



GLOBAL INSIGHT



Freight Transportation “Megatrends”

**Freight Demand Modeling:
Tools for Public-Sector
Decision Making Conference**

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Freight Transportation “Megatrends”

- **Global Boom of the 1990s → Expanded IT Penetration in Business**
- **Renaissance in the Arts → More High Value Goods**
- **Emergence of “Free-Market” Socialism → Opening of China**
- **Global Lifestyles & Cultural Nationalism → More Trade & SKUs**
- **Privatization of the Welfare State → Less Public Money for Freight**
- **Rise of the Pacific Rim → Dominance of China Leads World Trade**
- **1990's: Decade of Women in Leadership → More Diverse Workforce**
- **The Age of Biology → More High Tech Goods, Growth in Services**
- **Religious Revival of the 3rd Millenium → Obstacles to Trade**
- **Triumph of the Individual → ‘Mass Customization’ of Products**

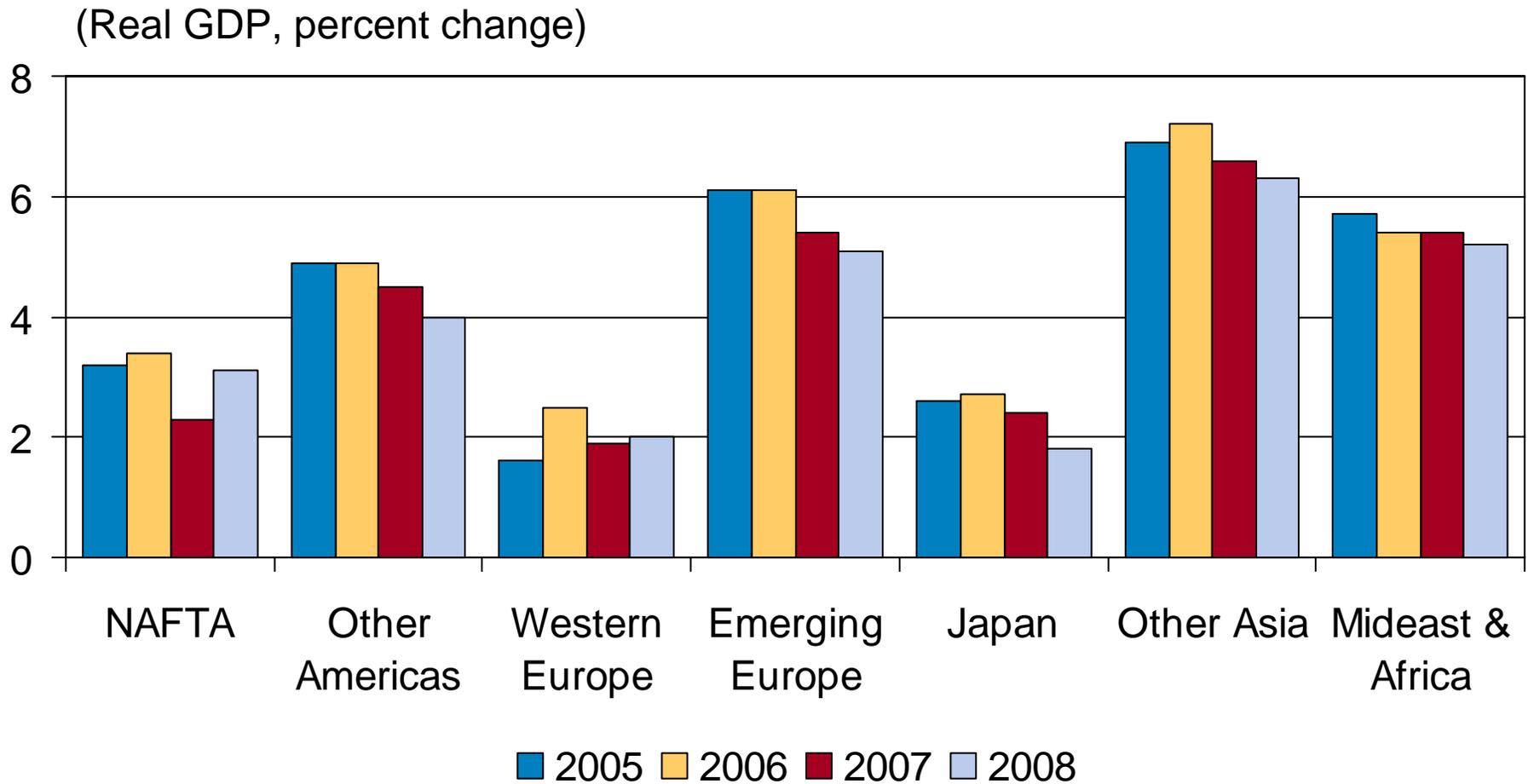
With apologies to John Naisbitt & Patricia Aburdene. Source *Megatrends 2000 (1990) / Megatrends (1982)*



