



# 2019 Annual Report



PROVIDING COORDINATED, INNOVATIVE TRANSPORTATION AND EMERGENCY MANAGEMENT SERVICES TO THE REGION.



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*“We’ve developed incredible trust among the various partner agencies at TranStar. We trust one another to do our best work, and as a result, we’re advancing an innovative regional transportation network, saving lives and protecting residents.”*

***Dinah Massie**  
Executive Director, Houston TranStar*

# Year In Review

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Established in 1993, Houston TranStar is a formal collaboration among the principal transportation and emergency management agencies in Southeast Texas. TranStar houses multi-agency operations and management of the region's transportation and emergency management system, including the following agencies:

- **The City of Houston**  
Intelligent Transportation Systems (ITS) and Safety, ITS Plan Review, Mobility and Traffic, Streets and Drainage
- **Harris County**  
Traffic and Transportation Group, the Harris County Sheriff's Office (HCSO), the Office of Homeland Security & Emergency Management (HCOHSEM)
- **The Metropolitan Transit Authority of Harris County (METRO)**  
Regional Bus System, Light Rail System, METRO Police, Office of Emergency Management (OEM), High Occupancy Vehicle (HOV) operations
- **The Texas Department of Transportation (TxDOT)**  
Freeway Operations, ITS Design and Special Projects, SH 288 Tolling Support Operation, Transportation Management Systems

This affiliation has evolved into a primary resource from which federal, state, county and local agencies respond to incidents and emergencies in Harris County and beyond.

Houston TranStar provides highly effective transportation and emergency management services through the combined use of the partners' resources to maximize safety and mobility to the public.

This sharing of resources, including cameras, data networks, sensors and traffic data, makes TranStar unique. During disasters and natural or man-made emergencies such as hurricanes and other extreme weather, agency partners utilize each others' systems to identify affected travel routes to redirect traffic and transport emergency resources.

This 24th Annual Report for Houston TranStar reviews the Center's performance and summarizes the return on investment as quantified by an estimated benefit/cost ratio. It also includes conservative estimates of the impact of Center operation on regional mobility (travel times, vehicle speed and travel delays), customer satisfaction and energy and environmental benefits.

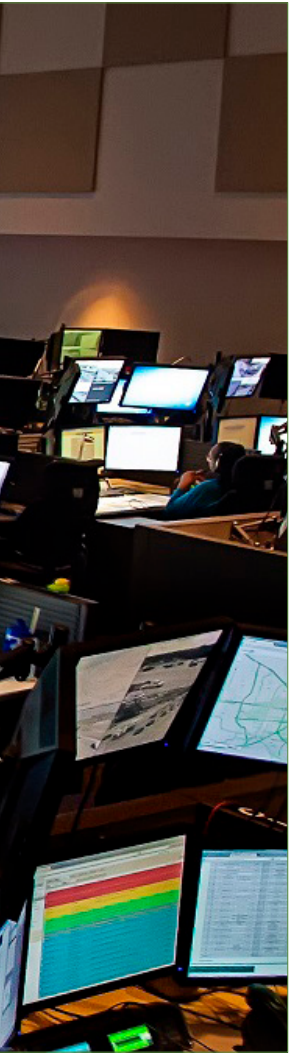
In 2019, travel time savings attributable to TranStar's operation were estimated at 19.2 million vehicle-hours. This is worth nearly \$460.6 million in road user cost savings and an additional \$85.5 million (approximately 35.9 million gallons) in reduced fuel consumption, resulting in nearly \$546 million in total benefits.

Compared with the annualized operating cost estimate of \$25 million, the Houston TranStar Center yields an estimated benefit/cost ratio of 21.8 for 2019. In other words, for every dollar spent on Houston TranStar's operations, the region realizes a benefit of \$21.80.

Since 1997, Houston TranStar's pivotal transportation role in the greater Houston region has saved motorists an estimated \$7.1 billion in reduced travel costs.







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*“We’re committed to improving lives in Southeast Texas, and together, alongside our TranStar partners, we’re doing exactly that each day.”*

*Quincy Allen, TranStar 2019 Executive Committee Chair*

## MISSION

The Houston TranStar consortium provides coordinated, innovative transportation and emergency management services to the region.

## VISION

Maximize safety and mobility by building, operating and advancing an innovative regional transportation network.

Save lives and protect property by coordinating large-scale emergency management planning, response and recovery.

Inform and educate the public about safety, travel conditions and emergency preparedness and response.

