

6.0 Transportation Safety and Security

A safe and secure transportation system is the responsibility of all transportation stakeholders and users. Local, state, and federal transportation, law enforcement, and emergency response agencies work cooperatively to construct, maintain, and monitor transportation networks, and assist travelers in need, but each transportation user must be responsible for their actions and vigilant of the environment around them while traveling to help ensure their own safety and security.

6.1 Texas Homeland Security Strategic Plan

The first 5-year Texas Homeland Security Strategic Plan was published in 2005. With the implementation of the *Texas Homeland Security Strategic Plan 2005–2010*, Texas is better prepared to prevent, protect, respond, and recover from natural disasters and man-made threats. The following are a few of the many major accomplishments that are relevant to transportation in Texas as described in the Texas Homeland Security Strategic Plan:

- ★ Texas has received national recognition for being able to handle multiple crises simultaneously with unsurpassed effectiveness. In less than 90 days during the summer and fall of 2008, Texas was hit with three hurricanes (including the third most destructive storm in United States history), a tropical storm, flooding on the Rio Grande, 3,900 wildland fires, and major criminal unrest in Mexican states bordering Texas. Texas' public-private partnership enabled the state to deal with all of these events in a manner that minimized the impact of each, and enabled rapid recovery.
- ★ Texas sponsored or participated in 254 homeland security/emergency management exercises between September 11, 2001, and October 2009.
- ★ Texas has enhanced the public-private partnership that incorporates the power of business and industry, private citizens, and all levels of government to achieve unprecedented synergies in all areas of homeland security, particularly in prevention and community resilience.
- ★ Texas' ability to evacuate communities in advance of hurricanes is the national standard. More than 2 million people evacuated ahead of Hurricanes Gustav and Ike with unprecedented speed and efficiency. Evacuation planning capitalized on experience gained and lessons learned from 2005 storms, and enabled swift, orderly, evacuations that kept families (and their pets) together and accounted for all segments of the population. For example, local, state, and federal partners helped evacuate over 34,000 special needs residents in advance of Hurricanes



Ike and Gustav, maintaining 100 percent accountability and awareness. The state's radio interoperability and other communications capabilities played critical roles in these efforts.

- ★ The Texas Legislature provided \$110 million in the 80th session and \$116 million in the 81st session to fund this evidence-based border security strategy. The funding included full-time positions, overtime, and operational costs for expanded local and state law enforcement patrol operations and four state-of-the-art Texas Department of Public Safety (DPS) helicopters to support patrol operations.
- ★ The increased patrol capability along the Texas-Mexico border in the air, on the ground, and in the water disrupted drug and human smuggling operations and put the Mexican cartels on notice that Texas has zero tolerance when it comes to smuggling, and there would be an increased cost of doing business in Texas.
- ★ In July 2009, Texas was a key player in the National Level Exercise (NLE 09), where Texas' critical infrastructure was targeted by national terrorist groups. In the exercise, Texas demonstrated the ability to discern intentions and take actions to prevent them. This ability to act was the result of unprecedented interagency coordination and synchronized actions made possible through the use of the state's geospatial information system, known as TxMAP. In addition to the key role it played during NLE 09, TxMAP greatly facilitated emergency response understanding and actions during Hurricane Ike in September 2008.

The *Texas Homeland Security Strategic Plan 2010–2015* serves as a high-level road map for the state's homeland security efforts for the next 5 years. This update builds on the foundation and momentum created by *The Texas Homeland Security Strategic Plan 2005–2010* and supports officials at all levels in fulfilling the homeland security and emergency management responsibilities assigned them in Texas Government Code Chapters 411, 418, and 421.

The updated plan provides overarching guidance for state, regional, and local homeland security and emergency management plans and operations, and informs federal partners who support Texas' homeland security efforts. It recognizes the critical importance of public-private partnership in all aspects of homeland security, and is aligned with the national objectives laid out in the *U.S. Department of Homeland Security Strategic Plan Fiscal Years 2008–2013* and other federal guidance such as the *National Response Framework*.¹⁶⁵

¹⁶⁵Office of the Governor. *Texas Homeland Security Strategic Plan 2010–2015*.



