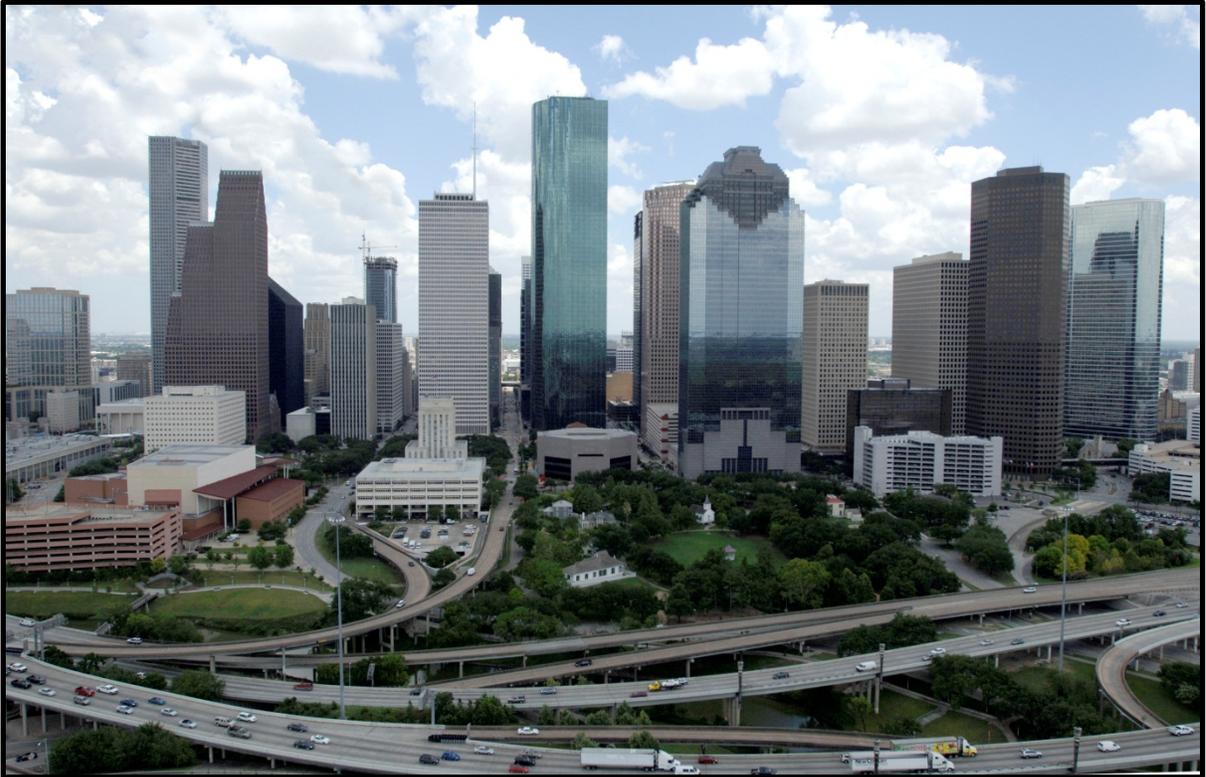


Houston TranStar 2012 Annual Report



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

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 \$3.5 billion in reduced travel time costs over the 16 years of Center operation from 1997 to 2012.

This document is the 16th 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.

In 2012, the reduction of travel time attributable to Houston TranStar operation was estimated to be over 14 million vehicle-hours. This level of delay savings has a corresponding value of over \$300 million in road user cost savings and nearly \$92 million (or more than 26 million gallons) in reduced fuel consumption.

The total estimated benefits of Center operation in 2012 were over \$391 million. Comparing the annualized TranStar operating cost estimate of \$28 million to the estimated annual benefit of \$391 million yields an estimated benefit/cost ratio for Houston TranStar center operation of 14.0 for 2012.

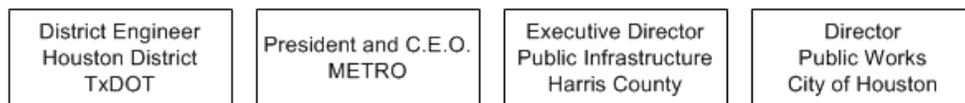
TRANSTAR OPERATIONS FRAMEWORK

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:

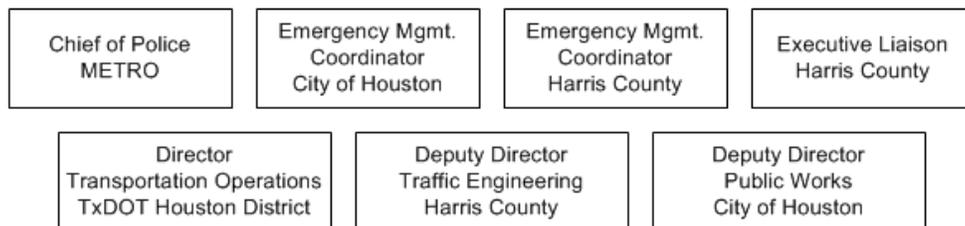
- Executive Committee – includes agency- or division-level executive administrators; the committee sets policy and manages fiscal and staffing matters;
- Leadership Team Committee – includes administrators of the transportation and emergency management groups; the team administers implementation of various 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

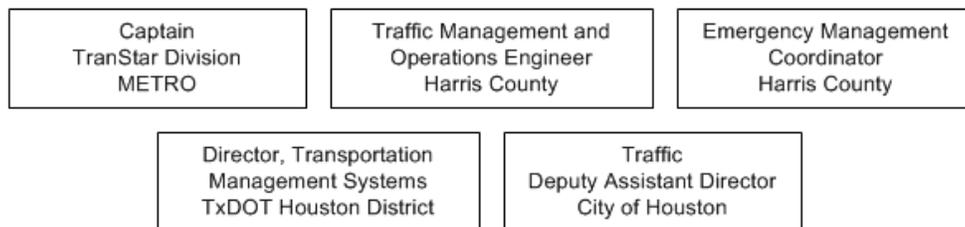
Executive Committee



Leadership Team



Agency Managers



2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

In 2012, the TranStar Partner Agencies continued transportation system operations and emergency planning and response. Significant agency activities at the center in 2012 are highlighted in the following sections of this report. Some of these highlights and significant accomplishments of TranStar and the partner agencies included:

- Data Sharing Agreements were put in place for KUHF 88.7 FM Radio. Other agreements with television stations were in development.
- Bids were opened on the Houston TranStar building expansion project in February and construction commenced in July.
- In March, Houston TranStar accepted an award for *Marketer of the Year*, Transportation Category, from the American Marketing Association, Houston Chapter, for its Public Service Announcement series.
- In April, Houston TranStar participated in TxDOT's National Work Zone Safety Awareness Kickoff at the TxDOT District Headquarters.
- On May 27, CBS Sunday Morning aired a story about the nation's highway infrastructure, featuring Houston TranStar's use of HOT lanes to ease congestion and raise revenue.
- In May, Houston TranStar hosted Harris County Judge Ed Emmett's media conference on use of *ClearChannel Outdoors* electronic billboards during emergencies.
- In June, Houston TranStar hosted a joint media conference between TxDOT, the Texas Department of Public Safety, and private organizations entitled "The Faces of Drunk Driving." The story aired on major television networks as well as KUHF 88.7 FM Radio.
- Houston TranStar hosted the annual West Houston Leadership Institute, which heard from City of Houston Mayor Annise Parker, Harris County Judge Ed Emmett, TxDOT District Engineer Mike Alford, and other dignitaries.
- TxDOT signed a contract with Saigon Network Television to provide video streaming to Vietnamese language programming.
- In July, partner agencies agreed on a short-term funding strategy for continuation of the Motorist Assistance Program.
- In August, Houston TranStar released its most recent Public Service Announcement "Aggressive Driving" to local television stations.
- The Incident Management Team reviewed the FHWA's self-assessment of incident management and set goals for 2013.
- In September, Houston TranStar began displaying arterial incidents on its Real Time Traffic Map, based on data from the City of Houston Police and Fire departments.
- Also in September, TranStar began working with regional Spanish language television stations to create an interpreter's booth for use during media conferences and major events requiring coverage.
- In December, Houston TranStar partners participated in a national SHRP2 Incident Management discussion via conference call.
- Houston Chronicle transportation reporter Dug Begley toured the facility.
- A new soundproof Spanish interpretation booth was unveiled, including a mock media event. Two Spanish language television stations tested the sound system.
- The final 2012 Public Service Announcement was delivered to the television stations. Subject matter: Adult distracted driving.
- There were more than 1,200 visitors to the center in 2012, including local, state, and national public officials and individuals, and overseas visitors from Colombia, China, Mexico, Japan, Australia, Canada, Russia, and South Korea.

