

# *Exploring A Green Alternative for Container Transport*

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Council of Governments  
Joint Meeting

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EXPLORING  
**Freight Transportation**  
ALTERNATIVES

# *The SAFE Freight Shuttle*



# *21<sup>st</sup> 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

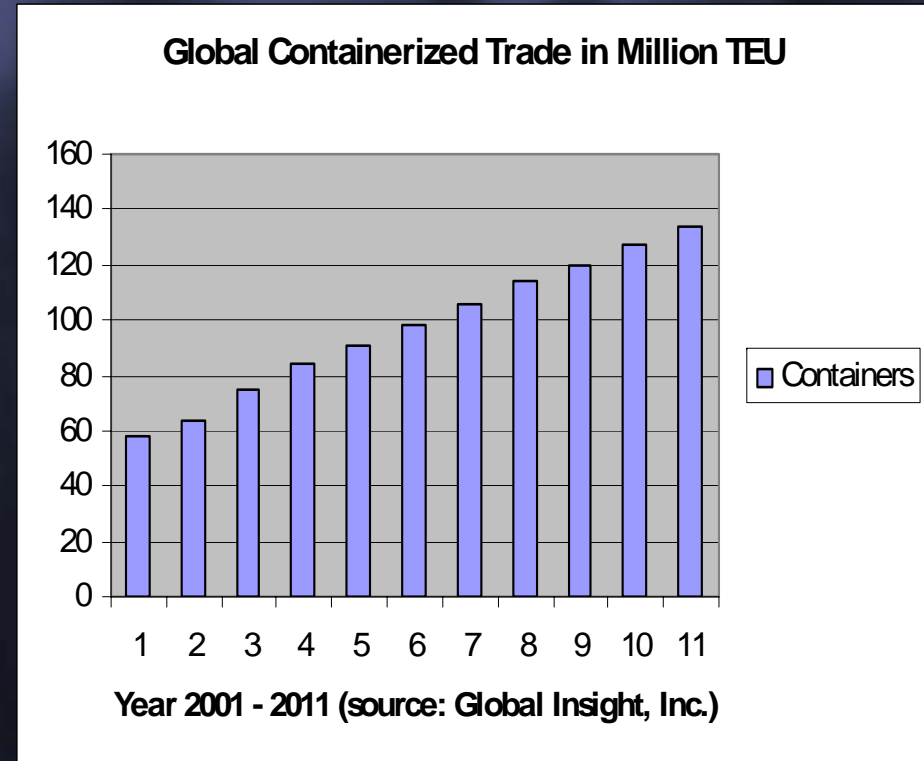
# *Maintaining Freight Movement: The Public Agency Challenge*

