

Leveraging the Freight Network

10 Steps to Improved Modal Connectivity



November 2007

Prepared by

Thomas L. Finkbiner • Theodore Prince

In Association with



National Center for Intermodal Transportation
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This report is solely the work of the authors and is representative of their personal opinions, views and analysis.

About the Authors

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The National Center for Intermodal Transportation (NCIT) is a partnership between the University of Denver and Mississippi State University. NCIT builds upon the activities of the Intermodal Transportation Institute (ITI) at the University of Denver and the activities of the centers with transportation focuses at Mississippi State University. NCIT is a part of the USDOT University Transportation Centers Program and was reauthorized under SAFETEA-LU.

The Foundation for Intermodal Research and Education (FIRE) supports the development of authoritative information about freight transportation and acting to encourage meaningful dialogue regarding industry issues as its reports are issued.

EXECUTIVE SUMMARY

“Our proposed solutions focus on intermodal improvements, which we believe have the power to leverage other freight network initiatives and maximize overall value for the entire network, not just a single mode or special interest.”

Historically, the U.S. federal government has recognized—and supported—the national development of transportation infrastructure necessary for economic growth and national defense. For many years, any investment was an improvement. However, such a haphazard arrangement is no longer acceptable. Today, we find ourselves with a funding mechanism as dysfunctional as the policy mechanism itself.

Transportation is an asset-based, network-operating business. Unfortunately, the system cannot efficiently accommodate the demands being placed on the road, rail, and waterway networks. In 2005, the American Society of Civil Engineers gave our nation’s infrastructure a grade of D+ and estimated a \$1.6 trillion price to repair it.

Many transportation stakeholders are raising issues in advance of the 2009 reauthorization cycle. During our interviews, we heard many ideas about our nation’s transportation problems. They do not all bear repeating, but a unified theme emerged:

The industry consensus is that freight is talking, and the federal government is not listening.

The overriding common theme expressed was the need for modal connectivity and solutions which support the interdependent freight transportation network. Unfortunately, intermodal transportation, the unifying force of our national transportation system, does not fit within the legacy modal governance and funding maintained by the federal government in both the executive and legislative branches. It has, therefore, failed to attract meaningful support.

Almost all respondents communicated the feeling that “politics” was the major problem facing the transportation system and that earmarks were only the tip of the iceberg. Freight is a national issue which moves within corridors that are national, continental, and international in nature. It is an asset-based, network-operating model that is not adequately addressed today. The current practice of relying on state and local initiatives is insufficient.

Leadership in the political arena is minimal because of: a lack of understanding that prevents an accurate assessment of the problem’s severity; modal silos (e.g., truck, rail, water); policy silos (trade, energy, environment); and, a failure to develop a national transportation policy.

We believe that current project planning for surface freight transportation is ineffective because the passenger and transit models—which are focused locally—fail to consider the entire freight network, and the network no longer enjoys the luxury of overcapacity. Prior to deregulation, overcapacity was a specific public goal. Carriers had protected business segments in exchange for maintaining excess capacity which would be called upon in times of national emergency. However, a generation later, all of this excess capacity has been wrung from the system. The once-in-an-eternity windfall has been consumed.

Furthermore, beyond the modal silos within transportation, transportation is itself a functional policy silo.

- Significant economic benefits have come from international trade. Unfortunately, while the federal government clearly supports the advancement of trade, it does little to provide plans for managing major trade volumes.
- Although the freight transportation network is a key component of national defense and homeland security, the historical relationship seems to have become ignored.
- Freight transportation policy today is increasingly interwoven with energy, economics, environmental concerns and international politics; however, transportation, which is already disaggregated into modal silos, finds itself just one silo in this larger, national policy area.

Our proposed solutions focus on intermodal improvements, which we believe have the power to leverage other freight network initiatives and maximize overall value for the entire network, not just a single mode or special interest.

1. We must reinforce the importance of intermodal connectors: the short—but essential—links that interconnect the freight transportation system. These connectors have been orphaned in the planning and financing process because they are not the specific domain of any of the legacy modal interest groups.

It was very disappointing to see that envisioned language in SAFETEA-LUA, committing 2% of highway funds to intermodal connectors, was removed in a conference committee—even though it had been included in both the original House and Senate versions of the legislation.

2. We must expand the definition of intermodal connectors. Although they represent less than one percent of National Highway System (NHS) mileage, NHS connectors are key conduits for the timely and reliable delivery of goods.

Our proposed view is that intermodal connectors are essential pieces of infrastructure that support multi-modal transportation. Freight moves through local, national, continental and international networks. These networks are, by definition, intertwined to the point where the constriction of any single “node” in the network, impacts the entire network.

3. We must solve the “outside the gate problem.” While there is a demonstrated supply of investment capital for marine terminals and port infrastructure “inside the gate,” the intermodal infrastructure [outside the gate] is not so easily funded.

These intermodal connectors “outside the gate” are deserving of federal attention and support. Intermodal connectors are arcs and nodes in the national freight network and federal pre-emption would obviate the cacophony surrounding numerous state and local proposals.

“We are starting to see infrastructure problems pose a threat to America’s economic growth and security.”



In order for the 24/7 supply chain to extend throughout the entire system, we must overcome local objections which ripple throughout the transportation network.

4. We must recognize freight’s federal role. There should not be any argument about the systemic nature of freight movement. Because the system is a network it must be planned and operated as such, which is impossible in the absence of a national transportation policy.

The federal government has a historical responsibility for the national freight transportation network. Mechanisms need to be developed for local input into federal decisions about freight that are larger than a single city, state or region.

A new political process, possibly modeled along the lines of Base Realignment and Closure (BRAC), might be necessary.

Finally, the development of a freight network plan is long overdue.

5. We should continue the preeminent role of the fuel tax and the Highway Trust Fund (HTF). The HTF works. To substantially change or destroy this mechanism requires replacing it with something better, which, as a practical matter, probably cannot be agreed upon.

The fuel tax should be increased and indexed to inflation to maintain its purchasing power. A lifecycle approach to network assets is also needed.

It is clear, however, that additional innovative and alternative means of funding must be developed to complement the fuel tax. Inevitably, this will lead to consideration of new methodologies (e.g., truck-only Interstate lanes).

6. We must maintain the Highway Trust Fund firewall. TEA-21 assured that a budgetary firewall protected funding in the HTF for its intended purpose. In comparison, other trust funds (i.e., Harbor Maintenance Tax) have had user fees collected—but not deployed for their intended purpose.

