



2024 ANNUAL REPORT

PREPARED BY THE TEXAS A&M
TRANSPORTATION INSTITUTE
JULY 2026





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 TranStar services.
- Ensure sustainable financial resources for TranStar operations.

INTRODUCTION

Houston TranStar was created in 1993 to coordinate and enhance surface transportation operations and respond to incidents and emergencies in the greater Houston area. The four partner agencies—the Texas Department of Transportation (TxDOT), the Metropolitan Transit Authority of Harris County (METRO), Harris County, and the City of Houston—recognized the importance of having transportation and emergency management agencies co-located to address emergencies in a coordinated and efficient manner.

HOUSTON TRANSTAR PARTNER AGENCIES			
TxDOT  • Freeway Operations • Intelligent Transportation Systems (ITS) • Transportation Management Systems • Tolling Support Operations • Media Contractors		CITY OF HOUSTON  • Intelligent Transportation Systems • ITS Plan Review • Mobility and Traffic • Traffic Signal Coordination • Flood Warning Systems	
HARRIS COUNTY  • Office of Homeland Security and Emergency Management (HCOHSEM) • Motorist Assistance Program (MAP) • Sheriff's Incident Management Unit (IMU) • Traffic and Transportation Group		METRO  • METRO Police • Bus Rapid Transit • Light Rail System • Regional Bus System • High-Occupancy Vehicle/Tolling Lanes • Office of Emergency Management	

With millions of users daily traveling Houston's regional roadway system, a crash or stall can have a considerable impact on traffic flow, especially during rush hours. In 2024, Houston TranStar staff recorded over 118,000 incidents that impacted freeway operations. The ability to coordinate law enforcement, tow trucks, and other responders from TranStar helps clear these incidents faster to restore traffic to normal conditions. In addition, the greater Houston area is vulnerable to natural and industrial emergencies such as flooding, tropical storms and hurricanes, hazardous material spills, and industrial accidents. The speed of responders to access and mitigate such an event is critical. TranStar partners can help facilitate getting responders to the scene and evacuating citizens from an impacted area.

TranStar's operations in 2024 provided an estimated 17.1 million vehicle-hours in travel time savings and 32.1 million gallons of fuel saved, which amounts to approximately \$596 million in road user cost savings. The annualized TranStar operating cost estimates of \$25.9 million yields an estimated benefit/cost ratio of **23 to 1** for 2024. In other words, for every \$1 spent on Houston TranStar's operations, the region realized a benefit of \$23. Since 1996, TranStar has saved motorists an estimated **\$9.3 billion** in reduced travel costs.

TRANSTAR CONTROL ROOM OPERATIONS

The TranStar Floor serves as the heart of traffic operations for the center. Using the various regional intelligent transportation system (ITS) technologies, multiple agencies operate in a common space to monitor the freeway system for incidents, coordinate response for clearance, and notify drivers of impediments to their trip.

TxDOT Floor Staff: TxDOT Floor staff monitor the freeways for incidents, assist in coordinating response to incidents, and log activity for active incidents. Floor staff are also responsible for activating dynamic message signs (DMSs) with notifications of active incidents. Floor staff are also responsible for reporting maintenance deficiencies discovered on the system. TxDOT Floor staff coordinate incident information from other responding agencies to help ensure consistent communication between those agencies.



SafeClear Management Group (SMG): SMG serves as the dispatchers for the Tow and Go (TAG) Program. SMG staff either dispatch participating tow companies to an incident or receive notification of a disabled vehicle from tow truck operators patrolling the freeways. SMG staff record TAG information in the Regional Incident Management System (RIMS) including tow operator performance for vehicle removals and information about the vehicles being towed.

Harris County Sheriff's Office (HCSO) Incident Management Unit (IMU): HCSO staffs IMU, which serves as the authorizing agency for TAG vehicle removals and the dispatcher for the Motorist Assistance Program (MAP).

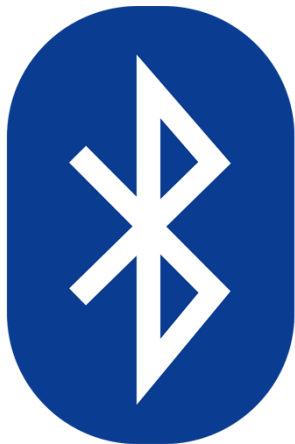
TAG hinges on the ability to remotely authorize the removal of a disabled vehicle from the roadway, requiring approval from a licensed law enforcement officer. HCSO deputies receive and review TAG requests using closed-circuit television (CCTV) and incident information in RIMS to verify the incident and authorize the tow. In addition, IMU dispatchers send MAP units to larger incidents to help provide traffic control and other assistance.

