



**Transportation
Vision and
Strategy for
the 21st Century
Summit**

The Big Picture Panel
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**The U.S. Freight Transportation
System in the Global Economy**
Anchored in the Past—Adrift in the Future

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The Big Picture

The U.S. Freight Transportation System in the Global Economy

Anchored in the Past—Adrift in the Future



Vision—A vivid mental image of the future positive enough to motivate and elaborate enough to direct planning and goal setting. A vision should:

- Enlighten
- Motivate
- Direct

“Without changing our pattern of thought, we will not be able to solve the problems we created with our current patterns of thought.”

—Albert Einstein

“Vision without execution is hallucination.”

—Albert Einstein

The Vision

“Let’s envision the transportation system that could make a difference in our global competitiveness, security and quality of life.”

—HNTB Holdings, Ltd.

By 2030, the United States will have the integrated multi-modal freight transportation system will be needed to maintain global competitiveness, domestic economic strength, and the quality of life of the American people that will be delivered and sustained through a public–private partnership.

This system will require major public and private investment both within and outside of current programs and well beyond current levels. This capital should be applied to the following:

- Expanded and targeted highway capacity
- Integration of private supply-chain management and public infrastructure
- Increased freight rail capacity
- More efficient port operations
- Improved intermodal connections
- Coordinated multimodal/multistate corridors
- Strategically located intermodal facilities

An essential element of this vision must be political, governmental, and institutional change without which it cannot be realized. These changes must address the following:

- Lack of national leadership
- A weak Federal role
- Absence of a clear, consensus picture of the freight system and its performance
- Fragmented Congress
- U.S. DOT stove pipes
- Business-government disconnect
- Multi-state collaboration
- National benefit—local costs
- Local fragmentation and parochialism

Why is this vision needed?

What are the benefits of realizing this vision and the costs of not carrying it out?

Big Picture Vision Panel
U.S. Freight Transportation Trends
(in priority order)

1. Increasing concentration of economic activity in and around the larger metro areas.
 2. Insufficient strategic investment in capacity, efficiency and productivity of U.S. freight transportation systems.
 3. Increased community resistance to the impacts of heavy freight operations will continue to impact the ability to provide needed transportation infrastructure improvements and will undermine the ability of U.S. businesses to grow.
 4. Security regimes will apply to both domestic and international goods movement.
 5. Asia outstrips United States in production, innovation, and consumption with an enlarging consumer class; however the risk of political instability could jeopardize this growth.
 6. Increasing fragility of the transportation system makes it more vulnerable to natural and other disasters.
 7. Unwillingness of local governments to understand the impact of goods movement beyond their boundaries.
 8. Global warming will force major changes in transportation.
 9. Global economy is growing at a faster rate than global population—will create increasing demand for goods and resources around the world.
 10. U.S. economy will continue to be more of a service and technology provider in the world economy and less of a goods manufacturer.
 11. Ownership of assets and control of the capital is changing—new relationships are emerging that we do not fully understand, and that will impact U.S. competitiveness because decisions won't be fully in public or private hands.
 12. Shift in fuels and fuel source shares.
 13. North America will become more of a cohesive trading block.
 14. Radical innovations in IT, robotics, and energy will combine to produce unimaginable changes in the structure and patterns of economic activity and in the patterns of the flow of goods.
 15. Continued deployment and use of technology will widen the gap between the users of the transportation infrastructure and the capacity and operations of that infrastructure.
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Big Picture Vision Panel
U.S. Freight Transportation Gaps
(in priority order)

1. Political will to establish a *national* transportation policy.

 2. Infrastructure capacity across modes.

 3. A meaningful understanding by the public and policy makers of the importance of freight transportation to their well being.

 4. Lack of highly visible, credible national “champions” for transportation investment.

 5. With global trade growing, there is a significant need for the entire network of inter-modal capacity: port facilities, access for road (trucks), rail, and rail network capacity.

 6. Gap between local priorities, planning, and investment, and regional/national/global priorities, planning, and investment

 7. Lack of a comprehensive national plan for the multimodal movement of freight that separates the movement of people and the movement of freight.

 8. Failure to have a comprehensive, holistic view of the “freight transportation system.”

 9. Public policy changes are needed to speed up and synchronize public–private actions in building infrastructure.

 10. Fragmented decision-making process.

 11. Measurement tools and planning models which will give decision-makers better insight into implications of trends, actions, consequences, etc.