## GOALS

Improve travel safety and reliability.

Expand and enhance the Traffic Incident Management Program throughout the region.

Enhance emergency planning, coordination of resources and delivery of information during hazardous events.

Increase the public’s awareness and use of our services.

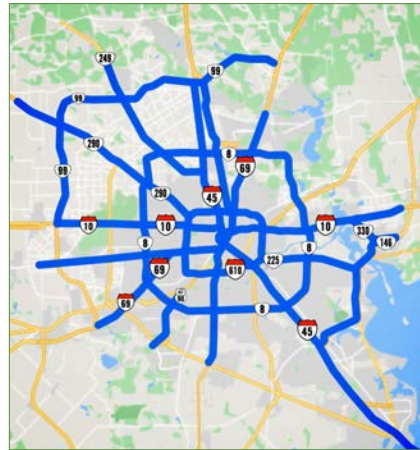
Ensure sustainable financial resources for TranStar operations.

## Highlights, Events

# 2019 Activities

In 2019, TranStar agencies continued ongoing 24/7 transportation system operations and emergency planning and response. The partnership conducted the following major activities in 2019:

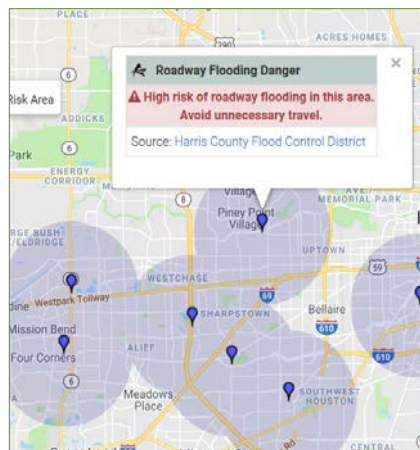
- Houston TranStar, along with the Texas A&M Transportation Institute and the Harris County Flood Control District, received awards from the Texas Public Works Association, the Emergency Management Association of Texas, Women in Transportation Services (WTS Houston) and the National Operations Center of Excellence in recognition of its Roadway Flood Warning System.
- TranStar launched the Move Over, Slow Down Campaign to inform drivers to move over one lane or slow down when passing emergency responders addressing roadway incidents.
- In September, all agencies activated during Tropical Storm Imelda.
- In October, all agencies activated for the American League Playoffs and the World Series at Minute Maid Park.
- The Center hosted delegations from China and Taiwan.
- Staff provided tours to 1,846 visitors.
- While average monthly website users (693,000) dropped 9.7% from 2018, TranStar's 310 million Closed Circuit Television Camera (CCTV) views reflected a 29% increase year-over-year.
- More than 54,100 mobile users downloaded the TranStar app in 2019.



*Houston TranStar's  
Regional Fiber Map*



*Regional Flooding During  
Tropical Storm Imelda*



*Houston TranStar's Roadway  
Flood Warning System*



An In-Depth Look at

# Partner Agency Reports

## THE CITY OF HOUSTON



The City of Houston's Transportation and Drainage Operations (TDO) service line operates and maintains traffic signals and ITS, as well as the design and installation of new traffic signals and ITS infrastructure.

The TDO's Traffic Signal Performance Improvement Program (TSPIP) ensures that signals are using the most up-to-date traffic data while taking advantage of new technologies to produce customized signal timings. TSPIP's revolving program is scheduled to revisit each signalized intersection every three years for retiming and optimization.

The City conducted the following major activities in 2019:

- continued its planning process for upgrading the City's wireless communications system to LTE/5G for signal and other ITS communications
- completed CCTV installations at 114 locations
- installed 144 mid-block counters
- continued installations of Dynamic Message Signs (DMS) and enhanced traffic detection systems
- activated centralized signal control to 1,700 signals (76% deployed)
- entered into a conduit exchange agreement with Verizon to allow for expansion of their fiber network

### The City of Houston manages:

- 2,450 Traffic Signals
- 1,600 School Zone Beacons
- 180,000 Streetlights
- 1,800 Freeway Safety Lights
- 200 Miles of Fiber Cable
- 641 Bluetooth Travel Time Devices

## HARRIS COUNTY TRAFFIC MANAGEMENT



The Harris County Public Infrastructure Department's Traffic Maintenance Group operates and maintains the County's traffic signal infrastructure, including the fiber optic communications network.

