

Appendix D

Freight and Goods Movement—Houston Region Freight Transportation Profile¹

Freight transportation in the Houston region is heavily influenced by the region's concentration of petrochemical industries. The region has more than 400 chemical manufacturing establishments with more than 35,000 employees.² The strategic placement of petrochemical facilities to port infrastructure facilitates the import and export of its products and makes its products available to the world via trucking, rail, pipeline or maritime transportation.

Trucking

In the Houston urbanized area, trucking moves on a network of 422 miles of Interstate and other highways, plus 755 miles of other principal arterials.³ The region is traversed by I-10 (running from California to Florida) and I-45 (running from Galveston to Dallas), and U.S. 59 (running from Laredo to Shreveport). SH 225, SH 36, and SH 146 are highways that accommodate truck traffic into and out of the regional ports. I-610 is the inner most loop that encircles the region. The Sam Houston Tollway/Beltway 8 is the second loop that encircles the region. Once completed, SH 99/The Grand Parkway, will be the third and outermost loop that encircles the region.

A future development that will impact the Houston region freight profile is the construction of I-69/Trans-Texas Corridor. I-69 is a planned 1,600 mile national highway connecting Mexico, the United States, and Canada. Eight states are involved in the project. In Texas, I-69 will be developed under the Trans-Texas Corridor concept. The Trans-Texas Corridor (TTC) is a proposed multi-use, statewide network of transportation routes in Texas that will incorporate existing and new highways, railways and utility right-of-ways. Specific routes for the TTC have not been determined. As envisioned, each route will include:

- Separate lanes for passenger vehicles and large trucks
- Freight railways
- High-speed commuter railways
- Infrastructure for utilities including water lines, oil and gas pipelines, and transmission lines for electricity, broadband, and other telecommunications services.

Source: TxDOT, Texas Turnpike Authority Division, 2004

Plans call for the TTC to be completed in phases over the next 50 years, with TxDOT overseeing construction and ongoing maintenance, with private vendors responsible for much of the daily operations (<http://www.keeptexasmoving.org>).

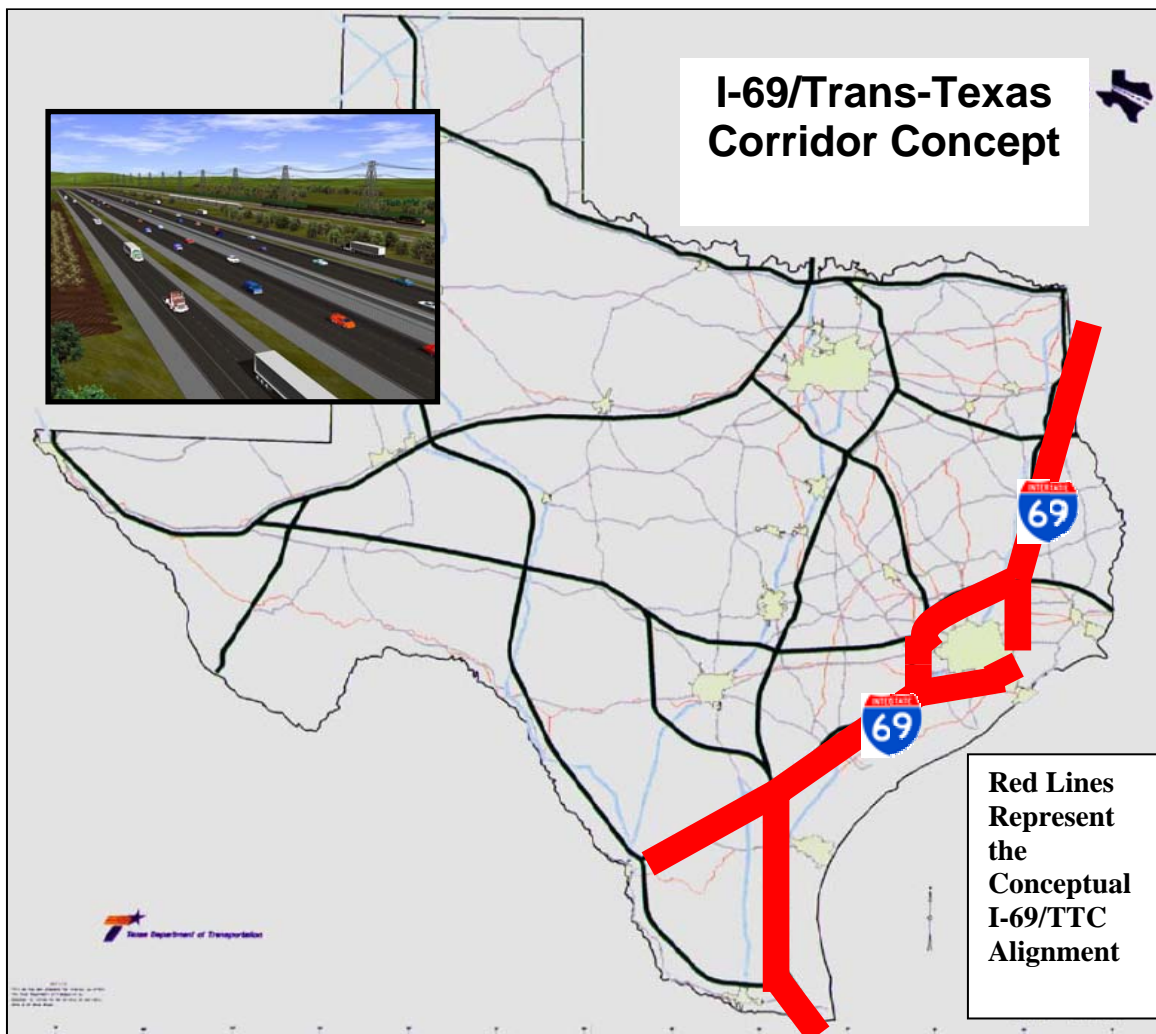
¹ Format for the section and portions of content for this section adopted from the Houston Region Freight Profile, Federal Highway Administration