 12. Lack of understanding of how bad it is going to get on the highways as freight floods the system in the next 20 years.

 13. Mechanisms to achieve collaboration and agreement between citizens, private-sector owners, and government leaders.

 14. Financial tools which would encourage private investors, public funding in new ways, including tax incentives.

 15. Rational and efficient connectivity between the modes that will result in more throughput.
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The Challenge

“A transportation system that moves people and goods safely, reliably, and efficiently is vital to the economic future of this country and our continued individual quality of life.”

–Associated General Contractors

Business has entered the 21st Century, but the U.S. freight transportation system has not. America cannot compete in the 21st Century global economy with a freight transportation built in and for the 18th, 19th, and 20th Centuries. Compared with its major competitors, the United States still has the most fully developed, efficient, and productive transportation system. It is, however, deteriorating, over-capacity, obsolete, fragmented, and not well-integrated with contemporary supply-chain management practices.

America’s major competitors are investing in transportation and intending to leap into the future while the United States patches up the past. Every mile of road, railroad, and waterway, every acre of seaport is operating in the global economy and adding to or subtracting from the global competitiveness of the United States. This is not a matter of choice.

By the middle of this century, the U.S. economy will not be the world’s largest. Will America be in decline? Investment in a 21st Century transportation system is one of the actions needed to avert this possibility.

The challenge now is to think differently and to execute that thinking effectively and expeditiously.

Where We Are and How We Got Here

“A 21st Century vision will require a comprehensive and integrated understanding of the United States within the global trading patterns and world economy to provide the platform for developing new ways to effectively guide policy, planning, regulation, and investment in the surface transportation system.”

—Michael Gallis

History

Over the past 300 years, a succession of transportation mode revolutions have combined to create the freight transportation systems that serve the nation today

They were developed in a sequence of mode specific layers by local, state, and Federal governments and a host of transportation and transportation related companies. In the 17th and 18th Centuries, the seaports and early roads. In the 19th Century, in quick succession, canals, steamships, and railroads. In the early 20th Century the railroad system peaked and the internal combustion engine planted the seed for the growth of car and truck traffic as well as air transport.

The national connectivity created by the Interstate Highway System, planned in the 1940s, enacted in the 1950s, and built in the succeeding decades established the physical base for revolutionary changes in freight transportation. The arena in which that potential could be realized was created by the deregulation of all modes in the last quarter of the past century, with results multiplied through the application of computing and communications technology in the field of business logistics

In each stage and across each mode, the goals and performance metrics were never focused on integrating the new layer or mode with the older layers and modes, but rather to achieve efficiency within each as they were developed. As a result, the nation’s transportation infrastructure is highly fragmented. Even if there were substantial improvements in the separate modal infrastructures they would still not constitute an integrated system.

“The nation is entering the early stages of a freight transportation capacity crisis. But the public sector is poorly positioned to deal with the emerging crisis because there is: no clear and consistent description of the national freight transportation system; insufficient public sector knowledge of freight transportation and supply chain management and their importance to businesses and economic growth; lack of coordinated public and private actions on freight transportation policies, programs, and finance; and lack of public sector focus on transportation operations.”

—Cambridge Systematics, Inc.

The modal systems are aging and stretched to capacity. All analyses, using all measures, conclude that each of those systems highways, railroads, ports, waterways, and airports requires investment well beyond current levels to maintain, much less improve their performance and create an integrated system.

The buyers, sellers, and carriers have until now worked within and around the constraints of the freight transportation system(s).

Changing Business Models

The U.S. freight transportation system was built to support patterns of freight movement which have undergone radical change. Throughout most of the 20th Century, the primary flow was Midwest outbound. The rate schedules reflected that the head-haul was Midwest outbound and the back-haul west coast ports inbound. In the past decade, this pattern has reversed itself.

This has also changed the characteristics and demands on the configuration of a system to handle principally outbound product to handle what is now a large and growing inbound distribution system. These changes in the national system, have especially concentrated impacts in the metropolitan regions that form the hubs in the system, such as Los Angeles’ Chicago, New York–New Jersey, Seattle–Tacoma, and a growing number of others such as the port areas of Virginia, South Carolina, and Georgia.

