

Transportation Mobility in Frisco

SAME Infrastructure Forum

Brian Moen, P.E.



February 28, 2025



Imagine that

- You are at a garage sale
- Looking for Legos/building blocks for kids or grandkids
- Just a box of pieces - no pictures or instructions
- Will you buy?
- Remember the imagination of children and ease of pretending?
- Innovation often has no manual and needs imagination



What Might Help Manage Traffic Now and in the Future?

Partnerships

Traffic Incident Management

Video Sharing

Data Sharing

Autonomous Vehicles

Traffic Signal Data

Connected Vehicle Data

Artificial Intelligence



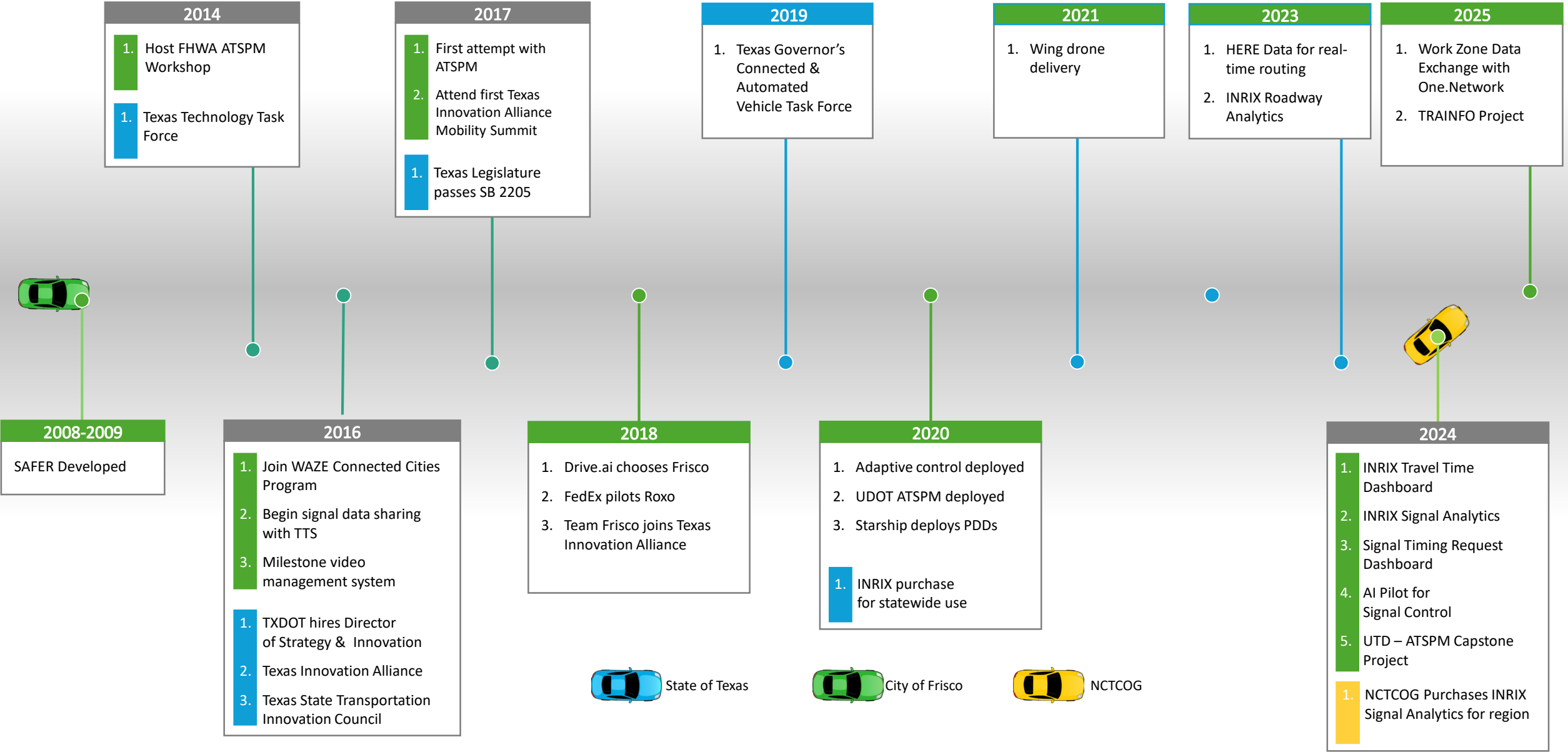


Partnerships & Innovation

- One of keys to innovation
- Other Transportation Agencies
- First Responders
- Private Companies
- Transit Agencies
- Academia