6.2 TxDOT's Responsibilities

Several TxDOT Divisions are responsible for administering federal and state grant programs to improve safety and security on various modes of the transportation system in Texas. The following are brief descriptions of those divisions and their responsibilities:

- ★ Maintenance Division is responsible for preservation, maintenance, and restoration of over 80,000 centerline miles of Texas highways and ensuring the safety of the state's ferry operations in Port Aransas and Galveston. In addition, this division oversees the safety rest areas, and provides support and guidance to TxDOT districts during natural disasters and emergencies.¹⁶⁶
- ★ Traffic Operations Division oversees programs in traffic management, engineering, and safety. This division is involved in planning for, and the maintenance of, signs, signals, pavement markings, and lighting. Finally, this division manages ITS, crash records, and safety initiatives to improve driver behavior, eliminate roadway hazards, and increase traffic law enforcement.¹⁶⁷
- ★ Motor Carrier Division is responsible for issuing permits with safe and efficient routing of vehicles transporting oversize/overweight loads on Texas highways. This division also coordinates with the DPS to enforce and ensure compliance with permit-related rules, conduct investigations, and when necessary, assess penalties for oversize/overweight violations.¹⁶⁸
- ★ Aviation Division administers routine airport maintenance grants and assists general aviation airports meet federal airport pavement management program requirements. The division also operates a fleet of state-owned aircraft for the transportation needs of state officials and employees, as well as providing maintenance and repair services to most state-owned aircraft.¹⁶⁹
- ★ Rail Division improves highway rail grade crossings by installing and maintaining signals and gates, improving crossing surfaces on state highways and consolidating crossings where possible. State rail safety inspectors coordinate investigative activities with federal authorities in the areas of hazardous materials, motive power and equipment, operating practices, signal and track

¹⁶⁶TxDOT. Maintenance Division. http://www.dot.state.tx.us/about_us/administration/divisions/mnt.htm

¹⁶⁷TxDOT. Traffic Operations Division. http://www.dot.state.tx.us/about_us/administration/divisions/trf.htm

¹⁶⁸TxDOT. Motor Carrier Division. http://www.dot.state.tx.us/about_us/administration/divisions/mcd.htm

¹⁶⁹TxDOT. Aviation Division. http://www.dot.state.tx.us/about_us/administration/divisions/avn.htm



control, and track structures— conducting safety inspections of railroad facilities and equipment with federal authorities as part of the rail safety program.¹⁷⁰

- ★ Public Transportation Division provides financial, technical and coordination assistance to the state's public transit providers. This division also represents public transit in the planning and programming process and prepares funding-needs projections.¹⁷¹

Safety and security for modes not under the direct responsibility of TxDOT will be discussed in the context of the plans, manuals, procedures, and guidelines prepared by each mode's providers and respective oversight agencies. Discussions of safety and security for these modes will include references to agencies and sources that can provide detailed information on these topics.

6.3 Highway Safety

TxDOT is committed to making travel as safe as possible for all users of the roadway system in Texas. Educating the travel public on what they can do to keep themselves safe, in conjunction with implementing existing safety plans and programs is enabling TxDOT to do just that.

6.3.1 Strategic Highway Safety Plan

TxDOT developed the first Strategic Highway Safety Plan (SHSP) in 2006 to identify key safety needs and provide data to guide investment decisions intended to lead to significant reductions in highway fatalities and serious injuries on all public roads. Since the adoption of the initial plan, TxDOT has updated and provided a status of its ongoing safety efforts twice—in 2007, and again in 2009.

State crash data, along with travel and population data, were used to provide estimates of various measures of roadway safety. Fatalities and fatality rates per 100 million VMT and per 100,000 population were computed for the state for the years 1999 through 2008. Serious injuries (incapacitating and nonincapacitating) and injury rates were computed for the same years. These data are presented in Table 6-1.