2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

The following sections summarize each partner agency's activity during 2012. 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 857 directional miles, including 768 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 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 2012 included:

- Closed Circuit Television;
 - 661 freeway CCTV cameras;
 - 71 regional hurricane evacuation cameras (on rural and/or remote routes);
- Dynamic Message Signs – 235 total DMS;
 - 189 for freeway operations;
 - 41 for HOV and park and ride operations;
 - 5 portable units;
- Radar-based Vehicle Volume and Speed Detection – 127 total detectors;
 - 28 locations on evacuation routes (primarily on rural and/or remote highway routes);
 - 99 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 – 86 total on six facilities (IH-45 North, IH-45 Gulf, US-59 Southwest; US-290 Northwest, IH-610 North Loop, and IH-610 West Loop), 80 of which were active in operation in 2012; and
- Travel Time Monitoring System – 857 directional miles of coverage.

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 systems 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 TranStar. Information is provided to motorists by three primary means: DMS, the Internet (by both desktop and mobile Internet formats), and the local media.

2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

The 230 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 375,000 operator activated messages and over 1.98 million automated messages displayed on DMSs in 2012. The total number of operator-activated and automated messages increased 47% over 2011 levels, while the total number of state-mandated Amber, Silver, and Blue Alert messages increased more than 52% over 2011 levels, mostly because of an increase in Amber Alert messages in 2012. The number of Silver Alert messages decreased slightly, about 7%, in 2012 as compared to 2011. A significant emphasis on safety messages and informational messages lead to increases of 250% and 86% in 2012 compared to 2011.

Other DMS message categories which changed significantly in 2012 (over 2011 levels) were:

- Incidents – down 19%;
- Road closures – down 5%;
- Safety campaigns – up 250%;
- Weather events – down 70%;
- Ozone alerts – down 37%;
- Informational messages – up 86%;
- Traveler information for special events – up 40%; and
- Traffic control information for special events – down 41%.

The types of DMS messages posted in 2012, and the corresponding estimated number of messages posted included:

- Operator Activated (382,400 total);
 - 63,300 operator activated messages for incidents;
 - 68,000 operator activated messages for road closures or construction;
 - 10,350 operator activated messages for weather-related events, including
 - 215,200 operator activated messages for public service messages, including,
 - 70,600 for safety campaigns;
 - 115,200 HCTRA's PEAT assistance information;
 - 29,400 for other informational messages;
 - 18,900 operator-activated messages for Special Events;
 - 6,670 Amber, Silver, and Blue Alert messages;
 - 1,200 for Statewide Amber Alerts;
 - 370 for Local Amber Alerts;
 - 5,100 for Silver Alerts;
 - 0 for Blue Alerts.
- Automated:
 - 1,977,000 Freeway travel time messages.

2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

Some of the significant activities of TxDOT at TranStar in 2012 included:

- In January, TxDOT began deployment of the new Ethernet backbone. All switches were deployed in the field and fiber connections are ongoing. NASA1 and US 290 were the first two facilities completed. IH 610 and IH 45 (Gulf Freeway), IH 10, SH 225, SH 146, US 59 Southwest, and Spur 330 were also converted. By the end of the year, all TxDOT corridors were converted, with the exception of Beltway 8.
- The integration to TxDOT LoneStar Center-to-Center (C2C) was completed. CCTV snapshots, incidents and travel times are being passed to TxDOT's Traffic Division in Austin.
- In January, the Houston TranStar radio tower support building was erected.
- In April, TxDOT had two safety campaigns:
 - Don't Text and Talk on the cell phone while driving: "Text, Talk, Crash".
 - Work Zone Safety Week, "Don't Barrel through a Work Zone".
- In May, TxDOT assisted with the Space Shuttle replica move to NASA. Several traffic signals were temporarily removed to get the exhibit to Space Center Houston.
- Also in May, TxDOT assisted the TxDOT Beaumont District with integration of 19 dynamic message signs into Houston TranStar.
- In August, TxDOT entered into a total maintenance contract on IH 45 from 61st street in Galveston Texas to the Montgomery/Walker County Line. The contractor is responsible for all maintenance on IH 45 except for signals and ITS equipment.
- In November, TxDOT began conversion of all video outputs to Ethernet in TranStar. TxDOT also assisted Harris County with their Ethernet conversion.
- In November, TxDOT accepted the Radio Tower support building.

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 2,400 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. During 2012 (and as part of the 2011-2012 program), corridors in the far western portion of the City (south of IH-10 and west of the Sam Houston Toll Road), southwest (generally between Beltway 8 and IH 610 along US

2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

59), south (south of US 90A, north of Beltway 8, west of Telephone Road and east of Fondren Road) were evaluated and traffic signal timing adjustments were made. Recent evaluations of TSPIP corridors have indicated travel time savings of 10 to 25 percent after retiming efforts are complete. In 2012, city staff also participated in a Railroad Safety Program in association with Union Pacific Railroad, BNSF Railroad and TxDOT to evaluate safety at signalized railroad crossing intersections.

Communications between Houston TranStar and traffic signals have always been problematic within the City using a combination of different technologies including fiber optics, twisted pair, cellular modems and other technologies. In 2009, the City of Houston began investigating the use of WiMax radios as a cost effective communications solution to provide reliable communications between field devices and Houston TranStar. The preliminary testing was successful and the City of Houston pursued American Reinvestment and Recovery Act (ARRA) funds to pursue the city-wide implementation of a WiMax communications system. The installation of field equipment began in late 2010 and continued into 2012, including installation of WiMax radios on the new TranStar radio tower.

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 highlights for 2012 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 2012, METRO's MAP personnel assisted 7,235 motorists on regional freeways.
- METRO began implementation of High Occupancy Toll (HOT) Lanes in the Houston region. 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. 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. Implementation for two additional corridors are expected in 2013.
- METRO coordinated with the Houston Police Department, Harris County Constables Office Precinct Seven, and the Transportation Security Administration on deployment of Operation BusSafe. Operation BusSafe trains officers on how to identify individuals exhibiting suspicious behavior on the transit operators system.

2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

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 2012 included:



- In January, deployed the backbone switch/routers for the Harris County portion of the TranStar Video System upgrade. This was for the migration from an Asynchronous Transfer Mode (ATM) based switch network to a Gigabit/10Gigabit Ethernet based network.
- The General Land Office/TDRA Extra-Low Power (ELP) Traffic Controller Pilot Project development has proceeded to the stage of reviewing vendors of alternate power sources.
- Harris County continued deployment of Bluetooth-based AWAM readers for real-time traffic monitoring on county arterials.
- In April, the Harris County Signals Maintenance team moved to a new base of operations in Suite 140 of the Harris County facility located at 10555 Northwest Freeway. This ended traffic signal maintenance activities at Houston TranStar since the inception of the center. However, the County's Signal Communications team remained housed at TranStar.
- The Maintenance team completed upgrading 197 intersections to newer signal control software. Working together, the two teams were able to accomplish this in 2.5 weeks by pushing the update from central over the fiber network and by having an on-site technician reset the controller. The extensive Harris County communications network allowed an efficient deployment, substantially minimizing the manpower it would have normally taken for individual field visits.
- In April, the Communications team at TranStar provided deployment/integration support for CCTV/Incident Detection System for the Washburn Tunnel and spliced, terminated and repaired various fiber circuits to complete the integration of the new 10 GE backbone as part of the ATM to Ethernet transition. Activities also included deploying switches in support of the AWAM Bluetooth deployment for Beltway 8 East;
- In July, the Communications team consolidated field equipment in preparation for the ATM to IP transition of the HCPID and HCTRA portions of the TranStar Video Network. This included working with TranStar IS to develop the technical design to support transitioning the camera systems for I-10, Beltway 8 (West), and Beltway 8 East.
- In August, converted 36 cameras for I-10 Managed Lanes and 10 decoders for the Incident Management Center from the ATM network to the new 10 GigE IP network.
- Also in August, county staff completed the Louetta E-Views Project. This project encompasses 21 Intersections on Louetta Road from Ella Boulevard to Vintage Park Drive and included installation of new intersection control software and E-Views hardware. This system allows the E-Views unit to communicate real time vehicle data directly to the intersection controller. With the real-time approach speed and distance the intersection controller is able to make adjustments to intersection operation "on the fly" without impacting traffic operations the way a traditional preempt system does
- In October, staff continued moving equipment from the 3rd floor of TranStar to the Warehouse Lab. Extended the Traffic Maintenance and Operations Network to the Warehouse Lab
- In November, county staff continued configuring and staging network equipment for CMAQ-2 and coordination of construction efforts for installing CCTV equipment in the Washburn Tunnel

2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

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.

Hurricane Season

Despite an extremely active hurricane season, the Texas Gulf Coast was again spared in 2012. The 2012 season had 19 named storms, 10 hurricanes and two major hurricanes (Category 3 or higher). HCOHSEM monitored storms all season, keeping a close eye on Tropical Storms Debby and Ernesto, and Hurricane Isaac, 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.
- 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.

2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

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 2012, HCOHSEM activated its EOC 12 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 will continue through 2013.

