FREIGHT SHUTTLE SYSTEM

Cost: ●●●●○
Time: Moderate
Impact: Regional
Who: Public/Private
Hurdles: Right-of-Way

Description

The privately-financed Freight Shuttle System (FSS), developed by the Texas A&M Transportation Institute (TTI), resolves one of freight transportation's most pressing deficiencies: the lack of a suitable system for high-volume freight traffic in congested corridors less than 600 miles long. These include marine ports, border crossings (land ports), intermodal terminals, and warehouses.

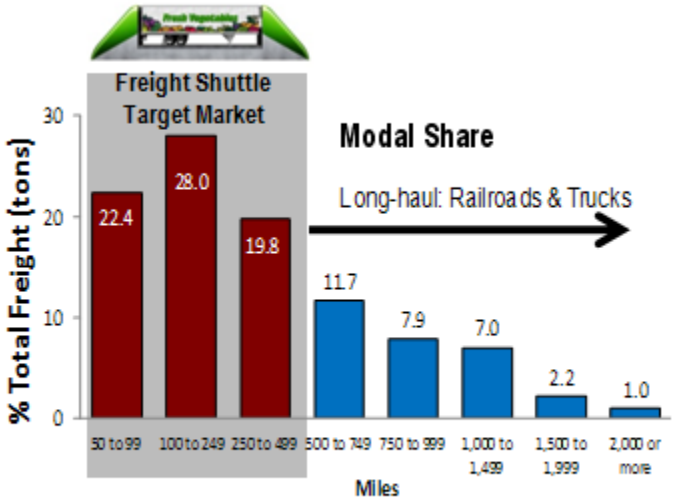
Heavy-duty diesel trucks carry most of today's freight load. They use the flexibility of public roadways to reach scattered distribution locations, but this flexibility comes at a cost: congestion, infrastructure deterioration, traffic safety issues, and pollution. Many critical freight corridors in Texas are becoming congested to the point that better alternatives need to be developed.

The FSS is ideal to connect two markets (within 600 miles[1]) generating large volumes of freight traffic. The FSS combines the best features of heavy-duty diesel trucks and railroads, making it economical for shorter distances and environmentally friendly. Like trucks, FSS vehicles are autonomous, traveling independently, each with its own motors. And 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.

The FSS uses efficient, linear induction motors to individually power the carriages. Because these motors are electrically powered, the FSS will not add to existing pollution, will advance the United States' 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.

Target Market

The Freight Shuttle System is intended to serve three principal markets: highly congested freight corridors of 50 to 600 miles in length, trips from congested port facilities to inland terminals, and international ports of entry that require a combination of trade volume and security.



** 80% of the FREIGHT MOVES LESS THAN 750 MILES*[1]

For more information, please refer to: http://mobility.tamu.edu/mip/strategies.php.

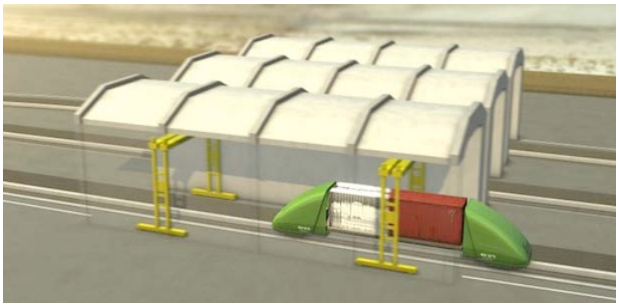
How Will This Help?

- The FSS will remove thousands of trucks per day from congested highways.
- The system is privately financed, constructed, and operated, providing a much-needed solution without any public expense.
- The FSS will occupy the unused airspace above existing highways, paying lease fees to the public sector for the opportunity to move freight.
- The FSS's attributes—driverless, elevated, non-divertible, and non-stop—provides efficiencies for Customs and Border Protection (CBP), allowing them to move the processing of international trade away from the border, reducing emissions, and alleviating congestion at international ports of entry.