Increasing globalization affects freight transport more directly than passenger transportation

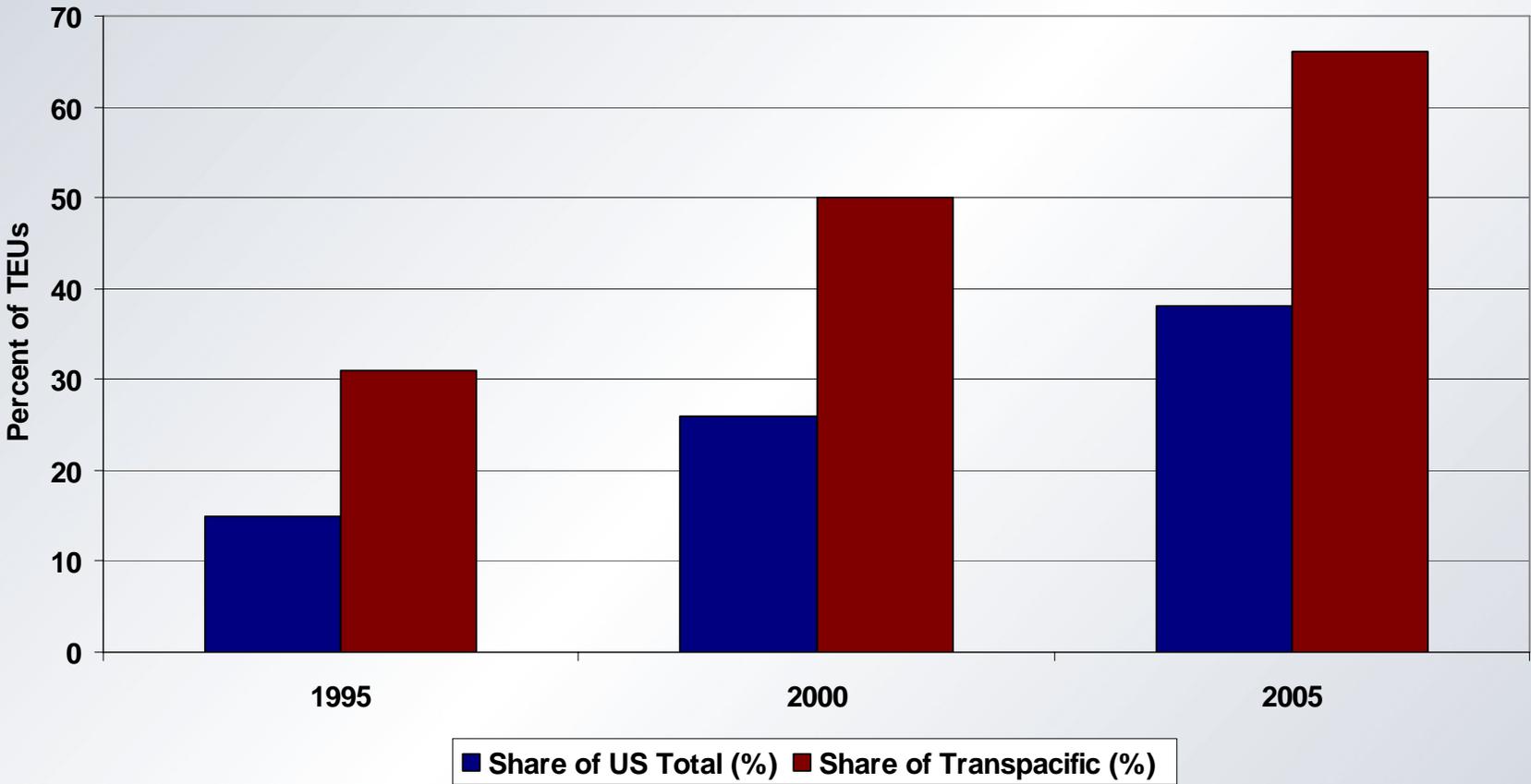
- **Reduced prices for traded goods and services; increased quality and choices available ... ever more SKUs & no passport needed**
- **U.S. enjoys lower prices for (most) imported goods**
- **U.S. exporters benefit from larger, more open markets**
 - ... *If* firms are world-class competitors**
- **Higher job growth in the trade, transportation and distribution sectors ... but decline in non-competitive producer industries**
- **Faster development of gateway region and exporting industries**
 - ... but decline in regions with non-competitive producers**
- **Shifts in economic geography, inside and out of the U.S.**
- **Environmental, safety and security impacts all change too**

