

# Houston TranStar 2013 Annual Report



**METRO**



**The Houston TranStar Consortium is a Partnership of Four  
Government Agencies Responsible for Providing Transportation  
Management and Emergency Management Services  
To the Greater Houston Region**

## **INTRODUCTION**

This document is the 17th annual report for the Houston TranStar Transportation Management and Emergency Operations Center. This annual report provides a review of the performance of the center and summarizes the estimated 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.

Houston TranStar is a formal partnership among the principal transportation and emergency management agencies in Harris County, including:

- Texas Department of Transportation (TxDOT);
- Metropolitan Transit Authority of Harris County (METRO);
- Harris County, including:
  - Traffic & Transportation Group,
  - Harris County Toll Road Authority, and
  - Office of Homeland Security & Emergency Management; and
- The City of Houston.

Established in 1993, Houston TranStar provides for multi-agency operations and management of the region's transportation system and has evolved into a primary resource from which multiple state, county and local agencies respond to incidents and emergencies in Harris County and beyond. It is the mission of Houston TranStar and its partner agencies to provide highly effective transportation and emergency management services through the combined use of the partners' collective resources to maximize safety and mobility to the public.

Houston TranStar plays a pivotal role in the travel of people and goods in the greater Houston region, with an estimated savings to motorists of nearly \$3.9 billion in reduced travel time costs over the 17 years of Center operation from 1997 to 2013.

In 2013, the reduction of travel time attributable to Houston TranStar operation was estimated to be over 15.6 million vehicle-hours. This level of delay savings has a corresponding value of over \$340 million in road user cost savings and an additional \$99 million (or more than 29 million gallons) in reduced fuel consumption. The total estimated benefits of Center operation in 2013 were over \$438 million. Comparing the annualized TranStar operating cost estimate of \$30.1 million to the estimated annual benefit of \$438.9 million yields an estimated benefit/cost ratio for Houston TranStar center operation of 14.6 for 2013.

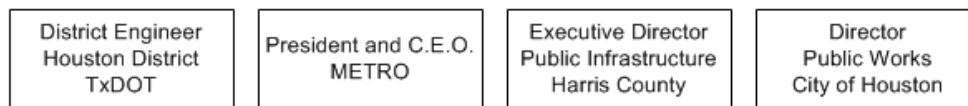
## TRANSTAR OPERATIONS FRAMEWORK

Houston TranStar is staffed by employees from each of the four member agencies which support the three levels of management in operating the programs housed in the Center. Operation of the Center is coordinated by a management staff that is responsible for operating and maintaining Houston TranStar facilities, coordinating multi-agency activities, coordinating budget preparation, hosting workshops and meetings, conducting facility tours, and managing public information activities. The three-tiered management structure and functions of the three committees are:

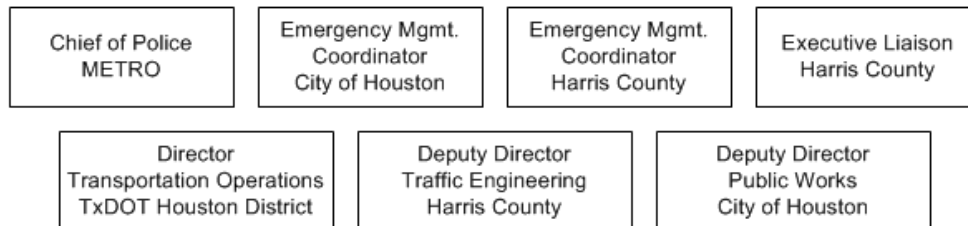
- Executive Committee – includes agency- or division-level executive administrators; the committee sets policy and manages fiscal and staffing matters;
- Leadership Team Committee – includes administrators of the transportation and emergency management groups; the team administers implementation of various projects and activities and reviews funding commitments; and
- Agency Managers Committee – includes managers of the transportation and emergency management groups; the agency managers are responsible for daily operations.

### Houston TranStar Organizational Chart

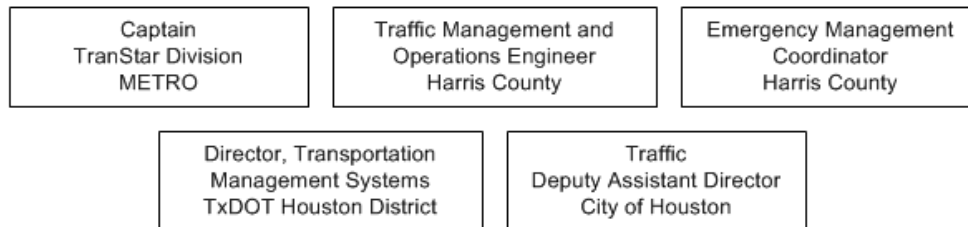
#### Executive Committee



#### Leadership Team



#### Agency Managers



## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

In 2013, the TranStar Partner Agencies continued ongoing, 24-7, transportation system operations and emergency planning and response. Significant agency activities at the center in 2013 are highlighted in the following sections of this report. Some of these highlights and significant accomplishments of TranStar and the partner agencies included:

- HCOHSEM activated the EOC (Emergency Operations Center) twice in January in response to severe weather potential (on 5<sup>th</sup> and 8<sup>th</sup>), moving to Level 3 - Increased Readiness on January 8th.
- HCOHSEM activated EOC January 15 in support of a natural gas pipeline leak in Pasadena.
- In the first quarter of 2013, TxDOT continued its implementation of Bluetooth travel time monitoring, CCTV and Vehicle Detection on: US 90 from IH 610 East Loop to the Harris/Liberty County Line; US 290 from Mueschke Rd to just past SH 6 in Hempstead; and on SH 6 from US 290 in Hempstead to two miles north of US 290 in Hempstead.
- In January, the segment on US 90 from IH 610 East Loop to east of the Sam Houston Tollway was integrated into the TranStar speed map. CCTV images were also integrated into TranStar.
- In February, HCOHSEM activated to support the City of Houston and first response agencies during NBA All-Star weekend. The EOC was staffed for 82 hours during that period.
- METRO PD consoles were upgraded with TranStar Computers to enhance Watch Command Officers operations.
- In February, TxDOT converted travel time monitoring on IH 45 from 61st Street in Galveston to Fuqua Street from the AVI, toll-tag based system to the Bluetooth-based AWAM system.
- In March, Houston TranStar hosted a group from Beijing, China with the HCOHSEM and a visit and webinar with New York University's Polytechnic Department.
- In March, METRO Hosted visitors from the Dallas Area Rapid Transit (DART).
- In March, work on Radio Tower building was completed.
- TxDOT Installed and integrated cameras on FM 2920 from IH 45 west to Tomball in March.
- In April, TranStar released a Public Service Announcement to all the television stations. Subject: Preventing teen distracted driving through peer action.
- HCOHSEM Activated the EOC on April 15 for local monitoring of Boston Marathon bombing.
- HCOHSEM Activated the EOC on April 27 for monitoring of a local flooding event.
- The TranStar METRO PD WCO/Dispatch console expansion was completed in April.
- In June, Houston TranStar hosted groups from the US State Department – Azerbaijan delegation – and the Nigerian Petroleum Corporation.
- In July, Harris County began building a lab to test various configurations and protocols necessary to integrate Harris County Traffic IP video cameras to the TranStar Video System.
- Harris County Judge Ed Emmett hosted more than 150 elected officials, EMCs and other response partners on July 8 for a 2013 Hurricane Season briefing at Reliant Center. Attendees received detailed information on evacuation and recovery planning from state agencies and private sector partners. HCOHSEM participated in this meeting as well.
- HCOHSEM hosted a Regional Joint Information Center exercise on July 24, the largest since Hurricane Ike in 2008. More than 100 individuals representing 50 agencies and jurisdictions

## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

operated six JICs around the region and in Arlington, Texas. The exercise was a successful test of internal and external communications systems.