On-Call

The On-Call program provides our 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 2012, On-call received 2,277 documented notifications requiring more than 866 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 2012 incidents that HCOHSEM monitored and supported in coordination with HCFMO:

- On-scene communications support to HCHMRT and the Crosby Volunteer Fire Department after a train struck a tractor-trailer that stalled on a rail line.
- Coordinated information from the scene of a massive chemical warehouse fire along the Houston Ship Channel.
- Assisted HCHMRT and Sheldon Fire & Rescue with a helicopter crash that resulted in two fatalities.
- Coordinated air monitoring activities with Harris County Pollution Control (HCPC) following an industrial flaring event in the Deer Park area.
- Coordinated emergency communications between HCPC, HCSO and industry during a refinery fire in Baytown.
- Assisted HCHMRT on site of a tanker truck explosion in northeast Harris County.

2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

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 2012, HCOHSEM hosted five exercises and participated in an additional 24 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:

- **Public Officials Workshop** - HCOHSEM hosted 32 elected officials at the Public Officials Workshop. This four-hour course introduces county judges and commissioners, mayors, city council members and other elected and appointed officials to emergency management in Texas.
- **Addicks/Barker Reservoir Functional Exercise** - The Addicks/Barker regional workgroup held a functional exercise to simulate a dam failure on the Addicks and Barker reservoirs. The goal of this exercise was to improve response and communications.
- **Functional Needs Support Services (FNSS) Seminar** - The purpose of the Functional Needs Support Services (FNSS) Awareness Seminar was to provide emergency partners with guidance about the sheltering requirements of individuals with functional and access needs. The event focused on building partnerships, increasing resilience and identifying FNSS best practices.
- **Harris County Hurricane Alexis Full-Scale Exercise** - The HCOHSEM Hurricane Alexis exercise was a two-day event hosted in August at the Reliant Center. This exercise brought together state, county and city officials with the objective of testing the county's Points of Distribution (POD) plan. The POD plan was developed from lessons learned following Hurricane Ike in 2008. This was the first time HCOHSEM tested this plan on a large scale. HCOHSEM also tested its Continuity of Operations plan (COOP). The COOP ensures that HCOHSEM can continue to operate from a remote location if its primary office has been compromised until normal operations can be resumed. More than 140 people participated in this successful exercise.

Public Information Office

The HCOHSEM Public Information Office keeps its emergency management partners and area residents informed about any and all emergency situations that have a direct impact on the community. It also uses its resources to warn and prepare residents before an incident occurs by promoting hurricane and disaster preparedness all year long.

2012 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES

In 2012, HCOHSEM participated in dozens of seminars and workshops throughout the county. The largest event each year is the annual Houston/Galveston NWS Hurricane Workshop at the George R. Brown Convention Center. Thousands of residents from around the region were able to interact with more than 50 exhibitors, ranging from government agencies to faith-based relief organizations to purveyors of emergency supplies. Attendees also learned more about hurricanes and hurricane preparedness from local emergency managers and meteorologists.

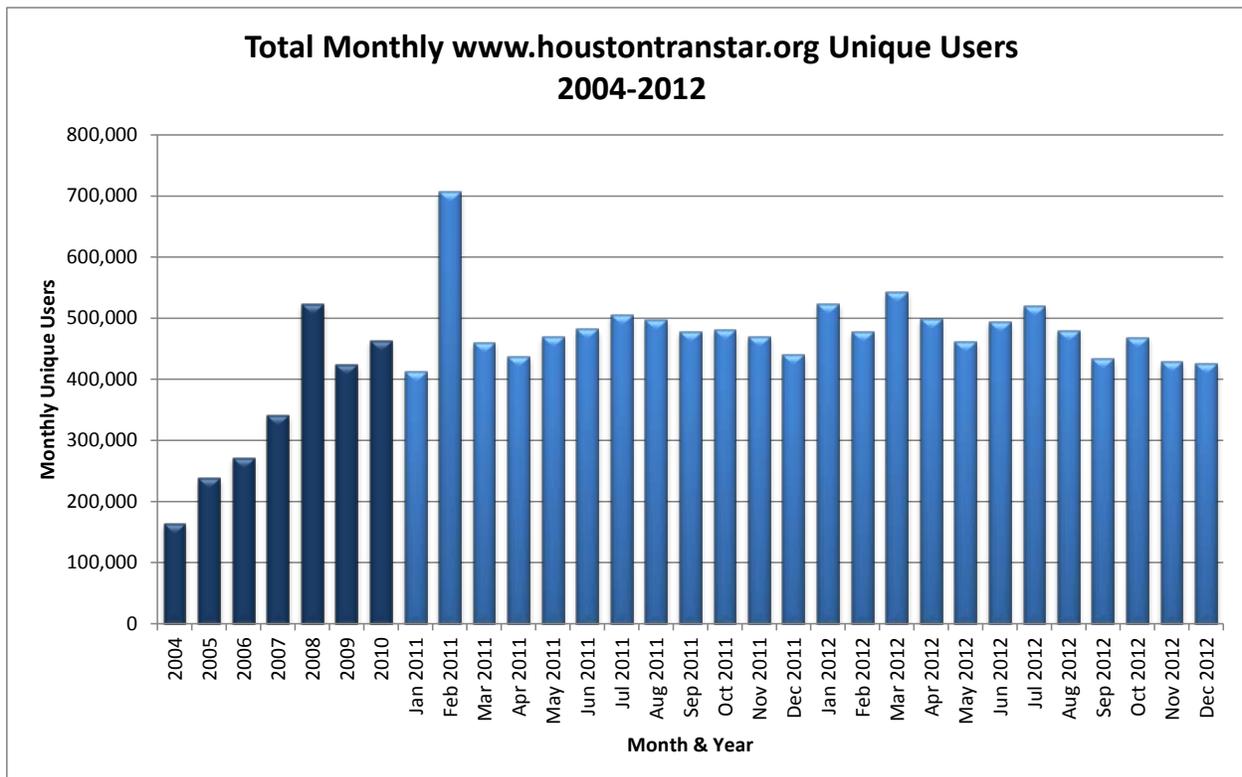
In 2012, HCOHSEM conducted more than 120 outreach events and presentations. In addition, the office logged more than 40 tours of the Harris County EOC and Houston TranStar to public officials, foreign dignitaries, students, senior citizen groups and other visitors. A total of 14 international delegations from 10 different countries visited Houston TranStar, the region's emergency management and transportation center. During the year, HCOHSEM and Harris County Citizen Corps members distributed more than 13,000 hurricane brochures and well over 50,000 "disaster wheels," Ready DVD's, Citizen Corps publications and other preparedness items. Nearly all were available in multiple languages.

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 2012 included:

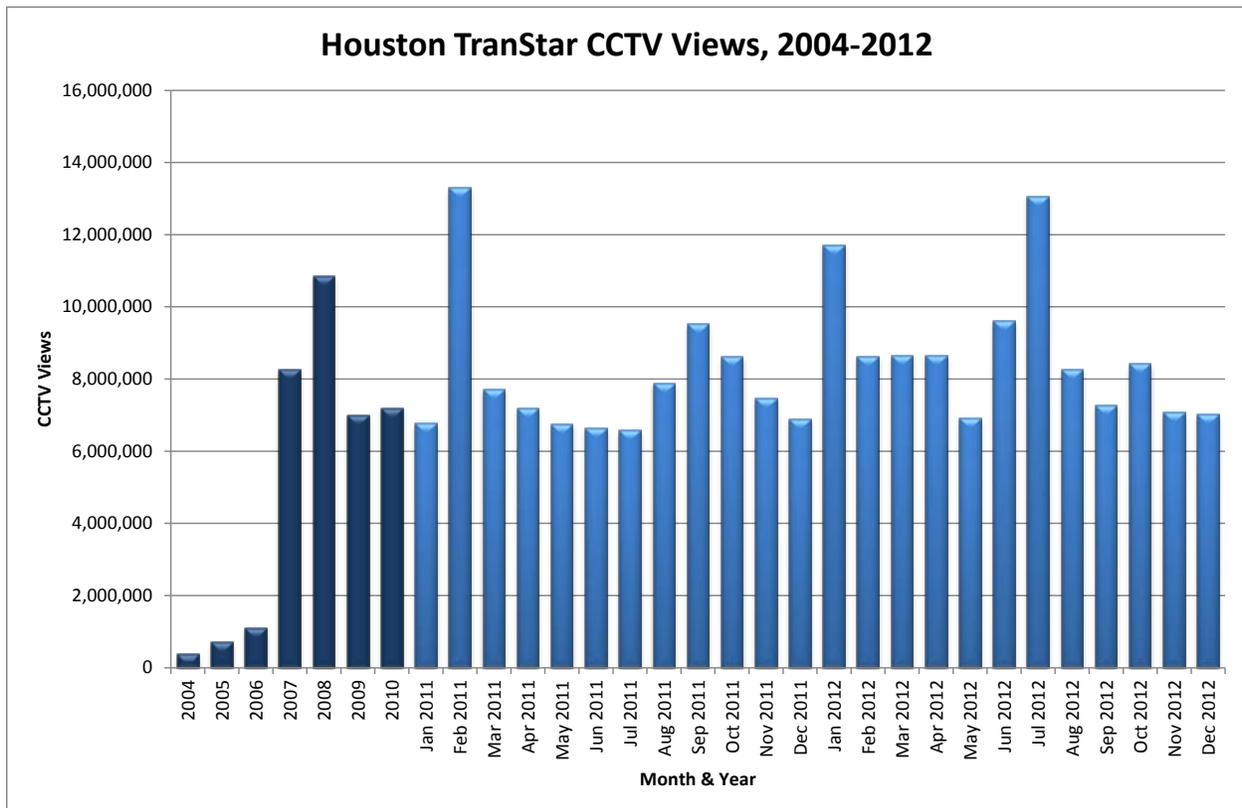
- Average unique monthly users held steady, with 479,300 users, a -1.4% change over 2011, but a 40% increase over in the five years since 2007.