Regional Incident Management System: RIMS is the central incident data management system for Houston TranStar. RIMS allows multiple control room staff at TranStar (and the Harris County Toll Road Authority [HCTRA]) to log and track incident activity. RIMS combines data from TxDOT, IMU, TAG, and HCTRA events to not just facilitate interagency coordination but also coordinate information to the traveling public. RIMS includes Towbook (for tracking and capturing tow-related information), Computer-Aided Dispatch to Traffic Management Center (for receiving 911 events from multiple law enforcement agencies), and Roadway Flood Warning System feeds (for identifying potential high-water areas during heavy rains).

INTELLIGENT TRANSPORTATION SYSTEMS

ITS aims to improve the efficiency and safety of the transportation system in the region through deployment of advanced technologies and systems management techniques. ITS technologies offer benefits ranging from improved safety on the existing transportation infrastructure to enhanced travel information for users of the transportation facilities. ITS technologies also provide managers of the transportation systems with the ability to get more out of existing infrastructure by using the information provided from ITS solutions.

CCTV Cameras: CCTV cameras play a critical role at Houston TranStar. As the eyes on the roadway, over 1,500 cameras allow TranStar staff to search, identify, and assess traffic incidents remotely to better help responders plan for their response. CCTV cameras have a 360-degree view with the ability to effectively zoom in on an incident within a half mile. CCTV plays an important role in the TAG Program, which allows sheriff's deputies to visually confirm a disabled vehicle and remotely authorize a tow from TranStar.



Bluetooth® Speed Capture: TranStar agencies use Bluetooth® technology to provide speed and travel time data to TranStar staff and the traveling public to monitor roadway performance. The technology reads unique anonymous Bluetooth addresses from passing vehicles and phones and measures the travel time as they pass between subsequent Bluetooth readers along regional roadways. Compared to toll-tag readers and license-plate recognition technology, the system is far less expensive to install and maintain, and the data received maintain the anonymity of the drivers and vehicles. This technology has been implemented along evacuation routes to San Antonio and Dallas to help manage traffic flow in the event of a hurricane.

Dynamic Message Signs: DMSs play an important role in informing regional travelers of roadway conditions. These electronic signs provide real-time information about incidents, travel times, construction, safety messages, and other relevant information to help drivers make informed travel decisions and potentially divert off a congested roadway.





Roadside Radar Detection: Radar units, located on the side of the road, are predominantly used to collect roadway traffic count data. Having those traffic volumes allows assessment of roadway usage and performance by time of day, which assists transportation staff with enhancing traffic flow and planning for improvements. Combined, TxDOT, HCTRA, and the City of Houston have more than 640 radar units located along the freeways and toll roads in the region.

Ramp Meters: TxDOT maintains ramp meters on some freeway entrance ramps to help regulate the flow of traffic onto the system, especially during heavy traffic conditions such as rush hour. These systems consist primarily of two devices: radar units to monitor traffic volumes near entrance ramps, and red/green traffic lights on entrance ramps to permit and prevent vehicles from entering the freeway based on the amount of traffic.



Wrong-Way Detection: TxDOT is installing wrong-way detection (WWD) systems on various freeway exit ramps to reduce the potential of these incidents occurring. HCTRA operates a 13-mile long WWD system on Westpark Toll Road that uses 18 radar sensors. WWD systems provide two important functions. They alert TranStar and HCTRA command center staff of wrong-way drivers that may have entered the roadway system. If the event is confirmed, staff can contact law enforcement and notify road users via DMSs. More importantly, the systems visually inform the wrong-way driver, using flashing lights and signage, to allow for correction. Most drivers acknowledge the alerts and correct course.

INCIDENT MANAGEMENT

Traffic incidents are unplanned roadway events that affect or impede the normal flow of traffic. Traffic incidents increase the likelihood of secondary crashes and pose a threat to the safety of incident responders and the traveling public. Incidents affect travel reliability, commerce, and transportation system performance. One of the essential responsibilities of transportation and public safety agencies is to ensure the safe and quick clearance of traffic incidents.