Frisco Transportation Innovation Timeline



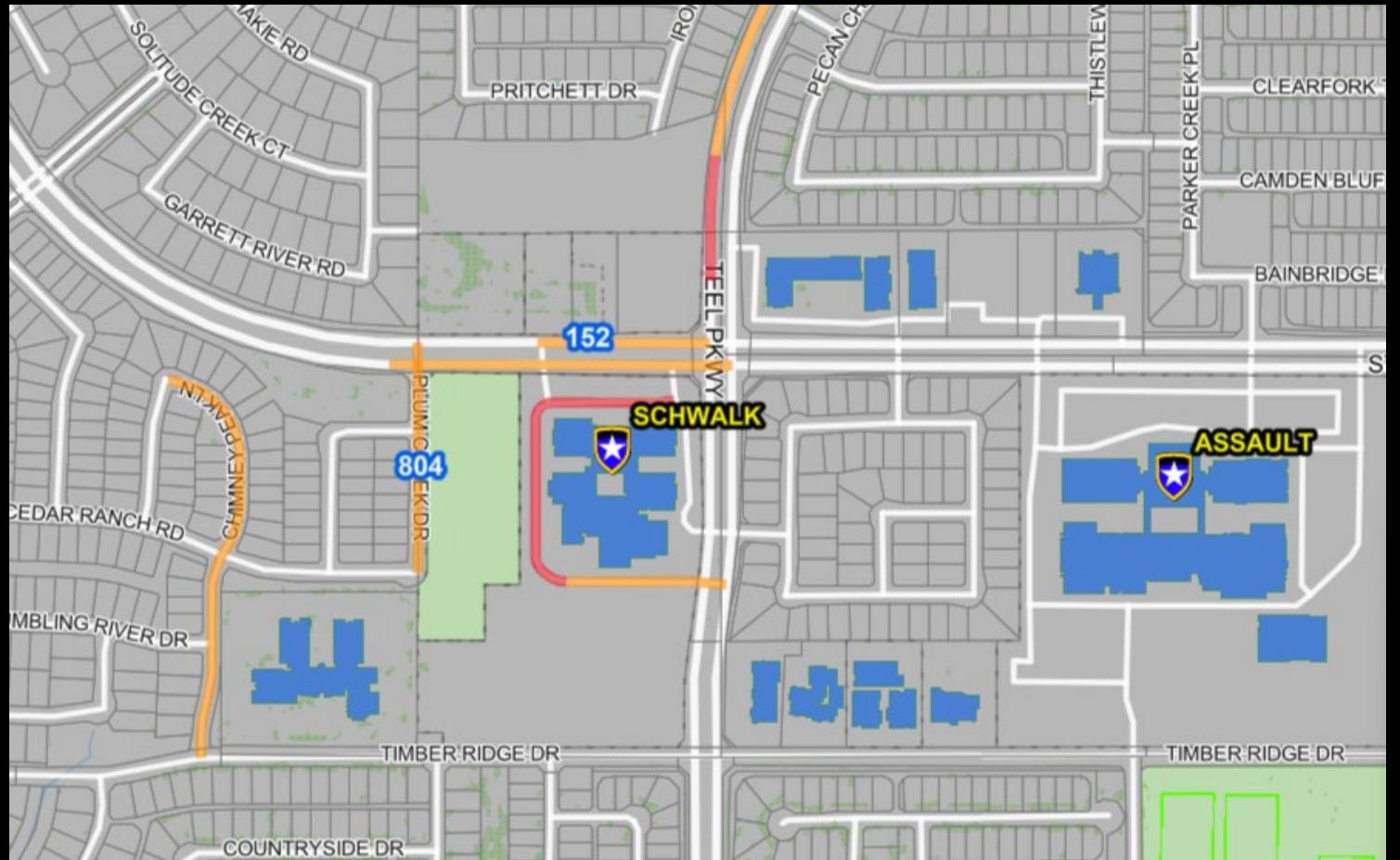
Emergency Response and Traffic Incident Management

- Video Cameras
 - Used by EOC/Dispatch
 - Available in responding units
- Closest To Dispatching
- Emergency Road Closures
- Special Event Management
- Tour/Demonstration for Companies and Events Considering Frisco
- https://www.youtube.com/watch?v=5By_fbq-Rtg&t=3s



HERE.com

- Real Time Traffic Feed
 - Optimize response route given traffic conditions
 - Produces arrival time estimate



