

Preliminary Observations of Mobility Issues, Concerns, and Efforts in Europe and the United States

EWITS Working Paper Number 10
October 1998

by

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EWITS Research Reports: Background and Purpose

This report is the sixth in a series of Working Papers current topics related to the mission of the Eastern Washington Intermodal Transportation Study (EWITS) to accompany EWITS reports providing information on the multimodal network necessary for the efficient movement of both freight and people into the next century.

EWITS is a six-year study funded jointly by the Federal government and the Washington State Department of Transportation as a part of the Intermodal Surface Transportation Efficiency Act of 1991. Dr. Ken Casavant of Washington State University is Director of the study. A state-level Steering Committee provides overall direction pertaining to the design and implementation of the project. The Steering Committee includes Jerry Lenzi, Regional Administrator (WSDOT, Eastern Region), Richard Larson (WSDOT, South Central Region); Don Senn (WSDOT, North Central Region); Charles Howard (WSDOT, Planning Manager), and Jay Weber (Douglas County Commissioner Pat Patterson represents the Washington State Transportation Commission on the Steering Committee. An Advisory Committee with representation - from a broad range of transportation interest groups also provides guidance to the study. The following are key goals and objectives for the Eastern Washington Intermodal Transportation Study:

- *Facilitate existing regional and state-wide transportation planning efforts.*
- *Forecast future freight and passenger transportation service needs for eastern Washington.*
- *Identify gaps in eastern Washington's current transportation infrastructure.*
- *Pinpoint transportation system improvement options critical to economic competitiveness and mobility within eastern Washington.*

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1. Gillis, William R. and Kenneth L. Casavant. "Linking Transportation System Improvements to New Business Development in Eastern Washington." EWITS Research Report Number 1. February 1994.
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3. Gillis, William R. and Kenneth L. Casavant. "Washington State Freight Truck Origin and Destination Study: Methods, Procedures, and Data Dictionary." EWITS Research Report Number 3. December 1994.
4. Gillis, William R. and Kenneth L. Casavant. "Major Generators of Traffic on U.S. 395 North of Spokane: Including Freight Trucks and Passenger Vehicles Crossing the International Border." EWITS Research Report Number 4. January 1995.
5. Newkirk, Jonathan, Ken Eriksen, and Kenneth L. Casavant. "Transportation Characteristics of Wheat and Barley Shipments on Haul Roads To and From Elevators in Eastern Washington." EWITS Research Report Number 5. March 1995.
6. 6. Jessup, Eric and Kenneth L. Casavant. "A Quantitative Estimate of Eastern Washington Annual Haul Road Needs for Wheat and Barley Movement." EWITS Research Report Number 6. March 1995.
7. Gillis, William R., Emily Gruss Gillis, and Kenneth L. Casavant. "Transportation Needs of Eastern Washington Fruit, Vegetable and Hay Industries." EWITS Research Report Number 7. March 1995.
8. Casavant, Kenneth L. and William R. Gillis. "Importance of U.S. 395 Corridor For Local and Regional Commerce in South Central Washington." EWITS Research Report Number 8. April 1995.

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10. Chase, Robert A. and Kenneth L. Casavant. "Eastern Washington Transport-Oriented Input-Output Study: Technical Report." EWITS Research Report Number 10. March 1996.
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7. Lee, Nancy S. and Kenneth L. Casavant. "Grain Receipts at Columbia River Grain Terminals, 1980-81 to 1995-96." EWITS Working Paper #7. January 1997.
8. Jessup, Eric L. and Kenneth L. Casavant. "Economic Evaluation of Grain Shipment Alternatives: A Case Study of the Coulee City and Palouse River Railroad." EWITS Working Paper #8. March 1997.
9. Casavant, Ken and Nancy S. Lee. "Grain Receipts at Columbia River Grain Terminals: 1980-81 to 1996-97." EWITS Working Paper #9. January 1998.

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Executive Summary

While Washington State grapples with the issues of freight and passenger mobility, corresponding environmental issues, and a key understanding that mobility is a basic underpinning of the economic vitality of a region, state, and nation in a global economy, many of the same interesting dynamics are now simultaneously being reviewed in Europe. As the European Union emerges, it will not only address a common currency, but the multitude of freight and passenger mobility needs to ensure a sustainable economic vitality for the entire European Union. In this paper, a review of issues and efforts in both regions is presented.

In September of 1993, a team of four government state transportation association representatives from the United States made a two week reconnaissance trip to Belgium, the Netherlands, and Germany to discuss and report on European experiences with intermodal freight transportation policies and systems. The team met with senior officials of the Commission of European Communities-Transport and private industry leaders to gain their views and insights on short and long term impacts that the European Union policies and programs would have on the private sector. The team developed observations and recommendations relative to the information they gathered on the tour. Their conclusions noted:

1. The United States could benefit by identifying transportation infrastructure networks, which are of national interest.
2. The United States should consider more innovative and focused funding policies for intermodal freight transportation fundamental to our country's ability to improve our efficiency and compete internationally.
3. Transportation planning organizations at the federal, state and local level could benefit from inviting and continuing discussions with European intermodal policy decision makers.
4. It was suggested that American transportation government officials visit other countries, especially those countries that are important trading partners with the United States to become better informed about their intermodal transportation policies and programs.

Subsequent to this tour and report, the ENO Transportation Foundation held a policy forum co-sponsored by the U.S. Department of Transportation and the European Union, directorate-general VII (Transport) in October, 1997. This forum produced suggestions, outcomes, and focused on seven priority coordination issues. Two very pertinent points came from this forum's discussion:

- The European Union is still in the process of implementing consistent regulatory issues across its member states, particularly in regard to the privatization of European railways. Similarly, the United States is in the process of coordinating

its regulatory framework with those in Mexico and Canada in accordance with NAFTA, and discussions concerning how the U.S. and Europe can work together to improve intermodal transport are less effective without clear, consistent policies and implementation from within the European Union and North America.

- Policy makers, operators and shippers in both the European Union and the United States need to get a better understanding of how the other system works. Otherwise, any discussion about the interface and coordination of these two systems will be less productive.

There are several current intermodal issues emerging in the European Union. The Department of the Environment, Transport and the Regions of the United Kingdom published *A New Deal for Transport, Better for Everyone* in August, 1998. This document is to serve as the government's White Paper on the future of transport. Over thirty five years ago, a similar document titled *The Buchanan Report* predicted that traffic would rise dramatically with profound consequences for the environment and the way life was lived. One of the more interesting findings was that congestion and unreliability of journeys add to the cost to business and undermine competition, at an approximate cost to the British economy of around 15 billion pounds per year. Additional information from discussions with transport professionals and articles on the channel tunnel; urban and regional freight flows; transport trends; etc., are presented and compared with U.S. efforts in that report.

The European transportation efforts and status focus on a multitude of different aspects. These aspects include *management; integration; regulation; rail; transportation and land use; information technology systems; airport connectivity; channel tunnel; devolution; and funding* that deal with costs and concerns about the future of transportation in the United Kingdom.

There are also issues that include *truck and rail changes; intelligent transportation systems; channel tunnel; intermodal terminals; freight flows and markets; congestion; environment; and passenger issues* for the entire European Union. It is important to note that all these are growing issues due to the need to compete in a global marketplace as well as fund the appropriate infrastructure to support the competitive nature of the global marketplace and mitigate the associated environmental impacts that could occur.

While the United Kingdom White Paper takes a 20 year view without specific policy and funding direction, the United States Intermodal Transportation Efficiency Act of 1991 (ISTEA) and the Transportation and Equity Act for the 21st Century of 1998 (TEA-21) provide a future vision, policy direction, and funding for two six year increments. Other EU work and research provides insight into infrastructure and policy needs, estimates, and corresponding investment requirements, but is silent on revenue sources.

TEA-21 - Transportation and Equity Act for the 21st Century, builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which is the last major authorizing legislation for surface transportation. Significant features of TEA-21 include:

- Assurance of a guaranteed level of federal funds for surface transportation through FY 2003. The annual floor for highway funding is keyed to receipts of the highway account of the Highway Trust Fund. Transit funding is guaranteed at a selected fixed amount.
- Strengthening of safety programs across the Department of Transportation. Increasing use of safety belts and promoting the enactment and enforcement of the 0.08 percent blood alcohol concentration standards for drunk driving.
- Flexible use of funds, emphasis on measures to improve the environment, focus on a strong planning process as a foundation of good transportation decisions - all ISTEA hallmarks - are continued and enhanced by TEA-21. New programs such as border infrastructure, transportation infrastructure finance and innovation, and access to jobs target special areas of national interest and concern.
- Investing in research and its application to maximize the performance of the transportation system. Special emphasis is placed on deployment of intelligent transportation systems to help improve operations and management of transportation systems and vehicle safety.
- Programs such as the surface transportation program, the National Highway System, transit programs, rail programs, special welfare to work and training programs, innovative financing and value pricing programs, congestion mitigation and air quality improvement programs, transportation enhancement programs, and research and development programs are all discussed.

It is obvious in reviewing the European effort and status, and the efforts of ISTEA and TEA-21 that they are very ambitious, future oriented, and committed endeavors to improve, construct and perpetuate respective intermodal transportation systems. TEA-21 assures that a guaranteed level of federal funds through federal fiscal year 2003 is available for transportation investments. In the European situation, funds have been invested in the channel tunnel, the underground, and bus systems, but the prospective funding scenarios are not defined other than continuing existing revenue sources. TEA-21 perpetuates a highway trust fund where states are guaranteed a minimum return of 90.5 cents for every dollar collected from transportation users. In Great Britain, it was noted that 26 billion pounds were received from British motorists per year with only 6 billion pounds being returned to the transportation system. Other issues such as welfare to work, access to jobs and training is provided in TEA-21. The European status recognizes the need to do some of these things, but has yet to identify a direction to move these efforts forward.

TEA-21 provides a host of different funded environmental related programs such as congestion mitigation, air quality improvement, transportation enhancement, bicycle transportation and pedestrian walkways, recreational trails, national scenic byways, and transportation and community preservation pilot projects that all basically go to the issue of trying to improve the environmental conditions for the nation. The European issues that were raised recognize that congestion, carbon dioxide releases, and global warming are all concerns, but as yet do not structure or finance programs to address those issues.