² The Greater Houston Partnership website, <http://www.houston.org/industryGuide>

³ Federal Highway Administration, *Highway Statistics 2005*. Calculated as the sum of the Houston and Texas City federal aid urbanized areas.

In the Houston region, the I-69/TTC will affect the following counties: Fort Bend, Brazoria, Waller, Harris, Liberty, and Chambers. The official route(s) for the highway has not been determined. Figure 1 is a conceptual map of the route(s) that will traverse the region.

Figure 1: I-69/Trans Texas Corridor Concept Map



TxDOT is in the Environmental Review phase of the project. The next step is to hold public hearings on the findings in the draft environmental documents during the summer of 2007. The final environmental documents are scheduled for completion in winter

2007/Spring 2008 (anticipated dates of completion). For up to date project information, go to the project website at <http://www.keeptexasmoving.org>.

Table 1 shows commodity flows into and out of the Houston region in 2004 by trucks. The top 5 truck freight commodities (in tons) for the region in 2004 were: 1) petroleum and coal; 2) chemicals and allied materials; 3) nonmetallic minerals; 4) secondary traffic; and 5) clay, concrete and glass.

Table 1: Trucking Commodity Flows Into and Out of the Houston Region, 2004

| Truck Mode & Type of Freight Movement | Actual 2004 Tonnage | Percent | Projected 2035 | Percent |
|---|---------------------|---------|------------------|---------|
| Truck Freight Originating in Houston Region | 7,618,690 | 29.7 | 15,567,057 | 28.9 |
| Truck Freight Terminating in Houston Region | 9,906,280 | 38.7 | 21,391,738 | 39.8 |
| Truck Freight Through Houston Region | 3,792,684 | 14.8 | 7,468,088 | 13.9 |
| Truck Freight Local in Houston Region | <u>4,288,079</u> | 16.8 | <u>9,322,414</u> | 17.4 |
| Total | 25,605,733 | | 53,749,297 | |

Source: Global Insights, 2007

Table 2 shows annual VMT in the eight-county Houston region by vehicle type and county. Light duty vehicles comprise most of the VMT for the region.

Table 2: Houston Area Annual VMT by Vehicle Type, 2005 (millions)

| Light Duty Vehicles | | Heavy-Duty Gasoline Trucks | | Heavy-Duty Diesel Trucks | | Total VMT |
|---------------------|---------|----------------------------|---------|--------------------------|---------|-----------|
| VMT | Percent | VMT | Percent | VMT | Percent | |
| 128,862 | 91% | 2253 | 1.6% | 10,862 | 7.7% | 141,978 |

Source: H-GAC Transportation Department, Air Quality Section, 2007.

