

# Houston TranStar 2011 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 \$3.1 billion in reduced travel time costs over the 15 years of Center operation from 1997 to 2011.

This document is the 15th 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 2011, the reduction of travel time attributable to Houston TranStar operation was estimated to be over 10.8 million vehicle-hours. This level of delay savings has a corresponding value of over \$227 million in road user cost savings and over \$69 million (or more than 20 million gallons) in reduced fuel consumption.

The total estimated benefits of Center operation in 2011 were over \$296 million. Comparing the annualized TranStar operating cost estimate of \$27.2 million to the estimated annual benefit of \$296 million yields an estimated benefit/cost ratio for Houston TranStar center operation of 10.9.

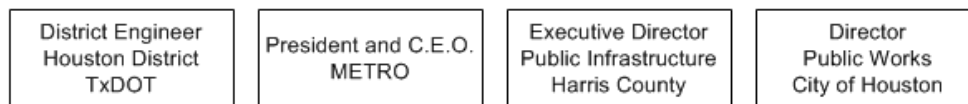
## **TRANSTAR OPERATIONS FRAMEWORK**

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:

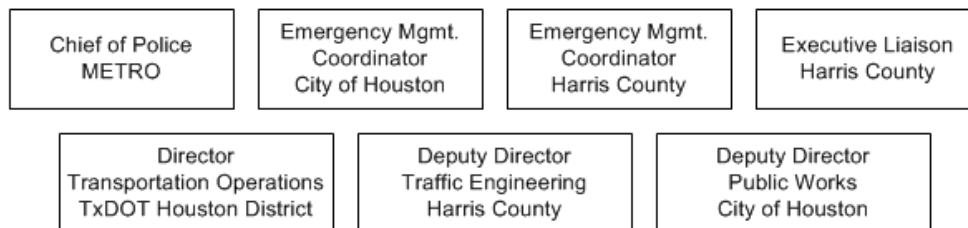
- Executive Committee – includes agency- or division-level executive administrators; the committee sets policy and manages fiscal and staffing matters;
- Leadership Team Committee – includes administrators of the transportation and emergency management groups; the team administers implementation of various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

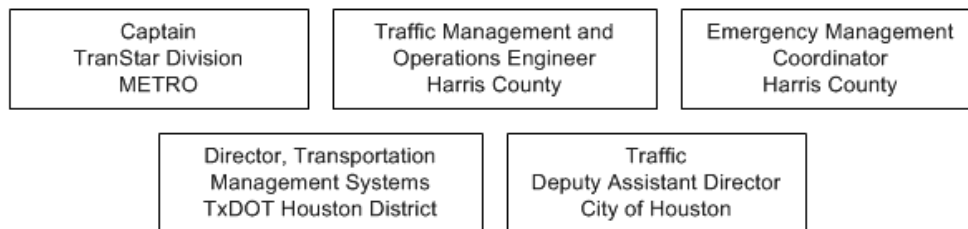
#### Executive Committee



#### Leadership Team



#### Agency Managers



## **2011 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES**

In 2011, the TranStar Partner Agencies continued transportation system operations and emergency response. Significant agency activities at the center in 2011 are highlighted in the following sections of this report. Some of these highlights and significant accomplishments of TranStar included:

- In January, Houston TranStar hosted the Incident Management Charrette, a multi-agency review of traffic incidents and how they are managed, with a process-based problem-solving focus.
- Also in January, TranStar released 15- and 30-second Public Service Announcements to all television stations with which the consortium has an agreement to air the PSAs. Their focus is on what to do in case of a freeway vehicle breakdown.
- The Houston TranStar website began to display real-time speeds and travel times from The Woodlands to IH 20 in Dallas.
- NASA Road 1 ITS was brought on line to include 16 cameras and six DMS signs.
- Government Technology's online magazine ran a story on January 25 about Houston TranStar's emergency management efforts, interviewing HCOHSEM's Mark Sloan.
- TranStar's Internet Usage spiked at 120 megabits per second during the winter storm February 4, 2011.
- Houston TranStar participated in the HCOHSEM response to the February 3 & 4 winter storm.
- In early 2011, HCOHSEM integrated Facebook and Twitter into its communications plan. This significantly improved interactive public messaging capabilities and has enriched emergency communications.
- On March 8, the Agreement between Harris County and Houston Ship Channel Security District was signed in Commissioners' Court.
- The Houston TranStar communications tower project began foundation work in April, construction on the tower began in June 2011 and erection completed in the 4<sup>th</sup> Quarter.
- Harris County Traffic continued installation and modification of the Real Time Traffic Monitoring Project to include traffic controller assemblies equipped with Bluetooth and GPS technology. Initially, 150 traffic signal controllers are reporting data for commuter travel time information for 180+ road miles. Ultimately, travel time data will be gathered from 351 traffic signal controllers located on 31 major arterials throughout Harris County.
- HCOHSEM and TranStar Agencies activate for support to the NCAA Final Four event at Reliant Stadium from April 2-4, 2011.
- In May 2011, TxDOT completed installation and testing of two dynamic message signs in Galveston for cruise traffic as well as other purposes such as hurricane information, Amber Alerts and other incidents through a Federal Earmark matched by the Port of Galveston.
- In May, HCOHSEM hosted a hurricane preparedness meeting for H-GAC Region County Judges and Mayors.
- Also in May, TxDOT and Houston TranStar was awarded the Center for Digital Government's 2011 Best of Texas Award for Most Innovative Use of Technology for the Bluetooth coverage from Houston to Dallas.
- Harris County Traffic continued maintenance support for the Harris County Ship Channel District HSCSD, including support and troubleshooting of the LTE (Long Term Evolution) G4 cell system deployment, Pivot 3 maintenance, and restoring 29 cameras to operational status.
- During the summer and fall of 2011, HCOHSEM partnered with the Neighborhood Centers and Harris County Precinct 2 for the Save the Children "Resilient and Ready Workshop," a disaster education and resiliency building workshop that combines cooperative games with disaster education to provide a fun and experiential way for children to learn about preparedness. A total of 1,130 children participated in this program.

## **2011 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES**

- In September, TxDOT Added 13.1 miles of real-time travel time and speed coverage on IH 10 Katy Freeway from Pin Oak to Austin/Waller County Line. This installation included AWAM (Bluetooth) equipment.
- In October, Harris County Traffic completed the Beltway 8 East ITS Project, bringing 39 CCTV cameras, 20 DMS signs and 31 Smart Sensors online for the Sam Houston Tollway (BW8 East) between US 59 North and I-45 South.
- On October 10, HCOHSEM returned to Level 4 (Normal Readiness) for the first time since May 31, 2011. HCOHSEM had been at Level 3 (Increased Readiness) or higher in response to the threat posed by the drought and wildfires. This marked the end one of the longest periods of continuous activation in the agency's history.
- Houston TranStar was awarded top honors at the Intelligent Transportation Society of America's annual meeting, winning for "Best New Practices" and "Best New Innovative Products or Services." The award was for the Anonymous Wireless Address Matching system deployments on I-45 between Houston and Dallas by TxDOT and for the City of Houston's deployment in west Houston. The system monitors and publishes traffic speeds at a fraction of the cost of traditional methods.
- HCOHSEM campaigns throughout the year included Flood Awareness Week in March, Severe Weather Awareness Week in April, Hurricane Preparedness Week in May, the 2011 Hurricane Workshop in June, Lightning Safety Week in June, National Preparedness Month in September and Fire Prevention Week in October.
- In all, HCOHSEM conducted more than 250 outreach events and presentations. The agency also logged more than 75 tours of the Harris County Emergency Operations Center and Houston TranStar to public officials, foreign dignitaries, senior citizen groups, students, and other members of the community.
- In 2011 EMAT (the Emergency Managers Association of Texas), recognized the Business Commodities Plan and the Joint Information Center plan at their annual meeting. Also in 2011, FEMA published a Practice Note highlighting HCOHSEM's use of social media as an emergency communications tool.
- Construction on the Communication building began in the 4<sup>th</sup> Quarter of 2011.
- A connection to the Galveston County EOC via TxDOT fiber was completed to enable video feeds later in the year.

## **2011 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES**

The following sections summarize each partner agency's activity during 2011. 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 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.



Total TxDOT ITS field equipment deployed as of the end of 2011 included:

- Closed Circuit Television;
  - 661 freeway CCTV cameras;
  - 71 regional hurricane evacuation cameras (on rural and/or remote routes);
- Dynamic Message Signs – 218 total DMS;
  - 172 for freeway operations;
  - 41 for HOV and park and ride operations;
  - 5 portable units;
- Highway Advisory Radio;
  - 12 fixed transmitting locations;
  - One portable transmitting station;
- Radar-based Vehicle Volume and Speed Detection – 104 total detectors;
  - 28 locations on evacuation routes (primarily on rural and/or remote highway routes);
  - 76 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), 78 of which were active in operation in 2011; and
- Travel Time Monitoring System – 857 directional miles of coverage.

