Mr. Chairman and Members of the Committee, on behalf of the Texas Transportation Institute, I would like to express our appreciation for this opportunity to testify before you today concerning aspects of the role of marine freight transportation in the economic development of the State of Texas.

In response to the invitation we received, I will focus my remarks on the following topics:

- How the different modes of transportation—surface, rail, and waterways—compare in terms of efficiency, safety, and impact to the environment
- How waterway transportation impacts our local, coastal, state, and national economies
- How using marine transportation can possibly reduce “wear and tear” of the state’s highways
- How other gulf coast states have assisted their water ports by strategically investing in their infrastructure
- The amount of North American Free Trade Agreement (NAFTA)-related trade currently being handled by our major water ports
- Issues related to truck traffic going in and out of ports
Modal Comparison

In December of 2007, TTI released a report sponsored by the U.S. Maritime Administration and the National Waterways Foundation that provided a modal comparison of domestic freight transportation effects on the general public. This report was amended in 2009 to include an analysis of greenhouse gases. We are currently in the process of updating the findings to include more current data, but that report will not be released until mid- to late-January, 2011. To the degree that we are able, I am including some of the more recent data and information on coastal deep sea shipping.

Our statistics focus on the inland waterway system and coastwise shipping. International deep sea trade is not included. Regardless of the metric used, waterborne transportation was the most favorable in terms of efficiency, safety, and impact to the environment. Our analysis indicated that barges such as those that use the Gulf Intracoastal Waterway can move one ton of cargo 576 miles per gallon of fuel. A rail car would move the same ton of cargo 413 miles and a truck only 155 miles. Unfortunately, unlike the case for inland marine operations, there is no established ton-mile/gal figure for coastal shipping.

Marine transportation is also by far the safest of the modes. For the period 2001-2007, our figures show that when each of the modes performs the same amount of work, for every one injury involving barge transportation, there are 90 injuries related to rail and 1,596 truck-related injuries.

<table>
<thead>
<tr>
<th></th>
<th>Number of Injuries</th>
<th>Averages</th>
<th>Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2001</td>
<td>2002</td>
<td>2003</td>
</tr>
<tr>
<td>Water: Coastwise</td>
<td>6</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Water: Inland</td>
<td>11</td>
<td>26</td>
<td>18</td>
</tr>
<tr>
<td>Rail</td>
<td>10,239</td>
<td>10,226</td>
<td>8,537</td>
</tr>
<tr>
<td>Truck</td>
<td>131,000</td>
<td>130,000</td>
<td>122,000</td>
</tr>
</tbody>
</table>

Table 1. Injuries across modes
For each barge transportation fatality, there are 16 fatalities related to rail and 128 truck-related fatalities.

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water: Coastwise</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatalities (millions)</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Average Fatalities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water: Inland</strong></td>
<td>16</td>
<td>19</td>
<td>3</td>
<td>5</td>
<td>17</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Fatalities (millions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rail</strong></td>
<td>968</td>
<td>944</td>
<td>865</td>
<td>892</td>
<td>872</td>
<td>901</td>
<td>844</td>
</tr>
<tr>
<td>Fatalities (millions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Truck</strong></td>
<td>5,417</td>
<td>5,241</td>
<td>5,343</td>
<td>5,519</td>
<td>5,539</td>
<td>5,347</td>
<td>5,116</td>
</tr>
<tr>
<td>Fatalities (millions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Fatalities across modes

The differences in impacts on the environment were measured in two areas. The first has to do with hazardous materials spills. The second pertains to air emissions.

In terms of haz-mat spills, the overall spill rates are relatively low. Trucks lose 11.2 gallons per one million ton-miles, rail cars 5.29 gallons, and barges 3.3 gallons per one million ton-miles.