The FSS is predicated on a new form of public-private partnership: private financing coupled with leasing airspace on public highway rights-of-way. The FSS is so efficient that it can offer customers both lower-cost and improved efficiency, thereby creating a commercially sustainable solution to a growing transportation issue—large volumes of commercial truck traffic.

Implementation

The FSS is being readied for implementation. A blue-ribbon development consortium has been formed to develop and demonstrate the FSS prior to commercial implementation. The team consists of the best firms in the areas of propulsion, command and control, vehicle manufacturing, bridge design, electrification, and construction.



Inspect in-motion allows for fewer delays and congestion at international ports of entry.

FSS Development Team Members

Application Techniques and Principles

Implementing the FSS to ease freight congestion in multiple corridors is a multi-step undertaking. Step 1 involves identifying the magnitude of the problem—how much truck traffic exists, the cost of moving freight through the corridor, and the origin-destination characteristics of the corridor. Step 2 would be a financial evaluation to assess the commercial viability of FSS operations as an option to shippers and carriers in the corridor. Step 3 would be a proposal to the owner of the right-of-way. Step 4 would involve planning, design, environmental assessment, construction planning, and financing. Step 5 would entail construction and implementation.

Issues

The FSS relies on proven technology assembled in novel ways making technical feasibility a non-issue in implementation. Identifying the appropriate rights-of-way with sufficient truck traffic to support the FSS business model is the key issue. However, finding corridors with significant truck traffic is becoming all too easy. The negative impact on mobility from commercial vehicle operations is well documented; traffic congestion is an impediment to goods movement as well as to the mobility of the general public.

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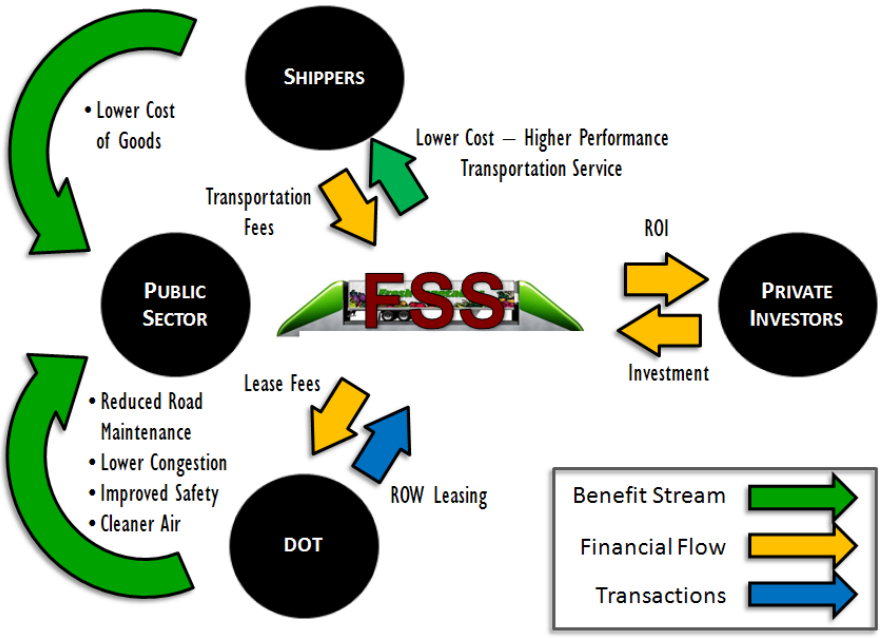


Freight Shuttle Business Model

Who Is Responsible?

Freight Shuttle International, LLC, has been formed to commercialize the FSS and undertake design, construction, operations, and maintenance. The business model is based on a private-financing approach to creating transportation infrastructure with the public-sector providing the right-of-way in return for a lease payment.

Project Timeframe

The use of segmental bridge design and construction techniques greatly accelerates the progress that can be achieved in implementing the FSS. Segmental bridges are made of precast concrete segments, much like concrete Legos®. Built off-site, they are transported to the construction site and added to the structure in spans supported by columns that are erected within the median of the highway or along the shoulder. This approach allows the FSS to be erected using multiple construction sites, greatly speeding up the process.