Active Incidents

DETECTOR
7011 ASH ST

CFS# 230395
Created Mon 8:52 A

E1 8 1m

55
FM 423 @ STONEBROOK PKWY

CFS# 230395
Created Mon 8:50 A

154

Active Incidents

INTOX
1600 LEGACY DR

CFS# 231297
Created Wed 10:54 A

141 8 4m

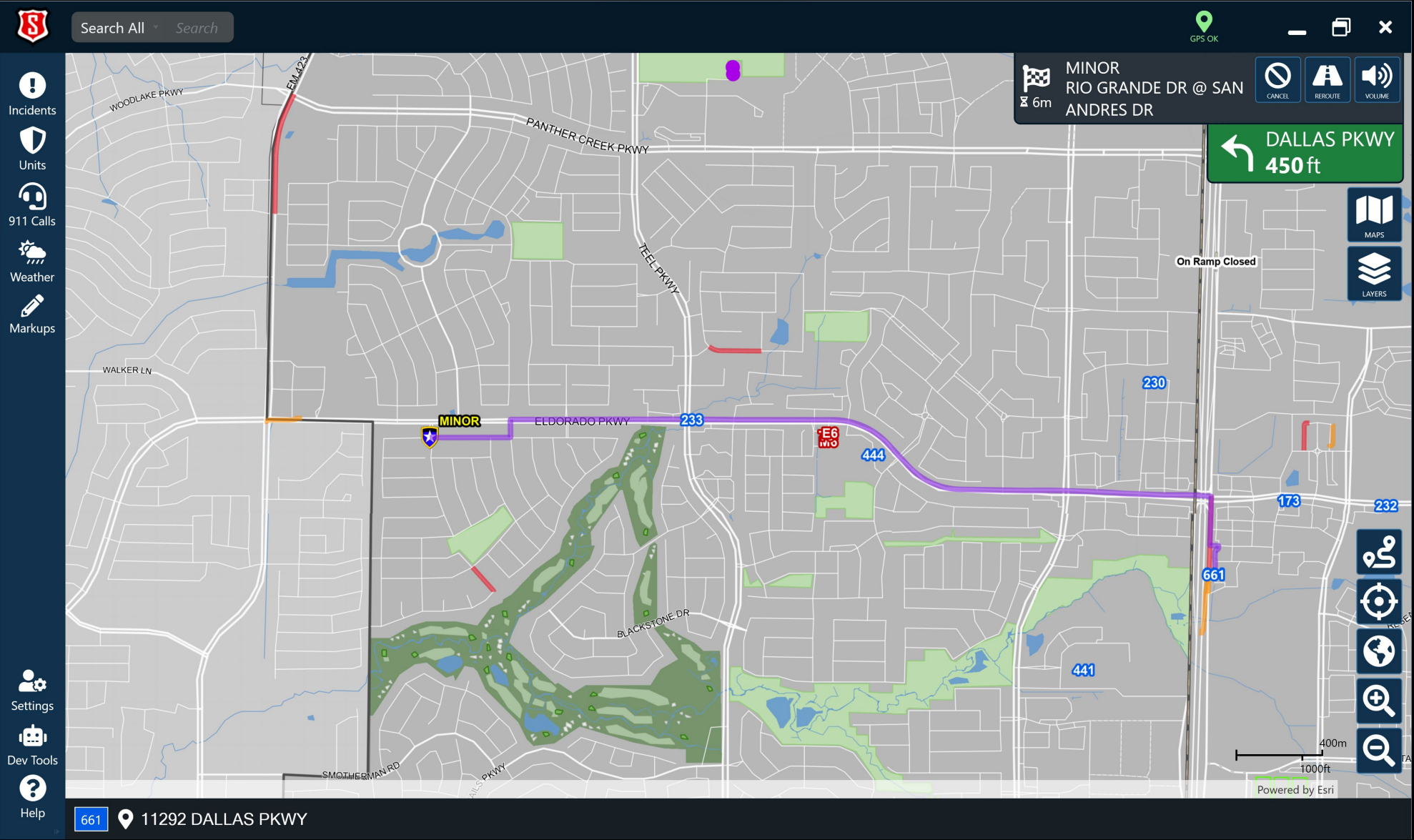
154 8 7m

TRAFFIC
TALBOT DR @ FLANDERS DR

CFS# 231297
Created Wed 10:53 A

170 8 3m

Example Routing



Detect Railroad Crossing Blockages

- NCTCOG 2020 TIM Grant
- Propose Trainfo
- Detects blockage
- AI and ML predict duration
- Real-Time routing can try to account for blockage too



Video Sharing

Milestone XProtect Smart Client

Live Playback Search Alarm Manager System Monitor

XProtect South

Views

Search views and cameras...

- 3.2 - Controls and View - Signals-Copy
- 4.5 - Logistics - Controls and View
- Carousel
- EOC screens
- Lower Admin
- Private
- Public Works
- Shared Views
 - Cowboys
 - High Schools
 - Protest
 - PTZ (all)
 - Coit
 - Custer
 - DNT
 - Eldorado
 - FC Dallas
 - FM 423
 - Frisco St
 - Gaylord
 - Hillcrest
 - Independence
 - John Hickman
 - Lebanon
 - Legacy
 - Little Elm
 - Main