7. We must recognize the confluence of transportation, energy and environment. The transportation industry in the United States is one of the largest consumers of oil in the world. This has resulted in Americans funding both sides of the war on terrorism through our armies and our nation’s insatiable thirst for oil.

Beyond “purchasing recovery,” the fuel tax needs to be significantly increased in order to reduce the growth of demand for oil. The increase should be phased in over a period of years so as to allow a smooth transition for users of the system.

8. We must extend the Passenger Facility Charge model to intermodal. We propose an Intermodal Facility and Connector charge (IFC) that would be assessed on all freight movements transiting modes.

Similar in nature to the Passenger Facility Charge (PFC) Program, the IFC would ensure that “orphaned” connectors would have a reliable source of funding—independent of the individual modes—yet funded by intermodal users.

Ideally, the IFC charges would be matched against other funds raised through public-private partnerships and innovative financing.

9. We need to change intermodal thinking from end-to-end to side-by-side. Traditional intermodal thinking has been end-to-end (i.e., door-to-door) in nature. This eliminates the ability to think about intermodal maximizing the

“We, the freight transportation industry, must focus on the future, put our arguments aside, and unite on a national transportation focus.”

capacity for both freight and passenger traffic at the same time—although both sectors are dealing with door-to-door transportation solutions.

We advocate the development of programs that foster intermodal solutions that eliminate negative externalities (i.e., congestion and pollution). Rather than argue over whether externalities are “fairly” assigned, we envision a process to “internalize the externalities.”

We believe that intermodal connector programs should include modal shift and traffic avoidance programs as part of freight corridor projects. It is our hope that several pilot/demonstration projects will be approved in this reauthorization cycle.

10. We should conduct a meaningful short sea shipping pilot. Short-sea shipping is often held out as a means of providing transportation capacity in selected markets. We believe that such possibilities exist here; however, the dialogue must be based on a more realistic analysis. There are a lot of economic obstacles to short sea shipping.

We believe that we should determine if a Jones Act waiver (to requiring U.S.-built vessels) could induce players to enter a market which had been heretofore unimaginable for short sea shipping.

We believe intermodal focus provides the catalyst for this common vision because it leverages the strengths of every mode. Transportation can achieve necessary synergies because integrated service is better, and more productive, than the individual modes. We believe the nation has reached an inflection point. The economic gains unleashed by deregulation have been consumed, and we are starting to see infrastructure problems pose a threat to America’s economic growth and security.

Government, by itself, cannot solve all its problems without the active participation of the private sector. Benjamin Franklin’s admonition that “We must all hang together, or, most assuredly, we shall all hang separately” provides appropriate guidance. We, the freight transportation industry, must focus on the future, put our arguments aside, and unite on a national transportation focus which will ensure that our freight system remains the finest in the world.

INTRODUCTION

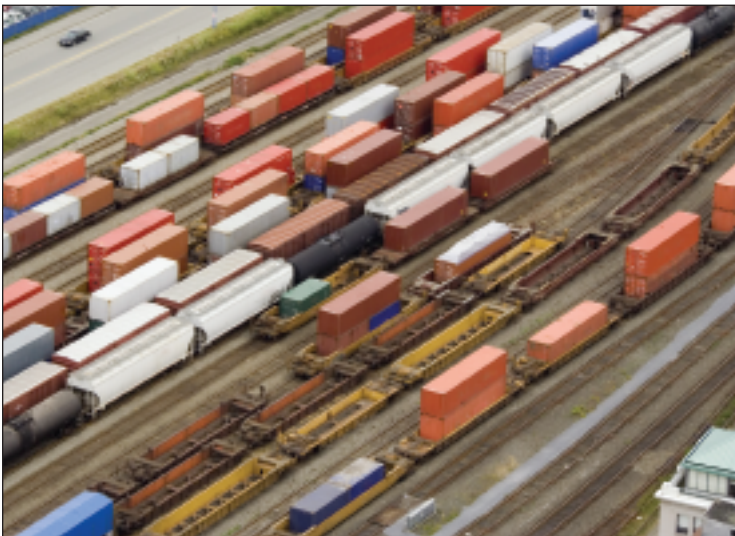
“Today, we find ourselves with a funding mechanism as dysfunctional as the policy mechanism itself.”

Historically, the U.S. federal government has recognized the national significance of transportation, and has provided the leadership (and funding) to plan, maintain and build our transportation network infrastructure (e.g., Trans-continental railroads, national highway system, airports, and inland dams and waterways).

For years, in the absence of any infrastructure, any investment improved the transportation system. However, as our transportation system matured, development of a more sophisticated approach to infrastructure became an urgent priority. Today, we find ourselves with a funding mechanism as dysfunctional as the policy mechanism itself.

Transportation is an asset-based, network-operating business. It has many moving parts which are owned and operated by a range of participants. Today, signs abound that the infrastructure supporting this network, which in turn helps support our economy, is no longer viable. The national system cannot efficiently accommodate the demands being placed on the road, rail and waterway networks.

In, 2005, the American Society of Civil Engineers gave our nation’s infrastructure a grade of D+. The report noted that “Congested highways, overflowing sewers and



and corroding bridges are constant reminders of the looming crisis that jeopardizes our nation’s prosperity and our quality of life. With new grades for the first time since 2001, our transportation infrastructure has shown little to no improvement since receiving a collective D+ in 2001. In fact, some areas slid toward failing grades.”¹

Many transportation stakeholders are raising issues in advance of the 2009 reauthorization cycle. Growth of the Interstate system’s infrastructure has not kept pace with the growth of cargo volume. Motor carriers have made proposals regarding dedicated truck lanes—and means by which charges will be assessed and the system financed. Similarly, during our interviews of transportation

stakeholders, we heard compelling suggestions about public-private partnerships, innovative financing, and consistent funding. These are just some of the many ideas we heard in our discussions about our nation’s transportation problems. They do not all bear repeating, but several themes emerged:

The industry consensus is that freight is talking, and the federal government is not listening.

Without reviewing the findings and recommendations already proffered by a plethora of stakeholders, we will focus on the freight system’s orphan—intermodal.

¹ “2005 Report Card for America’s Infrastructure.” American Society of Civil Engineers. <http://www.asce.org/reportcard/2005/index2005.cfm>

Although intermodal transportation is as old as transportation itself, it does not fit within the legacy modal governance and funding maintained by the federal government in both the executive and legislative branches. It has, therefore, failed to attract meaningful support.