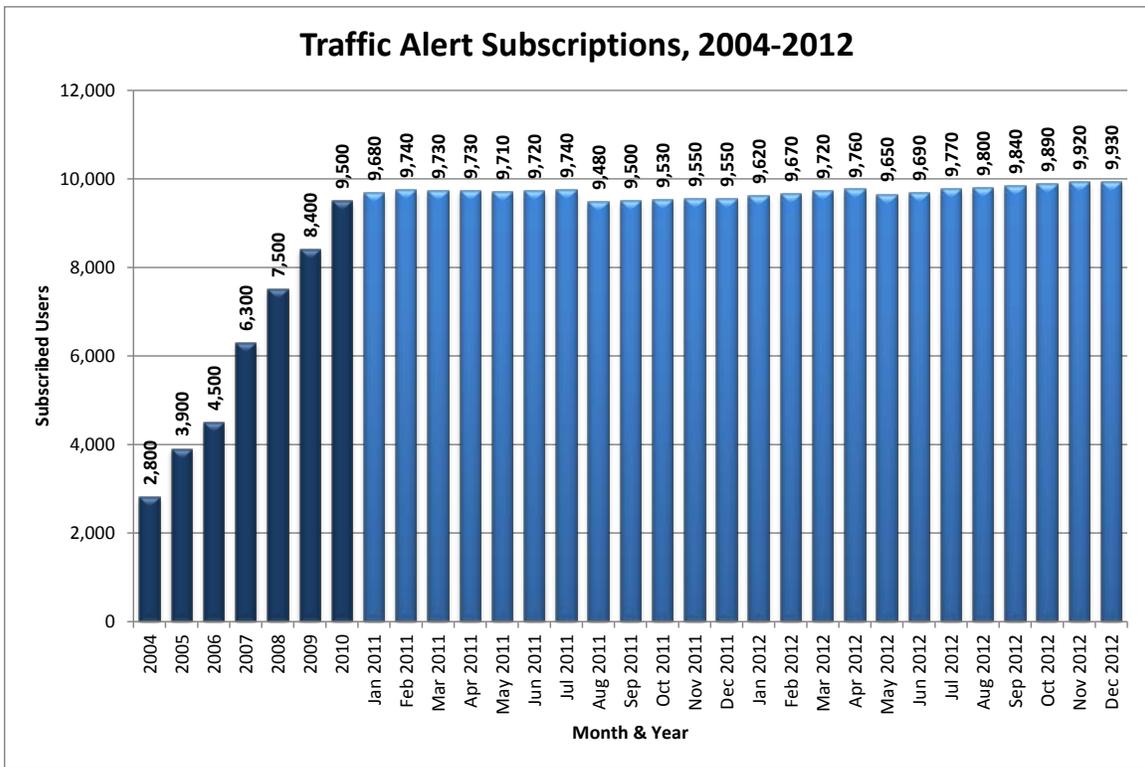
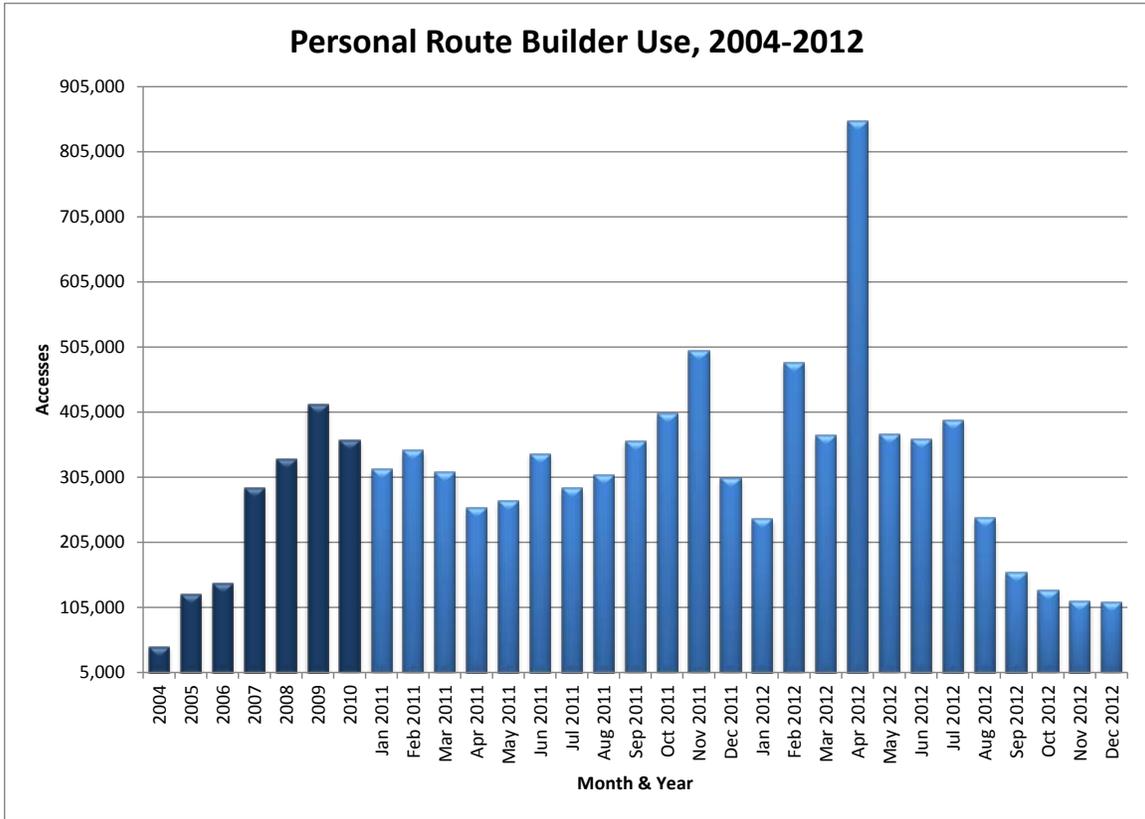
- Monthly Webpage accesses in 2012 ranged from 8.3 to 14.3 million, with a monthly average of about 9.95 million accesses. Total Webpage accesses for the year were more than 119.4 million, up about 42% from 2011.
- Access to the route builder system was down about 4.4% in 2012 as compared to 2011 levels, but still providing more than 3.8 million views in 2012. This level is still about 105 higher than 2007 levels.
- Views of CCTV images increased from 95.2 million in 2011 to 105.2 million in 2012, an increase of 10.5%. Cameras showing moving snapshots showing motion remain most popular, but overall views of CCTV images show an increasing trend.

TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES

- Traffic alert subscribers increased from an average monthly subscriber base of 9,600 in 2012 to 9,800 in 2011, an increase of 2.1%. A periodic effort to clean the subscriber database to eliminate those no longer reaching their email address ensures active subscriptions.
- Mobile traffic data accesses decreased in 2012 to 13.8 million accesses as opposed to 6.1 million in 2011, a 126% increase.
- DMS information viewed increased by 103% from 2011 to 2012, with more than 9.2 million views. Since 2009, views of DMS messages have increased nearly 500%.