In July, 1998, Dr. Ken Casavant, Professor of Agricultural Economics and Project Director of EWITS, and this author had the opportunity to attend, present papers and participate in the World Conference on Transport Research in Antwerp, Belgium. The conference offered valuable access to substantial intermodal transportation and finance information, and discussions with transportation practitioners and professionals. Conference attendance offered the opportunity to field review and discuss the myriad of transportation issues with other transportation professionals.

It is certainly recognized by all parties in a global market that we compete against one another, but there also must be cooperation to allow the seamless flow of freight and people. It is important for the EU and North America to cooperate and collaborate in this competitive global marketplace. Although this may seem unusual in a competitive environment, it is a must in terms of equipment standards, information exchange, and use of common protocols in moving both commodities and people. The ultimate goal is service to the customer, and this cannot fully occur without universal buy-in that involves coordination for trips that will cross not only national boundaries, but employ multiple modes. The entire journey is to be a seamless experience.

The analysis of the information presented lends itself to continued cooperative discussions, meetings, and exchanges of information between North America and the European Union to foster the exchange of commodities, both domestically and internationally, and methodologies to ensure the efficient, effective movement of people and goods between origins and destinations.

Introduction

While Washington State grapples with the issues of freight and passenger mobility, corresponding environmental issues, and a key understanding that mobility is a basic underpinning of the economic vitality of a state, region, and nation in a global economy, many of the same interesting dynamics are now simultaneously being experienced in Europe. The European Union that includes fifteen countries now shares a common currency, as well as attempts to increase trade, both internally and with other countries in the world.

The transport issues that are being investigated by the European Union countries run the gamut from Intelligent Transportation Systems projects, airport and air space considerations and needs, environmental issues as they relate to transportation, freight rail and passenger rail, maritime needs, personal automobile transportation, truck freight transportation, deregulation of various modes, and funding issues that are being analyzed and considered from both the public and private sectors.

All in all, none of these issues are new to transportation personnel, but it is interesting to have the opportunity to discuss these issues and review the literature from many of the countries in the European Union (EU) and to compare and contrast it with our experiences. This provides an external point of view, and perhaps can lead to suggestions that may be adaptable to respective progress in the areas of sustainable freight and passenger mobility.

Background

FHWA Study Tour for Intermodal Programs 1993

In September 1993, a team of four government and state transportation association representatives from the United States made a two week reconnaissance trip to Belgium, the Netherlands, and Germany to discuss and report on European experiences with intermodal freight transportation policies and systems (*FHWA Study Tour for European Intermodal Programs: Planning, Policy and Technology*, Sept. 1994, USDOT). The objective was to observe and chronicle information that discussed methods and experiences in the planning and administration, system development, environmental, compliance, financing, marketing, and operation of increasingly complex and capital intensive intermodal freight systems and facilities within the context of the European Union formation.

The trip was sponsored and managed by the Transportation Technology Evaluation Center of Loyola College in Baltimore, Maryland, through contractual arrangements with the Office of International Programs of the Federal Highway Administration. In Belgium, the team met with senior officials of the Commission of European Communities - Transport to discuss intermodal freight transportation policy development and programs at the EU level. The team also met with private industry leaders to gain their views and insights on short and long term impacts these policies and programs would have on the private sector.

In the Netherlands and Germany, the team visited some of the most modern and technologically advanced marine, rail, and highway intermodal terminals. These facilities not only demonstrated the potential that exists for intermodal technology, but they also pointed out the many challenges that the intermodal industry and the customers face. At the local government level, meetings were held with transportation officials to garner their input. To obtain private industry viewpoints, meetings were held with road hauler representatives and transportation consultants, freight forwarders, and chambers of commerce.

This tour was not only to gain additional information and knowledge about intermodal activities, but was of corresponding interest because of the concurrent emphases in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). ISTEA's focus was (and TEA-21 continues this focus) to develop and support more efficient regional and national intermodal transportation systems and transfer points that reduce congestion, maintain mobility, improve and preserve the environment, and most importantly, provide for sustainable economic development. ISTEA was also designed to help local and state governments improve their environment and economy, while ensuring that the nation as a whole will have the ability to compete effectively in the global market into the decades to come. This is especially poignant for the transportation issues that affect border crossings between Canada, Mexico, and the United States as a direct result of the North American Free Trade Agreement (NAFTA).

It is important to recognize the United States is not alone when it comes to developing and implementing ambitious goals in the improvement of intermodal freight and passenger systems. European countries, especially those that belong to the EU, have for years recognized similar needs to improve the economy, the environmental situation, and social conditions within the community via a strong, integrated transportation system. These major issues were the drivers behind the overwhelming desire to integrate and harmonize passenger and freight transportation in the EU, with an additional challenge of addressing the wide cultural and economic diversity within the EU community.

Finally, this 1993 visit was an attempt not only to review intermodalism and establish closer working relationships with the European government and private sector counterparts, but the team's mandate from the Federal Highway Administration was to review European experiences in intermodal freight policy planning and administration to learn more about their planning and development process, including research, environmental compliance, financing, marketing, and operations of the various systems.

The team's overall observations culminated in the following:

Observations

1. Intermodal freight planning and policy is in place at both the overall European level and individual national levels. The Europeans are well into the process of balancing both passenger and freight transportation needs together with the environment as the focus of attention. This creates the need for more discussion of freight intermodal alternatives, especially where transportation congestion along major highways causes environmental harm to surrounding areas.
2. Short distances force innovative intermodal solutions. With an average of 186 to 310 miles as a trip length, freight transportation distances are much shorter in Europe than in the US and do not easily benefit from the economies of scale and distance. As a result, this requires very innovative thinking to take advantage of distinctive modal characteristics and peculiarities, especially when considering traffic congestion and environmental constraints. In this regard, greater emphasis has been placed on railroads, short sea shipping (coastal shipping), and inland waterways to relieve highway congestion and pollution.
3. The planning process involves distinct public/private interaction and dialogue. Relationships between European intermodal interests are slowly but continuously evolving, especially in freight transportation. There are, however, some issues that are still the focus of very serious differences of opinions, although there have been some positive efforts in this regard.

4. Government funding is available for all modes. Because the EU recognizes that the larger economic social environmental issues are the driving forces behind passenger rail transportation, member governments provide public funds for intermodal infrastructure as incentives for the private sector to change more of its transportation utilization from single modal to intermodal systems.
5. Environmental concerns heavily influence transportation policy. Because the quality of life issues that are a direct attribute of environmental concerns play a significant factor, focus has been directed to the better use of rail and water modes, as well as better intermodal connectors to reduce reliance on other forms of transportation. Sustainable mobility has become a guiding principle for policies at the EU level and within many of the member countries.
6. Pricing/cost structure is key to realizing full intermodal integration. Rail, highway, water and air modes have reached the point in the planning process where to a large extent they are seen as equal partners. This is especially true where there is a clear need to link the modes to the existing and emerging demands of commercial activity. Each mode must pay its fair share in all respects. Such policies, although still a long way from ideal, encourage intermodal policy and infrastructure development that is supported in part by pricing systems that recognize both direct and indirect environmental costs of the various modes.
7. Efficient freight transportation requires planning at the European and national levels. Even though there is a need to address internal problems of congestion, environment and economics, there is also a strong feeling at the EU and most national levels that failure to develop a compatible, equitable, and efficient intermodal transport system will result in an unacceptable loss of world market share.
8. Governments share risk with the private sector. Many of the more innovative intermodal systems and facilities are considered high risk investments, given market and modal uncertainties. To address this risk factor, public and private entities agree to share such investments. For the public sector, the impetus is return on taxes and other forms of employment benefits. For the private sector, successful operations often help companies maintain a competitive edge within the marketplace at significantly reduced financial exposure. Such risk taking has had some degree of success.
9. Trans European networks for all surface modes and air provides the framework for investment. These networks developed for both modal and intermodal systems provide a focus for limited EU transportation investments as support for European economic development. It also provides member companies a framework for their investment actions. Additionally, these networks establish a common level of standards for infrastructure, equipment and operations and provide a flexible tool for ensuring that the EU investment is part of an overall transportation strategy providing stimulus for the financing of projects by the private sector. All modes are included in this overall framework.

10. Governments recognize freight transportation's role in economic competitiveness. Many of the EU governments are struggling to change from traditional to newer business activities and technologies. Governments at both the EU and at the national levels are supporting intermodal freight transportation infrastructure improvements that link economic regions through coordinated transportation, environmental, and commercial policies and projects. Duplicative transportation between regions is generally recognized as no longer acceptable.
11. A need to share intermodal technology and standards is recognized. Because of the differences in intermodal equipment and technology standards among EU countries, the EU has established projects like SIMET (Smart Intermodal European Transfer) that are designed to develop and help implement common standards and specifications for intermodal yards, including rail, highway, marine and inland waterways. Such harmonization of standards is designed to improve operating efficiencies by sharing information and innovative technological developments.

The team issued the following recommendations subsequent to their European tour.

Recommendations

1. They suggested that although they had received considerable information and observed a great deal, that substantial additional study should be given to many of the objectives and policies before adopting any European policies without qualifications.
2. This additional study would include in-depth comparisons between the United States and European policies and practices regarding ownership and/or defacto subsidization of modes; as well as the consequences of changing these patterns as reflected in the current policy of all EU nations.

Nevertheless, there were some conclusions that were suggested:

Conclusions

1. The United States could benefit by identifying transportation infrastructure networks, which are of a national interest. (It should be noted that the National Highway System (NHS) with a national focus and investment strategy was adopted by Congress in 1995).
2. The United States should consider more innovative and focused funding policies for intermodal freight transportation (rail, highway, inland and coastal waterways, air, etc.) fundamental to our country's ability to improve our efficiency and compete internationally. This would include the government's participation and facilitation of innovative intermodal investments that require longer term risk taking. (Again, the establishment of state infrastructure banks and other private funding opportunities in the transportation arena were authorized by Congress subsequent to this 1993 report).

3. Transportation planning organizations at the federal, state and local level could benefit from inviting and continuing discussions with European intermodal policy decision makers. It is suggested these meetings could concentrate primarily on intermodal freight transportation policy development and the process by which such policies could be linked internationally.
4. It is clear that the United States= and its trade partners= evolving efforts under NAFTA are also critical in this policy development and harmonization of standards, equipment and technologies.
5. It was suggested that American transportation government officials visit other countries, especially those countries that are important trading partners with the United States to become better informed about their intermodal transportation policies and programs.

