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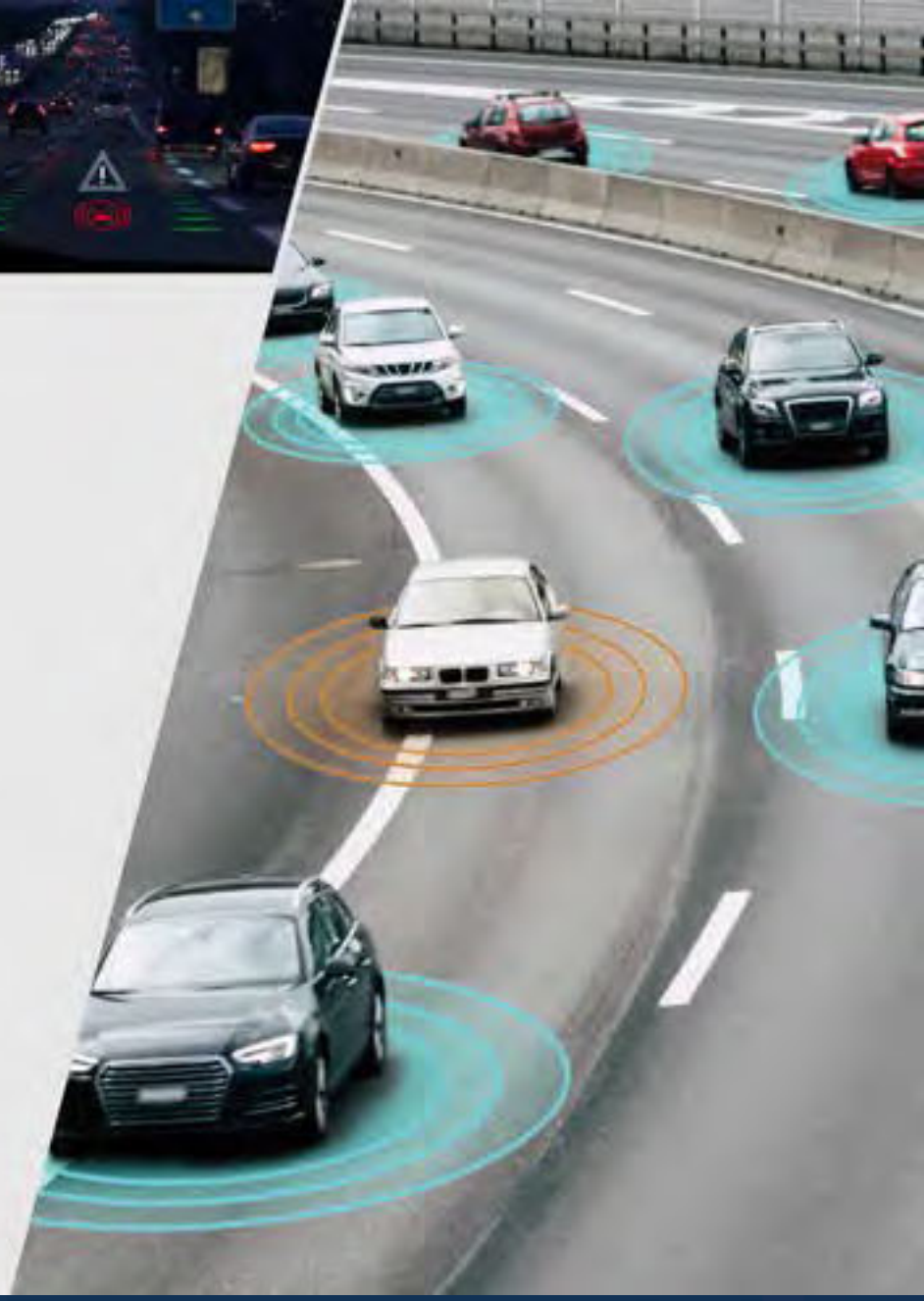
Texas Innovation Alliance

Spring In-Person Meeting

Texas State Transportation Innovation Council (TxSTIC)



April 4, 2024

Today's Agenda

9:00 AM | Welcome and Introductions

9:15 AM | Every Day Counts (EDC) Initiative

9:45 AM | State, Regional, and Location Innovative Project Showcases

10:30 AM | Break

10:45 AM | STIC Incentive Program Overview

11:00 AM | Closing Remarks

11:15 AM | Adjourn

EVERY DAY COUNTS (EDC)

Kristie Chin, UT CTR

Every Day Counts (EDC)

1) Strategic Workforce Development

2) Nighttime Visibility for Safety

3) Next-Generation Traffic Incident Management (TIM)

4) Enhancing Performance with Internally Cured Concrete

5) Rethinking DBE for Design Build

6) Environmental Product Declaration (EPD) for Sustainable Project Delivery

7) Integrating Greenhouse Gas Assessment and Reduction Targets in Transportation Planning

Every Day Counts (EDC)

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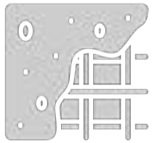

4) Enhancing Performance with Internally Cured Concrete

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6) Environmental Product Declaration (EPD) for Sustainable Project Delivery

7) Integrating Greenhouse Gas Assessment and Reduction Targets in Transportation Planning

2024 Texas Innovation Invitational

Dates: July 29-31

Location: Grand Hyatt Riverwalk and Convention Center, San Antonio

Agenda at a Glance:

July 29 | Tech Showcase

July 30 | Conference

July 31 | Pitch Competition

Pitch Competition

Who: Regional teams of public agencies

What: Present ideas for innovative projects to a panel of expert judges

Categories:

- Safety
- Connectivity
- Operations

Awards: Up to three awards will be made. Winners will be submitted in August to the FHWA State Transportation Innovation Council (STIC) Incentive Program for an opportunity to win $125,000.

Every Day Counts (EDC)

STRATEGIC WORKFORCE DEVELOPMENT

LaKesha Raynor, Dallas College

DALLAS COLLEGE

Texas Innovation Alliance
Spring Meeting

Strategic Workforce Development: Kodiak and DFW Workforce Development Partnership

LaKesha Raynor
Dallas College

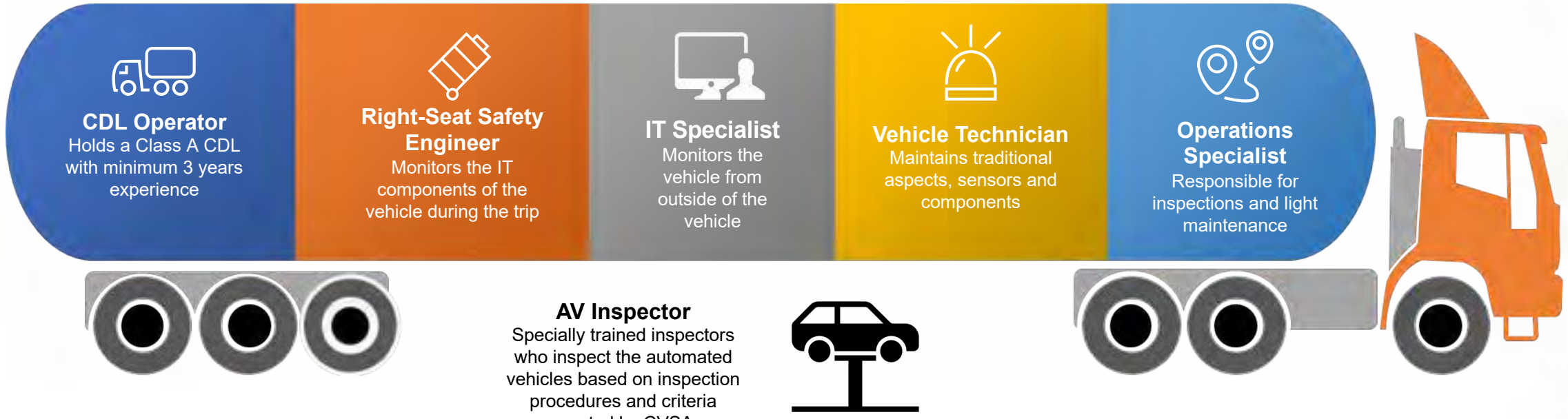
The Opportunity

Dallas College and our partners have the opportunity to lead the nation in addressing the need for drivers and training for this rapidly changing technology

The Synergy

In 2019, Dallas College initiated discussions with Kodiak Robotics to introduce autonomous vehicle skills training in the Dallas/Fort Worth area.

Two compression planning sessions were held to identify the business case and gather insights from employer partners on the emerging occupations in the autonomous freight industry.



The Insight: Identifying Industry Expectations

The Collaboration

The North Central Texas Council of Governments' Regional Transportation Council approved $4.74 million in funding from TXDOT and FHWA to support a workforce development initiative. This initiative includes an automated vehicle deployment, which also encompasses training for autonomous freight.

Dallas College and TXDOT

- Congresswoman Eddie Bernice Johnson visits Kodiak on December 16, 2021
- At the House Hearing on Automated Vehicles on February 2, 2022, Congresswoman Johnson presented on the role of Dallas College in workforce development in the AV industry

The Recognition

The Solution

The AV ecosystem has come together to address the talent shortage through targeted, well-developed workforce programs, address the regulatory and safety concerns, and acquire funding to get started.