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water: Coastwise</strong></td>
<td>35,100</td>
<td>34,348</td>
<td>65,792</td>
<td>233,466</td>
<td>204,496</td>
<td>71,601</td>
<td>0</td>
</tr>
<tr>
<td>Amount in Gallons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water: Inland</strong></td>
<td>159,292</td>
<td>30,659</td>
<td>243,652</td>
<td>237,155</td>
<td>60,468</td>
<td>10,600</td>
<td>1,318</td>
</tr>
<tr>
<td>Amount in Gallons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rail</strong></td>
<td>296,114</td>
<td>245,183</td>
<td>247,287</td>
<td>371,992</td>
<td>625,833</td>
<td>671,544</td>
<td>584,315</td>
</tr>
<tr>
<td>Amount in Gallons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Truck</strong></td>
<td>789,006</td>
<td>633,534</td>
<td>644,404</td>
<td>4,679,363</td>
<td>610,507</td>
<td>531,273</td>
<td>477,867</td>
</tr>
<tr>
<td>Amount in Gallons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Large Spills

\[1\]

\[1\] 1,000 gallons or more
Barge transportation generates the lowest emissions as measured in grams per ton-miles in four air quality standards tracked by the U.S. Environmental Protection Agency:

- Particulate matter (PM)
- Hydrocarbons (HC)
- Carbon monoxide (CO)
- Nitrogen oxides (NOx)

The data for 2001-2005 are shown below in Table 4.

<table>
<thead>
<tr>
<th></th>
<th>HC</th>
<th>CO</th>
<th>NOx</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inland Towing</td>
<td>0.01737</td>
<td>0.04621</td>
<td>0.46907</td>
<td>0.01164</td>
</tr>
<tr>
<td>Eastern Railroad</td>
<td>0.02419</td>
<td>0.06434</td>
<td>0.65312</td>
<td>0.01624</td>
</tr>
<tr>
<td>Western Railroad</td>
<td>0.02423</td>
<td>0.06445</td>
<td>0.65423</td>
<td>0.01621</td>
</tr>
<tr>
<td>Truck</td>
<td>0.020</td>
<td>0.136</td>
<td>0.732</td>
<td>0.018</td>
</tr>
</tbody>
</table>

Table 4. Summary of emissions - grams per ton-mile

The same comparative results hold true for greenhouse gas emissions (CO₂) shown in the figure below.

Figure 1. Tons of CO₂ per million ton-miles
Impact of Waterborne Transportation on the State’s Economy

Texas has 12 deep water freight-oriented ports with channels at least 30 feet deep along the gulf coast. The following figure shows the locations of these ports.

In 2009, Texas’ top-three export destinations were Mexico, Canada, and China, which together accounted for over 48% of total Texas exports\(^2\). The top three origins for imports to Texas were Mexico, China, and Venezuela, accounting for 61% of total Texas imports in 2009\(^3\).

Over the last 3 years, Texas-Mexico waterborne trade has averaged roughly 63 million short tons of cargo. Approximately 75% is imports and 25% exports. Of the imports, 90% are oil. Exports are much less concentrated; the two main exports—oil and grain—make up roughly 45% of the total.

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\(^3\) U.S. Census Bureau, Foreign Trade Division: [http://www.census.gov/foreign-trade/reference/products/catalog/port.html](http://www.census.gov/foreign-trade/reference/products/catalog/port.html)
Some firms that in the past moved to Asia have been coming back to North America—establishing manufacturing plants closer to the consumption points, or “nearshoring.” Some of these manufacturing centers are relocating along the Mexico-Texas border. The relocation of these businesses may be an opportunity for Texas to influence the location of freight transportation generators. However, marine transportation cannot serve every market. Many markets are not close to water, and some products need to move more quickly than marine transportation can move them. Where marine transportation IS an option, it offers several advantages.

**Impact of Marine Freight Transportation on the Texas Economy**

Counting public and private facilities, Texas has more than 970 wharves, piers, and docks handling waterborne freight. In 2008, over 500 million tons of commodities moved through these channels. This is just under 20% of the tonnage handled by the entire U.S. port system. Texas ports handled 26% of all foreign tonnage in 2008. With the deepening of the Panama Canal and the expected increase in worldwide waterborne trade, over 766 million tons are expected to be moving on Texas waterways by 2030.

Employing over one million Texans, the ports contribute over $135 billion annually to the economy and generate approximately $5 billion in local and state tax revenues.