- In July, final closeout for City of Houston WiMAX Project took place.
- In July the Advance Funding Agreement for \$1 million was signed between TxDOT and Harris County, funding the HCSO MAP for an additional year.
- In August, two Houston TranStar Web videos were published to the website and YouTube page. One describes TranStar's innovative approach to emergency management and transportation management, and the other portrays TranStar's information-sharing for transportation management.
- In August, members of HCOHSEM staff participated in a Radiological Tabletop response exercise conducted by Harris County Public Health & Environmental Services (HCPHES).
- Also in August, TxDOT implemented Ferry Travel Time traveler information from Seawall Blvd. to Bolivar Peninsula using Wi-Fi technology from TTI.
- In September, the ITS Technology and Applications class of Texas Southern University visited Houston TranStar.
- In September and October, Harris County completed fiber communications installations at Kuykendahl Road and Louetta Road as part of the Changeable Lane Assignment Sign project.
- In October, a group of guests from the Netherlands visited the facility to examine the ITS system.
- HCOHSEM activated on October 3 to monitor Tropical Storm Karen. Karen ultimately dissipated in the Gulf of Mexico, with minor coastal flooding in Brazoria County.
- TranStar made necessary cable runs to facilitate a move in November of the police dispatch consoles to the rear of the floor. This move was determined necessary to meet the DPS CJIS (Criminal Justice Information Security) compliance requirements.
- In November, about 50 members of the Leadership Group from the City of Missouri City visited Houston TranStar to learn more about center operations.
- The National Industrial Transportation League visited Houston TranStar on November 17 as part of a national convention.
- Houston TranStar was selected as a site for one of the vehicles from the City of Houston's electric car fleet. Charging stations were installed for the vehicle.
- HCOHSEM staff participated in the HC Public Health & Environmental Services RADD SNS exercise on November 1 & 2. This multi-location exercise tested the ability of state and local health officials to distribute medication in the event of a medical emergency.
- TxDOT, in conjunction with the City of Houston, installed travel time monitoring equipment on Hempstead Road. Speeds were integrated into the US 290 speed map.
- In December, HCOHSEM monitored extremely cold weather December 5-6.
- TxDOT Installed Bluetooth readers on NASA Road One. The speeds on the roadway were integrated into the Speed Map.

## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

- TxDOT opened Grand Parkway (SH 99) Segment E on December 21, 2013. No tolls were charged until February 1, 2014. CCTV, speed and volume sensors were placed on the facility and integrated into TranStar systems.
- There were more than 1,330 visitors to the center in 2013, including local, state, and national public officials and individuals, and overseas visitors from China, Singapore, Mexico, and the Netherlands, among others.

The following sections summarize each partner agency's activity during 2013. This includes various measures of performance of the center and programs operated from Houston TranStar.

### **Texas Department of Transportation**

The Texas Department of Transportation (TxDOT) is responsible for traffic management of freeways and state-maintained arterial highways in the region.

TxDOT's Computerized Traffic Management System (CTMS) has been in continuous deployment on Houston area freeways since the late 1980s. The total extent of the regional system is about 890 directional miles, including 801 directional freeway miles and 89 miles on HOV and Managed Lanes. Also not separately monitored are the non-barrier-separated HOV "diamond lanes" on US-59 (Southwest) and IH-10 (Katy Freeway) as these are currently included with mainlane monitoring. TxDOT also has continuous travel time monitoring in-place on 197 miles between The Woodlands and Interstate 20 in Dallas for traveler information and hurricane evacuation route monitoring.



Total TxDOT ITS field equipment deployed as of the end of 2013 included:

- Closed Circuit Television; 717 freeway CCTV cameras and 71 regional hurricane evacuation cameras (on rural and/or remote routes);
- Dynamic Message Signs – 224 total permanent DMS;
- Radar-based Vehicle Volume and Speed Detection – 161 total detectors;
  - 28 locations on evacuation routes (primarily on rural and/or remote highway routes);
  - 133 locations on freeway facilities in the urban area, including 30 on the IH-10 Managed Lanes operated in coordination with HCTRA;
- Flow Signals in Operation – 80 active in 2013 total on six facilities (IH-45 North, IH-45 Gulf, US-59 Southwest; US-290 Northwest, and IH-610 West Loop); and
- Travel Time Monitoring System – 1322 directional miles of coverage (AVI+AWAM).

Major components of the CTMS include CCTV, DMS, freeway entrance ramp flow signals, travel time monitoring using the Automatic Vehicle Identification (AVI) system and AWAM (Anonymous Wireless Address Matching) system, and related communications and central facility computer systems.

TranStar's traveler information systems are the cornerstone of the partner agencies' traffic management function and its ability to respond to and manage incidents. Monitoring systems at Houston TranStar provide extensive information of value to motorists as well as to traffic management operators at Houston TranStar. TxDOT operates and maintains this system for the TranStar consortium. Information is provided to motorists by three primary means: DMS, the Internet (by both desktop and

## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

mobile Internet formats), and the local media. The 224 permanent roadside DMSs provide information on traffic incidents and planned construction, giving location, travel direction, and nature of the incident or activity. The system is also used to display current travel times; weather alerts; and Amber (missing child), Silver (missing elderly or disabled persons), and Blue (law enforcement-related) Alerts.

There were more than 206,000 operator activated messages and over 2.45 million automated messages displayed on DMSs in 2013. The total number of operator-activated and automated messages increased 13% over 2012 levels, while the total number of state-mandated Amber, Silver, and Blue Alert messages increased more than 44% over 2012 levels, mostly because of an increase in Silver Alert messages in 2013. There were 50% more incident-related messages in 2013 as compared to 2012.

DMS message categories which changed significantly in 2013 (over 2012 levels) were:

- Incidents – up 50%;
- Road closures – down 24%;
- Safety campaigns – down 60%;
- Weather events – down 99%;
- Ozone alerts – down 46%;
- Informational messages – down 98%;
- Traveler information for special events – down 10%; and
- Traffic control information for special events – down 7%.

The types of DMS messages posted in 2013, and the corresponding estimated number of messages posted included:

- Operator Activated (206,600 total);
  - 95,000 operator activated messages for incidents;
  - 51,500 operator activated messages for road closures or construction;
  - 400 operator activated messages for weather-related events;
  - 29,300 operator activated messages for public service messages, including,
    - 28,600 for safety campaigns;
    - 700 for other informational messages;
  - 17,000 operator-activated messages for Special Events;
  - 9,580 Amber, Silver, and Blue Alert messages;
    - 1,610 for Statewide Amber Alerts;
    - 770 for Local Amber Alerts;
    - 7,070 for Silver Alerts;
    - 130 for Blue Alerts.
- Automated Messages:
  - 2,456,000 Freeway travel time messages
  - 3,800 Ferry travel time messages



## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

Some of the significant activities of TxDOT at TranStar in 2013 included:

- In January, TxDOT continued its implementation of Low Cost ITS of Bluetooth, CCTV and Vehicle Detection on: US 90 from IH 610 East Loop to the Harris/Liberty County Line; US 290 from Mueschke Rd to just past SH 6 in Hempstead; and SH 6 from US 290 in Hempstead to 2 miles north of US 290 in Hempstead. A segment of US 90 was integrated into the TranStar Speed map from IH 610 East Loop just past the BW8/Sam Houston Tollway. Camera images have also been placed on the map.
- In February, TxDOT converted travel time monitoring on IH 45 from 61st Street to Fuqua to Bluetooth Speed Readers.
- In March, work on the new Radio Tower building was completed and TxDOT installed and integrated cameras on FM 2920 from IH 45 west to Tomball.
- Conducted several public information campaigns, including the "Talk, Text, Crash" Safety Message and Work Zone Safety Week Campaigns in April.
- In July, an Advance Funding Agreement for \$1 million was signed between TxDOT and Harris County, funding the HCSO MAP for one more year.
- In August, TxDOT implemented Ferry Travel Times from Seawall Blvd. to Bolivar Peninsula using Wi-Fi address readers.
- In November, Hempstead Road was outfitted with AWAM sensors and placed on the US 290 speed map
- In December, TxDOT installed Bluetooth readers on NASA Road One and placed the roadway on Speed Map. That same month, TxDOT let a project to extend ITS on US 59/ IH 69 from SH 6 to SH 99 in Fort Bend County.
- SH 99 Segment E opened on December 21, 2013. No tolls were charged until February 1, 2014.

### **City of Houston**

The City of Houston Traffic Operations Branch, located at Houston TranStar, directs the design and installation of new traffic signals, operates and manages the city's signal system, and over sees operations and development of the traffic signal communications infrastructure. Traffic congestion is a major issue for Houstonians, making signal timing optimization an excellent investment with significant benefits for our city's future traffic operations. Houston has more than 2,450 signalized intersections maintained and operated by the city.



The Public Works and Engineering Department's Traffic Signal Performance Improvement Program (TSPiP) is a coordinated effort to ensure 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 major corridor every four years for retiming. The central approach of TSPiP is to provide an optimized level of traffic signal operation on the city's most heavily-traveled corridors and throughout some of its most heavily-populated employment areas.

In addition to providing the program management for TSPiP, the Traffic Operations Branch is responsible for developing signal optimization plans for the selected zones. The Traffic Operations Branch's role in this process consists of field data collection, timing plan design, and signal timing implementation. Approximately 800 traffic signals are evaluated and optimized each year. In TSPiP 2013-2014, signal performance improvements continued in the following areas: North West Area – 130 Traffic Signals; North Central Area - 310 Traffic Signals; North East Area – 270 Traffic Signals; Clear Lake Area – 55 Traffic Signals; and Uptown District & Surrounding Area – 70 Traffic Signals.



## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

### **Metropolitan Transit Authority of Harris County**

The Metropolitan Transit Authority of Harris County provides bus and light rail transit services as its core function but is also involved in other transportation and law enforcement functions. METRO is an active partner in the operation of Houston TranStar, and by using Houston TranStar's collection of ITS technologies, METRO provides improved service to the Authority's patrons. METRO programs operated from Houston TranStar include METRO bus and METRORail dispatch, METRO Police Communication Section operations, traffic signalization systems, HOV management systems, SAFEClear and incident management programs. METRO activity highlights for 2013 include:

- The METRO Motorist Assistance Program (MAP) consists of civilian staff members who continued to provide METRO MAP services in close coordination with the SAFEClear program. Both METRO MAP and SAFEClear on the HOV lanes are coordinated through Houston TranStar in partnership with the Houston Police Department and the SAFEClear Management team. In 2013, METRO's MAP personnel assisted 3,211 motorists on regional freeways.
- METRO began implementation of High Occupancy Toll (HOT) Lanes in the Houston region in 2012. These lanes allow single occupant vehicles to pay a toll to ride the HOV Lane during designated times. The IH 45 South (Gulf Freeway), US 59 Southwest, and IH 45 North Freeway HOT Lanes opened in 2012. HOT Lanes opening in 2013 included the US 290 (Northwest Freeway) and US 59 (Eastex Freeway) corridors. Included in these deployments is the Automated Reversible Gate Operation (ARGO) System, which enables remote opening, reversal and closure of the regions HOV/HOT Lane facilities. The ARGO system is operated from METRO consoles within TranStar.

### **Harris County Traffic Management**

The Harris County Public Infrastructure Department's Traffic Maintenance Group (TMG) is responsible for the operation and maintenance of the County's traffic signal infrastructure, which includes the fiber optic interconnect communications network. Major initiatives during 2013 included:



- In January, staff built a fiber path from the Crosby-Lynchburg switch to CE King Satellite building to build a redundant path for the 10 GigE backbone.
- Also in January, worked with ITC to develop network growth plans in order to build resiliency into the systems backbone, to develop near/long term vision of the LTE build-out requiring fiber work, and assisted with integration efforts of LTE circuits from Baytown to TranStar.
- In June, county staff replaced a failed Network Time Protocol Server; repaired eight cameras and three fiber cuts; handled video issues at Washburn Tunnel; programmed IP encoders for deployment into CMAQ-1 corridors; finalized new communications maintenance contract documents. In addition, staff installed fiber to support Constable operations; worked on DMS signs on BW-8 East; repaired one switch failure on BW-8; and worked on integrating switch at DPS in support of ITC/Dowley Securities requirements.
- In July, repaired damaged fiber trunk cable in two areas, replaced older switches in both Clay Hub and Klein Church Hub in preparation for ATM to IP transition, and began building a lab to test various configurations and protocols necessary to integrate HC Traffic IP video cameras to the TranStar Video System.
- In August, staff moved fiber at Kuykendahl Road @ Louetta Road as part of the CLAS Project; worked to build a circuit from TranStar to the East Toll Plaza for the Precinct 8 Constable's

## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

office; and replaced transceivers with Ethernet switches for 20 DMS signs on Beltway 8 East in order to improve the communications path between the DMS subsystem and the DMS controller.

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

With almost 4.2 million residents, Harris County is the most populous county in the State of Texas and the third most populous county in the United States. Harris County consists of 34 cities, including Houston, the nation's fourth-largest city, but nearly 1.6 million people live in unincorporated Harris County and rely on the county to be the primary provider of basic government services.



While the proximity to the Gulf of Mexico makes Harris County vulnerable to hurricanes, it has seen its share of other incidents. The Harris County Office of Homeland Security & Emergency Management (HCOHSEM) is ready to activate its Emergency Operations Center (EOC) for any natural or man-made disaster. In the past, the EOC has activated for emergencies that have included weather events, health related events, hazardous materials, industrial accidents and wildfires. HCOHSEM serves as a liaison to local, county, state, federal and military agencies and departments. In total, HCOHSEM activated the EOC 14 times in 2013.

#### ***Hurricane Season***

The Texas Gulf Coast was again spared in 2013 from any significant hurricane activity. The 2013 season had 14 named storms and only two hurricanes. HCOHSEM monitored storms all season, keeping a close eye on Tropical Storms Ingrid and Karen which could have moved into the Texas coast.

#### ***Homeland Security***

The HCOHSEM collaborates with local, state and federal partners to prevent, protect against, respond to and recover from natural and man-made disasters, health emergencies and terrorism. Partner agencies include the Harris County Sheriff's Office, Harris County Fire Marshal's Office, Federal Bureau of Investigation, U.S. Department of Homeland Security, U.S. Coast Guard, Federal Communications Commission, State of Texas, the local Fusion Center, and countless first responder organizations as well as other local, state, national and international partners. Harris County Sheriff's Office (HCSO) HCSO has seven officers assigned to HCOHSEM.

Some of their duties include:

- Working directly with Incident Command during activations.
- Staffing and providing security for Houston TranStar during dignitary visits and Emergency Operations Center activations.
- Participating in all drills/exercises in which the HCSO or Harris County, in general, is a stakeholder.
- Coordinating planning and response activities with state and federal military forces.
- Transporting assessment teams and/or conducting damage assessments post events.
- Maintaining and updating all plans that would involve a Homeland Security Bureau response, such as deployment of the Strategic National Stockpile.

## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

- Reviewing and updating, as needed, all annexes that are assigned to the Sheriff's Office in the Harris County Emergency Management Plan.
- Conducting public awareness activities/education for residents and business groups.

### ***Emergency Operations Center (EOC)***

HCOHSEM activates its Emergency Operations Center (EOC) for a wide range of emergencies or special events. The EOC is where emergency partners coordinate response efforts, make decisions, locate and deploy resources, and gather and disseminate information. In 2013, HCOHSEM activated its EOC 14 times. The EOC is equipped with state-of-the-art technology to assist in information gathering, assessment and public notification. It is also connected to the State's WebEOC network that enables emergency personnel to electronically share real-time information during an incident and helps manage resources. Construction is under way at Houston TranStar to expand HCOHSEM facilities to include a new and larger EOC. The construction began in 2012 and continued through 2013.



### ***On-Call***

The On-Call program provides response partners with 24-hour access to a trained staff member for the reporting of significant events and after-hour resource requests. The calls range from severe weather inquiries to assistance requests for high impact chemical spills. In 2013, On-call received 2,532 documented notifications requiring more than 734 hours of staff time.

### ***Industry***

HCOHSEM's Operations team was involved with various industrial and hazardous material emergencies during the year. This includes supporting the Harris County Hazmat team with on-scene safety, emergency communications to community leaders and serving as liaison with partner agencies. In general, the department assists the Texas Division of Emergency Management, State Operations Center, U.S. Department of Homeland Security and the National Response Center to gather information on industrial incidents.

HCOHSEM's new technology systems allows for training and emergency response, while also making inventory control of cache items automated. All of these enhanced capabilities benefit the entire region because they allow HCOHSEM to be more productive, efficient, and responsive to all needs. The following are a few 2013 incidents that HCOHSEM monitored and supported in coordination with HCFMO:

- Skid fire at a major pipeline facility
- Trimethylacetyl chloride release at a chemical facility
- Explosion at a gas facility

## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

- Acetylene cylinder fire
- Compressor shutdown at Houston Ship Channel
- Liquid propane tanker truck accident
- Scrap metal facility fire
- Boron trifluoride leak.

### ***Transportation Assistance Registry (TAR)***

HCOHSEM plays a critical role in serving people with functional access needs (formerly special needs) before and during emergencies. Every year, designated planners update the transportation registry list for Harris County and participate in several projects aimed at helping residents requiring evacuation assistance. Individuals who need evacuation assistance can dial 2-1-1 and provide their contact information and any medical needs that may require special transportation.

### ***Training & Exercises***

Training and exercises are essential components to HCOHSEM's comprehensive approach to preparedness for homeland security and emergency management. Training and exercises provide a practical evaluation of the capabilities of local governments and their partners. HCOHSEM, in collaboration with federal, state and regional partners, conducts and participates in training and exercise events that strengthen the ability of the local emergency management community and build strong relationships.