The Nexus

The NSF Texoma Type 1 Innovation Development Engine

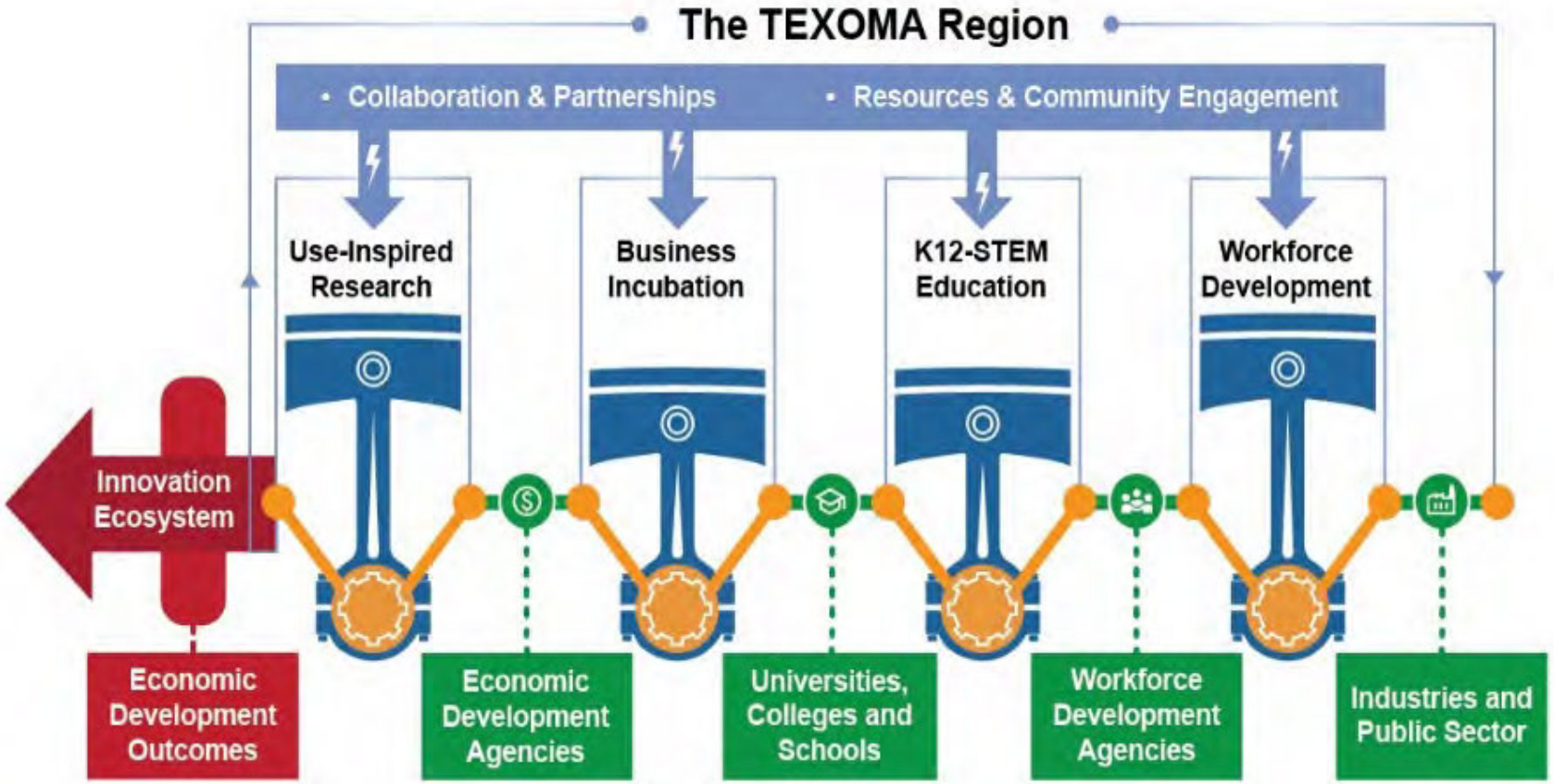


Figure 1. TEXOMA Innovation Engine

Thank You

LaKesha Raynor
Dallas College

DALLAS COLLEGE

Every Day Counts (EDC)

NIGHTTIME VISIBILITY FOR SAFETY

Okan Gurbuz, Texas A&M Transportation Institute

Texas Department of Transportation

Texas A&M Transportation Institute

UTTyler
THE UNIVERSITY OF TEXAS AT TYLER

A Comprehensive Approach to Collecting and Analyzing Illumination Data for Nighttime Crash Prediction

April 04, 2024

Nighttime Visibility for Safety

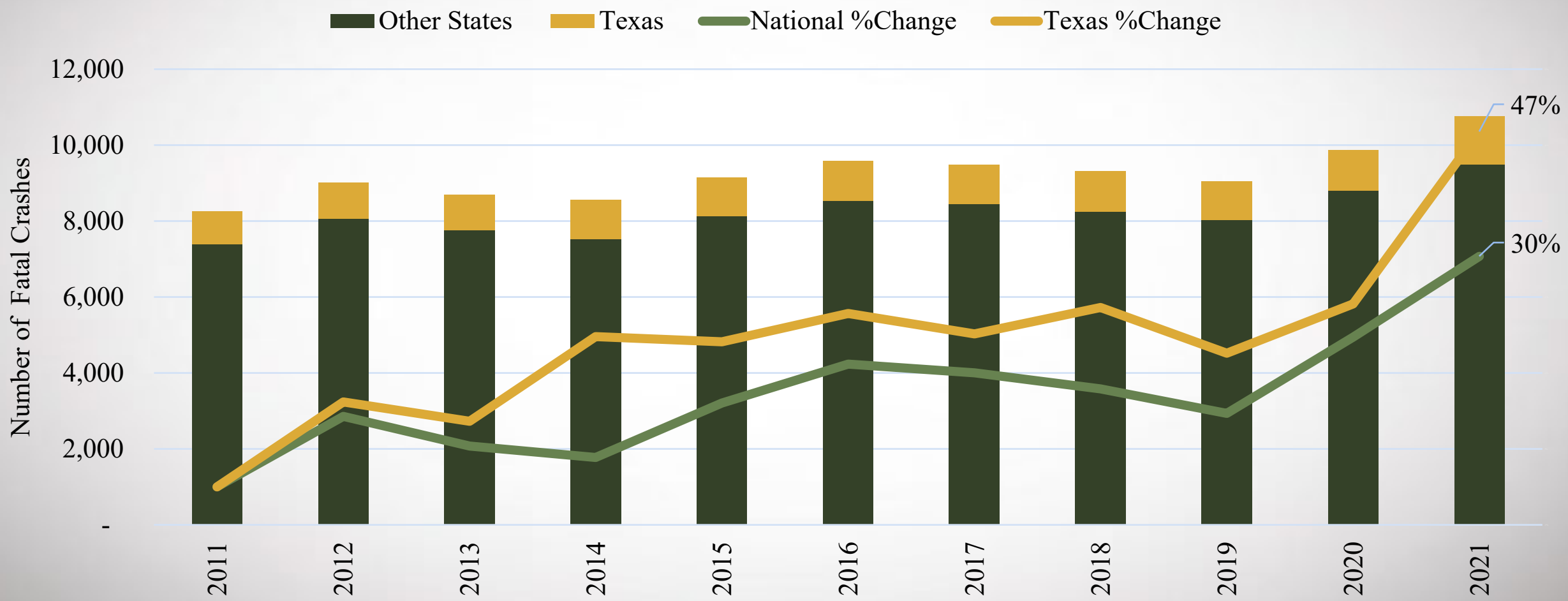
Every Day Counts
Innovation for a Nation on the Move

Background

- Nationally, fatal crash rates are three times higher at night.
- 76% of pedestrian fatalities happen during nighttime hours, nationally.
- Installing streetlights on roadways significantly reduces (up to 60%) the risk of nighttime fatal crashes

