

Exploring A Green Alternative for Container Transport

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Gateway Cities
Council of Governments
Joint Meeting

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EXPLORING
Freight Transportation
ALTERNATIVES

The SAFE Freight Shuttle



21st Century Freight Transportation Challenges

- Public Safety
- Environmental Impact
 - Air
 - Noise
- System Capacity
- System Maintenance & Preservation
- Adverse Impact on Quality of Life
- Oil Dependency
- Security
- Funding

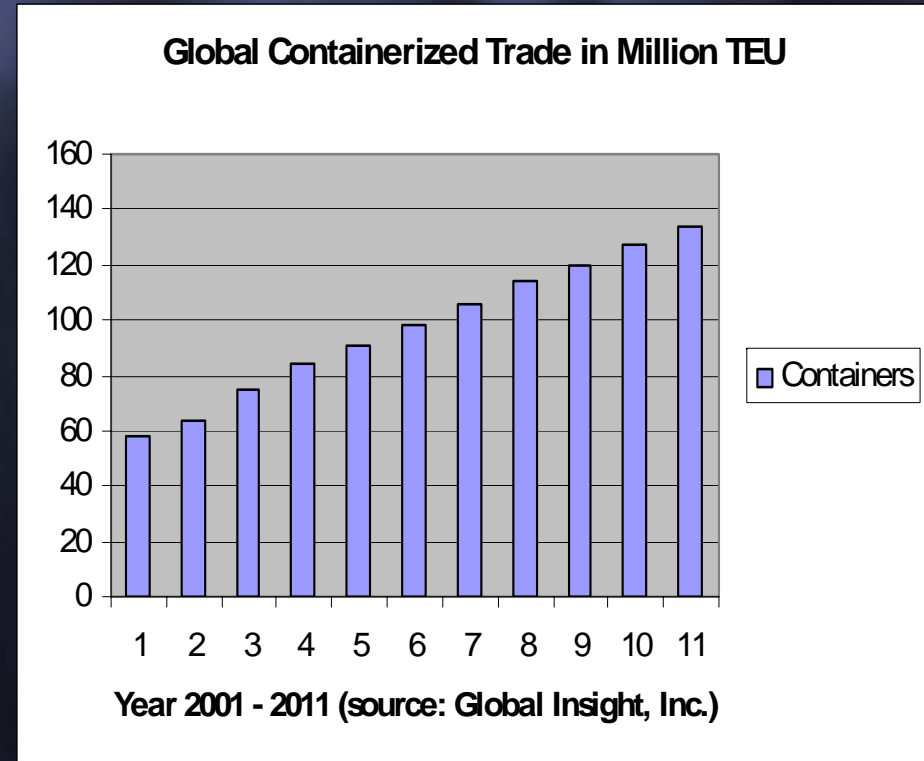
Maintaining Freight Movement: The Public Agency Challenge

Find a Balance Between:

- Environmental soundness
- Affordability
- Effectiveness
 - Capacity
 - Cost-effectiveness
- Commercial viability
 - Financing / construction by the private sector
 - Sustainable – revenues exceed costs