¹⁷⁰TxDOT. Rail Division. http://www.dot.state.tx.us/about_us/administration/divisions/rail.htm

¹⁷¹TxDOT Public Transportation Division. http://www.dot.state.tx.us/about_us/administration/divisions/ptn.htm

**Table 6-1: Summary of Texas Crash Trends (1999–2008)¹⁷²**

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Fatalities	3,519	3,775	3,739	3,823	3,821	3,699	3,559	3,521	3,461	3,468
Rate per 100M VMT	1.69	1.76	1.77	1.77	1.75	1.61	1.52	1.48	1.43	1.48
Rate per 100K Population	17.56	18.10	17.65	17.76	17.48	16.14	15.57	14.98	14.48	14.39
Serious injuries*	107,996	108,282	105,520	101,560	93,774	91,611	92,042	89,611	89,476	84,508
Serious injury rate per 100M VMT	51.95	50.41	49.87	47.05	44.81	39.94	39.30	37.89	37.01	37.02
Serious injury rate per 100K Population	538.79	519.29	494.82	466.30	442.05	407.34	402.63	381.20	374.31	350.58

*Incapacitating and nonincapacitating injuries.

According to the 2009 SHSP: *A Report of Progress for 2009*, while fatalities and serious injuries have declined over time, the goal of further reductions is desirable and that technological improvements in automobile and roadway engineering, enforcement methods, medical treatment and educational processes make this feasible. Strategic planning to enable these reductions has resulted in the establishment of the target goal of 1.40 fatalities and 41.2 serious injuries per 100 million VMT by 2010 (not reflected in Table 6-1)—the latter of which was actually exceeded ahead of schedule in 2004, and has remained below the target since.

Since the development of the initial 2009 SHSP: *A Report of Progress for 2009*, crash data for 2008 has become available and is now included in the report by the same name. In addition, the current plan also reflects the results of contributions from safety professionals and those interested in traffic safety from surveys and meetings arranged through MPOs located in the Bryan, Houston-Galveston, San Antonio areas, and the North Texas Council of Governments located in Arlington.

The participation of these various groups resulted in collective ownership of the SHSP, and was beneficial to ensuring that the Roadway Safety Emphasis Areas and countermeasures that were identified as a result of the collaboration were both comprehensive and representative of the stakeholders and organizations involved in the

¹⁷²Sources: The 1999–2001 fatality and injury data are from the DPS, Texas Traffic Crash Database. The 2002–2006 fatality and injury data are from the TxDOT Crash Record Information System (CRIS) and were extracted and verified as of March 26, 2009. The 2007 and 2008 data was extracted as of August 30, 2009 and September 3, 2009, respectively. Travel data are from TxDOT and population data are from Texas State Data Center.



process. Subsequently, the 2009 Texas Legislature passed and signed into law several bills that relate to traffic safety.¹⁷³

6.4 Traffic Safety Program

The mission of the Texas Traffic Safety Program (TTSP) is to identify traffic safety problem areas and implement programs to reduce the number and severity of vehicular crashes through the statewide traffic safety program.

The goal of the TTSP is to use information, data, technology, resources, and skills to identify priority traffic safety issues, plan initiatives, generate coordinated action, and evaluate and communicate results. The program objective is to operate the program in a manner that reduces crashes, injuries, deaths, and their related losses.¹⁷⁴

6.4.1 TxDOT's Educational Efforts to Enhance Highway Safety

TxDOT has increased its efforts to educate and encourage roadway and highway users to travel safely. A few examples are:

- ★ **Click It or Ticket** campaign – Since 2002, increased seatbelt usage among Texans has saved nearly 2,000 lives and prevented an estimated 46,500 serious injuries.
- ★ **Teens in the Driver Seat** program is the first peer-to-peer driving safety program for young drivers in Texas. It has helped reduce the rate of fatal teen crashes, a rate that is declining faster and more steadily in Texas than in any other state.
- ★ **Give us a BRAKE** work zone warning signs, public safety announcements and work zone awareness handouts have helped raise awareness of safety precautions for workers and motorists in work zones.