In 2019, the County conducted the following major projects:

- deployed system-wide traffic signal controller software and centralized Advanced Transportation Management Systems (ATMS)
- installed battery backup systems at traffic signals and central communication hubs with power loss alarms
- studied, evaluated and implemented Flashing Yellow Arrow (FYA) signal operations at four-legged intersections
- continued the coordination and optimization of traffic signal timings as part of its annual program

# Partner Agency Reports

## Harris County manages:

- 990 Active Traffic Control Signals
- 552 School Zone Beacons
- 46 Warning Beacons
- 32 Street Lights
- 10 DMSs
- 16 Changeable Lane Signs
- 135 CCTV Cameras
- 435 Miles of Fiber Optic Cable

## METROPOLITAN TRANSIT AUTHORITY OF HARRIS COUNTY



Houston TranStar houses several of METRO's operations including bus dispatch, the METRO Police communication section, HOV management systems, the social media program, the OEM and traffic incident management programs.

METRO conducted the following major activities in 2019:

- relocated light-rail dispatch to Houston TranStar
- stationed social media outreach staff members in the TranStar Transportation Control Room
- provided support for the Houston Livestock Show and Rodeo
- activated the Emergency Operations Center (EOC) at TranStar for severe weather May 7 – 10
- activated the EOC for Tropical Storm Imelda coverage September 18 – 20

## TxDOT-HOUSTON DISTRICT



TxDOT manages traffic on freeways and state-maintained roads in the region. TxDOT's Computerized Traffic Management System (CTMS) has expanded to more than 1,550 bi-directional miles in the Houston District.

CTMS consists of multiple technologies that enhance monitoring of the transportation system, allow faster detection of slowdowns and incidents and improve freeway system management.

CTMS technologies include CCTV cameras to monitor roadways and provide remote visuals for responding agencies during incidents.

Other technologies include TxDOT's DMSs, which provide information about slowdowns, incidents and special events and TxDOT's Bluetooth and Automatic Vehicle Identification (AVI) devices that capture system travel times and speeds and identify roadway segments with abnormal traffic.

TxDOT-Houston District conducted the following major activities in 2019:

- installed two new CCTV cameras and six radar sensors
- upgraded six DMSs, eight weather stations and 20 CCTV cameras
- expanded Bluetooth-based speed and travel time information on IH-69 from the Grand Parkway to Spur 10 west of Rosenberg

- completed installation of DMSs along SH 6, US 90A and IH-69 frontage road in Fort Bend County
- activated the Smart Work Zone on IH-69/Southwest Freeway and IH-610/West Loop to provide CCTV, messaging and speed information for the IH-69/IH-610 interchange reconstruction effort

**TxDOT-Houston District manages:**

- 730 Fiber-based and Wireless CCTV Cameras
- 192 DMSs
- 339 Bluetooth/AVI Travel Time Readers
- 201 Radar Units
- 61 Ramp Meters
- 17 Wrong Way Driver Detection Devices

**THE OFFICE OF  
HOMELAND SECURITY &  
EMERGENCY MANAGEMENT**



The Harris County Office of Homeland Security & Emergency Management (HCOHSEM) plans, coordinates and implements emergency management and homeland security-related activities for Harris County. When a disaster occurs, HCOHSEM works with federal, state and local partners to facilitate quick and effective recovery efforts.

HCOHSEM monitors severe weather, industrial accidents and other emergencies around the clock. Depending on the nature, scale and severity of an incident, HCOHSEM may activate the Harris County EOC. For large-scale emergencies and events, additional

staff and partners deploy to the EOC to support response and recovery.

HCOHSEM also serves as the hub for coordinating emergency public information, keeping elected officials, stakeholders, emergency management partners, residents and the media informed through its Regional Joint Information Center.

HCOHSEM continues to facilitate recovery efforts for Hurricane Harvey, Tropical Storm Imelda and other major flooding events with partners across all levels of government, non-profits and faith-based organizations.

HCOHSEM conducted the following major activities in 2019:

- activated for the Houston Marathon
- activated for the ITC (Deer Park), KMCO (Crosby) and Exxon-Mobil (Baytown) chemical plant fires, which resulted in several shelter-in-place orders
- activated for severe weather in May, which resulted in flooding in Kingwood, Spring, and Friendswood
- activated in May to monitor a barge collision in the Houston Ship Channel, resulting in one ship capsizing and fuel leaking into the Channel
- activated for Tropical Storm Imelda in September, which resulted in significant flooding in Northeastern Harris County, including the Kingwood and Humble areas