1 Preston & Gary Burns PTZ

1 Preston & Hickory PTZ

1 Preston & Rolater/Stonebrook PTZ

1 Preston & Wade PTZ

1 Preston & Lebanon PTZ

1 Preston & John Hickman PTZ

1 Preston & Warren PTZ

1 Preston & Gaylord PTZ

1 Preston & SH 121 PTZ

Waze Data Sharing



Transportation Management

Waze Dashboard

Waze Data Analysis

Crash Reporting Analysis

Real-Time Traffic Dashboard

Alert Types

Crashes

Closures

Jams

Road Hazards

Weather Hazards

Time Periods

Live

Last 10 Minutes

Last 20 Minutes

Last 30 Minutes

Reported Crashes

0
0%

Reported Closures

4
27%

Reported Jams

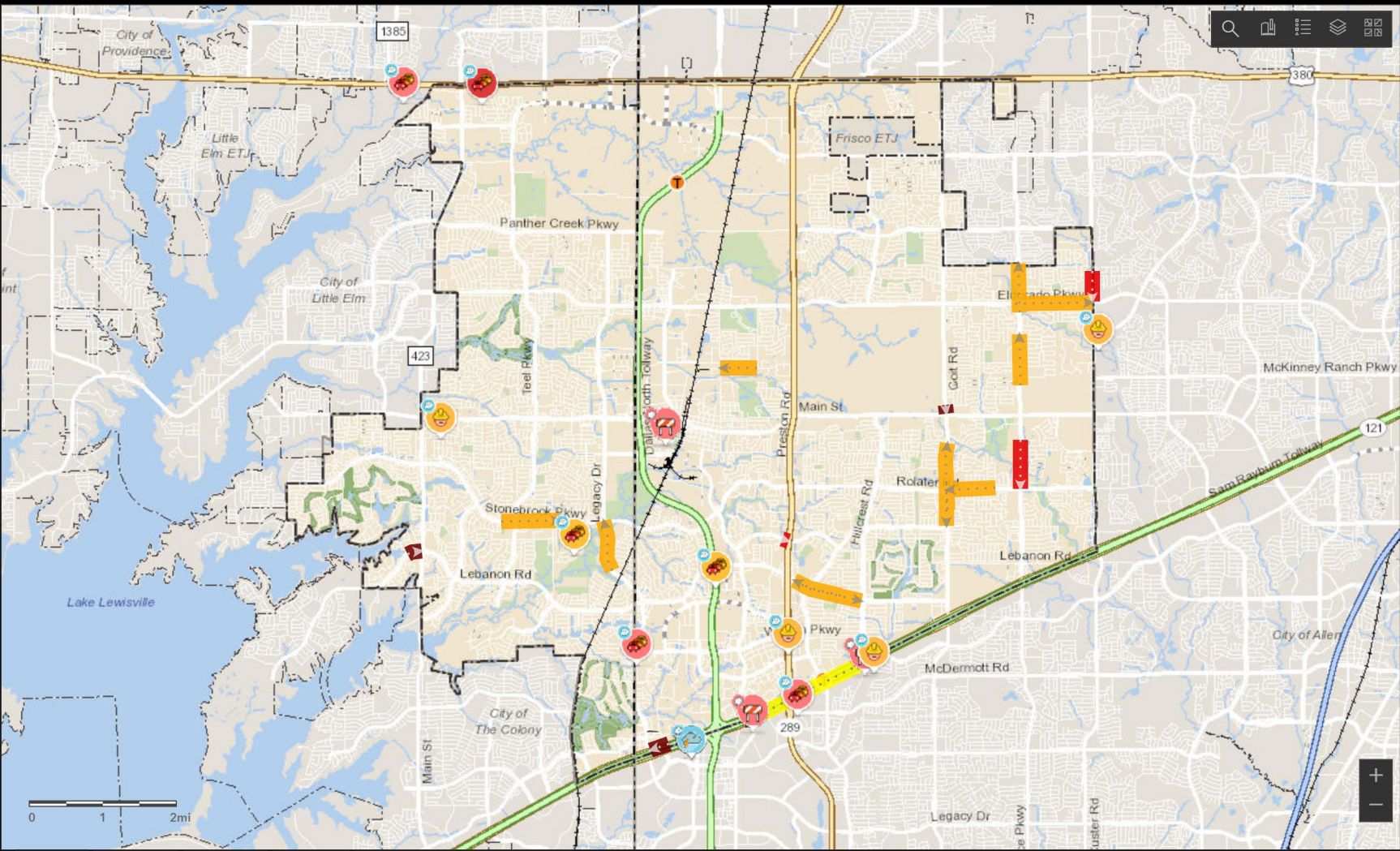
6
40%

Reported Road Hazards

4
27%

Reported Weather Hazards

1
7%



Active Alerts

15

11/5/2019, 4:16 PM

- Road Hazard** | Main St
South East - Construction on Road
11/5/2019, 4:14 PM
- Road Hazard** | S Stonebridge Dr
East - Construction on Road
11/5/2019, 4:14 PM
- Jam** | Legacy Dr
North East - Heavy Traffic
11/5/2019, 4:14 PM
- Jam** | Sam Rayburn Tollway N
North East - Heavy Traffic
11/5/2019, 4:14 PM
- Jam** | E University Dr
North West - Heavy Traffic
11/5/2019, 4:13 PM
- Jam** | Dallas North Tollway N
North West -
11/5/2019, 4:12 PM
- Road Hazard** | SH-121
South West - Construction on Road
11/5/2019, 4:09 PM
- Weather Hazard** | to Dallas North Tollway
North East - Fog
11/5/2019, 4:07 PM
- Jam** | Loxton Blvd
South East -
11/5/2019, 4:03 PM
- Jam** | US-380
West - Stand-Still Traffic
11/5/2019, 3:55 PM