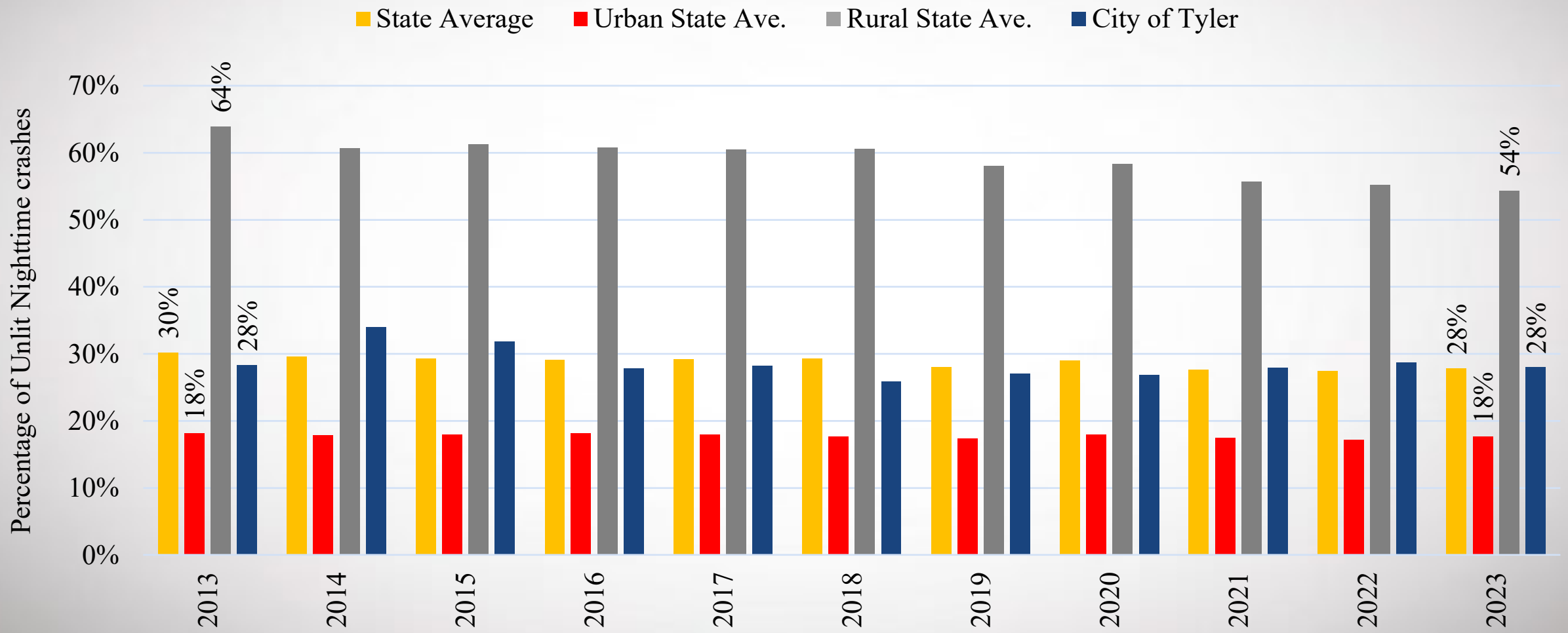
Background

NHTSA FARS Fatal Nighttime Crashes in Unlit Areas



Background

TxDOT CRIS Nighttime Crashes in Unlit Areas

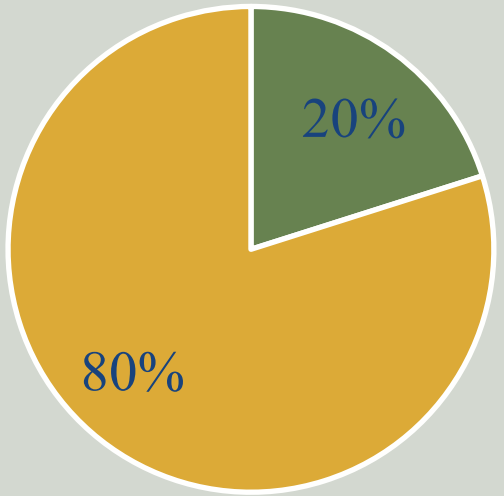


Background

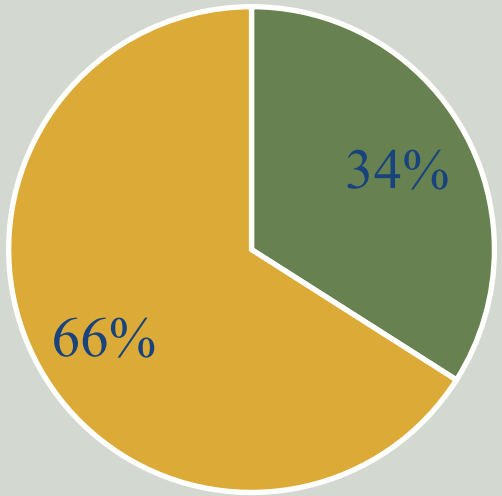
Nighttime Crashes by Lighting Condition (2013-2023)

State-Urban

Total Crashes

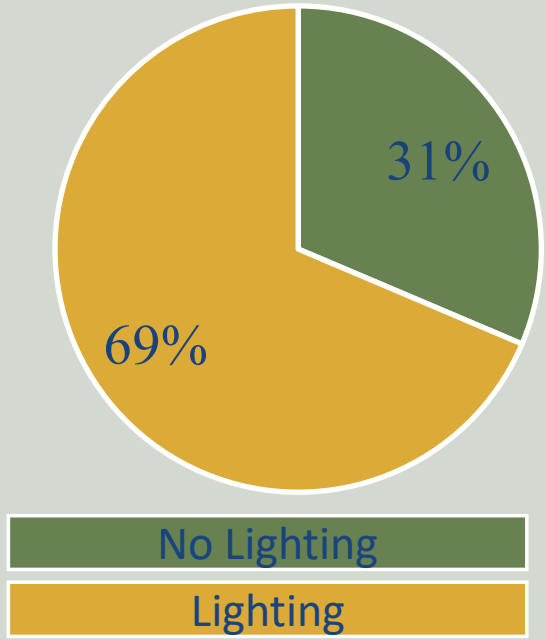


Fatal Crashes

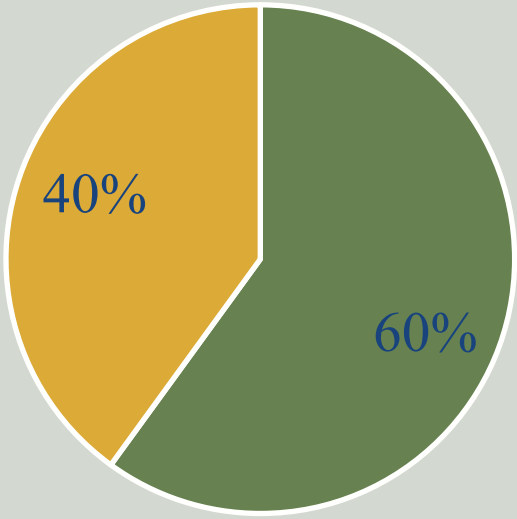


City of Tyler

Total Crashes



Fatal Crashes



Background

TxDOT Highway Illumination Manual

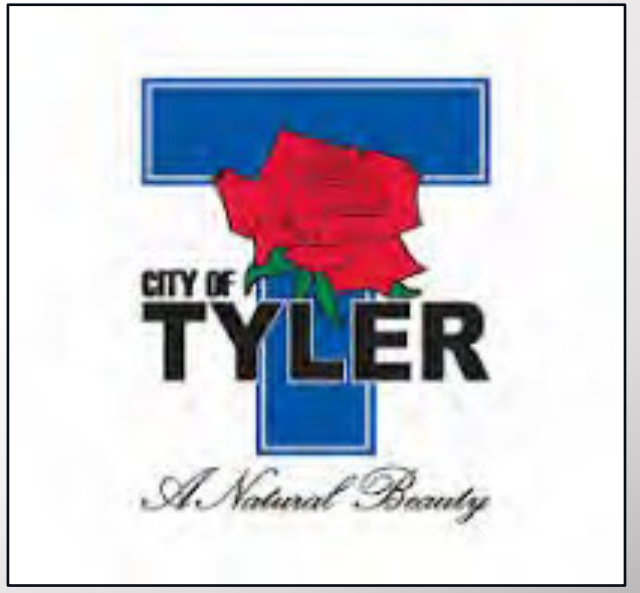
- Lighting systems
- Eligibility warrants
- Guidelines for construction and maintenance

City of Tyler's Illumination Code

- Sec 10.441

Data Collection

- No comprehensive procedure
- No tool or device identified



Proposed Solution

- To develop a process to identify and assess areas prone to nighttime crashes,
- To create predictive models relative to roadway lighting.
- Smartphone application as the main data collection tool.
- Case Study: City of Tyler.

Proposed Solution

Ground Truth

- Lux-meter

Secondary Data sources

- Dashcam footage
- Satellite imagery

Work Plan

State of Practice Review

Lux Meter Extraction

Data Collection

- Primary Data Source
- Secondary Data Sources

Model Development

Deliverables

- Prediction Model
  - Regression Model
- GIS-based Dashboard
  - Interactive
  - Historical Crash Records
  - Predicted Crash Locations
- Final Report
  - Guideline to Collect, Monitor, and Assess Illumination Needs

Questions

Okan Gurbuz, Ph.D.
Minh Le, P.E., PMP

State Innovative Project Showcase

AI AND DATA CULTURE AT TEXAS WORKFORCE COMMISSION

Courtney Arbour, Texas Workforce Commission

Introduction to AI in Public Service

The Texas Workforce Commission's (TWC) proactive approach to implementing AI for government agencies and public organizations, highlighting its importance and impact.

a **by Courtney Arbour**

Executive Leadership and AI Awareness

1

Market Engagement

Engagement with market experts to educate TWC leadership on AI applications and use cases.

2

Recorded Sessions

Distribution of recorded sessions on AI considerations, use cases, and security across the agency.

3

Leadership Review

Department leadership reviewing with an employee with Data and AI experience options to help the department identify safe and effective ways to use AI.

Practical AI Exploration

1

Create and use Secure Sandboxes

Sandbox environments established for staff experimentation.

2

Coaching and Training

Create a safe environment to coach and train departments to create projects and implement them.

3

Test Projects with Freedom to Revise

Encourage departments to test and learn in the safe environment about various AI options and see what projects work best.

Why AI for Government?

1

Administrative Efficiency

AI's role in reducing redundancies and addressing public workforce turnover and administrative burden.

2

Employee Satisfaction

How AI can make the workday more enjoyable and improve overall employee satisfaction.

AI's Impact on the Workforce

Occupational Change

AI's transformative effect on occupations and the increasing demand for workers skilled in these technologies.

Adaptability Over Expertise

The necessity for workers to be adaptable and capable of learning new skills, rather than being experts from the outset.

Fostering Digital Literacy

Skills for the Future

The rising importance of digital literacy in the workplace and opportunities for hands-on learning.

Learning Opportunities

Access to no-cost courses on platforms like LinkedIn Learning and secure sandbox environments for practical learning.

Evolution of Workforce Education

Collaboration

Encouragement for workforce development division (WDD) staff to engage in AI projects, with 64 initiatives either planned or in progress.

Continuous Learning

Role of continuous learning and adaptability in ensuring Texans remain competitive in the evolving job market.

Challenges Encountered

Difficulties in evaluating project costing and estimated budget adjustments.

Accuracy of chatbot responses.

Capacity for staff to explore and create test projects.

Embracing AI for Public Service

1

Community Impact

Encouragement for other public organizations to adopt similar AI and digital literacy initiatives.

2

Innovation Drive

The pivotal role of AI in fostering innovation and addressing public service challenges.