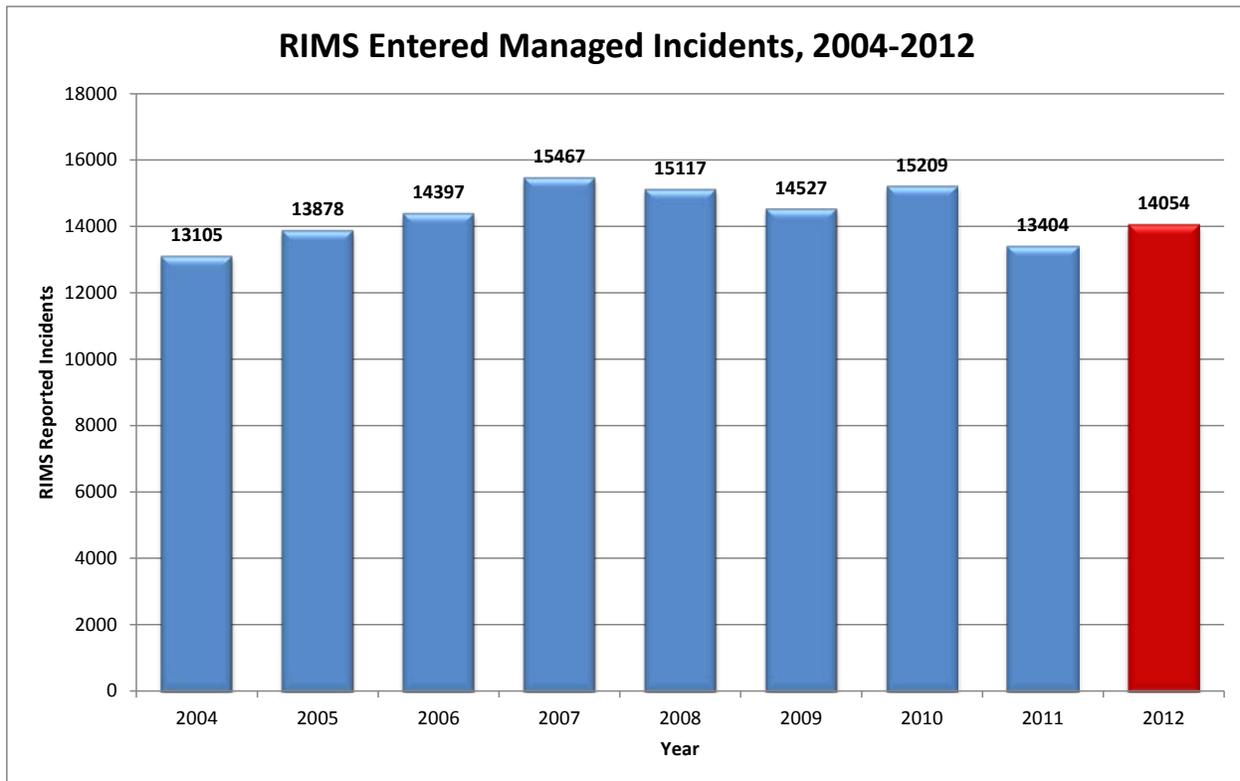


TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES



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 2012 there were 14,054 incidents recorded by Houston TranStar operators, largely by TxDOT personnel. This is an increase of about 4.8% when compared to total incidents entered into RIMS in 2011.



Some of the incident related performance measures determined for 2012 included:

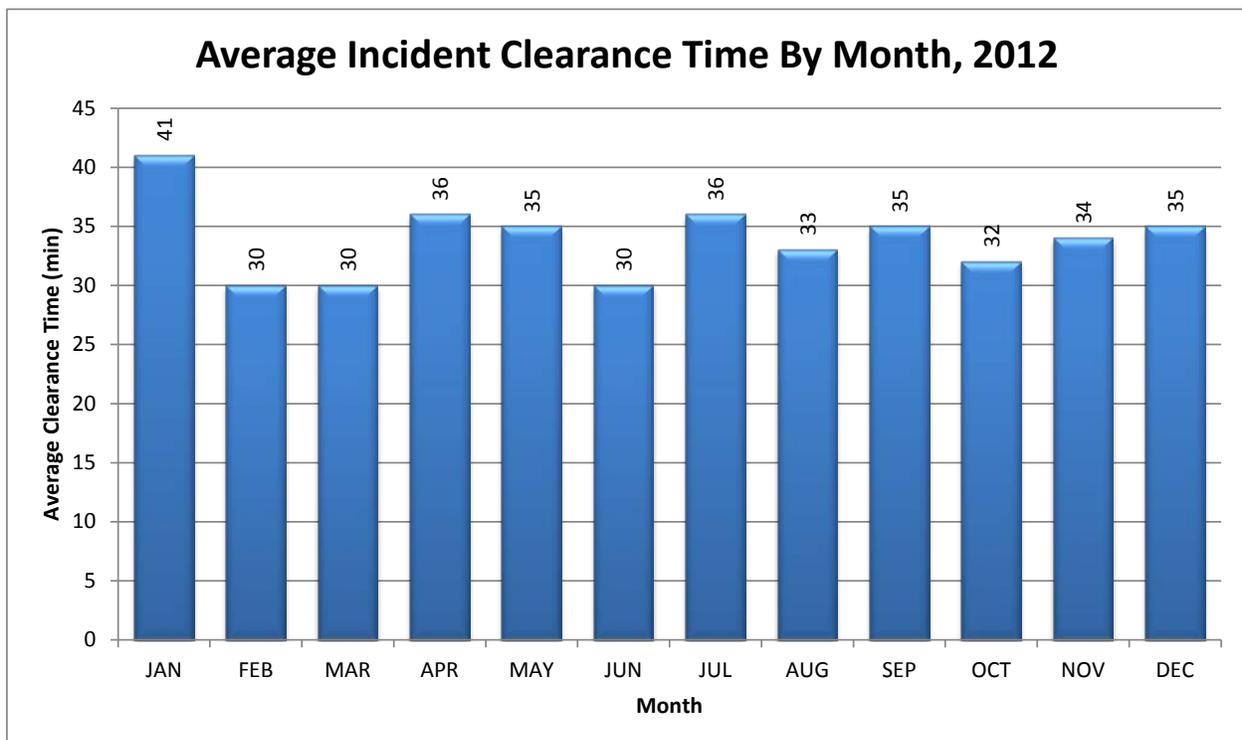
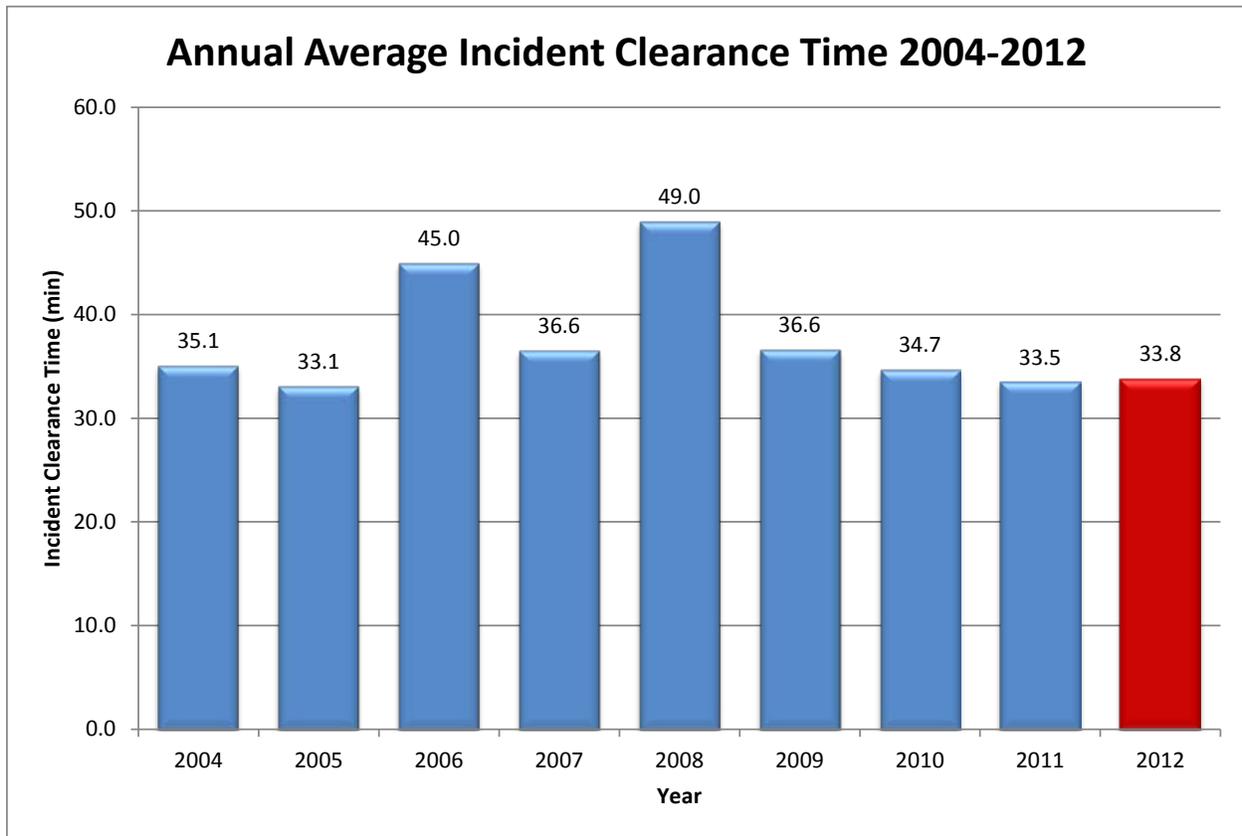
- There were 7,927 incident-hours managed from the Center in 2012 (as compared to over 7,400 in 2011), an increase of about 5.8%.
- The average incident clearance time in 2012 was 33.8 minutes, which was inline with the overall average since 2009 (34.7 minutes).