In 2013, HCOHSEM hosted six exercises and participated in an additional 28 partner exercises throughout the region. The office hosted several state and federal courses, including a Public Officials Workshop and a Threat and Risk Assessment course. Key events included:

- Regional Joint Information Center (JIC) Functional Exercise - In 2013, HCOHSEM hosted the Regional JIC functional exercise. Close to 100 federal, state and local public information professionals, representing more than 50 organizations, participated in this exercise that tested and evaluated public information during a disaster.
- Rail Hazardous Materials Virtual Tabletop Exercise - HCOHSEM and several other county departments participated in a Federal Emergency Management Agency (FEMA) virtual tabletop exercise to test response capabilities for a chemical release from a train derailment. This unique tabletop provided the opportunity to coordinate face-to face with other local response organizations and correspond virtually with nine other communities. This was accomplished via conference calls and through video teleconferencing technology.
- County Staging Area – POD Training and Drill - HCOHSEM and the Harris County Community Services Department held a POD drill focused on the testing of communications equipment and standard operating guidelines between the CSA and the Harris County EOC. This two-day event was a result of lessons learned from Hurricane Ike, as well as our 2012 full-scale hurricane exercise.
- Other partner exercises included:
  - United States Coast Guard SecureEx Functional Exercise
  - Regional Allocation Distribution and Dispensing Strategic National Stockpile Full-Scale Exercise

## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

- Texas Medical Center Weapons of Mass Destruction (WMD) Tabletop Exercise
- Various LEPC and industrial exercises

### ***Public Information Office & Public Education***

A strong public outreach program is a key part of HCOHSEM's mission to encourage personal disaster preparedness. Each year, HCOHSEM works closely with private sector partners, faith-based organizations, school districts and other groups to promote an all-hazards approach to disaster preparedness. Highlights from HCOHSEM's outreach program in 2013 included:

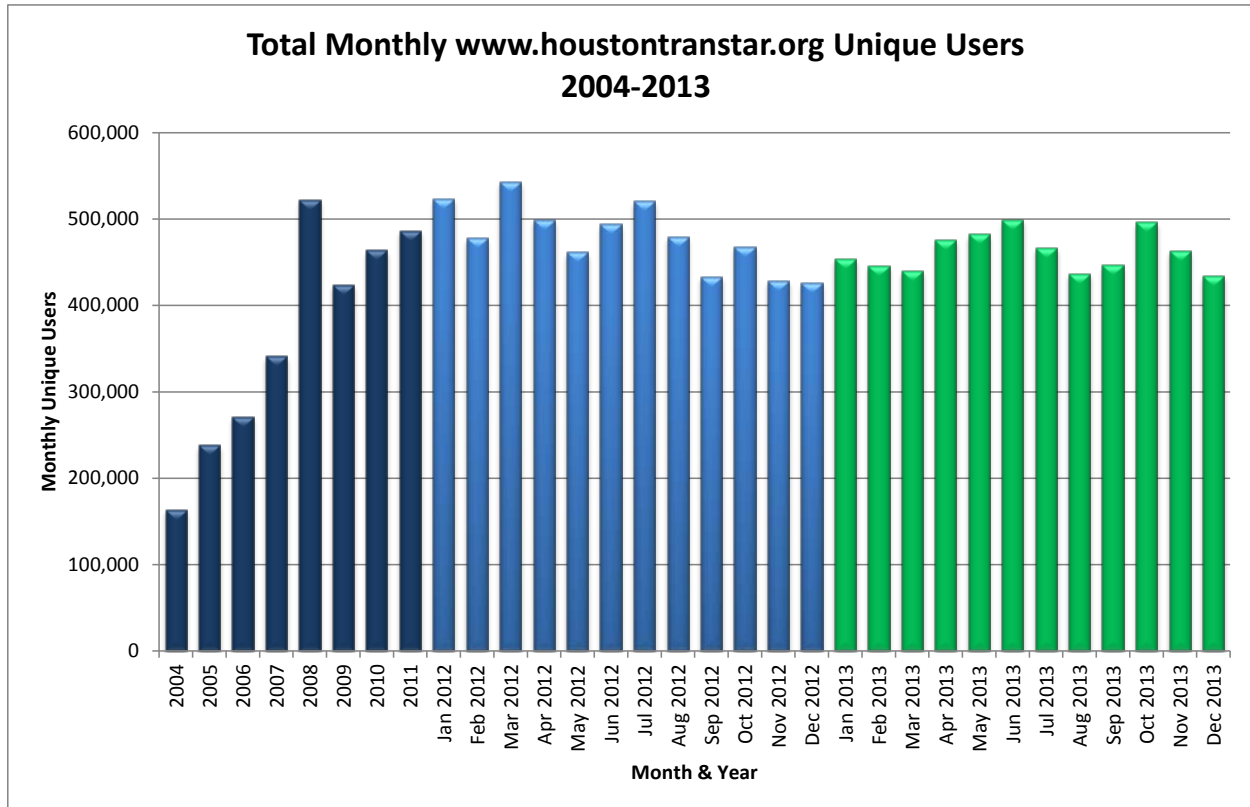
- National Weather Service Hurricane Workshop - The largest and best attended hurricane preparedness event each year is the National Weather Service's Hurricane Workshop that is held at the George R. Brown Convention Center. In 2013, more than 3,500 residents from Harris and surrounding counties discussed hurricane preparedness with elected officials, local television meteorologists and other experts.
- Medical Community Preparedness Events - In 2013, HCOHSEM worked with the medical community to participate in health and safety fairs at several major hospitals. In May 2013, HCOHSEM joined the annual Texas Children's Hospital Bridge Event which draws more than 1,000 employees of the Texas Medical Center as well as patients and their families. Similarly, HCOHSEM participated in events at Lyndon B. Johnson and Ben Taub hospitals at the invitation of Harris Health Systems.
- Homeowners Associations - One of HCOHSEM goals for 2013 was to engage community and homeowner associations as a means of improving our preparedness culture. The Greater Houston Neighborhood Association's annual seminar and trade show last February served as the kick-off for that effort. Hundreds of homeowners from all parts of the county gathered to hear an address by Harris County Judge Ed Emmett and learn more about improving disaster preparedness in their neighborhoods. This event led to nearly a dozen events at homeowner association meetings throughout the year.
- Industry - In 2013, HCOHSEM collaborated in more than 20 presentations at safety meetings for companies such as Baker Hughes, Chevron, ExxonMobil, BP and Schlumberger.
- EOC Tours - In 2013, more than 900 visitors toured the Harris County EOC and TranStar, including almost 100 dignitaries from Azerbaijan, China, Ghana, Japan, Mexico, the Netherlands, Nigeria and Singapore.

## **TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES**

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 capabilities, and travel time reporting systems in their daily traffic reporting functions. In addition, traffic service organizations are housed on the operations floor of Houston TranStar.

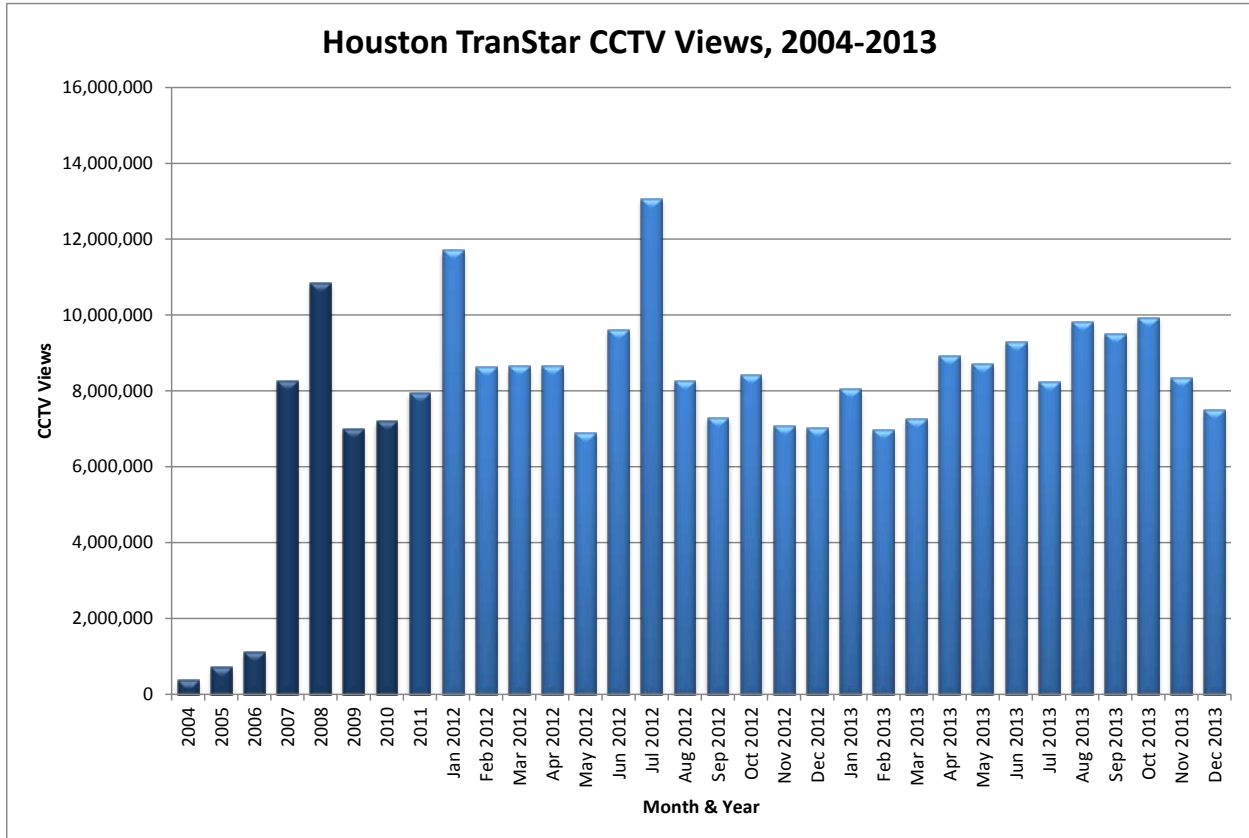
Operational highlights for the TranStar Website in 2013 included:

- Average unique monthly users held relatively steady, with 461,500 users, a -3.7% change over 2012, but a 35% increase over in the five years since 2007.

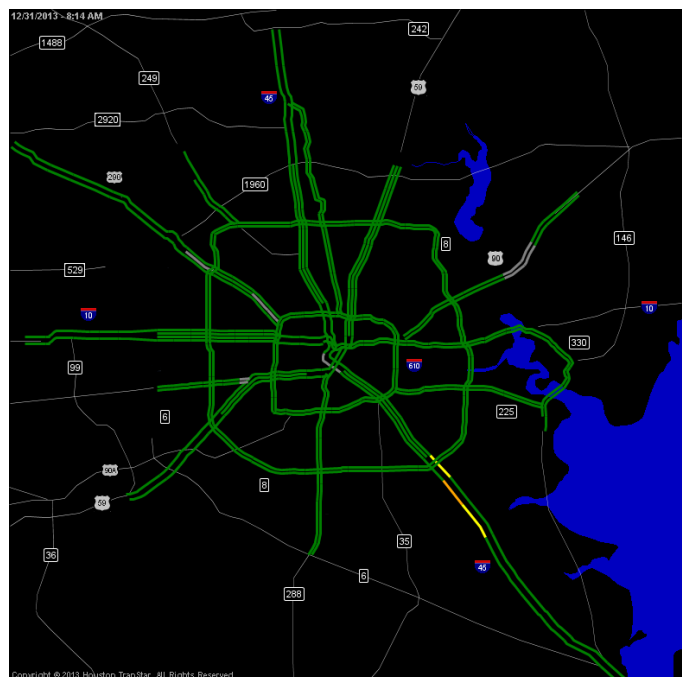


- Monthly Webpage accesses in 2013 ranged from 8.8 to 11.7 million, with a monthly average of about 9.82 million accesses. Total Webpage accesses for the year were more than 117.8 million, down slightly from 119.4 million in 2012.
- Route builder information was accessed 2.1 million times in 2013.
- Views of CCTV images remained steady at 102.5 million in 2012 as compared to 105.2 million in 2012. Cameras showing moving snapshots showing motion remain most popular.
- Traffic alert subscribers increased from an average monthly subscriber base of 10,200 in 2012, about 4.5% higher than in 2012. A periodic effort to clean the subscriber database to eliminate those no longer reaching their email address ensures active subscriptions.

## TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES



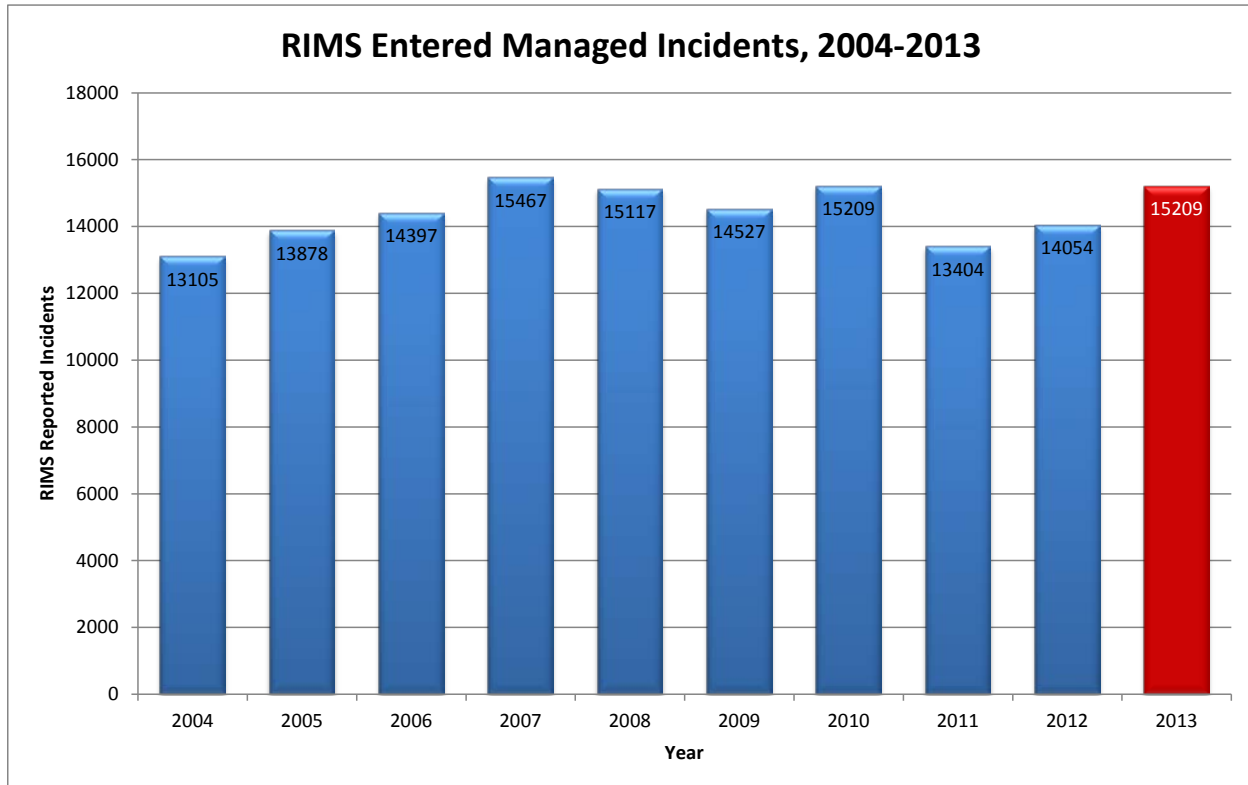
- Construction information data accesses increased in 2013 to 410,000 million accesses as opposed to 326,000 in 2012, a 25% increase.
- DMS information viewed decreased by 17% from 2012 to 2013, with more than 7.6 million views.
- Speed map coverage at the end of 2013 totaled approximately 890 directional miles of travel on area freeways, tollways, and managed lanes.





## **INCIDENT MANAGEMENT**

Detection, response, and clearing of freeway incidents are important functions of Houston TranStar, and the Houston TranStar agencies play a major role in incident response management and information dissemination. A majority of incidents are entered into the Regional Incident Management System (RIMS) operations database by agency personnel. In 2013 there were 15,209 incidents recorded by Houston TranStar operators, largely by TxDOT personnel. This is an increase of about 8.2% when compared to total incidents entered into RIMS in 2012.