ENO Transportation Foundation Policy Forum 1997

On October 30 and 31, 1997, the Eno Transportation Foundation held a policy forum co-sponsored by the U. S. Department of Transportation and the European Union, directorate-general VII (transport). Key public and private leaders from the transportation industries in both Europe and North America came together to focus on opportunities to improve intermodal transport. A subsequent report was published from this forum titled *Intermodal Freight Transport in Europe and the United States*.

This forum was acknowledged as an important first step in the process of building better international cooperation in the transport arena. The issues involved continue to be complex, and will require time, effort and diligence to address them. This forum concluded with a suggestion of three top priority steps for immediate action that will lead towards seamless freight transport between North America and the European Union.

Suggestions

- Identify legal and regulatory issues that require resolution in order to facilitate intermodalism.
- Conduct an industry initiative forum to exchange information about best practices in relation to logistics and information technology.
- Conduct an information exchange to identify constraints on physical transport infrastructure, as well as possible improvements.

The forum focused on the movement of goods within and between countries and continents in a smooth, efficient manner to benefit all who produce, market, transport, or purchase these goods. It was recognized that inefficient commodity transport can increase cost, cause congestion and pollution, negatively impact customers, and even close potential markets for some products. There is a need for increasing coordination

between the modes of transportation in the countries in which the commodities move. A singular commonality is the need to develop a seamless transportation system across different countries and continents.

The forum brought together key industry and public sector representatives to identify issues that hinder the smooth transport of cargo from an intermodal standpoint. The candid and informative discussions about many topics resulted in the following key outcomes:

Outcomes

- The forum represents one of the first meetings with such a large group of key decision makers from the European Union and the United States.
- The forum provided opportunities for participants to gather and exchange knowledge about making intermodalism effective between the United States and the European Union.
- Key areas of investigation and cooperation were identified.
- The participants and sponsors began a promising, ongoing dialogue about how to work together toward resolving issues that were identified.

There were a multitude of issues identified during the forum, but the sessions culminated in a set of seven key areas of cooperation between the United States and the European Union. These seven areas were agreed to be the priority issues involved in the EU - US intermodal coordination. The issues are as follows:

Priority Coordination Issues

1. Legal and Regulatory Issues.
Even though technological and service improvements may be impossible, there are laws and regulations in each country that govern various aspects of transportation. To gain increased efficiency in the intermodal system, there is a need for review and rationalization of existing laws and regulations to improve consistency across modes and countries.
2. Integrated Logistics and Information Technology.
The need for efficient, accurate transmission of commodity identification information will become increasingly important. This will be vital in the arena of integrated logistics. When dealing with multiple modes and countries, there should be further study as to what information is common to all modes and countries and how this information can be harmonized into a standard information packet to be transmitted along the logistics chain.

3. **Physical Infrastructure Constraints.**
There are physical constraints that must be resolved. The majority of physical constraints are landside access issues or how to move cargo into and out of ports. These landside access constraints come in the form of land availability, roadway congestion, railroad right of way constraints, and timing coordination of infrastructure improvement projects.
4. **International Standardization of Transportation Equipment.**
The large array of container sizes and equipment types may place increased demand on equipment and result in lower transportation efficiency. It is important to get to a set of standards that can be applied throughout the US and the EU.
5. **Collection of Intermodal Transport Statistics.**
Although computer systems are very helpful in calculating and recording data, poor data or data analyzed with no understanding of its assumptions or exclusions can result in erroneous conclusions. In order to quantify correctly the impact of intermodal transportation, it is important to come to consensus on what information is meaningful, who will collect it, how it should be collected, and how to keep sensitive and proprietary information secure.
6. **Unhindered Flow of Commerce Between International Gateways.**
An integral part of any international commodity flow is in the import/export process. This crossing of commodities into the international community must be allowed to flow smoothly with a minimum of delays and a minimum of information required. This process can only succeed if the participation and authority of the customs agency of each country is improved.
7. **Intermodal Mishap Mitigation and an Intermodal Liability Regime.**
The transportation system is comprised of both public and private stakeholders with each expending effort and cost to provide its service within the system. Damages or loss of commodities raise a host of liability and litigation issues, from who is responsible for the damaged commodity, to what expenses are incurred in hazardous material accidents, and how cargo is claimed and under what modal regime.

In addition to the range of issues, which were formed and developed, it was recognized that cultural differences and divergent attitudes towards a government's role in the marketplace arise from the fact that the evolution of the transportation system in Europe occurred very differently than in the United States. Often these differences cause confusion and concern over terminology and recommended actions. Two very pertinent points came from this forum's discussion:

- The European Union is still in the process of implementing consistent regulatory issues across its member states, particularly in regard to the privatization of European railways. Similarly, the United States is in the process of coordinating

its regulatory framework with those in Mexico and Canada in accordance with NAFTA. And, discussions concerning how the US and Europe can work together to improve intermodal transport are less effective without clear, consistent policies and implementation from within the European Union and North America.

- Policy makers, operators and shippers in both the European Union and the United States need to get a better understanding of how the other system works. Otherwise, any discussion about the interface and coordination of these two systems will be less productive.

Information from these reports is useful material as we now embark on a discussion of the current activities within the European Union.

In July, 1998, Dr. Ken Casavant, Professor of Agricultural Economics and Project Director of EWITS, and I had the opportunity to attend, present, and papers and participate in the World Conference on Transport Research in Antwerp, Belgium. In addition to access to substantial intermodal transportation and finance information, and conference discussions with transportation practitioners and professionals, we had the opportunity to field review and discuss the myriad of transportation issues with other transportation professionals.

Besides Antwerp, this field review included Belgium and the intercoastal waterway systems, Rotterdam (largest port in the world); Amsterdam and its canal and waterway systems; and London with its robust transportation system of underground, bus, freight and passenger rail, roadways, and Heathrow Airport and air services. Discussions with transportation professionals in all these areas enriched our understanding of the complexities and challenges of promoting intermodal transportation activities in the European Union. Additionally, the opportunity to ride the EuroStar from Brussels to London through the Channel Tunnel was informative.

Discussion

The Department of the Environment, Transport and the Regions of the United Kingdom published in August, 1998 *A New Deal for Transport Better for Everyone*, which is the government's White Paper on the future of transport. This document has a multi faceted purpose that emphasizes public transportation, increased personal choice by improving the alternatives, while understanding that it is important to the mobility of millions of people to be able to continue to use their own cars. It is clearly recognized that the quality of life depends on transportation and people do have a love affair with their vehicles, but this is creating concerns for the economy and the environment. The principle concern for both the economy and the environment appears to be congestion and an understanding that simply building more roads is not the answer to traffic growth.

Over 35 years ago, a similar document titled *The Buchanan Report* predicted that traffic would increase dramatically with profound consequences for the environment and the way life was lived. It noted that congestion and the unreliability of journeys add to the cost of business, undermining competition, at an approximate cost to the British economy of around 15 billion pounds (one British pound equals approximately 1.70 US dollars) per year. It noted in the United Kingdom that the carbon dioxide (CO₂) emissions are the fastest growing contributor to climate change and global warming. Increased CO₂ emissions also results in additional pollution that individuals have to breathe. Added to this projection was the fact that over the next 20 years, traffic will grow by more than a third and that van and lory (truck) traffic is forecasted to grow even faster.

Unfortunately, at this time, it is recognized that many people do not have a choice but to use a car, as it has become a necessity for transportation to work, etc. Many rural communities have no daily bus service and those that would like to rely on public transportation find inadequate schedules, increasing fares and declining service. As an example, 20 years ago, one in three five to ten year old children made their own way to school. Now only one child in nine does. They are transported there via car by adults. It is also noted that in Britain, with fewer cars, more mileage is put on their cars and public transportation is used less than other countries in the European Union.

Additional specific information was gained from discussions with transport professionals and articles on the Channel Tunnel: urban and regional freight flows; transport trends; freight movement in urban areas; the nexus of energy, climate and transportation; and high speed train impacts. These will be presented and compared with United States efforts. In addition, information regarding the Transportation Equity Act for the 21st Century, passed by the United States Congress, June 9, 1998, will be presented and subsequently compared with current European efforts.

European Transportation Efforts and Status

United Kingdom White Paper

Management, Integration, Regulation

To contribute to the quality of life, the UK White Paper outlines the following principles:

- Integration within and between different types of transportation.
- Transportation choices that support a better environment.
- Integration with land use planning at the national, regional, and local level.
- Integration policies for education, health, and wealth creation.

The White Paper acknowledges that besides integrating transportation into the above areas, it is clear funding will be a crucial issue, and toll roads and increased parking costs or similar revenue generators will be required. Furthermore, it is recommended that a truck road network be identified, and improved management of the trunk road system including the truck network be undertaken. In addition, investment would be focused on improving the reliability of journeys, increasing maintenance of facilities, improve safety, improving security of trips, less congestion, more fuel efficient vehicles, and an increase in customer service. The document proposes improved transit service, a new strategic rail authority that will bring vision to the privatized rail system, improved connections among multi-modal systems, a reduction of fares for the elderly, and easy access to public transportation for all users.

World competition and the ability to move goods, which supports economic vitality, are recognized. It is recommended that the following ingredients be part of that solution: A new strategic rail authority to promote rail freight infrastructure, partnerships for freight between local authorities and operators, reducing damage to the highway infrastructure and the environment through greater use of six axle lorries (trucks) and restricting larger vehicles from utilizing the facility, working in partnership with the freight industry to improve practices, and using methods to make freight movement more environmentally friendly.

In effectuating many of these changes, it is suggested that the way the existing transportation system is managed be altered. For example, this means many decisions on transport issues be devolved to the Scottish Parliament, the Welsh Assembly and the Assembly for Northern Ireland. In addition, planning arrangements in the English Regions need to be strengthened to ensure integration between transport and land use planning, including the role of airports, ports, railways and roads in the region. In some areas, the decision making on transport should be more accountable to local people.

It is recognized that the transportation system moves goods and people and is a fundamental supporting mechanism for economic vitality. It is needed to get people to jobs, recreation, travel, etc. It is also a major contributor to the economy by employing around 1.7 million people. As in many areas of the world, there is a backlog of needs

for all modes of transportation. In Britain, more than four fifths of the domestic freight tonnage goes by road. But traffic congestion now costs the nation billions of pounds each year with traffic forecasted to increase by a third in the next 20 years. Of great concern is the fact that rail freight tonnage has dropped by more than a quarter over the last decade. However, within the last few years it appears that trend is turning around and turning positive.