We appreciate the time and effort provided by the industry leaders who met with us and/or responded to our survey. The study's methodology involved a survey sent to 188 industry leaders from the freight transportation industry. All of the feedback is worthy of consideration within the larger scope of the freight transportation network.

The Problem is Bigger Than Just Transportation

The overriding common theme expressed was the need for modal connectivity and solutions which support the interdependent freight transportation network. Almost all respondents communicated the feeling that “politics” was the major problem facing the transportation system, and that earmarks—although the most infamous example of political asset allocation—were only the tip of the iceberg.

Freight is a national issue which moves within corridors that are national, continental and international in nature. It is an asset-based, network-operating model that is not adequately addressed today. The current practice of relying on state and local initiatives is insufficient.

Leadership in the political arena is minimal because of: a lack of understanding that prevents an accurate assessment of the problem's severity; modal silos (e.g., truck, rail, water); policy silos (trade, energy, environment); and, a failure to develop a national transportation policy. The problem is bipartisan. Consider two recent examples:

- In October 2007, Secretary of Transportation, Mary Peters, testified before Congress that the system needed to move “from a tax and spend structure to a price and invest system.” While we agree with this approach, her philosophy of a reduced federal role (and more control at the state and local level) totally ignores the comprehensive national network.²
- In August, Senator Hillary Clinton of New York proposed a “\$10-Billion (over ten years) emergency repair fund to address the backlog of critical infrastructure repairs.” While we applaud the good intentions, this is too little, too late and ignores continued deterioration of the system.³ In contrast the American Society of Civil Engineers (ASCE) estimates that \$1.6 trillion is needed over a five-year period to bring the nation's infrastructure to a good condition.⁴

We believe that current project planning for surface freight transportation is ineffective because the passenger and transit models—which are focused locally—fail to consider the entire freight network. Furthermore, beyond the modal silos within transportation, transportation is itself a modal policy silo.

“Freight is a national issue which moves within corridors that are national, continental, and international in nature.”

² “Statement of The Honorable Mary E. Peters Secretary of Transportation before the Committee on the Budget U.S. House of Representatives October 25, 2007.”
http://www.house.gov/budget_democrats/hearings/2007/10.25Peters_testimony.pdf

³ “Hillary Clinton Announces Rebuild America Plan.” August 8, 2008.
<http://www.hillaryclinton.com/news/speech/view/?id=3889>

⁴ “2005 Report Card for America's Infrastructure.” American Society of Civil Engineers.
<http://www.asce.org/reportcard/2005/index.cfm>

Trade

International trade constitutes an ever-increasing portion of our economy. Significant economic benefits (i.e., low inflation and real income growth) have come from international trade—now estimated to comprise almost 30% of our total economy. Unfortunately, while the federal government clearly supports the advancement of trade, it does little to provide plans for managing major trade volumes. Border crossings continue to experience congestion, and transportation vehicles (ships and airplanes) are growing to sizes exceeding the capacity of our existing ports and airports in an effort to realize economies of scale.

We can thank international trade for much of our nation's prosperity. Consider how the world was transformed by the innovation of containerization, which revolutionized intermodal transportation. The fulfillment of Moore's Law (predicting the microprocessor revolution) has delivered technology which is constantly improving and becoming cheaper.

But engineering is one accomplishment; manufacturing and delivery is another.

Texas Instruments, one of the early e-goods manufacturers, initially planned to manufacture in the Caribbean. However, the "Yankee Go Home" attitude prevalent at the time of the Vietnam War, persuaded TI to opt for Asia—considered at the time to be more receptive to American business. The subsequent "e-goods" revolution in Asia could only have occurred with the support of a reliable and cost effective transportation solution. Containerization and intermodal were key components of the Asian economic miracle.⁵



National Defense and Homeland Security

In the last two decades, the United States mobilized military operations to Afghanistan and (twice) to Iraq. These missions have been highly sophisticated logistical performances.

Military deployments were not always so smooth. During World War One, railroad cars were backed up 400 miles, from Bayonne to Buffalo, as the nation strove rapidly to deploy the Army to France. In the future, rapid deployment of personnel and supplies is expected to be essential, but it is unclear whether or not adequate transportation infrastructure exists to manage such movement.

The concern is well founded. Continued traffic growth, accompanied by transportation asset rationalization, has brought supply and demand into

⁵ The development of the double stack train (DST) in the early 1980s represented another significant technological breakthrough which provided faster transit with reduced transportation expense, and served as an important force in the import boom which started as the U.S. economy emerged from the early 1980s recession.

closer balance. The network no longer enjoys the luxury of overcapacity. As a nation, since 1980, we reaped the efficiencies brought about by transportation deregulation.⁶

Many forget that prior to deregulation, overcapacity was a specific public goal. Carriers had protected business segments in exchange for maintaining excess capacity which could be called upon in times of national emergency. However, a generation later, all of this excess capacity has been wrung from the system. The once-in-an-eternity windfall has been consumed.

Historically, there has been a close link between transportation and defense. The Federal-Aid Highway Act of 1956 created the National System of Interstate and Defense Highways and today's national highway system (NHS) is approximately 160,000 miles of roadway important to the nation's economy, defense and mobility.

In the wake of September 11th, the United States confronts a changed world. Safety and security issues impact system capacity and availability. 100% inspection of all containers is a great sound bite, but it ignores the reality of freight movement. Implementation of the hours of service (HOS) and the Transportation Worker Identification Credential (TWIC) have been delayed as the public sector seeks "safety without gridlock."

It may be valuable to contemplate transportation infrastructure within a military framework. Very often, military strategists base their analysis on a recent war, in an attempt to predict what will happen in the next war. This "fighting the last war" can be disastrous. An excellent example is the Maginot Line of defenses built by France after World War One that was unable to respond to the changed warfare of tanks and airplanes in World War Two. Not only were scarce resources consumed in worthless infrastructure, but the French government operated with a false sense of security. As a nation, we need to be looking forward at how to develop flexible transportation solutions which can seamlessly adapt to new requirements.

Energy and the Environment

Energy policy today is increasingly interwoven with economics, environmental concerns and international politics. In the absence of sustained growth—and possible \$100-a-barrel oil—economics has assumed a greater role in energy policy.