TxDOT, in conjunction with local authorities, maintains emergency response plans to ensure the safety of Texans in the event of natural or man-made disasters. The threat of emergencies such as hurricanes, flash floods, and terrorist attacks underscores the importance of our highways to the state's emergency evacuation system.¹⁷⁵

Hurricane season runs from June 1 through November 30 annually, and for the citizens of Texas, hurricane preparedness is paramount to safety. Hurricane Ike in 2008 resulted in the largest evacuation of Texans in the state's history and is an ever-present

¹⁷³TxDOT. Texas Strategic Highway Safety Plan: A Report of Progress for 2009. http://www.txdot.gov/txdot_library/publications/traffic_planning.htm

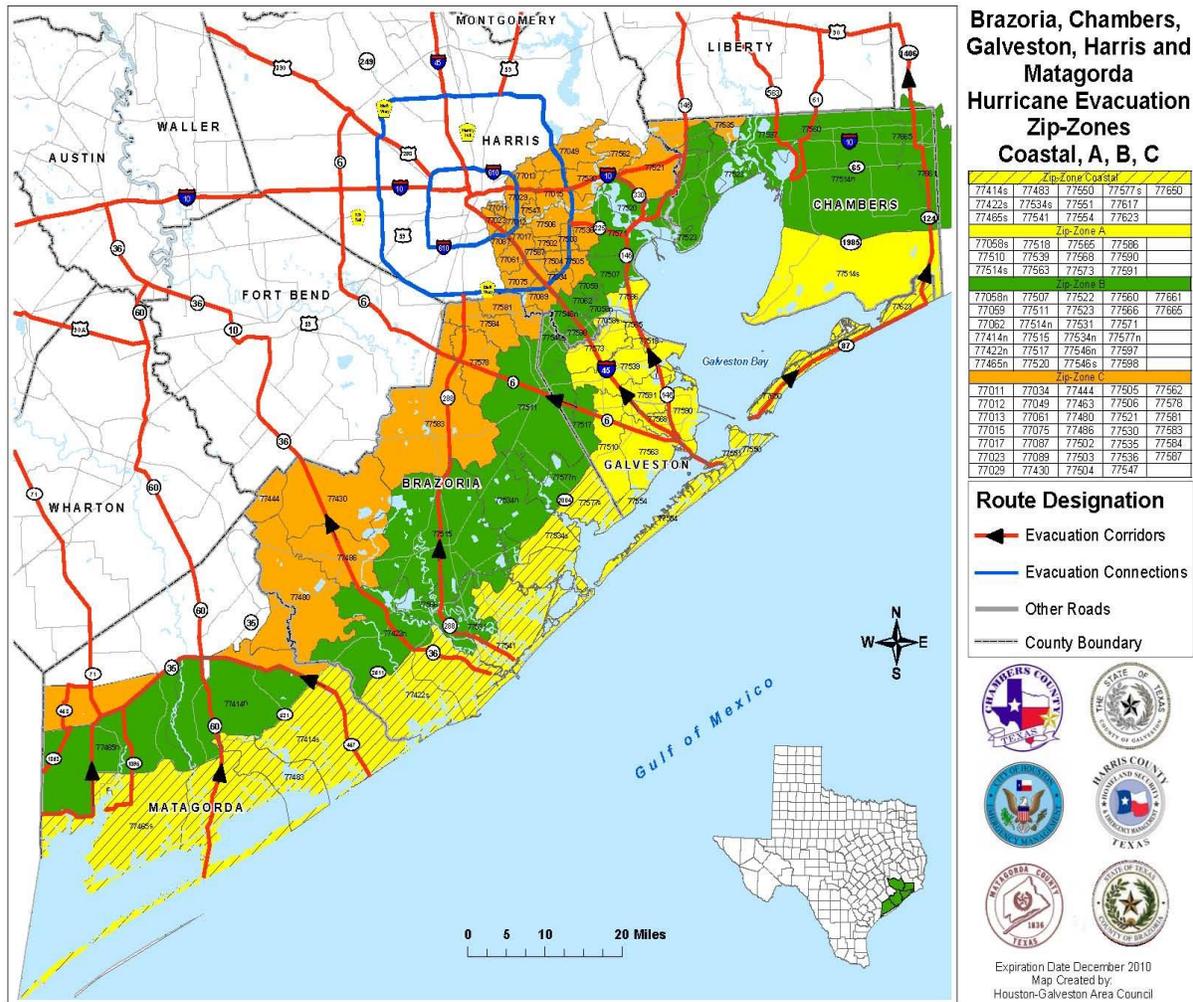
¹⁷⁴TxDOT. Traffic Safety Program Manual. October 2008.

