



# **The Transportation Capacity Problem:**

## **Approaches to Congestion Relief**

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# Introduction

Transportation and the National Economy

Drivers of Transportation Demand—Economic Activity

Population

Globalization

Business Practices



# Transportation Supply

Public/Private Provision

Private: Rail, Pipelines

Public: Roads, Airports, Port Facilities

Historic Pattern: Supply Preceded and Shaped  
Demand

Today: Respond to Crises



# The Growing Capacity/ Congestion Problems

Focus on Surface Freight Modes

TTI Annual Studies Document Worsening Problem

Congestion caused: 3.7 billion hours of  
travel delay and 23 billion gallons of  
wasted fuel consumption

Travel during peak hours takes 40% longer than  
during off peak; it took 13% longer in 1982



# Growing Capacity/ Congestion Problem

More than 2/3s of all travel during peak periods occurs in congested conditions compared to 1/3 in 1982

Roughly 60% of major roads are congested at the peak

Length of congested period has grown from 4.5 to 7 hours

Travel time reliability is greatly reduced

And it will get worse



# Growing Capacity/ Congestion Problem

By 2025

Population will increase by 26%

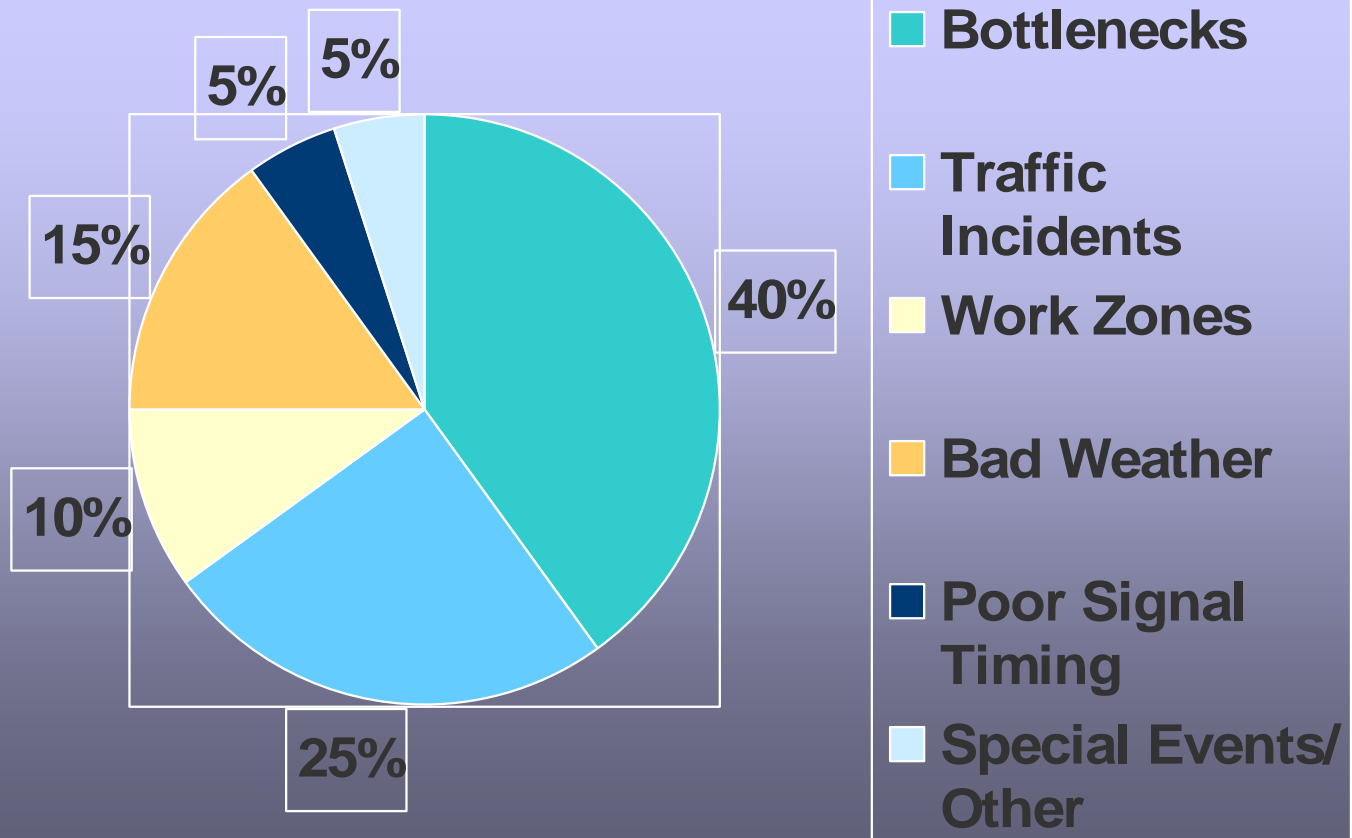
GDP will approximately double

Total passenger travel will rise 72%

Truck tonnage will grow 75% by 2020



# Sources of Congestion





# Growing Capacity/ Congestion Problem

Investment in Urban Transport Infrastructure  
inadequate to meet growing demand

Require 5000 additional lane miles of freeways  
and major roads annually just to stay even

Major transportation projects take 10-15 years  
from conception to completion

Not as though we are doing nothing—highway spending  
grew under TEA-21 and fewer miles were in poor shape

But more than 50% of spending went to system preservation





# Growing Capacity/ Congestion Problem

Problem not limited to Highways

Ports dealing with larger vessels and rapidly  
expanding international trade

Rail capacity problem is of more recent vintage

Economic regulation fostered excess  
capacity, especially for the railroads



# The Developing Rail Capacity Crisis

Shrinking Workforce and Infrastructure Partly  
Offset by Productivity Improvements

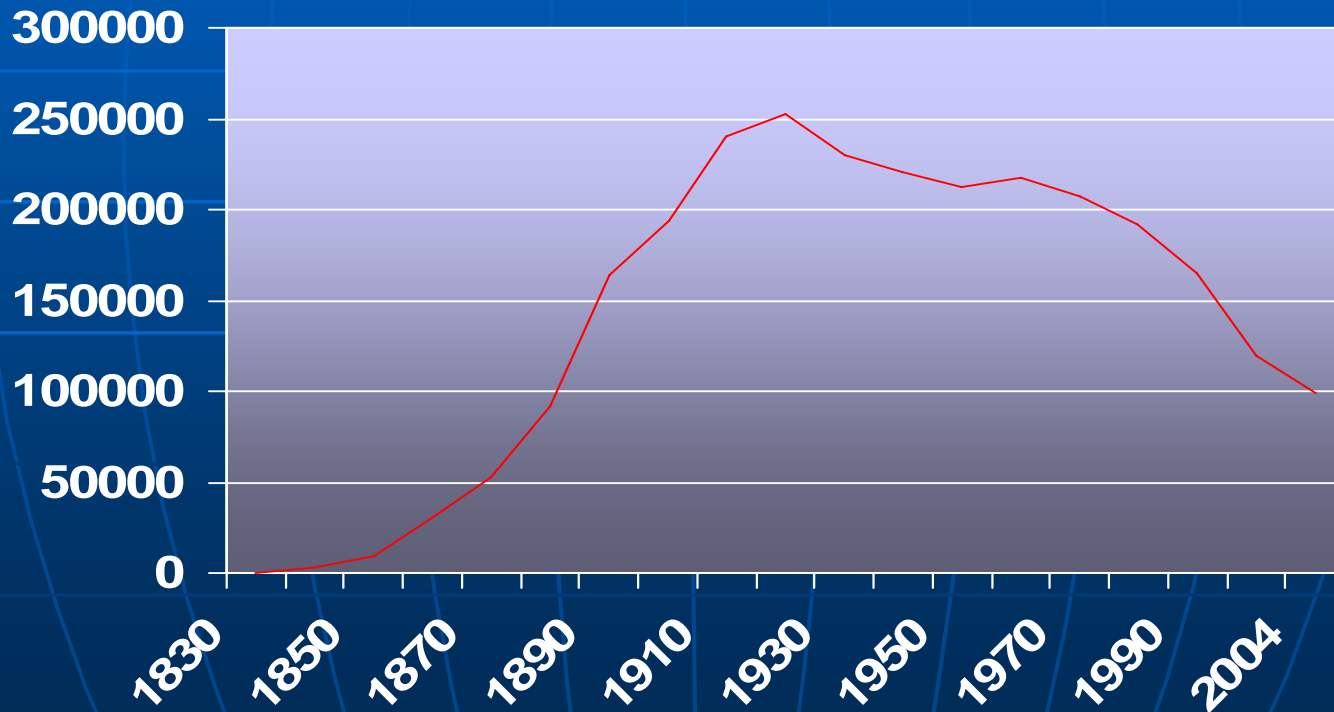
But Continuous Increase in Traffic Begins to  
Absorb “Excess Capacity”