New York Times columnist Thomas Friedman observed in a 2005 column "... we are in a war. It is a war against open societies mounted by Islamo-fascists, who are nurtured by mosques, charities and madrasas preaching an intolerant brand of Islam and financed by medieval regimes sustained by our oil purchases. Yes, we are financing both sides in the war on terrorism: our soldiers and the fascist terrorists."⁷

"The network no longer enjoys the luxury of overcapacity."



⁶ Estimates have placed the savings at close to 4-6% of total gross domestic product (GDP.)

⁷ Thomas L. Friedman. "Too Much Pork and Too Little Sugar." *The New York Times*. August 5, 2005. <http://www.nytimes.com/2005/08/05/opinion/05friedman.html>

The United States is the world's largest consumer of petroleum—and transportation uses more oil than does any other sector of our economy. According to David Greene of Oak Ridge National Laboratory, the U.S. transportation industry is the largest in the world—consuming almost 20% of the world's oil production. The annual movement of 5-trillion passenger miles and 4-trillion ton-miles consumes almost 70% of U.S. petroleum. Transportation is 96% dependent on petroleum. In addition, most petroleum consumed comes in the form of high-end refined products.⁸

“Numerous capacity expansion plans for rail, port and marine terminals are on hold, and (some believe) may never get off the drawing board.”

Closely linked to the energy issue is that of the environment. In February 2007, the United Nations Intergovernmental Panel on Climate Change stated that global warming is “unequivocal.” Concerns about greenhouse (and other) gasses impacts the expansion of transportation infrastructure. Numerous capacity expansion plans for rail, port and marine terminals are on hold and (some believe) may never get off the drawing board.

The best example of environmental infrastructure delay may be the Clean Air Action Plan (CAAP), adopted last November by the Ports of Los Angeles and Long Beach. The Plan proposes millions of dollars of investment by the ports and various governmental jurisdictions to reduce pollution risk in the South Coast Air Basin. The ports are also proposing \$1.6 billion in funding for a Fleet Modernization Program to replace older, dirtier trucks driven by owner-operators with newer, less polluting trucks driven by a company employee. Such a modification could completely transform the entire harbor trucking industry. Unfortunately, affected parties are locked in stalemate.

In the meantime, government enforcement of regulatory requirements is increasing. In August 2006, BP began shutting down the nation's largest oil field after detecting heavy corrosion and a small leak in a critical pipeline serving Prudhoe Bay. The affected fields represent 8% of total U.S. production. The pipeline problems were detected only after extensive tests were mandated by the federal government following a spill in March. This incident further highlights the Gordian policy knot of transportation, energy, environmental protection and commerce.

The issues of transportation, energy and environment also extend to land use and zoning. The most effective way to immediately increase capacity is to ensure that infrastructure is used 24/7. Unfortunately, local zoning ordinances often prohibit the implementation of such an approach.

⁸ David L. Greene. “Transportation and Energy: Issues, Challenges and Solutions.” Presentation to the Business Advisory Committee Meeting of the Northwestern University – Transportation Center. October 16, 2002.

PROPOSED SOLUTIONS

Our proposed solutions will focus on intermodal improvements, which we believe have the power to leverage other freight network initiatives and maximize overall value for the entire network, not just a single mode or special interest.

1. Reinforce the Importance of Intermodal Connectors

Intermodal connectors are short—but essential—links that connect America’s most important seaports, airports, rail yards, barge facilities and pipelines to the National Highway System (NHS), a 161,000-mile network that includes the interstate system and other key roads. Congress designated the NHS network in the National Highway System Designation Act of 1995, and mandated the “NHS Intermodal Freight Connectors Report” in TEA-21.

The study, completed in 2000, identified 616 intermodal freight terminals accessed by 1,222 miles of NHS connectors.⁹ It is notable that although these connectors are less than 1% of the total NHS mileage, they carry a significant proportion of total freight volumes. The study went on to point out that:

- NHS connectors are short, averaging less than two miles in length.
- They are usually local, county or city streets, and they generally are held to lower design standards than are mainline NHS routes, which are primarily interstate and major highways.
- Intermodal connectors serve heavy truck volumes moving between intermodal freight terminals and mainline NHS routes, primarily in major metropolitan areas.
- They typically provide this service in older, industrialized and other mixed land use areas, where there are often physical constraints or undesirable community impacts.

Well developed linehaul networks for specific modes are insufficient without suitable connectors. We only need to look at Los Angeles, the site of some of the most extensive end-line facilities for freight, to observe that the connectors are some of the most congested and unproductive pieces of the freight infrastructure (i.e., Gerald Desmond Bridge). In terms of quantitative impact (“more bang for the buck”), connectors have delivered some of the highest investments returns with significant national impact (i.e., the Alameda Corridor).

Unfortunately, connectors tend to be orphaned in the planning and financing process, because they are not the specific domain of any of the legacy modal interest groups. Frequently, funds are limited, and a connector is considered “someone else’s problem.” Moreover, since many of these multi-modal interchanges are relatively new (in a historical sense) to the freight industry, they become an afterthought in the planning process.

“Well-developed linehaul networks for specific modes are insufficient without suitable connectors.”

⁹ “NHS Intermodal Freight Connectors: A Report to Congress.” U.S. Department of Transportation. 2000. http://ops.fhwa.dot.gov/freight/freight_analysis/nhs_intermod_fr_con/index.htm

Emphasis on connectors is further diluted because few highway projects are exclusively dedicated to freight transportation. Connectors are a significant piece of the intermodal equation, and they must be included in the planning process from the beginning. (E.g., CSX’s proposed new logistics facility in Winter Park, Florida has connectors—funded by the State—budgeted in the tens of millions of dollars.) Still, we cannot forget legacy facilities, which have been converted into new intermodal uses, and are literally islands lacking connection to the rest of the freight network.



The interface of rail, highway and water often suffer from this problem.

Until the widespread implementation of containerization, careful integration of these connectors was unnecessary. Previously, break-bulk ships brought freight to harbors, and the freight was then trucked away from the ports. But today’s volumes and economies of scale were unthinkable even 15 years ago. The growth of container hub ports requires that rail and truck access be engineered as part of an overall network in order to prevent congestion in any part of the flow.

In the ever-expanding and dynamically-interdependent freight network, intermodal connectors play an essential role. It was therefore distressing to learn that envisioned language in SAFETEA-LUA, committing 2% of highway funds to intermodal connectors, was removed in a conference committee—even though it was included in both the original House and Senate versions of the legislation. This is why many believe that “freight is talking but the government isn’t listening.”

