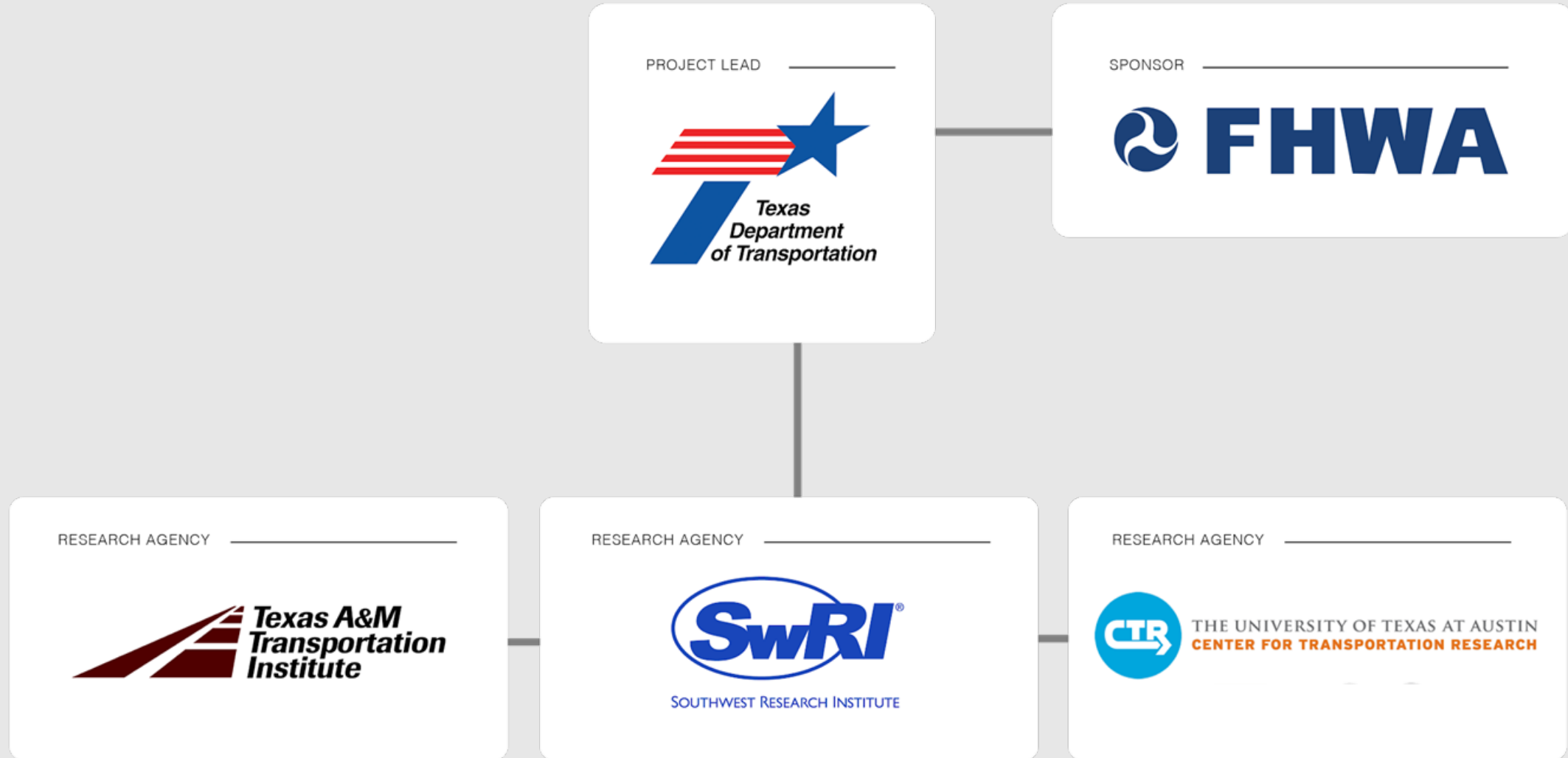
Gain access to **near-real-time information** on work zones, traffic queues, alternative travel routes, and wrong-way drivers



Achieve **proof of concept** before making a large connected vehicle technology investment



Contribute to a model that will set an example for future CV deployments and **develop national standards**





PUBLIC SECTOR

TxDOT Districts:

Austin, Bryan, Dallas, Fort Worth, Houston, Laredo, San Antonio, Waco, Yoakum

Regional Agencies:

North Central Texas Council of Governments, Houston TranStar, City of Austin, City of San Antonio Department of Public Safety (DPS)



PRIVATE SECTOR*

*in current discussions

Retailers:

H-E-B, Coca-Cola, Home Depot

Carriers/3PLs:

Crete Carriers, UPS, Uber Freight

Original Equipment

Manufacturers:

Volvo, Peterbilt, Daimler, Ford

CAV Trucking:

TuSimple, Kodiak, Peloton

Texas Trucking Association (TxTA)

AllianceTexas

Overall Project Timeline





Objective: Planning 15 field sites with dual-mode /dual-active RSUs & Tier 1 apps and create dual V2I environment with both DSRC and C-V2X

Anticipated Work

- Task 1 – Detailed Design
- Task 2 – Hardware Procurement
- Task 3 – Pre-deployment Hardware Testing
- Task 4 – Application Development
- Task 5 – Field Installation and Testing
- Task 6 – Maintain & Operate (aligned with TCFC Task III)

>> See SwRI's whitepaper for more details



Objective: Integrate data from Waze into 911 center located along the I-30 corridor and to improve information flows from traffic management centers

NCTCOG will conduct overall outreach

Involved Cities: Dallas, Grand Prairie, Arlington, and Fort Worth

Gathering feedback from 911 contractors about integration for evaluation

Anticipated Work

- Task 1 (Planning) – Assess needs and explore integration options
- Task 2 (Deployment) – Develop prototype and provide stakeholder assistance during Waze/911 integration
- Task 3 (Evaluation) - Evaluate Waze impacts on 911 system



Objective: Create the first AV-ready corridor in Texas

Project recommendations scaled to meet budget

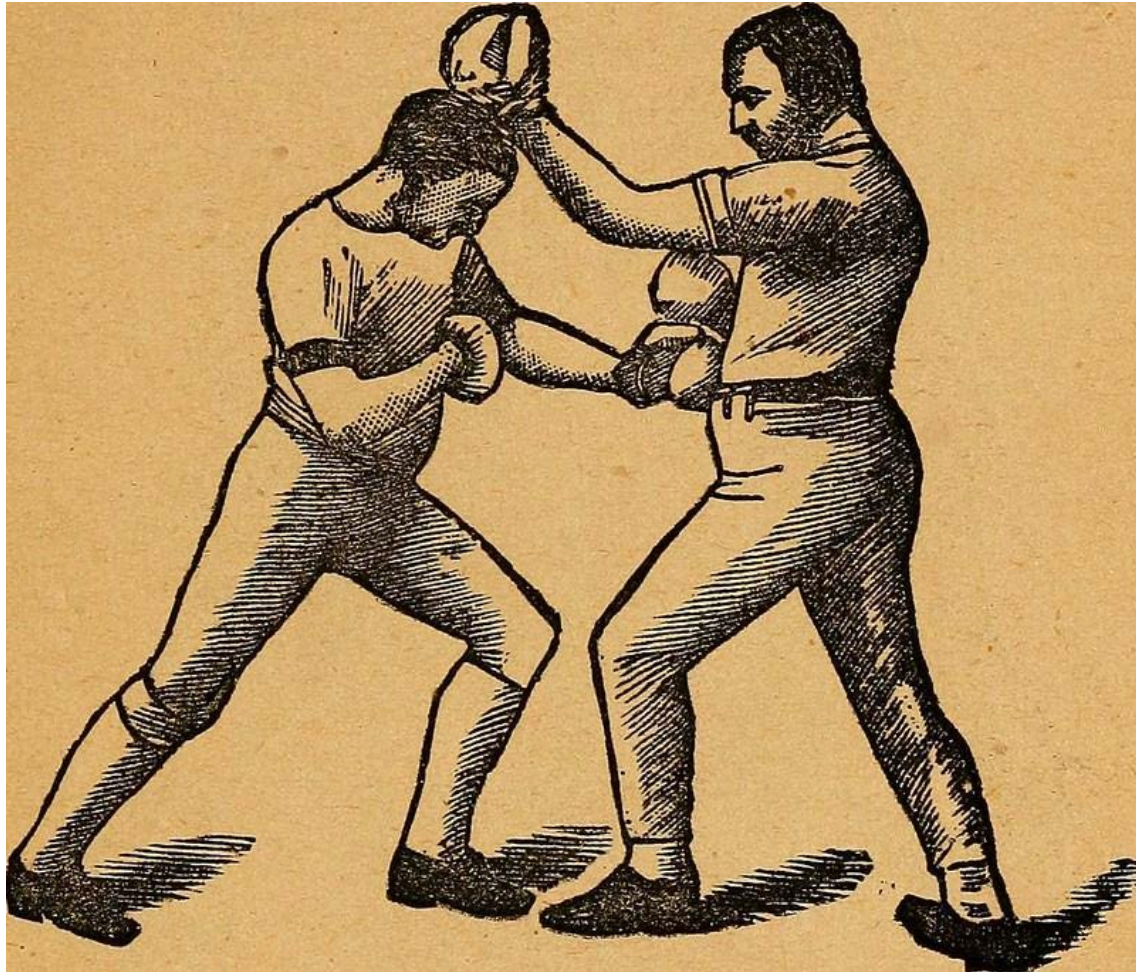
Able to do small corridor improvements, small sections of pavement markings