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%

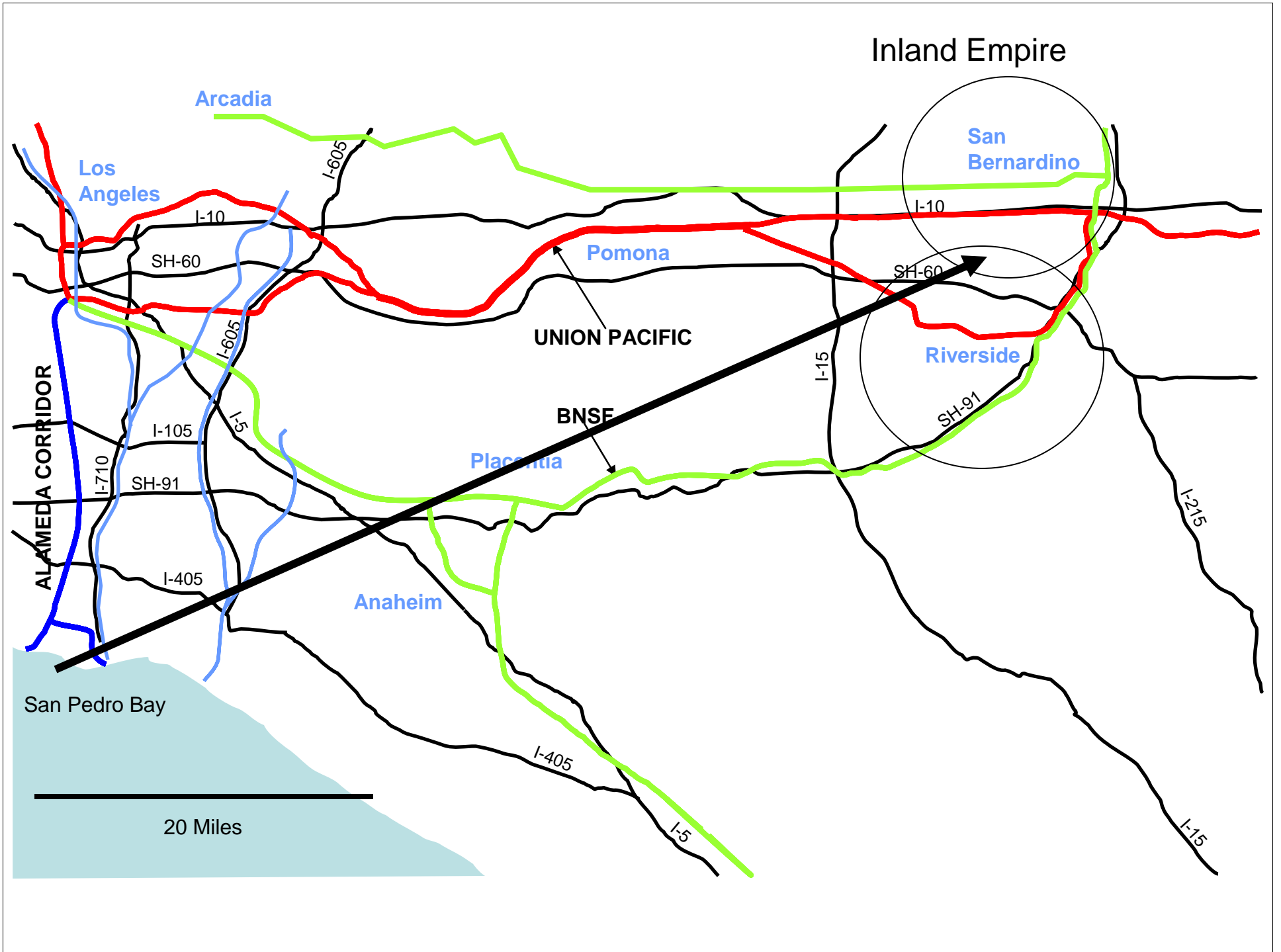




# *Maintaining Freight Movement: The Challenge at the Ports*

- 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



# *21<sup>st</sup> 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**

EXPLORING  
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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*



