



# 2018 ANNUAL REPORT





Established in 1993, Houston TranStar is a formal collaboration among the principal transportation and emergency management agencies in Harris County. It houses multi-agency operations and management of the region's transportation system. The following agencies and operations are co-located at TranStar:

- Texas Department of Transportation (TxDOT)
  - Freeway Operations,
  - Intelligent Transportation Systems (ITS) Design and Special Projects,
  - Media Contractors,
  - SH 288 Tolling Support Operations and
  - Transportation Management Systems.
- Metropolitan Transit Authority of Harris County (METRO)
  - Regional Bus System,
  - Light Rail System,
  - METRO Police and
  - Office of Emergency Management.
- Harris County
  - Traffic & Transportation Group,
  - Sheriff's Office and
  - Office of Homeland Security & Emergency Management.
- The City of Houston
  - ITS & Safety,
  - ITS Plan Review and
  - Mobility and Traffic.

This affiliation has evolved into a primary resource from which multiple 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' collective resources to maximize safety and mobility to the public.

This 22nd Annual Report for Houston TranStar reviews the center's performance and summarizes the return on investment as quantified by the estimated benefit/cost ratio. It also includes conservative estimates of the impact of center operation on regional mobility (travel time, speed and delay), customer satisfaction and energy and environmental benefits.

In 2018, the travel time savings attributable to TranStar's operation were estimated at more than 19.0

million vehicle-hours. This is worth nearly \$431 million in road user cost savings and an additional \$86 million (approximately 35.6 million gallons) in reduced fuel consumption. The total estimated benefits of TranStar operation in 2018 were over \$517 million. Comparing these benefits to the annualized TranStar operating cost estimate of \$25.2 million yields an estimated benefit/cost ratio for Houston TranStar center operation of 20.5 for 2018. In other words, for every dollar spent on Houston TranStar's operations, the region realizes a benefit of \$20.50.

Since 1997, Houston TranStar's pivotal role in the transportation of people and goods in the greater Houston region has saved motorists an estimated \$6.5 billion in reduced travel costs.

### **Houston TranStar 2018 Activities**

TranStar member agencies continued ongoing 24-7 transportation system operations and emergency planning and response. Significant agency activities at the center included the following:

- The partner agencies approved a new 10-year interlocal agreement for the continuation of the Houston TranStar collaboration.
- TranStar agencies began a strategic planning process to identify future operational and building needs.
- TranStar unveiled its Roadway Flood Warning System to alert drivers of roadway flooding risk during rain events.
- In October, all collaborating agencies activated for the American League Playoffs at Minute Maid Park.
- The center hosted delegations from Ecuador, Brazil, Australia, and Kenya
- Tours were provided to 2,136 visitors.

The Partnership welcomes Dinah Massie as the Center's new Executive Director. Dinah served as the Public Information Officer for TranStar since 2006 and has worked extensively with all member agencies.

## City of Houston



The City of Houston's Transportation and Drainage Operations (TDO) service line is responsible for the operations and maintenance of traffic signals and ITS, as well as the design and installation of new traffic signal and ITS infrastructure.

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

### The City of Houston manages:

- 2,490 traffic signals
- 1,400 School Zone Beacons
- 180,000 streetlights
- 1,800 freeway safety lights
- 200 miles of fiber cable
- 1,600 wireless devices
- 600 Bluetooth travel time devices

Major activities conducted by the city in 2018 include:

- Initiated the planning process for upgrading the City's wireless communications system to LTE/5G for signal and other ITS communications.
- Awarded TIGER grant for roadway flood warning system at various underpasses in the region
- Ongoing deployment of an Advanced Traffic Management System, which includes CCTV cameras, Dynamic Message Signs (DMS), vehicle detection and permanent count stations, which will allow quicker detection and response to abnormal traffic conditions and incidents and share real-time information with the traveling public.
- Finalized an expansion of the City's traffic signal fiber network to improve center-to-center communications between public works facilities

## METRO



Houston TranStar houses several METRO's operations

including bus dispatch, METRO Police Communication Section operations, High-Occupancy Vehicle management systems, METRO's social media program, the Office of Emergency Management and traffic incident management programs.