Changing business practices have also integrated shipping into the production process increasing the demand for on-time delivery. Traditionally, moving freight was assigned to the shipping department. It was considered separate from production. However, as computers and communications were increasingly deployed in the methods of production and distribution, new concepts of freight movement moved them out of the shipping department and into the stream of production.

“There is a tremendous amount of strength and flexibility in our nation’s transportation systems. But...all freight modes in the United States are facing capacity challenges. At full or near-full capacity, transport systems become more fragile. With inadequate redundancy, there are fewer alternative routes and facilities, breakdowns and back-ups proliferate faster and further, and recovery from disruptions takes longer.”

–Association of American Railroads

As these new technologies altered business and production practices, a shift from mass standardization to mass customization took place. This increased the complexity of the pattern of shipping and increased the demand for scheduled delivery. “Shipping” was no longer viewed as a separate activity, but as an integrated part of the production process for every industry.

The Global Economy

By themselves growth in the population, and the domestic economy combined with the changes in business practices would have put heavy pressure on the freight transportation system, At the same, however, the world economy was going through a revolution, putting more strain on the system. Throughout the 20th Century, the United States had a competitive advantage within the free world marketplace, as it was the largest of the “Free World” populations and economies. Following the collapse of communism in 1991 though, a new global economic geography began to take form as billion-person nations, such as China and India, became active in the world marketplace.

Consequently, the global Gross World Product (GWP) is rising at the fastest rate in history creating a disproportionate strain on the freight system because access to needed resources and the location of economic activity are so dispersed throughout the global network.

“Based on solid demand, known system limitations, and increasing peak congestion, there is a growing freight crisis. If needed infrastructure is not quickly added, there will be a frustration in free freight movement. This will impact our competitiveness and the price U.S. consumers pay for goods.”

—Maersk, Inc.

The delivery of a computer to the buyer’s front door is likely to have included multiple trips in Asia to move and assemble parts for final assembly in the United States before delivery to the final destination. More trips, longer distances, and tighter time tolerances have taken advantage of the efficiency and economy of the domestic transportation system, which has been a major asset to United States competitiveness.

Today, however, the performance the modal subsystems is deteriorating and the freight system remains physically, functionally, and institutionally fragmented within and between each of the modes involved in moving freight, including roads, rails, sea-ports, and airports. The gap that has emerged between the fragmented transportation system we have and the more fully integrated system we need to achieve system wide efficiencies and synergies to remain competitive is growing and placing an increasing drag on the nation’s competitiveness.

The Consequences of the Status Quo

“The nation needs a vision of the role of freight as part of the transportation system which is clear, understandable, and relevant. The vision must be tied to both our economic future and to energy independence and environmental sustainability. It must recognize benefits to the United States of globalization and that other nation’s are dealing with these same problems but are advancing faster.”

–Eno Foundation

The consequence of our outdated and fragmented freight transportation system coupled with increased economic activity and population increases is congestion and reduced reliability, resulting in higher costs to business and consumers and reduced economic efficiency.

Within each mode that makes up the national surface transportation system are significant congestion problems that are the result of the lack of capacity and eccentricities in the system. The congestion within each system is illustrated in the set of diagrams below. The gap that is not revealed by these diagrams is the gap in the total performance of the system taken as a whole. The metrics to demonstrate the size of the gap between the system and the demands of business and global competition would indicate a much more serious and disturbing picture of the condition of the U.S. infrastructure and its ability to support U.S. competitiveness in the 21st Century.

As trucking is the primary means of moving manufactured goods across the United States, the congestion on the highways is an impediment to the ability to maintain on-time efficient delivery schedules. As truckers face ever increasing levels of congestion, the development of a “Critical Corridors” concept and a resulting plan has emerged to keep freight flowing in the United States.



Figure 1. Potentially Congested Highways by 2020

This diagram shows the anticipated levels of congestion on major roadways across the nation in 2020. The patterns are expected to be similar in 2035—more intensive traffic and congestion in our major metropolitan areas; more traffic and congestion in our medium and smaller cities; spreading congestion along our major intercity routes; and a concentration of traffic and congestion at our major international gateways, both land border crossings and water ports.