Network becomes More Vulnerable to  
Stochastic Events

A Perfect Storm or the Rail Version of Global  
Warming

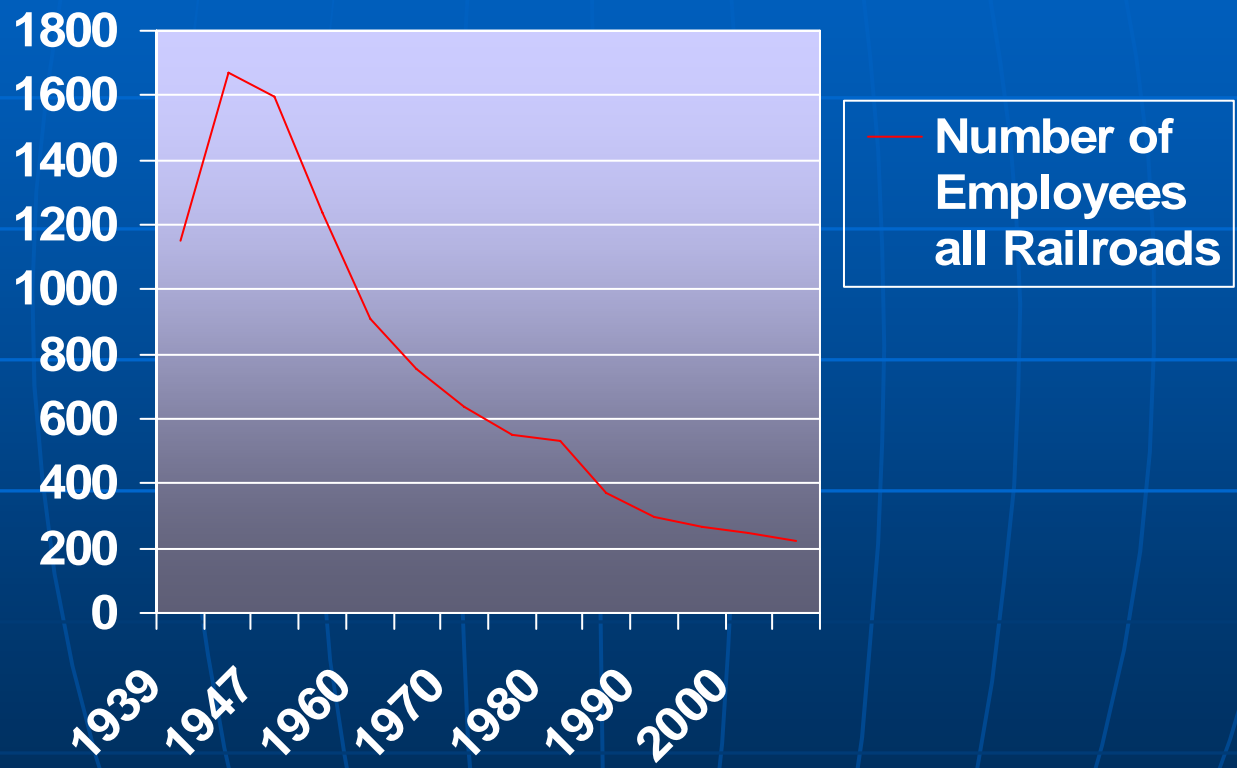


# Growth and Decline of Railroad Mileage





# Railroad Employment 1939-2003 (in thousands)





# The Genesis of the RR Capacity Problem

Improved Earnings Still not Revenue Adequate  
Railroads “Punished” by Wall Street for Making  
Capital Investments