Live Map

Live Delays

Live Trends

Heat Map

Historical Map

Historical Trends



Traffic Signal Data Sharing





STARSHIP

FedEx

FRISCO ISD



FRISCO



Wing™



Traffic Signal Data

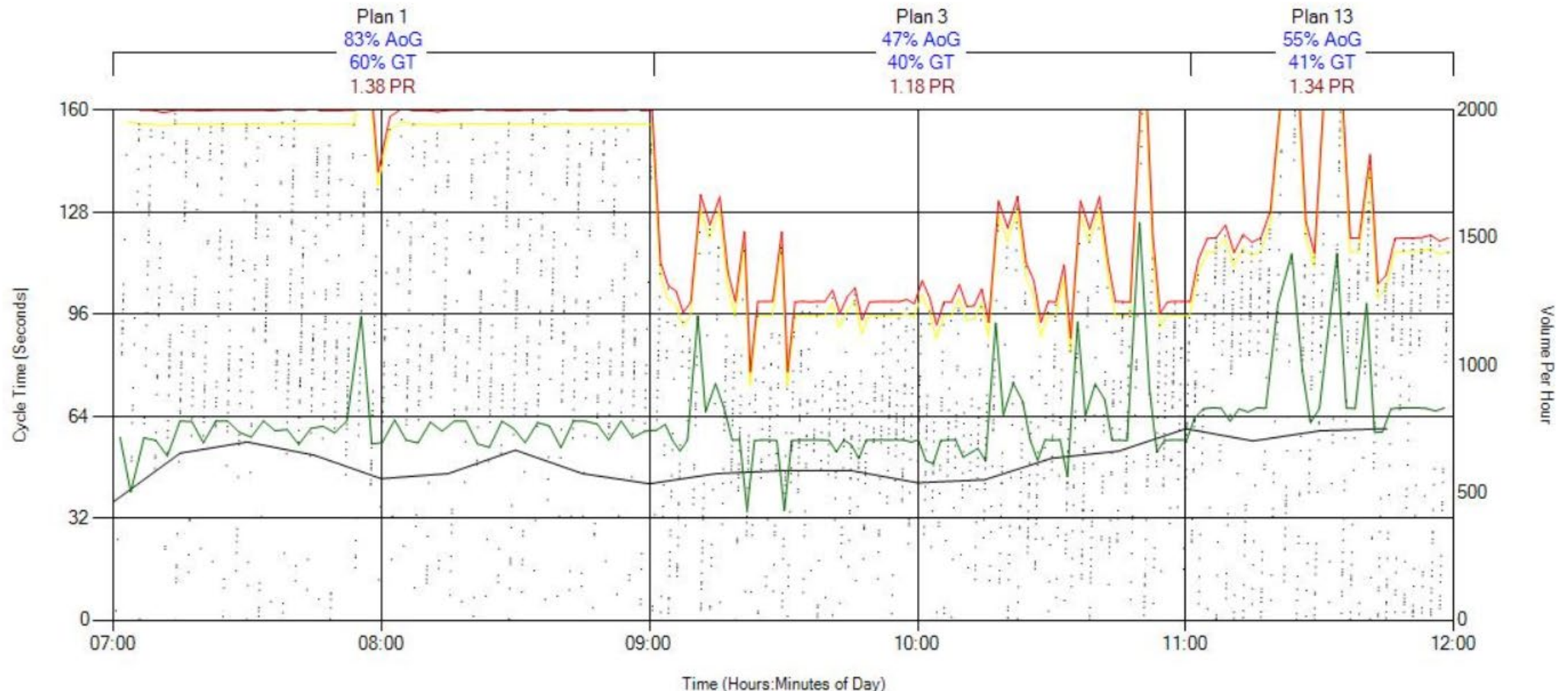
Preston Rd @ Warren Pkwy - SIG#675
Thursday, July 30, 2020 7:00 AM - Thursday, July 30, 2020 12:00 PM
Advanced detector located 370 ft. upstream of stop bar

Phase 2: SBT

AoG = 63%

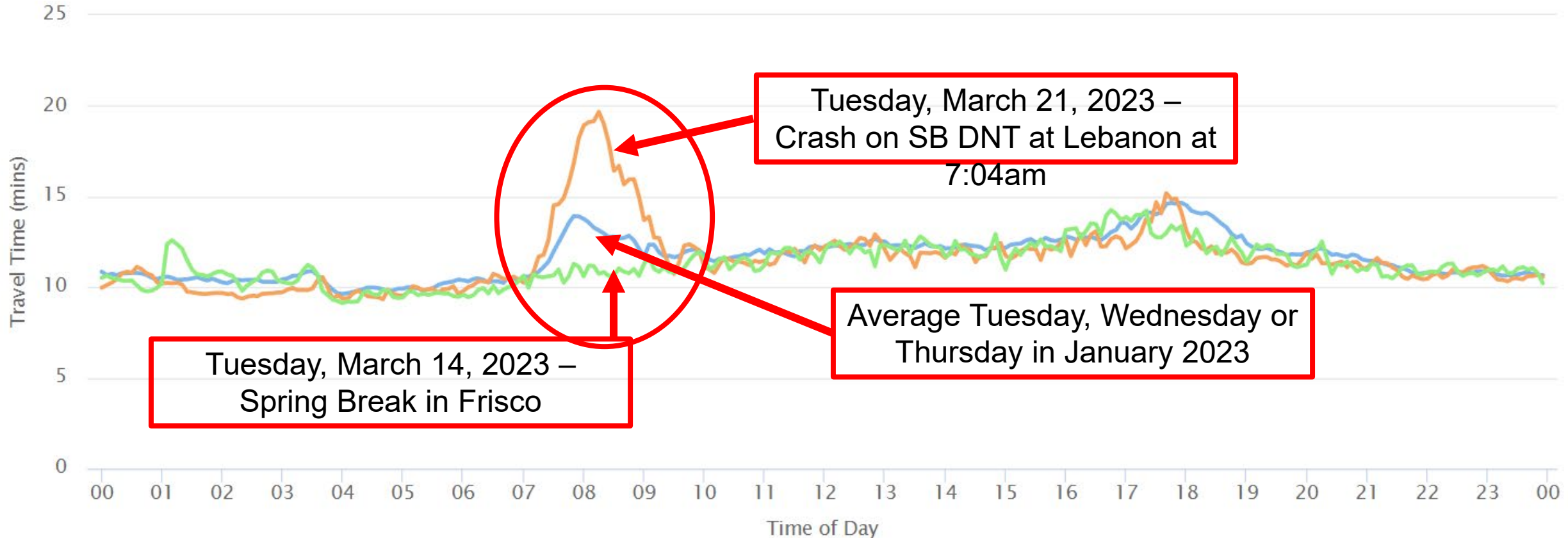
SB Preston at Warren
63% of traffic arrives on green
from 7am to noon