Goods Movement

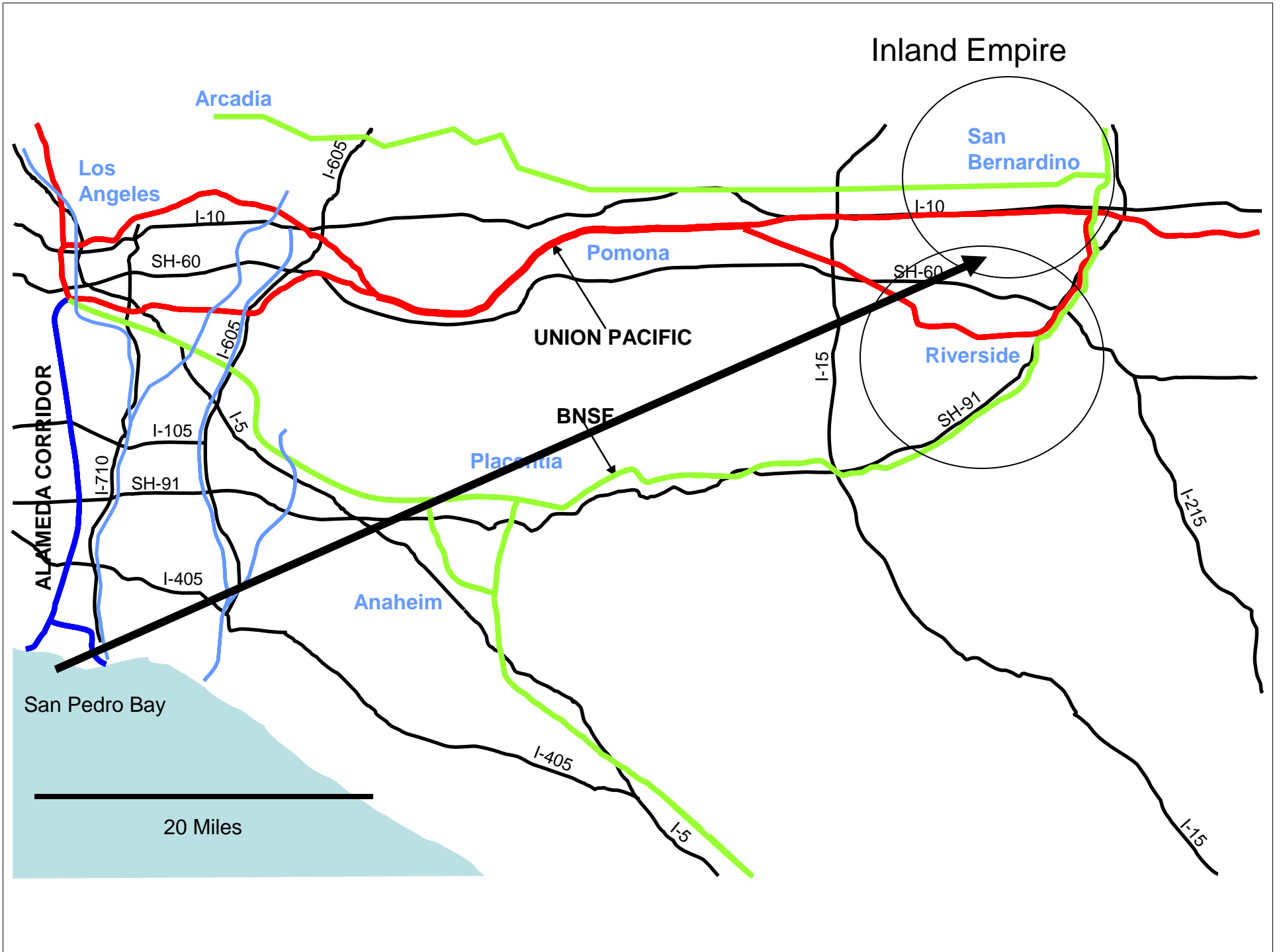
- Types of Freight
 - Bulk
 - Manifest
 - Intermodal
- Growth in Intermodal
- Pacific Rim
 - LA/LB
 - Landbridge Services
 - National Market Share approximately 44%



Maintaining Freight Movement: The Challenge at the Ports

- Significant levels of national and regional trade
 - Significant percent of import containers are destined for the regional economy
 - Results in chronic truck traffic problems on local/regional highways
 - Impact on jobs





Freight Transportation System Requirements

Freight Transportation is a Cost Minimizing Industry

21st Century Freight Transportation System Requirements

VIABLE FREIGHT TRANSPORTATION SYSTEMS MUST BE:

- Low-cost and have a long operating life – rugged and simple
- Based on known-understood technology
- Well-suited to the task at hand
- Reliable – reduce supply-chain uncertainty
- High Capacity – increases throughput
- Interconnected with the existing intermodal system
- Environmentally sound
 - Air
 - Noise
- Segregated; freight from passenger traffic
 - Reduces roadway congestion
 - Improves safety
- Secure

Freight Transportation is a Cost Minimizing Industry

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The SAFE Freight Shuttle

- A new approach to regional Intermodal Freight transport
 - Concept developed over the last 6 years at the Texas Transportation Institute
 - Based on known and understood technology
 - May effectively address both community and commercial needs

Combines technology and innovation to meet basic freight transportation requirements in an environmentally responsible manner

The SAFE Freight Shuttle

- Secure
- Automated
- Fast
- Environmentally-sound



*Hybrid System Combining the
Best Features of Rail and Trucks*

The SAFE Freight Shuttle



The SAFE Freight Shuttle

- Automated Freight Shuttles
 - Single-container transports
 - Linear induction motors (LIMs)
 - Designed for steel wheels-on-steel running surface
 - Dedicated, small footprint guide way
 - Surface operations, elevated, or subterranean

24/7 operations offer an option that may overcome throughput, capacity, and impact issues affecting local communities