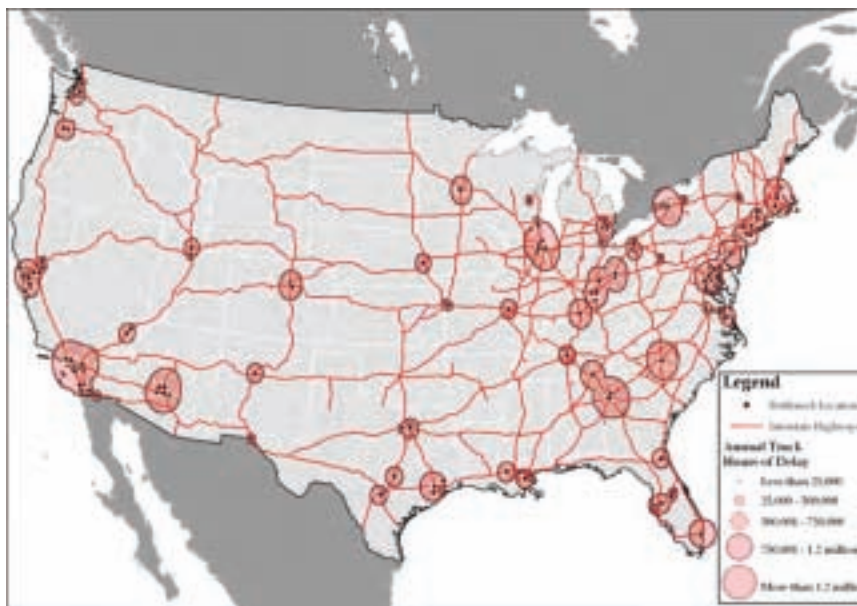


Figure 2. Major Freight-Truck Bottlenecks

This diagram shows the location of the highway interchange bottlenecks for trucks. The bottleneck locations are indicated by a solid dot. The size of circle accompanying each dot indicates the annual truck-hours of delay associated with the bottleneck. Each of the top 10 highway interchange bottlenecks cause over a million truck-hours of delay per year.



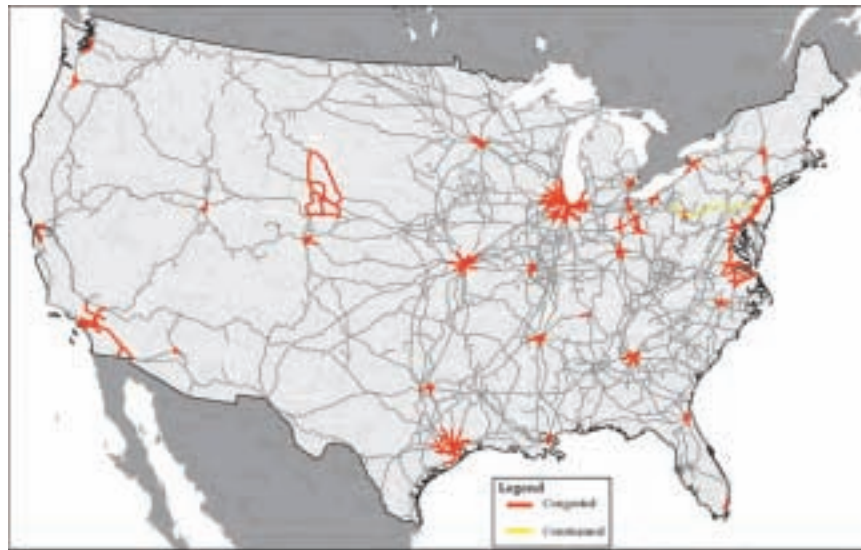


Figure 3. Approximate Freight-Rail Choke Points and Congested Areas

This diagram shows the nation's most severe railroad choke points and congested lines. This map was constructed using the best professional judgment of a group of rail experts because there is no systematic national inventory of rail capacity and congestion. The map highlights congested corridors, such as the Northeast Corridor and Southern California; major interchange locations, such as Chicago, Kansas City, and Memphis; and congested hub facilities, such as Atlanta, Houston, and Cincinnati.

By overlaying each of these maps it is possible to see the need for investments and actions that remedy that problems in each mode. It is not currently possible, however, to portray and assess the entire system or to relate the transportation system to other important elements of the economy, society, and environment, and understand that there are zones of multi-modal congestion concentrated in and between the key metropolitan areas that have a national as well as regional impact and consequences. The lack of a capacity to produce an integrated multi-modal picture reveals the currently siloed condition of planning and performance measurements.

