

TxDOT Innovations and Technology Deployment Briefs

TranStar Roadway Flood Warning System



PROBLEM

Southeast Texas Districts face numerous challenges when extreme weather events, such as Hurricane Harvey in 2017, generate high water conditions affecting the ability of travelers to safely navigate the roadways. It is essential that travelers, emergency personnel, and other roadway users receive real-time information that enables better decision-making.

SOLUTION

The Houston TranStar Roadway Flood Warning System, developed in 2018 after Hurricane Harvey, synthesizes rainfall and stream elevation data with traffic information in real time to identify where roadway flooding is most likely to occur and displays that data on TranStar's traffic map and mobile application. This effort was a collaboration between TranStar, the Harris County Flood Control District, TxDOT, and TTI. TTI has incorporated existing rainfall sensors into the warning system, each owned and maintained by Jefferson County Drainage District 6. With its effectiveness proven, the flood warning system is expanding through a consortium of other Districts around Houston.

BENEFITS

Advancing available technology provides increased safety for highway users, as well as real-time information which allows for more accurate route decision-making. The system warns travelers to avoid travel in potentially flooded areas and helps displaced individuals return to their communities following major storms. The system uses real-time, highly accurate maps that notify the public and the media of roadway conditions. It integrates flood sensor data from 200 locations and highlights areas exceeding flood thresholds. This real-time information is a key indicator for maintenance crews during weather events. The flood warning information is readily available from Houston TranStar website (<https://www.houstontranstar.org/>) or using the Houston TranStar mobile application. This Flood Warning System is being moved to the state-wide information and mapping tool, Drive Texas, for the future.



PROJECT DELIVERY



CUSTOMER FOCUS



FOSTER STEWARDSHIP



PRESERVE ASSETS



OPTIMIZE PERFORMANCE



PROMOTE SAFETY



VALUE EMPLOYEES



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KEY TASKS

- Use rainfall rates to establish a geographic area of flood concern.
- Communicate project information across multiple agencies.
- Utilize multi-agency data sets and sharing.

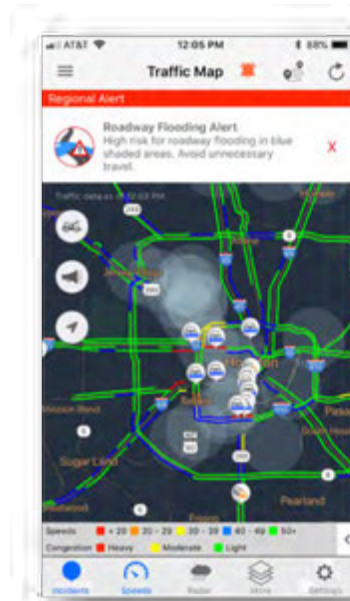
DATA SOURCES

Sharing of data and interagency communication ensures accuracy and reliability. Jefferson County DD6 shares 77 rainfall sensors. An additional 93 sensors from the Sabine River Authority and Lamar University are currently being tested. Other potential data partners include river authority data, United States Geological Survey, Hydrometeorological Automated Data System, University of Texas, or Texas A&M University-Corpus Christi, and National Oceanic and Atmospheric Administration radar data.

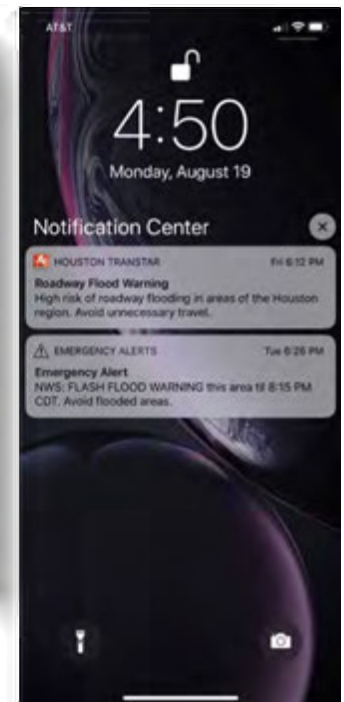
PROACTIVE APPROACH

The TranStar Flood Warning System is a prime example of regional and government partners collaborating to leverage innovation into valuable, practical tools.

The plan is to continue building in additional sensors where appropriate throughout Texas.



Mobile App.



Example of Flood Warning Sensors.



POINT OF CONTACT

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