The SAFE Freight Shuttle



Technical Elements

- Four systems interact to provide functionality:
 - 1. Vehicle
 - 2. Guide way
 - 3. Communications/ command/ control
 - 4. Terminal layout and design

Technical Elements

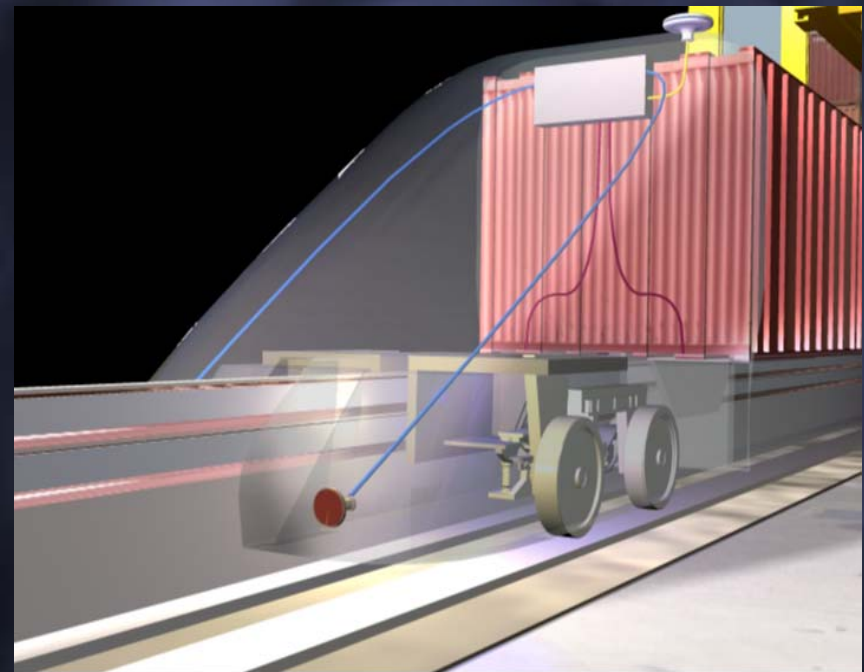
1. Vehicle

- Automated
- Aerodynamic leading and trailing ends
- Moderate speeds (30-70 mph)
- Electric LIM propulsion
- Design simplicity



The SAFE Freight Shuttle

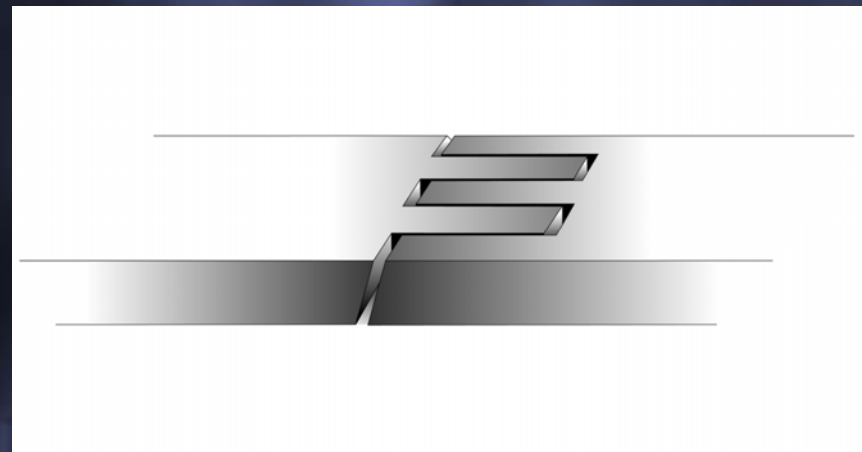
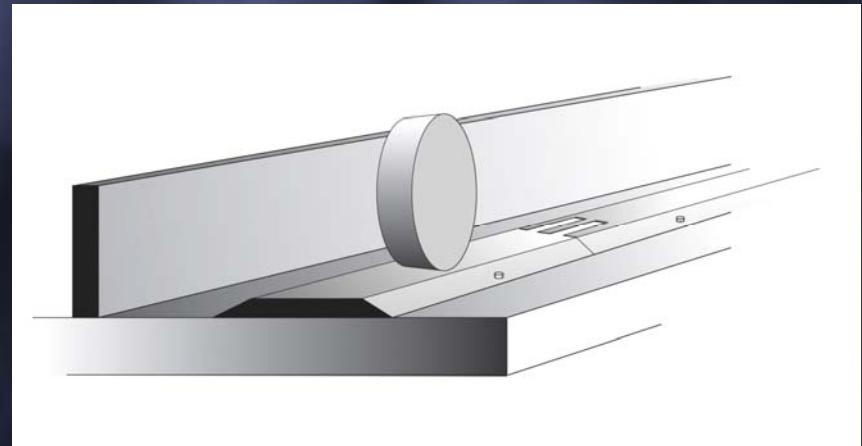
- High reliability
 - LIM – linear motion from vehicle-track interaction
 - Small number of moving parts
 - Steel-on-steel for low rolling friction/low cost