Major components of the CTMS include CCTV, DMS, highway advisory radio (HAR), 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

## **2011 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES**

provided to motorists by four primary means: DMS, HAR, the Internet (by both desktop and mobile Internet formats), and the local media.

The 213 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 267,000 operator activated messages and over 1.3 million automated messages displayed on DMSs in 2011. The total number of operator-activated and automated messages decreased 11.5% below 2010 levels, while the total number of state-mandated Amber, Silver, and Blue Alert messages increased more than 10% over 2010 levels, mostly because of an increase in Amber and Silver Alert messages in 2011. Other DMS message categories which changed significantly in 2011 (over 2010 levels) were:

- Incidents – up 2.5%;
- Road closures – up 9.2%;
- Ferry wait times – down 98%;
- Safety campaigns – up 20%;
- Weather events – up 100%;
- Ozone alerts – down 44%;
- Informational messages – down 22%;
- Traveler information for special events – up 53%; and
- Traffic control information for special events – up 21%.

The types of DMS messages posted in 2011, and the corresponding estimated number of messages posted included:

- Operator Activated (267,850 total);
  - 78,100 operator activated messages for incidents;
  - 71,400 operator activated messages for road closures or construction;
  - 10,350 operator activated messages for weather-related events, including
    - 9,100 for general weather events, including hurricane preparation and fire danger;
    - 850 ozone alerts; and
    - 400 for icing events.
  - 87,730 operator activated messages for public service messages, including,
    - 20,100 for safety campaigns;
    - 51,830 HCTRA's PEAT assistance information;
    - 15,800 for other informational messages;
  - 13,700 operator-activated messages for Special Events;
  - 6,340 Amber, Silver, and Blue Alert messages;
    - 800 for Statewide Amber Alerts;
    - 0 for Local Amber Alerts;
    - 5,400 for Silver Alerts;
    - 140 for Blue Alerts; and
  - 230 Galveston-Port Bolivar Ferry wait time messages.
- Automated:
  - 1,332,000 Freeway travel time messages.

## **2011 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES**

### **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 oversees operations and development of the signal communications infrastructure. The need for good traffic signal operation has never been greater. 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 between many agencies 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 each 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 2011 (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 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. Evaluations of TSPiP corridors have indicated travel time savings of 10 to 25 percent.

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 through 2011.

### **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 METRO Rail dispatch, METRO Police Communication Section operations, traffic signalization systems, HOV management systems, SAFEClear and incident management programs. METRO highlights for 2011 include:





## **2011 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES**

- 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 2011, METRO's MAP personnel assisted 15,834 motorists on regional freeways.
- METRO continued efforts to prepare for major incidents through on-going meetings and training events with TranStar partner agencies. Included in those events in 2011 were the NCAA Final Four and Chevron Houston Marathon.

### **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. In 2011, work continued on projects that are an integral part of our system and of our partnering with our sister agencies at Houston TranStar.



TMG was responsible for significant upgrades to school zone flashing beacon systems in 2011, including 252 new flasher system time clocks, which regulate flashing signs for school zones, and 370 GPS units. CMAQ II fiber interconnect projects were underway in Precincts One, Two, Three and Four in partnership with TxDOT. TMG completed the Beltway 8 East ITS Project, bringing 39 CCTV cameras, 20 DMS signs and 31 Smart Sensors online for the Sam Houston Tollway (BW8 East) between US 59 North and I-45 South.

TMG began work on the American Reinvestment & Recovery Act (ARRA) Real Time Traffic Monitoring Project, which included installation and modification of traffic controller assemblies equipped with Bluetooth and GPS technology. More than 380 traffic signal controllers will ultimately stream data to TranStar for processing, with ultimate commuter travel time information for more than 180 road miles gathered located on 31 major arterials throughout Harris County.

TMG established and inaugurated new response procedures for the 24-hour Hotline for Traffic Signal Maintenance and worked on fiber preparations and switch configurations for the ATM to Ethernet conversions for the TranStar video network.

TMG continued maintenance support for the Harris County Ship Channel Security District (HSCSD), including support and troubleshooting of the LTE (Long Term Evolution) G4 cell system deployment, Pivot 3 maintenance, and restoring 29 cameras to operational status.

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

With a population of more than 4.1 million, 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.



## **2011 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES**

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, most recently, wildfires.

HCOHSEM is on alert 24/7 and always ready to exercise its basic emergency management plans. The agency is on constant watch and meets the growing expectations of public safety officials and the population it serves by:

- Coordinating and maintaining comprehensive emergency management plans
- Successfully activating the EOC to coordinate and support local, state and national efforts in response to emergencies
- Hosting and participating in dynamic public education and outreach programs
- Timely and accurately informing residents, elected officials, the media and important partners and stakeholders
- Vigorously working together with partners in comprehensive classes, drills and exercises to prepare for and respond to all emergency situations.

Harris County hosted numerous meetings with local, state, national and international organizations that visited its Emergency Operations Center (EOC) to study lessons learned and best practices. Countries that visited the EOC in 2011 included: China, Russia, Poland, Turkey, Great Britain, Libya, Vietnam and New Zealand.

### ***Hurricane Season***

Despite an extremely active hurricane season, the Texas Gulf Coast was spared in 2011. According to experts, most storms were turned away by a trough of low pressure along the East Coast that steered storms moving towards the United States back out to sea. Of the 19 storms that formed in the Atlantic, only seven became hurricanes. The Gulf of Mexico saw only two tropical cyclones during the 2011 season. In July, Tropical Storm Don formed in the Yucatan Channel and moved northwest up the Gulf of Mexico. Don weakened to a tropical depression as it made landfall near Baffin Bay in south Texas.

### ***Drought & Wildfires***

2011 was one of the driest years on record for the State of Texas. According to experts, the scarcity of rain caused in part by the La Niña phenomenon resulted in one of the worst heat waves in the state's history. The extreme conditions contributed to wildfires, affected the state's agricultural economy and forced water rationing. HCOHSEM's Emergency Operations Center (EOC) was activated several times in 2011 to monitor and assist with wildfire emergencies.

One of the busiest wildfire activations took place during the Labor Day weekend. Dry conditions and high winds ignited wildfires in many parts of the state as well as in areas in and around our region. While fires ravaged Bastrop County in central Texas, Harris County kept a close eye on the Riley Road Fire that quickly spread over three nearby counties. This tri-county event burned 18,000 acres and 75 homes in Waller, Grimes and Montgomery counties. Fire departments from all over Texas, California and Florida assisted during this fire that took about two weeks to extinguish. Closer to home, a massive fire scorched about 1,500 acres at George Bush Park in west Harris County, twice in the same week.

## **2011 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES**

In 2011, Harris County became the largest area in Texas to implement a community wildfire protection plan, a collaborative effort of the Harris County Fire Marshal's Office (HCFMO), the Texas Forest Service (TFS) and local fire departments. Harris County joined 14 other counties and 57 communities in Texas that have implemented wildfire protection plans. The increased danger of the Wildland Urban Interface (WUI) to the threat of wildfire was clearly demonstrated throughout the spring and summer of 2011. HCFMO worked to increase public education efforts on wildfire mitigation, performing a county-wide risk assessment to map and identify the most at-risk areas and promoting the use of defensive space and fire resistant materials in development projects. In addition, HCFMO worked with local fire departments to strengthen wildfire suppression capabilities.

### ***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.

HCOHSEM contributes to security efforts in one of America's largest cities by maintaining a database of critical infrastructure and key resources, engaging local jurisdictions in emergency planning, disseminating accurate and timely information to all stakeholders and monitoring significant events in our area and in areas all over the world. HCOHSEM also designs and conducts exercises and drills to improve emergency preparedness planning and response; and manages state and federal grant funding for emergency management, homeland security, and other preparedness programs.

In the last year, the EOC enhanced its Geographic Information System (GIS) and digital real-time mapping capabilities. The GIS is a set of tools that captures, stores, analyzes, manages and presents data linked to multiple geographic locations. GIS data is used to maintain situational awareness and a common operational picture during an emergency. The GIS team generated more than 260 maps for internal requests and external partners and generated floor plans for a new EOC.

The Harris County Citizen Corps Council is a nationally recognized program that coordinates with such volunteer groups as the American Red Cross, The Salvation Army, the United Way and other partners to identify volunteer opportunities in the community. The Citizen Corps programs include the Community Emergency Response Team (CERT), the USA on Watch/Neighborhood Watch Program, Volunteers in Police Service (VIPS), Fire Corps and the Medical Reserve Corps (MRC). Harris County Citizen Corps has earned numerous awards for effectively supporting emergency services year round. In 2011, members of Citizen Corps worked tirelessly to assist emergency response workers in the widespread Texas wildfires that devastated many regions in our state.

In 2011, HCOHSEM was enlisted by area jurisdictions to enhance logistics and planning capabilities during area wildfires caused by widespread and sustained drought conditions in the State of Texas. The interactions between jurisdictions enriched the best practices of all involved by the heavy flow of information in the effort to fight the fires.

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## **2011 HOUSTON TRANSTAR PARTNER AGENCY ACTIVITIES**

### ***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 2011, On-call received 2,643 documented notifications requiring more than 660 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.