Economic Growth is Uneven so Trade is Uneven



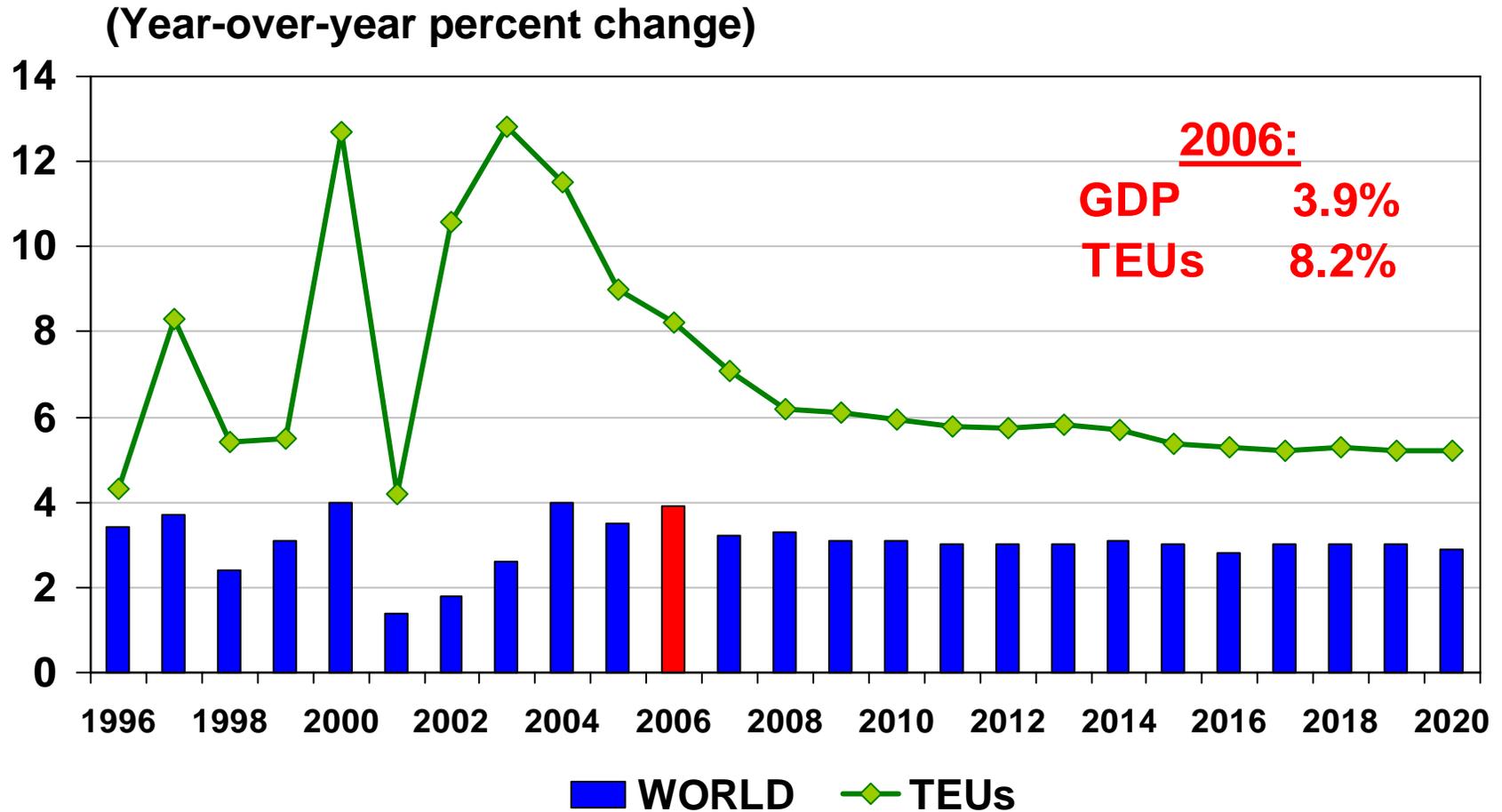
China's Role in U.S. Imports is Hard to Overstate