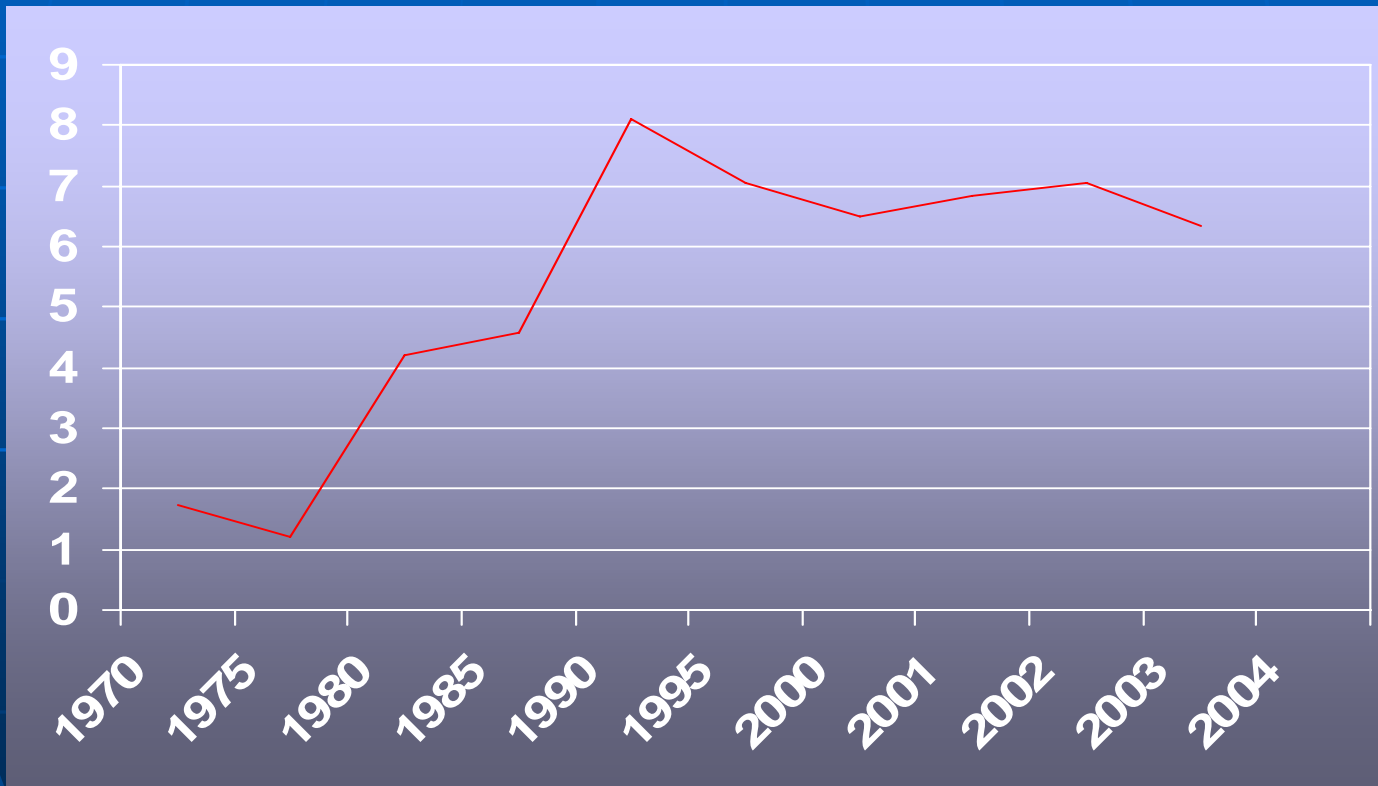
Railroads Often Found that Infrastructure Investments  
Failed to Generate Sufficient Income

Long term Strategy to Reduce Size of Workforce

Added Rail Infrastructure is Long-Lived While Demand  
Increases can be Short-Lived