### ***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. In June 2011, the TAR database was used several times to assist residents in north Harris County who needed help evacuating due to wildfires.

### ***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.

Additions to the Regional Joint Information Center (JIC) website launched in 2010 continued through 2011. Recent improvements include additional links so that residents can learn more about disaster preparedness, obtain real-time electric power outage data and register to receive important information through Harris County Alerts. The site acts as a dashboard where residents can find out about weather, traffic, school closings and what first responders are doing. They can also sign up for updates which will be delivered directly to their email.

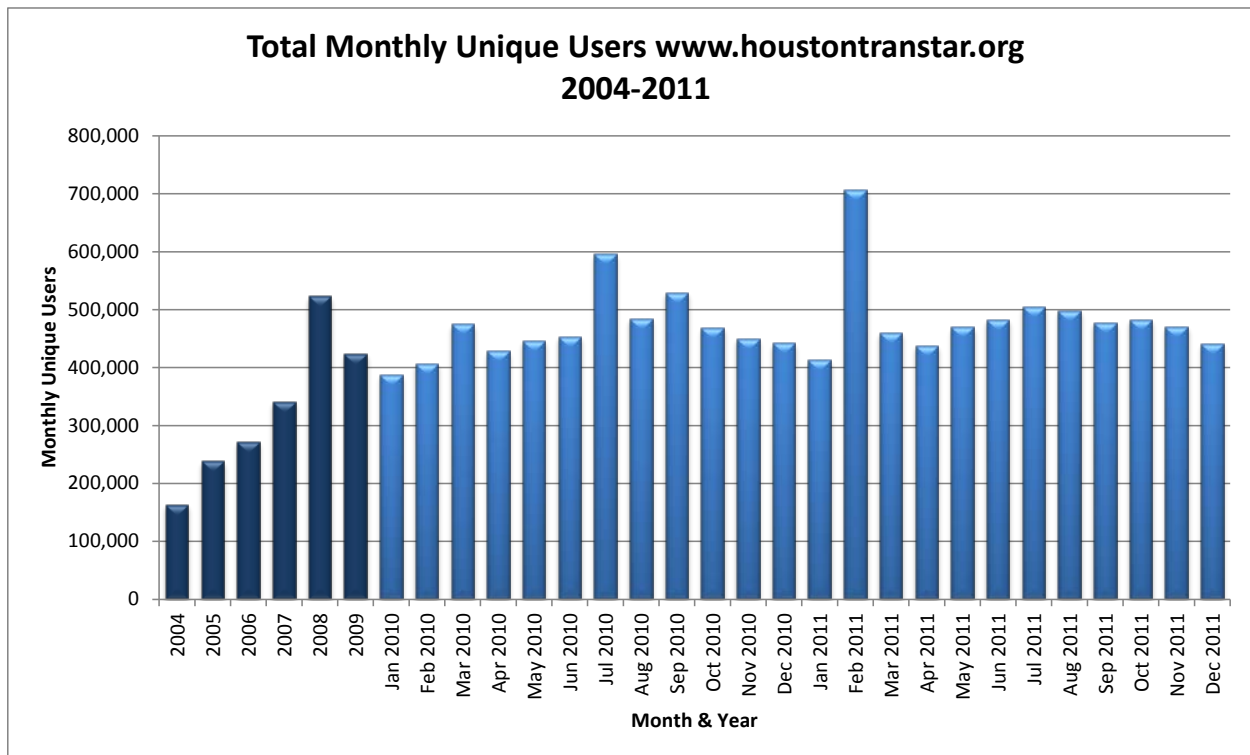
In 2011, HCOHSEM distributed 1,477 communications products, handled 424 media inquiries and hosted 73 tours of the EOC. It also ran a successful bilingual public service campaign urging residents to prepare for hurricane season.

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

The most visible product of the Houston TranStar center operation on a daily basis 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.

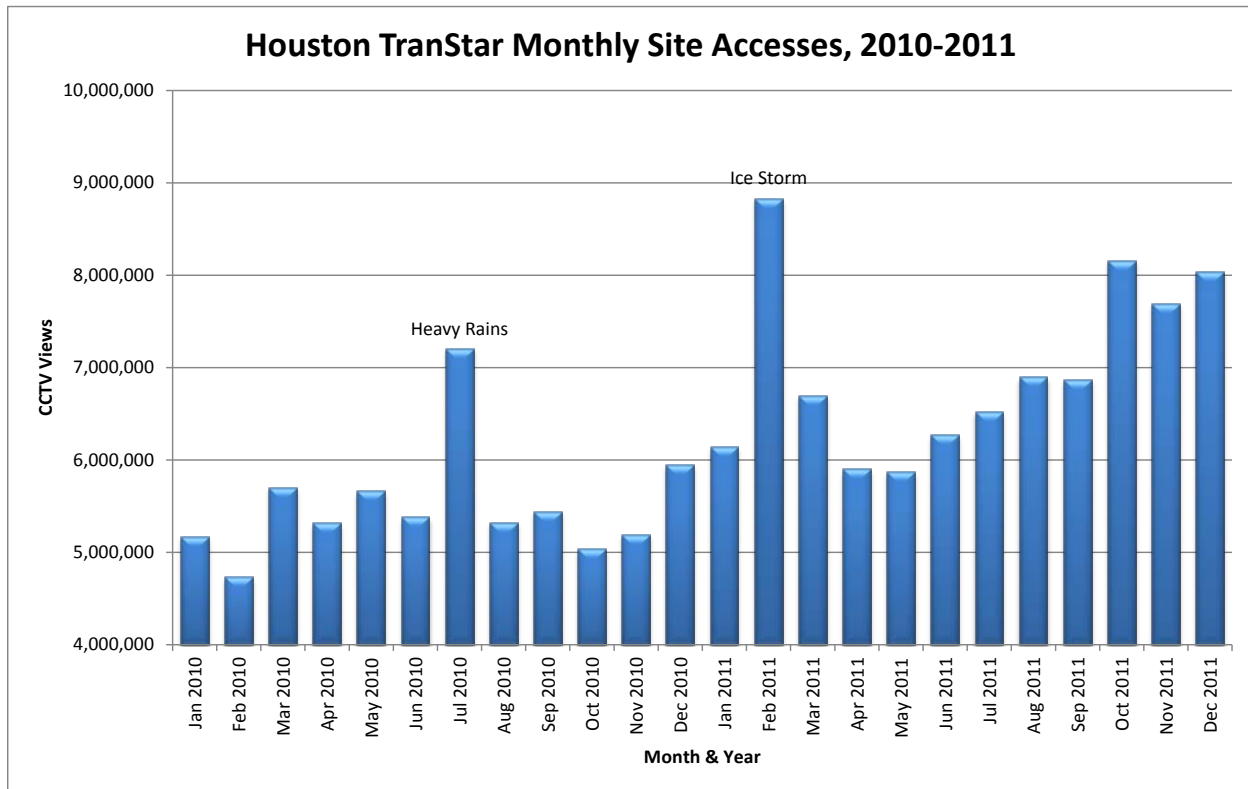
Operational highlights for the TranStar Website in 2011 included:

- Average unique monthly users increased to 486,300 in 2011, a 5% increase over 2010 levels and a 79% increase in the five years since 2006.