Even a complete representation of the combined modal systems does not relate them to the global freight flows as seen in the map below. What is clear is that the volume of freight is not the only consequence of participating in the global economy. The origins, destinations, and routes create new patterns of demand placed on the transportation system, which has not been configured to accommodate them.



Figure 4. Approximate Water, Rail, and Highway Access Conditions at the Top U.S. Container Ports

At most of the the nation's major container ports the landside highway and rail connections are congested and constrained.



Figure 6. Global Network Map

Every location in the United States and every segment of the U.S. freight transportation system is embedded in the global network.

“The effect of rising congestion is like a tax—only it escalates every year without a vote of the people. This congestion tax can be repealed only if the United States adopts a new vision and new strategy for a global, 21st Century American Transportation System.”

—American Association of State Highway and Transportation Officials

“All freight modes in the United States are facing capacity challenges. At or near full capacity, transport systems become more fragile. With inadequate redundancy, there are fewer alternative routes and facilities, breakdowns and back-ups proliferate faster and further, and recovery from disruptions takes longer.”

—Association of American Railroads

Future Concerns

“Our transportation system is a gift of visionaries from the past, people like President Eisenhower, who led the development of the interstate highway systems; President Lincoln, who saw the need for a transcontinental railroad; and Malcolm McLean, who saw that the container would change the maritime industry.”

–National Industrial Transportation League

Growth in Global Trade

By 2050, the world’s population is expected to rise by 50 percent, from six to nine billion. The population of the United States is also expected to rise by 50 percent, from 300 million to 450 million. This increase in population will create greater demand for goods, housing and jobs—all of which will greatly increase the demand on the freight system. As world population increases, the size of the United States population compared to the rest of world will remain essentially the same. With rising standards of living in the developing nations, the level of economic activity will continue to increase, driving the increase in freight flows through the global transportation network.

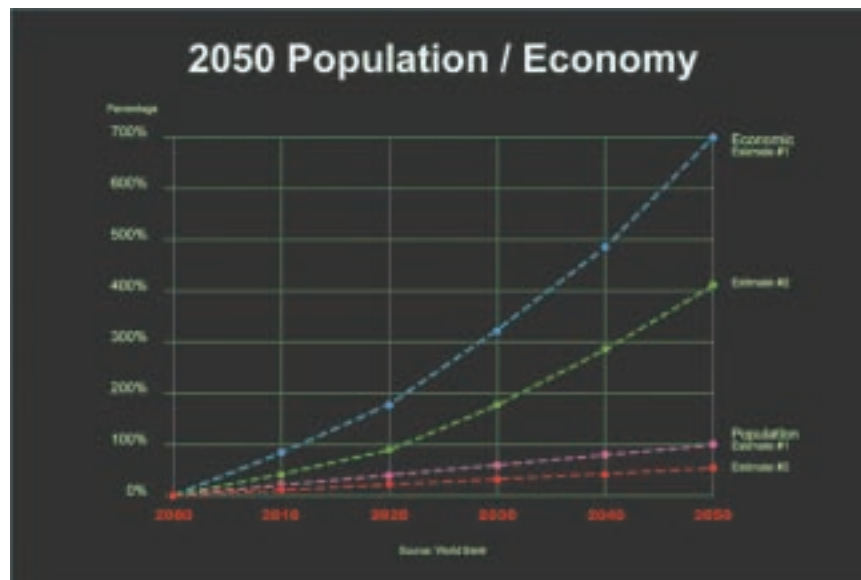


Figure 6. 2050 Trends

Economic growth over the next 40+ years will far exceed population growth. This will increase the amount of natural resources, components and products moving through the global network. As a result the amount of freight moving through the U.S. transportation and logistics grid will flood the system.

The long-term projections of freight volume increases reveal that the nation is unprepared and is not preparing fast enough for the freight increase. The increase in freight

flows will not be equal across the nation, but unequal due to the relationship of the patterns of freight to the unequal dispersion of the size of urban areas, population concentrations, consumption and production across the nation. In the “AASHTO Freight Bottom Line Report” freight is projected to grow by 89 percent by 2035. However, more dramatic increases are anticipated in particular categories and in particular places. For example, a recent report on port volume projections by 2020 prepared by Maersk, Inc. forecasts a four-fold increase of container volumes in Los Angeles, Houston, and Savannah with a near tripling of volumes at the ports of New York/New Jersey, Charleston, and Virginia and greater than doubling at the ports of Miami, Tacoma, and Oakland.