Regional Innovative Project Showcase

FREIGHT OPTIMIZATION SYSTEM

Connor Sadro, North Central Texas Council of Governments

North Central Texas Council of Governments

NCTCOG Freight Optimization System

Connor Sadro

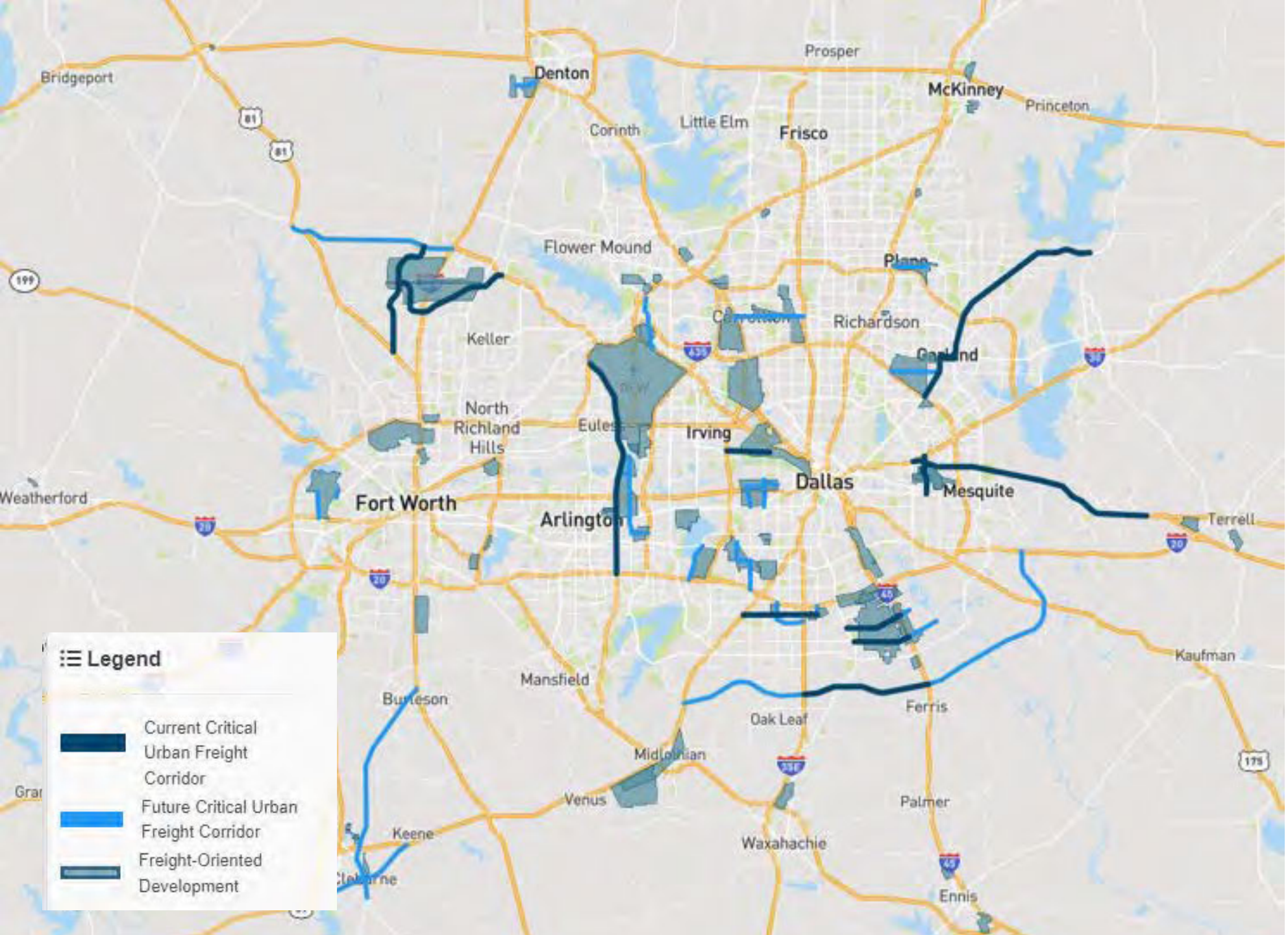
Transportation Planner

TIA Q1 - April 2024

Project Context

- DFW is the largest inland port & distribution ecosystem in the US
- 40+ Freight-Oriented Developments (FODs)
- Shippers send trucks through traffic signals to/from FODs to expressways
- Additional regional & local distribution on major arterials

TxDOT: Texas Connected Freight Corridors Program


Legend
Current Critical Urban Freight Corridor
Future Critical Urban Freight Corridor
Freight-Oriented Development
Bridgeport
Denton
Prosper
McKinney
Princeton
Corinth
Little Elm
Frisco
Flower Mound
Plano
Richardson
Keller
Garland
North Richland Hills
Irving
Dallas
Mesquite
Fort Worth
Arlington
Weatherford
Terrell
Kaufman
Mansfield
Burleson
Oak Leaf
Ferris
Midlothian
Venus
Palmer
Waxahachie
Keene
Ennis

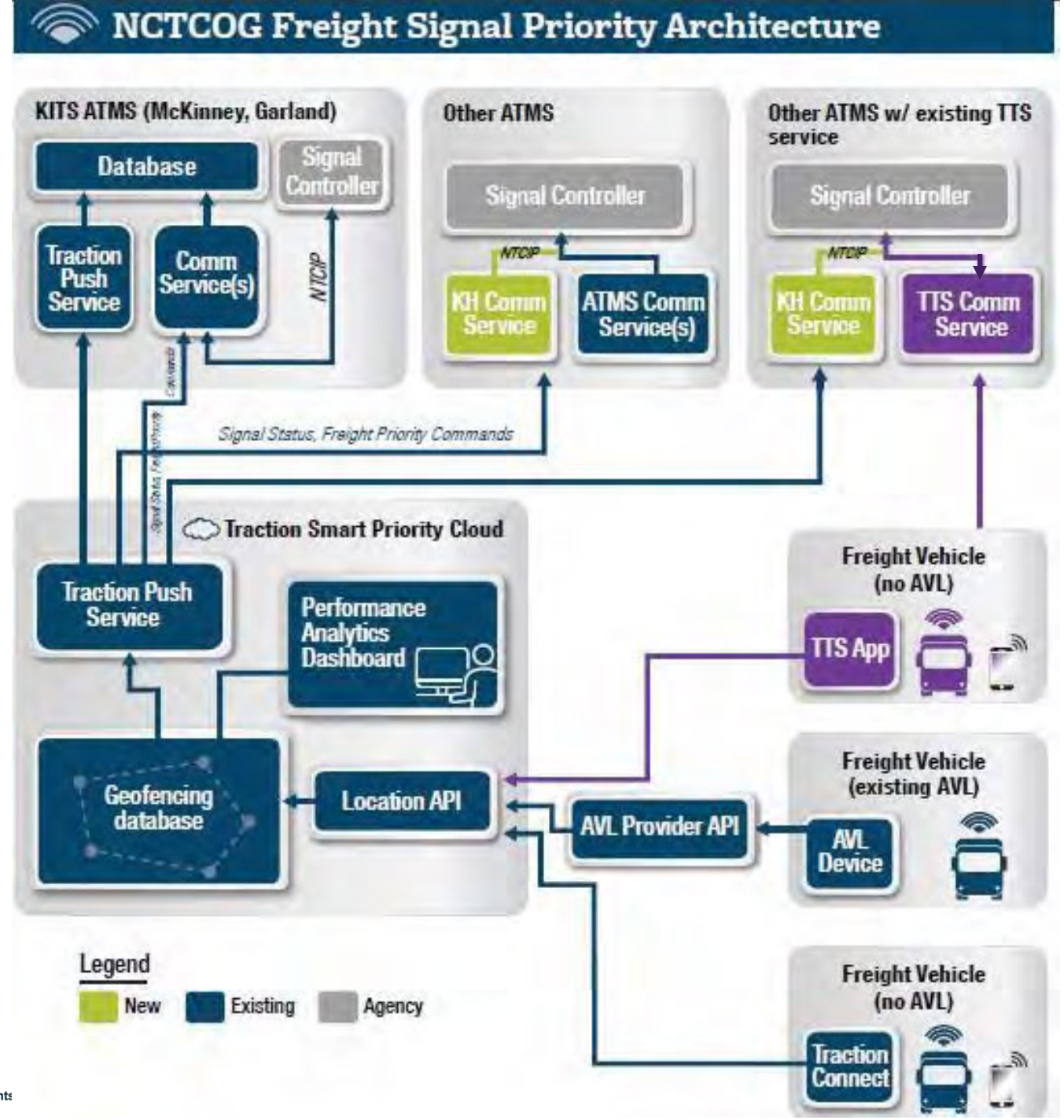
Kimley»Horn

Project Vision

- Provide real-time information to the truck drivers so that informed travel decisions can be made at the traffic signal
- Provide active control of the traffic signal to provide a few seconds extra green time that enables the truck to keep moving safely
- Track benefit-cost to identify where operational improvements for freight provides significant benefit
- Corridor, signal, etc. optimization during O&M
- No cost to local agencies
- No cost to truck operators
- Self-sustainable after 5 years operations
- No new equipment

Project Concept

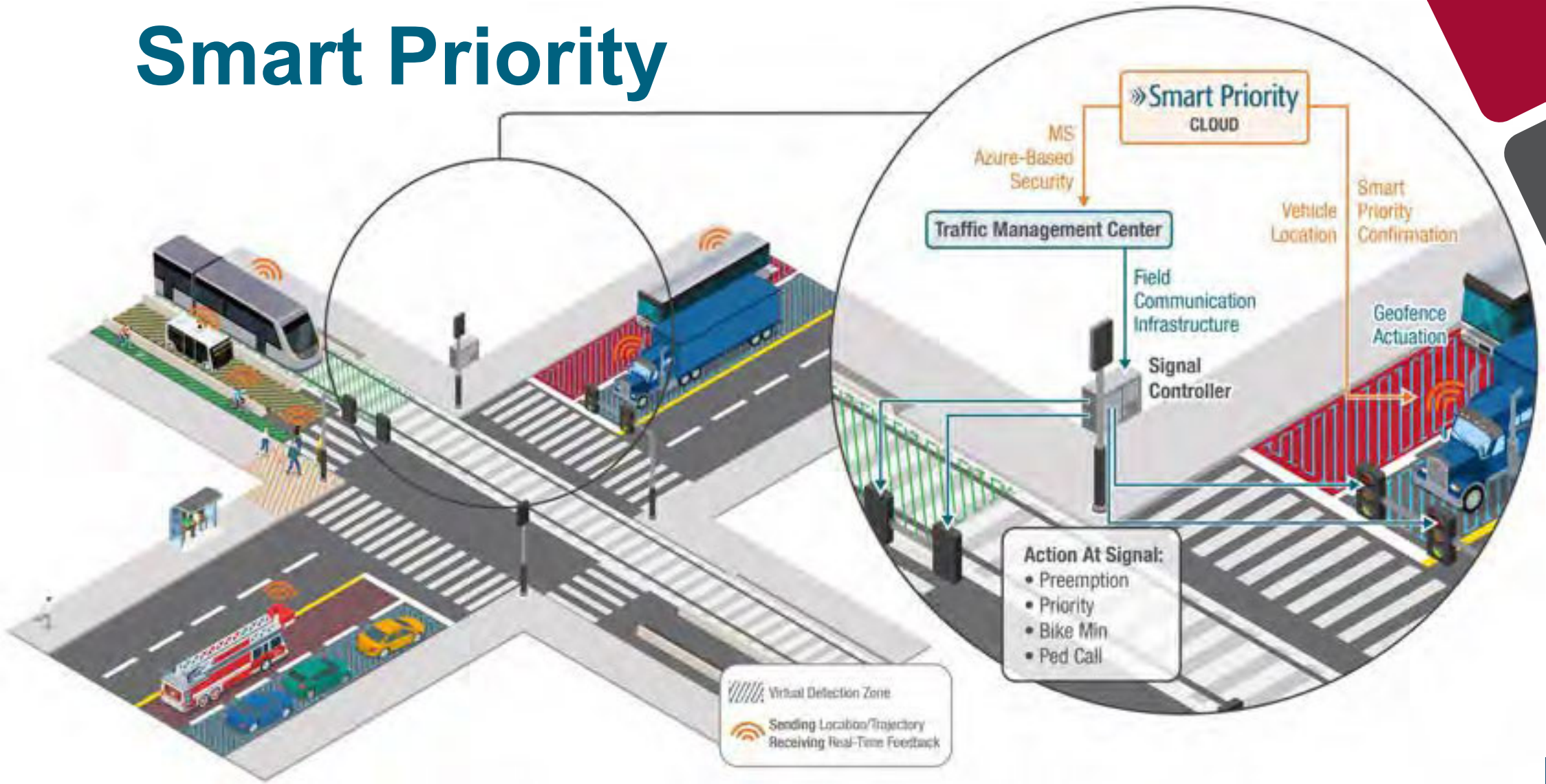
- Freight Signal Priority
- Green Light Optimized Speed Advisory (GLOSA)
- 500 traffic signals (NTCIP)
- ~10 agencies
- ~10 AVL suppliers
- 50,000+ trucks (5,000 simultaneous in the system at once)
- Cloud deployment



