

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



USE CASE #9 Curve Speed Warning

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.



Vehicles navigate a curved highway ramp marked with bright directional signs. (source TTI)

USE CASE #9 DESCRIPTION

Driving too fast around a curve can lead to serious, and sometimes fatal, crashes. Even though roadway signs try to reduce these risks, bad weather, poor visibility, or simple distraction can still make curves dangerous. With V2X technology, V2X-equipped vehicles can get alerts if they approach a curve at an unsafe speed. This added warning encourages safer driving habits and helps protect both drivers and passengers.

WHAT CAN I EXPECT FROM THIS USE CASE?

At select curved roadway segments, V2X-equipped vehicles will receive curve speed warnings if approaching a curve too fast. These warnings give drivers extra time to slow down, helping to prevent crashes and promote safer driving habits on winding roads.

HOW DOES IT WORK?

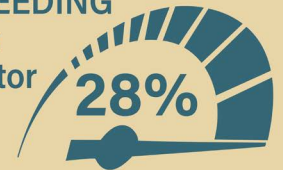
V2X-equipped curved roadway segments will use data from local weather sensors to calculate a safe curve speed based on current conditions. This information will be broadcast as a V2X message to V2X-equipped vehicles within the geofenced area, alerting drivers only when they exceed the speed limit.

>25%
of U.S. FATAL
CRASHES
happen on
HORIZONTAL CURVES



Curve segments have the
~3X CRASH RATE
of straight/tangent roadway

SPEEDING
is a
factor
in
of
28%
U.S. FATAL CRASHES



USER STORY

The Challenge: You are driving from College Station to Houston to attend an important event. Running late and navigating through heavy rain, you don't notice you're approaching a sharp curve too quickly.

V2X Solution: A safe curve speed is calculated from weather data and broadcast as a V2X message, then alerts drivers approaching the curve too fast.

Outcomes & Benefits: You safely navigate the curve and still arrive at your event on time.

Curve Speed Warning

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:

NATIONAL HIGHWAY SYSTEM

6. Incident Management / Hurricane Evacuation
7. Adverse Weather Events/Flooding
8. Planned Construction and Special Events
9. **Curve Speed Warning**



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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