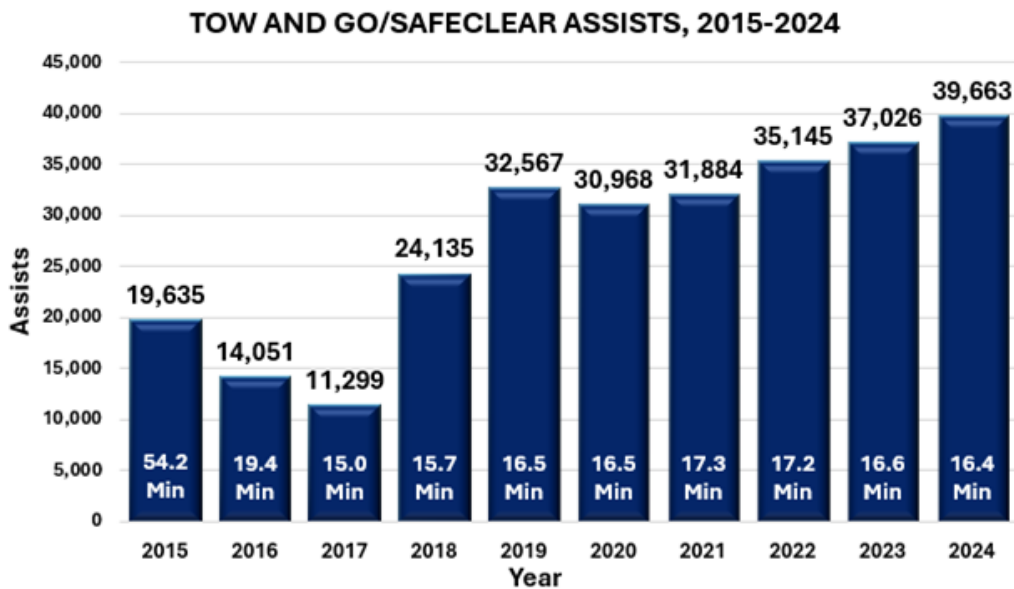
Traffic incident management (TIM) consists of a planned and coordinated multidisciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM reduces the duration and impacts of traffic incidents; improves the safety of motorists, crash victims, and emergency responders; and reduces the frequency of secondary crashes.



Tow and Go: TAG, formerly known as SafeClear, brings quick response to disabled vehicles to reduce traffic congestion and increase safety. Operating within the majority of Harris County on the freeway system, tow operators 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 drivers can arrange to retrieve their vehicles.

The program uses 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. The program is free of charge to motorists thanks to funding from the Federal Highway Administration, TxDOT, and the Houston-Galveston Area Council.

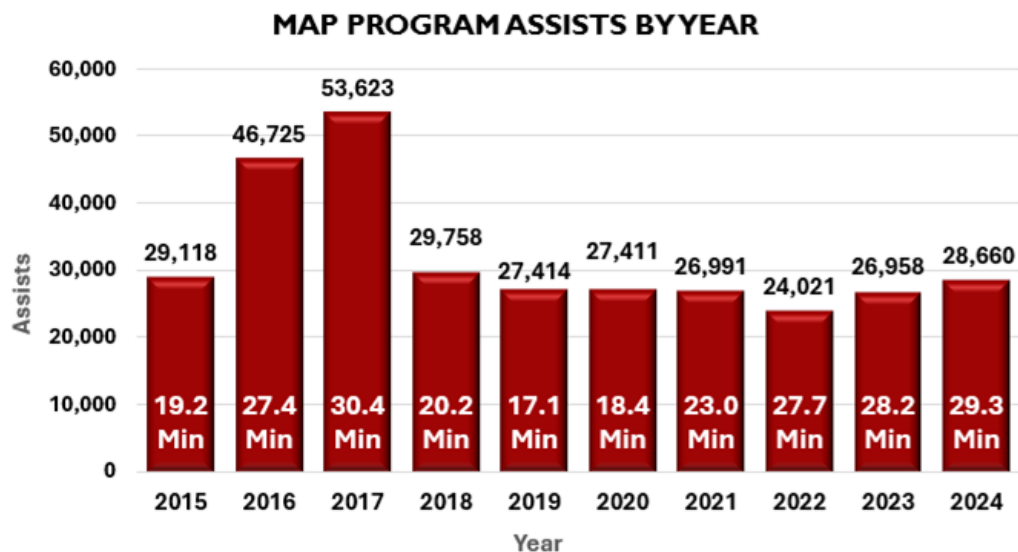
In 2024, TAG had 39,663 assists, a 7.1 percent increase from 2023. Average clearance times decreased from 16.6 minutes in 2023 to 16.4 minutes in 2024. The average response time to an incident was 7.6 minutes, while the average clearance time upon arrival was 8.8 minutes.



Motorist Assistance Program: Since 1986, HCSO has operated MAP, which provides assistance to motorists throughout Harris County 24 hours a day Monday through Friday. The program, consisting of HCSO deputies, provides various services to disabled vehicles including changing a flat tire, providing fuel, jumpstarting batteries, making minor engine repairs, and assisting patrons with directional and other assistance.



MAP deputies also provide traffic and scene management during crashes and work with the TAG Program to remove stalled and disabled vehicles off the freeway. MAP conducted 28,660 assists in 2024, up 6.3 percent from 2023. In addition to providing services, MAP deputies aid stranded patrons and provide scene and traffic management for freeway crashes.





HCTRA Incident Response: HCTRA operates 132 miles of tolled facilities throughout Harris County. In 2024, nearly 1.8 million vehicles a day used the toll road system. HCTRA and Houston TranStar share travel information with travelers, not only to provide information about significant events that impact traffic but also to display route options and information that can save travelers time. While not physically located at TranStar, HCTRA's traffic management center monitors the toll road system and serves as the coordination center for its Incident Response team and law enforcement activities for toll road

safety.