# Railroad ROI 1970-2003



# Railroad Cost of Capital and ROI

	Cost Of Capital	BNSF	CSXT	NS	UP	KCS	SOO	GT	IC
1996	11.9%	8.6%	8.9%	13.0 %	9.3%	7.2%	23.5%	0.0%	15.2 %
1997	11.8%	8.4%	9.8%	13.1 %	5.2%	3.6%	12.3%	5.2%	15.8 %
1998	10.7%	9.7%	8.1%	10.5 %	2.9%	9.1%	4.9%	3.0%	13.6 %
1999	10.8%	9.5%	3.8%	5.2%	6.8%	6.4%	2.5%	25.4 %	10.0 %
2000	11.0%	8.8%	3.6%	5.5%	6.9%	6.3%	5.6%	5.9%	5.9%
2001	10.2%	7.1%	4.6%	8.3%	7.6%	7.0%	5.9%	4.9%	4.9%
2002	9.8%	6.4%	5.2%	9.1%	8.6%	6.5%	5.7%	3.1%	3.1%
2003	9.4%	6.2%	4.0%	9.1%	7.3%	3.7%	.01%	4.5%	4.5%
2004	10.2%	5.8%	4.4%	11.6 %	4.5%	8.3%	3.3%	6.0%	6.0%