2. Expand the Definition of Intermodal Connectors

Connectors have traditionally been defined as roads leading to major rail, port or airport facilities. Although they represent less than one percent of NHS mileage, NHS connectors are key conduits for the timely and reliable delivery of goods.

Our theory is that intermodal connectors are essential pieces of infrastructure which support multi-modal transportation. Thus, they could be: rail connections from ports to mainline routes; inland waterways that support barge movement; or, bridges that span ports to connect terminal roadways with NHS highways. We submit that intermodal services are “virtual connectors” which are consistent with the original vision of ISTEA: “to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the nation to compete in the global economy and will move people and goods in an energy efficient manner.”¹⁰

Some might argue that our idea of intermodal connectors is an abomination of ISTEA’s “original intent.” To the contrary, we maintain that the recognition of these terms is fundamental to the understanding of the freight infrastructure in the same way that the recognition of a problem is fundamental to its solution. How else—except by lack of understanding—could one explain the elimination of promised necessary funding from legislation to support these assets?

“It is our position that intermodal movements have the ability to leverage the freight network.”

¹⁰ Intermodal Surface Transportation Efficiency Act of 1991 – Summary. U.S. Department of Transportation. <http://ntl.bts.gov/DOCS/ste.html>

It is our position that intermodal movements have the ability to leverage the freight network. Leverage, in the sense that we are using it, multiplies the capacity of existing modal infrastructure in a way which is not possible with legacy or conventional usage of these assets. Recognizing the importance of intermodal connectors, and expanding their definition, is integral to gaining this additional capacity quickly and at a lower cost.

Application of Funds	Intermodal Connector?	
	Today	Tomorrow
Public roads leading to major intermodal terminals	Yes	Yes
Private roads leading to major intermodal terminals	No	Yes
Bridges in intermodal area	Yes	Yes
Intermodal ITS projects	No	Yes
Intermodal rail terminals	No	Yes
Near-dock rail facilities	No	Yes
Inland waterways	No	Yes
Air cargo facilities	No	Yes
Multimodal logistics parks	No	Yes

An intermodal network is an integrated transportation system consisting of two or more modes connected through facilities which allow freight (and/or travelers) to transfer from one mode to another during a trip from an origin to a destination. Freight moves through local, national, continental and international networks. These networks are, by definition, intertwined to the point where the constriction of any single “node” in the network impacts the entire network.

An expansion of the intermodal connector definition could well help achieve an efficient freight infrastructure. Despite their national significance, most intermodal connectors historically have lacked proponents other than supporters from the localities which contain the connectors. In the same way that a foundation must be planned and funded before the house can be built, intermodal connectors must be considered, defined and funded before any major infrastructure project can be viable.

3. Solve the “Outside the Gate Problem”

During our interviews, many interviewees referred to the “Outside the Gate Problem” to illustrate the inconsistencies of infrastructure investment allotment. While there is a demonstrated supply of investment capital for marine terminals and port infrastructure “inside the gate,” the intermodal connectors [outside] are not so easily funded.

Steady expansion of international trade and the economic impact of container ports combine to create a two-tiered challenge to provide sufficient infrastructure.

Intermodal connectors frequently focus on a single-entity within a region. With railroads, the focus becomes single-entity and single-company.

- Within a geographic area, individual railroads use their own facilities, which are separate and distinct from those used by their competitors. Often, these facilities are far apart.¹¹ Various truck lines—dispersed throughout the region—may serve that facility. The truck lines are usually spaced to operate (in the best interest of their own economics) somewhere centrally located to all of the rail facilities in the region. Trucks hauling rail trailers and containers tend to flow radially between the facilities and therefore spread themselves across the region.
- Alternatively, in any given region, ports tend to focus all of their traffic from every company, in multiple modes to a single location.¹² The need for an adequate harbor and critical mass makes ports super-regional. Truck lines and railroads seek to colocate facilities close to ports for operational and commercial advantage. Both railroads and truckers are focused on a single corridor for access and egress.

In the strictest sense, the infrastructure requirements “outside the gates” are intermodal connectors and deserving of federal attention and support. This is more than just roads and highways. It should include rail access and bridges. These connectors are of a size and scope which makes them too costly for funding by individual cities and states. As intermodal connectors, they are arcs and nodes in the national freight network. Federal pre-emption would obviate the cacophony surrounding numerous state and local proposals which are, of necessity, locally focused.

“These connectors are of a size and scope which makes them too costly for funding by individual cities and states.”

An additional problem that exists “outside the gate” is the conflict between freight system requirements and local municipalities. Perhaps the greatest difference between North American ports and their counterparts in Asia is the lack of 24-hour operation.¹³ Certainly, the increased labor expense for night shifts and hoot owl shifts (3-8 a.m.) is prohibitive, but other problems go much deeper.

In many parts of the country, the supply chain is not truly 24/7. It is a formidable challenge for trucks to pick up and hold containers. Not only are there hours of service and insurance issues, but parking space outside marine terminals is insufficient.

In some areas, inland parking places have been developed. Containers are shuttled between the marine terminal and the remote parking facility in substituted service. These services have been developed by terminal operators to accommodate increased volume without obtaining additional land (that may not be available). The additional volume subsidizes the foregone investment and increased handling.¹⁴

The problem plaguing zoning and land use policy is the highly fragmented oversight of regulation. Local municipalities have more influence over zoning than

¹¹ In Chicago, the distance between the Union Pacific’s Rochelle and Norfolk Southern’s Calumet terminals is over a hundred miles.

¹² By definition, all port traffic is intermodal because it is either water/rail or water/truck.

¹³ It is very common to compare productivity between the two – with North American ports lagging far behind. Like comparisons are very difficult due to widespread operational differences – of which 24/7 operation is just one.

¹⁴ Expansion of this concept is restricted by a disagreement about the extent of waterfront labor’s right to “follow their work” inland.

do federal and state governments. It is not uncommon for there to be numerous jurisdictional issues over land use. For example, the facility might be located in one town, but truck traffic restrictions may exist in another.

Such restrictive covenants are becoming increasingly difficult to challenge. Distribution centers are often placed in remote locations to take advantage of low real estate costs. But over time, those same low real estate costs may attract residential development, which objects to all-night activity (noise) and truck traffic. Resistance, which was once categorized as NIMBY (not in my back yard) has evolved into outright rejection: BANANA (build absolutely nothing anywhere near anything) or NOPE (nowhere on planet Earth).