- Volume Per Hour
- Detector Activation
- Change to Green
- Change to Yellow
- Change to Red
- AoG - Arrival On Green
- GT - Green Time
- PR - Platoon Ratio



Connected Vehicle Data

SB Preston - US 380 to SH 121



01/01/2023 – 01/31/2023 (Tu,We,Th) 5th and 95th Percentiles 25th and 75th Percentiles 03/14/2023 – 03/14/2023 (All Days) 5th and 95th Percentiles 25th and 75th Percentiles 03/21/2023 – 03/21/2023 (Tu) 5th and 95th Percentiles 25th and 75th Percentiles



INRIX Signal Analytics

Daily Analytics Summary Email



Signal Analytics

Worsened Control Delay (Total)		4-wk Avg	2024-10-08	Change	
1	6593 - COIT ROAD & PGA/VIRGINIA PARKWAY	14.8h C	17.7h C	+2.8h	+19%
2	Lakehill Boulevard & Legacy Drive	5.5h A	8.3h B	+2.8h	+50%
3	Dallas Parkway & Gaylord Parkway	12.7h C	14.9h D	+2.2h	+18%
4	Lebanon Road & Hillcrest Road	10.5h C	12.4h C	+2.0h	+19%
5	Main Street & South County Road	7.0h C	8.4h C	+1.4h	+21%
Worsened Control Delay (per Vehicle)		4-wk Avg	2024-10-08	Change	
1	6593 - COIT ROAD & PGA/VIRGINIA PARKWAY	29s C	34s C	+5s	+19%
2	Lebanon Road & Hillcrest Road	29s C	35s C	+5s	+19%
3	Dallas Parkway & Gaylord Parkway	30s C	35s D	+5s	+18%
4	Main Street & South County Road	25s C	30s C	+5s	+21%
5	Lakehill Boulevard & Legacy Drive	7s A	10s B	+3s	+50%