# Partner Agency Reports

- activated to monitor Major League Baseball's American League Championship Series and the World Series in October
- continued planning for the Harris County Multi-Hazard Mitigation Action Plan, which is required for the County to maintain eligibility for FEMA Hazard Mitigation Assistance grants
- recognized by the Texas Association of Municipal Information Officers for its Public Service Announcement: Prepare Together
- hosted five multi-disciplinary exercises and 26 trainings
- Francisco Sánchez, Deputy Emergency Management Coordinator, reappointed to the FCC's Communications Security, Reliability, and Interoperability Council
- The Gulf Coast Regional Tow-and-Go Program provides no-cost towing when vehicles break down on freeways in the City of Houston
- The HCSO Incident Management Unit dispatches Motorist Assistance Program (MAP) deputies, provides remote authorization for Tow-and-Go tows and coordinates with other responding agencies for crashes, collisions and incidents
- METRO Police monitor HOV lanes and assist with roadway and transit-related incidents
- Harris County Toll Road Authority monitors the County's toll road system, including Katy Managed Lanes, to manage incidents and display information on TranStar's website
- The Blueridge Transportation Group, operator for SH 288, monitors for incidents and coordinates response efforts
- System monitors recorded 17,163 crashes, down 3.8% from 2018, and average clearance times improved from 29.0 minutes in 2018 to 27.4 minutes in 2019

## TRAFFIC INCIDENT MANAGEMENT



TranStar supports incident detection, incident response and clearance of freeway crashes. The facility houses various programs involved in the region's traffic incident management activities.

- TxDOT staff monitor the freeway system 24/7 for stalls and incidents, notifying responder agencies of crashes and tracking clearance progress. Staff coordinate with media about major incidents, post messages on DMSs and update TranStar's Real-Time Traffic Map

## THE GULF COAST REGIONAL TOW-AND-GO™ PROGRAM



The Gulf Coast Regional Tow-and-Go Program was developed to keep motorists safe and traffic moving through no-cost, quick clearance of vehicle breakdowns on camera-monitored freeway sections.

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Each tow is authorized by law enforcement and provided by Tow-and-Go responders who meet strict performance standards.

Tow-and-Go operators remove disabled vehicles from freeways, at no cost to drivers, towing them to safe locations at the nearest freeway exit.

The program increases traveler safety, reduces secondary crashes and decreases travel delays. The Houston-Galveston Area Council (H-GAC) manages the Gulf Coast Regional Tow-and-Go Program through funding provided by the Federal Highway Administration and TxDOT.

There were 32,567 Tow-and-Go assists throughout the year, a 34.9% increase from 2018. Tow operators averaged a 16.5-minute clearance time, measuring from initial notification to traveler drop-off in a safe location.

## **MOTORIST ASSISTANCE PROGRAM (MAP)**



MAP operates from 6:00am to 10:00pm Monday through Friday and consists of 18 HCSO deputies operating in two shifts.

MAP services include traffic and scene management during incidents, changing flat tires, supplying fuel, water or air when necessary, jump-starting vehicles, assisting with minor engine repair, removing stranded vehicles from roadways and transporting motorists to safe locations.

The program costs approximately \$2.4 million per year, with funding through the HCSO and H-GAC.