¹⁷⁵TxDOT. TxDOT 2011–2015 Strategic Plan. http://www.dot.state.tx.us/txdot_library/publications



reminder of the need for effective local and regional evacuation route maps. Figure 6-1 is an example of a regional hurricane evacuation route and zone map from the Houston region.

Figure 6-1: Houston Region Evacuation Routes (Example)



Source: H-GAC

Statewide hurricane preparedness information and evacuation route maps can be found at:

- ★ TxDOT: <http://www.dot.state.tx.us/travel/hurricane.htm>
- ★ DPS: http://www.txdps.state.tx.us/dem/pages/weather_aware_hurricane.htm

Information about other highway-related safety programs and initiatives may be obtained on the TxDOT website at <http://www.dot.state.tx.us/safety/>.



6.5 Bicycle and Pedestrian Safety

Bicycle and pedestrian safety is addressed by MPOs in their MTPs or in stand-alone Bicycle and Pedestrian Plans. These plans may be obtained on an MPO or Council of Government (COG) website.

TxDOT develops and implements an annual Highway Safety Performance Plan (HSPP) under the provisions of the 1966 National Highway Safety Act and the Texas Traffic Safety Act of 1967. The purpose of plan is to reduce crashes and associated deaths, injuries and property damage. It includes goals, objectives and performance measures specific to bicycle and pedestrian safety.

Funds are allocated to program areas authorized under federal regulations as determined by a state problem identification process. Pedestrian and bicycle safety is one of the program areas included in the HSPP. A copy of the FY 2011 HSPP is available at the following link:

https://www.txdot.gov/apps/eGrants/eGrantsHelp/Reports/HSPP_FY11.pdf

6.6 Public Transportation Safety

Public transportation providers and their passengers are primarily responsible for the safety and security on buses and light rail. Some local transit providers such as DART have established their own police force to ensure a safe system for their riders.¹⁷⁶ Others have immediate access to local law enforcement and emergency response agencies.

Capital Metro in Austin educates the community about rail safety through public service announcements; presentations at school campuses within 2 miles of the MetroRail tracks; a rail safety radio message played on buses; partnerships with bicycle safety organizations, Central Texas emergency responders, and social service agencies working with area transient populations; and “block-walking” in neighborhoods located within 0.25 mile from the tracks.¹⁷⁷

6.6.1 Rail Safety and Security Program

In 1995, the FTA published rules for the creation of a state safety and security oversight program that required states to oversee the safety of Rail Fixed-Guideway Systems (RFGS) not regulated by FRA. The goal of this program is to improve rail transit safety and security.