### METRO's services include:

- Service to 15 cities within Harris County
- 1,246 active buses on 114 routes
- 22 miles of light-rail on three lines
- 6,512,979 average monthly passenger trips

METRO activity highlights for 2018 included:

- Activated the OEM on January 2-3 and 16-17 due to expected winter weather and freezing conditions
- Activated the OEM on September 3 due to potential severe weather
- Activated the OEM on October 22 for Trump/Cruz political rally
- Connected CCTV system to METRO bus dispatchers

## 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.

### Harris County manages:

- 946 traffic signals
- 130 CCTV Cameras
- 536 School Zone Beacons
- 300 miles of fiber optics

Major activities during 2018 included:

- Deployment of a centralized signal software system
- Connected 450 traffic signals into the TranStar ITS Network.
- Installed connected school beacon system to monitor school zone installations
- Installed battery backup systems at traffic controller locations
- Installed 10 DMS signs on Ship Channel crossing routes (Independence Parkway & Washburn Tunnel)

## Harris County Office of Homeland Security & Emergency Management (HCOHSEM)

The Harris County Office of Homeland Security & Emergency Management (HCOHSEM) plans, coordinates and implements all 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 round-the-clock. Depending on the nature, scale and severity of an incident, HCOHSEM activates the Harris County Emergency Operations Center (EOC). For large-scale emergencies and events, additional staff and partners will deploy to the EOC to support response and recovery operations.

HCOHSEM also serves as the communication hub for the coordination of emergency public information. During a disaster, HCOHSEM keeps elected officials, stakeholders, emergency management partners, residents and the media informed through its Regional Joint Information Center.

To help build resilient communities, HCOHSEM promotes disaster preparedness year round through regional emergency planning, training and community outreach programs. The 2018 hurricane season was one of the busiest on record for outreach activities and requests. HCOHSEM took part in 415 outreach events and presentations.



HCOHSEM also continues to facilitate Hurricane Harvey recovery efforts with partners across all levels of government, non-profits and faith based organizations. HCOHSEM also is updating existing plans to reflect lessons learned and creating several different recovery-based initiatives, including an overarching Harris County comprehensive recovery plan.



In 2018, HCOHSEM:

- Activated the EOC 19 times; seven of those for severe weather, including the January winter event.
- Responded to eight industrial-related incidents including chemical plant releases and fires, and collisions involving the transport of harmful materials.
- Released its Hurricane Harvey After-Action Report (AAR), which reviewed the county's overall response efforts during Harvey and identified what efforts worked well and what needed improvement.
- Worked with the National Weather Service (NWS) to recertify Harris County as a StormReady county. To be certified, a NWS advisory board reviews the county's application and inspects its emergency management operations capabilities.
- Held quarterly homeland security briefings for Harris County department heads and emergency management partners. Also provided timely, actionable intelligence to the local public safety community through its house publications.
- Kicked off multi-hazard mitigation planning process with multiple jurisdictions and public participation. The plan provides a vision to reduce risks from natural hazards and strategies to build communities that are more resilient.
- Hosted 95 exercises and participated in 28 partner exercises throughout the region.

## TxDOT-Houston District



TxDOT is responsible for traffic management on freeways and state-maintained roads in the region. Since the 1980's, TxDOT's Computerized Traffic Management System (CTMS) has grown to nearly

1,550 bi-directional miles in the urban areas of the Houston District and evacuation routes on IH-10, IH-45 and US 290.

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

- Closed-Circuit TV (CCTV) cameras to monitor the system and provide remote visuals for responding agencies during incidents
- Dynamic Message Signs (DMS) to provide traveler information about slowdowns, incidents and special events
- Bluetooth and Automatic Vehicle Identification (AVI) devices to capture system travel times and speeds and identify roadway segments with abnormal traffic.

### TxDOT-Houston District manages:

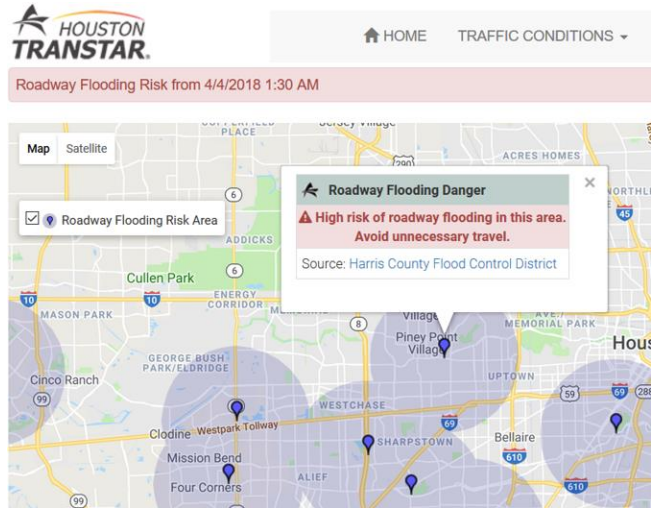
- 719 Fiber-based and Wireless CCTV Cameras
- 189 Dynamic Message Signs (DMS)
- 323 Bluetooth/AVI Travel Time Readers
- 194 Radar Units
- 61 Ramp Meters
- 17 Wrong Way Driver Detection Devices

Major activities conducted by TxDOT in 2018 included:

- Conducted 11 upgrades and 3 replacements of DMS signs
- Began installation of ITS systems on IH 10 East in Baytown, US 90 to Beltway 8, and SH 146 through Seabrook
- Posted over 30 million DMS messages displaying travel times, incidents, Amber/Silver Alerts and special event information
- Upgraded the RIMS Incident Management System to connect all incident management program activities and enhance communications between programs.
- Activated Smart Work Zone on Interstate 10 in Waller County, which provides CCTV, messaging, and speed information for roadway widening project.