Technical Elements

2. Guide way

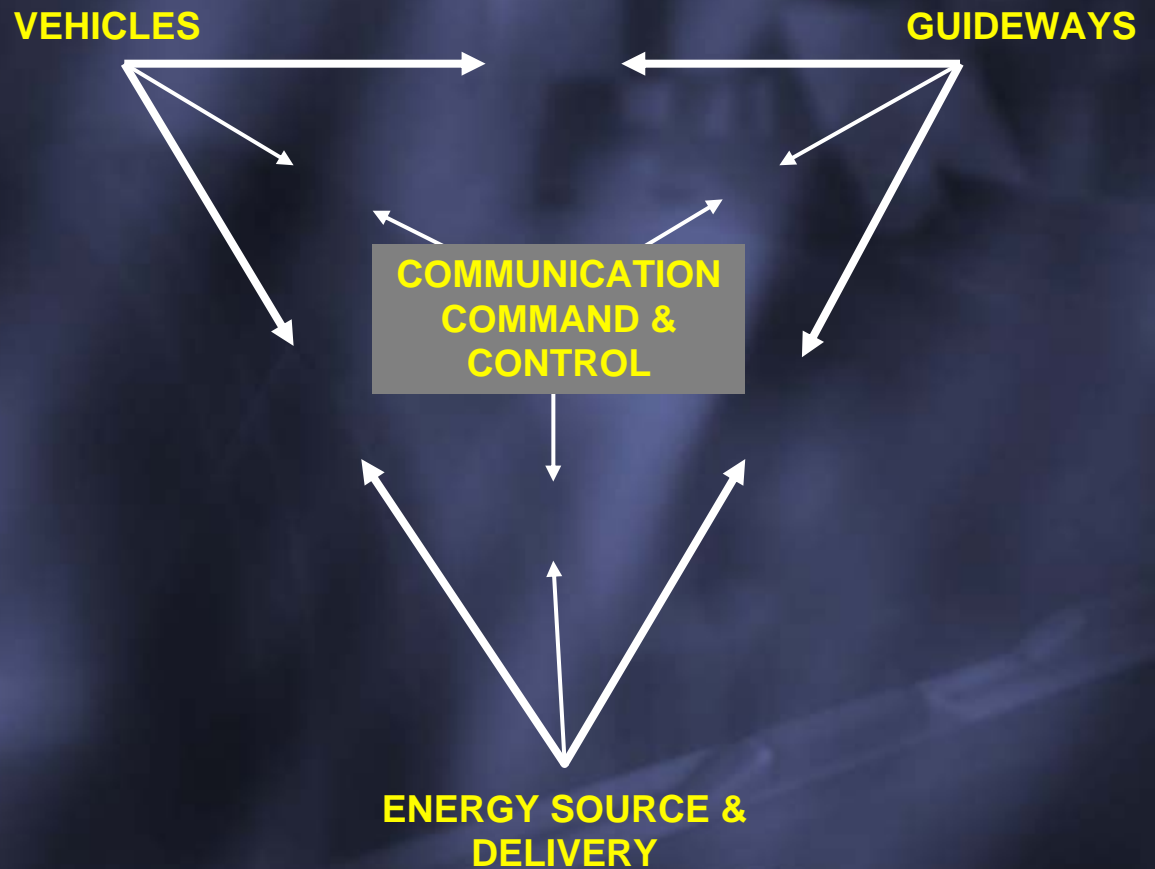
- Prefabrication
- Concrete track bed
- Steel running surface
- Small footprint
- Rail expansion joints



Technical Elements

3. Communications Command Control (C3)

- Automated vehicles
- Centralized control



Technical Elements

4. Terminal Layout and Design

- Highway access considerations
- Warehousing
- Crane configurations
- Acreage
- Services
 - Fueling
 - Maintenance