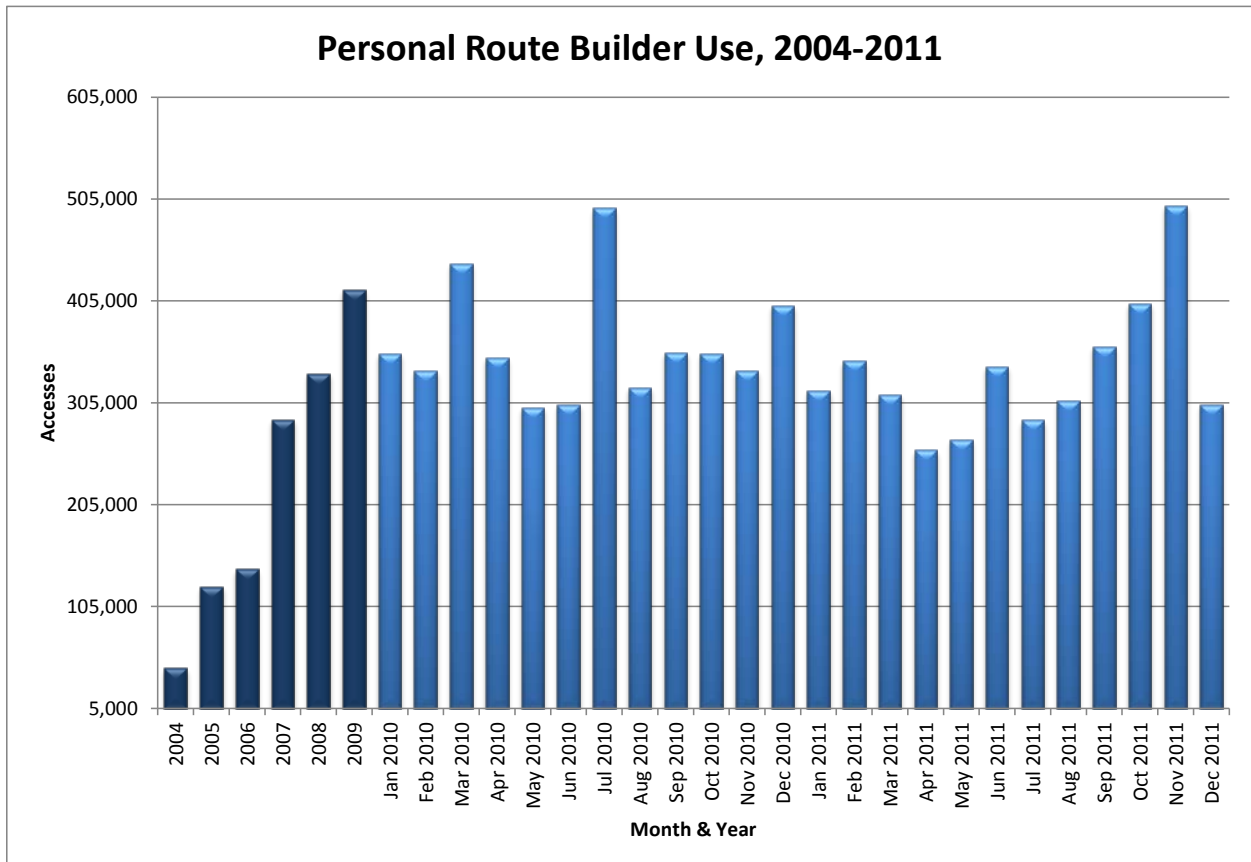
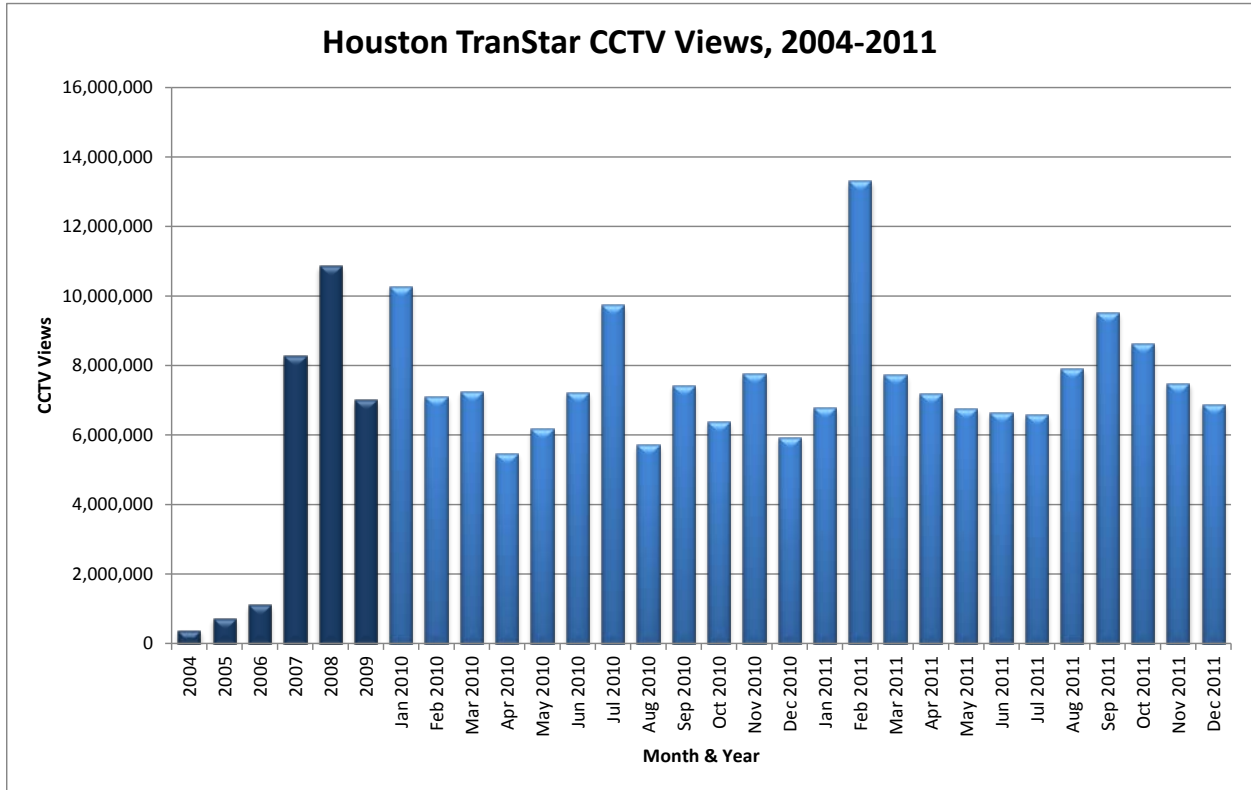
- Accesses to the main TranStar home page remained stable at 1.08 million views in 2011, down slightly from 1.1 million views in 2010.
- Monthly Webpage accesses in 2011 ranged from 5.8 to 8.8 million, with a monthly average of about 7.0 million accesses. Total Webpage accesses for the year were more than 83.8 million, up about 27% from 2010. The continuous improvement process which emphasizes site efficiency has typically resulted in fewer accesses, which has an ultimate impact in site bandwidth requirements; but even with these improvements, overall website use was up.
- Access to the route builder system was down about 8% in 2011 as compared to 2010 levels, but is still providing more than 4.0 million views in 2011. This level is nearly triple (+268%) over 2005 levels.

## TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES

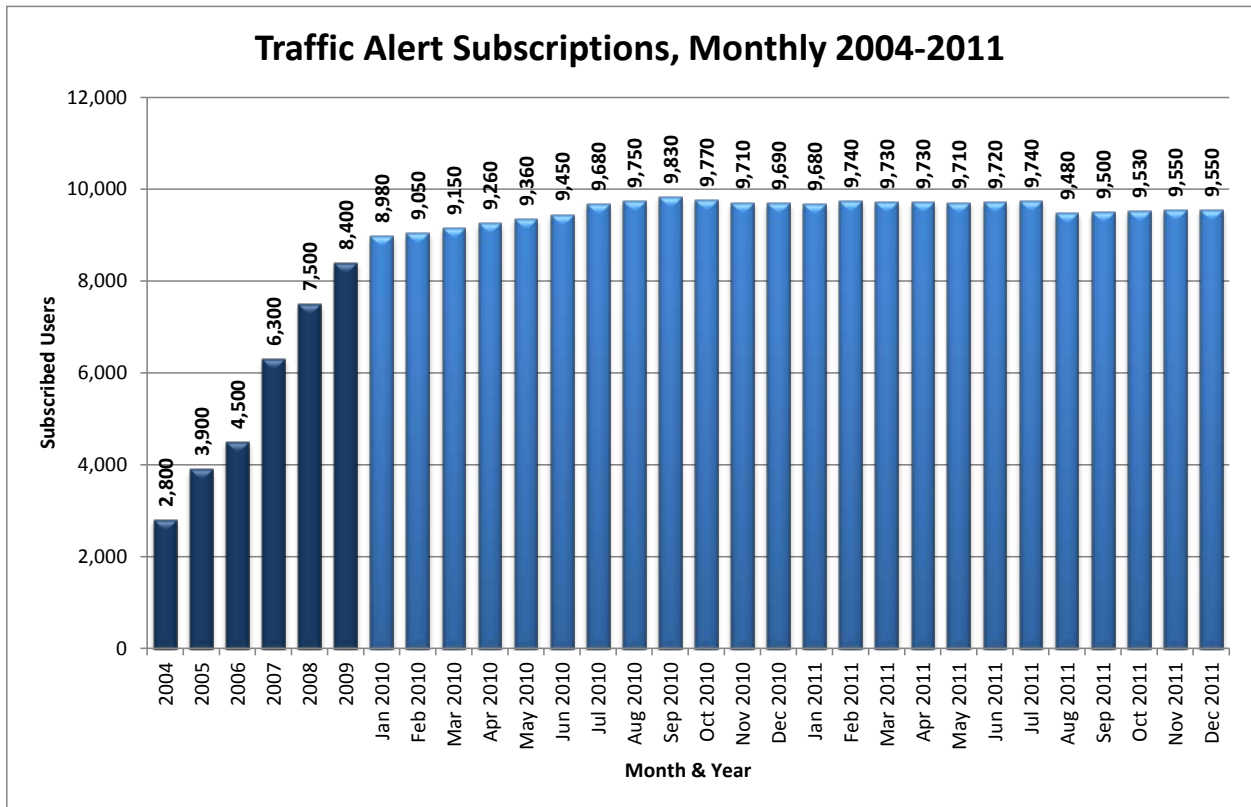


- Views of CCTV images increased from 86.3 million in 2010 to 95.2 million in 2011, an increase of 10.3%. Cameras showing moving snapshots showing motion remain most popular.
- Traffic alert subscribers increased from an average monthly subscriber base of 9,470 in 2010 to 9,640 in 2011, an increase of 1.1%. In 2011, a periodic effort to clean the subscriber database to eliminate those no longer reaching their email address reduced the number of subscriptions by about 300.
- Mobile traffic data accesses decreased in 2011 to 6.1 million accesses as opposed to 7.1 million in 2010, a 14% decrease.
- DMS information viewed increased by 91% from 2010 to 2011, with more than 4.5 million views. Since 2009, views of DMS messages have increased nearly 200%.

# TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES



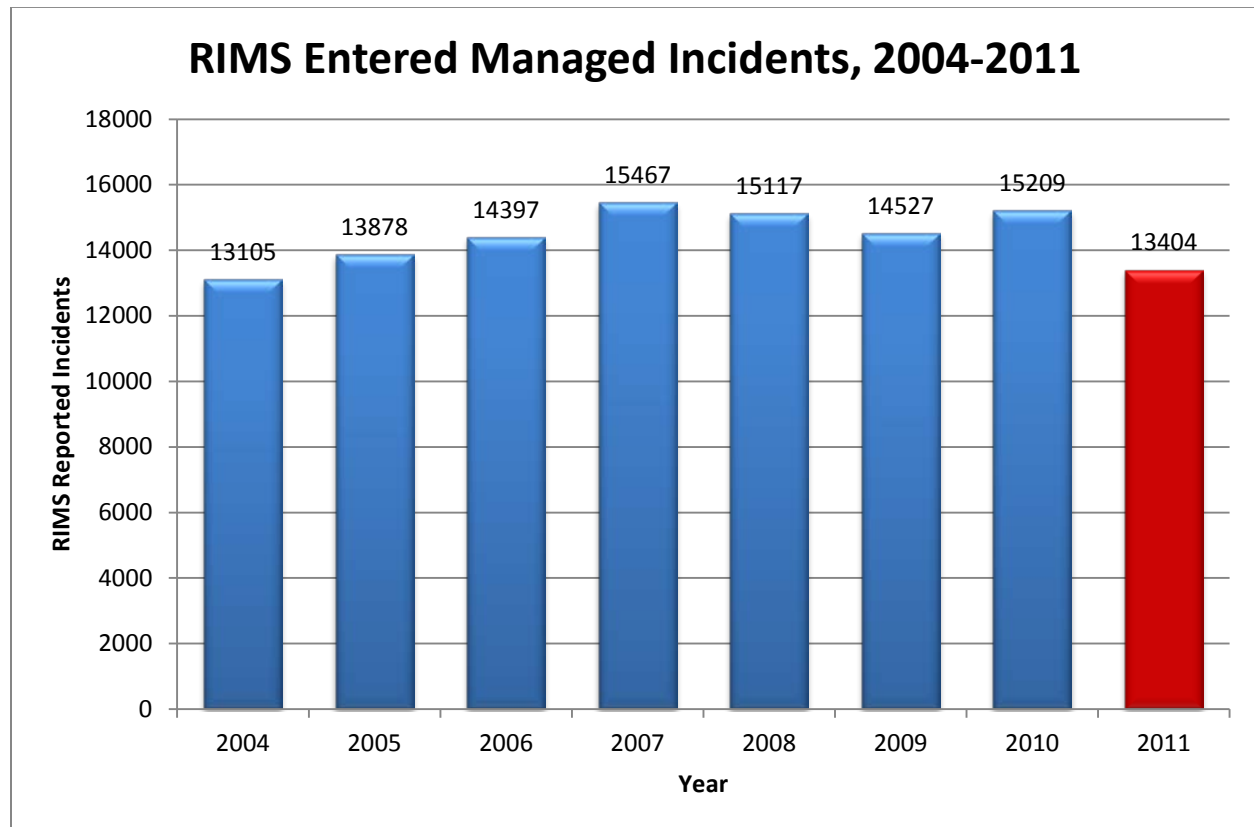
# TRAVELER INFORMATION PROVIDED BY HOUSTON TRANSTAR AGENCIES





## **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 2011 there were 13,404 incidents recorded by Houston TranStar operators, largely by TxDOT personnel. This is a decrease of about 15% when compared to total incidents entered into RIMS in 2010. The decrease is attributed primarily to two factors: 1) extraordinarily dry conditions in the region in 2011 leading to fewer weather-related crashes; and 2) lower staffing levels may have led to fewer incidents being logged and managed.



Some of the incident related performance measures determined for 2011 included:

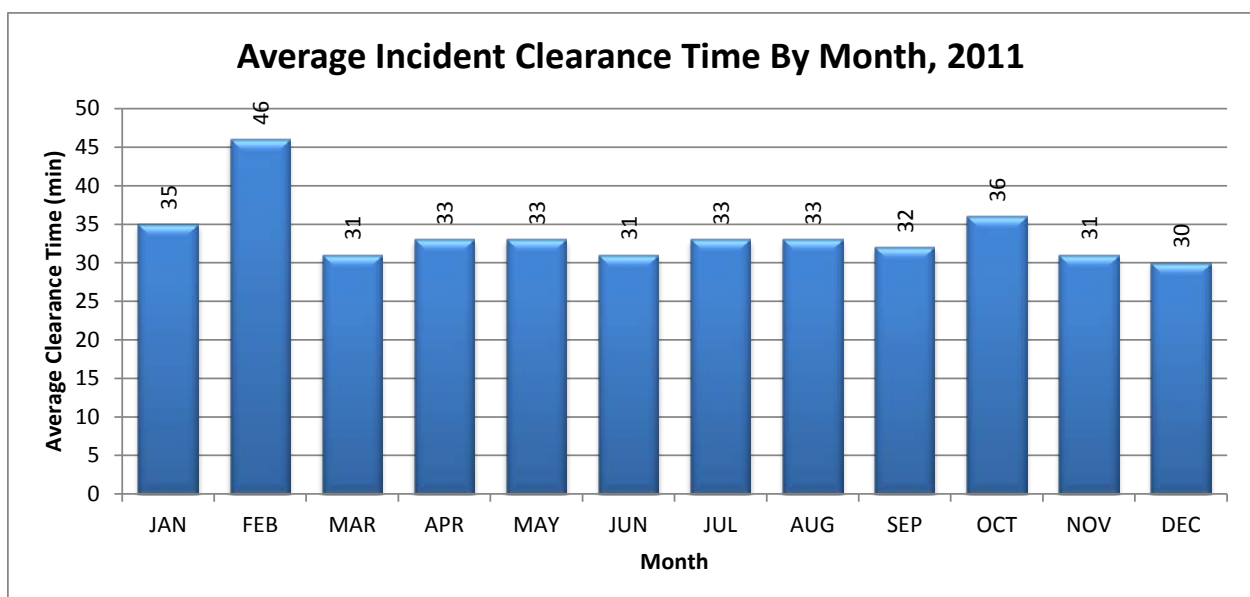
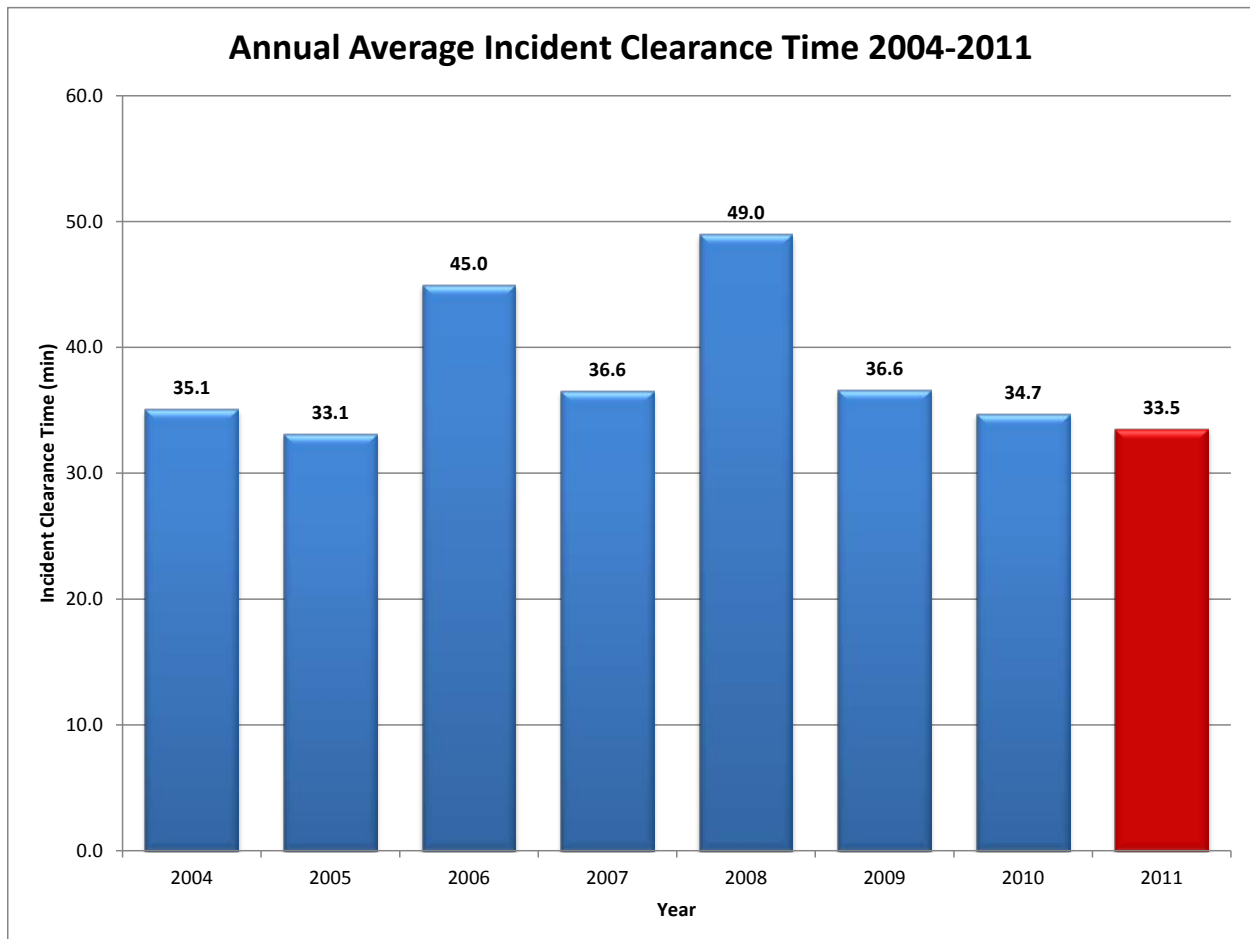
- There were 7,491 incident-hours managed from the Center in 2011 (as compared to over 8,800 in 2010).
- The average incident clearance time in 2011 was 33.5 minutes, which was somewhat lower than the overall average since 2004 (38.6 minutes).