¹⁷⁶DART. About DART Police. <http://www.dart.org/about/dartpolice/dartpolice.asp>

¹⁷⁷Capital Metro. <http://www.capmetro.org/>



6.6.2 State Safety Oversight (SSO) Program

RFGS affected by this program include any light, heavy, or rapid rail system, monorail, inclined plane, funicular, trolley or automated guideway operating within the state's jurisdiction that:

- ★ Is not regulated by the FRA;
- ★ Is included in FTA's calculation of fixed-guideway route miles or receives funding under FTA's formula program for urbanized areas; or
- ★ Has submitted documentation to FTA indicating its intent to be included in FTA's calculation of fixed-guideway route miles to receive funding under FTA's formula program for urbanized areas.¹⁷⁸

Three RFGSs are currently subject to the provisions of the SSO Program: Dallas Area Rapid Transit, Galveston Island Transit, and Metropolitan Transit Authority of Harris County.

Detailed information about the program can be found in TxDOT's 2006 State Safety and Security Oversight Program Standard.¹⁷⁹

6.6.3 On-Site 3-Year Safety and Security Reviews

At least every 3 years, beginning with the initiation of passenger operations, TxDOT conducts an on-site review of the RTAs in Texas to ensure compliance with the agency's system safety and security programs. A review team verifies crash reports, investigations, hazard management, corrective action plans, and compares TxDOT records with the RTA's records for consistency. The review team may also use FTA Drug and Alcohol Audits, FTA Triennial Reviews, and Program Management Oversight Reports (monthly and spot) from the RTA to support its assessment of compliance in areas previously investigated by FTA.

6.7 Freight Rail Safety and Inspection Program

The Rail Safety Inspection Program is directed toward the enforcement of state and federal rail safety standards for track, locomotives, freight cars, signal and train controls, operating practices of employees, and the transportation of hazardous materials. This program is conducted in coordination with the FRA.

¹⁷⁸TxDOT. Rail Safety and Security Program. http://www.dot.state.tx.us/safety/rail_safety.htm

¹⁷⁹TxDOT. State Safety and Security Oversight Program Standard. 2006. http://www.dot.state.tx.us/safety/rail_safety.htm



TxDOT rail safety inspectors conduct safety inspections of railroad facilities and equipment. They also monitor compliance with both state and federally mandated safety regulations in the areas of hazardous materials, operating practices, motive power and equipment, signal and train control, and track.

Texas is 1 of 30 states currently participating in the FRA's Rail State Safety Participation Program, which allows states to enter into a multi-year agreement with the FRA for the delegation of specified authority. This includes investigative and surveillance authority regarding all or any part of federal railroad safety laws.¹⁸⁰

6.8 Airport Safety

Safety is the primary goal of the FAA. The FAA and its air traffic control system, along with pilots and airport operators, work together every day to ensure that procedures are followed, coordination of safe aircraft movement occurs, and that airport infrastructure is maintained. This creates a system of checks and balances designed to mitigate risk in the runway environment. The FAA also partners with aircraft operators, pilots, airport managers, and industry groups to proactively review the effectiveness of these checks and balances and identify additional means to improve safety.¹⁸¹

Runway safety is a critical component of that goal. Nowhere are aircraft in closer proximity to other aircraft and obstacles such as vehicles, pedestrians and airport structures and equipment than when on the airport surface. The agency aims to reduce the risk of runway incursions and wrong runway departures, as well as address the errors committed by pilots, air traffic controllers, vehicle operators, and pedestrians by focusing on outreach, awareness, improved infrastructure, and technology.¹⁸²

6.9 Waterways, Ports and Border Safety and Security

Within months of the terrorist attacks on September 11, 2001, U.S. Customs Service had created the Container Security Initiative (CSI). CSI addresses the threat to border security and global trade posed by the potential for terrorist use of a maritime container to deliver a weapon.