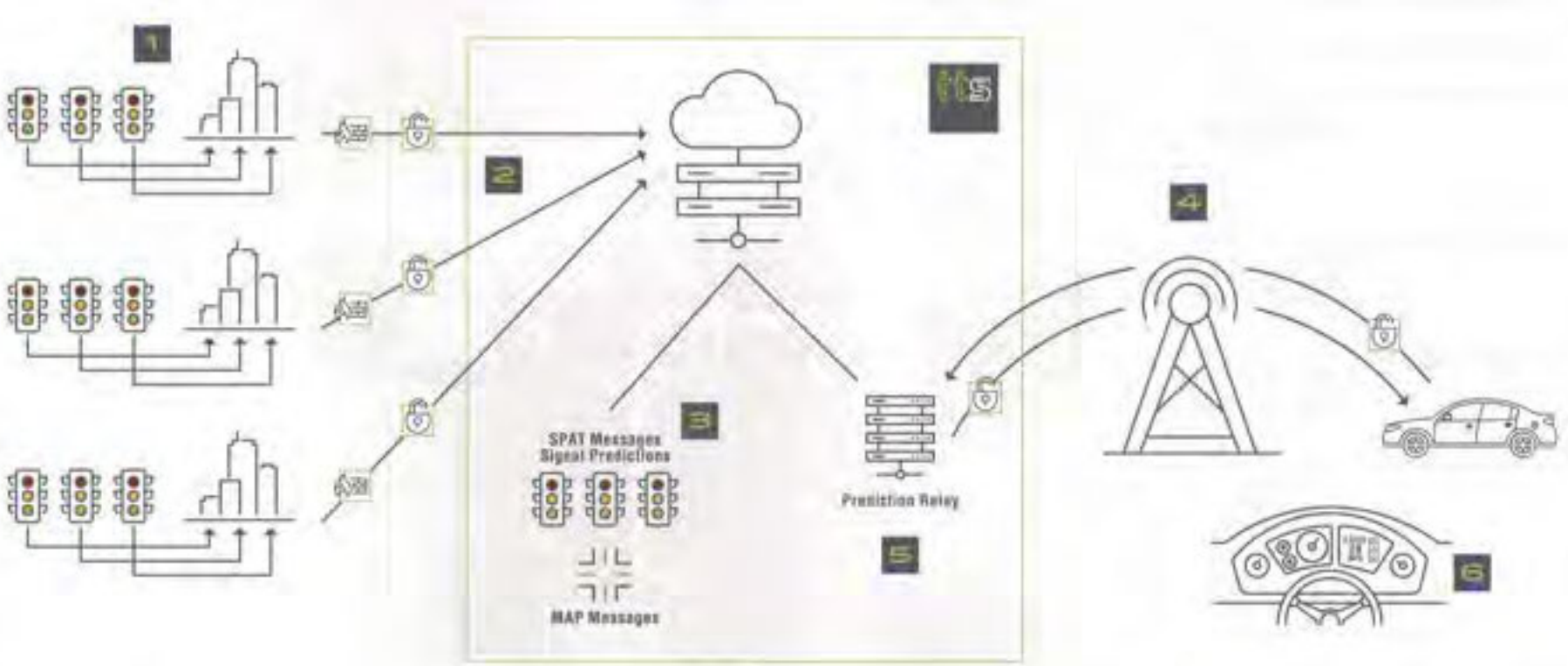
North Central Texas Council of Governments

Kimley»Horn

Smart Priority



Signal Information



1 Agency/Region provides real time traffic signal data, as-built drawings, and signal timing plan information

2 Data feed from ATMS to TTS cloud-based servers via web service

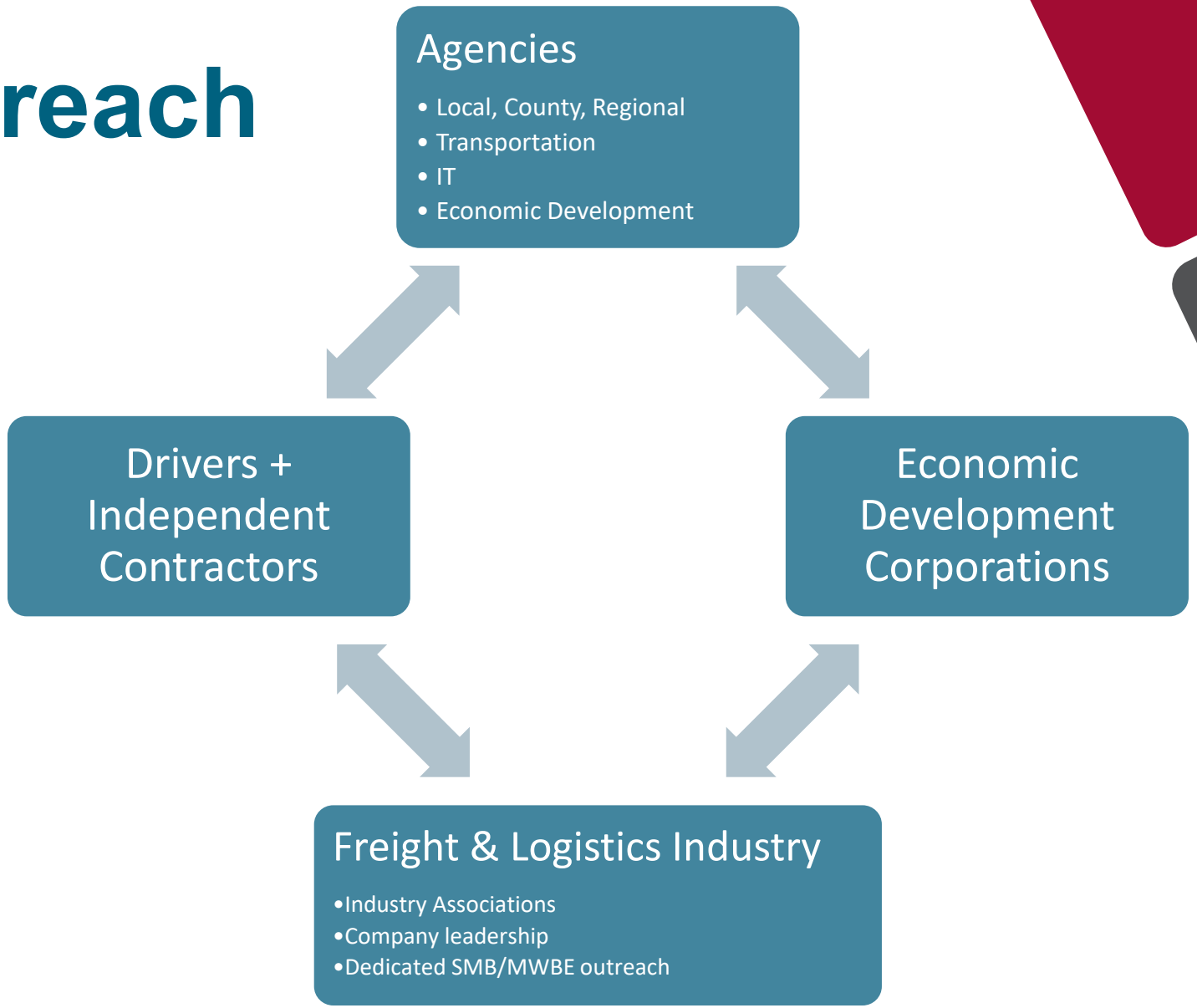
3 Develop SAE J2735 MAP and SPAT messages for each traffic signal location