The top five incident locations managed and/or monitored from TranStar in 2011 included:

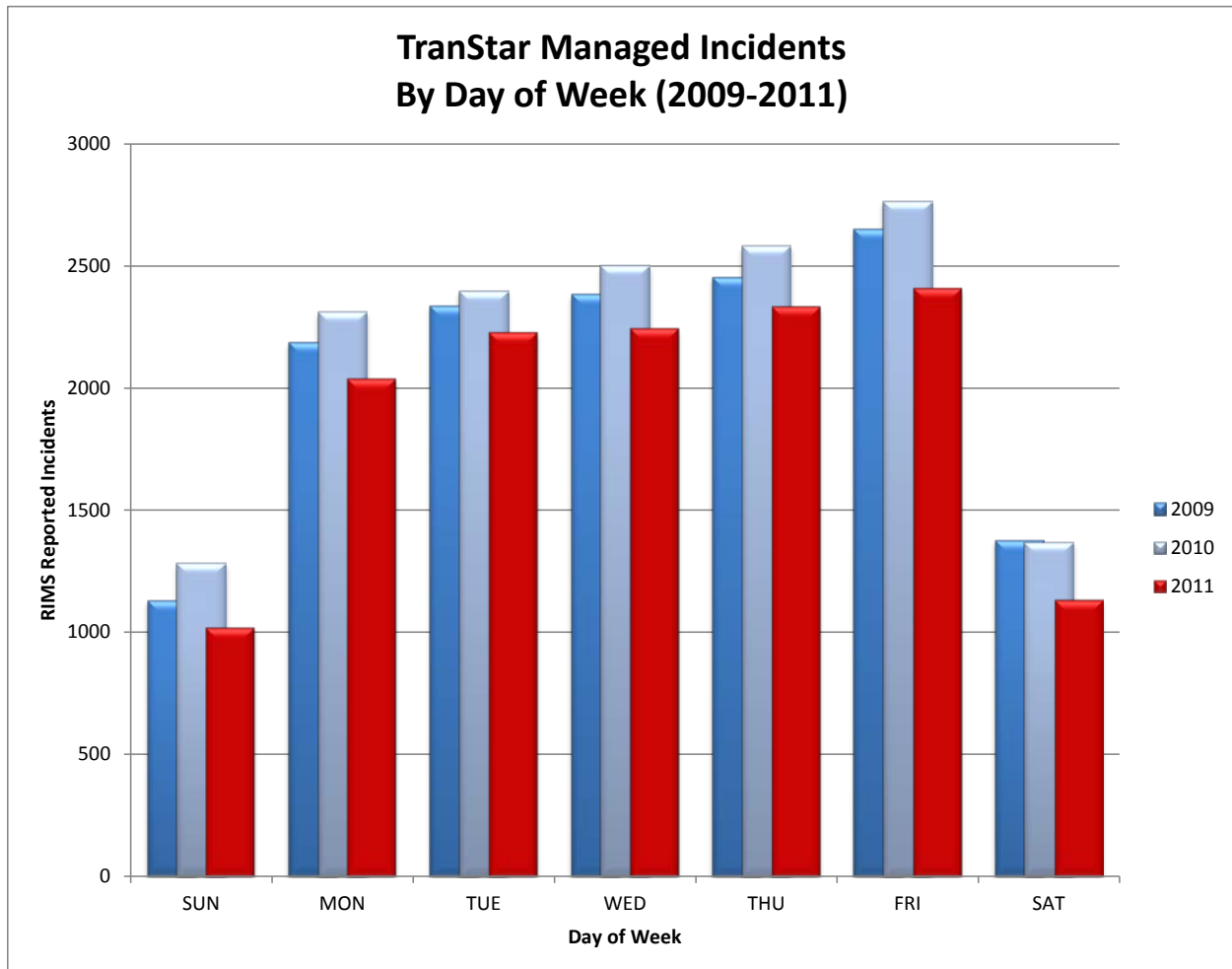
- US-59 Southwest Freeway Northbound at IH-610 West Loop (118 incidents);
- IH-610 West Loop Northbound at US-59 Southwest Freeway (91 incidents);
- IH-45 Gulf Freeway Northbound at IH-610 South Loop (84 incidents);
- IH-45 North Freeway Southbound at IH-610 North Loop (82 incidents); and
- West Sam Houston Tollway Southbound at Central Plaza (82 incidents).

## INCIDENT MANAGEMENT

RIMS incident location 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)