Figure 7. In 2025, U.S. ports and the surface transportation systems will be carrying a much heavier load in patterns of freight movement that support a North American economy.

These volumes will overwhelm the ports and in the surface freight system in each of these metropolitan areas and the inland corridors that currently suffer congestion. If these projections are correct portions of the freight system will be jammed by 2020.

International Competitiveness

Following the collapse of communism in 1991, a new global economic geography began to take form as billion-person nations, such as China and India, became active in the world marketplace. The need to form a larger unit of competition led the smaller nations of Europe to form a multi-nation trading bloc. The U.S. also recognized the need to join with its neighboring countries to form a larger unit of competition. The North American trading bloc linking Canada, Mexico, and the United States was formed in 1994 as a result of the NAFTA treaties. In 2006, six nations in Central America formed an expansion of the three-nation trading bloc with the signing of the CAFTA treaty

Across the world, nations and trading blocs have launched new transportation and logistics initiatives. The most notable are those in the European Union and China, but also in countries such as India and Brazil. The Europeans have already completed a number of large-scale projects, including the Chunnel and the Scandinavian bridge connecting Sweden and Denmark that have led to greater continental economic integration. China has an ambitious and multi-layered transportation and logistics plan that will transform its surface road and rail network into a continental scale grid, and totally transform its airports and seaports into highly efficient freight and passenger facilities by the year 2020, just 13 years in the future.



Figure 8. Increasingly National Economies are Competing in the Global Economy in Major Trading Blocs

It is clear that the economies of scale that the United States enjoyed in the Free World during most of the 20th Century have disappeared. As India and China with populations more than three and four times the size of the United States have become part of the global marketplace, the United States faces significant economic challenges. The formation of the North American Trading Bloc of Canada and Mexico, followed by the six CAFTA nations have allowed the United States to increase its relative size in global competition. To maximize the benefits of these trade agreements a North American freight transportation strategy will have to be developed. (See map of North American freight flows above.) Without a national policy guiding the development of the national system, no systematic or rational relationship can be developed with the infrastructure of the other nations of North America.

Conclusion

“Sustainable goods movement lies at the center of our quality of life, not only for the availability of consumer products, but because of transportation’s impact on land use, energy consumption and environmental quality... There should be a Federal policy regarding partnership for freight and goods movement funding through a dedicated Federal Freight Trust Fund.”

**–Coalition for America’s Gateways
and Trade Corridors**

Business as usual, incrementalism and opportunism will not create the freight transportation system that the United States needs in the 21st Century. The United States is underinvesting in its transportation systems while our major competitors are making major new investments. While mode specific and substantial modal improvements be made be made, a bold new vision of an integrated freight transportation system must be created to provide the framework for the future. The United States has fallen behind in transportation investment and needs to move quickly to catch up. We need to rethink how we fund our freight network but whatever mechanisms are used will be both public and private.

Carrying out a new vision for freight transportation in the global economy will be a challenge due to the complexity of the transportation system, and the need to maximize the contributions made by both the public and private sectors. On the public side, there is both lack of vertical integration between Federal, state, and local agencies and a horizontal lack of integration within the Federal departments and agencies as well as the House and Senate committees that are charged with the responsibility of funding transportation. There is as well little integration between modes in multimodal transportation corridors and among states through which those corridors run.

“With few exceptions, Congress and the states tend to view the HTF and the highway reauthorization process as simply an opportunity to address parochial interests, without putting these decisions into the context of a broader national vision. What attempts are made to focus on national priorities tend to get lost in the battle for greater state apportionments and earmarks for local projects. In the meantime, critical projects whose failings have national or regional implications go unfunded. The ability to plan, from a national perspective, for the transportation challenges of the 21st Century, is impossible within this parochial atmosphere.”

–American Trucking Associations

On the private side, there are companies that own physical infrastructure and operate components of the system such as railroads, while others, such as trucking companies, do not own the physical infrastructure but own the operating companies. In addition, there are the businesses that have integrated the use of the system into their production processes and customers that receive goods through the system.

The United States does not have a shared vision and a policy context within which it is possible to set the priorities and make the investments necessary to compete effectively in the world market. Such a context is needed and it cannot be developed without Federal participation, resources, and leadership.