In 2024, HCTRA Incident Response performed the following tasks:

- Addressed 5,237 crashes.
- Handled 14 fatality crashes on HCTRA system.
- Assisted 39,134 stranded vehicles.
- Addressed 1,798 commercial vehicle incidents.
- Repaired 16,311 vehicles.
- Provided 8,383 complimentary tows.
- Responded to 136 hazardous material incidents.

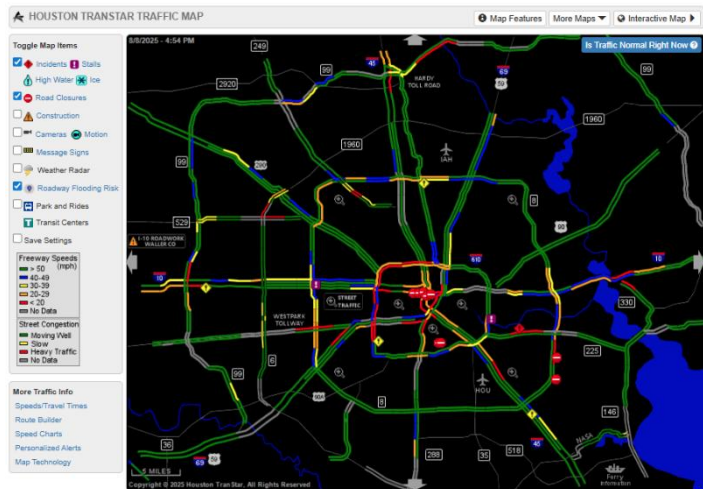
TRAVELER INFORMATION

Traveler information systems update drivers on current roadway conditions, including delays, incidents, weather, travel times, emergency alerts, and alternate routes. Providing this information to drivers before and during trips allows drivers to make more effective travel decisions about changing routes, modes, departure times, or even destinations. More informed drivers result in more efficiently used roadway capacity. This means less gridlock and better traffic flow.

Travel information is generated by sensors reporting to traffic management centers like Houston TranStar, through private entities using data from in-vehicle location devices, or from smart phones communicating location and speed. This information is then disseminated via traditional broadcast media, the internet, mobile devices, or roadside messaging. Personalized travel messages and alerts enable individuals to get trip-specific information on demand, or have it pushed to them via email or text message subscription services. Once familiar with these services, nearly 80 percent of drivers use traveler information to make daily decisions about route or departure time.

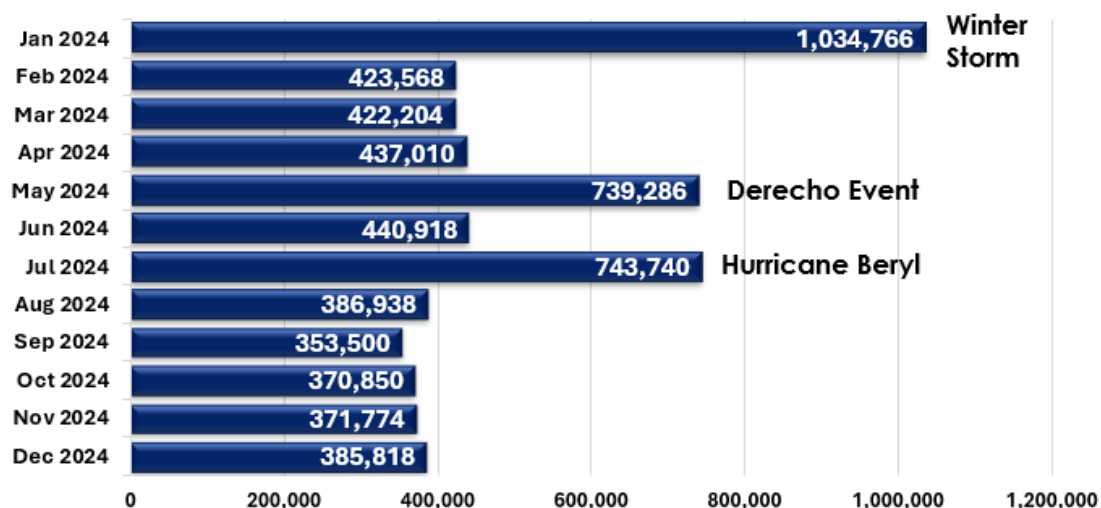
TranStar Website: The Houston TranStar website (<https://www.houstontranstar.org>) serves as the primary source of traffic information for the greater Houston area. The website—used by traffic managers, local media outlets, and the traveling public—contains a variety of traffic information affecting the region’s roadways, including the following:

- The TranStar Traffic Map provides a color-coded representation of freeway speeds and travel times ranging from green (free-flow speeds or conditions) to red (heavy traffic).
- CCTV camera snapshots display a near-real-time view of freeways at various locations.
- Incident and hazard information provides locations of crashes, stalls, high water, ice, road closures, or construction activity that might impact traffic flow.