Implementation limited by contractor availability and weather

Anticipated Work

- Task 1 – Assess infrastructure for AV based on AV problem conditions and AV data; get process/procedures/standards in place
- Task 2 – Improve infrastructure for AV
- Task 3 – Identify other infrastructure improvements for AV based on Task 2 results

Communications Breakdown



FCC and FHWA
sparring over
the 5.9 GHz
“Safety
Spectrum”



TIERS

01

Work
Zone
Warning



Queue
Warning



Wrong-
Way
Drivers



Truck
Signal
Priority



02

Advance
Traveler
Information
System (ATIS)



Road
Weather
Warning



Truck
Parking
Availability



Bridge
Height
Warning



03

Emergency
Electronic
Brake Light



Pedestrian
& Animal
Warning



Eco-
Dynamic
Routing

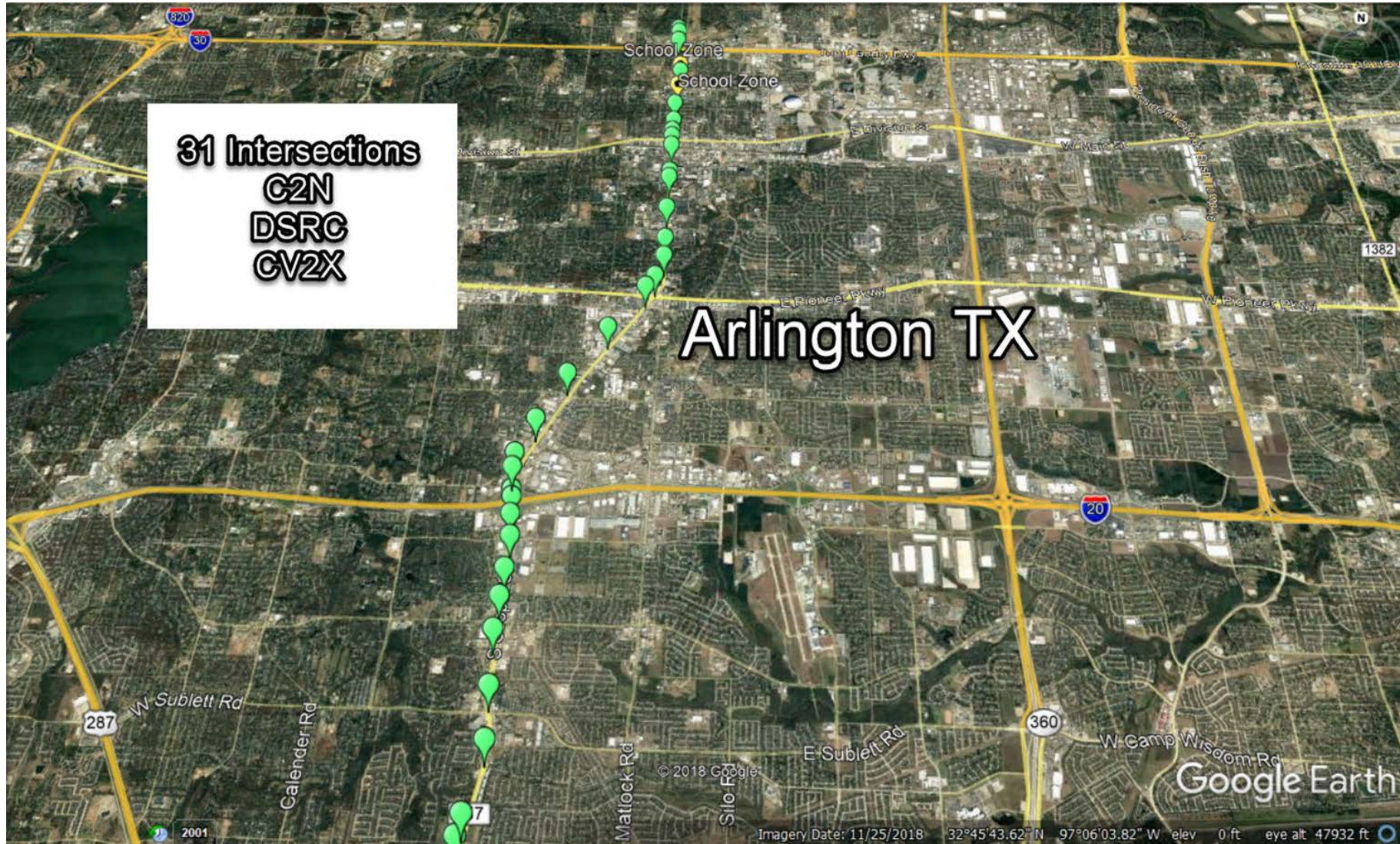


Border
Wait
Times



 = Highlighted applications are prioritized for development

Connected Freight Arterial Corridors





Contact Info

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Clint Hail, Transportation Planner
Automated Vehicles

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For AV news:

[@TomBamonte](https://twitter.com/TomBamonte)





North Central Texas Freight Mobility Study

PRESENTATION TO NCTCOG, May 19, 2020



May 19, 2020

Project Need



Challenge of integrating growing demand of freight and passenger rail

Railroad corridor volumes exceed 20 trains per day on 25 percent of the network.

Project Need



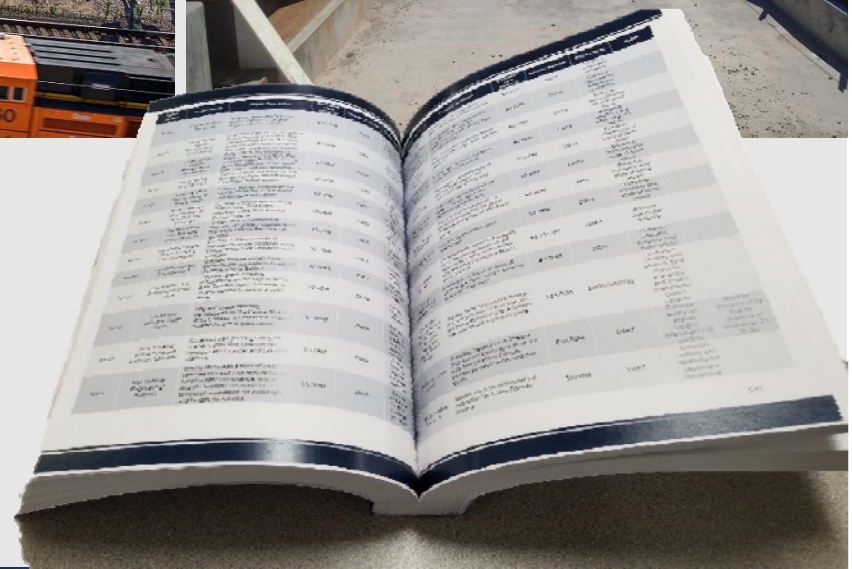
Need for additional grade separations for vehicles and train operations