Of the nation’s top 30 ports in total tonnage, six are located in Texas. Texas and Louisiana host 80% of the nation’s chemical and petrochemical production. These facilities are heavily dependent on waterways. The petrochemical complex along the Houston Ship Channel is the world’s second largest, with $15 billion in assets. One-third of U.S. refinery capacity is located in Texas. Nearly one-half of the total chemical and gasoline production in the United States takes place in the Galveston Bay area. It’s not a coincidence that all of this industry is located on the water!

The U.S. Coast Guard estimates that a one-month closure of a major port such as Houston would cost the national economy $60 billion.

**How Other Gulf States Help Their Ports**

**Alabama**

*Alabama Constitutional Amendment 666 (2000 Amendment One)*

The 2000 amendment stipulates that 28% of all Oil and Gas Capital Payments received by the Alabama Trust Fund during the preceding fiscal year shall be paid into the Alabama Capital Improvement Trust Fund. Funds in the Alabama Capital Improvement Trust Fund may be appropriated for capital improvements only upon the certification of the Governor, based upon the recommendation of the Director of Finance, that funds are needed for particular capital improvements. The Governor’s certification for such capital improvements is contained in his or her budget for the operation of state government submitted annually to
the legislature. Legislative appropriations from this fund in excess of those contained in the
Governor’s certification must be accompanied by legislative findings of fact explaining the
appropriations that differ from or are in excess of those certified by the Governor. The
foregoing notwithstanding, the legislature may appropriate funds from this trust fund for
capital improvements upon a recorded majority vote of each house of the legislature.

**Alabama State Docks Capital Credit**
A capital credit is available to be applied to the income tax liability generated by income
from a project with written approval from the Governor of Alabama, the Finance Director of
Alabama, and Alabama State Port Authority. The State Docks Capital Credit program is
administered by the Alabama Department of Revenue. The capital credit is available each
year for 20 years. The annual capital credit is calculated 5% of the total capital costs of the
qualifying project and the credit begins in the year the qualifying project is ‘placed in
service.’ The operations must be conducted on the premises in which the Alabama State Port
Authority has an ownership, leasehold, or other possessory interest, and such premises are
used as part of the operations of the Alabama State Port Authority. Statutory requirements
must be met in order to qualify for the credit.

**Florida**

**Florida Seaport Transportation and Economic Development Program**
In 1990, the Florida State Legislature created the Florida Seaport Transportation and
Economic Development Program (FSTED) within the Florida Department of Transportation
(FDOT) to finance seaport projects that improve the movement of people and goods, and
otherwise support the interests, purposes, and requirements of Florida’s seaports.

The FSTED Council manages the FSTED Program. The council consists of the 14 deep water
port directors, the Executive Director of the Governor’s Office of Tourism, Trade, and
Economic Development (OTTED), and the secretaries or designees of FDOT and the
Department of Community Affairs (DCA). The council is responsible for preparing a 5-year
Florida Seaport Mission Plan, which defines the goals and objectives of the seaports.
Additionally, the FSTED Council meets semiannually to review project applications submitted
by each of the individual seaports and recommends which projects to forward to the agencies
for further review and possible recommendation for state funding. OTTED, FDOT, and DCA
review the list of FSTED-recommended projects to ensure each project is consistent with
state statutes and local master plans. Section 311.07(2), F.S., directs the transfer from the
State Transportation Trust Fund (STTF) of a minimum of $8 million annually. Actual funding
has been at $15 million.

**Louisiana**

**Ports Construction and Development Priority Program**
The Ports Construction and Development Priority Program was created by Act 452 of the 1989
Regular Session of the Louisiana Legislature. Funding for the program comes from the
Transportation Trust Fund, which was approved as a constitutional amendment in January
1990. From 1977 to 1984, Louisiana expended more funds for ports than any other state. For
this period Louisiana spent $25,985,000 on shallow draft ports and $173,424,000 on deep draft ports for a total of $199,409,000.4

The creation of the Ports Construction and Development Priority Program changed the method by which Louisiana participates in port improvements. The feasibility of proposed port projects must now be determined and the projects must be prioritized.