“There is currently no comprehensive national strategic initiative targeted at facilitating the efficient and secure movement of freight in the United States. The scope of this challenge is beyond the ability of an individual state or local planning authority to address... The U.S. economy and business community require a surface transportation network that provides for the predictable and reliable movement of freight. The development of a national freight strategy is more important now than ever.”

**–American Road and Transportation
Builders Association**

Appendix

“The Big Picture”—Breakout Group #1

Key Points

Modal Needs

- 1) **Ports**—Need to increase efficiency and improve internal organization to expand their capacity. Need to improve the shuttle capacity to off-site distribution centers “last Lousy Mile” and improve connections to the Interstate
- 2) **Distribution Centers**—Integrate with rail, and Create Commerce Corridors to serve distribution centers rather than having distribution centers dispersed over a geographic area.
- 3) **Rail**—Need to be designed, built, and improved to meet 21st Century. Heartland Corridor can serve as a model.
- 4) **Trucks**—Truck-only lanes in designated corridors and expanded capacity across the board. Create targeted increases in truck size and weight.

Institutional Change

1. Realign Congressional committees.
2. Create an Undersecretary for Freight.
3. Create a new entity for regional-multi-state planning with a multi-state bank that has a pool of money for regional purposes, and operates like an investment bank.

“Big Picture”—Group #2

Key Points

The Choice: America gets better or America gets worse.

Vision—By 2030, the U.S. freight transportation system will once again be recognized as the finest in the world, allowing its people and businesses to prosper in the domestic and global economy. The United States will be the first nation to fully integrate its transportation system, reflecting an understanding of modal roles in global, national, regional, local, and intercity services and activities.

Why the Public Cares—If no action is taken in light of projected population growth, increasing global competition, and constrained system, system breakdowns will occur, costs will go up, jobs and commuting will become more frustrating, investments will drop off, there will be less access to diversity of goods, and the quality of life will suffer.

Maximize/Optimize—Utilization of system by making choices that use right modes for right trips/purposes. Data and performance measure models—need a continuous flow of information to assess position, adjust plans, and inform decisions.

Reassert Federal Role (common good)

- First, and last source of funding
 - Focus on national values—economy, security, environment, and safety
 - Specific source of funds to be used for new program structure; existing funds for maintaining the current system and planning for new systems.
-

“Big Picture”—Group #3

Key Points

The 21st Century has arrived and it is not the same as the 20th Century.

Business and Industry—Has developed a seamless, integrated, continuous, synchronized on time-delivery system. There is a need, however for greater coordination and integration of the freight system—the physical infrastructure and operational structure

Fragmentation—The public sector is fragmented vertically by mode, horizontally by level of government, and by geographic jurisdiction. The growing fragmentation of ownership and financing is putting more pressure on the Federal government as the only entity that can coordinate the system on a national and North American Trading bloc scale and across metropolitan regions that cross local and state boundaries.

The Institutional Framework important for freight transportation includes:

- Public Sector—Federal, state, local, security, etc.
- Private Sector—Transportation industry and equity groups, air, trucking, water, rails, investment bankers, etc.
- Advocacy Groups and Associations—Representing various industry, government, and related groups
- Businesses—Involved in production of Manufacturing, agriculture, food, energy, etc.
- The General Public—Consumer groups, etc.
- Benefits—To create the messages that will resonate, we need to identify the threats to raise awareness as well as the opportunity for a better future.

Threats and Opportunities

- Raises the cost of goods
 - Lowers the standard of living and the quality of life
 - National competitive disadvantage
 - Increases negative environmental impacts
 - (Opportunities are the reverse of each item above.)
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“Big Picture”—Group #4

Key Points

Build links between high-intensity freight areas by providing for freight corridors without sacrificing non-priority routes. Low-density connections to high-density service must be upheld.

Planners must be educated as to freight impacts under a holistic approach to freight planning and land use.

Planners, modal representatives and officials need to work together. Possibly establish a user governing body at the national level?

Create mechanisms to achieve collaboration between citizens, private sector and government and focus on closing the gap between local priorities and national priorities. System users must communicate with policymakers.

Maintain a strong Federal role.

- Establish broad goals and performance measures for the system,
- Speed up and synchronize approvals.
- Support the transfer of technology from private sector to broader public uses.
- Provide for an infusion of capital in such a way that modal balances are maintained.

Look to all levels of government to participate in supporting a dedicated freight system.