Privatization, deregulation and competition are key features of the last decade, but they have failed to deliver an integrated transportation system. The legacy ranges from the competitive market of the deregulated bus industry to inadequate regulation of monopoly supply in the provision of railway infrastructure. The objectives of this White Paper for competition and deregulation are:

- Build a framework that retains competition in the market, but provides for intervention where there is evidence that this is needed in the public interest.
- Make increasing use of pricing and taxation to send clear signals about the social and environmental impacts of travel decisions.
- Improve planning to recognize the interaction between modes, land use, economic development, operations and investment decisions.

Rail

Rail privatization has had mixed success. As competition has been introduced, there have been issues of cherry picking of routes by some operators that could threaten the overall route integrity. Competition should not be allowed if it would undermine existing services supported by the taxpayer or reduce network wide passenger benefits. A healthy growing economy would indicate an increase in the number of rail passengers and associated revenues, but the privatized, fragmented railway system continues to receive vast amounts of public subsidy with inadequate public accountability. There have been improvements, some train operators have gained new customers with better services and products. However, this is often offset by others that let standards slip, with punctuality deteriorating in more than half of the service providers, and an investigative finding showed there were less reliable services in more than a third of the providers.

The White Paper stresses that pressure on the road network can be relieved by using more rail to ship freight, while also garnering environmental benefits. The English, Welsh and Scottish Railway (EWS) has a target of doubling its rail traffic over five years and tripling it over ten years. However, it is also noted that Freightliner, which specializes in hauling containers between deep sea ports and inland terminals, aims to increase its volume of containers by fifty percent over five years.

These examples are in direct competition and to some extent contradictory. These two operations in reaching their respective goals could mean that in 2010, the share of freight going by road will be ten percent lower than is currently forecast. If this is the case, the White Paper notes that for every percentage point reduction in road freight that is achieved, some one to two thousand heavy lorries (trucks) would be taken off the road.

The rail projections are based on the fact that 277,000 metric tons of steel commodities have switched from road to rail haul, with an additional five trains per week between south Wales to the Wolverhampton steel terminal. In addition, there is the new 75 mile per hour Scottish rail service five days per week, and there has been significant discussion between operators and local authorities about potential shifts of port traffic to rail at Great Yarmouth, Lowestoft, and Kingsland.

Non-motorized and Mass Transit

The White Paper also takes considerable time and effort to discuss non-motorized options such as walking and bicycling. It is noteworthy that they are applying the term 'quality' to many of the efforts that they are undertaking. For example, they note quality partnerships have been developed in a number of towns and then go on to explain that this includes newer, better quality and more accessible buses and increased bus subsidies. There is a significant effort to put mass transportation, (i.e. bus and rail) forth as the desired options.

Gender differences are discussed. The document notes that women's transport needs are often different. They make about the same number of journeys on average as men, but these are shorter journeys and they want to use public transportation, especially buses more. This is under the assumption that men have the first call on the family one car household. In doing this, women's concerns particularly focused on personal security, especially when they are on their own or traveling at night. To address this, the White Paper indicates a greater emphasis on integrated transport, greater accessibility to buses and safer interchanges.

As a part of this seamless integrated transportation system, it is recognized that fares and ticketing are areas with a potential to increase customer service and encourage greater utilization of mass transit systems, especially if there's flexibility and value for the money. A good example is the London Travel Card that one can buy for the underground for all day that allows unlimited travel between specified zones. From field observations, several people were noted employing this as a method to commute from home to work by purchasing weekly and monthly fare cards.

Transportation accessibility for the disabled is also discussed with systems such as integrated bus and rail that are fully available to those with physical impairments. An interesting side effect of this issue is that the British government will raise the maximum axle weight of buses and coaches from 10.5 to 11.5 metric tons and increase their maximum gross weight from 17.0 to 18.0 metric tons. This will allow the additional hardware to be installed in these vehicles to provide for disabled lifts, etc.

Transportation and Land Use

The issue of quality residential environments, more peaceful country sides, traffic calming, etc., appears to be an attempt to minimize automobile use and suggest that land use connections need to be somehow incorporated with transportation decisions. This is the classic chicken and egg theory that transportation professionals continually grapple with, i.e. does transportation infrastructure direct growth or does growth direct transportation infrastructure?

One of the basic issues is the concept of a trunk or core road network. An identified core network in England of nationally important roads has been identified. These core roads link main population centers and economic activity, access major ports, airports and rail intermodal terminals, provide key cross border links to Scotland and Wales, and importantly are classified as part of the UK Trans European Road Network. This Road Network appears to be similar to the United States National Highway System (NHS). The core road system in England, however, is managed by local highway authorities to enable decisions to be made locally and to be theoretically better integrated with local transport and land use planning issues.

This is a departure from the methodology used to establish the United States National Highway System (NHS) that is the backbone of our national highway transport system. In addition, while NHS has funding that is provided by the federal government to be used on the designated system, the England core system is silent on funding and simply talks about devolving powers to local agencies.

Based on land use decisions, the New England policy will adopt a graduated approach to new connections on a trunk (core) road system. Access will be most severely restricted in the case of high speed motorways and core national routes. In other areas, there will be a less restrictive approach to connections subject to consultation, with local land use authorities.

Information Technology Systems

Information Technology systems are briefly discussed in the White Paper. Roadwatch, which is the provision of relevant, timely and accurate information to help motorists make the best use of the roadway network by making informed choices prior to their departure and choices about modal use, is becoming operational. There are also data sources available for trip information from traditional roadside signs, variable message signs, car radios, in-vehicle congestion warning systems, and road guidance systems. In the future, they are looking for radio data systems - traffic message channels - with pilot service systems starting shortly, dynamic (changing) route guidance systems, and dedicated short range communications.

The White Paper suggests research indicates there may be potential to divert about 3.5 percent of the United Kingdom's road freight traffic to water, split between ships rerouting to ports near to the origin and destination of their loads, and the potential for bulk and unit loads to shift to coastal waterway traffic, such as the use of the Thames River, etc.

Airport Connectivity

There is a significant amount of information related to improvements for providing connectivity to and activities at airports. The connectivity would be not only highway, but also rail and underground connections to be improved and enhanced. For example, the British Air Authority is working to link Heathrow Airport to the national rail network with a 440 million pound investment in the Heathrow Express. The project seeks to improve links to the national rail network; attract airport staff onto buses by increasing the quality, frequency and reliability; provide local rail service links to complement the sky train express service; and offer a Heathrow Airport travel card which entitles 56,000 staff working at Heathrow to discounts of up to 80 percent on 17 bus and coach services. It is this economic incentive that will more than likely have the greatest opportunity to succeed, as suggested by the White Paper.

Channel Tunnel

Another major freight and passenger mobility issue is the Channel Tunnel. In terms of the rail portion of this facility, the White Paper notes that the public/private partnerships have now come back on track and revised agreements to completely finish the facility and operate the Eurostar Rail Service are being consummated. This will be accomplished by a 1.8 billion pound government grant, complemented by 3.7 billion pounds of private funding. The private funding will be backed by government bonds. This additional work, to be completed by the year 2007, includes a dedicated high speed railway providing a strategic artery for international and domestic passengers and freight, a new international and domestic intermodal transport interchange at Heathrow Airport, and over 3 billion pounds of economic transport and environmental benefits. It is clearly noted that the reform of railways across Europe will be a varying mix of public/private associations that are necessary if rail delivery is to be a seamless, sustainable trans-European service capable of serving the needs of a global market.

There is talk about an innovative radical public/private partnership for the London underground of over seven billion pounds over 15 years, but retaining it in public ownership. Although this is stressed as desirable, there are no specifics that really indicate how such an investment could be attracted or what other procedures or mechanisms would need to occur to make it happen. It could be suspected that this could be a public backed bond with the result being increased fares. An additional financing possibility is implementing tolls on the motorways and trunk roads, as well as significantly increasing workplace parking.

Devolution

One of the issues that have greatly concerned the United States is the issue of devolution planned investment. Different parts of the UK will possibly be provided the ability to consider their own transport priorities under new arrangements with the Scottish Parliament, National Assembly for Wales, and Assembly for Northern Ireland. Moreover, more regional planning coordination and guidance in all of transportation will be encouraged.

The White Paper lays out some interesting thematic areas with generalized direction. There is little to make a reader believe that this has been thoroughly thought out with well crafted methodology. It appears to be a cursory explanation of how they want to proceed. In addition, the document is uneven in the sense that it deals with freight and passenger mobility issues for railroad, road, non-motorized, etc., associated environmental issues that deal not only with air, but noise, land use planning decisions (that are often reiterated without showing direct linkage), gender issues, and the issue of devolution without really explaining how it could, at least, conceptually work. After discussing this with many members in the greater London area, it would appear at first blush to be very difficult policies sell. To make the thematic areas in the White Paper work, even partially, requires increased revenues. Primarily this would appear to be toll roads, increased parking fees, changes to the allowances for company cars, the potential for increased fares in many areas and/or similar revenue generation.

It is clearly recognized in the Paper that the United Kingdom cannot succeed in an integrated transportation policy in isolation from the rest of Europe. The UK appears to be a leader in making this single transport policy more achievable by merging the UK departments of the Environment, and Transport, with a common need to link land use planning policies. In order to continue the momentum generated by this document (its predecessor was 20 years before, noted as the Green Paper) an independent body known as the Commission for Integrated Transport will be formed to provide independent advice to government on the implementation of the integrated transport policy, monitor developments in transportation, environment, health and other sectors and to review progress toward meeting objectives.

Funding

Private enterprise commitments are also in place for 230 million pounds for the purchase of rail rolling stock. Furthermore, additional funds will be available, aimed at supporting new investment proposals that produce significant and wider benefits for both integration and modal shifts. This funding will be distributed through an infrastructure investment fund and the rail passenger partnership scheme.

The infrastructure investment fund will support strategic investment projects aimed at addressing capacity constraints at key infrastructure pinch points on the existing rail network. They will be used to supplement traditional commercial infrastructure investment and assist in achieving adequate capacity for existing and new demand.