Cost

The fact that the FSS is privately financed means that the public need not concern itself directly with the cost. However, commercial sustainability requires that the FSS be cost competitive and that the transportation services sold to its customer base are a better value than what is being replaced. The FSS business model requires that the capital expenditures for its infrastructure can be paid for out of the revenues generated from operations plus providing an adequate return on investment for the direct investors in the system. The combination of a highly efficient linear induction propulsion system, proven technology, and simplicity of design means that the FSS can be built and operated for less than traditional highways and over-the-road trucking.

Economic Development Potential

In Texas on IH 35 alone, the FSS would:

- Provide more than 20,000 construction jobs.
- Introduce more than 600 permanent jobs.
- Provide a total economic impact to the State of over $9 billion.
- Save more than $60 million per year in pavement damage.

For more information, please refer to: http://mobility.tamu.edu/mip/strategies.php.

mobility INVESTMENT PRIORITIES

Data Needs

Current truck volumes determine if the FSS is an appropriate fit within a particular corridor. If the length of the corridor is within the FSS's target range (50 to 600 miles) and the truck volume exceeds 2500 trucks per 24-hour period, the corridor may be a candidate for the FSS.

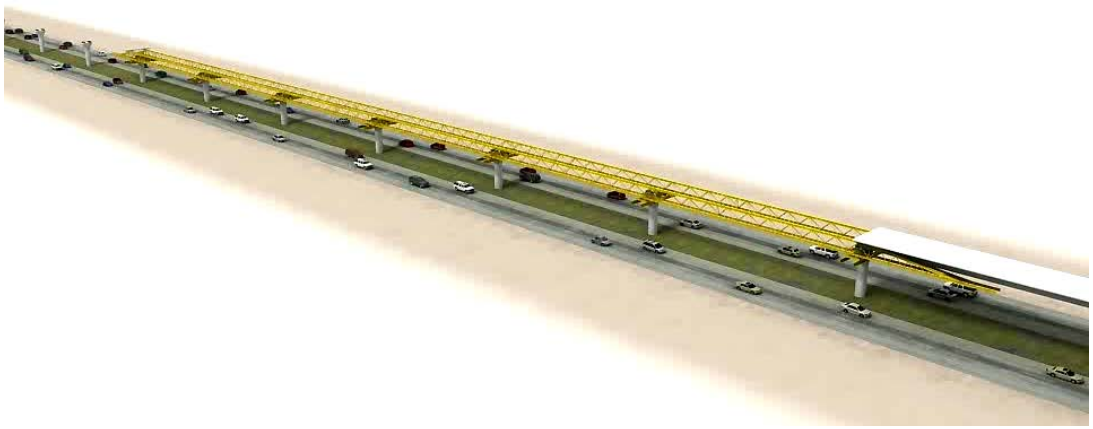
Freight Shuttle System Best Practice

- Type of Location: The FSS is designed to operate in highly congested highway corridors with large numbers of commercial vehicles. Highway congestion in these circumstances is both an impediment to and exacerbated by commercial vehicle operations.
- Agency Practices: The FSS business model is predicated on privately financed infrastructure built within public or private rights-of-way. Lease payments for air-space rights are provided to the owner of the right-of-way in return for the opportunity to undertake commercial freight transportation activities.
- Frequency of Reanalysis: Not required since system is privately managed.
- Supporting Policies or Actions Needed: The Texas Department of Transportation has the statutory authority to lease highway rights-of-way and has developed the rules to govern the leasing process. Other state DOTs may have to develop similar rules to allow the FSS to be implemented on highway rights-of-way within their state.
- Complimentary Strategies: Grade separation, traffic management centers, and truck incentives and use restrictions.

For More Information

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce, U.S. Census Bureau. *2007 Economic Census: Transportation Commodity Flow Survey.* December 2009. http://www.bts.gov/publications/commodity_flow_survey/final_tables_december_2009/html/table_03a.html.

To learn more about the FSS visit: www.freightshuttle.com or contact Steve Roop at s-roop@tamu.edu.



Bridge spans are made in segments off-site, transported to the location, and then installed.