Project Need



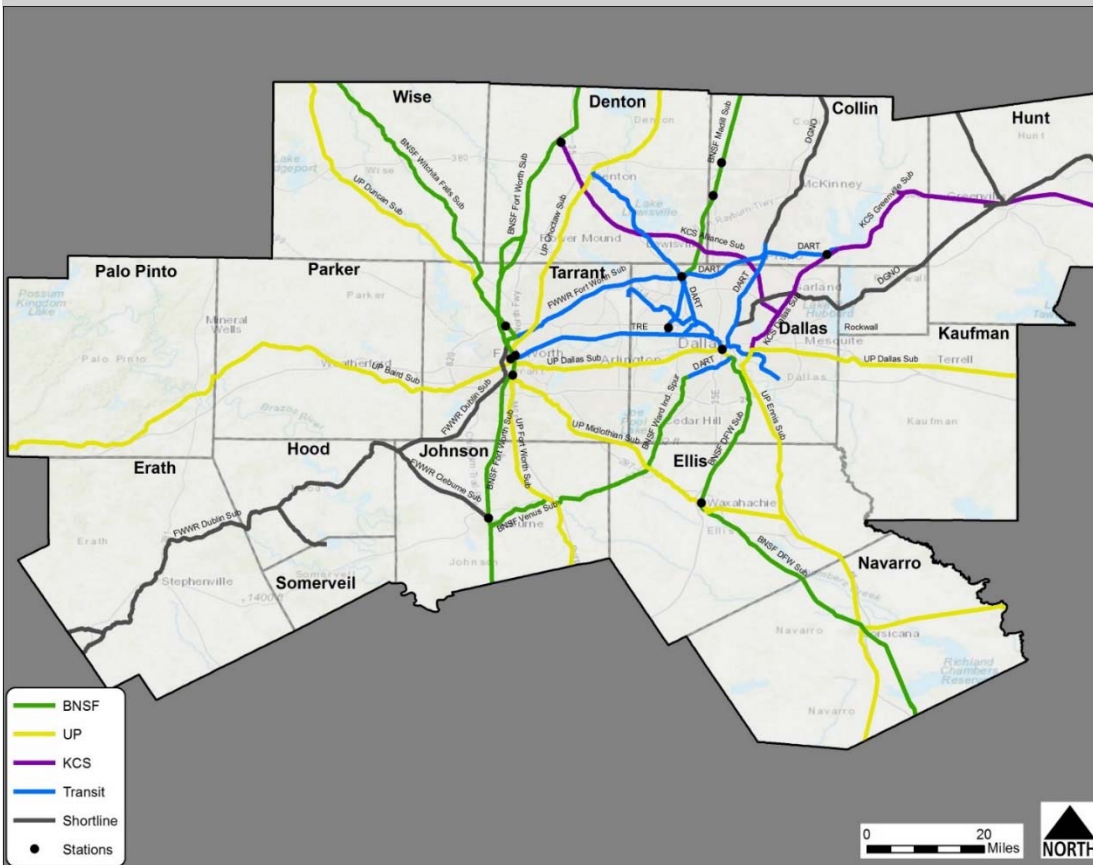
Approximately 5 percent of the public at-grade highway-rail crossings in the region have an average daily traffic volume over 20,000 vehicles per day

TxDOT Rail Division



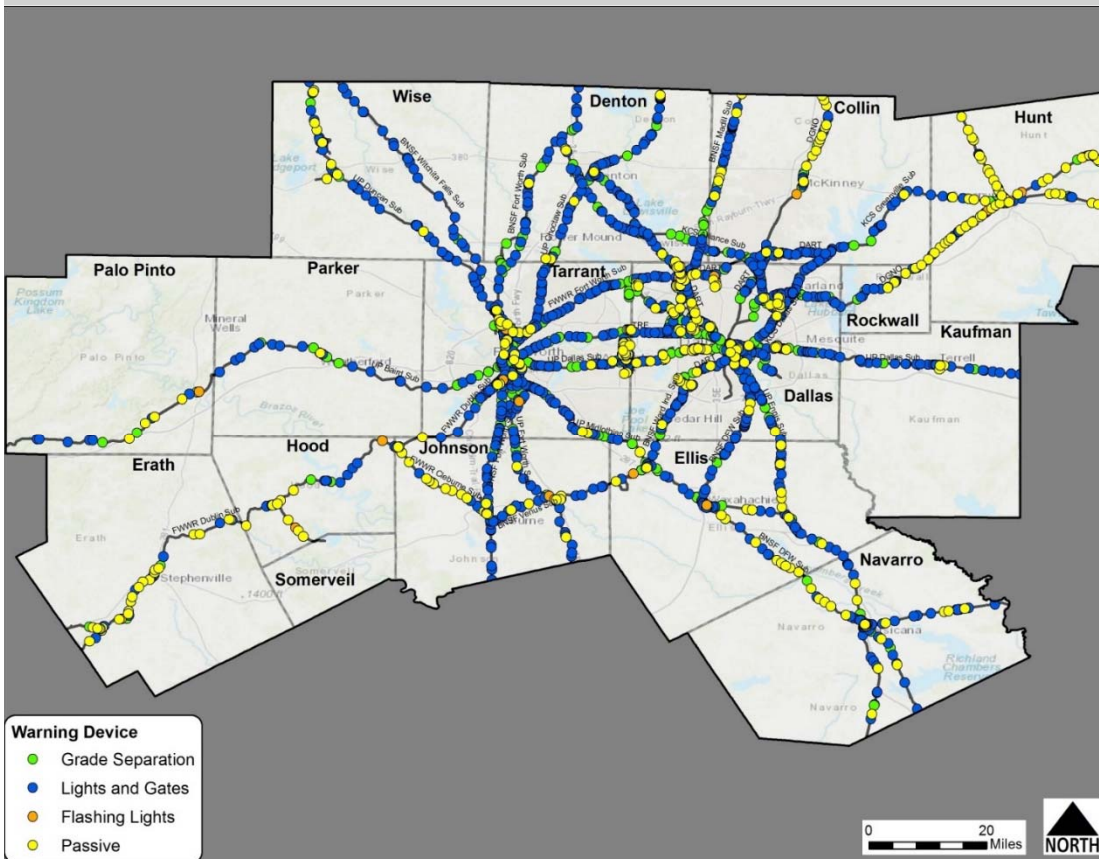
- Partnerships with FRA, regional leaders, and railroads on major plans & projects
- Statewide safety inspections
- Rail-highway crossing improvements
- Manage state-owned rail facilities

Project Purpose



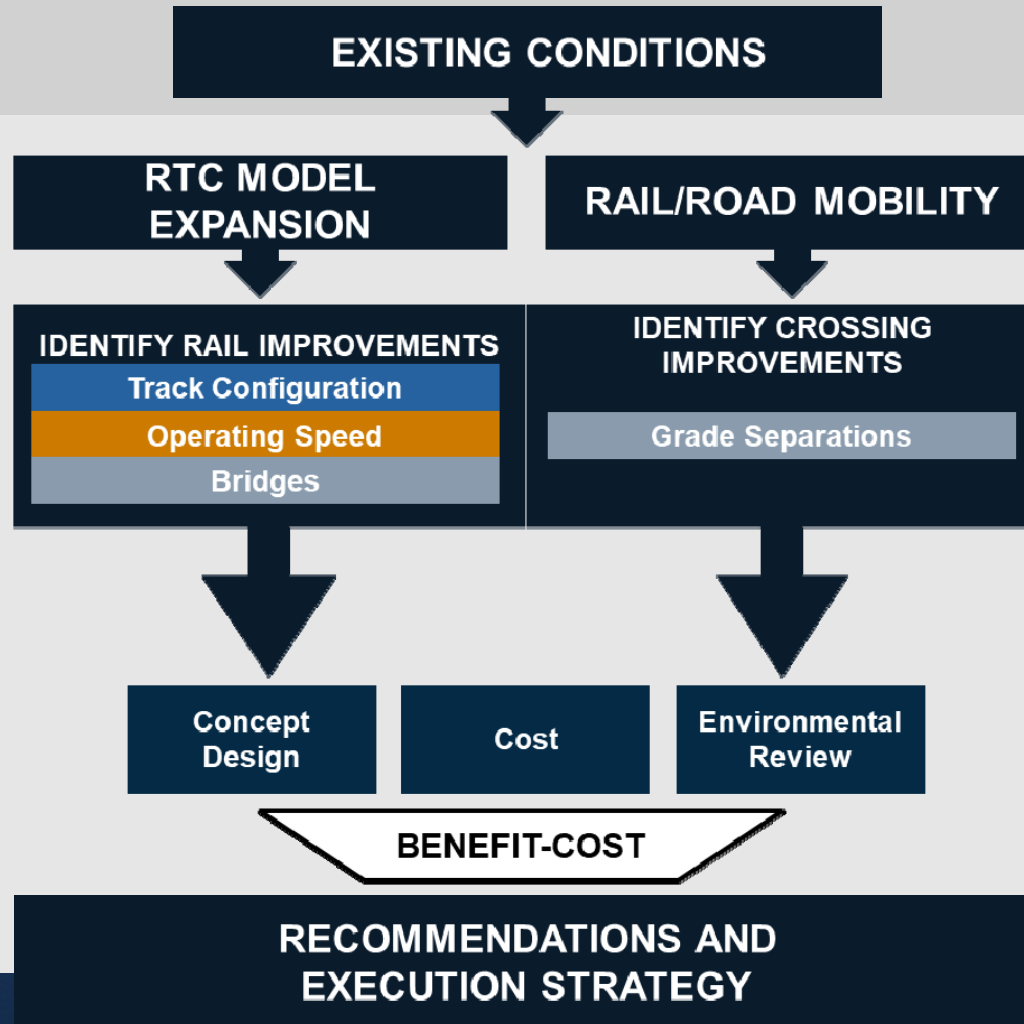
Purpose: To conduct a comprehensive analysis of the freight and passenger rail transportation network to identify mutually beneficial mobility improvements