In an effort to improve truck traffic safety, laws and ordinances have been enacted within the region to restrict commercial truck traffic to certain lanes during most of the day. Commercial trucks are restricted from using the far left lane Monday through Friday from 6 AM to 8 PM on certain segments of the following facilities: IH 10, IH 45 North, US 290/Northwest Highway, and SH 225. After the implementation of the restrictions, the Texas Transportation Institute (TTI) conducted a study to evaluate the impacts of this

restriction and came up with positive findings: (1) the restriction was a positive experience; (2) reduced crashes by 68%; (3) 95% compliance rates were observed; and (4) there were no impacts to the overall freeway operations.

While there has been success with the truck lane restrictions, implementation of the policy on a wide spread basis may not be feasible from an operational standpoint. The restriction of trucks to certain lanes has hazards that potentially cause conflicts with cars and trucks, like cars entering and exiting a freeway with the commercial vehicles in that lane. The inner most lane restriction will not be useful unless it is separated from the other freeway traffic by a concrete barrier.

To control travel demand for peak period travel, region wide policies to reward truck movements during non peak periods may need to be explored.

Rail Freight

The Houston-Galveston area serves as a major rail hub for the region and has five freight rail yards. The rail network in Houston is dominated by UP and BNSF, with UP rail lines transporting the majority of the tonnage on the system.⁴ The railroad's Settegast and Englewood rail yards in Houston are major classification yards for the southern part of Texas and serve the petrochemical industry along the Texas Gulf Coast.⁵ UP also has an intermodal facility at the Port of Houston. BNSF has two intermodal facilities in the Houston area, one near Hobby airport and another at the Port of Houston. BNSF also serves the ports of Galveston and Texas City.

Table 3 displays the railroad commodity flows into and out of the Houston Region for 2004. The most heavily traded rail commodity flows were 1) chemicals/allied products; 2) coal; 3) nonmetallic minerals; 4) farm products; and 5) petroleum/coal products.

⁴ Houston Galveston Area Council, *Draft 2025 Regional Transportation Plan, Freight Appendix*.

⁵ Union Pacific web site, <http://www.uprr.com/aboutup/usguide/usa-tx.shtml>.

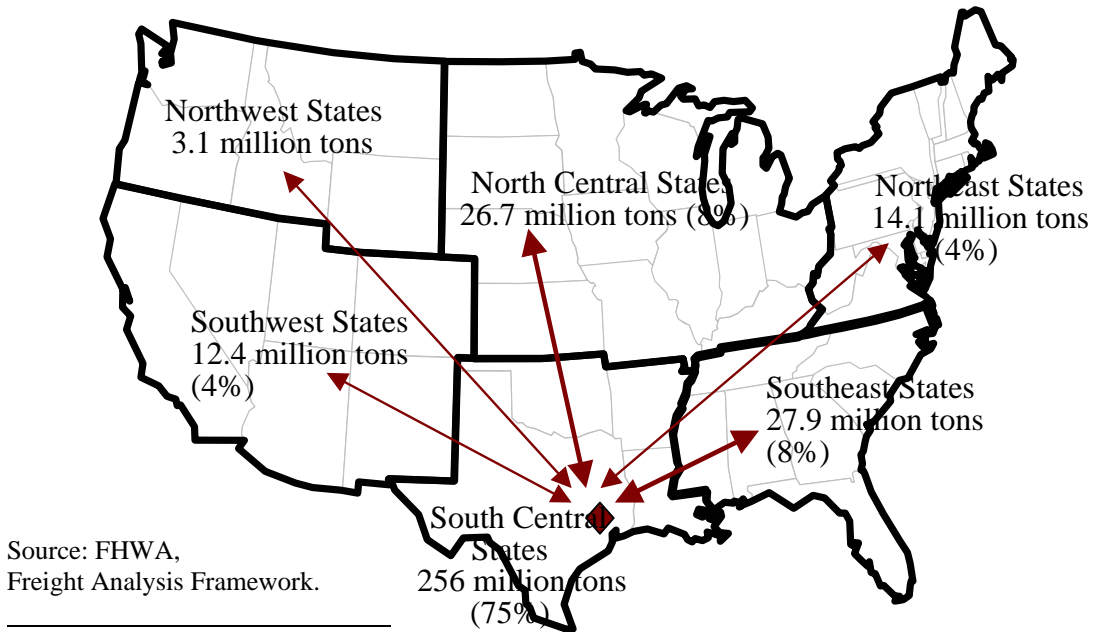
Table 3: Railroad Commodity Flows Into and Out of the Houston Region, 2004

| Rail Mode & Type of Freight Movement | Actual 2004 Tonnage | Percent | Projected 2035 | Projected Percent |
|---|------------------------------------|----------------|---------------------------|------------------------------|
| Rail Freight Originating in Houston Region | 651,677 | 26.7 | 1,542,183 | 24.4 |
| Rail Freight Terminating in Houston Region | 1,077,207 | 44.2 | 2,406,485 | 38.0 |
| Rail Freight Through Houston Region | 609,542 | 25.0 | 2,270,049 | 36.0 |
| Rail Freight Local in Houston Region | <u>96,072</u> | 4.1 | <u>103,015</u> | 1.6 |
| Total | 2,434,498 | | 6,321,732 | |