The top five incident locations managed and/or monitored from TranStar in 2012 included:

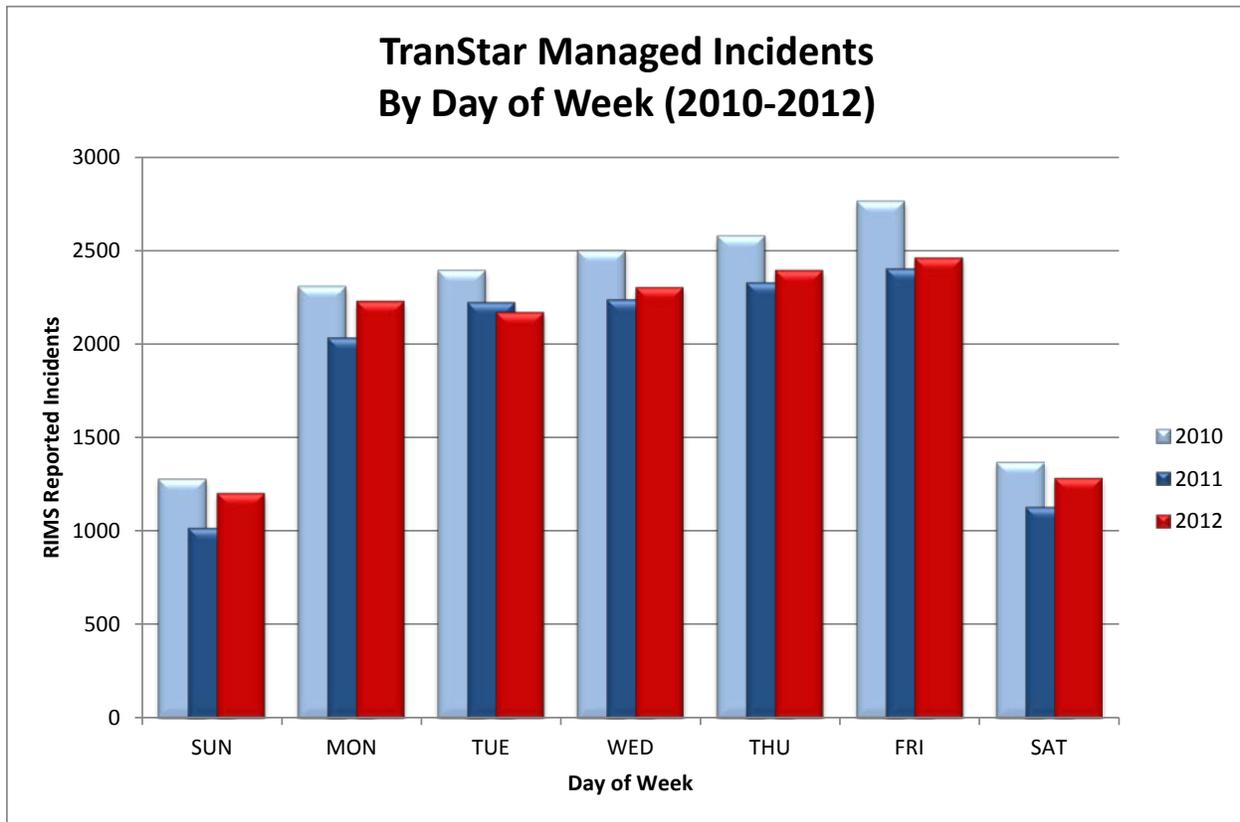
- WEST SAM HOUSTON TOLLWAY Southbound at CENTRAL PLAZA (145 incidents)
- EAST SAM HOUSTON TOLLWAY Northbound at SHIP CHANNEL/TOLL BRIDGE (137 incidents)
- US-59 SOUTHWEST Northbound at IH-610 WEST LOOP (112 incidents)
- WEST SAM HOUSTON TOLLWAY Northbound at SOUTH SAM PLAZA (109 incidents)
- IH-45 GULF Northbound at I-610 SOUTH LOOP (92 incidents).

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



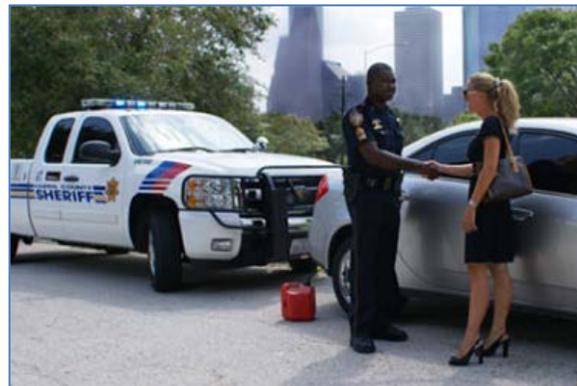
INCIDENT MANAGEMENT



Motorist Assistance Program (MAP)

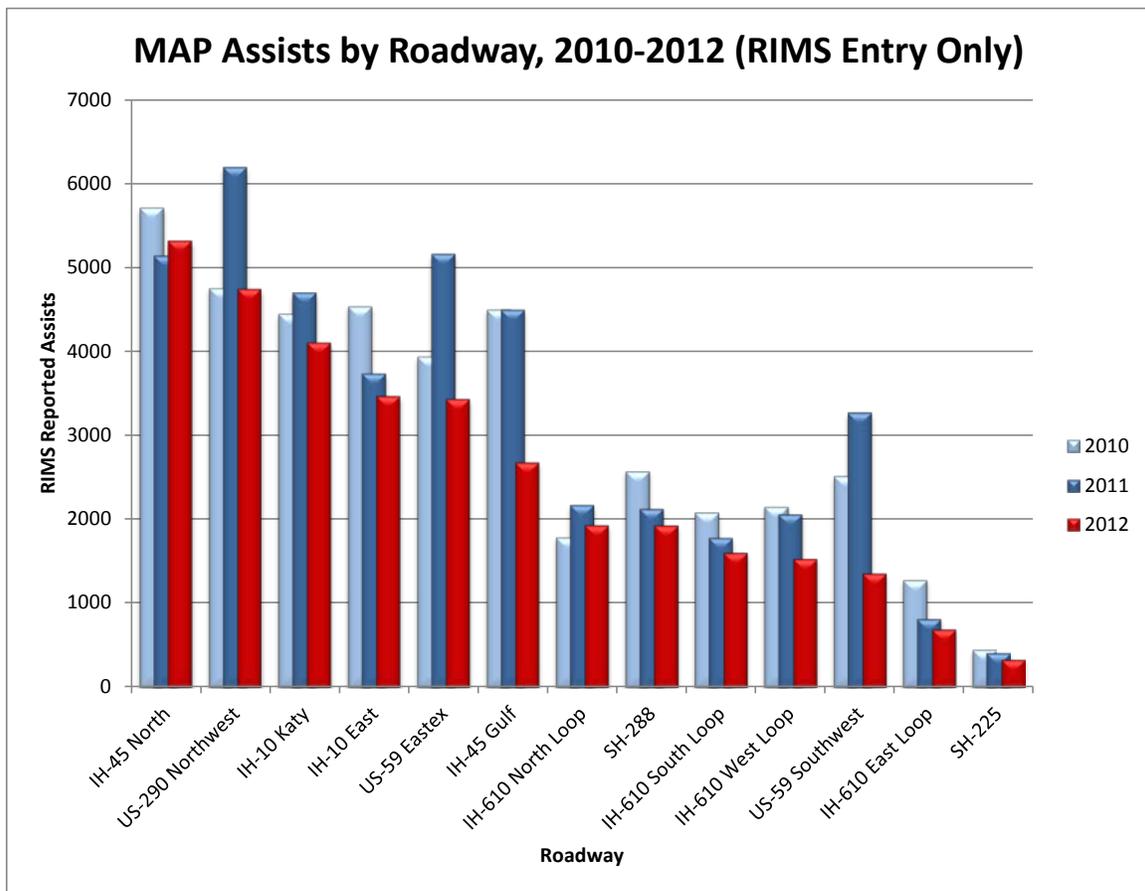
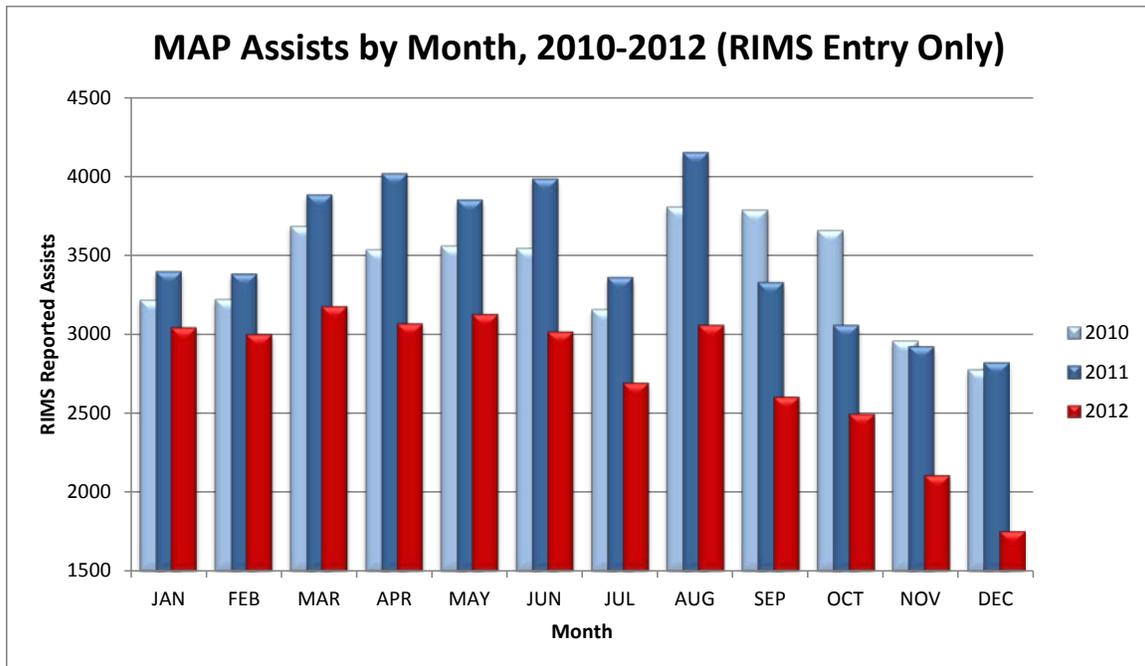
The Motorist Assistance Program (MAP) continues to be one of the most visible services operated by the Houston TranStar agency partnership.