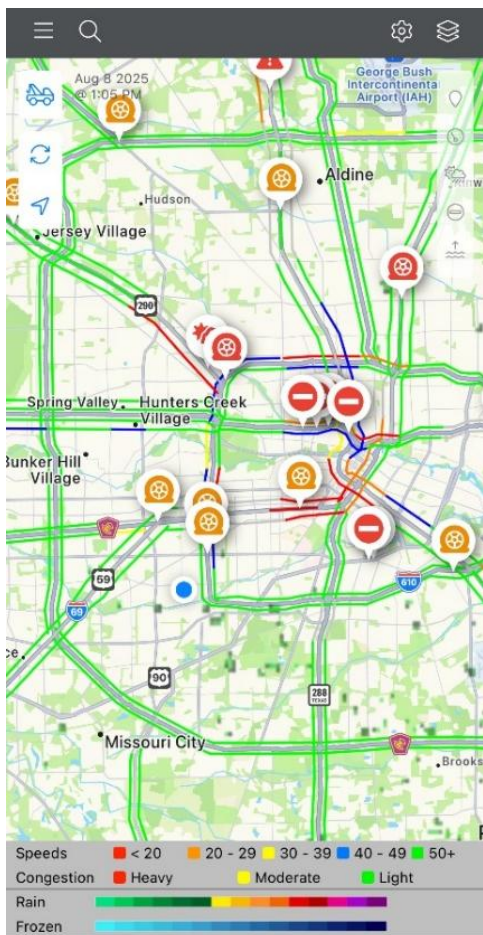


In 2024, the TranStar website was accessed by an average of nearly 400,000 unique user visits per month during months without a major disaster. When major disasters strike the Houston area, roadway users rely on the TranStar website even more. The TranStar website had an average of 840,000 visits during three high-hazard events including the January winter storm (1 million visitors) and May’s derecho event and July’s Hurricane Beryl (around 740,000 visitors each month).

Houston TranStar Website Unique Users, 2024



Note: A derecho is a large, fast-moving complex of thunderstorms with powerful straight-line winds that cause widespread destruction. A derecho struck the greater Houston area in May 2024.