4 Customer application sends request to Prediction Relay with anonymized ID, vehicle heading, maneuver, and geolocation

5 Prediction Relay matches vehicle's location to MAP message, returns targeted SPAT content to customer application

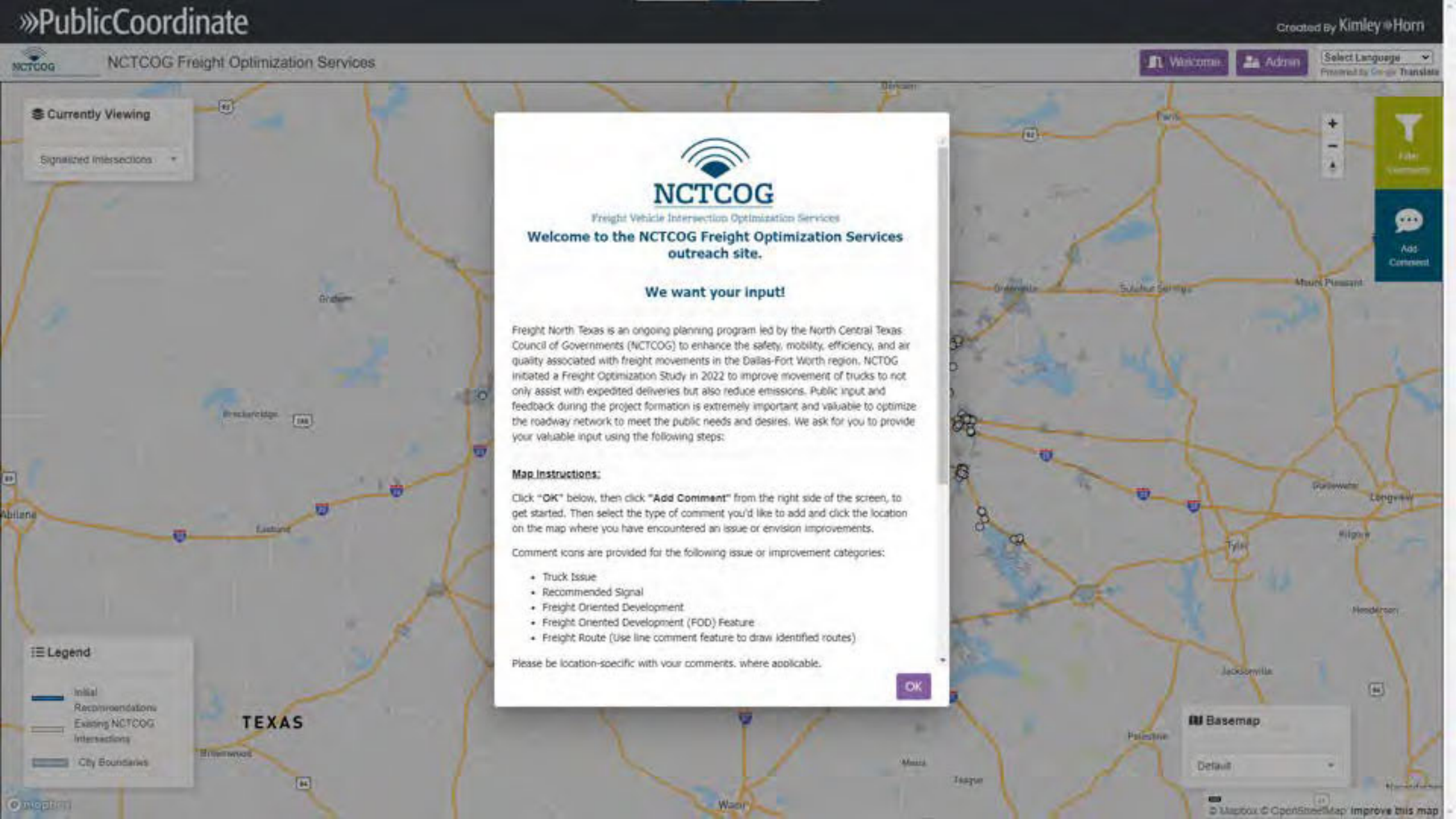
6 Information displayed to end user for relevant connected vehicle application

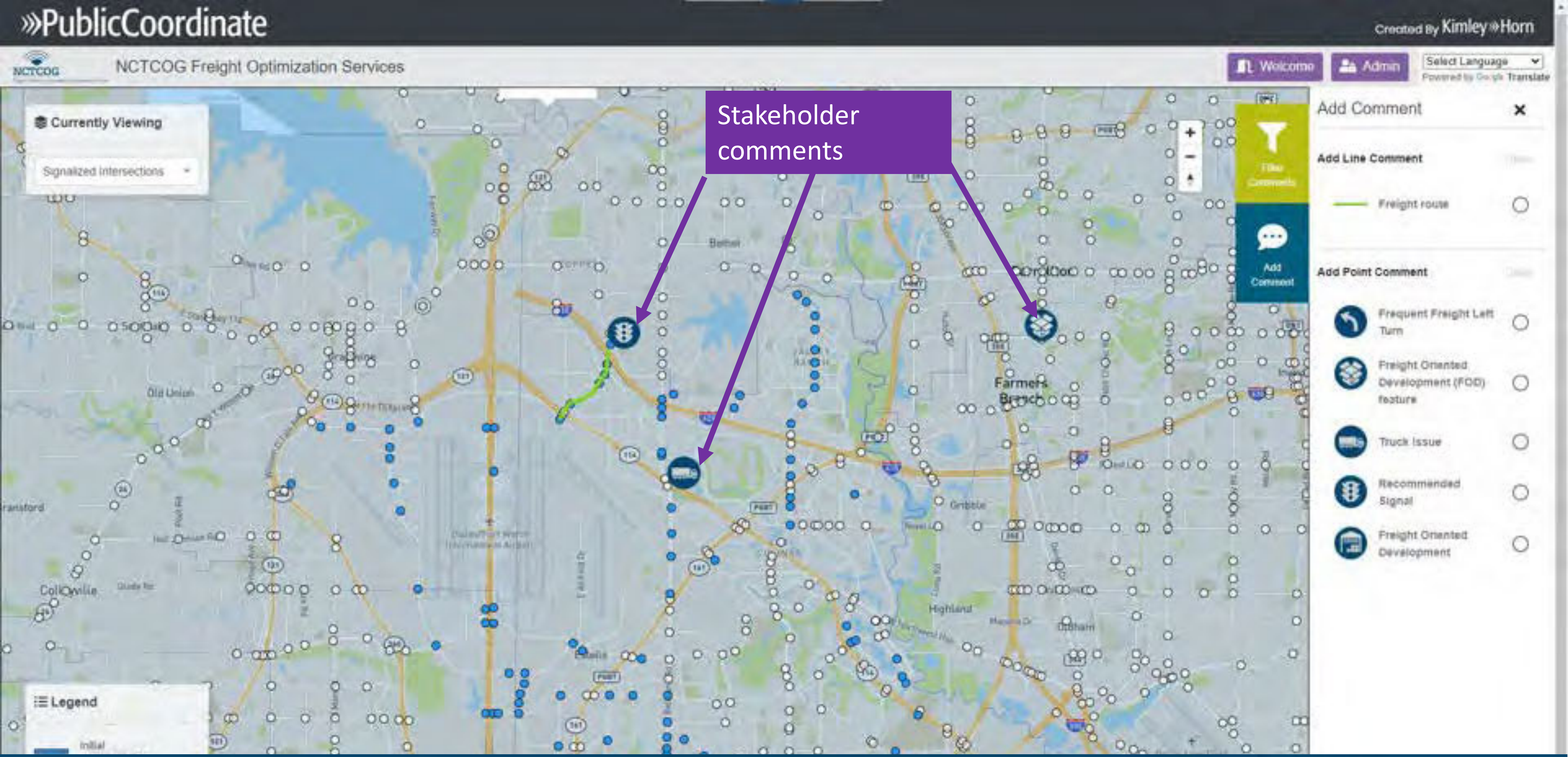
Public Outreach



We Need Your Input: PublicCoordinate

www.freightpriority.com


PublicCoordinate
Created By Kimley»Horn
NCTCOG
NCTCOG Freight Optimization Services
Welcome
Admin
Select Language
Powered by Google Translate
Currently Viewing
Signalized Intersections
Filter
Add Comment
NCTCOG
Freight Vehicle Intersection Optimization Services
Welcome to the NCTCOG Freight Optimization Services outreach site.
We want your input!
Freight North Texas is an ongoing planning program led by the North Central Texas Council of Governments (NCTCOG) to enhance the safety, mobility, efficiency, and air quality associated with freight movements in the Dallas-Fort Worth region. NCTOG initiated a Freight Optimization Study in 2022 to improve movement of trucks to not only assist with expedited deliveries but also reduce emissions. Public input and feedback during the project formation is extremely important and valuable to optimize the roadway network to meet the public needs and desires. We ask for you to provide your valuable input using the following steps:
Map Instructions:
Click "OK" below, then click "Add Comment" from the right side of the screen, to get started. Then select the type of comment you'd like to add and click the location on the map where you have encountered an issue or envision improvements.
Comment icons are provided for the following issue or improvement categories:
Truck Issue
Recommended Signal
Freight Oriented Development
Freight Oriented Development (FOD) Feature
Freight Route (Use line comment feature to draw identified routes)
Please be location-specific with your comments, where applicable.
OK
Legend
Initial Recommendations
Existing NCTCOG Intersections
City Boundaries
TEXAS
Basemap
Default
© Mapbox © OpenStreetMap Improve this map


»PublicCoordinate
Created By Kimley»Horn
NCTCOG
NCTCOG Freight Optimization Services
Welcome
Admin
Select Language
Powered by Google Translate
Stakeholder comments
Currently Viewing
Signalized Intersections
Add Comment
Add Line Comment
Freight route
Add Point Comment
Frequent Freight Left Turn
Freight Oriented Development (FOD) feature
Truck Issue
Recommended Signal
Freight Oriented Development
Filter Comments
Add Comment
Legend
Initial
Farmers Branch
Old Union
Colleyville
Highland
Addison

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tts

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and Partnerships
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Local Innovative Project Showcase

SA WORX

Romanita Matta-Barrera, greater:SATX

Strategic Workforce Development

Romanita Matta Barrera, Chief Business Advancement Officer

We are greater:SATX

MISSION: To lead the development & diversification of the San Antonio, Texas regional economy through the location & expansion of quality employers & job-producing investments.

- greater:SATX is a public-private, regional economic development organization charged with developing and diversifying the San Antonio, Texas economy through **business attraction**, **business retention**, **workforce development** and **global marketing strategies**.