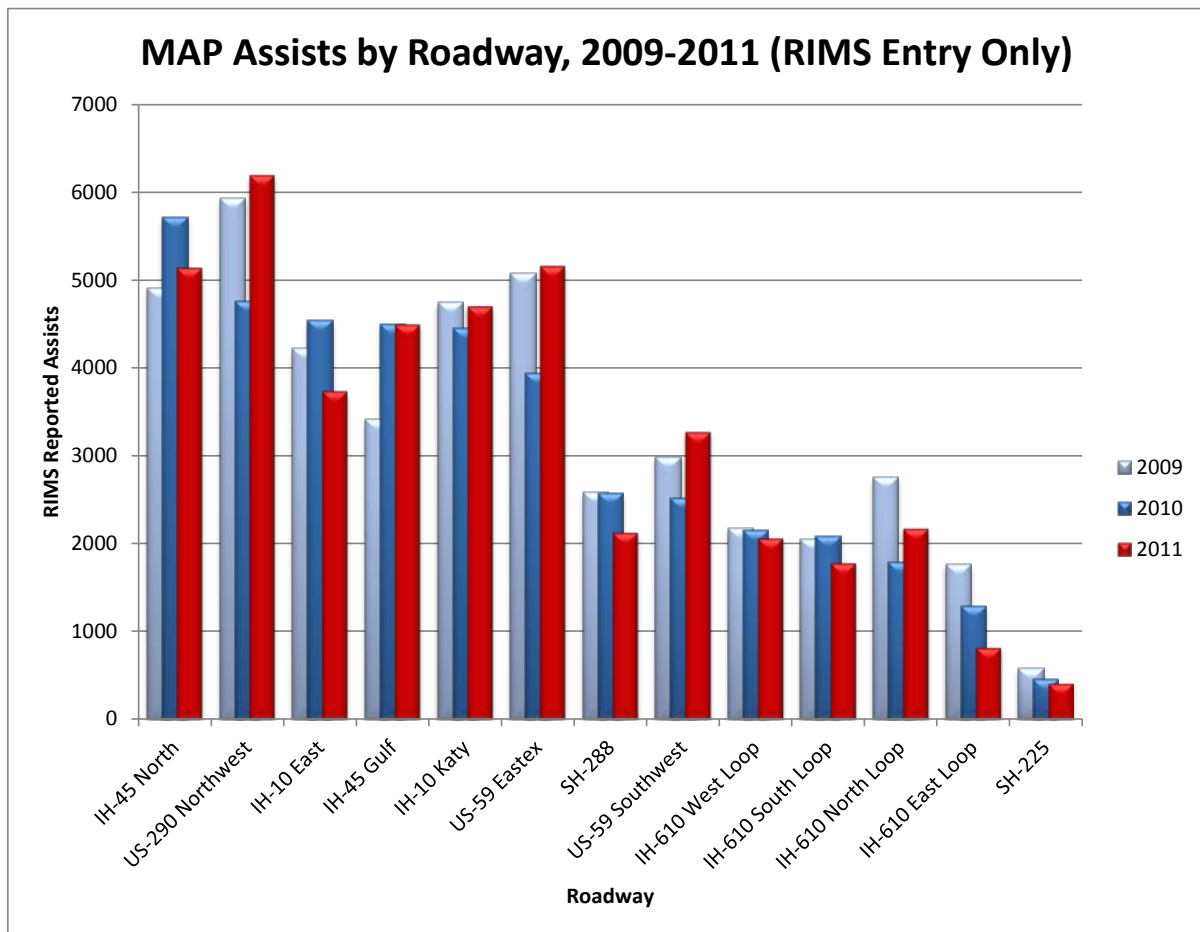
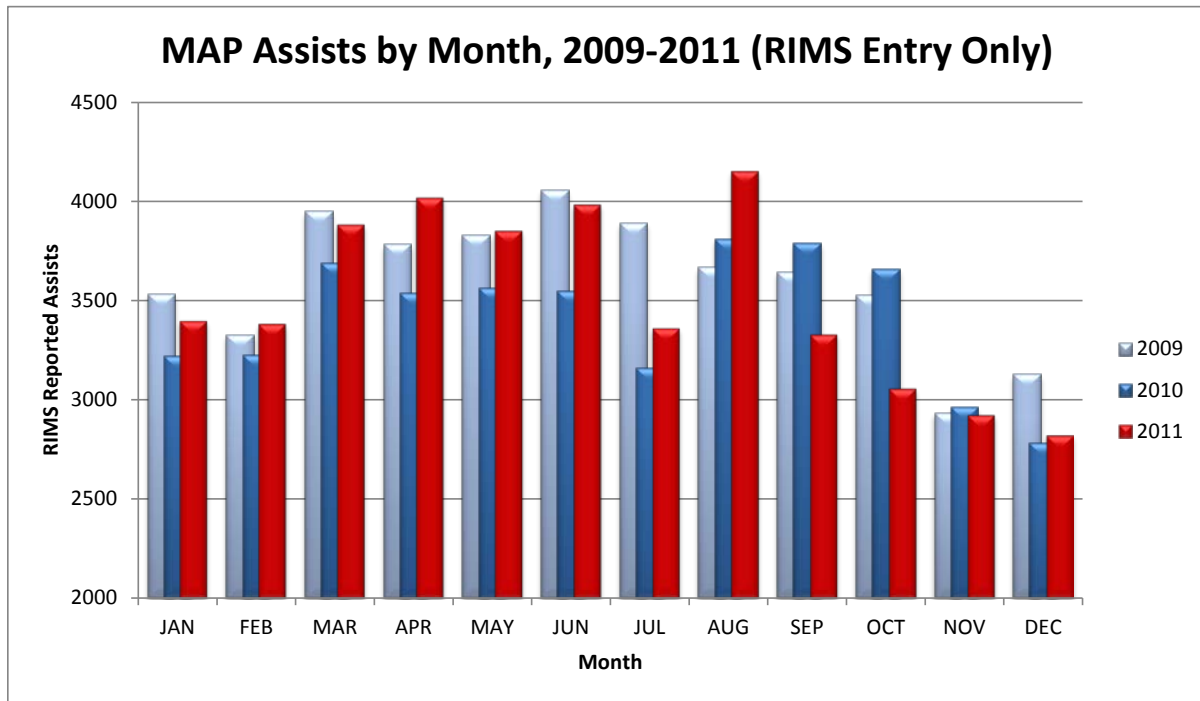
The Motorist Assistance Program (MAP) continues to be one of the most visible services operated by the Houston TranStar agency partnership.

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 42,174 RIMS-reported assists handled by MAP in 2011, an increase of about 3% from 2010. The RIMS-reported MAP assists are for Harris County Deputy MAP activity only. METRO reported an additional 15,834 assists, but those are not currently entered into RIMS, the TranStar Incident Database. TxDOT operators provide dispatch service to the MAP program.

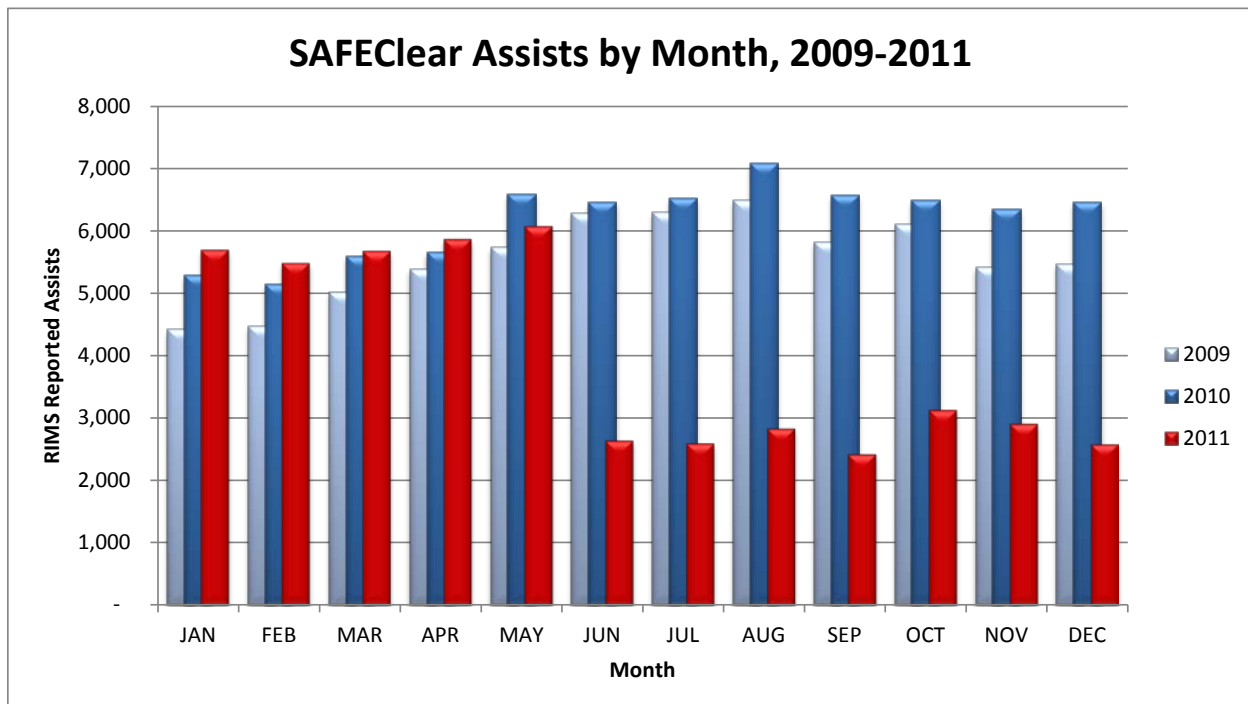
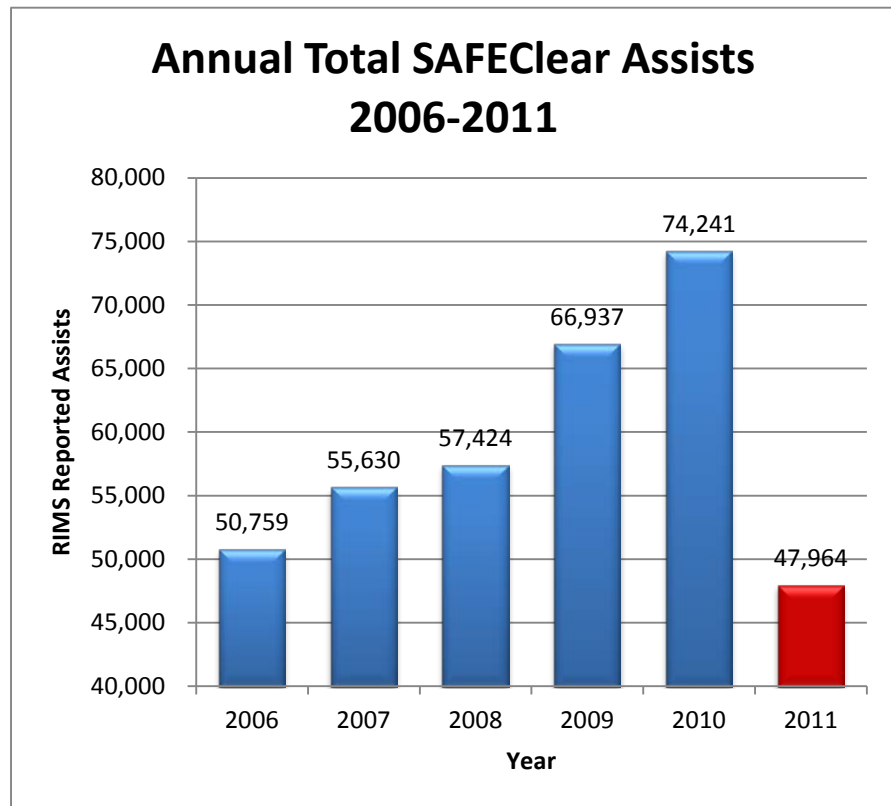
## INCIDENT MANAGEMENT



## 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. Due to discontinuation of the free tow program in June 2011, there were only 47,964 RIMS reported SAFEClear assists in 2011; a decrease of 36% from 2010 levels. In 2011, the average time from tow authorization to clearance was 27 minutes, as compared to 14 minutes in 2010, as more motorists balked at the fee-for-service tows later in the year.