As earlier mentioned, the federal government has always aggressively fostered international trade. But it has not devoted similar energy to ensuring the smooth flow of this trade (consider support of the NAFTA versus the severe congestion at our northern and southern borders). Congestion issues will soon plague our ports if this “outside the gate” problem is not addressed.

4. Recognize Freight’s Federal Role

By now, we should all understand the systemic nature of freight movement. Because the freight system is a network, it must be planned and operated as such. Interviewees seemed anxious about the total lack of a national transportation policy. Moreover, they expressed doubt that there would ever be one.

One of our participants summed up the issue by observing that in an era of significant deficits, transportation systems would never share the policy podium with Social Security, national defense or even a national health policy.¹⁵ Yet, this in no way relieves the federal government of its historical responsibility for the national freight transportation network.

There is already a role for states and localities in the planning of the highway system, and that role must continue. People live—and vote—locally. The considerable local use of the highway system by passengers—especially in metropolitan areas—must be managed locally. The actual highway construction is also best carried out by the states (as it is today).

However, mechanisms must be developed for local input into federal decisions about freight that are larger than a single city, state or region.

- Freight is picked up and delivered locally. It moves locally, regionally, nationally, continentally and internationally. All of these movements use the same infrastructure; they therefore must be managed from the broadest perspective available—the federal government.
- Because freight moves in a systemic, network fashion, projects must be analyzed, planned and managed within this same framework.
- Financially speaking, efficiency (ISTEA) needs to be reinstated over equity (TEA-21). Freight is a national issue and its requirements need to be managed—and funded—at a federal level.

“Mechanisms must be developed for local input into federal decisions about freight that are larger than a single city, state, or region.”

¹⁵ In the proposed FY 2008 budget, “mandatory” expenditures of \$2.902 trillion exceed envisioned receipts of \$2.662 trillion. <http://www.whitehouse.gov/omb/budget/fy2008/summarytables.html>

We believe that such an approach requires a new mechanism other than the current legislative one which delivered \$23 billion in 5,500 earmarks in SAFETEA-LU. (By comparison, the entire amount envisioned for intermodal connectors was \$1.1 billion.) Annual and multi-year funding must be determined on the basis of national priorities as well; state and local agencies and MPOs must be able to submit their requests.

We recommend forming a national commission along the lines of the Base Realignment and Closure (BRAC) process. The commission would determine the best use of federal funds for freight, and this funding would be subject to Congressional approval or rejection—but not amendment.

The development of a freight network plan is also mandatory. Perhaps a useful historical example would be the United States Railway Association (U.S.R.A.) which developed the Preliminary and Final System Plans for the northeastern railroads.

5. Continue the Preeminent Role of the Fuel Tax and the Highway Trust Fund

The pros and cons of the fuel tax and the Highway Trust Fund (HTF) have been debated in a number of forums in greater detail than we can (or even should) pursue within the scope of this paper. Regardless of its future role(s), HTF has been effective in funding the NHS for the past fifty years. In this context, it should be recognized as a “miracle of public policy.” To our knowledge, nothing remotely like it exists anywhere in the world. More importantly, it has been tied through various mechanisms to local and state funding initiatives, so that the entire highway system is now integrated with this funding mechanism.

To substantially change or destroy this mechanism requires replacing it with something better, which, as a practical matter, likely cannot be agreed upon by the interested constituencies.

Despite the complaints, the HTF works. The technological and policy issues surrounding the implementation of other methods (i.e., vehicle mileage taxes, congestion pricing, etc.) are too daunting to contemplate implementing throughout the entire nation.

The fuel tax should be increased and indexed to inflation to maintain its purchasing power. A lifecycle approach to the network assets is also mandated. The expense of an asset with a long physical life is a step function. As the asset ages, more maintenance is required to keep the asset in reasonable operating condition. As the Interstate System has transformed from its focus of constructing new capacity, maintenance of the system has become the priority.

The financing problem is exacerbated because the federal government does not follow Generally Accepted Accounting Principles (GAAP). GAAP recognizes that assets depreciate over time. Investment is recognized as an asset that depreciates over time. At the expiration of the depreciation period, the asset is expected to be



*“Despite the complaints,
the HTF works.”*

replaced. The federal government merely expenses all expenditures in the year spent. Unfortunately, neither method takes into account the fact that replacement cost will be significantly higher than the initial, historical cost. We believe that infrastructure needs must reflect a “public-private” financial view, so that long-term funding requirements can be understood and articulated.

Clearly, we must also develop alternative (and innovative) means of funding to complement the fuel tax. Without dedicated funding mechanisms, major intermodal infrastructure projects will never be completed efficiently or in a cost effective manner. In fact, they may never be completed at all. Traditional authorization/appropriation federal infrastructure financing is ill-suited and unavailable to these types of “mega projects.” Yet incentives through the federal tax code could represent a more viable option for stimulating freight capital investment. We advocate investment tax credits (ITC) for projects undertaken by private companies who add capacity to the overall system, as we see in the rail industry.¹⁶



We believe that the development of truck-only lanes is a natural enhancement to the NHS, even though it may take billions in investment and decades to build. The potential benefits could extend beyond operational improvement for trucking, to include traffic safety improvements, reduced conflicts and lower maintenance costs on car-only lanes.

This is a very complicated and controversial topic, because talk of truck-only lanes inevitably lead to discussion about two emotionally charged issues within the transportation industry: truck size and weight rules, and privatization and tolling of highways. The divergence of opinion—even within this “two-by-two” decision matrix—always causes a lively and divisive debate. Even among the intermodal and trucking community, there is not complete agreement (i.e., some contrarians favor LCVs, believing they could reduce drayage expense and improve intermodal’s competitiveness versus over-the-road truck movement).

6. Maintain the Highway Trust Fund Firewall

TEA-21 assured that a budgetary firewall protected funding in the HTF for its intended purpose. In comparison, other trust funds (i.e., Harbor Maintenance Tax) have collected user fees but not deployed them for their intended purpose. In our individual interviews with the surveyed companies, we repeatedly heard the distrust of the federal funding and policy mechanisms by the private sector. Whether it was the 5,500 earmarks worth \$23 billion in SAFETEA-LU, or the diversion of funds authorized, collected, and misused, freight providers have become cynical and suspicious of federal funding.