- Supported by over 200 private sector investors and 19 regional partners, we are responsible for assisting over **500 companies** relocate or expand in the region that collectively employ more than **120,000 San Antonians**.

greater:SATX REGIONAL ECONOMIC PARTNERSHIP

Strategic Initiatives

PEOPLE

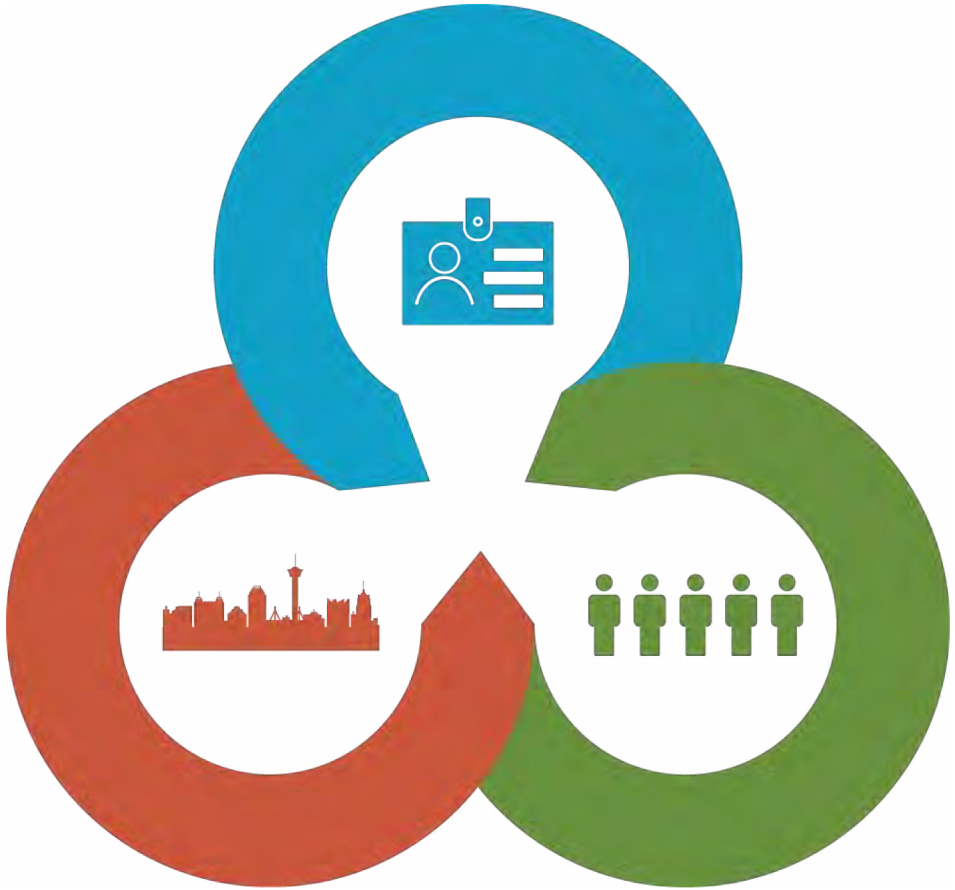
- Workforce Readiness
- Talent Retention
- Talent Pipeline Management (TPM)

PLACE

- Regional Sites
- San Antonio International Airport
- Marketing & Brand Recognition
- Advocacy & Influence

JOBS

- Regional Partnerships
- Targeted Corporate Recruitment
- Business Advancement



greater: SATX REGIONAL ECONOMIC PARTNERSHIP

TPM Framework Strategies

Strategy 1:
Organize for Employer Leadership and Collaboration

Strategy 2:
Project Critical Demand

Strategy 3:
Align and Communicate Job Requirements

Strategy 4:
Analyze Talent Supply

Strategy 5:
Build Talent Supply Chains

Strategy 6:
Engage in Continuous Improvement and Resiliency Planning

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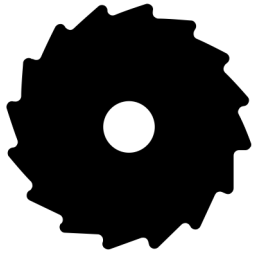
REGIONAL ECONOMIC PARTNERSHIP

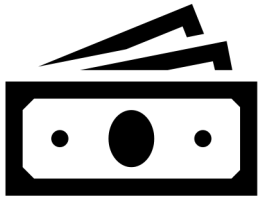
TPM Target Industries

Healthcare & Bioscience



Advanced Manufacturing

Cybersecurity & Technology



Financial Services

Construction & Skilled Trades

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REGIONAL ECONOMIC PARTNERSHIP

Supporting Career Pathways

K12 Initiatives

Job Shadow Days

High School Summer Internships

Manufacturing Month

Cybersecurity Career Awareness Week

Higher Education

Alamo Fellows

Harvard Business School Young American Leaders Program (YALP)

Higher Education Presidents' Convening

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greater: SATX

REGIONAL ECONOMIC PARTNERSHIP

BREAK

STIC Incentive Program Overview

Shelley Pridgen, TxDOT
Kirk Fauver, FHWA

Innovative TRANSPORTATION in Texas

STIC Incentive Program

Texas Innovation Alliance – Spring Meeting

Shelley Pridgen – STR Innovations Section

April 4, 2024

Table of Contents

Summary of STIC Incentive Program

Federal Highway Administration (FHWA) State Transportation Innovation Council (STIC) Incentive program provides resources to help STICs **foster a culture for innovation and make innovations standard practice in their States**.

The Texas
State Transportation
Innovation Council

Background of STIC Incentive Program

- The STIC allows the State's transportation community to **consider sources of innovation**, **select those innovations** that best **fit its needs**, and then quickly **put innovations into practice.**
- The **STIC Incentive program is one tool to address Accelerated Innovation Deployment (AID) requirements** by providing resources to foster a culture of innovation and advance innovations into standard practices.

Background continued…

Technology and Innovation Deployment Program (TIDP) Initiatives*

1. Accelerated innovation deployment (AID);
2. Implementation of future strategic highway research program (SHRP2) findings and results;
3. Accelerated implementation and deployment of pavement technologies; and
4. Advanced transportation innovation deployment.

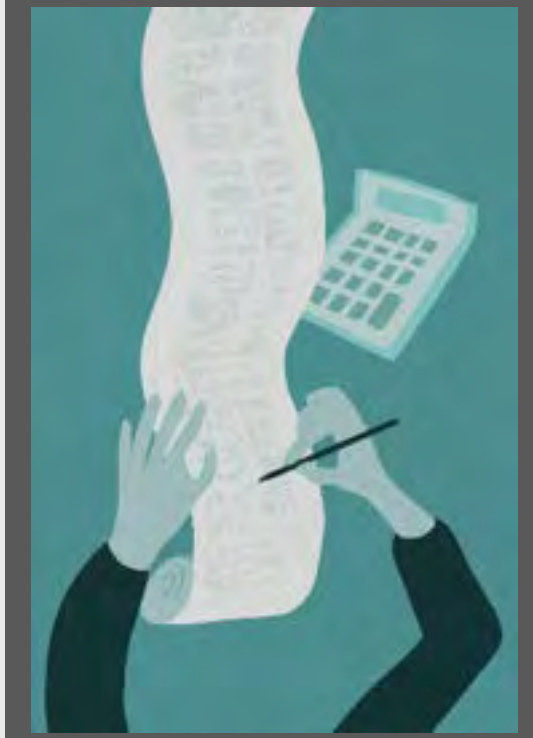
Background continued…

Technology and Innovation Deployment Program (TIDP) Goals

- Significant acceleration and adoption of innovative technologies;
- Leadership and incentive support to promote state-of-the-art technologies, elevated performance standards, and new business practices in highway construction processes;
- Construction of longer-lasting highways using innovative technologies and practices that lead to faster construction of efficient and safe highways and bridges;
- Improvement of highway efficiency, safety, mobility, reliability, service life, environmental protection, and sustainability; and
- Development and deployment of new tools, techniques, and practices to accelerate the adoption of innovation in all aspects of highway transportation.

Program Funding

- Federal funding recently increased to **$125,000 per State per Federal fiscal year**.
- Federal share of **80%** is applied to eligible projects, limited to $125,000 per state each year. A **20%** state match is required (Total award up to $150,000 for eligible projects).
- Supports or offsets the costs of **standardizing innovative practices** in a State Transportation Agency or other **public sector** STIC stakeholder (cities, regional entities, universities).
- More details available online (https://www.fhwa.dot.gov/innovation/stic/guidance.cfm)



Program Eligibility

Entities:

- TxDOT is the primary recipient as funds are obligated via the Fiscal Management Information System (FMIS).
- Other public sector STIC stakeholders such as MPOs, local governments or tribal governments are eligible to receive STIC Incentive funding as sub-recipients to TxDOT.

Projects/Activities:

- Must have a statewide impact in fostering a culture for innovation or in making an innovation a standard practice.
- Must align with TIDP goals.
- Must be eligible for Federal-aid assistance and adhere to applicable federal requirements.

Program Eligibility continued…

Examples of Allowable Activities (not complete list)

- develop standards and specifications
- develop and deliver training to facilitate widespread use of an innovation
- refine current specifications based on lessons learned from implementing an innovation
- develop memoranda of agreement
- prepare standard operating procedures or technical guidance for an innovation
- prepare a report summarizing the lessons learned and economic analysis of an innovation
- develop a decision matrix for use of an innovation
- prepare an implementation plan for an innovation, including performance measures
- sponsor an innovation workshop/exchange sharing best practices

How to Apply for the STIC Incentive Program

When to apply:
(follows Federal fiscal year)

Project solicitation opens October 1st and closes on **September 30th**.

Proposals should include:

- ✓ Description; End product/ result;
- ✓ Funds requested; Commitment of other funding;
- ✓ Budget justification; and
- ✓ Anticipated project schedule

Share with STIC stakeholders:
(TIA Members Meetings or Lead calls)

- First bring your project idea before the Texas Innovation Alliance as a potential STIC Incentive Project.
- Based on interest in the topic or idea, the STIC Steering Committee and STIC Members may shortlist more than one project.