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 33,180 RIMS-reported assists handled by MAP in 2012, a decrease of about 21% from 2011. The decrease was likely a combination of somewhat regionally cooler temperatures and drier conditions, leading to fewer vehicle failures. The RIMS-reported MAP assists are for Harris County Deputy MAP activity only. METRO reported an additional 7,235 assists, but those are not currently entered into RIMS, the TranStar Incident Database. TxDOT operators provide dispatch service to the MAP program.

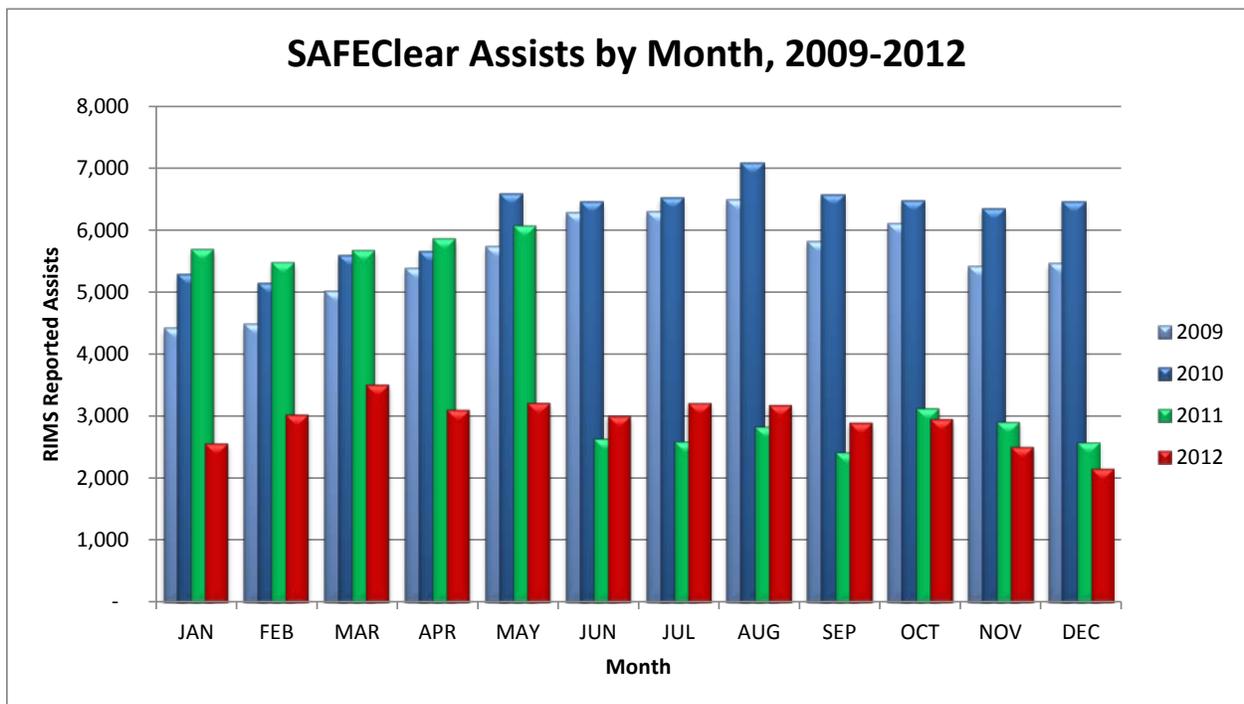
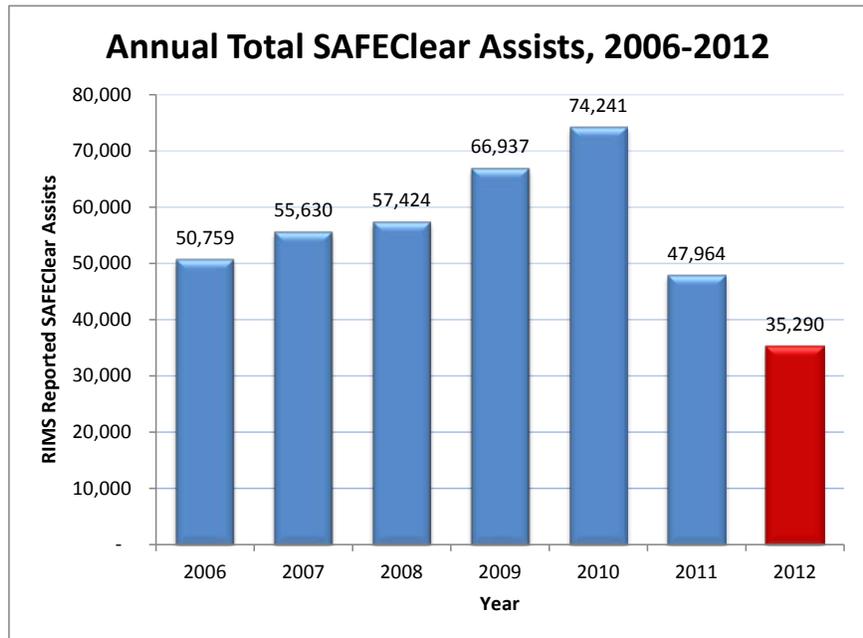
INCIDENT MANAGEMENT



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 35,290 RIMS reported SAFEClear assists in 2012; a decrease of 26% from 2011 levels. In 2012, the average time from tow authorization to clearance was 29.8 minutes, slightly higher as compared to 27.0 minutes in 2011.

