

## FREIGHT SHUTTLE SYSTEM

### Background

The Texas A&M Transportation Institute (TTI) has developed a new freight transportation system: the Freight Shuttle System (FSS). The FSS was conceived to resolve freight transportation's most pressing deficiency: the lack of a system suitable for high-volume traffic between two points located less than 600 miles apart. This situation occurs frequently at marine ports, border crossings (land ports) and congested

### THE PROBLEM: The United States Lacks a Sustainable Freight Transportation System

Currently, heavy-duty diesel trucks carry most of the freight load. One of the most important attributes of trucks is their flexibility. They use existing highway and roadway infrastructure to reach dispersed and scattered distribution locations. But this flexibility comes at a high cost: infrastructure deterioration, congestion, traffic safety issues and pollution. Many critical freight transportation corridors in Texas are becoming congested to the point that alternative means of transportation with fewer adverse impacts need to be developed.

Railroads are a perfect choice for moving high volumes of freight traffic between two points. However, due to the operating and network characteristics of heavy freight rail, railroads tend to favor hauling freight over longer distances and refrain from carrying freight less than 600 miles.



### THE SOLUTION: The Freight Shuttle System

The FSS is the ideal medium to connect two closely located points (within 600 miles) handling large volumes of freight traffic. By borrowing features from both heavy-duty diesel trucks and railroads, the FSS is economical for shorter distances and environmentally friendly. Much like trucks, the FSS's transporters are autonomous: each transporter has its own motors and travels independently of other transporters. Inspired by railroads, FSS transporters use steel wheels to carry either a standard-size freight container or an over-the-road trailer. Moreover, the FSS runs on an elevated, dedicated right-of-way to avoid interference with and from other transportation systems.

However, unlike any other freight transportation mode, the FSS uses efficient, linear induction motors. Because these motors are electrically powered, the FSS will not add to existing pollution, will advance the United State's effort to achieve energy independence and will allow more environmentally friendly energy choices. Moreover, by taking heavy-duty diesel truck traffic off the highway, the FSS directly reduces pollution, infrastructure damage and highway congestion, while improving traffic safety.





### The Freight Shuttle System at a Glance

- Is privately financed and operated in keeping with the commercial nature of goods movement.
- Helps create value for the public from underperforming assets – the Highway System.
- Reduces infrastructure deterioration by providing an alternative to over-the-road trucking.
- Reduces congestion on overburdened roadways and improves safety.
- Enhances economic competitiveness by providing a more efficient goods-movement system.
- Reduces dependence on foreign oil.
- Enhances community livability by creating far fewer emissions than other alternatives.
- Creates new industry and generates new jobs.

### FSS Technology

The FSS consists of automated transporters, an elevated guideway, high-efficiency terminals, and a communications, command and control (C3) system that effectively manages shipments in facilities and in transit. Three design guidelines have been followed throughout: simplicity, reliability, and the use of mature and proven technologies.

FSS transporters travel on a specially designed guideway, similar to the “people movers” at major airports and cities. The propulsion system involves both the vehicle and the guideway as inherent components of the linear-induction-motor assembly and, as a result, has virtually no moving parts to wear out or fail. To support their load, transporters use flangeless steel wheels that run on a steel running surface, which reduces energy consumption. The FSS incorporates redundant safety measures and does not require an onboard driver.

### Business Model

The FSS is envisioned as a privately financed, owned and operated system. With today’s high operating costs, trucking companies and shippers are looking for alternatives to business as usual. The FSS has been designed with trucking interests as its core customer base. The FSS also fosters a new form of public-private partnerships because it can operate on leased airspace from current highways or other public or private right-of-way. The revenue earned from leasing right-of-way can, for example, be reinvested to maintain or expand the current highway system.

### Business Development

On April 8, 2011, the Texas Department of Transportation (TxDOT) disseminated a ground-breaking request for competing proposals “For the Lease of TxDOT-Owned Right-of-Way to Implement Low Emission Freight Transportation Facilities.” This request for proposals represents a forward-thinking and innovative approach to creating value from TxDOT-owned assets and creates the opportunity in Texas for a next-generation freight system. Coupling proven technology and an innovative business model with a world-class investment bank, the FSS is in the perfect position to emerge as a new option for the goods movement industry.

### About TTI

TTI is recognized nationally for its expertise in all modes of transportation and has been extensively involved in mobility research for more than 60 years. The agency’s researchers have developed a wide range of solutions to mobility issues, including managed lanes, improved public transportation services and intelligent transportation systems. These studies have successfully assessed potential improvements, enhanced evaluation and prioritization processes, and resulted in the cost-effective implementation of numerous projects to improve mobility and quality of life.

### TTI’S MISSION

*To solve transportation problems through research, to transfer technology and to develop diverse human resources to meet the transportation challenges of tomorrow.*

### Contact

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