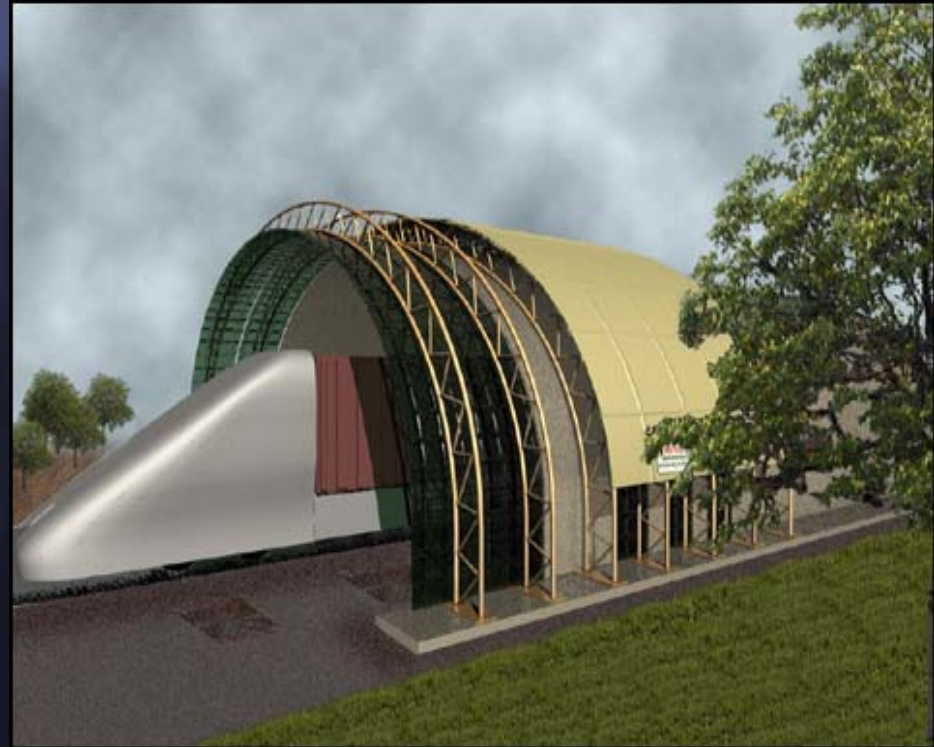
# Technical Elements

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

# Technical Elements

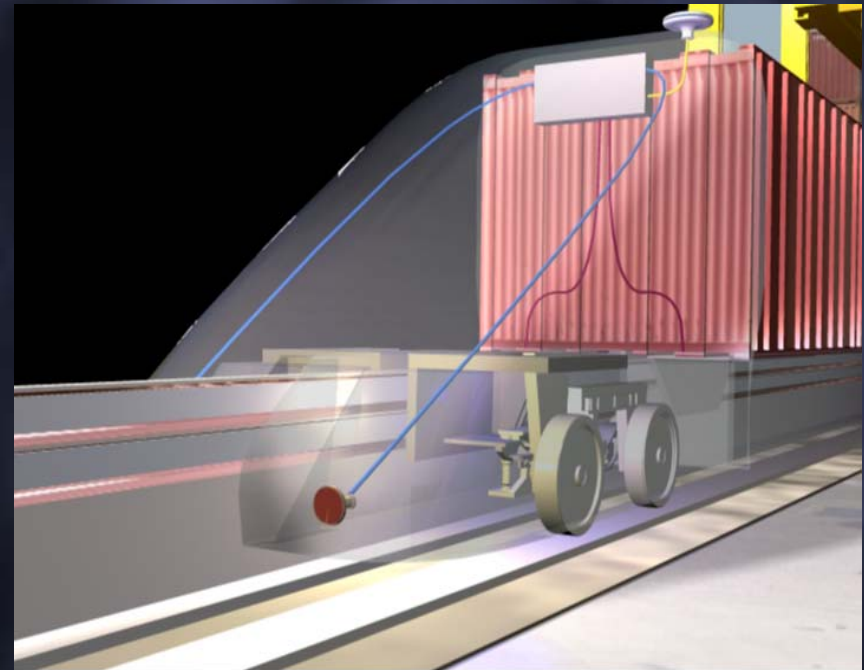
## 1. Vehicle

- 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

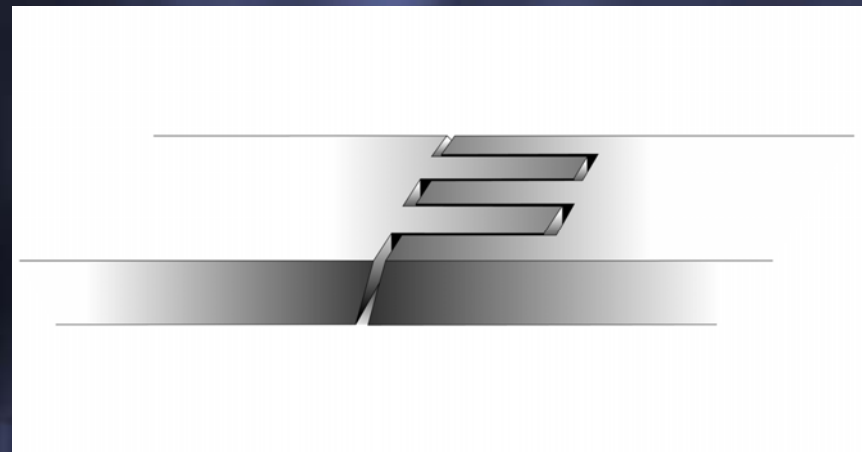
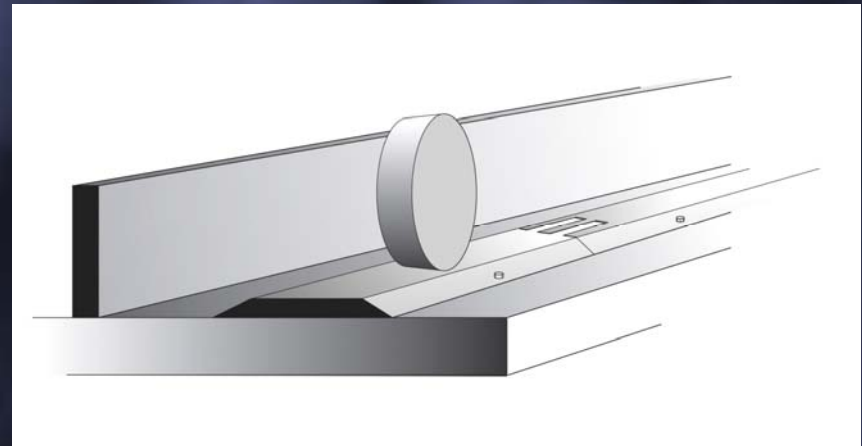