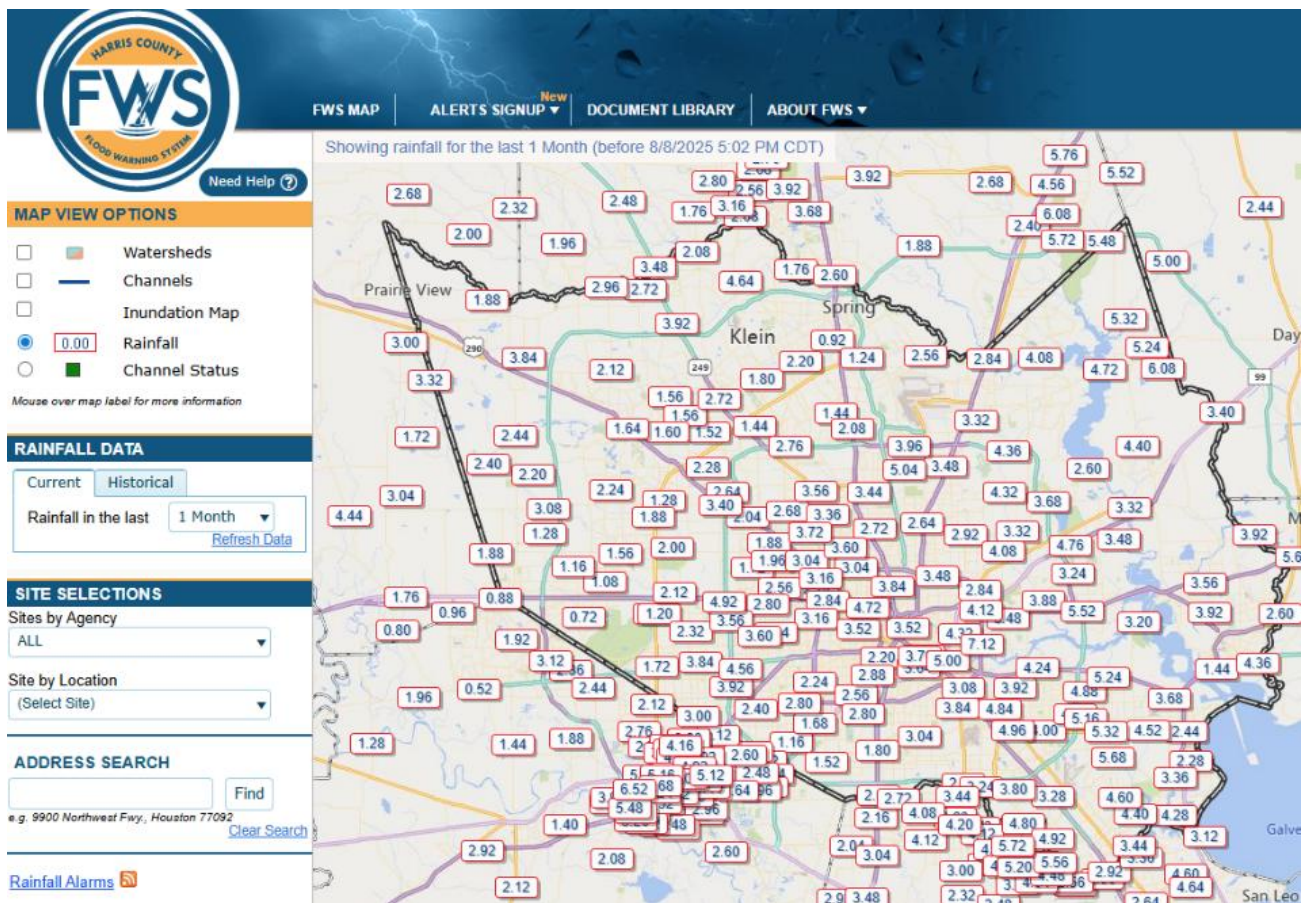


Houston TranStar Mobile App: The Houston TranStar Mobile App (available for Android and iPhone) provides the functionality of the TranStar website in the portability of a phone app. The app provides traveler information including the TranStar Traffic Map, freeway travel times and speeds, weather, high-water and ice warnings, regional travel alerts, evacuation information, live traffic camera images, and traffic incident and construction information to assist in trip planning. Since its introduction, the app has been installed on over 227,000 devices, including 24,000 new installations in 2024.

Roadway messaging via DMS: DMSs are a significant part of the traveler information system for Houston TranStar. DMSs have been installed at 400 locations throughout the Houston region. The signs give travelers advance warning about roadway conditions within the Houston region. DMSs provide information on travel times, traffic incidents, roadway conditions, road construction, AMBER Alerts (and other alerts), weather conditions, and evacuations. In rural areas, while benefiting all travelers, DMSs are particularly beneficial to long-haul interstate truck drivers. The signs give drivers advance warning of road environmental conditions, which allows drivers to either alter their route to another state highway around the Houston region or

alter the time they travel through the Houston region.

Roadway Flood Warning System: This system, developed in cooperation with the Harris County Flood Control District (HCFCD), uses data from the District's multiple rainfall and flood detection systems, as well as real-time weather data, to determine where roadway flooding might occur during high-rainfall events as depicted in the map on the following page. TranStar incorporates data from HCFCD, and then displays alerts on the Houston TranStar Traffic Map and pushes alert notifications to the TranStar App. The system has won state and national awards and is currently being considered for statewide implementation.



EMERGENCY MANAGEMENT

The Greater Houston region is vulnerable to natural and industrial emergencies and disasters such as flooding, tornadic thunderstorms, tropical storms and hurricanes, hazardous material spills, fires, and industrial accidents. Addressing these incidents requires a reliable transportation system to facilitate the potential evacuation of residents from an impacted area and the dispatch of responders to mitigate the emergency.

In recognition of the relationship between transportation and emergency management, the Harris County Office of Homeland Security and Emergency Management (HCOHSEM) operates out of Houston TranStar. Working with TranStar agencies enables faster response times in dispatching the appropriate equipment and manpower, resulting in more effective and efficient responses that reduce the cost of activations. The community also benefits from reductions in the impact of emergencies.

HCOHSEM plans, coordinates, and implements all emergency management and homeland security-related activities for Harris County. HCOHSEM works in cooperation with incorporated cities, first response agencies, all levels of government, and the private sector to prepare for and mitigate the effects of natural and human-caused disasters.

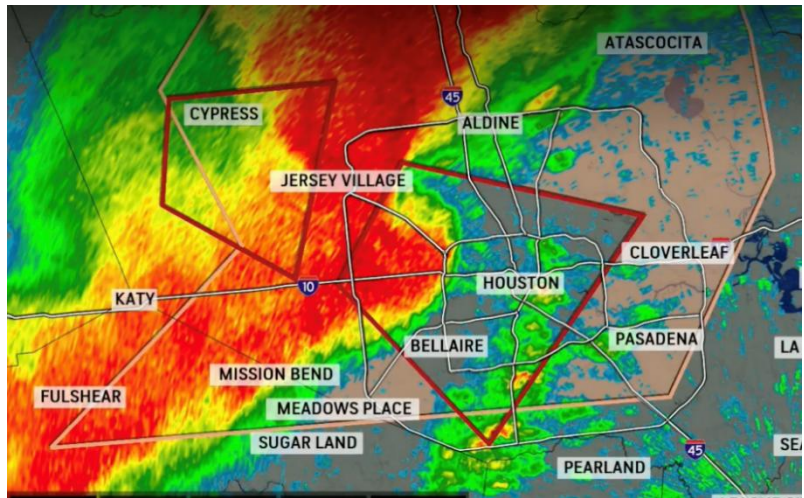


HCOHSEM monitors severe weather, industrial accidents, and other emergencies 24 hours a day and 7 days a week. Depending on incident nature, scale, and severity, HCOHSEM activates the Emergency Operations Center (EOC) at TranStar. For large-scale emergencies and events, additional staff and partners will deploy to the EOC to support response and recovery operations.