The SAFE Freight Shuttle



The SAFE Freight Shuttle

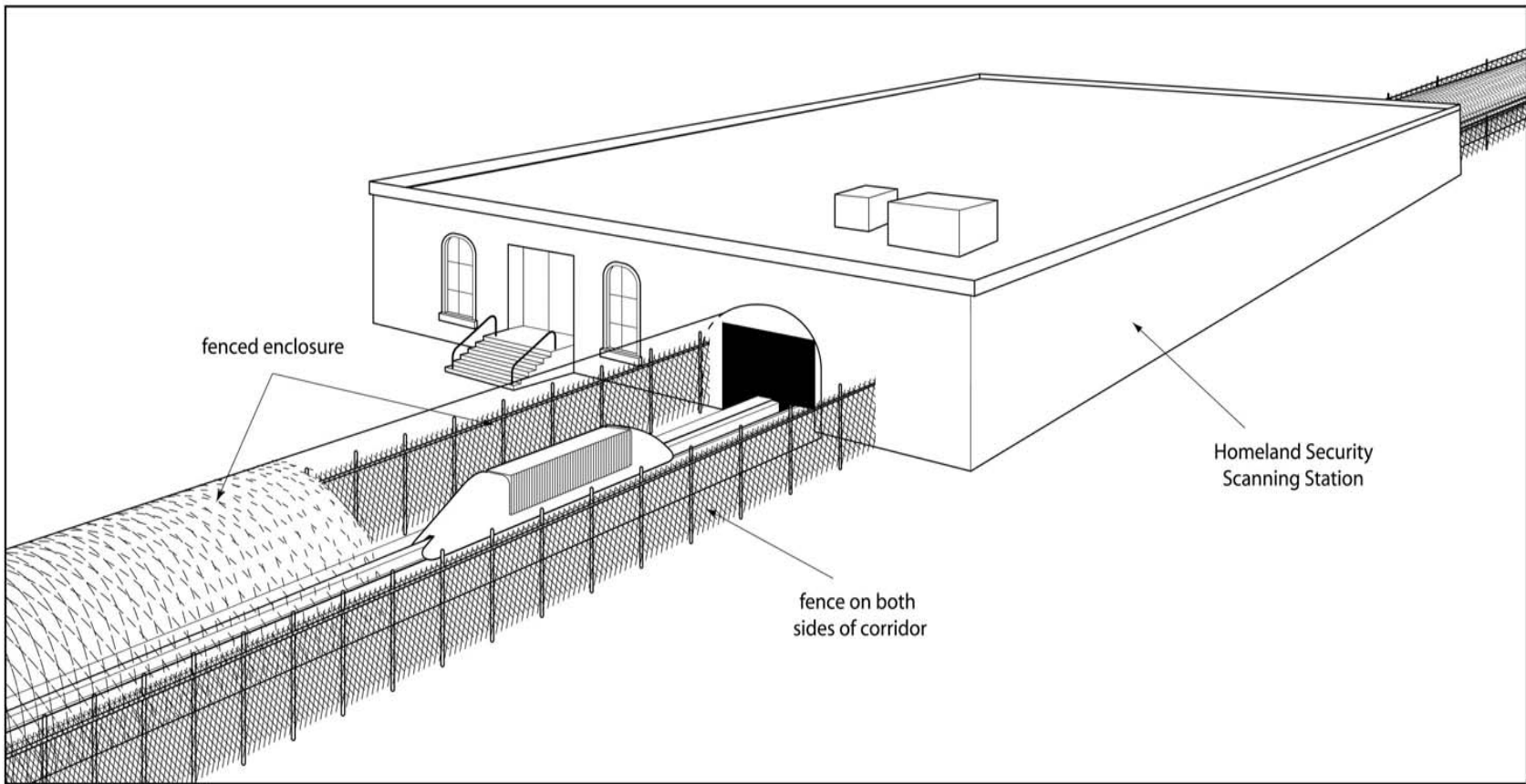
- Design features enhance system viability
 - Single unit transports
 - Prefabricated infrastructure / Small footprint / Low cost
 - High capacity / Continuous operation
 - Simplicity of design / System reliability
 - Energy efficiency / Low operating cost
 - Commercially viable – Private sector involvement
- And mitigate the most pressing adverse impacts of high levels of truck traffic
 - Grade separation of alignment
 - Segregation of freight from passenger traffic
 - Non-polluting propulsion system



The SAFE Freight Shuttle

- Security
 - Operates on a secure corridor
 - Inspect-in-motion
 - Vehicle tracking
 - Container tags/locks
 - Vehicle design precludes tampering

*DHS initiatives will support approaches
that enhance security*



Inspect-in-Motion Concept within a Secure SAFE Freight Shuttle Corridor