The rail passenger partnership scheme is designed to encourage and support innovative proposals at the regional and local level that develop rail use and promote modal shift. Targeted proposals will offer the greatest opportunity for modal shift and integration with other modes. For example, increased accessibility for physically challenged people and improving the effectiveness of rail to both existing and potential users. In addition, increased freight grants will be made to favor rail haul using environmental benefits to justify the investments. In 1997/1998, grants increased to 60 million pounds per year (as contrasted with 30 million pounds per year in previous grants).

Investments in trunk roads will be a priority, and there will be increased resources available for trunk road maintenance in England. Consideration of the potential for privately financed projects for maintenance and operation of trunk roads will be considered. Additionally, investments in aviation and trust boards will be a higher priority.

Assuredly, the major task of an effort as ambitious as the above is funding capability. As an example, for the current year, the planned expenditure includes 1.6 billion pounds on the railways in Great Britain, 3 billion pounds on local transport in England, and 1.3 billion pounds for the English Truck and Motorway Network. One of the fundamental principles is to ensure that the funds received from transport services are reinvested within the transport infrastructure. Moreover, there needs to be new ways of funding. There is considerable concern about trying to relieve the burden on the individual taxpayer. For example, there is a proposed public/private partnership for the London underground that will provide seven billion pounds of investment and six billion pounds of investment for a channel tunnel rail link. One of the ways to ensure that the investments are made in these types of rail facilities is the recommendation to set up a strategic rail authority to focus strategic planning of both passenger and freight railways with appropriate powers to influence the behavior of key industry players. This would include promoting the use of railway within an integrated transport system, ensuring the rail transport options are accessible in a way that constitutes good value for the market, and drawing policies and criteria for the future framework for competition between passenger train operators. Clearly, one of the major components that will be reviewed is the passenger rail fare structure.

In addition, government issues will also be a portion of the proposed solution. Such as, memorandum of understanding between the regulator and the companies is the minimum necessary to protect the public interest with a potential that further review may require additional regulation.

European Union (EU) Issues

Truck and Rail Changes (University of Westminster Transport Studies Group Annual Report 1997)

The European Union has already had significant effects on the United Kingdom. For example, in 1992 to 1993, trucking was deregulated. Currently, 44 metric tons maximum per truck are allowed in Britain, however, the Netherlands allows 50 metric tons maximum weight, and Sweden allows 60 metric tons maximum weight. Ostensibly, they have the same issue in this regard as we do with the North American Free Trade Agreement in figuring out what the appropriate harmonization will be. In January of 1999 in Great Britain, a six axle truck is allowed to increase from 38 metric tons maximum to 41 metric tons maximum, and additionally, a rail/truck to distribution center movement is allowed with 44 metric tons maximum with the distance unlimited. However, if you're on the European continent, it's 100 miles. But it stresses the need for harmonization.

In terms of funding, it was interesting to note that 26 billion pounds per year is contributed by Britain's motorists and only 6 billion pounds per year is actually invested back into transportation. In addition, the British fuel taxes have an inflation rate that's been moving at about 5 percent plus annually. Currently, this equates to one gallon of gas being approximately 4 plus dollars per gallon. U.S. equivalent. Inflation rates in much of the remainder of the EU are two to three percent creating an economic imbalance.

One of the interesting things about the make-up of the demographics of the English highway vehicle system is that there are only one half million vehicles that have a maximum weight in excess of three and one half metric tons. On the other hand, there are twenty four million vehicles that are less than three and a half metric tons. Another anomaly is the bus system that has been deregulated except that London is still controlled. An unfortunate attribute or perhaps a corollary to this issue has been the fact that ridership has dropped off 25 percent.

In terms of freight, there is some skepticism about rail movement. This is because of the continued motorway (highway) development and the convenience. Also, the Wisconsin Central Railroad has purchased most of Britain's rail freight system. For example, they operate the 500 miles to Glasgow. Britain is basically a small country, so perhaps a regional railroad equivalent in the United States can appropriately operate this system.

There is some new technology in freight rail, allowing pivoting rail trailers to facilitate loading and unloading, freight villages which act as rail terminals with distribution centers for manufacturing and industrial modes, and the advent of some private/public funding issues.

Again, there's a difference in the monetary issues from the European continent that has overall interest rates of three to four percent and Britain that continues to have an overall interest rate of eight percent. This discrepancy in interest rates can impact the direction and amount of freight flows and corresponding investments.

The European Union provides funds from the value added tax on goods, which amounts to 5 to 17-1/2 percent that is levied against luxury services, manufacturing, etc., but not on food. It is this funding source that can be used to assist in freight investments throughout the EU. Such investments can be used on intelligent transportation systems, systems architecture, tachographs installed in commercial vehicles to ensure that the drivers do not exceed their allotted hours for driving (we would refer to a driver's log and this is a black box) that could be analyzed. In addition, these information systems could assist in scheduling, fleet management, cargo transfer information, telecommunications and computer systems that would tie things together in terms of logistics.

Intelligent Transportation Systems

There are currently seven demonstration sites with different freight technologies for logistical applications. As an example, there are satellite options, which includes GPS; cell phones; electronic data interchanges; etc. These demos will be evaluated to see if there are one or two that really are the best to use. (*Sustainable Urban and Regional Freight Flows*, September 1997, University of Westminster)

Channel Tunnel

One of the main problems for intermodal traffic in the English Channel Tunnel relates to rail gauge, particularly in the UK and the availability of rail cars capable of carrying the latest generation of containers. These rail cars can be 45 feet long, 9-1/2 feet high, and 8-1/2 feet wide. This brings about an issue about the differences oceangoing shipping container dimensions and those of the European continent units. This can cause not only handling problems for equipment and transferability to modes, but places a significant damper on economic activities in dealing with these mixed sizes. Clearly, one of the biggest issues in resolving this issue is the financing that is required, especially those areas that need financing that cannot or do not receive government support.

Often when there is government support, the procedures and regulations are said to take too long before decisions are reached, therefore creating an economic problem. Additionally, in some countries, the nationalized railways are eager to provide trains per day for a fixed price, but reluctant to share any financial losses in the start up period or to provide equipment without specific guarantees. The example here is that the risk is not equally balanced and we experience shows that without balanced risk among partners the possibility of success is extremely limited.

Even so, the rail traffic is continuing to rise. The progress to date has been disappointing when compared to the projected levels prior to the opening of the tunnel. *Prospects for Intermodal Freight Transport - the Case of the Channel Tunnel*, July 1998, Fouks, Nash, Tweetle, Institute for Transport Study, University of Leeds. This is most likely attributable to the intense price competition and improved services made by "Le Shuttle" which have made trucking services much more competitive than anticipated. The trucking advantage may be mitigated to some degree as the ferry services are privatized. Moreover, some of the difficulties involved in establishing a new set of international services to operate reliably across the frontiers of different countries were greatly underestimated. To date it is not clear that these problems are being overcome by existing operators or whether European commission policies on open access will lead to the establishment of high quality services by new operators, as noted in the *Short Run and Long Run Impacts of Major Transportation Infrastructure: The Channel Tunnel*, July 1998, Norman, Sharp, Vickerman, Centre for European Regional and Transport Economics, Keynes College, University of Kent at Canterbury. The two factors of cost and service quality are the greatest barriers to achieving greater intermodalism followed by inadequate infrastructure (rail gauge problems), followed by a lack of technology to support the freight movements.

It is clear the tunnel is currently in deep financial trouble as a result of capital cost increases during construction, and problems in implementing rail service with more intense price competition than originally forecasted. Even after three years of service, traffic levels for rail are only around 50 percent of those originally forecast upon opening.

Intermodal transport through the English Channel Tunnel is an extremely important aspect to both the continent of Europe and United Kingdom, as noted in the *Intermodal Transport through the Channel Tunnel - An Examination of the Terminal Infrastructure in the UK - Final Report*, by Steven Nester, July 1996. For the United Kingdom, there have been several train operating schemes, terminal design and operation issues, as well as methods of handling equipment that need to be seriously considered to ensure that intermodalism through the tunnel is advantageous. Intermodal train operation is mainly influenced by the volume and direction of freight flows. For freight flows to support less than full trains, the hub and spoke system forms a cost and time efficient solution. In addition, the equipment at the terminals is extremely important. For example, terminal design and the configuration of the onsite rail infrastructure can be provided in such a manner as to assist with one way or two way access to the railway main line. In general, two way access and full length train sidings minimize the number of shunting activities that are required. To introduce intermodal services to the United Kingdom that would be similar to those in continental Europe required several infrastructure measures to be undertaken. Approximately 450 million British pounds resolved the loading problem with the British Rail Network. This required tunnels and bridges along the intermodal routes to be widened to accommodate the British rail gauge and the specially designed fleet of low platform wagons that had to be purchased.

The scheduled train service through the Channel Tunnel is provided by centralized rail freight distribution. Loading capacity of trains is booked by so called aggregators who are retailing it to the individual clients. Since the start of service in the summer of 1994, traffic has built up and is anticipated to reach 11.7 million metric tons by 2003 and 17.4 million metric tons by 2014. Intermodal traffic is estimated to amount to fifty to sixty percent the above amount.

The operational scheme of the Channel Tunnel intermodal services can be classified as a hub and spoke system. The Wembley European Freight Operating Center in London functions as a hub for the majority of trains serving the regional terminals in the United Kingdom. It is widely recognized that this Center is a key element of the terminal network, and it is one of the few that can support sufficient traffic volumes for full block trains.

Intermodal Terminals

With the prospects for projected intermodal traffic growth through the Channel Tunnel to increase, the freight village concept has been adopted by a number of private development groups. These facilities usually provide the appropriate setting for positive distribution operations due to accessibility, land availability, and the option for the use of rail for freight movements, as well as trucks.

The United Kingdom terminal network is subject to centralized planning as far as rail freight distribution projects, with no indication of over capacities as borne out of the investigation, reported July 1996 by the Transport Studies Group of the University of Westminster. Assuming by the year 2000 that a portion of the intermodal through rail freight will amount to approximately 7 million metric tons per year, five to seven terminals could be supported exclusively by channel rail traffic. It is noteworthy that the total number of currently operational planned terminal schemes has nearly doubled its figure, which may induce additional traffic demand. The anticipated extension of the modal share of rail in both the cross channel and domestic freight transport markets will be significantly influenced by the efficiency, service and quality of the train operation and the terminal transfer. This will comprise the ingredients of transport cost, information flow, and quality aspects as compared against associated roadway hauling schemes. This clearly points out that the creation of adequate conditions for intermodal transport chains has to be given a high priority through using flexible operating strategies and technological solutions.

