

Saving Lives with Connectivity: Accelerating Vehicle to Everything (V2X) Deployment



USE CASE #2 Traffic Signal Preemption and Priority

WHAT IS VEHICLE-TO-EVERYTHING (V2X)?

V2X functions like a group chat for the road. It allows cars, traffic lights, and other road users to communicate in real-time by sending messages to each other, and each message can carry different safety and roadway information.



Fire truck driving through intersection, while other vehicles wait at the cross street. (source TTI)

USE CASE #2 DESCRIPTION

When seconds save lives, timing is everything. Emergency vehicles rely on clear routes to reach their destination faster and attend to emergencies requiring immediate attention and resources. With V2X technology, traffic lights detect approaching emergency vehicles and adjust in real time to clear the way, helping responders arrive sooner.

WHAT CAN I EXPECT FROM THIS USE CASE?

As a general road user, you may still notice the usual momentary disruptions when an emergency vehicle passes. Traffic signals will continue to operate normally. However, at select intersections in the Houston region, this technology helps emergency vehicles move more efficiently by providing green lights as they approach an incident.

HOW DOES IT WORK?

An emergency vehicle submits a request to a V2X-equipped intersection asking for a green light. The request is sent as a V2X message to the intersection, where it is received and approved. This process is known as Emergency Vehicle Preemption.

In 2024, the Houston Fire Department responded to more than

416,000

incidents



332,000

medical emergencies



In most cases
crews arrived
within

~11 minutes



90% of responses
happen within

11:05
minutes

In 2023, Texas logged

4,291 traffic deaths
240,489 injuries



USER STORY

The Challenge: You are responding to an emergency call and approaching a busy intersection. Every second counts but waiting at a red light could delay your arrival.

V2X Solution: V2X-equipped intersections receive your request to extend the green light and adjust the signal timing to let the emergency vehicle pass.

Outcomes & Benefits: You reach the scene faster, reducing response time and improving safety for both emergency crews and everyone on the road.

Traffic Signal Preemption and Priority

TEXAS TRUST PROJECT

The Transforming Roads: Unleashing Smart Technologies (TRUST) project is a federally funded initiative led by the Texas A&M Transportation Institute (TTI).

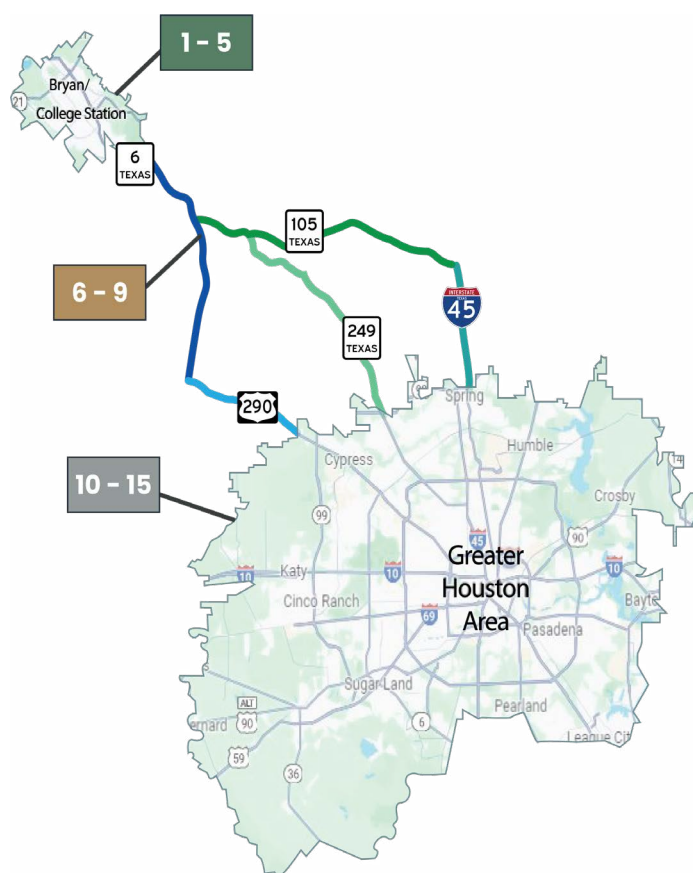
TTI, in partnership with state, local, and industry partners, is implementing V2X technology in Houston and Bryan-College Station through 15 real-world use cases that demonstrate how V2X can enhance safety, mobility, efficiency, and economic growth. TRUST aims to develop solutions that work across different technologies and regions, while sharing insights to help create a national blueprint to accelerate V2X adoption and implementation nationwide.

USE CASES

LOCATION:

BRYAN/COLLEGE STATION

1. SPaT-Enabled Intersections for VRU Identification and Protection
2. **Traffic Signal Preemption and Priority**
3. Transit Fleet Integration
4. Every Day a Gameday
5. Enhanced Highway Construction Worker Safety



LEARN MORE ABOUT TEXAS TRUST & V2X

For more information on Texas TRUST and to explore V2X educational resources, project updates, and use cases, please visit: <https://v2xtexastrust.com/>

For a list of supporting references used in these materials, visit: [V2X Use Case Sources](#).



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