## Traveler Information

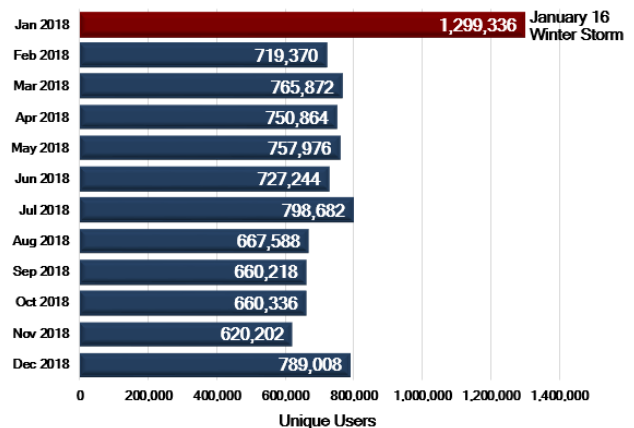
One of the most visible products of Houston TranStar center operation is traveler information. Local Internet and media outlets use the TranStar CCTV feeds, Internet-based incident reporting and travel time reporting systems in their daily traffic functions.



Highlights for TranStar-based traveler information on the TranStar website in 2018 included:

- Inclusion of a Roadway Flood Warning System to alert drivers of flooding risk during rain events
- An average of 768,000 monthly unique users
- 240 million CCTV views
- Also, the Houston TranStar Mobile Application was installed on 32,306 devices

Unique Houston TranStar Website Monthly Users, 2018  
(<http://www.houstontranstar.org>)

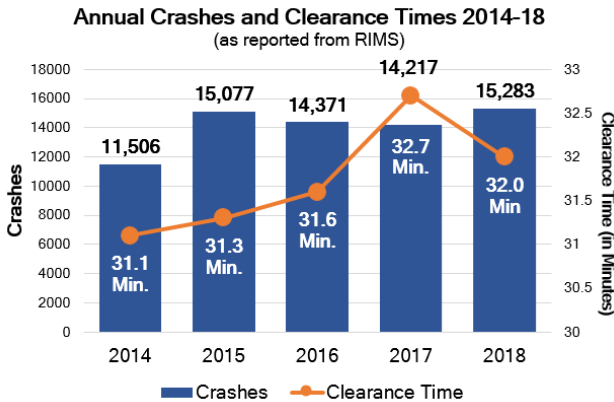


Average monthly unique website users decreased 28.2% from 2017. A winter storm in January contributed to the largest number of unique users for the year. However, the relatively few major events in 2018 most likely contributed to fewer views overall.

## Traffic Incident Management

Detection, response and clearing freeway incidents are essential functions of Houston TranStar. The facility houses multiple programs involved in the region's traffic incident management activities. The systems managed through Houston TranStar, including CCTV cameras, DMS signs and travel time detectors, play an important role in identifying incidents and notifying responders and the general public. The following organizations play key roles in addressing incidents to promote quick clearance:

- TxDOT staff monitor the freeway system 24/7 for stalls and incidents using CCTV and speed detection systems, notifying responder agencies of incidents and tracking progress. TxDOT staff coordinates with the media about major incidents, posts messages on DMSs and updates the Houston TranStar traffic map.
- The Tow-and-Go program dispatches tow trucks to stalls and crashes on the freeway system within the City of Houston.
- HCSO's Incident Management Unit (IMU) monitors the freeway to dispatch MAP units, provide remote authorization of Tow-and-Go tows for disabled vehicles and coordinate with other responding agencies for collisions.
- METRO Police monitor the HOV lanes and provide assistance for an incident.
- The Blueridge Transportation Group (BTG), the operator of SH 288, monitors the freeway for incidents and coordinates responses.



In 2018, TxDOT staff identified 15,283 crashes, up 7.5% from 2017. Average clearance times decreased from 32.7 minutes in 2017 to 32.0 minutes in 2018.