Percent of U.S. Containerized Import TEUs, 1995 - 2005



Note: Journal of Commerce PIERS

Globalization Drives Ocean Container Trade Volume Growth to be Faster than World Economic Growth

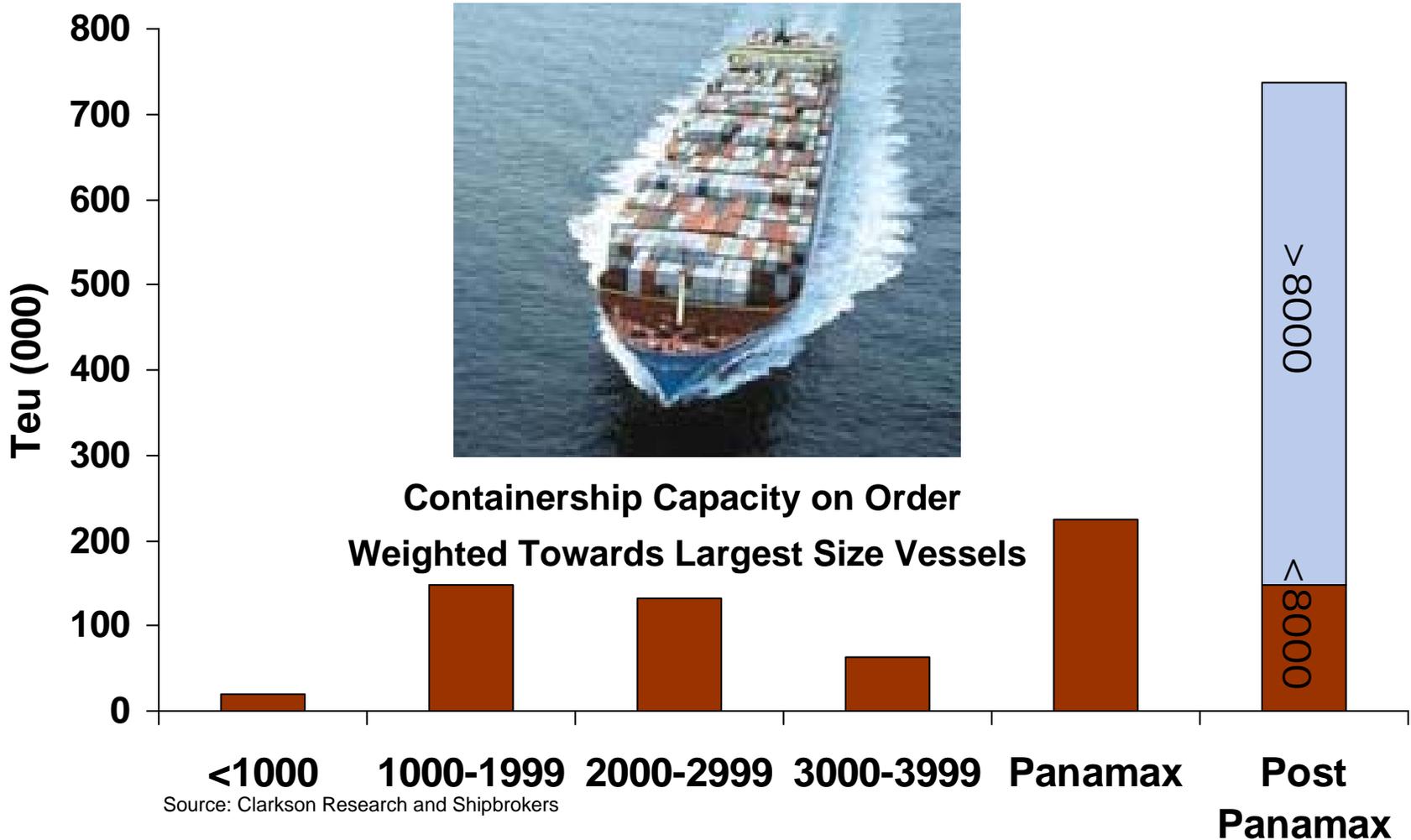


Source: Global Insight World Service and World Trade Service

Imbalanced U.S. Goods Trade is a Reflection of the U.S. Trade Deficit and Global Interdependency