# Technical Elements

## 2. Guide way

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

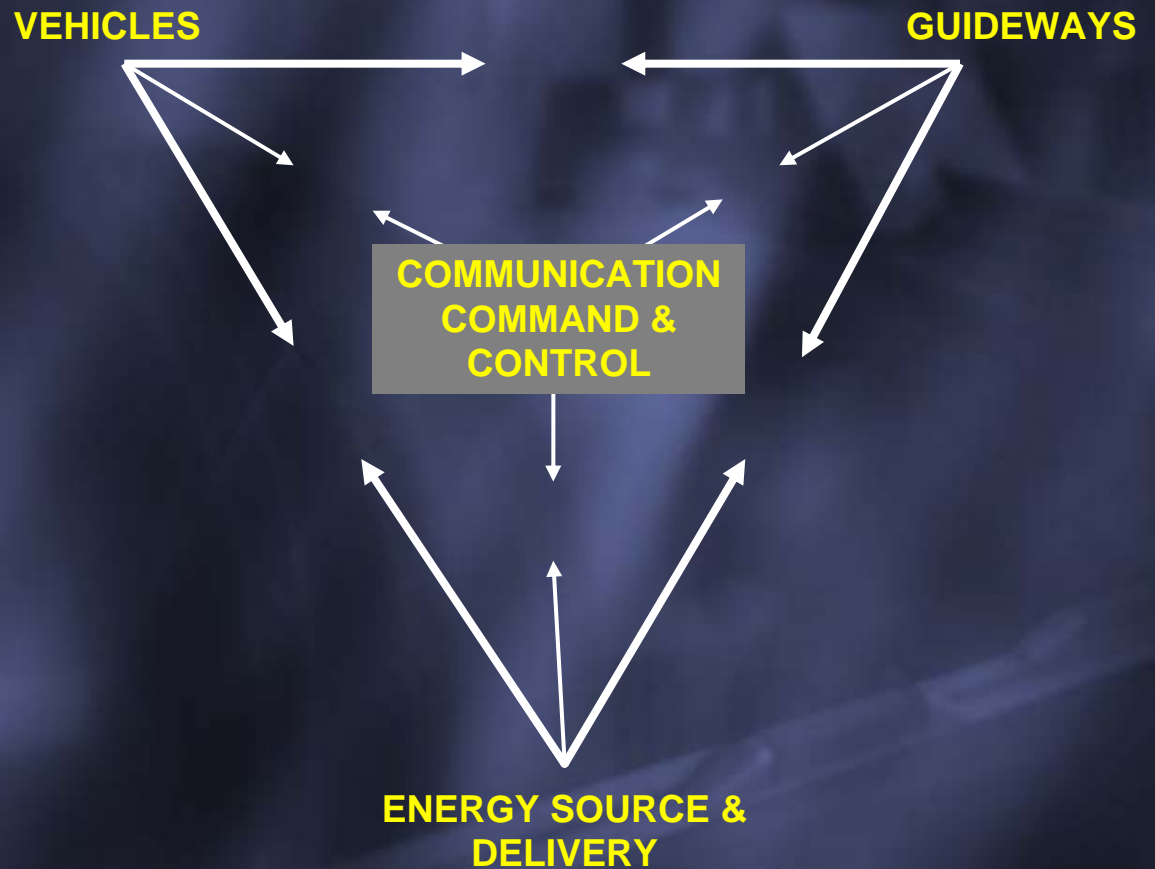




# Technical Elements

## 