Purpose Outcome



Outcome: A program of projects to address mobility needs in the North Central Texas region

Project Overview



Stakeholder Involvement



Welcome

WELCOME

Metroplex Rail Mobility Study

TxDOT is conducting an analysis of the freight and passenger rail transportation network to identify mutually beneficial mobility improvements. Your input is vital to addressing rail mobility needs.

Begin

The 2010 Dallas-Fort Worth Regional Freight Study identified infrastructure improvements such as highway-rail grade separation projects and closures.



2

PROJECT INFORMATION

3

MAP MARKERS

4

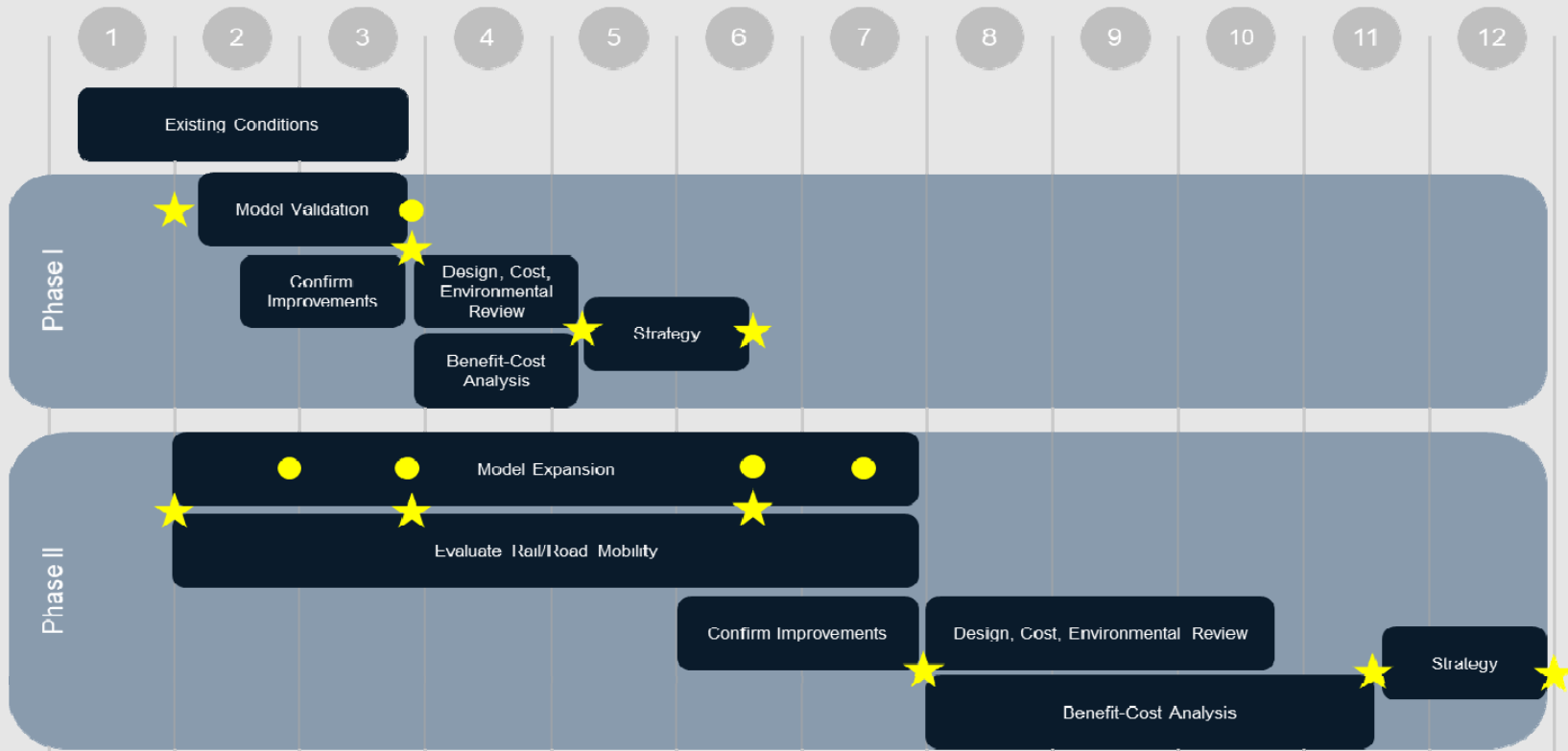
LET US HEAR FROM YOU

5

WRAP UP



Schedule Outline



- One-on-One Meeting
- ★ Stakeholder Group Meetings

Phase I



May 19, 2020

11

Phase I Tasks



BNSF completed a RTC Analysis to

- Analyze viability of TRE suggested new passenger service plan
- Identify potential impacts of the new passenger service plan on current TRE passenger and BNSF freight service
- Identify improvements needed to avoid impacts to passenger and freight service

TranSystems tasked to

- Confirm RTC Model
- Review Infrastructure Recommendations

Phase I Model Details



	Freight Volume	Passenger Service	Analysis Purpose	Stated Result
Base Case	2017	Current TRE	Provide base performance metrics for scenario comparison.	Base delays.
Test Case 1	2017	Current TRE	Measure improvement of two freight sidings without freight growth.	Reduced delays from base.
Test Case 2	2022	Current TRE	Measure improvement of two freight sidings with 2022 freight growth.	Delays greater than base with 2022 freight growth.
Test Case 3	2022	Current TRE plus TRE Irving to Prosper	Test Case 2 and impact of first level TRE network improvements with 2022 freight growth and new TRE service.	Delays greater than base with 2022 freight growth and new TRE service with first level of TRE improvements.
Test Case 4	2022	Current TRE plus TRE Irving to Prosper	Test Case 2 and impact of first and second level TRE network improvements with 2022 freight growth and new TRE service.	Delays less than base with 2022 freight growth and new TRE service with first and second level of TRE improvements.
Test Case 5	2030	Current TRE plus TRE Irving to Prosper	Test Case 3 with 2030 freight growth and new TRE service.	Freight train delays are greater than base with 2030 freight growth.
Test Case 6	2030	Current TRE plus TRE Irving to Prosper	Test Case 3 and two additional freight sidings with 2030 freight growth and new TRE service.	Freight train delays are the same as base with 2030 freight growth and two additional freight sidings.