Legacy & Lakehill

- Not construction related
- Broken Detection Panel



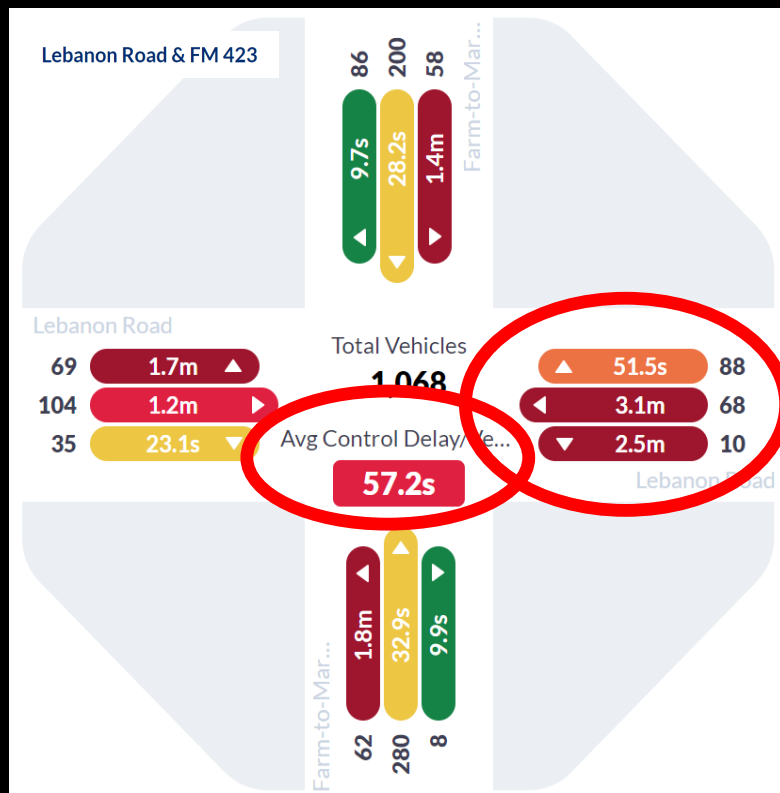


INRIX Signal Analytics

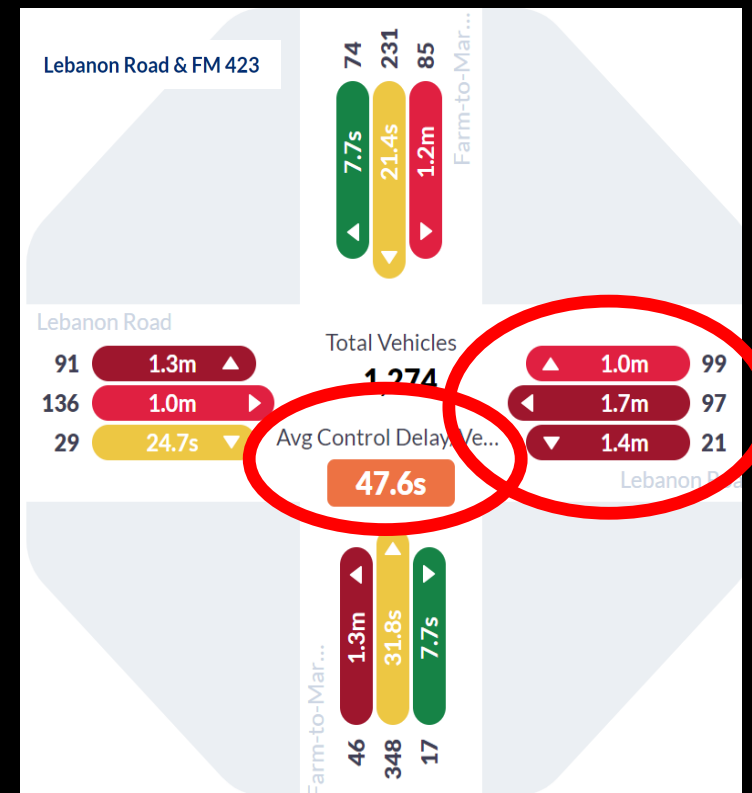
FM 423 and Lebanon Intersection Improvements



Signal Analytics



Delay Before



Delay After



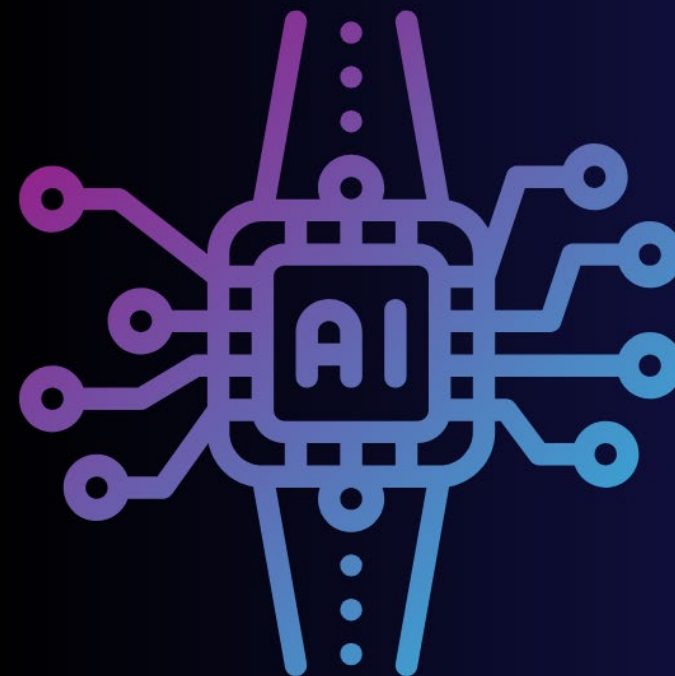
Traffic Signal AI Pilot

- Use cameras to detect and classify all road users
- Use ML to find traffic patterns
- Use AI to predict traffic and adjust signal timing accordingly

VisionFlow by ITC

The Fully Adaptive Traffic Signal Control Software Solution

Revolutionizing urban mobility with AI-driven, real-time traffic management for smarter, greener, and more efficient cities.





What's Next?

- Implement TRAINFO
- Work Zone Data Exchange (WZDx) Project using One.Network
- Finish UTD Capstone - Traffic Count Dashboard
- Finish Traffic Signal AI Pilot



Closing Thoughts

- Future of Transportation Mobility
 - Challenging
 - Complex
 - Innovation needed
- Don't be deterred by lack of a Manual
- Partnerships are vital
- Planning, Flexibility, Adaptability
- Utilize Pilots
- Share what you learn with others





Thank You!

- Brian Moen, Asst. Dir. Engineering
- bmoen@friscotexas.gov
- 972-292-5400
- Contact me with questions or if you want a tour of our Emergency Operations Center
- View the Monthly Report to Council www.FriscoTexas.gov/Engineering

Engineering Services

Welcome to the City of Frisco Engineering Services. Our division provides the following services:

- **Capital Improvement Projects** - Management of planning, design, and construction of city funded infrastructure including roadways, water distribution, and wastewater collection.
- **Construction Services** - Inspection and administration of projects under construction to ensure compliance with Frisco's [Engineering Design Standards \(PDF\)](#).
- **Development Review** - Manages the planning, design, and permitting of private developments for compliance with the City's [Engineering Design Standards \(PDF\)](#).
- **Traffic Operations** - Traffic management and transportation planning, traffic signal construction and operations, neighborhood and school zone safety, special events, and mobility services, including demand response contracts.