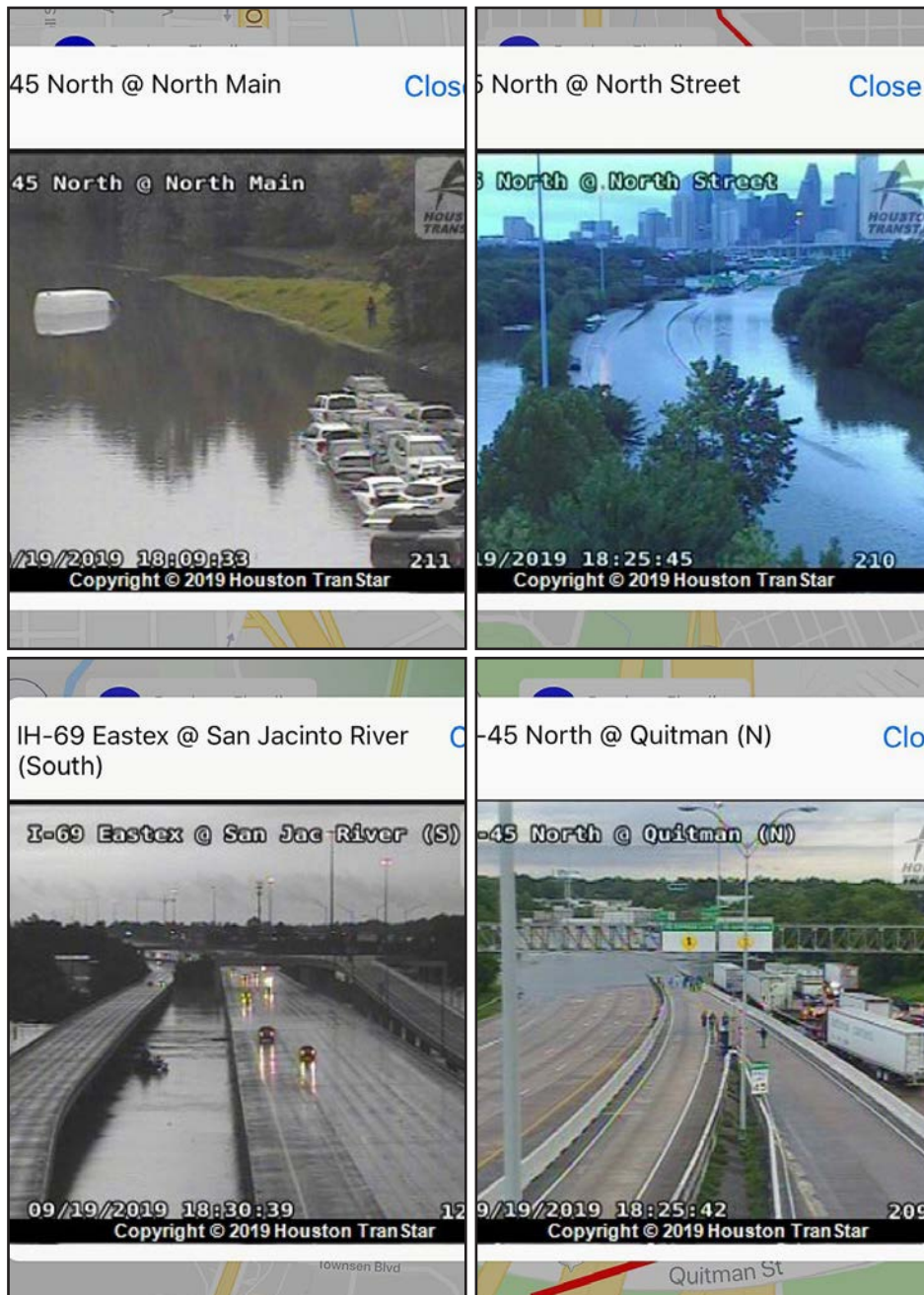
MAP conducted 27,414 assists in 2019, down 7.9% from 2018. While MAP deputies continue to aid stranded patrons, the return of free towing by the Tow-and-Go program reduces that need. MAP deputies have in turn increased their role in providing scene and traffic management for freeway crashes.





*“Providing good customer service means a lot to METRO, and because of the strong partnerships we’ve built at Houston TranStar, we’re better able to deliver quality service to residents and travelers.”*

**Tom Lambert**  
*President and CEO, METRO*



*“During an emergency, communication and coordination are the most important elements of a successful response. Houston TranStar is where all of this happens when our community faces a disaster.”*

***Francisco Sánchez***  
*Deputy Emergency Management Coordinator, HCOHSEM*

# Houston TranStar's Benefit to the Region

For the past 24 years, this report has estimated operational benefits in terms of freeway motorist delay savings. Determining benefits is treated conservatively because many are not easily quantifiable, and some are intangible.

Traffic delays on freeway mainlanes were assessed using TxDOT's travel time monitoring system, traffic volumes from TxDOT's roadway inventory files and HCTRA's toll road system.

The evaluation process employs national benchmarks and experience to establish Houston TranStar's goals for expected benefits. TranStar staff is relied upon to assess performance of the transportation systems in terms of percent attainment of goals.

Annual benefits due to TranStar operations were nearly \$546.1 million in 2019.

- 19.2 million fewer vehicle-hours (\$460.6 million)
- 35.9 million gallons of fuel saved (\$85.5 million)

With an annualized cost estimate of Center operation calculated at approximately \$25 million in 2019, the center recognized a 21.8-to-1 benefit/cost ratio.

Based on the USDOT's Bureau of Transportation Statistics, the reduction in fuel consumed resulted in emission reductions estimating 753 tons of hydrocarbons, 8,259 tons of carbon monoxide, 317,356 tons of carbon dioxide and 1,357 tons of nitrogen oxide.