Since intermodal transport requires additional transfer activities when you compare it to roadway hauling, the terminal handling efficiencies and methodology is a vital element in terms of attractiveness and viability of a combined road/rail transfer concept. Interdependent relationships between installed handling capacity and operating strategies and the resulting cost of transfer determines the economic performance of an intermodal terminal as well as the traffic potential, and location questions. It is clear that the daily course of a terminal operation is subjected to peaks and valleys in terms of demand and perhaps one focus could be a more balanced utilization of the handling facilities. An option would be to acquire additional traffic suitable for a shift to off-period peaks and/or traffic diversion through flexible pricing methods.

Several efforts are underway to ensure sustainable regional and urban freight flows (SURFF). SURFF is a three year project co-financed by the European Union in the transport telematics application program. The project is reviewing the network operation of freight centers and city logistics and aims to develop and validate a number of technological solutions that are applicable to freight movement. The objectives as stated are:

- More efficient operation of freight centers by optimizing the information flows to ease the trans-shipment of freight between available modes of transport and the use of multi-modal change,
- Integration of the user needs and specific requirements in freight center concepts in order to utilize technology, and
- Optimize the use of technology to achieve sustainable freight flows in urban areas and reduce their environmental impacts.

One of the problems is the lack of integration of different systems moving freight through and to freight centers, due to a variety of different entities involved in transporting freight. These complexities that create constraints must be brought together in a collaborative fashion through technological efforts that are backed by policy implications to allow a seamless, sustainable freight flow to support the economy. Currently, there are seven demonstration sites throughout Europe: Aalborg, Denmark; Aspropyrgos, Greece; Bologna, Italy; Linz/Tilburg, Austria; Haute Normandie, France; Stockholm, Sweden; and Tilburg, Netherlands.

Freight Flows and Markets

It is important to realize that freight transport, as noted in the *Transport Trends in Europe - Comparison and Contrasts*, 1995, Transport Studies Group, University of Westminster, for Lloyds Bowmaker, measured in metric tons/kilometers, within Europe has increased 40 percent between 1970 and 1990. Forecasts suggest that further growth can be expected so that between 1990 and 2010, it is anticipated that freight transport volumes will increase about 60 percent, but most of this growth is due to be trucking. Some of the problems that the European Union must address are several member states such as France and the United Kingdom having markets which are dominated by for hire operators, contrasted with other countries such as Germany, which have nationalized systems that have been remarkably stable. However, in Germany the deregulation that was commenced in January of 1994 is now reflecting a shift towards more private for hire services. Currently it appears that smaller companies in the EU may be initially more limited simply because of their inability to compete with larger entities. To effectively compete, many of these smaller firms are either merging or being consumed by the larger companies.

The creation of the single European market and legislative measures, which accompanied this move, has made a significant contribution to the removal of market distortions between markets in the European Union. This is especially noticeable in international operations, cabotage technical matters, and fiscal arrangements. Even though there have been some productive attempts at harmonization, there is still concern at the extent of the continuing differences among markets and the way that individual national governments treat the trucking industry. The British truckers feel that they have been unfairly discriminated against in international operations in which road user charging schemes have been introduced and governments have reduced the vehicle taxation on their respective national haulers, but not on those that are external. It is true there are differences in operating costs that arise out of variations such as vehicle taxes, fuel prices, labor rates, vehicle acquisition, and financing costs, but the concern can come about because all markets in the countries will be subject to competition from haulers outside of the countries. Therefore, if there are factors that on a consistent basis lead to certain countries' haulers having a lower operating cost, then this could be regarded as a distortion of free and fair competition.

It appears that freight transportation services within and external to the EU will continue to expand rapidly in the coming years. There will be ample opportunities to engage in international market competition as well. The international haulers in competition with the EU already understand that strategies and tactics need to be tailored to a particular country of operation. This is an area that EU countries must understand and adapt if they are to remain competitive. Perhaps one of the greatest challenges to the EU is the necessity to ensure that regulations continue to establish a level playing field for all competitors. In addition, they will need to deal with the differences between approaches to enforcement with individual member states.

Congestion

One major issue that needs to be addressed by all freight movers is the issue of congestion, especially in urban areas. In *Freight Transportation in Congested Urban Areas: Issues and Methodology*, July 1998, Heann Cranic notes concerns with this issue and suggests it is often attributable to not only the increase in freight movements, but also is directly related to land use planning and economic development. In fast developing areas, the intervention of the public sector can play an important role in both land use planning and freight transportation through land use regulation and guidance. This role can be outlined in the following points:

- Functional land use zoning. This will clearly influence the goods consumption, and production patterns, resulting in changed freight flows,
- Transportation facilities location. The location of transportation centers will cause or perpetuate traffic movements and need to be managed appropriately, and
- Network optimization and service network design. This is basically the connectivity between the land use and transportation facilities that needs to be carefully balanced.

The above illustrates the age old dilemma of does transportation lead or guide economic development and growth or does land use planning and regulations guide the development of economic growth and transportation activities. This is one of the central arguments to the Growth Management Act of Washington State.

Environment

With the increased volumes of freight movement and emissions that occur from transport vehicles, there are several issues of concern to many individuals, as noted in *Energy and Climate Criteria for Sustainable Transportation*, July 1998, Sven Hunhammar. This primarily includes global warming and its associated effects of diminished air quality and the corresponding consumption of fossil fuels. Although technological improvements could change the parameters of the concerns about global warming and fossil fuel consumption, it nevertheless does not appear to be on the immediate solutions horizon. There are those already who believe that the emission of greenhouse gases is already too extensive and have caused irreversible change. This certainly will be a challenge and condition to attempts in moving freight to support the economy's vitality.

Passenger

In terms of passenger movement, many European cities are making tremendous efforts to boost ridership, as reflected in *The European High-Speed Train and Urban Revitalisation*, July 1998, Berg and Pol. Examples include renovation of inner cities by improving accessibility, living climate, and attracting new business activity through various practices. The European high speed train network is often touted as one of the instruments in generating urban revitalization. With the European Union and continuing European integration, the need for high grade passenger transport connections among major European cities is growing. High speed trains such as the TVG are essential to fulfill the demand for this type of movement. Moreover, this means that connectivity from stations by other modes of transport such as buses, trolleys, tramways, etc. must also be accessible, user friendly, and provide convenient service for users.

It is important that each city take account of its spatial economic structure as it seeks the solution for a balanced development of urban inner cities. It is clear that what works for one city will not work for all.

Comparisons

It is important to acknowledge the United States Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) that set in place many principles that also deal with freight and passenger mobility, efficiency, environmental concerns, safety, congestion mitigation and seamless transportation interchanges. As a follow on, the United States passed the Transportation Equity Act for the 21st Century in 1998 (TEA-21). This Act perpetuates many of the principles embodied within ISTEA, but additionally provides greater funding over the six year period, approximately 35 percent more than was provided in ISTEA. In addition, the Airport Development Program assesses needs and provides funding for United States designated airports. The following provides a brief summary of TEA-21 and the Airport Improvement Program.

While The White Paper takes a 20 year view without overly specific policy and funding direction, ISTEA and TEA-21 provides a future vision and policy direction and funding for two six year increments. Other EU work and research provide insight into infrastructure and policy needs and estimates, corresponding investments made and future requirements, but are silent on revenue sources.

TEA-21-Transportation Equity Act for the 21st Century- Moving Americans into the 21st Century

TEA-21 builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which was the last major authorizing legislation for surface transportation. This new Act continues and improves current programs as well as offering new initiatives to meet the challenges of improving safety as traffic continues to increase at record levels, protecting and enhancing communities and the natural environment as we provide transportation, and advancing America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation.

Overview

Assurance of a guaranteed level of Federal funds for surface transportation through FY 2003 is achieved. The annual floor for highway funding is keyed to receipts of the Highway Account of the Highway Trust Fund (HTF). Transit funding is guaranteed at a selected fixed amount.

Strengthening of safety programs across the Department of Transportation (DOT) is proposed. Increasing the use of safety belts and promoting the enactment and enforcement of 0.08 percent blood alcohol concentration standards for drunk driving is emphasized.

Flexibility in the use of funds, emphasis on measures to improve the environment, focus on a strong planning process as the foundation of good transportation decisions-all ISTEA hallmarks-are continued and enhanced by TEA-21. New programs such as Border Infrastructure, Transportation Infrastructure Finance and Innovation, and Access to Jobs target special areas of national interest and concern.

Investing in research and its application to maximize the performance of the transportation system is increased. Special emphasis is placed on deployment of Intelligent Transportation Systems to help improve operations and management of transportation systems and vehicle safety.

Funding Level

In a major change to Federal budget rules, highway (including most highway safety programs) and transit programs are now guaranteed a minimum level of spending under TEA-21. Prior to enactment of TEA-21, funding for surface transportation programs was one item among many on a list of priorities for Federal program spending in the budget. Under the new budget rules, highway guaranteed amounts are keyed to actual Highway Trust Fund (Highway Account) receipts and can only be used to support Federal highway and highway safety programs. Transit funding is guaranteed at a selected fixed amount over the TEA-21 period and can be used only to support transit programs.

The amount guaranteed for surface transportation, as explained above, is estimated to be \$198 billion. In essence, the guaranteed amount is a floor; it defines the least amount of the authorizations that may be spent. The authorizations for the highway (including highway safety) and transit programs in TEA-21 total just over \$217 billion.

Highway Funding Equity - Minimum Guarantee

Funds are distributed to ensure that each state receives an amount based on equity considerations. This provision is called the Minimum Guarantee and ensures that each state will have a guaranteed return on its contributions to the Highway Account of the Highway Trust Fund.

For each state, the Act specifies a certain share of the overall funding for the following Programs: Interstate Maintenance (IM), National Highway System (NHS), Bridge, Congestion Mitigation and Air Quality (CMAQ) Improvement, Surface Transportation Program (STP), Metropolitan Planning, High Priority Projects, Appalachian Development Highway System, Recreational Trails, and the Minimum Guarantee funding itself. The shares specified were pegged to meet the objective of a 90.5 percent return to each state.