HCOHSEM serves as the primary communication hub for coordinating 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.

HCOHSEM experienced several significant events in 2024, requiring extended activations. Heavy rainfall in late April and early May resulted in river flooding and mandatory evacuations in northeast Harris County along the San Jacinto River basin. HCOHSEM activated the EOC to Level 1—Maximum Readiness to amplify emergency public information and support recovery efforts.

On May 16, less than two weeks into recovery from the flooding, HCOHSEM again activated the EOC to Level 1—Maximum Readiness when the county was struck by a derecho. Winds consistent with a Category 2 hurricane brought destruction to homes and knocked out power, leaving more than 1 million customers without power for days.



In July, while the area was still recovering from the derecho, Hurricane Beryl struck the area on July 8 as a Category 1 storm, causing additional damage and leaving millions without power. With the lack of power, there was an increase in heat-related illnesses and an alarming number of generator-related carbon monoxide incidents. HCOHSEM activated the EOC to Level 1—Maximum Readiness to support recovery efforts and broadcast emergency public information about cooling centers, distribution points, and Disaster Recovery Center/Business Recovery Center information.

Following the derecho event and Hurricane Beryl, Harris County received two presidential disaster declarations. The Federal Emergency Management Agency (FEMA) received over 905,000 Harris County registrations for assistance. Over \$1.1 billion in FEMA assistance was provided to Harris County residents to

help recover from the impacts of these disasters.

With the generous support of sponsors, HCOHSEM hosted its second annual EM Impact program in June at Houston TranStar, designed for young women interested in exploring a career in emergency management. Sixteen participants attended and learned about careers related to disasters and emergency response. Participants interacted with panels featuring professionals from different facets of emergency management including public information, geographic information systems, and education.

AGENCY REPORTS

TxDOT



TxDOT is responsible for traffic management on freeways and state-maintained roads in the region. Since the 1980s, TxDOT's Computerized Traffic Management System (CTMS) has grown to nearly 1,600 bidirectional miles in the urban areas of the Houston District and evacuation routes on the I-10 Katy, I-45 North, and US 290 Northwest Freeways.

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

- CCTV cameras to monitor roadways and provide visuals for responding agencies during incidents.
- DMSs to provide traveler information about slowdowns, incidents, and special events.
- Bluetooth detection for freeway travel time/speed calculations and identification of roadway segments with abnormal traffic.
- Radar to capture volumes and spot speeds.

The TxDOT Houston District manages:

- 1,198 CCTV cameras.
- 309 DMSs.
- 517 Bluetooth or automatic vehicle identification travel time readers.
- 490 radar units.
- 61 ramp meters.
- 18 WWD detection devices.

TxDOT performed the following activities in 2024:

- TxDOT control room staff on the Houston TranStar floor identified more than 14,750 incidents on area freeways. In addition, staff provided roadway monitoring support for over 78,000 incidents identified by other agencies. This included cataloging real-time roadway conditions, providing incident updates to the public, and coordinating with other entities for response.
- TxDOT staff on the TranStar Floor received 4,354 reports of roadway maintenance deficiencies called in from citizens, law enforcement, and incident management personnel including debris, potholes, struck guard-rails, downed signage, and other infrastructure damage.
- TxDOT's personnel at TranStar's control room activated for enhanced transportation operations for the solar eclipse on beginning on Sunday, April 8, by going into a 24-hour

shift schedule beginning in anticipation of the numerous visitors through the region for eclipse viewing.

- TxDOT staff responded to the Houston derecho which took place on the evening of Thursday, May 16, 2024. The storm caused widespread power outages and infrastructure damage across the Houston region. It resulted in numerous traffic signal outages, power loss to TxDOT infrastructure, and cleanup of storm debris on roadways.
- TxDOT activated its Emergency Operations Center during Hurricane Beryl in July to respond to the storm and its aftermath. TxDOT activities included debris removal, closing roads due to high water, repairing nearly 4,800 signs, and restoring service to over 1,250 traffic signals experiencing outages. TxDOT also deployed personnel and generators to critical intersections to maintain traffic signal operations.
- TxDOT, in conjunction with equipment vendors and technology and vehicle manufacturers, began installation of connected vehicle technology at TxDOT intersections within the Houston District. The technology will allow communication between vehicles and traffic signals to allow for enhanced traffic flow and notification to drivers about driving hazards.
- TxDOT implemented further enhancements to its ITS infrastructure including:
 - Installation of seven radar units on FM 1463.
 - Installation of nine color Light-Emitting Diode DMS signs.
 - Deployment of 10 portable trailers with CCTV on IH 45 Gulf Freeway.
 - Upgrade of 79 CCTV Cameras to Internet Protocol technology for improved communications and enhanced image resolution.