# Short term Capacity Problems

Expanding Economy Led to Surge in Imports

Large Grain Harvests in 2003 and 2004

Growth in Export Coal Market

Crew Shortages due to Wave of Retirements

Equipment Shortages due to Reduced Purchases

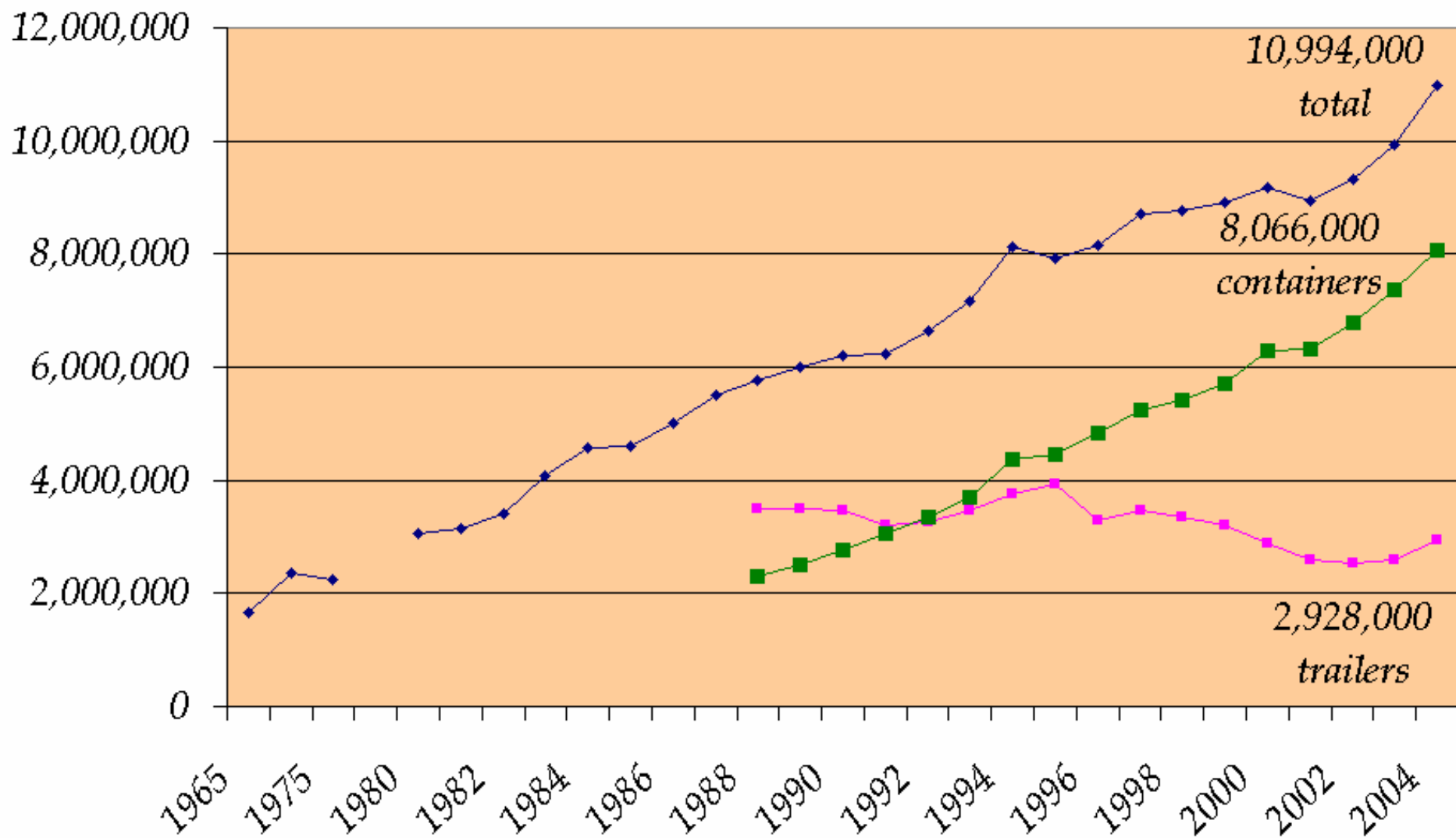
Cutbacks in Capital Spending Programs

Tight Capacity in Trucking Industry due to Driver

Shortages, Higher Fuel Costs, HOS Rules, etc.



## Intermodal Shipments beginning 1965





# Class I Capital Expenditures (in billions of current \$)





# Carrier Responses to Recent Capacity Problem

More Cars and Locomotives Bought and Leased

Accelerated Hiring and Training of Train Crews

Some Infrastructure Expansion Efforts

Price Rationing of Available Capacity

Railroads Choosing who they will Serve and the  
Common Carrier Obligation



# Long-Term Rail Capacity Constraint Factors

Demand for Freight Rail Transport Projected  
to Grow by 60%-70% over Next Two Decades

Railroads' Inability to Earn Cost of Capital

Pressure from Wall Street to Reduce Capital Costs  
and Improve ROI

Long-Term Contracts Limit Railroad  
Pricing Flexibility

Railroads tend to Bid Long Term Contract  
Rates Down to Long Run Marginal Costs



# Approaches to the Transportation Congestion Problem

Build more Physical Infrastructure

Adopt technological innovations

Make better use of existing  
facilities

Promote shipper and traveler behavioral  
changes

All have potential but all limits



# Infrastructure Capacity

SAFETEA-LU— 2 years late and \$90 billion short  
\$286.5 billion over 6 years is 38% more than was  
provided for in TEA-21back in 1998 but far short of  
\$375 billion estimated need

Contains a rail title but far from intermodal legislation

Expands the RIFF program to \$35 billion and  
makes shippers eligible



# Rail Capacity Investment

Railroads Support Limited Public Sector Role  
Public/Private Partnerships (Alameda Corridor,  
CREATE)

Railroad Trust Fund Concept

Investment Tax Credits

- Short Lines and the 286K lb. Car Problem
- Class I Access and Limited Fiscal Capacity
- RIM and RIFF



# Technological Innovations

Highways—Intelligent Transportation Systems

Railroads – Positive Train Control

Short Sea Shipping

Low Speed Maglev





# Improve Utilization of Existing Infrastructures

Highways--Ramp metering, optimizing traffic signals, variable tolls, etc

Railroads—more use of MIS in scheduling locomotives, cars, crews

Ports— move to 24/7 operations



# Obstacles

Dollar resources

Resistance to Change

Labor Contracts

Ineffective lobbying Effort to address freight  
transportation needs



# Need to Focus on Freight Issues and Intermodal Solutions

Reauthorization of Highway Program is only 4 years away

Need to Increase the visibility of freight issues

Need to install a comprehensive evaluation process (i.e., c/b analysis) in the planning process

Need to deal with limitations on Federal funding that dedicates \$ to a single mode or non-freight purposes

# Thank You, Any Questions?