Phase I Proposals



2030 Infrastructure Improvement	Purpose
New 10,000 foot siding at Sherman	Provide new siding for meet and pass conflict resolution
Extension to 10,000 foot siding at Hebron	Provide extended length for siding for meet and pass conflict resolution
Double Track, CTC, Crossovers at 5-6 mile increments from Irving to Prosper	Provide tracks to accommodate new TRE service to Prosper
Extension to 10,000 foot siding near Irving Depot	Extend current siding to allow longer trains. Use as an alternate track off main for crew changes at Irving
New 10,000 foot siding at New Gribble	New siding to accommodate longer aggregate trains
CTC on Madill Subdivision between Prosper, TX and Staley, OK	Upgrade from Track Warrant Control (TWC)
Double Track 1.4 miles from East Mockingbird (MP 639.3) to Medical Center (MP640.7)	Double track for TRE service
Double track 0.45 miles from North Junction (MP 643.9) to Union Station (MP 214.2)	Double track for TRE service
Speed Increase from 25 to 40 mph on DFW Subdivision from MP 769.3 to MP 770.4 near Forest Avenue through MP 779.5	Speed improvements
New 10,000 foot siding at Clark, OK	Extend siding at Clark to accommodate longer aggregate trains
New 10,000 foot siding at Madill, OK	Extend siding at Madill to accommodate longer trains



Metroplex FMS

Phase II

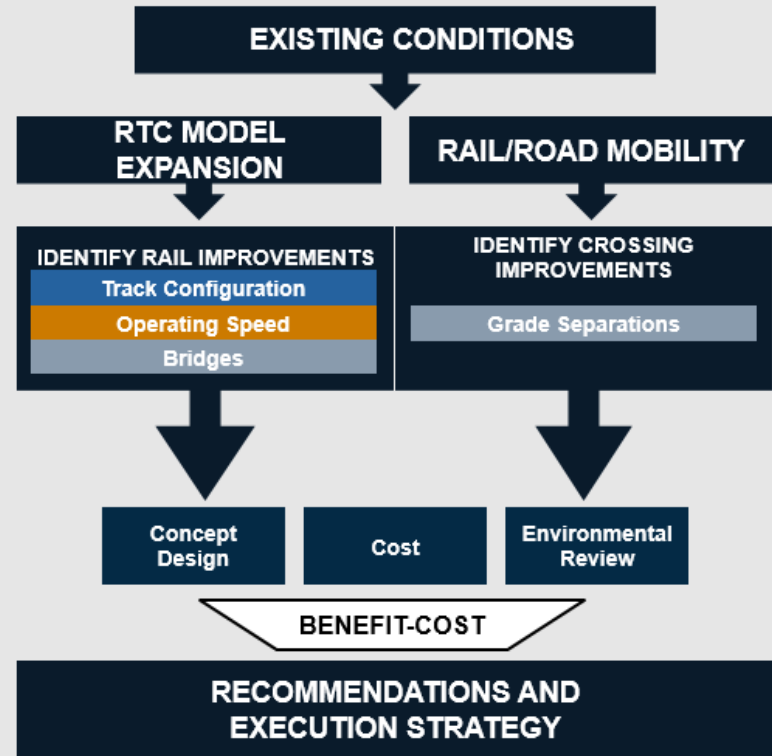


May 18, 2020

Project Purpose – Phase II Overview



- Expand RTC model analysis of freight and existing passenger rail subdivisions
- Identify mutually beneficial mobility solutions to support growth on the freight rail and highway networks

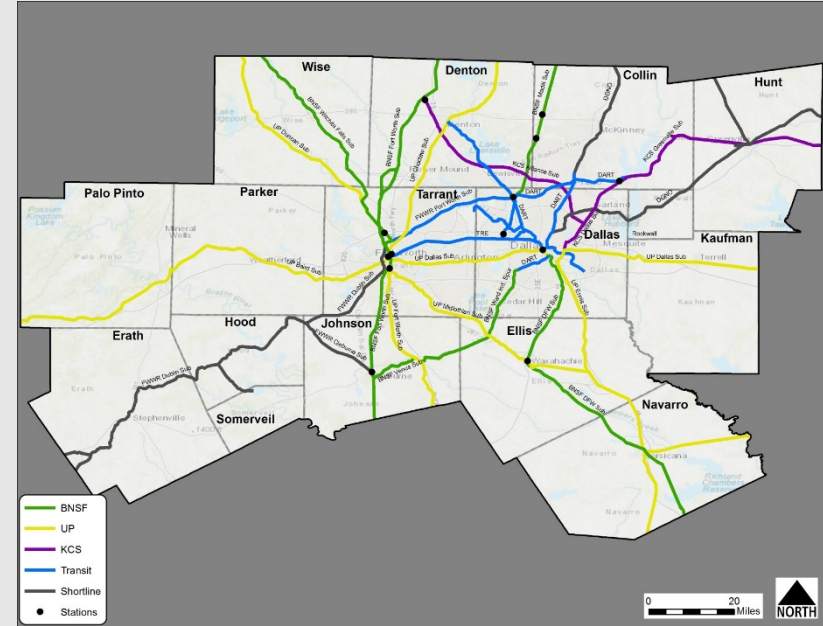


Note: Excludes consideration of potential new passenger service.

Phase II Model



- Step 1: Identify basis for modeling and obtain Railroad train movement data
- Step 2: Review Operating Plan from train movement data and scope of model(s) for analysis
- Step 3: RTC Baseline Model Analysis
- Step 4: Develop and review Growth Scenario and Alternate Scenarios
- Step 5: RTC Alternate Scenarios Analysis
- Step 6: Review and Refine Alternate Scenarios Results



Phase II Model: Opportunity Location at CP 217



Phase II Model: Opportunity Location at CP 217



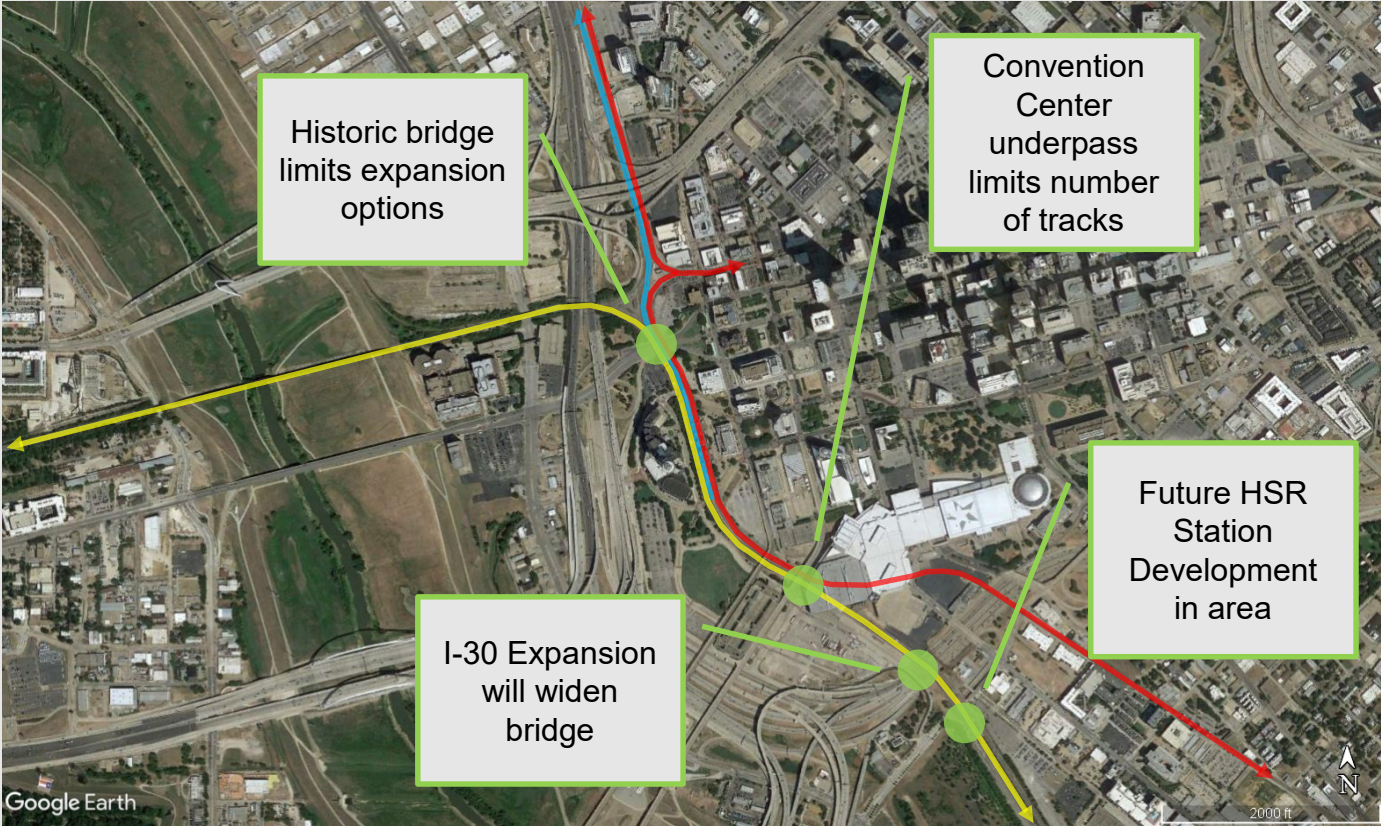
Anticipated Changes:

- Introduction of Sunday passenger service
- Increase in freight train volume and length

Operational Constraints:

- Limited storage locations for freight train movements
- Multiple dispatching handoffs

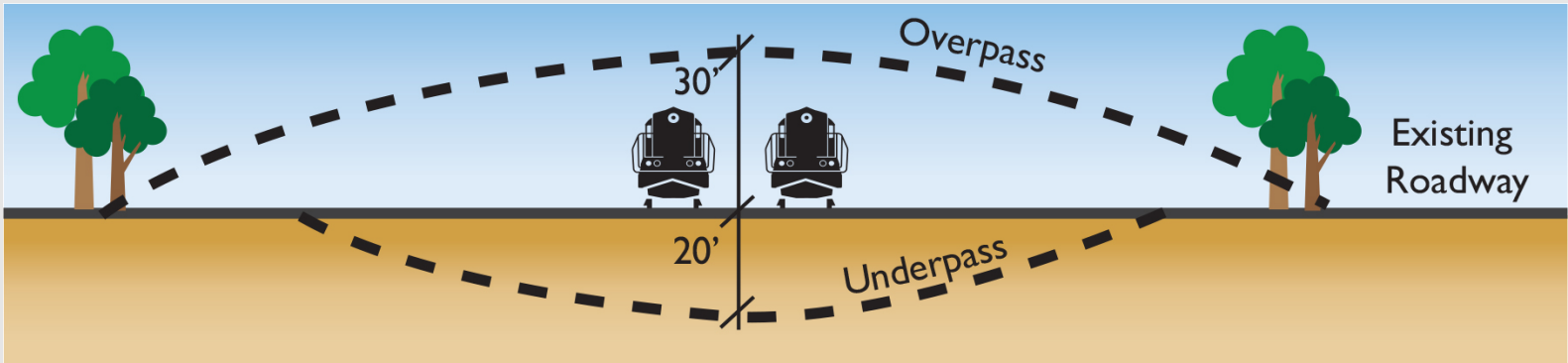
Phase II Model: Opportunity Location at CP 217



Phase II Grade Crossings Mobility



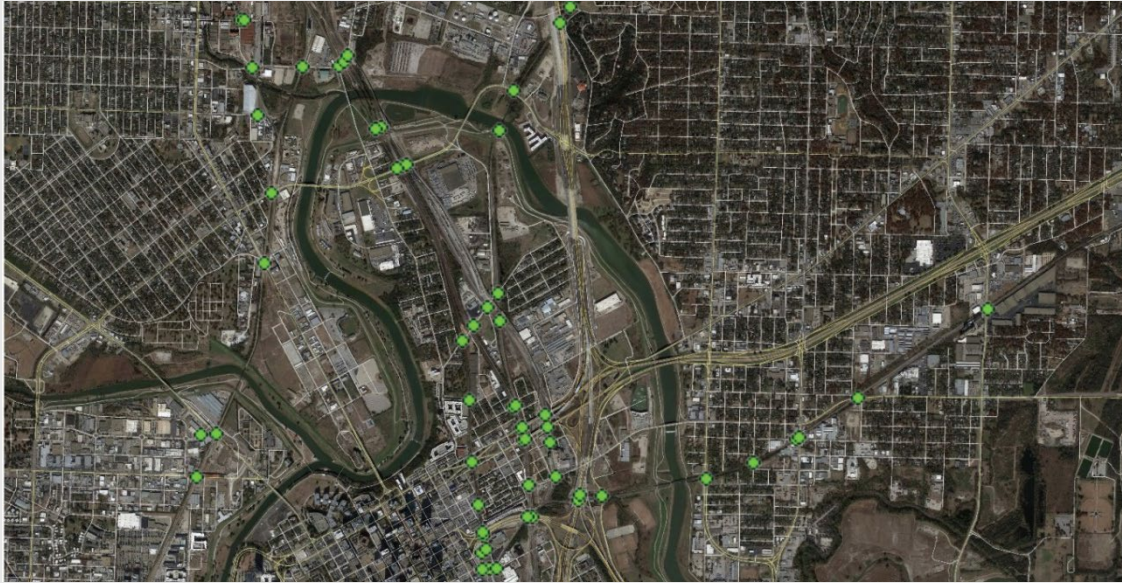
1. Ensure data is complete
2. Select locations for review
3. Identify mobility solutions



Phase II Grade Crossings Mobility: Data



- 2,250 crossings in Metroplex
- 500 already grade separated

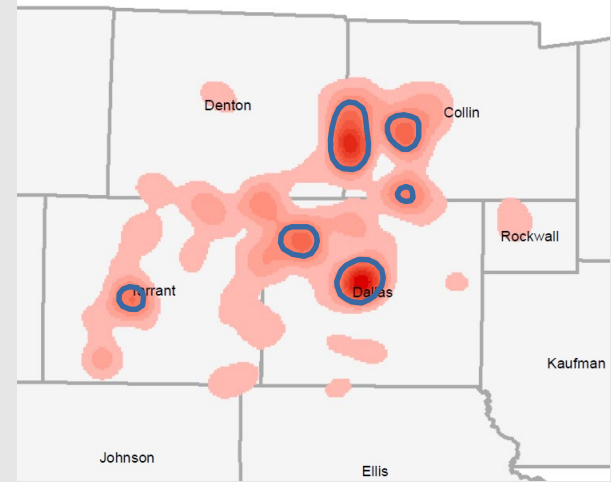


Phase II Grade Crossings Mobility: Select Locations



- The primary screening factors are as follows:
 - Data-Driven Approach
 - TxDOT Priority Index
 - Previous Concepts
 - Corridor Approach
 - Stakeholder Input

- The secondary screening factors are as follows:
 - Caller Complaints (TxDOT Rail Hotline)
 - Train Volume Growth
 - Development (Land Use Changes)