Some of the incident related performance measures determined for 2013 included:

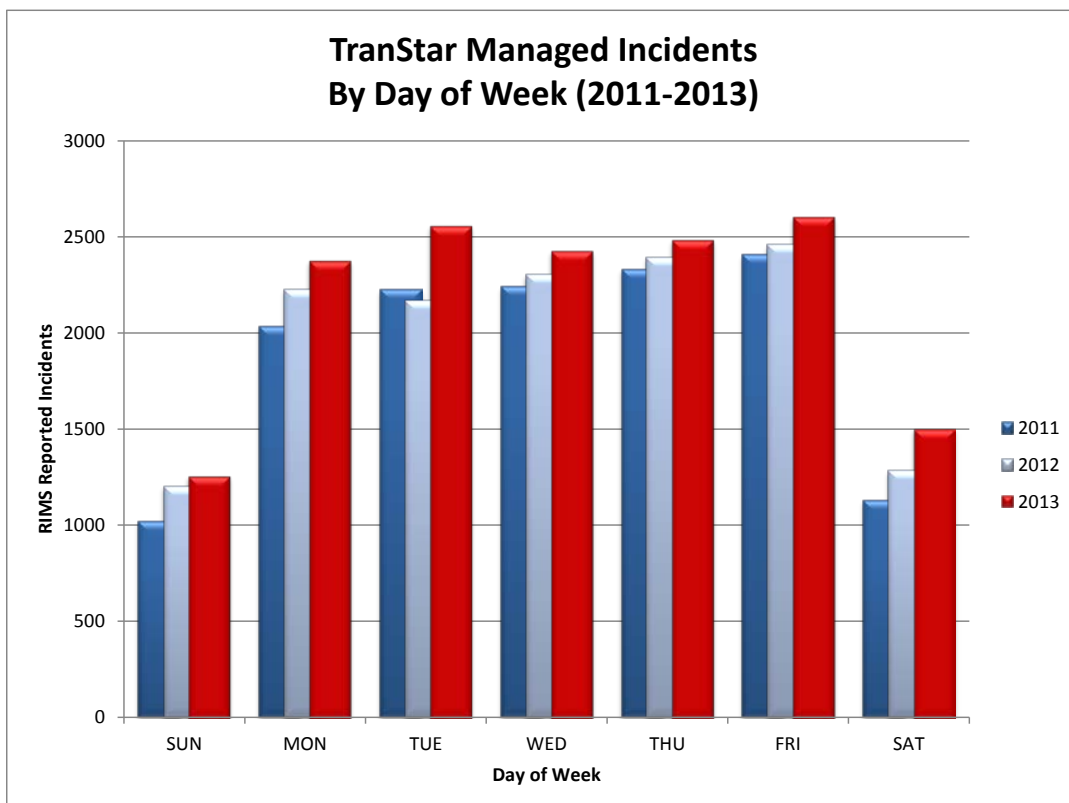
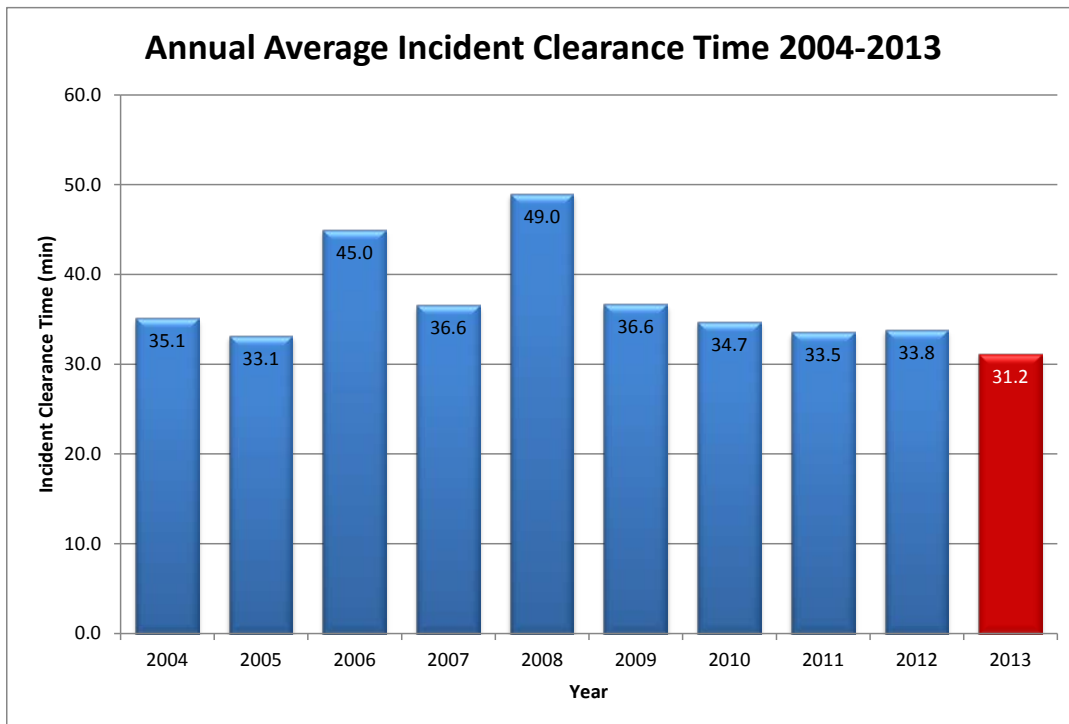
- There were 7,902 incident-hours managed from the Center in 2013 (as compared to over 7,927 in 2012), a decrease of about 0.3%.
- The average incident clearance time in 2013 was 31.2 minutes, which was about 8% lower than in 2012.

The top ten incident locations managed and/or monitored from TranStar in 2013 included:

- WEST SAM HOUSTON TOLLWAY Northbound at SOUTH SAM PLAZA
- EAST SAM HOUSTON TOLLWAY Northbound at SHIP CHANNEL/TOLL BRIDGE
- WEST SAM HOUSTON TOLLWAY Southbound at CENTRAL PLAZA
- WEST SAM HOUSTON TOLLWAY Southbound at SOUTH SAM PLAZA
- NORTH SAM HOUSTON TOLLWAY Westbound at NORTH SAM PLAZA
- WEST SAM HOUSTON TOLLWAY Northbound at CENTRAL PLAZA
- NORTH SAM HOUSTON TOLLWAY Eastbound at NORTH SAM PLAZA
- IH-45 GULF Northbound at US-59 EASTEX
- IH-45 GULF Northbound at I-610 SOUTH LOOP
- IH-610 WEST LOOP Northbound at US-59 SOUTHWEST

## INCIDENT MANAGEMENT

RIMS incident locations and status are automatically provided on the traffic Website. Operators develop and activate DMS messages providing information on the incident (e.g., traffic direction, location, type incident, lanes blocked) to motorists at the roadside.

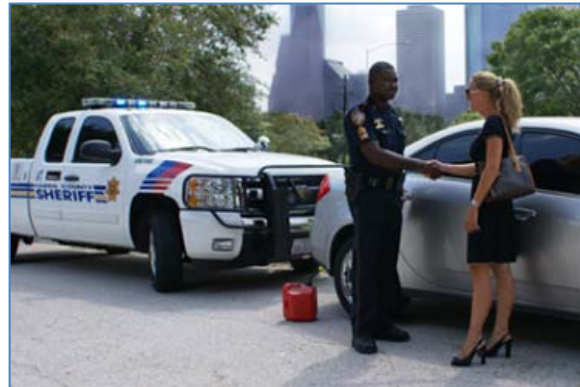


## INCIDENT MANAGEMENT

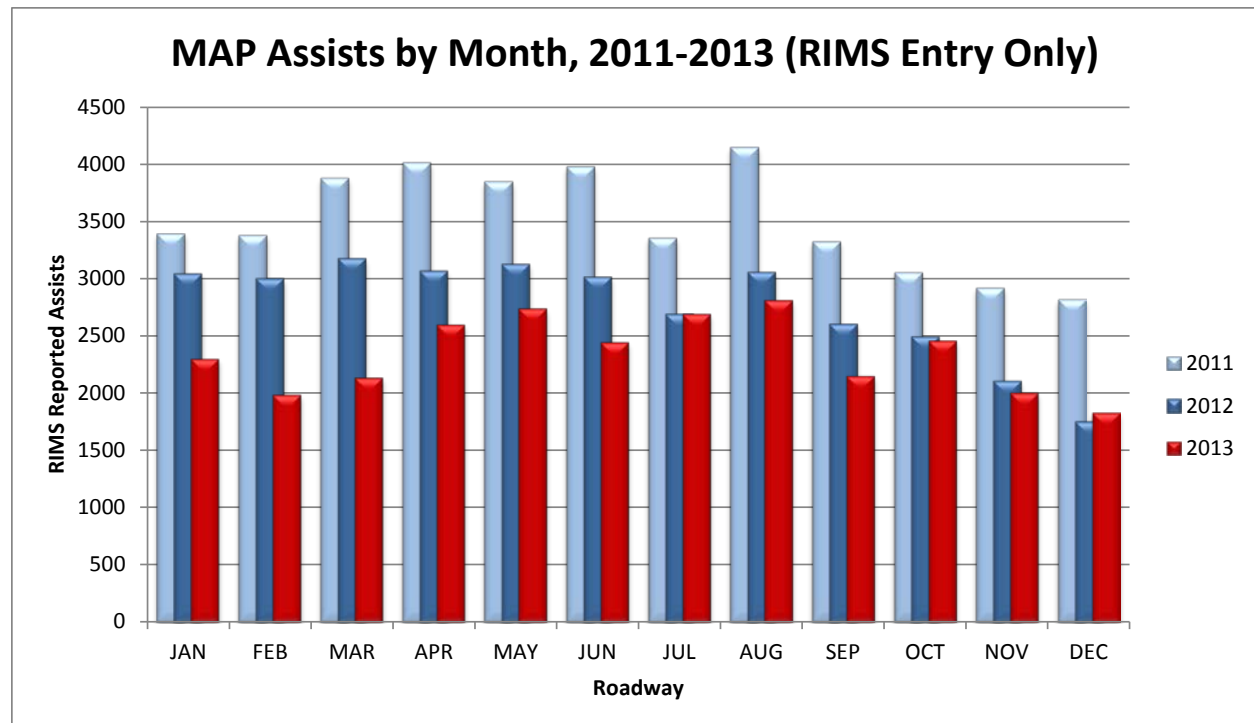
### Motorist Assistance Program (MAP)