METRO



Houston TranStar houses several METRO 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 TIM programs.

METRO's services include:

- Service to 15 cities within Harris County.
- 113 bus routes.
- 27 miles of light-rail and bus rapid transit.
- 5,740,000 average monthly passenger trips.

METRO activity for 2024 included:

- January 8: served as a key transportation partner for the College Football Playoff National Championship at NRG Stadium.
- January 14–16: served as a transportation partner during the January arctic front requiring citizens to be moved to warming centers; later assisted the demobilization of warming centers.
- May 16–21: provided regional emergency transportation support after the Derecho by moving citizens to cooling centers.

- June 25–27: provided emergency transportation for those in need to cooling centers during Houston’s citywide heat emergency.
- July 5-17: transported CenterPoint personnel to assist in post–Hurricane Beryl recovery efforts; also transported people to cooling centers, assisted with mobility-impaired people in need, and supported first responders with cooling buses.
- September: operated two local bus routes by electric buses for regular service: 402 Bellaire Quickline and 28 OST–Wayside.
- October 21 through November 5: offered free rides to vote in the presidential election.

City of Houston



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

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 3 years for retiming and optimization.

The City of Houston manages:

- 2,500 traffic signals.
- 1,450 school zone beacons.
- 180,000 streetlights.
- 1,800 freeway safety lights.
- 300+ miles of fiber-optic cable.
- 2,000+ wireless devices.
- 600 Bluetooth travel time readers.
- 141 radar sensors
- 92 arterial DMSs.
- 115 CCTV cameras.

Major activities conducted by the City of Houston in 2024 included:

- Finalized downtown/midtown traffic signal retiming of nearly 400 signalized intersections, with emphasis on safety and efficiency.
- Optimized traffic signal operation on various major corridors in Houston.
- Along with partnering agencies, continued the process of amending the agreement and scope for the Houston Roadway Flood Warning System for critical underpasses in the region.
- Finalized a citywide Transportation System Management and Operations master plan.

- Piloted the Automated Traffic Signal Performance Measures project on Old Spanish Trail to help with special events traffic management at the NRG Stadium, including Texans football, the Houston Rodeo, concerts, and other events.
- Piloted the Automated Traffic Signal Performance Measures project on Studewood to gauge the need for signal priority for buses when the corridor is congested.
- Installed 50 CCTV cameras along major corridors at signalized intersections, offering engineers the tools to improve traffic management.
- Activated two DMSs outbound from George Bush Intercontinental Airport to provide drivers with real-time travel times and critical alerts.

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:

- 1,050 active traffic control signals.
- 1,344 school zone beacons.
- 59 warning beacons.
- 43 streetlights.
- 8 changeable lane signs.
- 210 CCTV cameras.
- 300 miles of fiber-optic cable.

Major activities during 2024 included:

- Continued the coordination and optimization of traffic signal timings as part of its annual program.
- Optimized Harris County's advanced traffic management system software (Centracs).
- Completed a full assessment of damages to the fiber-optic cable network and Harris County's traffic control devices from the derecho on May 16.
- Upgraded four Brocade routers to Cisco routers.

HOUSTON TRANSTAR'S REGIONAL BENEFIT

For the past 28 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.

The evaluation process looks at freeway and toll road traffic estimates and employs national benchmarks and experience to establish Houston TranStar goals for expected benefits. TranStar staff assess the performance of the transportation systems in terms of the percentage of goal attainment.

Annual benefits from TranStar operations were nearly **\$596 million** in 2024. The increase in monetary benefits is partially due to an increase in the value of vehicle delay, full depreciation of assets, and increased traffic levels.

Time and fuel savings were:

- 17.2 million fewer vehicle-hours, saving \$505 million.
- 32.1 million fewer gallons of fuel, saving \$91 million.

Based on estimates from the U.S. Department of Transportation Bureau of Transportation Statistics, the reduction in fuel consumed resulted in the following estimated emissions reductions compared to the absence of TranStar and its systems.

Emissions	Hydro-carbons	Carbon monoxide	Carbon dioxide	Nitrogen oxide
Reduction	829 tons	5,363 tons	284,029 tons	1,207 tons

With an annualized cost estimate of approximately \$25.9 million in 2024 for center operations, Houston TranStar recognized a 23-to-1 benefit/cost ratio. With a return of regional traffic to pre-COVID-19 levels, a greater number of roadway users are impacted by services provided through the TranStar regional traffic management center.

Benefit/cost calculation:	
Annual benefits	\$595,753,000
Annualized costs	\$25,901,000
Benefit/cost ratio	23:1

Houston TranStar Benefit/Cost Ratios 2015-2024