Phase II Grade Crossings Mobility: Select Locations

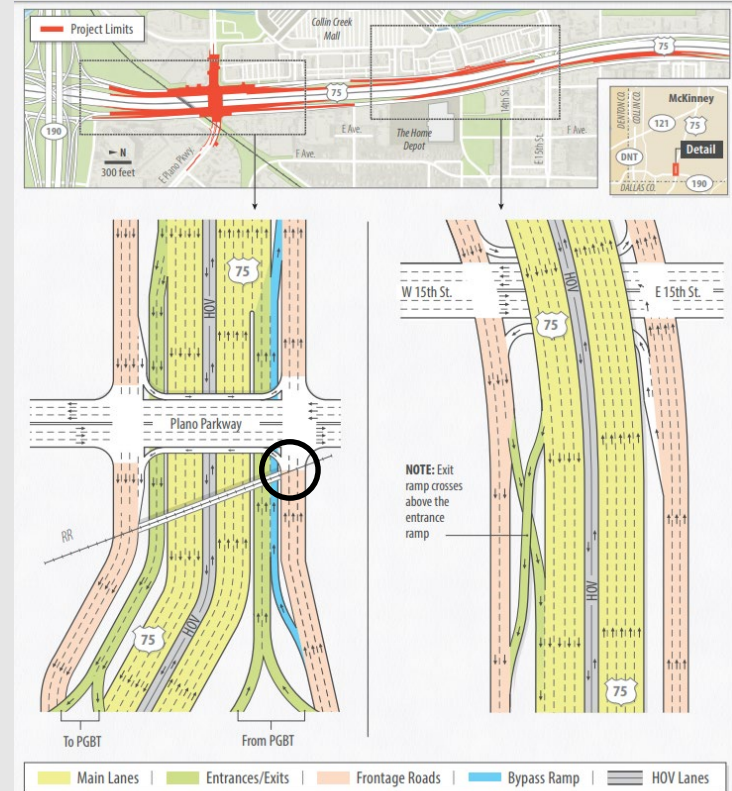


DOT #	Street Name	Warning Device	Operator	Subdivision	County	City	Mile Post	AADT	Trains per Day	PI
794971E	GREAT SW PKWY	Gates	Union Pacific Railroad Company	Dallas	Tarrant	Arlington	228.98	15,140	40	•
794926K	WESTMORELAND RD	Gates	Union Pacific Railroad Company	Dallas	Dallas	Dallas	218.43	24,320	40	•
598338N	RIVERSIDE DR	Gates	Trinity Railway Express	DFW	Tarrant	Fort Worth	613.13	13,860	78	•
794844D	JIM MILLER RD	Gates	Union Pacific Railroad Company	Mineola	Dallas	Dallas	208.06	21,220	30	•
597747C	NURSERY RD	Gates	Trinity Railway Express	DFW	Dallas	Irving	635.47	10,610	70	•
794997G	S OAKLAND BLVD	Gates	Union Pacific Railroad Company	Dallas	Tarrant	Fort Worth	241.86	12,312	32	•
598341W	BEACH ST	Gates	Trinity Railway Express	DFW	Tarrant	Fort Worth	614.17	23,909	78	•
794980D	N COOPER ST	Gates	Union Pacific Railroad Company	Dallas	Tarrant	Arlington	233.10	39,826	40	•
763657K	LAMAR ST	Gates	Union Pacific Railroad Company	Dallas	Dallas	Dallas	210.40	11,640	44	•
021749Y	DALLAS N PKWY	Gates	Kansas City Southern Railway	Alliance	Collin	Plano	78.55	18,000	8	•
765876F	US 77	Flashing Lights	Union Pacific Railroad Company	Midlothian	Ellis	Waxahachie	11.67	16,100	12	•
795361A	WATAUGA RD	Gates	Union Pacific Railroad Company	Choctaw	Tarrant	Watauga	745.25	20,784	20	•
022058U	S SHILOH RD	Gates	Kansas City Southern Railway	Dallas	Dallas	Garland	214.12	20,271	6	•
794951T	SE 14TH ST	Gates	Union Pacific Railroad Company	Dallas	Dallas	Grand Prairie	225.52	9,998	43	•
597759W	MARKET CENTER BLVD	Gates	Trinity Railway Express	DFW	Dallas	Dallas	641.70	15,450	78	•
020478S	WEST SEMINARY DR	Gates	BNSF Railway Company	Fort Worth	Tarrant	Fort Worth	341.10	15,766	26	•
414708G	LAKE PARK RD	Gates	Denton County Transit Authority	Denton	Denton	Lewisville	734.30	10,500	66	•
414060E	HEBRON PKWY	Gates	Denton County Transit Authority	Denton	Denton	Lewisville	739.48	30,509	64	•
789631H	US 0075 EFRNTG RD	Gates	Kansas City Southern Railway	Alliance	Collin	Plano	590.20	11,770	10	•
331691Y	WESLEY ST	Gates	Kansas City Southern Railway	Greenville	Hunt	Greenville	170.47	9,680	14	•
414842T	CEDAR SPRINGS RD	Crossbucks	Dallas, Garland and Northeastern Railroad	DART	Dallas	Dallas	754.50	9,417	2	•
765265R	SEMINARY DR	Gates	Union Pacific Railroad Company	Midlothian	Tarrant	Fort Worth	47.10	10,120	12	•
795369E	N SYLVANIA AVE	Gates	Union Pacific Railroad Company	Choctaw	Tarrant	Fort Worth	750.06	10,070	27	•
020871M	LOGAN/JOHNSON ST	Gates	Fort Worth and Western Railroad	Dublin	Hood	Cresson	21.88	22,920	14	•
020856K	HULEN ST	Gates	Fort Worth and Western Railroad	Dublin	Tarrant	Fort Worth	4.55	49,710	10	•
414715S	FM 1171	Gates	Denton County Transit Authority	Denton	Denton	Lewisville	736.70	16,070	66	•
789635K	SH 5 (Ave K)	Gates	Kansas City Southern Railway	Alliance	Collin	Plano	589.63	21,060	10	•
022060V	W KINGSLEY RD	Gates	Kansas City Southern Railway	Dallas	Dallas	Garland	213.48	20,310	6	•
414813H	WEBB CHAPEL EXT	Gates	Dallas, Garland and Northeastern Railroad	DART	Dallas	Dallas	751.95	19,473	12	•
789724C	FM 1938 DAVIS BLVD	Gates	Fort Worth and Western Railroad	Fort Worth	Tarrant	North Richland Hills	15.50	32,106	7	•
021638G	OHIO DR	Gates	Kansas City Southern Railway	Alliance	Collin	Plano	76.07	17,599	8	•
021607H	JUPITER RD	Gates	Kansas City Southern Railway	Dallas	Dallas	Garland	63.79	20,271	6	•
928407H	CENTRAL EXPRWY SB		Dallas Area Rapid Transit		Dallas	Dallas		147,490	150	•
675114C	TRINITY MILLS RD WBND	Gates	BNSF Railway Company	Madill	Dallas	Carrollton	697.57	9,490	12	•
414717F	BU 0121	Gates	Denton County Transit Authority	Denton	Denton	Lewisville	737.11	41,824	64	•

Phase II Grade Crossings Mobility: Identify Mobility Solutions



- Grade Separation
 - Conceptual Design
 - Programmed
- Other Improvement
 - Programmed
 - Monitor
 - Closure
 - Transportation Network Solution



NOTE: Highlighted areas are not drawn to scale. SOURCE: Texas Department of Transportation.

TxDOT graphic

Phase II Grade Crossings Mobility: Identify Mobility Solutions

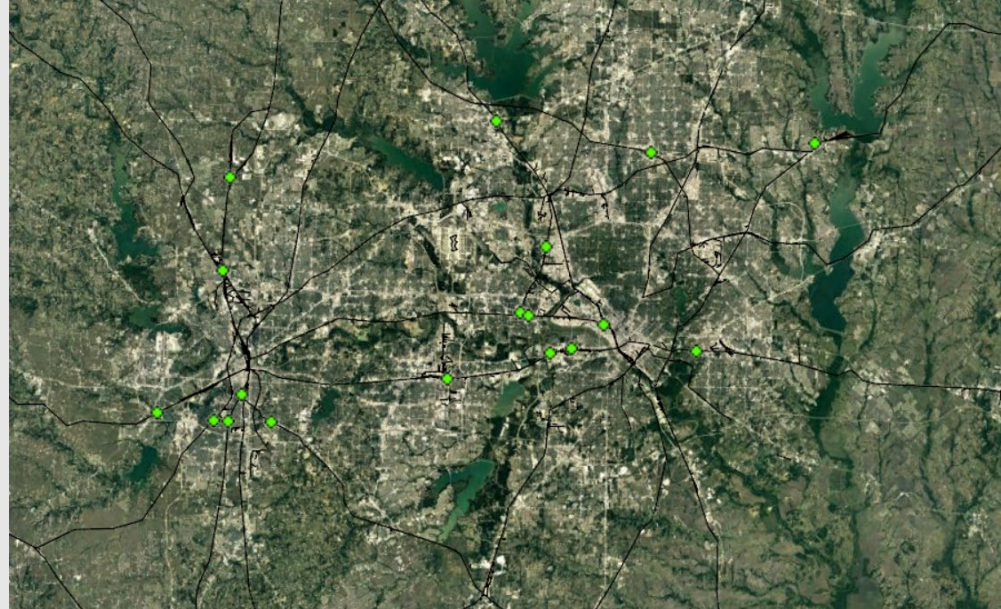


- Madill Subdivision (Phase I)
- North Fort Worth Corridor
- South Fort Worth Corridor
- West Fort Worth Corridor (UP Davidson Yard)
- West Dallas Corridor
- Mesquite Corridor (UP Mesquite Yard)
- Wylie Corridor (KCS Wylie Yard)