In order to facilitate access to maritime facilities the Transportation Security Administration and USCG initiated the Transportation Worker Identification Credential (TWIC) program. The TWIC program provides a tamper-resistant credentials to maritime workers requiring unescorted access to secure areas of port facilities, outer

¹⁸⁰TxDOT. Rail Safety Information. <http://www.dot.state.tx.us/safety/rail.htm>

¹⁸¹FAA. Annual Runway Safety Report. 2009. http://www.faa.gov/airports/runway_safety/publications/

¹⁸²Ibid.



continental shelf facilities, and vessels regulated under the Maritime Transportation Security Act (MTSA) and all USCG credentialed merchant mariners. As of 2007, the program only addresses maritime facilities, but the program may be implemented across other transportation modes in the future.¹⁸³

In addition to these initiatives, FEMA sponsors the Port Security Grant Program (PGSP). The purpose of the PSGP is to create a sustainable, risk-based effort to protect critical port infrastructure from terrorism, particularly attacks using explosives and nonconventional threats that could cause major disruption to commerce. The PSGP provides grant funding to port areas for the protection of critical port infrastructure from terrorism. The PSGP funds are primarily intended to assist ports in enhancing maritime domain awareness, enhancing risk management capabilities to prevent, detect, respond to and recover from attacks involving improvised explosive devices (IEDs), Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE), and other nonconventional weapons, as well as training and exercises and TWIC implementation.¹⁸⁴

6.9.1 Container Security Initiative

CSI proposes a security regime to ensure all container contents that pose a potential terrorism risk are identified and inspected at foreign ports before they are placed on vessels destined for the United States, and Customs Border Protection (CBP) has stationed multidisciplinary teams of U.S. officers from both CBP and Immigration and Customs Enforcement (ICE) to work together with our host foreign government counterparts to that end. Their mission is to target and prescreen containers and to develop additional investigative leads related to the terrorist threat to cargo destined to the U.S.

The three core elements of CSI are:

- ★ Identify high-risk containers. CBP uses automated targeting tools to identify containers that pose a potential risk for terrorism, based on advance information and strategic intelligence;
- ★ Prescreen and evaluate containers before they are shipped. Containers are screened as early in the supply chain as possible, generally at the port of departure; and
- ★ Use technology to prescreen high-risk containers to ensure that screening can be done rapidly without slowing down the movement of trade. This technology

¹⁸³ U.S. Department of Homeland Security, Available at: <https://twicprogram.tsa.dhs.gov/TWICWebApp/AboutTWIC.do>

¹⁸⁴ FEMA, Port Security Grant Program, Available at: <http://www.fema.gov/government/grant/psgp/index.shtm>



includes large-scale X-ray and gamma ray machines and radiation detection devices.¹⁸⁵

6.9.2 Safety and Security at Texas-Mexico Border Points of Entry

Texas' border with Mexico is 1,254 miles long.¹⁸⁶ There are 26 international border crossings joining Texas and Mexico. Twenty-three are bridges, two are dam crossings, and one is a hand-drawn ferry (the La Linda Bridge and Roma International Suspension Bridge are not included because they are currently closed).¹⁸⁷

Border security is largely a function of the federal government. During the creation of the Department of Homeland Security, the U.S. Border Patrol, along with the Immigration and Naturalization Service (INS) inspection division (now Immigration and Customs Enforcement [ICE]), the U.S. Customs inspection division, and the Department of Agriculture's plant and animal inspection service, were merged into a new agency called U.S. Customs and Border Protection, also known as CBP. As the single, unified border agency of the United States, CBP's mission is to protect U.S. borders and global trade.¹⁸⁸

TxDOT's responsibilities involving the transport of goods and people through border Points of entry include planning and designing border transportation projects; issuing and recording Texas and Mexico commercial vehicle registrations; improving coordination of U.S.-Mexico and Texas border transportation infrastructure planning; and approving international bridge construction projects before bridge sponsors request a Presidential Permit.¹⁸⁹

6.10 Pipeline Safety

Energy industry stakeholders consider pipelines to be the safest method for transporting energy products.¹⁹⁰ As with any infrastructure, factors such as aging infrastructure, lack of maintenance, and damage caused by subterranean excavation do cause ruptures that pose serious, if not life-threatening, health risks depending on the products being transported.