The Motorist Assistance Program (MAP) continues to be one of the most visible services operated by the Houston TranStar agency partnership.

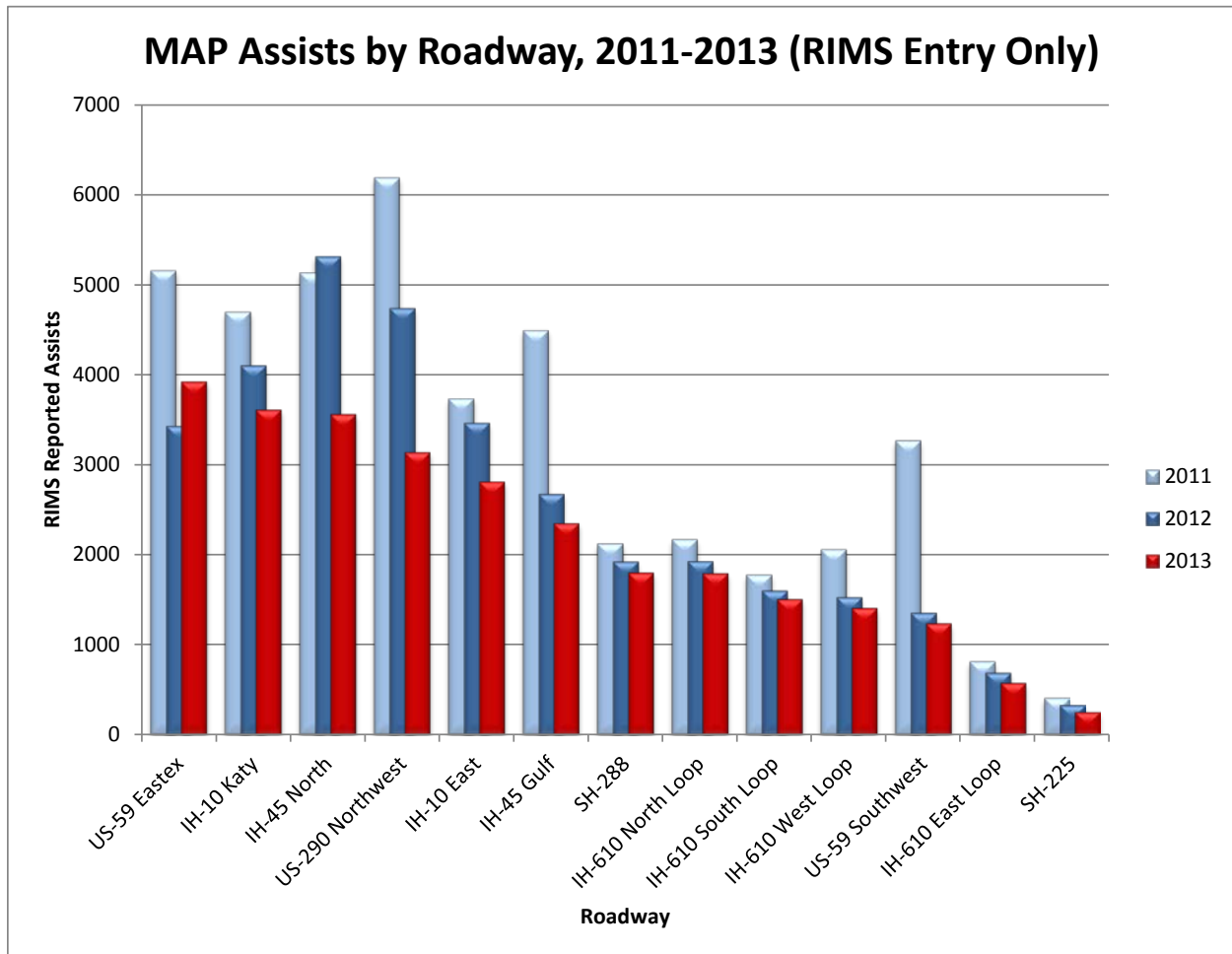
MAP started in 1986 with two vans operating eight hours per day. The program has expanded significantly since, operating 16 hours per day on all major freeways, Monday through Friday. The program was expanded in 2005 to include the participation of METRO Police in addition to Harris County Deputies. In 2008, METRO replaced METRO Police with METRO civilian staff members to participate in MAP activity.



There were 28,124 RIMS-reported assists handled by MAP in 2013, a decrease of about 15% from 2012. The decrease was likely due to staffing reductions in the program. The RIMS-reported MAP assists are for Harris County Deputy MAP activity only. METRO reported an additional 3,211 assists, but those are not currently entered into RIMS, the TranStar Incident Database. TxDOT operators provide dispatch service to the MAP program.



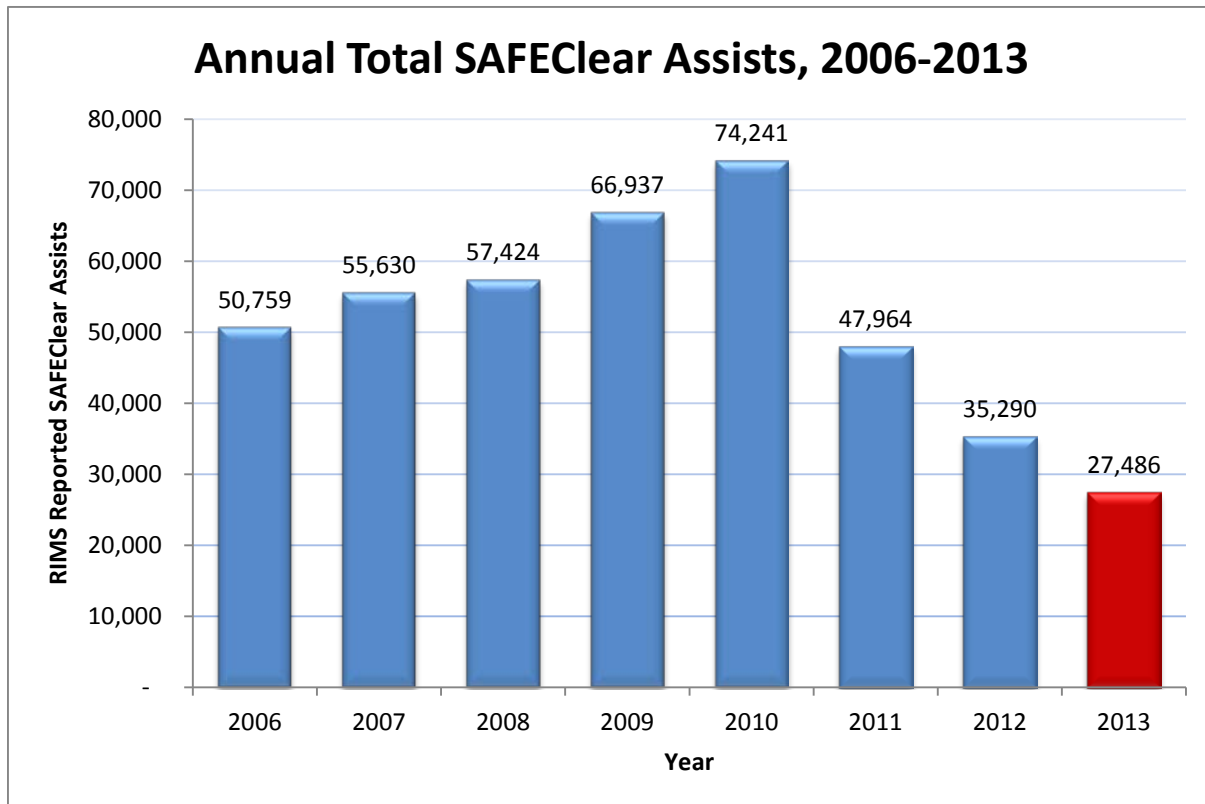
## INCIDENT MANAGEMENT



## INCIDENT MANAGEMENT

### SAFEClear

SAFEClear, the City of Houston's rapid clearance program, was instituted in 2005. SAFEClear is intended to bring quick response to disabled vehicles to reduce the occurrence of secondary crashes in the freeway queue. There were 27,486 RIMS reported SAFEClear assists in 2013; a decrease of 22% from 2012 levels. In 2013, the average time from tow authorization to clearance was 48.4 minutes.