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



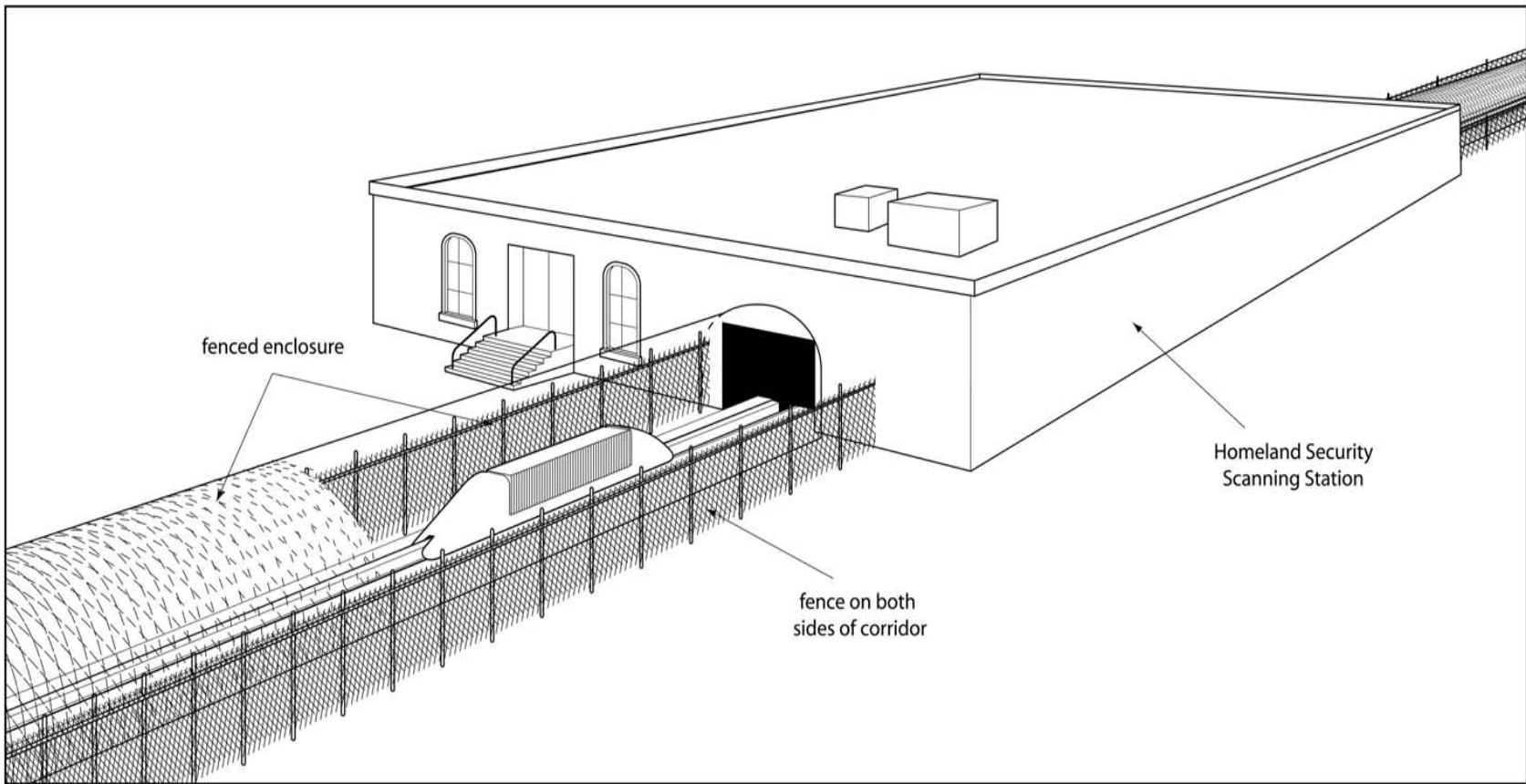




# *The SAFE Freight Shuttle*

- 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