## Tow-and-Go™ (formerly SAFEClear)

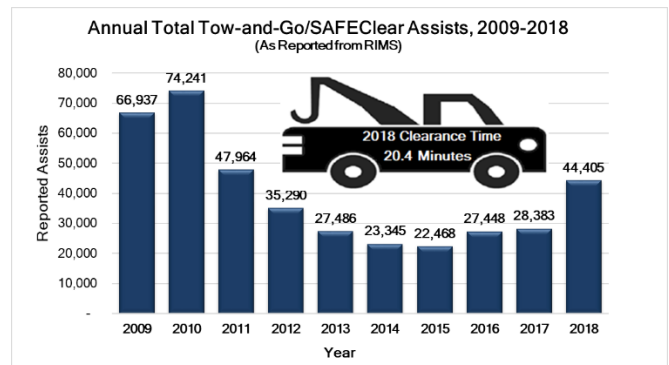


Tow-and-Go, formerly known as SAFEClear, brings quick response to disabled vehicles to reduce traffic congestion and increase safety. Tow operators within the City of Houston remove a vehicle from the freeway to a safe location within a mile of the freeway or to a secured vehicle storage facility for 48 hours, without storage fees, where patrons can make arrangements to retrieve their vehicles.



The program utilizes qualified, vetted towing companies to rapidly remove disabled vehicles from the freeway to increase patron safety, reduce secondary crashes and decrease incident-related travel delays.

In 2018, the City of Houston, in conjunction with the Houston-Galveston Area Council, made the program *free of charge* to patrons receiving the service. The program is expected to expand to the rest of Harris County in 2019.



In 2018, there were 44,405 Tow-and-Go assists, a 56.4% increase from 2017. This increase is likely due to the program no longer requiring payment by the stranded patron. In addition, clearance times improved from 22 minutes in 2017 to 20.4 minutes in 2018.

## Motorist Assistance Program (MAP)

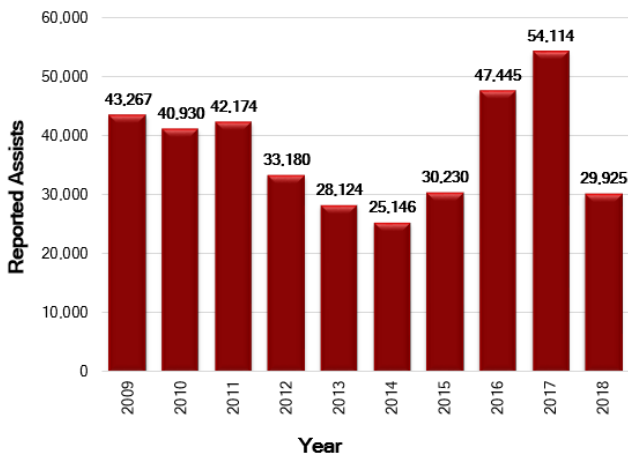


The Harris County Motorist Assistance Program (MAP) began in 1986. MAP operates from 6am to 10pm Monday through Friday and consists of 18 Harris County Sheriff's Office (HCSO) deputies operating in two shifts. Patrons call 713-CALL-MAP (713-225-5627) to reach a dispatcher. MAP services include:

- Traffic and scene management during incidents
- Changing a flat tire.
- Supplying fuel, water and/or air.
- Jump starting vehicles.
- Assisting with minor engine repair.
- Removing stranded vehicles from the roadway.
- Transporting motorists to a safe location.

The program costs about \$2.4 million per year, funded through HCSO and the Houston-Galveston Area Council.

**MAP Program Assists by Year**  
(As Reported from RIMS)



MAP conducted 29,925 assists in 2018, down 44.7% from 2017. While MAP deputies continue to aid stranded patrons, the return of free towing by the Tow-and-Go program reduces the need for those services. MAP deputies have, in turn, increased their role in providing scene and traffic management for freeway crashes.

## TranStar's Benefit to the Region

For the past 22 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 estimated 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 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 \$517.2 million, which included:

- 19.0 million fewer vehicle-hours - \$431.0 million
- 35.6 million gallons of fuel saved - \$86.2 million

### Benefit Cost Calculation:

Annual Benefits	\$517,190,000
Annualized Costs	\$25,228,000
<b>Benefit/Cost Ratio</b>	<b>20.5</b>

With an annualized cost estimate of center operation calculated at \$25.2 million in 2018, the center recognized a 20.5-to-1 benefit-cost ratio.

Based on USDOT's Bureau of Transportation Statistics, the reduction in fuel consumed resulted in the following estimated emission reductions:

Hydro-carbons	Carbon Monoxide	Carbon Dioxide	Nitrogen Oxide
746 tons	8,190 tons	314,704 tons	1,346 tons

**Houston TranStar Benefit/Cost Ratios 2008-2018**