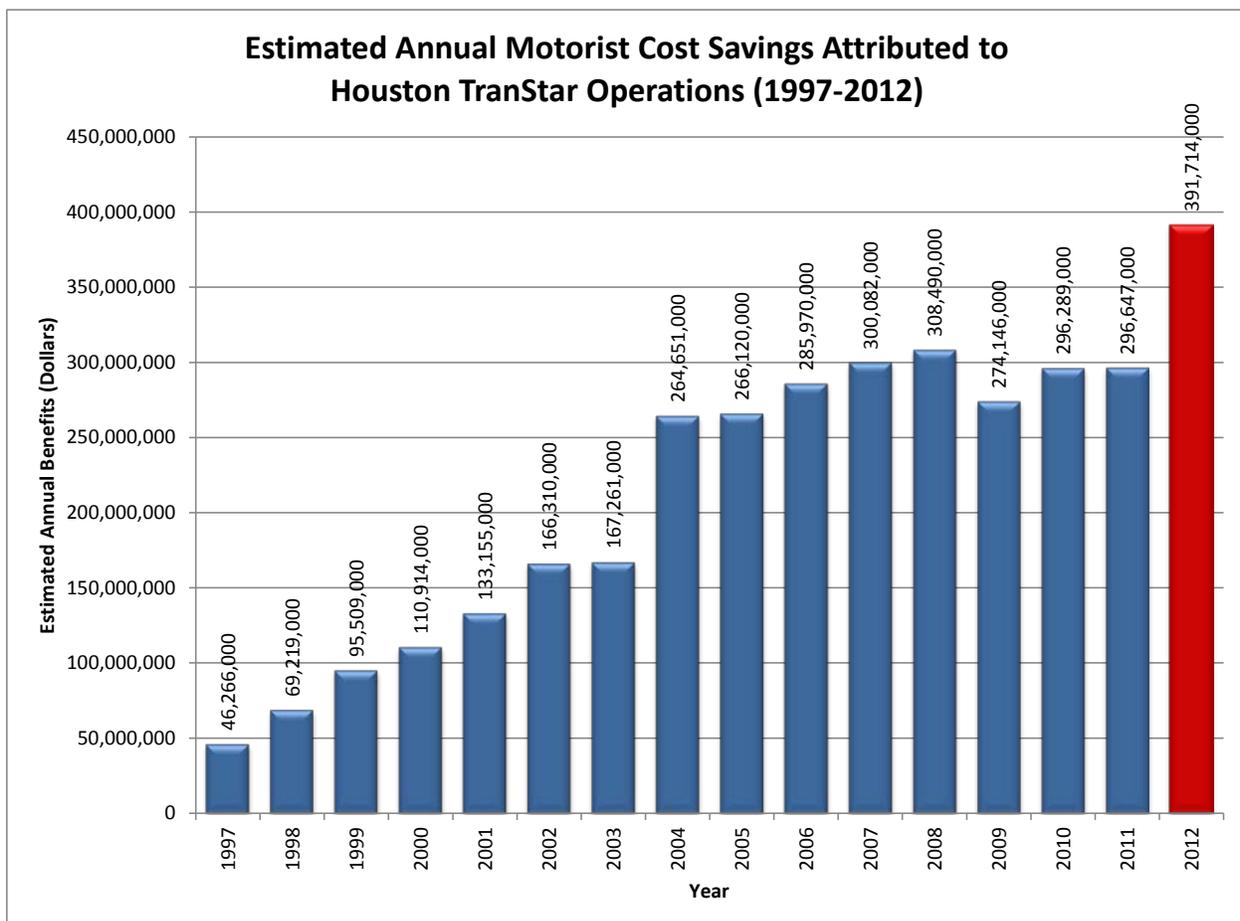


BENEFITS

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 16 years, this report has used an approach which estimates the operational benefits in terms of freeway motorist delay savings. Traffic delays on the freeway mainline 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.

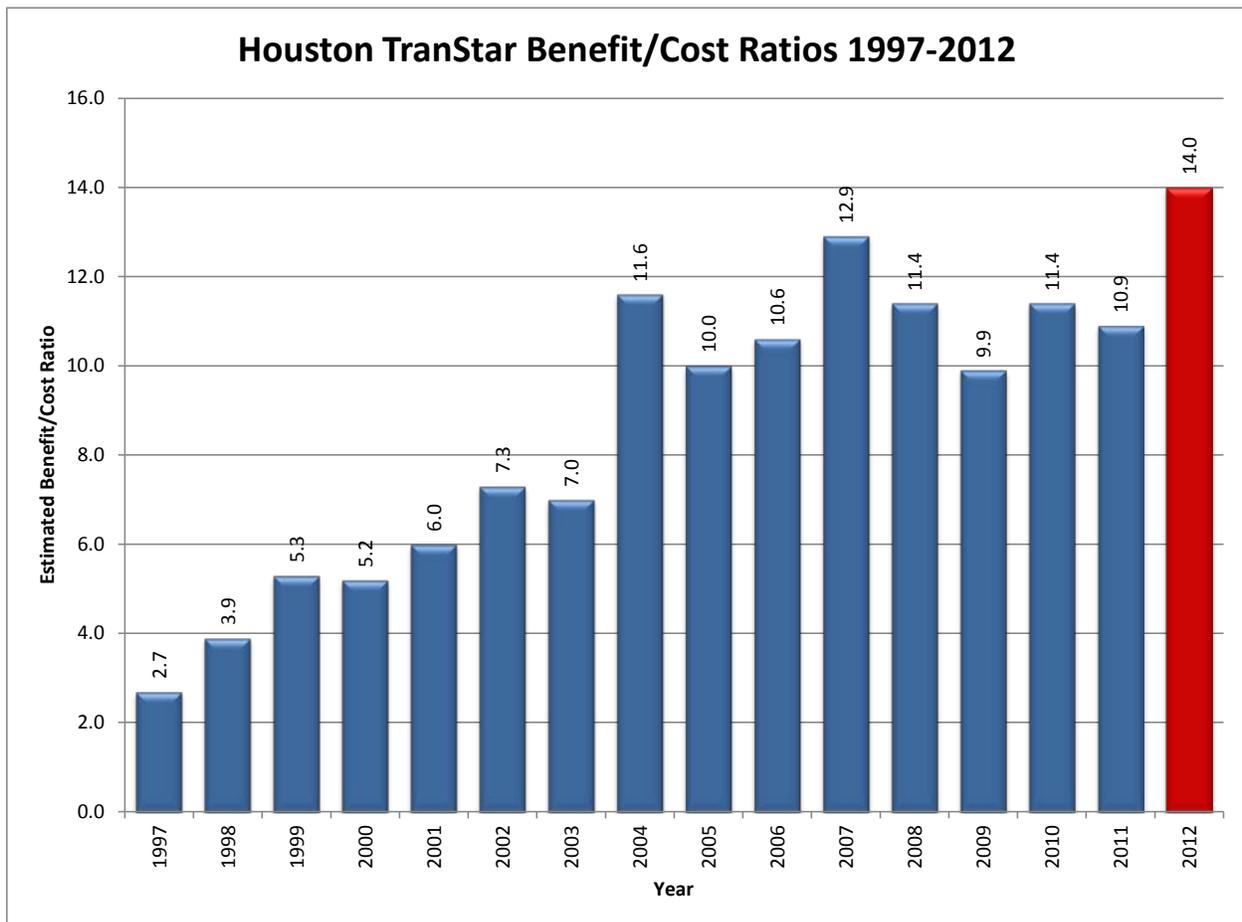
The estimated costs of congestion in the Houston TranStar region were calculated to be just under \$758 million in 2012. Annual benefits in the reduction of travel time were estimated to be more than 14 million vehicle-hours with an estimated monetary benefit of over \$300 million. The saving in travel time is equivalent to reducing fuel consumption more than 26.2 million gallons, which results in an additional savings of about \$91.7 million. Thus, the total 2012 motorists' savings was in excess of \$390 million. Since 1997 (when benefits were first estimated), Houston TranStar has saved Houston area motorists nearly \$3.5 billion in reduced traveler delay and fuel costs.



BENEFITS

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 26.2 million gallons of fuel is equivalent to an estimated reduction of 566 tons of hydrocarbons; 3,660 tons of carbon monoxide; 231,600 tons of carbon dioxide, and 824 tons of nitrogen oxides.

A benefit/cost analysis for 2012 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 \$27.99 million is divided into the annual benefit estimate of \$391.7 million, yielding a 2012 estimated benefit/cost ratio of 14.0.



Since 2004, the benefit/cost ratio of Houston TranStar has ranged from 10.0 to 12.9. In 2012, the benefit/cost ratio is 14.0. Several factors enter into this calculation when comparing 2012 to previous years:

- The motorist value of time increased from \$21.00 per vehicle-hour in 2011 to \$21.42 in 2012.
- The average cost of fuel in the Houston area increased 2.6% in 2012 as compared to 2011, from \$3.41/gal in 2011 to \$3.50/gal in 2012.

BENEFITS

- The largest factor in the increased B/C ratio in 2012 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. Of the 16 facilities included in the benefits analysis, 15 were found to have an increase in congestion in 2012 as compared to 2011. Only SH 146 (from Fairmont Parkway to W Texas in Baytown) was found to have less delay in 2012 compared to 2011 (down by 5%). Roadways calculated to have increased congestion levels in 2012 over 2011 included:
 - IH 10 East Freeway (US 59 to Harris/Chambers County Line): +129%
 - IH 10 West Freeway (US 59 to Pin Oak Road): +77%
 - IH 45 North Freeway (IH 10 to FM 1488): +13%
 - IH 45 Gulf Freeway (IH 10 to 61st Street, Galveston): +15%
 - IH 610 (All Segments): +28%
 - US 59 Southwest Freeway (IH 45 to SH 99): +30%
 - US 59 Eastex Freeway (IH 45 to Townsen Boulevard): +30%
 - US 290 Northwest Freeway (IH 610 to Barker Cypress Road): +24%
 - SH 288 South Freeway (US 59 to SH 6): +20%
 - SH 225 La Porte Freeway (IH 610 to SH 146): +65%
 - SH 249 (Beltway 8 to Northpointe Boulevard): +63%
 - Spur 330 (SH 146 to IH 10): +2%
 - Hardy Toll Road (IH 610 to IH 45): +63%
 - Westpark Toll Road (IH 610 to SH 6): +54%
 - Sam Houston Tollway (All Segments): +87%
- TxDOT completed over \$31M in Computerized Transportation System Management (CTMS) installations in 2012. This investment was of significantly increased magnitude over the past several years. Another factor impacting the B/C calculations is that the original \$13.5M for TranStar facility construction dropped in the life-cycle cost calculations (as amortized over the first 15 years of center operation).

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