- **The U.S. goods trade deficit will continue despite a long-term decline in the dollar exchange rate because foreigners will continue to lend the money to finance it**
- **Trading partners are dependent on the U.S. consumer for the demand to keep them employed**
- **The global trade imbalance requires a global solution:**
 - **Higher U.S. savings, including federal deficit reduction and a cooling of housing and consumer markets**
 - **Faster domestic growth in Western Europe and Asia**
 - **U.S. dollar depreciation; Asian currency appreciation**
- **Much export freight capacity will continue to move empty**

Equipment Economies of Scale Still Pursued When Economically Viable in Water, Rail, Air & Truck



Lower Unit Costs Dampen Growth in Rates, Encouraging More Transport

Supply Chain has Increasingly Complex Practices

- **Increasingly demand-driven, time-definite freight needs more reliability and visibility; and security of transit**
 - **Increasingly distributed, point-to-point, direct-to-customer shipments (“direct to store”) can add volume at smaller gateways and on secondary traffic lanes**
 - **Demand for more efficient flows – more products per shipment to reduce re-handling; pre-blocking containers on ships abroad for U.S. intermodal trains; reducing MTs**
 - **Overall, trade in lighter weight, higher value products outpaces growth in bulk commodity categories, meaning more air and ocean container trade, more expedited truck and more intermodal rail freight**
- . . . technology makes all this possible**

Globalization Affects the Domestic System Too

Problem:

- **Global trade growth remains faster than the growth of U.S. domestic system capacity across airports, seaports, terminals, railroads, trucking, warehousing and labor**

(Partial) Solutions:

- **International transportation will be increasingly integrated with domestic transportation; less W. Coast transloading; more “hub and spoke” (inland) distribution; more ‘bulk’ import DCs**
- **Smaller and more frequent shipments favors truck vs. rail; intermodal container vs. intermodal rail trailer**
- **Improved (double-stack) intermodal rail service captures more line-haul long-distance trucking (not just TL either)**
- **However, sustained (regional) trucking growth swamps other domestic mode growth; truck remains the default solution**



Workforce Issues Affect System Capacity as Well

Workers still matter for getting freight delivered

- **Demographics is working against the industry within U.S.**
- **Aging workforce with adequate opportunities from other professions offering a better quality of life for new entrants**
- **Worker “shortages” in segments of trucking, rail and maritime industry already exist and will not disappear**
- **Safety and security regulations for transportation labor will only increase, further reducing available pool of qualified and interested workers**
- **Labor costs will go up which will promote substitution of capital (e.g. equipment, technology) for labor and location of where labor is employed (e.g. off-shore consolidation)**

Consequences of Growth for Available Capacity

What developments are we likely to see?

- **Worsening congestion; urban slack capacity used up**
- **Deteriorating travel times and delivery time reliability**
- **Increasing costs (e.g., freight rates, ancillary fees, ...)**
- **More community NIMBY opposition to freight activity**
- **Inadequate public finance and investment in freight infrastructure building, operations and maintenance**
- **Increasing mismatch in scope and scale of shipper and carrier networks and government jurisdiction / interests**

Public Sector Response to Freight Challenges

What will we see? Better match benefits to costs:

- **New mileage-based or ton-mileage fees for highway use**
- **More toll roads, including potentially, truck-only lanes**
- **For all modes, ever tighter emissions limits, alternative fuel equipment mandates, new operating restrictions, new (e.g. carbon) taxes, and more user fees**
- **Further logistics workforce regulations (security / safety)**
- **Higher productivity equipment, including, potentially, higher truck size and weight, perhaps with user fees**
- **Subsidies / tax benefits for environmental reasons alone**

What Freight Modelers Can Expect

- **Further complexity in the relationships that contribute to the decision-making about freight system use**
- **A greater demand for forecasts sensitive to alternative policy scenarios and linked to other related models (e.g. environment, land-use, security risk, and public finance)**
- **Modeling a moving target: increased pace of change for the networks, practices and underlying production and consumption geography that we're trying to quantify**
- **Continued difficulty in obtaining freight activity data**



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Thank You

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