Source: Global Insights, 2007

Figure 2 shows rail freight flows to and from the Houston region for the United States. The bulk of rail freight (75 percent) remains within the south central states. Chemicals make up approximately 64 percent of all rail commodities originating in the Gulf Coast port districts, and is the largest rail commodity originating in the Houston area.⁶

Figure 2: Rail Commodity Flows To and From Houston, 2003



⁶ Houston Galveston Area Council, *Draft 2025 Regional Transportation Plan, Freight Appendix*.

The Harris County Freight Rail Crossing Study (July, 2004) identified the following projects as priority improvement projects for at grade crossings in Harris County. The listing can also serve as a useful tool for future RTP projects.

| | Roadway | Railroad Company | Proposed Improvements | Cost (millions) | Status in RTP Project Database |
|---|--|-------------------------|------------------------------|------------------------|---|
| 1 | Federal Road (N. of Clinton Dr.) | PTRA | Overpass | \$10.2 | Long Range (#11075)– Unfunded |
| 2 | FM 1960 (north of SH 249) | BNSF | Overpass | \$15.1 | N/A |
| 3 | Griggs/Mykawa/Long (north of IH 610 South Loop) | BNSF/ UPRR | Overpass and Underpass | \$57.7 | N/A |
| 4 | Harrisburg Boulevard (between Lockwood and Wayside) | BNSF/ UPRR | Underpass | \$16.0 | N/A |
| 5 | Hirsch Road (north of IH-610 North Loop) | UPRR | Overpass | \$8.9 | City of Houston Project – Construction Date 7/1/08 |
| 6 | Houston (between IH 10 and Washington Avenue) | UPRR | Underpass | \$13.7 | N/A |
| 7 | Richey (south of FM 1960, east of Hardy Toll Road) | UPRR | Underpass | \$30.8 | N/A |
| 8 | Richmond Avenue (between Newcastle and Wesleyan) | UPRR | Overpass | \$10.5 | N/A |
| 9 | Shepherd Drive/Durham Dr (between IH-10 and Washington Avenue) | UPRR | Underpass | \$31.9 | N/A |

Getting the commodities out of the region in an efficient manner and in the manner not to negatively impact commuter traffic is of huge concern not only to the railroad companies, but to the public as well. Vehicle minutes of delay have a negative impact on the driving public. The table below ranks the top 5 at grade crossings ranked by vehicle minutes of delay per day.

Table 4: At Grade Crossings Ranked by Vehicle Minutes of Delay per Day

| RR | RR Subdivision | Street | Trains | Minutes Blocked | Train Length (ft) | Vehicle Minutes of Delay |
|-----------|-----------------------|---------------|---------------|------------------------|--------------------------|---------------------------------|
| UPRR | East Belt | Hirsch | 42 | 167 | 7000 | 57,134 |
| BNSF | Mykawa | Griggs Rd | 30 | 119 | 7000 | 53,443 |
| BNSF | Mykawa | Long Dr | 30 | 119 | 7000 | 51,840 |
| UPRR | East Belt | Harrisburg | 33 | 94 | 5000 | 42,063 |
| UPRR | Seabrook Indus | Fairmont Pkwy | 14 | 80 | 5000 | 40,662 |

Source: Harris County Freight Rail Grade Crossing Study

The H-GAC Safety program identified some at grade railroad crossings throughout the region as “hot spots” – areas having a history of accidents. The locations are:

FM 1960 east of SH 249

Hillcroft Street near Main Street (US 90A)

Bellfort near Mykawa Road

Almeda-Genoa near Mykawa Road

Antoine Drive near Tidwell

Park Terrace near Galveston Road

The TxDOT recently completed the Houston Freight Rail Study (2007) that addressed deficiencies in the Houston region’s freight network (roads, ports, and railroads). The study identified improvements that may provide relief to residents and the traveling public adversely affected by delays, interruptions, and noise attributed to the movement of freight within the region. The study also identified alternatives that may improve regional freight rail capacity by enhancing the efficiency and operations of the railroads.