Highway Trust Fund

TEA-21 extends the imposition of the highway-user taxes, at the rates that were in place when the legislation was enacted, through September 30, 2005. The truck taxes and all but the permanent 4.3 cents per gallon of the motor fuel tax were scheduled to expire on October 1, 1999. Provision for deposit of almost all of the highway-user taxes into the Highway Trust Fund is extended through September 30, 2005.

Safety Issues

Driver and Vehicle Safety Programs

A total of \$2.7 billion is authorized for non-construction highway safety programs.

Alcohol Programs

Incentives to prevent operation of motor vehicles by intoxicated persons are significantly increased. The Act provides \$500 million for incentive grants for FYs 1998-2003 to states that have enacted and are enforcing a law, providing that any person with a blood alcohol concentration of 0.08 percent or greater, while operating a motor vehicle in the state, shall be deemed to have committed a per se offense of driving while intoxicated.

Seat Belt and Occupant Protection Programs

Under seat belt incentive grants, the Act authorizes \$500 million over FY's 1999-2003 for a new program of incentive grants to encourage states to increase seat belt use rates.

State Highway Safety Data Improvement Incentive Grants

The Act provides \$32 million for the period FY's 1999-2002 for a new state highway safety data improvement incentive grant program to encourage states to take effective actions to improve the timeliness, accuracy, completeness, uniformity, and accessibility of their highway safety data.

Highway Safety Research and Development

The Act continues the Section 403 Highway Safety Research and Development Program and specifies several new categories of research under Section 403, including training in work zone safety management; measures that may deter drugged driving; and programs to train law enforcement officers on motor vehicle pursuits.

National Driver Register

The National Driver Register (NDR) is reauthorized with several changes to its provisions. The Act eliminates a deficiency in the NDR statute by extending participation to Federal departments or agencies, like the state department, that both issue motor vehicle operator's licenses and transmit reports on individuals to the NDR.

1. Evaluate the implementation of the NDR and the commercial drivers license information system to identify ways to improve the exchange of information about unsafe drivers and drivers with multiple licenses.
2. Assess electronic technologies that may improve the exchange of driving records.

Automobile Safety and Information

Rulemaking directions for improving air bag crash protection systems are specified.

Railway-Highway Crossings-Behavioral

The annual funding for Operation Lifesaver, a program that works to eliminate railway-highway crossing and railroad trespasser accidents, fatalities, and injuries, is increased from \$300,000 to \$500,000 per year.

Infrastructure Safety

Reflecting the importance of safety throughout all surface transportation programs, TEA-21 designates "the safety and security of the transportation system for motorized and non-motorized users" as one of the seven newly established areas to be considered in the overall planning process, both at the metropolitan and statewide level. TEA-21 continues the requirement that 10 percent of each State's STP apportionment be set aside for safety construction activities.

The Act continues a program initiated in ISTEA for eliminating hazards of railway-highway crossings in certain designated high speed rail corridors. The program is funded by a set aside from STP funds of \$5.25 million per year in contract authority from the HTF and an additional \$15 million per year authorized to be appropriated from the General Fund.

Motor Carrier Safety

Under the provisions of TEA-21, the National Motor Carrier Safety Program (NMCSAP) is restructured to promote performance-based activities, provide flexibility for state grantees by allowing them to invest in areas providing the greatest potential for crash reduction based on their own circumstances, strengthen Federal and state enforcement tools, and provide innovative approaches to improving motor carrier compliance. The Act also enhances the information systems that support all national motor carrier safety activities and provide the analytical foundation for future safety improvements.

Motor Carrier Safety Assistance Program (MCSAP)

MCSAP provides funds for state enforcement of commercial motor vehicle safety and hazardous materials regulations. Uniform roadside driver and vehicle safety inspections, traffic enforcement, compliance reviews, and other complementary activities are eligible. Under the Act, states must adopt and implement a performance-based program by the year 2000. The Act authorizes a total of \$579 million over the 6 years.

Strengthening Safety Enforcement and New Approaches to Compliance

1. Imposes mandatory shutdown on all unfit carriers, strengthening the authority of the Secretary to order unsafe motor carriers to cease operations.
2. Removes barriers to effective application of penalties and establishes a \$10,000 maximum penalty for all non-record keeping violations of the safety regulations.

Information Systems

The Act includes a total of \$65 million for motor carrier information systems and analysis. Funds may be used for improvements to information systems containing carrier, vehicle, and driver safety records and development of new data bases; analysis of motor carrier information and program effectiveness; implementation of Performance and Registration Information System Management (PRISM); and improvements to commercial driver programs.

National Highway System (NHS)

The National Highway System is composed of 163,000 miles of rural and urban roads serving major population centers, international border crossings, intermodal transportation facilities, and major travel destinations and includes connections to terminals designated by this Act. It includes the Interstate System, other urban and rural principal arterials, highways that provide motor vehicle access between the NHS, and major intermodal transportation facilities, the defense strategic highway network, and strategic highway network connectors. The NHS funding level is \$28.6 billion for the six years of the Act.

Interstate System/Interstate Maintenance (IM)

The 46,000 mile Dwight D. Eisenhower National System of Interstate and Defense Highways retains a separate identity within the NHS. The IM program established under ISTEA is retained, and authorizations totaling \$23.8 billion are provided for FY's 1998-2003.

Surface Transportation Program (STP)

The STP provides flexible funding that may be used by states and localities for projects on any Federal-aid highway, including the NHS, bridge projects on any public road, transit capital projects, and public bus terminals and facilities. Total funding provided for the STP over the six years is \$33.3 billion.

Once the funds are distributed to the states, 10 percent is set aside for safety construction activities (i.e., hazard elimination and railway-highway crossing improvements), and 10 percent is set aside for transportation enhancements, which encompass a broad range of environmentally related activities.

Bridge Replacement and Rehabilitation

Continuing as a separate program with its own funding is the Bridge Replacement and Rehabilitation program. A total of \$20.4 billion is authorized for this program for FY's 1998-2003 to provide assistance for eligible bridges located on any public road.

Transit Programs

TEA-21 provides \$42.0 billion over the 6 years for transit programs. Of this amount, \$29.34 billion (70 percent) is to come from the Mass Transit Account of the Highway Trust Fund while \$12.65 billion (30 percent) is authorized, subject to appropriation, from the General Fund.

The rural transportation accessibility incentive program provides \$44.7 million for the 5-year period of FY's 1999-2003 for over-the-road bus service.

A new program, the clean fuels formula grant program supports the global warming initiative by providing an opportunity to accelerate the introduction of advanced bus propulsion technologies into the mainstream of the nation's transit fleets. When the authorization in this formula grants account is combined with the authorization in the Discretionary Grants account, a total of \$1 billion is authorized for the Clean Fuels Formula Grant Program.

The urbanized area formula grant program contains authorizations totaling \$18.02 billion for the 6-year period, provided for the Urbanized Area Formula Grant Program. Under this program, 91.23 percent of the funding is made available to all urbanized areas with a population of 50,000 or more.

Capital Investment Grants

New transit starts have total funding of \$9.18 billion, authorized for FY's 1998-2003. In evaluating projects, the Secretary is to consider the following new factors: population density and current transit ridership in the corridor; the technical capability of the grant recipient to construct the project; and factors that reflect differences in local land, construction, and operating costs. A number of projects are identified for funding during the reauthorization period.

Fixed guide way modernization review authorizations totaling \$6.59 billion for this program over the six year period. Bus also receives a total of \$3.55 billion, authorized for bus and bus-related facilities over the six year period.

Transit Benefits

The Act changes the Internal Revenue Code to introduce equity between parking benefits and transit/vanpool benefits. The limit on nontaxable transit and vanpool benefits is increased from \$65 to \$100 per month for taxable years beginning after December 31, 2001.

Rail Programs

Magnetic Levitation Transportation Technology Deployment Program (MAGLEV) includes contract authority totaling \$60 million, authorized for FY's 1999-2001 to fund nationally significant projects that will demonstrate the feasibility and safety of transportation systems employing magnetic levitation. An additional \$950 million in budget authority is authorized, but must first be appropriated by Congress.

High Speed Rail Development

The existing high speed rail development program authorized by the Swift Rail Development Act is reauthorized for FY's 1998-2001 at \$10 million per year for corridor planning and \$25 million per year for technology improvements.

Light Density Rail Line Pilot

A new program is created to fund light density rail line pilot projects. It provides funding for capital improvements and rehabilitation of publicly and privately owned rail line structures. The program is authorized at \$17.5 million per year for FY's 1998-2003 funds.

Special Programs

Welfare to Work

Access to jobs is approved by the Act, creating a new program for Job Access and Reverse Commute Grants. The program is funded for FY's 1999-2003 with \$400 million from the Transit Account of the HTF and \$350 million from the General Fund of the Treasury. The twofold purpose of the program is (1) to develop transportation services designed to transport welfare recipients and low-income individuals to and from jobs, and (2) to develop transportation services for residents of urban centers and rural and suburban areas to suburban employment opportunities. Additionally, to provide job opportunities through training, a new provision in TEA-21 allows states the opportunity to reserve slots for welfare recipients in On-the-Job Training programs, which lead to full journey level in skilled highway construction trades.

Innovative Finance

TEA-21 builds on the innovative financing initiatives begun under ISTEA to leverage Federal resources by encouraging private participation in the delivery of surface transportation infrastructure. These initiatives are intended to supplement the traditional Federal-aid grant assistance by increasing funding flexibility and program effectiveness. They establish pilot programs to test new finance mechanisms, and they extend or make permanent some of the tools already tested.

The Act establishes a new program, under the Transportation Infrastructure Finance and Innovation Act (TIFIA), through which DOT can provide credit assistance on flexible terms directly to public-private sponsors of major surface transportation projects to assist them in gaining access to the capital markets. TIFIA provides a total of \$530 million of contract authority over FY's 1999-2003, and authorizes the Secretary to collect fees from borrowers, to fund up to \$10.6 billion of direct loans, loan guarantees, and lines of credit to support up to 33 percent of project costs. Eligible projects include highway and capital transit projects under Titles 23 and 49, international bridges and tunnels, intercity passenger bus and rail projects (including Amtrak and MAGLEV systems), and publicly owned intermodal freight transfer facilities on or adjacent to the NHS. Projects must cost at least \$100 million or 50 percent of a State's annual apportionments (except \$30 million for ITS projects) and be supported by user charges or other dedicated revenue streams.