Work with TxDOT:
(through the STR Innovations Team)

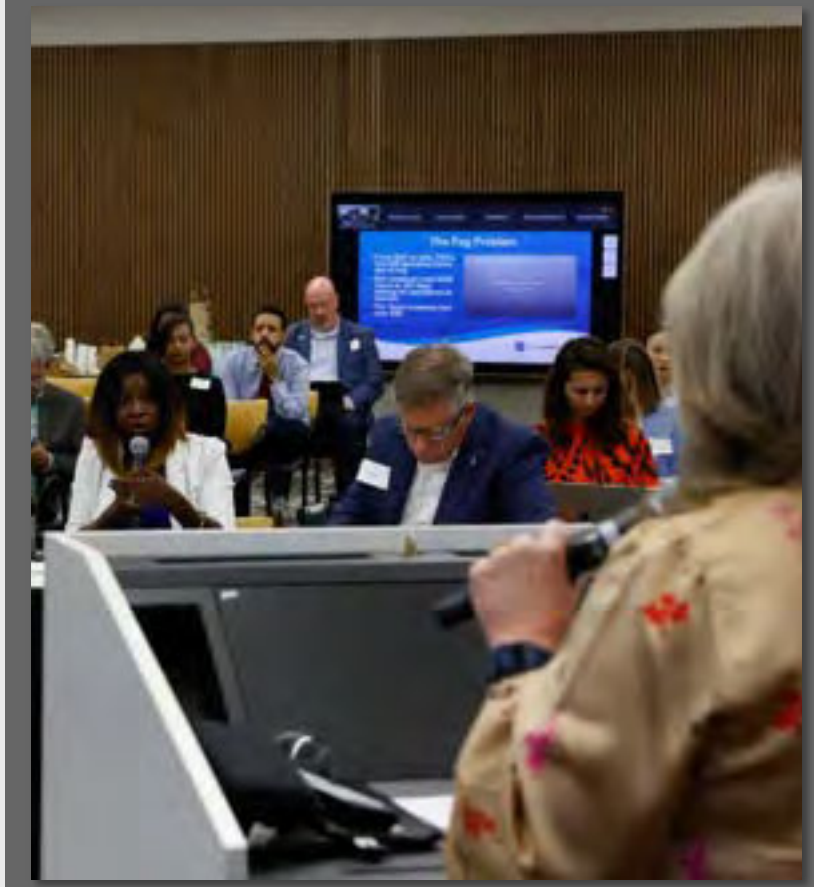
- TxDOT can provide go-bys and assist with review and finalizing the application.
- Once a project is selected by the TIA, TxDOT will work with the project team to formalize the application and obtain FHWA approval.

Final selection is made based on national relevance at that time:

- An agreement will need to be prepared between TxDOT and the Performing Agency or Entity.
- Proposed project/activity must be started as soon as practical after notification of approval and funds must be expended within 2 years.

Project Team Responsibilities

- Comply with eligibility requirements for use of the funds and any contract terms*;
- Provide **progress report presentations** at Texas Innovation Alliance (STIC) meetings;
- Provide **written progress reports** for TxDOT review and submittal to the local FHWA Division Office, semi-annually; and
- Provide **a written final report** for TxDOT review and submittal to the local FHWA Division Office upon project conclusion.



*Outlined in Title 2 Code of Federal Regulations (CFR) part 200, including financial management standards and audits)

STIC Incentive Projects (FY22, FY23 and FY24) and EDC reporting

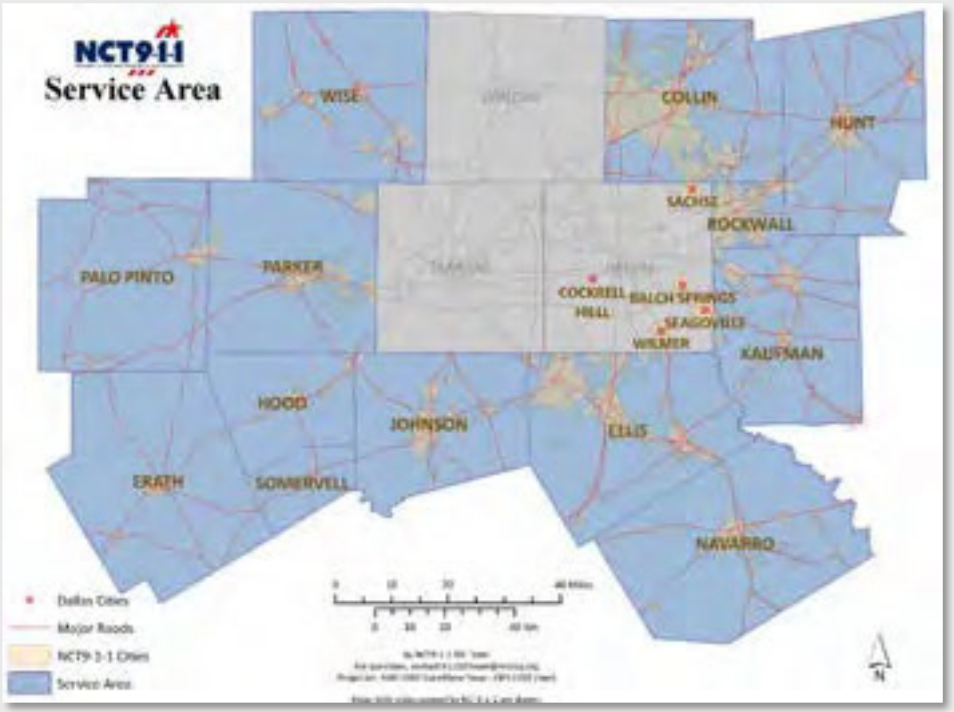
Crowdsourcing for Advancing Operations (current FY24) – Improve Emergency Response to Roadway Incidents using Waze Integration (NCTCOG; NCT-9-1-1)

TIM Tech for Saving Lives (FY22) – CAD2TMC Recently concluded in December 2023 (TTI)

Strategic Workforce Development (FY23)– For County Road and Bridge Workers (TxLTAP – UTA)

Mid-year Reporting for EDC Activities statewide – Collection phase for reports through end of April 2024 and Due to FHWA May 17th

Waze Integration Project – NCTCOG



Timeline for FY25 STIC Incentive Projects

Innovative Transportation in Texas Information Online

Learn more on TxDOT.gov

Contact

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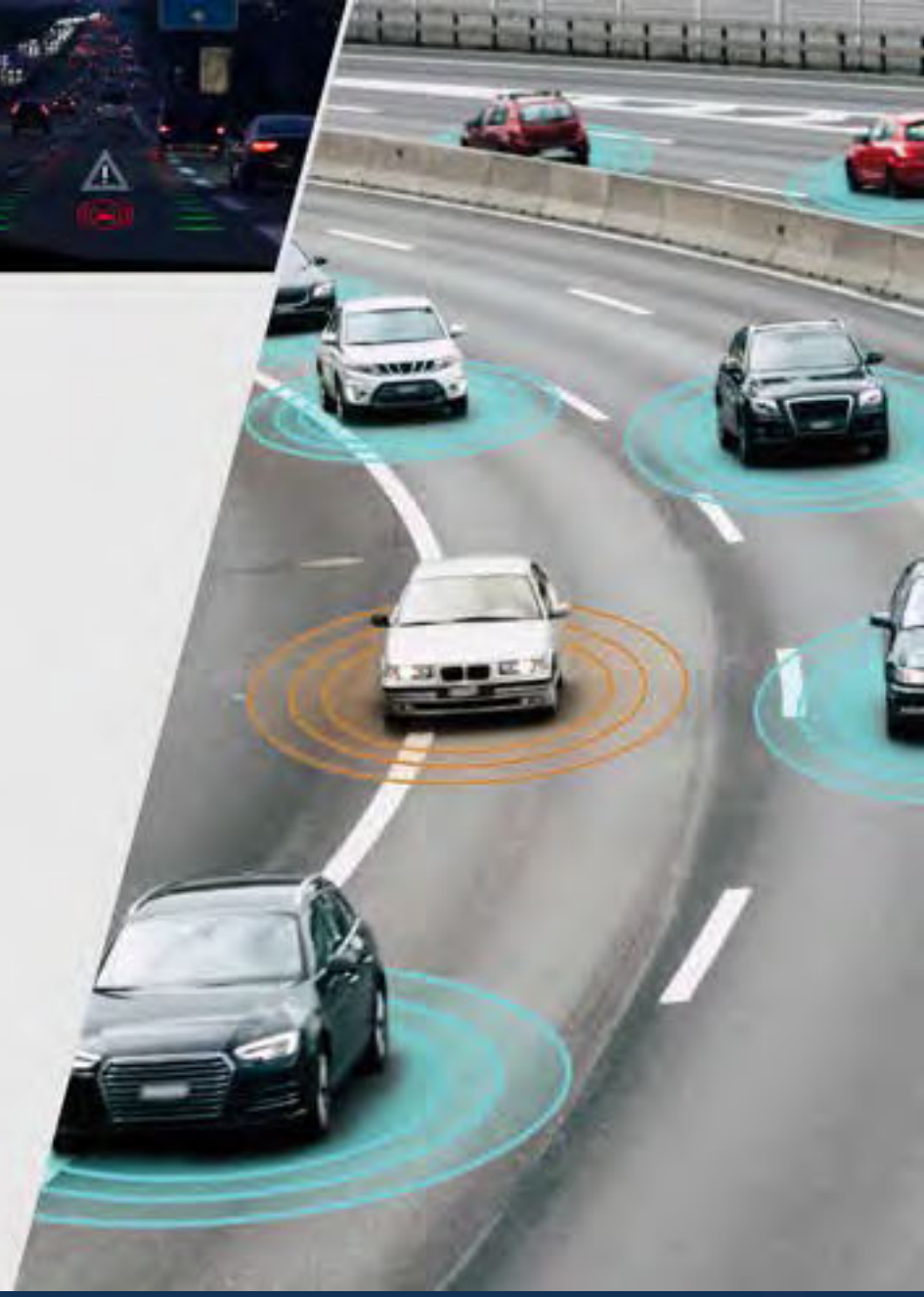
Innovative TRANSPORTATION in Texas

Questions?

Thank you!

Feedback Survey



April 4, 2024