At the same time there has been some general recognition among freight transportation groups that they must take some responsibility for funding projects specifically designed for their own use. No user fee funding will ever be completely

“There has been some general recognition among freight transportation groups that they must take some responsibility for funding projects specifically designed for their own use.”

¹⁶ The “Freight Rail Infrastructure Capacity Expansion Act of 2007” (S.1125/HR.2116) would accomplish this.

supported unless there is some mandatory legislative directive to spend the funds collected for their intended use.

7. Recognize the Confluence of Transportation, Energy and Environment

As discussed above, the transportation industry in the United States is one of the largest consumers of oil in the world. We previously outlined our belief that the federal fuel tax needs to be raised (and indexed to inflation) in order to preserve its purchasing power and to expand infrastructure capacity.

“The increased fuel tax should be phased in over a period of years to allow a smooth transition for users of the system.”

We also believe that the fuel tax needs to be significantly increased (beyond what we call for in #5) to reduce the growth of demand for fossil fuels. The increased fuel tax should be phased in over a period of years to allow a smooth transition for users of the system. The additional funds should be allocated as follows: 25% to the highway account; 25% to the transit account; 25% to the intermodal account; and 25% to the general treasury.

Last year, N. Gregory Mankiw, a professor at Harvard, who was chairman of the Council of Economic Advisers from 2003 to 2005, outlined a rationale for raising the gas tax “substantially—but gradually.”¹⁷ Mankiw’s reasons included the following:

- Burning gasoline emits several pollutants, including carbon dioxide, a cause of global warming. Higher gasoline taxes, perhaps as part of a broader carbon tax, would be the most direct and least invasive policy to address environmental concerns.¹⁸
- A higher gas tax would provide an incentive to drive less, thereby reducing congestion—and increasing capacity.
- A higher gas tax would accomplish everything corporate average fuel economy (CAFÉ) standards do, but without the adverse side effects and unintended consequences from Congress’ heavy-handed government regulations.¹⁹
- The federal budget is on an “unsustainable path.” Social Security and Medicare will either need to cut benefits or raise taxes. Increased fuel taxes could make a dent in the looming fiscal gap.
- Economists maintain that the burden of a tax is shared by both consumer and producer. A higher gas tax would depress oil consumption, so the price of oil would fall in world markets. As a result, the price of gas to consumers would rise by less than the increase in the tax. In effect, Saudi Arabia, Iran and Venezuela would pay for part of the tax.
- Public finance experts advocate that consumption taxes are better than income taxes for long-run economic growth, because income taxes discourage saving and investment. Gas is a component of consumption, so an increased reliance on gas taxes over income taxes would make the tax code more favorable to

¹⁷ N. Gregory Mankiw. “Raise the Gas Tax.” The Wall Street Journal, October 20, 2006. <http://online.wsj.com/article/SB116131055641498552.html>

¹⁸ In the event of the implementation of a cap and trade process, due regard must be taken that payers of the fuel tax have already “paid once.”

¹⁹ Mankiw believes CAFÉ is partly responsible for the growth of SUVs, because light trucks have laxer standards than cars. Also, by making the car fleet more fuel-efficient, the regulations encourage people to drive more, offsetting some of the conservation benefits and exacerbating road congestion.

growth. It would also encourage firms to devote more R&D spending to the search for gasoline substitutes.

- It is hard to judge how much high oil consumption drives U.S. involvement in Middle Eastern politics; but economists (i.e., Alan Greenspan) maintain that the gas tax is an economic policy with positive spillovers to foreign affairs.
- Even after a [hypothetical] \$1 hike, the U.S. gas tax would still be much lower than the gas tax in other industrial democracies. According to a November 2006 analysis by GTZ (German Technical Cooperation) on behalf of the German Federal Ministry for Economic Cooperation and Development,²⁰ comparative prices for a gallon of gas were:

United States	\$2.38
China	\$2.61
Mexico	\$2.80
Russia	\$2.91
Brazil	\$4.77
France	\$5.60
Britain	\$6.17

8. Extend the PFC Model to Intermodal

The Passenger Facility Charge (PFC) Program allows the collection of PFC fees up to \$4.50 per passenger for every emplaned passenger at commercial airports controlled by public agencies. Airports use these fees to fund FAA-approved projects which enhance safety, security or capacity; reduce noise or increase air carrier competition.

We propose an Intermodal Facility and Connector charge (IFC) that would be assessed on all freight movements transiting modes. The “orphaned” connectors would have a source of funding independent of the individual modes and would be funded by intermodal users.

- Every unit exiting an intermodal facility would be assessed an IFC. The mode transporting the unit would be responsible for reporting the charge and remitting the funds.
- Because this is a basic “facility charge” with the funds being returned using a similar mechanism employed in the PFC, it should not conflict with constitutional prohibitions against taxes on interstate or international commerce.
- The monies collected would be applied to intermodal connectors within a defined region from which they were collected. Any modal transfer would incur an IFC.
- Ideally, the IFC charges would be matched against other funds raised through public-private partnerships and innovative financing.

“The ‘orphaned’ connectors would have a source of funding independent of the individual modes and would be funded by intermodal users.”

²⁰ “Global Fuel Prices 2006.” German Technical Cooperation.
<http://www.gtz.de/en/themen/umwelt-infrastruktur/transport/10285.htm>

9. Change Intermodal Thinking from End-to-End to Side-by-Side

Traditional intermodal thinking has been end-to-end (i.e., door-to-door) in nature. Intermodal has not therefore explored the option of maximizing the capacity for both freight and passenger traffic simultaneously—although both sectors seek door-to-door transportation solutions.



The Surface Transportation Assistance Act of 1982 recognized the fungible nature of transportation demand when it created the mass transit account—within the Highway Trust Fund—to receive 1 cent of the increased fuel tax. This was increased to 1.5 cents per gallon on December 1, 1990; 2 cents per gallon on January 1, 1996; and 2.86 cents per gallon on October 1, 1997.