The types of projects that may be funded by the program are limited to the construction, improvement, capital facility rehabilitation, and expansion of publicly owned port facilities, including intermodal facilities and maritime-related industrial park infrastructure developments. Projects such as wharves, cargo handling capital equipment, utilities, railroads, primary access roads and buildings that can be shown to be an integral component of any proposed port project are eligible.

Annual budgets for the program have widely varied throughout its existence and have occasionally been augmented by surplus and capital outlay funds. They have recently trended toward $20 million. According to the 16th Annual Report on the program, as of March 2009, $472,799,692 had been allocated, which has allowed funding for 174 projects. Of the allocation, $281 million in state funds have been spent for port infrastructure development.

**Other Programs**

Of particular interest is the wide variety of funding sources used by Louisiana ports other than in the Ports Construction and Development Priority Program. Sources include Louisiana economic development grants, state flood control grants, local municipal funds, USDA grants, U.S. Department of Commerce grants, U.S. Coast Guard grants, Federal Transit Administration grants, Homeland Security grants, Delta Regional Authority grants, Red River Waterway grants, FEMA grants, and private sector investments.

**Mississippi**

**Port Revitalization Revolving Loan Program**

The Mississippi Port Revitalization Revolving Loan Program is available to provide loans to state, county, or municipal port authorities to assist with the location and expansion of businesses and for the improvement of port facilities. State, county, and municipal ports authorized to operate in Mississippi may apply for loans for the port or on behalf of a new or expanded industry. Loans made under the Port Revitalization Revolving Loan Program may be made for a maximum of 10 years, in amounts not to exceed $750,000 per project. The annual interest rate on these loans is 3%.

**Trucking Into and Out of Ports**

Unfortunately, there have been no recent comprehensive studies on truck traffic related to Texas ports. The Texas Department of Transportation sponsored a study published in 2008 that included certain aspects of the container drayage business at the Port of Houston’s

4 Port and Waterways Institute, Louisiana Statewide Ports Assessment, 2 vols., Baton Rouge: Louisiana State University, 1986
Barbours Cut Terminal, but this has been the extent of such research in recent years. This may be an item to consider in future research budgets.

We noted one study which stated that an average of 1,100 trucks each day conduct some 1,700 transactions at the facilities operated by the Houston authority. This does not include private companies who lease facilities from the authority.

**Wear and Tear on Highways**
The highway design manual published by the American Association of State Highway and Transportation Officials (AASHTO) provides guidance on the impact of traffic and weight on highways. For flexible pavements, the impact of heavy truck traffic on pavement condition and life is significant, when compared to that of passenger vehicles. The data suggest that one typical 80,000 pound, 5-axle truck does the damage of approximately 9,700 automobiles weighing 3,800 pounds each. In 2000, the Federal Highway Administration calculated the marginal cost of truck traffic in cents per mile. Adjusted to 2009 dollars, these figures indicate that 5-axle tractor-trailer combinations—the type usually used to move freight into and out of ports—cause 19.1 cents in marginal costs to rural interstate highways and 61.5 cents in marginal costs to urban interstate highways for every mile that they move freight.

**Items for Consideration**

1. Waterborne transportation is clearly the mode of choice with regard to the effects on the general public. However, it is not economically feasible when freight generators are removed from the water. Incentives might be explored that encourage businesses to locate near marine freight corridors.
2. The nature and effect of truck traffic generated by port complexes have not been adequately studied. The volume, the routes traveled, and the origins/destinations of cargo need to be better understood. This should be a research priority for the near future.
3. In 2001, the Texas Legislature passed a bill to create Chapter 55, Funding of Port Security, Projects and Studies, within the Transportation Code. This chapter has three main subjects: the Port Authority Advisory Committee, the Port Access Account Fund, and the Capital Program. No funding has been appropriated to the Port Access Account Fund since it was created in 2001. Funding would assist Texas ports in maintaining their competitiveness in terms of the infrastructure they offer.

Thank you very much for this opportunity to speak to you. We at TTI, especially our Center for Ports and Waterways, are ready and willing to assist your work in any way we can.