The study identified \$3.3 billion of improvements for the 8-county region, which are categorized as:

- Grade Separations (bridges to separate the railroad from streets)
- Grade Crossing Closures (closing to rerouting the street at the intersection with the railroad).
- Improvements to existing railroad infrastructure (improving capacity and connectivity on existing rail lines).
- New railroad corridors

More information about the study and the newly-formed Gulf Coast Freight Rail District can be found at <http://www.houstonrailplan.com>.

Marine Freight

The Houston region is served by the Port of Houston, the Port of Texas City, and two smaller ports at Freeport and Galveston. Crude oil and chemical products, which are handled in large quantities at the ports in the region, are frequently processed at or in close proximity to the ports. The resulting product is then shipped out again or transported via oil pipeline to destinations such as Oklahoma. In 2004, the Port of Houston ranked 8th among U.S. containership ports, handling 933 thousands of Ton Equivalent Units (TEUs), and ranked second in the nation in terms of tonnage.⁷ The Port of Texas City is a privately owned, for-profit port that almost exclusively handles bulk liquid products, such as chemical and crude oil products. Table 4 shows annual marine freight tonnage at the region’s four ports. Nearly two-thirds of total tonnage is foreign imports or exports.

⁷ U.S. DOT, Bureau of Transportation Statistics.

Table 5: Waterborne Commerce at Houston Area Ports, 2004

| | Port of Houston | | Port of Texas | | Port of Galveston | | Port of Freeport | | Total |
|--------------------|--------------------|----------|-------------------|----------|-------------------|-----------|-------------------|-----------|--------------------|
| | Short Tons | Rank | Short Tons | Rank | Short Tons | Rank | Short Tons | Rank | Short Tons |
| | | | City | | | | | | |
| Foreign Imports | 97,713,314 | 1 | 46,384,689 | 4 | 537,928 | 79 | 33,908,024 | 23 | 178,543,955 |
| Foreign Exports | 39,823,197 | 2 | 4,421,097 | 25 | 2,834,086 | 35 | 2,980,966 | 33 | 50,059,346 |
| Domestic Trade | 64,510,816 | 4 | 17,477,116 | 20 | 4,741,249 | 62 | 5,769,879 | 55 | 135,179,060 |
| Total Trade | 202,047,327 | 2 | 68,282,902 | 9 | 8,113,263 | 61 | 33,908,024 | 23 | 312,351,516 |

Source: U.S. Army Corps of Engineers, *Waterborne Commerce of the United States* database.

Water transportation is the lowest cost transportation option, providing significant savings to businesses and consumers. The Gulf Intracoastal Waterway (GIWW), a 1,300 mile-long man made canal runs along the Gulf Coast of Mexico coastline from Texas' southernmost tip at Brownsville to St. Marks, Florida. The canal links all of the Gulf Coast ports and enables these ports to access the inland waterway system of the United States. In Texas, the GIWW is 423 miles long. The GIWW is an important transportation asset to the state of Texas. In 2004, over 72 million short tons of cargo were moved on the Texas portion of the waterway with a commercial value of over 25 billion dollars. In combination to ports, Texas ranked first in the nation for 2004 in total waterborne tonnage moved in the United States.⁸ Commercial uses for the GIWW include the movement of domestic and international cargo, harvesting of fish and shellfish, and servicing of the gulf and coastal oil and gas industry.

The waterway is over 50 years old and in need of rehabilitation. The dimensions of the 1949 design and increased barge traffic do not support the state of barge transportation today. Of particular interest and concern to this region is the area in West Galveston Bay, where the GIWW passes beneath the dual IH-45 bridges and the Galveston Island Railroad Bridge. The opening for barge traffic through these structures is only 120 feet wide. Experts in the industry have identified this spot as the greatest hazard to navigate on the entire 1,300 miles of the GIWW. TxDOT is currently building replacement highway bridges which will have a 300 feet opening for navigation interests. These replacement bridges have an estimated completion date of 2008. The Coast Guard and local legislators are working on replacing the railroad bridge under the authority of the Truman-Hobbs Act, but only partial construction funding has been secured at this time.⁹

To accommodate the truck traffic into and out of the ports, certain infrastructure improvements are critical. Specifically, the Port of Houston recommends improvements to the following gateways to their facility: SH146, SH225, Port Drive, Barbour's Cut Blvd, Spencer Road, and Red Bluff. Many of the Port of Houston priority projects are in the H-GAC Transportation Improvement Program (TIP) for funding years 2008 – 2011. For Port Freeport, improvements to SH36 are critical to its ability handle projected

⁸ Texas Department of Transportation, Gulf Intracoastal Waterway 2005 -2006 Legislative Report.