National Engineers Week

[National Engineers Week](#) takes place in February and celebrates how engineers make a difference in our community. This year's theme is 'Design Your Future'. The National Society of Professional Engineers initiated Engineers Week in 1951, and it has been commemorated since that time.

During National Engineers Week we recognize the entire Engineering Department staff and their contributions.

Reports

- [Annual Report Engineering Services](#)
- [Monthly Report Engineering Services](#)
- [Capital Improvement Projects Dashboard - Engineering/Parks](#)
- [Traffic Volume Interactive Map](#)



Connected Vehicles

- Development important for safety and driver information
- Support autonomous vehicles
- Physical infrastructure changes
- Equipment needed on vehicles





Closing Thoughts

- Future of transportation mobility
 - Challenging
 - Complex
- Planning, flexibility, adaptability
- Mobility isn't just a car
- We can help by our own actions!
- Will take strong leadership
- No option to quit and start over



Waze Data Sharing



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Jams

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40%

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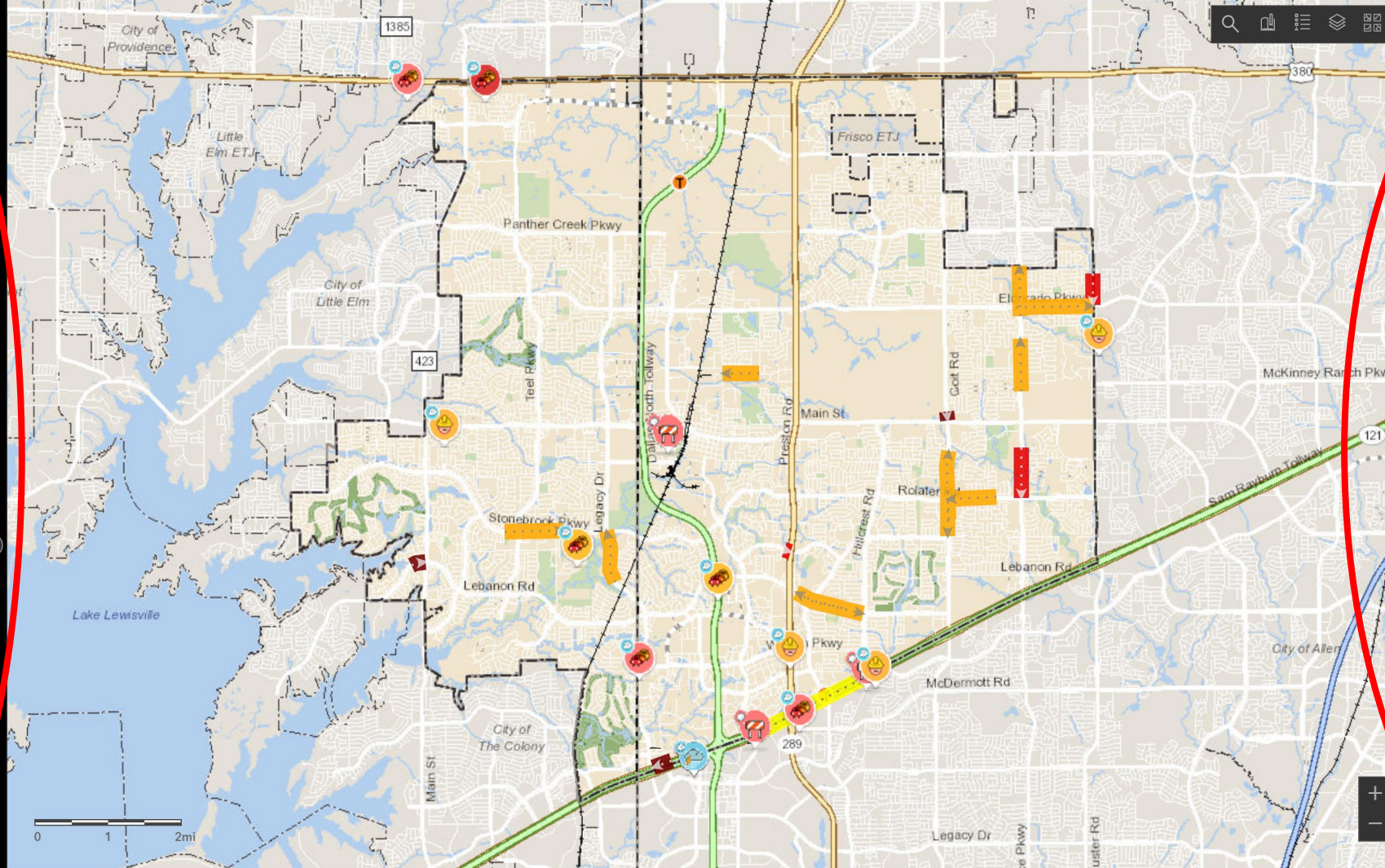
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