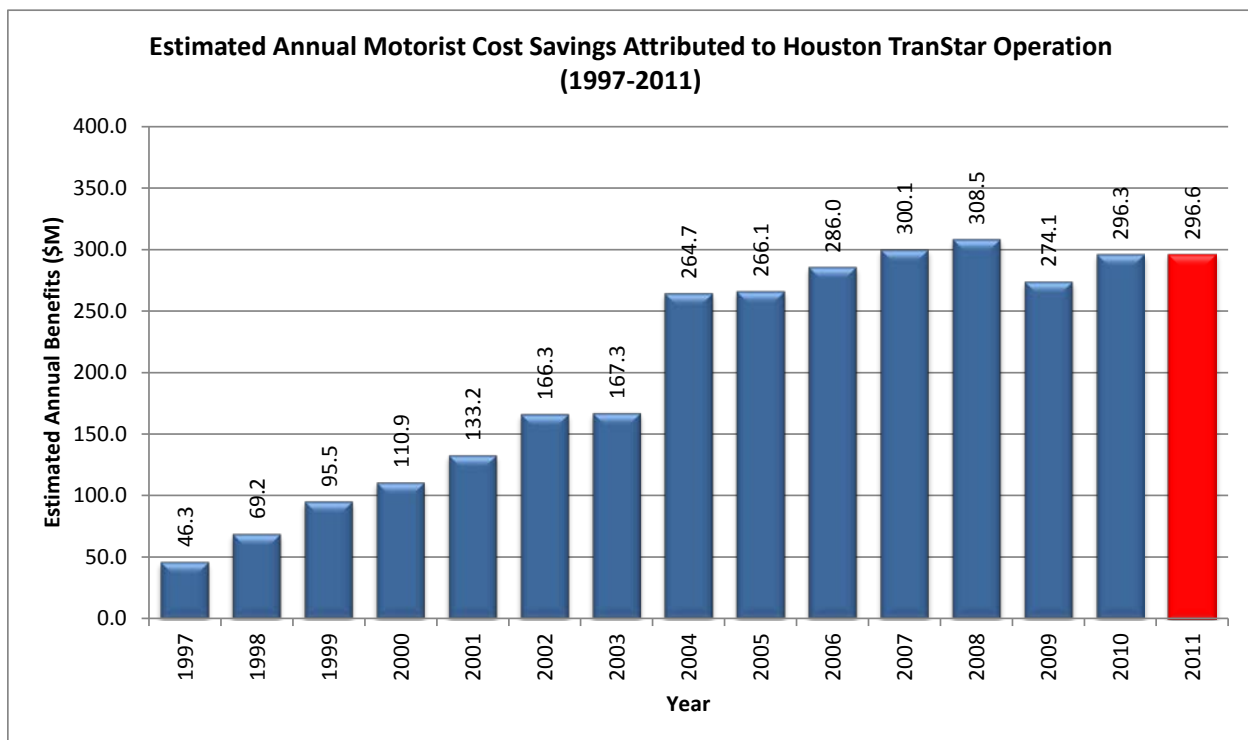


## **BENEFITS**

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 15 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. 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.

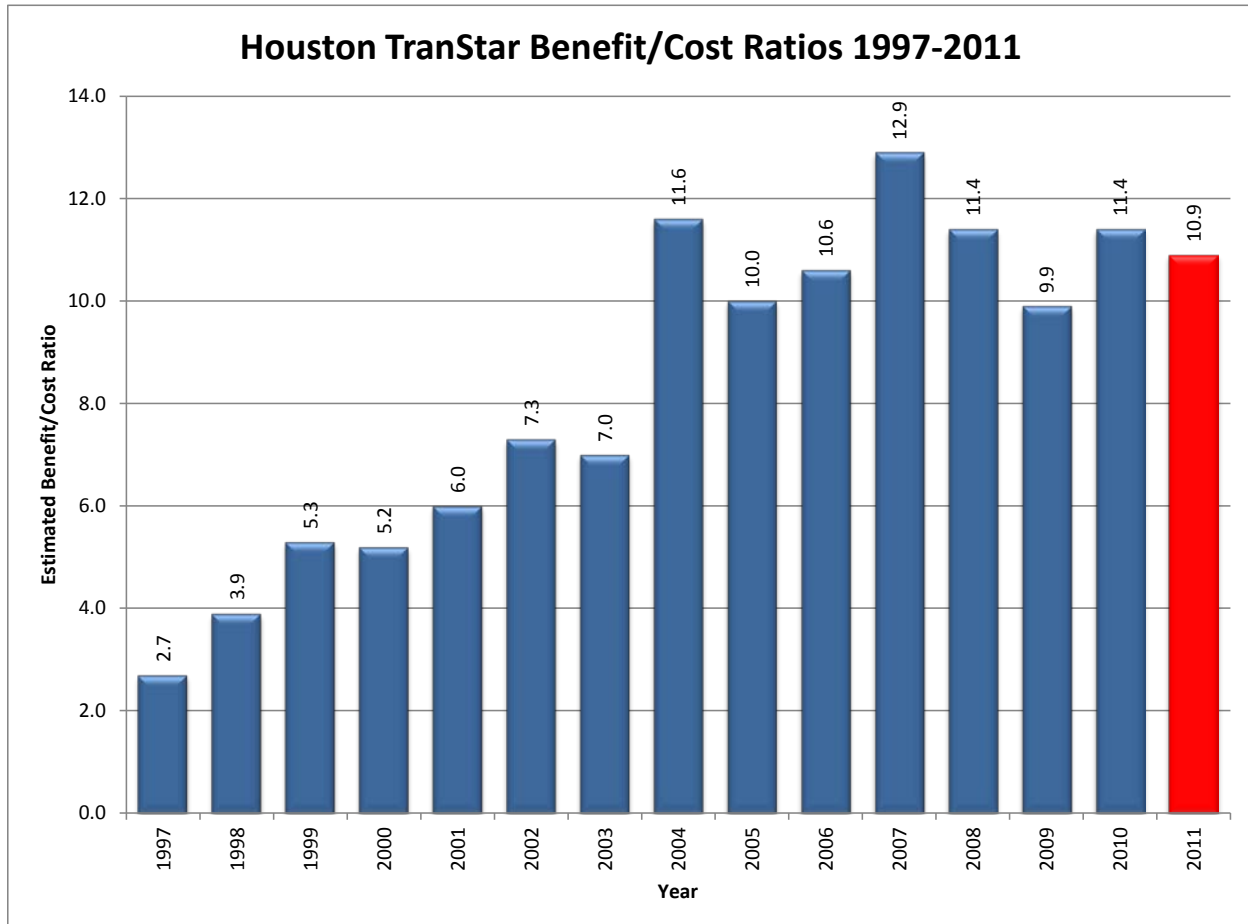
The estimated costs of congestion in the Houston TranStar region were calculated to be more than \$558 million in 2011. Annual benefits in the reduction of travel time were estimated to be more than 10.8 million vehicle-hours with an estimated monetary benefit of over \$238 million. The saving in travel time is equivalent to reducing fuel consumption more than 20.3 million gallons, which results in an additional savings of about \$69.1 million. Thus, the total 2011 motorists' savings was in excess of \$296.6 million. Since 1997 (when benefits were first estimated), Houston TranStar has saved Houston area motorists nearly \$3.1 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 20.3 million gallons of fuel is equivalent to an estimated reduction of 438 tons of hydrocarbons; 2,831 tons of carbon monoxide; and 637 tons of nitrogen oxides.

## **BENEFITS**

A benefit/cost analysis for 2011 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 \$27.3 million is divided into the annual benefit estimate of \$296.65 million, yielding a 2011 estimated benefit/cost ratio of 10.9.



Since 2004, the benefit/cost ratio of Houston TranStar has ranged from 10.0 to 12.9. In 2011, the benefit/cost ratio is 10.9. Several factors enter into this calculation when comparing 2011 to previous years:

- The motorist value of time increased slightly, from \$20.35 per vehicle-hour in 2010 to \$21.00 in 2011.
- The average cost of fuel in the Houston area increased 29% in 2011 as compared to 2010, from \$2.64/gal in 2010 to \$3.41/gal in 2011. While fuel savings in gallons was 8% lower in 2011 compared to 2010, the dollar value of fuel saved was 19% more over that same time.
- Total measured congestion via the travel time monitoring system decreased from 28.6 million to 26.6 million vehicle-hours in the TranStar managed region (a 7% decrease).

## **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