## **BENEFITS**

This report develops estimates of those benefits which are quantifiable, such as the cost of motorist delay savings (in time and dollars), fuel savings (in gallons and dollars), and emissions reductions (in tons of emissions). However, determining the benefits of Houston TranStar is treated conservatively because many benefits are not easily quantifiable and some are intangible.

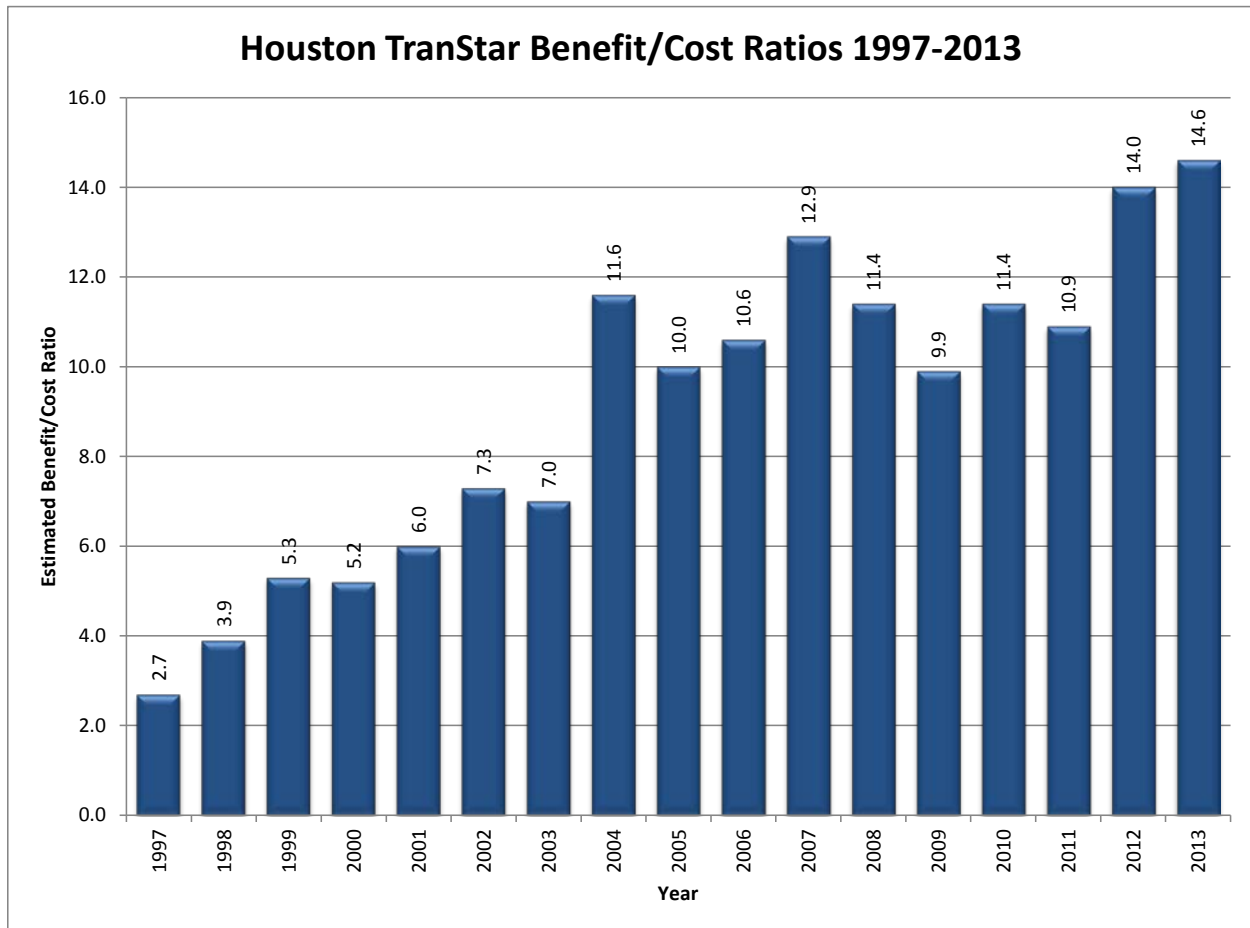
For the past 17 years, this report has used an approach which estimates the operational benefits in terms of freeway motorist delay savings. Traffic delays on the freeway mainlane system were estimated using the TxDOT travel time monitoring system and traffic volumes from the TxDOT annual volume-roadway inventory files and from HCTRA on the toll road system. The procedure for evaluation uses national benchmarks and experience to establish Houston TranStar quantitative goals for expected benefits. The expertise of Houston TranStar staff is relied upon to estimate performance of the transportation systems in terms of percent attainment of the goals.

The estimated costs of congestion in the Houston TranStar monitored region were calculated to be just under \$863 million in 2013. Annual benefits in the reduction of travel time were estimated to be more than 15.6 million vehicle-hours with an estimated monetary benefit of over \$340 million. The saving in travel time is equivalent to reducing fuel consumption more than 29.2 million gallons, which results in an additional savings of about \$98.9 million. Thus, the total 2013 motorists' savings was in excess of \$438 million. Since 1997 (when benefits were first estimated), Houston TranStar has saved Houston area motorists over \$3.9 billion in reduced traveler delay and fuel costs.

An estimated reduction in the amount of fuel consumed would also result in a reduction of mobile source exhaust emissions. Based on USDOT Bureau of Transportation Statistics, the reduction of 29.25 million gallons of fuel is equivalent to an estimated reduction of 632 tons of hydrocarbons; 4,085 tons of carbon monoxide; 258,570 tons of carbon dioxide, and 919 tons of nitrogen oxides.

A benefit/cost analysis for 2013 was performed, comparing the benefits discussed previously to the annual costs of Houston TranStar. Annual costs include annualized capital costs, annual operational costs of the Houston TranStar systems, and the annual cost of operation and maintenance of the field installations. The annualized cost estimate of \$30.14 million is divided into the annual benefit estimate of \$438.9 million, yielding a 2013 estimated benefit/cost ratio of 14.6. Since 2004, the benefit/cost ratio of Houston TranStar has ranged from 10.0 to 14.6.

## **BENEFITS**



Several factors enter into this calculation when comparing 2013 to previous years:

- The motorist value of time increased from \$21.42 per vehicle-hour in 2012 to \$21.75 in 2013.
- The annual average cost of fuel in the Houston area decreased 3.4% in 2013 as compared to 2012, from \$3.50/gal in 2012 to \$3.38/gal in 2013.
- The largest factor in the increased B/C ratio in 2013 was the significant increase in congestion in the Houston region as the economy gained strength and population growth accelerated. As congestion increases, the benefits of quick incident clearance and traveler information become realized as traffic operations becomes critical to keep traffic moving as smoothly as possible.



## **ACRONYMS**

TxDOT	Texas Department of Transportation
METRO	Metropolitan Transit Authority of Harris County
HCTRA	Harris County Toll Road Authority
RIMS	Regional Incident Management System
TEEX	Texas Engineering Extension Service
PIO	Public Information Officer
FEMA	Federal Emergency Management Agency
CTMS	Computerized Traffic Management System
CCTV	Closed Circuit Television
DMS	Dynamic Message Sign
HAR	Highway Advisory Radio
AVI	Automatic Vehicle Identification
HOV	High Occupancy Vehicle
MAP	Motorist Assistance Program
PEAT	Patron Emergency Assist Team
TSTOP	Traffic Signal Optimization Program
HCPID	Harris County Public Infrastructure Department
HCOHSEM	Harris County Office of Homeland Security and Emergency Management
EOC	Emergency Operations Center
CERT	Citizens Emergency Response Team
RWIS	Roadway Weather Information System
USDOT	United States Department of Transportation