¹⁸⁵ Department of Homeland Security. CSI in Brief. http://www.cbp.gov/xp/cgov/trade/cargo_security/csi/csi_in_brief.xml

¹⁸⁶ The Comptroller of Public Accounts. Window on State Government. <http://www.window.state.tx.us/border/ch09/ch09.html>

¹⁸⁷ TxDOT. Texas-Mexico Border Crossings Study – Crossings. http://www.txdot.gov/project_information/projects/border_crossing/crossings.htm

¹⁸⁸ Department of Homeland Security. U.S. Customs and Border Protection. <http://www.cbp.gov/>

¹⁸⁹ The Comptroller of Public Accounts. State Functions at the Texas-Mexico Border and Cross-Border Transportation. <http://www.window.state.tx.us/specialrpt/border/sfatb2.html>

¹⁹⁰ Texas Regulatory Services. Pipeline Safety. <http://www.texas-pipeline.com/>.



Virtually all aspects of the energy transportation pipeline industry—construction, operation, and maintenance—are regulated to some extent by federal, state, and local agencies. The PHMSA is the primary federal regulatory agency responsible for ensuring that pipelines are safe, reliable, and environmentally sound pursuant to rules Title 49 CFR Parts 191–199.

PHMSA shares these responsibilities with the RRC—its state regulatory counterpart responsible for oversight pursuant to TAC, Title 16, Chapter 8-Pipeline Safety Regulations and Chapter 18-Underground Pipeline Damage Prevention.¹⁹¹

For question regarding pipeline locations or to report pipeline emergencies (e.g., leaks or damages lines), RRC provides the following call center information on its website: Lone Star Notification Center Texas Excavation Safety System Texas One Call.

6.11 Intelligent Transportation Systems

One of the primary goals for the implementation and use of ITS is safety. TxDOT and local transportation agencies have employed the use of ITS to reduce congestion, enhance safety, monitor incident management and communicate hazardous weather conditions persons. Some examples of ITS are:

- ★ **Traffic Management Centers (TMCs)** are central hubs where highway, transit, incident, and weather information are collected and disseminated to the traveling public, law enforcement agencies, and emergency responders.
- ★ **Closed-Circuit Television (CCTV)** cameras monitor traffic conditions and incidents by providing real-time video to the TMC that the general public can access through websites. This allows the TMC to apply the necessary measures to warn the road-user of the impending condition and notify the appropriate emergency personnel.
- ★ **Dynamic Message Signs (DMS)** – both portable and permanent – are utilized by TxDOT to advise motorists of work zones and lane restrictions, detours, upcoming construction or lane closures, unexpected traffic or weather, detours, upcoming construction, and alert the public to missing persons.
- ★ **Red Light Cameras** on state highways are being used for traffic signal enforcement to improve safety at their intersections. Although TxDOT does not

¹⁹¹ Railroad Commission of Texas. Pipeline Safety. <http://www.rrc.state.tx.us/safety/pipeline/index.php>



install or operate these cameras, they do allow cities to install them on state highways under certain conditions.¹⁹²

- ★ **Roadway Weather Information Systems** such as flood warning systems and weather sensors warn drivers of adverse weather conditions. Information on wind, rainfall, hurricane, ice, and snow conditions can allow drivers and emergency officials to take the appropriate precautions during a weather event.

6.12 Agency Partnerships to Ensure Safety and Security

TxDOT partners and coordinates safety and security on modes not under its direct purview with many federal, state and local transportation, law enforcement, and emergency response agencies, as well as private stakeholders. This network of groups has devoted extensive resources to establishing, promoting, and continuously enhancing the safety, security, efficiency, and cost-effectiveness of the multimodal transportation system in Texas.

The extent to which TxDOT partners with so many agencies demonstrates the magnitude of collaboration and coordination on, as well as the implementation and execution of, plans, programs, regulations, and corrective processes to ensure the collective safety and security of the visitors and citizens of Texas.

More information about TxDOT's safety and security initiatives can be accessed at <http://www.dot.state.tx.us/>.

¹⁹² TxDOT. Red Light Safety Cameras. http://www.dot.state.tx.us/safety/red_light_cameras.htm