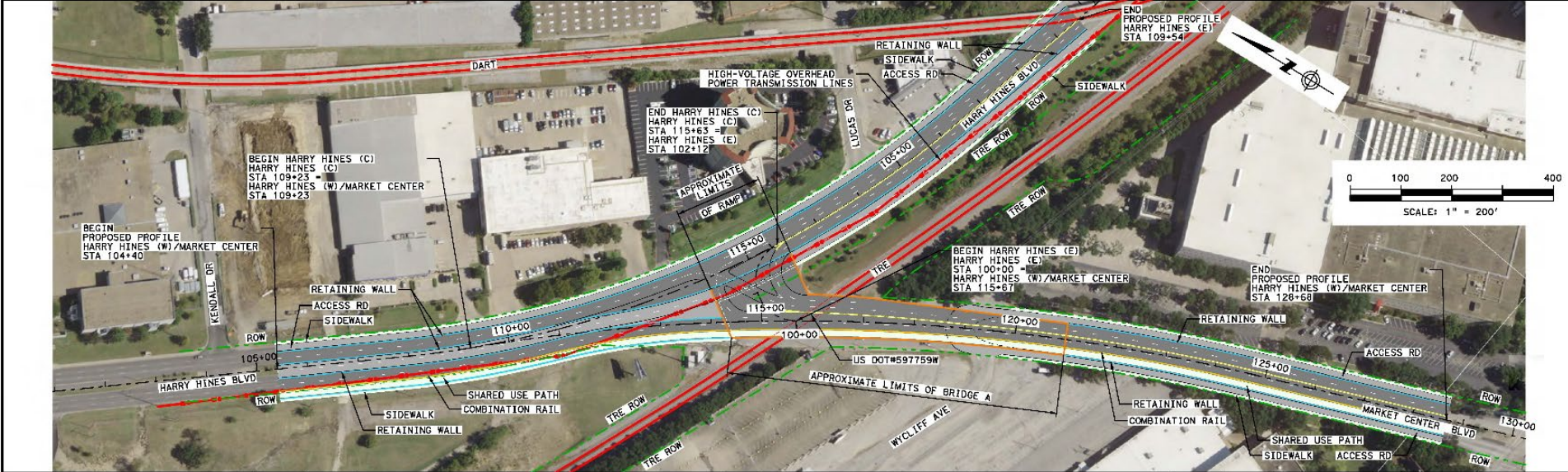
20 Concept Locations



	DOT #	Street	Subdivision
1	020634B	Avondale Haslet Road	BNSF Fort Worth
2	020486J	Hemphill Street	BNSF Fort Worth
3	Proposed	McPherson Road	BNSF Fort Worth
4	020538Y	McLeroy Boulevard	BNSF Fort Worth/Wichita Falls/UP Duncan
5	Proposed	Heritage Trace	BNSF Wichita Falls/UP Duncan
6	021635L	Coit Road	KCS Alliance
7	789653H	FM 2514	KCS Greenville
8	839206W	Winscott Road	UP Baird
9	794929F	Chalk Hill Road	UP Dallas
10	794971E	Great Southwest Parkway	UP Dallas
11	794926K	Westmoreland Road	UP Dallas/DGNO
12	794844D	Jim Miller Road	UP Mineola
13	672171F	Pioneer Drive	DART Madill
14	672161A	Royal Lane	DART Madill
15	597747C	Nursery Drive	TRE DFW
16	597759W	Market Center Boulevard	TRE DFW
17	414717F	Bus SH 121	DCTA
18	020846E	Seminary Drive	FWWR Dublin
19	020478S	Seminary Drive	BNSF Fort Worth
20	765265R	Seminary Drive	UP Midlothian



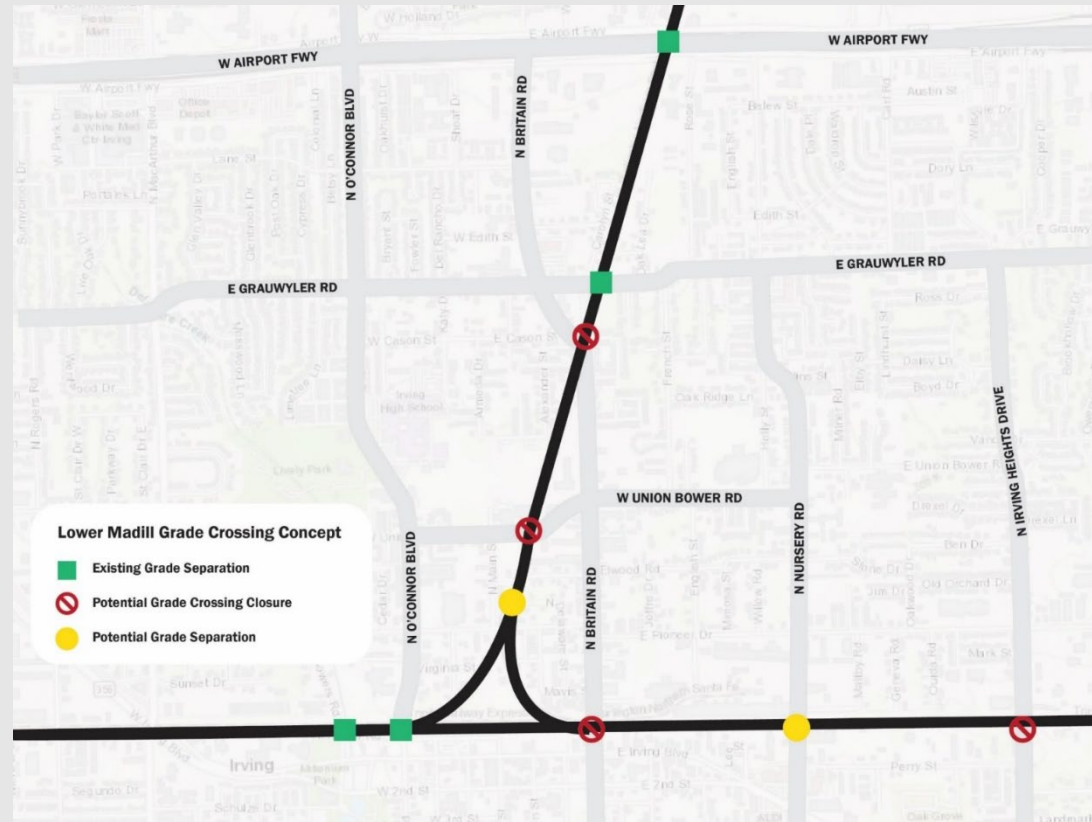
Phase II Grade Crossings Mobility: Identify Mobility Solutions



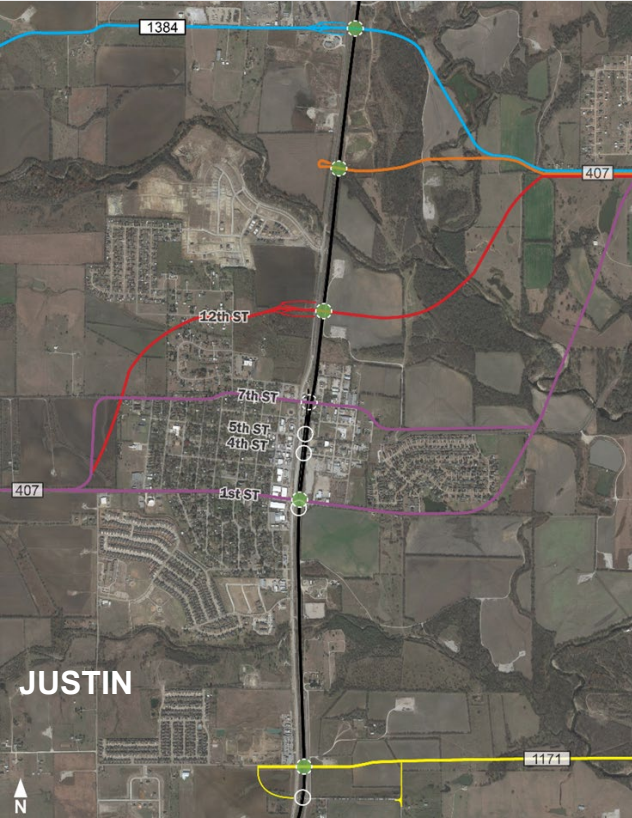
Phase II Grade Crossings Mobility: Identify Mobility Solutions



- Madill Subdivision (Phase I)
 - Irving Wye
 - New passenger service
 - Projected freight growth
- Subarea/Corridor Plan
 - Crossing Consolidation Options



Phase II Grade Crossings Mobility: Identify Mobility Solutions



Phase II Grade Crossings Mobility: Summary of Mobility Solutions



- All Counties
- Background information
- Summary table of all crossings
- Map of locations identified
- Specific information

The image displays three draft document covers for mobility solutions studies, arranged in a descending staircase pattern. Each cover features the Texas Department of Transportation logo at the top. The first cover on the left is titled "Metroplex F Summary of Mobility Solutions for Parker and Palo Verde" and is dated March 2020. The middle cover is titled "Metroplex Freight Mobility Study Summary of Mobility Solutions for Hood, Erath, and Somervell" and is dated March 2020. The third cover on the right is titled "Metroplex Freight Mobility Study DRAFT Summary of Mobility Solutions for Dallas County" and is dated April 2020. All covers are marked as drafts and are attributed to the Texas Department of Transportation - Rail Division.

Drafts currently in review.