⁹ Ibid.

growth. As foreign trade increases, land side infrastructure must be improved. Public-private partnerships to finance the necessary improvements will be key to implementing projects in a timely and cost efficient manner.

Air Freight

The Houston-Galveston region has three major airports: George Bush Intercontinental Airport/Houston (IAH), William P. Hobby Airport (HOU), and Ellington Field (EFD). IAH handles the vast majority of air cargo for the Houston Airport System – 336,000 tons in 2003, as shown in Table 5. IAH ranks 30th among the nation’s cargo-service airports in terms of landed weight.

Table 6: Houston Area Air Cargo Flows, 2003

| Airport | Air Cargo (tons) | | |
|------------------------------------|------------------|----------|---------|
| | Inbound | Outbound | Total |
| George W. Bush International (IAH) | 172,651 | 163,729 | 336,380 |
| William P. Hobby Airport (HOU) | 7,041 | 8,121 | 15,162 |
| Total | 179,692 | 171,850 | 351,542 |

Source: Bureau of Transportation Statistics, Air Carrier Statistics T-100 database.

Policy Recommendations/Next Steps

In May 2003, H-GAC hosted a Freight Stakes Workshop. The workshop highlighted a variety of issues, concerns and themes related to freight mobility in the Houston-Galveston region. The workshop concluded with potential action items for H-GAC. The action items include:

- Continue and enhance efforts to engage freight operators and stakeholders in the metropolitan planning process, with a focus on specific issues and/or projects. Identify “champions” in the industry willing and able to foster industry involvement.
- Ensure the planning process considers intermodal and multimodal options and opportunities for addressing regional freight movement needs. Such options are critical to maintaining freight mobility in a congested transportation system.
- Expand and continue region-wide freight movement data collection and analysis for all modes, including intermodal movements. Focus on key freight movement corridors and sub-areas of the region.
- Examine and analyze options for more efficient truck use of any under-utilized toll facilities, including peak hour diversion strategies (e.g., TDM for trucks).
- Look for “quick fix” type projects with relatively high benefits.
- Work with municipalities and counties to develop “freight supportive land use guidance” as a way to proactively integrate freight access and mobility

considerations into development planning and design, thereby mitigating needs for costly future retrofitting of the transportation system.

- Use the public involvement program to help educate the public and policy makers on the importance of freight and its relationship to everyday life.

At the MPO level, the implementation of provisions in the Freight Transportation Gateways Program (SAFETEA-LU, Section 1205) should be explored. A “Freight Transportation Gateway” is a nationally or regionally significant transportation port of entry or hub for domestic and global trade, military mobilization, and includes freight intermodal and Strategic Highway Network connections that provide access to and from these gateways. Under this program, states and localities are encouraged to adopt innovative financing strategies for freight improvements, including new user fees and private sector investment. The purposes of the program include: 1) facilitating and supporting multimodal freight transportation initiatives at the state and local levels; 2) providing capital funding to address infrastructure and freight operational needs; 3) encouraging adoption of new financing strategies; and 4) supporting military mobilization and readiness¹⁰.

To encourage innovative financing options for implementation of projects, SAFETEA-LU includes the following provisions which will encourage private sector investment:

- **Private Activity Bonds** – used to attract private investment for projects that have a distinct public benefit. Until now, airports and maritime ports were the only eligible transportation projects. Qualified projects now include surface transportation projects for which an international entity authorized under federal or state law responsible and facilities for the transfer of freight from truck to rail or rail to truck (including any temporary storage facilities related to the transfers). These bonds are not subject to the general annual volume cap for private activity bonds for state agencies and other issuers.
- **Transportation Infrastructure Finance and Innovation Act (TIFIA)** – provides Federal credit assistance to nationally or regionally significant surface transportation projects, including highway, transit, and rail. To encourage broader use of TIFIA financing, the threshold required for total project cost has been lowered to \$50 million (\$15 million for ITS projects), and eligibility is expanded to include public freight rail facilities or private facilities providing public benefit for highway users, intermodal freight transfer facilities, access to such freight facilities and service improvement to such facilities including capital investment for ITS.

¹⁰ Federal Highway Administration, A Summary of Highway Provisions in SAFETEA-LU, 2005.