Any further integration of passenger and freight transportation in the United States has been undeveloped. We believe that an examination of European initiatives might be worthwhile. In the 1990s, the European Union (EU) found itself trying to manage increased transportation demand against a series of constraints: over-reliance on fossil fuels, economic growth, congestion, health and climate change. Given the steady rise in Europe traffic flows, the EU opted for an EU-wide transportation policy which mandated that Europe-wide truck movements should be shifted to more environmentally friendly modes of transport such as rail, short sea shipping or inland waterway transport.²¹

In October 2006, following the success of the first Marco Polo initiative, the EU established a second Marco Polo program to run between 2007 and 2013 with a budget of €400 million (about \$550 million). The program is designed to support programs which: reduce congestion, improve the environmental performance of the transportation network, and enhance intermodal transportation. The intention is to “contribute to a more efficient and sustainable transport system which will provide EU added value without having a negative impact on economic, social or territorial cohesion.”²²

The EU envisions five distinct types of action being supported:²³

- **Modal Shift:** Shifting as much freight as economically meaningful under current market conditions from road to short sea shipping, rail and inland waterways. These may be new services or significantly enhance existing services.
- **Catalyst actions:** change the way non-road freight transport is conducted by overcoming structural market barriers.
- **Motorways of the sea:** provide a door-to-door service which shift freight from long road distances to a combination of short sea shipping and other modes of transport.
- **Traffic avoidance:** reduces road freight transport demand—and emissions.

²¹ http://ec.europa.eu/transport/intermodality/passenger/index_en.htm

²² http://ec.europa.eu/transport/marcopolo/summary_en.htm

²³ Ibid.

- Common learning: enhances industry knowledge and supports market cooperation.

The program budget of €400 million for 2007-2013 represents twice that of the initial program, and it has been extended to countries bordering the EU. The European Commission estimates that every €1 in grants to Marco Polo will generate at least €6 in social and environmental benefits.

We believe that the EU’s program is an elegant way to avoid the market impasse created when new services are blocked because they are not market competitive. A market impasse—or even a market failure—can develop when infrastructure and operation of different modes have different owners.

In turn, a variety of externalities impact the process. Such outside influences are frequently third party (or spill-over) market events which result from non-payment of compensation for production and/or consumption of goods and services. Such occurrences can cause market failure if the price mechanism does not take into account the full social costs and social benefits of production and consumption—and create a divergence between the private and social costs of production. Pollution and congestion are common externalities. (N.B.: Many initiatives of this type are already under study by U.S. Department of Transportation. It is our hope that their application could be accelerated.)

Earlier, we noted the validity of considered truck-only lanes on the Interstate Highway System. Just as trucks and cars have different operating requirements, so do passenger and freight rail. Development of separate networks would allow both to succeed without either impeding the other. Success of freight and passenger networks (including commuter) would increase highway capacity and reduce peak congestion.

Rather than argue over whether externalities are “fairly” assigned, we promote a plan to “internalize the externalities.” We propose that intermodal connector programs should include modal shift and traffic avoidance programs as part of freight corridor projects, in the form of approving several pilot/demonstration projects in this reauthorization cycle.

Potential pilot projects should focus on areas where infrastructure is critically short and not easily expandable, sufficient critical mass of volume is present, and environmental challenges exist. The following are examples of several projects which have been discussed in the past.

“We believe that an examination of European initiatives might be worthwhile.”

Project	Scarce Resource
Expand rail capacity between Portland and Seattle for freight and passenger	I-5 capacity Rail mainline capacity
Shorthaul rail between San Pedro ports and Inland Empire	Highway capacity Train slots in/out of LA Basin
Feeder barge from Port of NY/NJ to Brooklyn and Bridgeport	Highway capacity George Washington Bridge

10. Conduct a Meaningful Short Sea Shipping Pilot

Short-sea shipping is often held out as a means of providing transportation capacity in selected markets. (MARAD has been actively studying opportunities for years.) We believe that such possibilities exist here, but the dialogue must be based on a realistic analysis.²⁴ Too often, the short sea solution is intuitive. It is based on anecdotal stories of highway congestion—often I-95—adjacent to “wide open” ocean space. This thinking closely resembles rail intermodal thinking of a generation ago. Linehaul efficiencies do not automatically translate into a competitive door-to-door product.

“Linehaul efficiencies do not automatically translate into a competitive door-to-door product.”

There are many economic obstacles to short sea shipping. Some—such as reduced labor assessments on the rehandling of containers—have already been resolved. Some—such as a single assessment of the Harbor Maintenance Tax on such movements instead of the current “double taxation”—are under consideration. The Jones Act has not effectively been synthesized into the discussion either.

We recognize that relaxing the Jones Act could penalize companies who have complied with (and profited) by it. Still, it could be interesting to see if a Jones Act waiver, allowing non-U.S.-built vessels, could induce players to enter a market which had been heretofore unimaginable for short sea shipping. (Conditions requiring U.S.-flag and 75% U.S. crew members would be retained.) U.S. Coast Guard manning rules and workmen’s compensation standards may also require additional analysis here.

Requests for waivers of certain provisions of the act are reviewed by the Maritime Administration (MARAD) on a case-by-case basis. Waivers have been granted in cases of strategic interest. (E.G., in 2006, declining oil production prompted the Department of Homeland Security to grant a waiver to operators of the 512-foot Chinese vessel Tai An Kou to tow an oil rig from the Gulf of Mexico to Alaska.)

²⁴ For example, there have been studies that compare door-to-truck with pier-to-pier short sea movement. The latter is not a fair comparison because it excludes the necessary [truck] pickup and delivery.

CONCLUSION

Few of the ideas presented here are ours alone. Most suggestions were offered in one fashion or another during the study. This leads us to believe that there is hope one day of developing a National Freight Transportation Policy. It is our belief that this development will not come from waiting for Congress or the executive branch. It must originate with participants themselves.

If the freight transportation community is united in their goals, policies will be developed, enacted and supported. In order to achieve this, participants will have to put aside decades of disagreement and mistrust. This is possible only if we accept that future success is more important than past differences.

We believe intermodal focus provides the catalyst for this common vision because it leverages the strengths of every mode. Transportation can achieve synergy because integrated service is better and more productive than the individual modes.

Our proposals support many programs deemed critical by the individual modes. We believe the nation has reached an inflection point. The economic gains unleashed by deregulation have been consumed, and we are starting to see infrastructure problems which pose a threat to America's economic growth and national security.

Government, by itself, cannot solve all its problems without the active participation of the private sector. Benjamin Franklin's admonition that "We must all hang together, or, most assuredly, we shall all hang separately" provides appropriate guidance. We, the freight transportation industry, must focus on the future, put our arguments aside, and unite on a national transportation focus which will ensure that our freight system remains the finest in the world.

Respectfully,

Ted Prince and Tom Finkbiner

"If the freight transportation community is united in their goals, policies will be developed, enacted and supported."



National Center for Intermodal Transportation
*A Partnership between the
University of Denver and Mississippi State*