The Act also authorizes a new Railroad Rehabilitation and Improvement Financing program to provide credit assistance, in the form of direct loans and loan guarantees, to public or private sponsors of intermodal and rail projects. The aggregate amount of outstanding loans and guarantees made under this program is limited to \$3.5 billion, with \$1 billion reserved for projects primarily benefiting freight railroads other than Class I carriers. Eligible projects include the acquisition, development, improvement, or rehabilitation of intermodal or rail equipment or facilities, including track, bridges, yards, buildings, and shops.

The Act establishes a new pilot program for State Infrastructure Banks (SIB's) in which four States-California, Florida, Missouri, and Rhode Island-may participate. The 39 existing SIB's are limited to using federal funds appropriated in FFY 1996 and FFY 1997 (Washington state is this category).

Several provisions are included in the Act that provides greater flexibility to States, MPO's, and local governments in satisfying the non-Federal matching requirements of a project. The Act removes a former requirement that Federal match be applied to each progress payment to the state, thereby providing the Secretary with discretion in developing policies to allow the Federal match to be adjusted during the life of the project.

The Act also provides more flexibility to states and local governments in meeting the non-Federal matching requirement by:

1. Allowing the fair market value of land lawfully obtained by the state or local government to be applied to the non-Federal share of project costs.
2. Allowing funds from other Federal agencies to be applied to the non-Federal share of recreational trails or transportation enhancement projects.
3. Allowing funds appropriated to Federal land management agencies or to the Federal lands highway program to be applied to the non-Federal share of certain projects.

For the first time, reconstruction or rehabilitation of a free interstate highway segment and its conversion to a toll highway is allowed for three pilot projects. The purpose is to provide for the reconstruction or rehabilitation of Interstate highway corridors where improvement costs exceed available funding sources, and work cannot be advanced without the collection of tolls.

National Corridor Planning and Border Infrastructure Programs

The new National Corridor Planning and Development program will provide funds for coordinated planning, design, and construction of corridors of national significance, economic growth, and international or interregional trade. Allocations may be made to corridors identified in Section 1105© of ISTEA and to other corridors using specified considerations.

The Coordinated Border Infrastructure program is established to improve the safe and efficient movement of people and goods at or across the U.S./Canadian and U.S./Mexican borders.

A total of \$700 million is provided for these efforts for FY's 1999-2003, of which up to \$30 million may be made available for the construction of transportation infrastructure necessary for law enforcement in border States.

Value Pricing

To promote economic efficiency in the use of highways and support congestion reduction, air quality, energy conservation, and transit productivity goals, the Act provides authorizations for the Value Pricing Pilot program. This program replaces the Congestion Pricing Pilot program authorized by ISTEA, and provides funding to support the costs of implementing value pricing projects included in up to 15 new state and local value pricing programs.

Any value pricing project under this program may involve the use of tolls on the Interstate System. The Act provides that a state may permit vehicles with fewer than two occupants to operate in high occupancy vehicle lanes if such vehicles are operating as part of a value pricing program. Potential financial effects on low-income drivers shall be considered as part of any value pricing program, and mitigation measures to correct potential adverse financial effects on low-income drivers may be included as part of the value pricing program.

Ferry Boats

A total of \$220 million is authorized over the 6-year period of the Act for construction of ferry boats and ferry terminal facilities. Of this amount, for each year from FY's 1999-2003, \$10 million shall be made available to Alaska, \$5 million to New Jersey, and \$5 million to Washington.

High Priority Projects

The Act includes 1,850 high priority projects specified by the Congress. Funding for these projects totals \$9.3 billion over the 6 years of the Act with a specified percentage of the project funds made available each year.

Program Administration

TEA-21 streamlines many aspects of the administration of the Federal surface transportation programs and turns additional authority over to the state transportation agencies. A state may assume the Secretary of Transportation's responsibilities for approval of plans, specifications, and estimates (PS&E), contract awards, and construction inspections under an agreement between the Secretary and the state. Previously two separate actions-the PS&E approval and the execution of the project

agreement to commit Federal funds to a project-are now combined. Large projects receive special treatment. An annual financial plan is required for any project with an estimated total cost of \$1 billion or more. After regulations are developed, states may employ the design-build contracting technique for projects costing \$50 million or more (\$5 million for an ITS project). TEA-21 continues vital labor protections for transportation workers, such as the Davis-Bacon prevailing wage guarantee.

Congestion Mitigation and Air Quality Improvement

The Congestion Mitigation and Air Quality Improvement program, continued in TEA-21 at a total funding level of \$8.1 billion for the 6 years of the Act, provides a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available for areas that do not meet the National Ambient Air Quality Standards (non-attainment areas), as well as former non-attainment areas that are now in compliance (maintenance areas). A state may transfer up to 50 percent of its increase in CMAQ funds compared to what it would have received if the CMAQ program were funded at \$1.35 billion nationwide. The funds may be transferred to other Federal-aid programs, but can be used only for projects located in non-attainment and maintenance areas.

Transportation Enhancements (TE)

Transportation enhancement activities continue to be funded through a 10 percent set aside from STP funds. The list of activities eligible for transportation enhancement funds is expanded, but all projects must relate to surface transportation. Newly eligible are safety education activities for pedestrians and bicyclists, establishment of transportation museums, and projects to reduce vehicle-caused wildlife mortality. Provision of tourist and welcome center facilities is specifically included under the already eligible activity "scenic or historic highway programs." In addition, 1 percent of the transit urbanized area formula funds distributed to areas with populations greater than 200,000 must be used for transit enhancement projects specified in the Act.

Bicycle Transportation and Pedestrian Walkways

TEA-21 continues and expands provisions to improve facilities and safety for bicycles and pedestrians. The eligibility of NHS funds is broadened to include pedestrian walkways, and safety and educational activities are now eligible for TE funds.

Recreational Trails Program

A total of \$270 million in contract authority is authorized for FY's 1998-2003 to provide and maintain recreational trails. States must establish a state recreational trails advisory committee that represents both motorized and non-motorized recreational trail users. Of funds distributed to a state, 30 percent must be used for motorized use, 30 percent must be used for non-motorized use, and 40 percent must be used for diverse trail uses (any combination-the diverse category may overlap with the others). The

Federal share is raised to 80 percent (from 50 percent), and Federal agency project sponsors or other Federal programs may provide additional Federal share up to 95 percent. Soft match provisions are allowed, including soft matches from public agencies.

National Scenic Byways Program

TEA-21 provides a total of \$148 million for technical assistance and grants to states for the purposes of developing scenic byway programs and undertaking related projects along roads designated as National Scenic Byways, All-American Roads, or as State Scenic Byways.

Transportation, Community, and System Preservation Pilot

The Transportation and Community and System Preservation Pilot program is a comprehensive initiative of research and grants to investigate the relationships between transportation and community and system preservation and private sector-based initiatives. States, local governments, and metropolitan planning organizations are eligible for discretionary grants to plan and implement strategies which improve the efficiency of the transportation system; reduce environmental impacts of transportation; reduce the need for costly future public infrastructure investments; ensure efficient access to jobs, services, and centers of trade; and examine private sector development patterns and investments that support these goals. A total of \$120 million is authorized for this program for FY's 1999-2003.

Planning

The core metropolitan and statewide transportation planning requirements remain intact under TEA-21, emphasizing the role of state and local officials, in cooperation with transit operators, in tailoring the planning process to meet metropolitan and state transportation needs.

Continuing at both the metropolitan and statewide level are provisions concerning fiscal constraint, planning horizon, and public involvement, with modification to the list of named stakeholder groups by adding freight shippers and public transit users.

Metropolitan transportation planning funding remains a 1 percent takedown from certain authorized programs in Title 23, and in Title 49, has changed to specific funding levels. Funding for State Planning and Research supported activities remains a 2 percent set aside of certain apportionments in Title 23 and also has changed to specific funding levels in title 49.

The key change in the new legislation is the consolidation of 16 metropolitan and 23 statewide planning "factors" into seven broad "areas" to be considered in the planning process, both at the metropolitan and statewide level. The growing importance of operating and managing the transportation system is recognized as a focal point for transportation planning.

Other changes are included to further ensure the involvement of local officials, especially local officials in non-metropolitan areas; strengthen the financial aspects of the planning process; and improve coordination, cooperation, and public involvement. MPO's and states will be encouraged to coordinate the design and delivery of federally funded non-emergency transportation services.

Streamlining

The Secretary will establish a coordinated environmental review process for the DOT to work with other Federal agencies in ensuring that major highway projects are advanced according to cooperatively determined time frames. The coordinated process will use concurrent, rather than sequential, reviews. It will allow states to include their environmental reviews in the coordinated environmental review process.

Ozone and Particulate Matter Standards

New and revised National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter (PM) were promulgated in July 1997. Included in the PM NAAQS were new standards for PM_{2.5}-fine particles less than 2.5 microns. TEA-21 ensures the establishment of the new monitoring network for PM_{2.5} and, within appropriated totals, requires financial support be given to the States for 100 percent of the cost of establishing and operating the network.

The Act also codifies the timetables for designating areas as to attainment of the new PM_{2.5} NAAQS and the revised ozone NAAQS. The Administrator of the Environmental Protection Agency (EPA) is to issue final designations for ozone areas in July 2000, and for PM_{2.5} areas the earlier of 4 years after the State receives PM_{2.5} monitoring data or December 31, 2005. TEA-21 requires EPA to harmonize the schedules for state submissions of regional haze and PM_{2.5} air quality plans.

Research and Technology

TEA-21 establishes a strategic planning process to determine national research and technology (R&T) development priorities related to surface transportation, coordinate national R&T development activities, measure results and impacts, and coordinate reporting. In addition to a 5-year strategic plan, this program will produce reports on competitive merit review procedures for R&T, performance measurement procedures, and model procurement procedures.

Highways

Surface transportation research has contract authority totaling \$592 million provided for in FY's 1998-2003 to fund research, development, and technology transfer activities with respect to all phases of transportation planning and development and motor carrier transportation, in addition to testing and development activities.

New efforts include an Advanced Research program to address longer-term, higher-risk research that shows potential for substantial national benefits and a new Surface Transportation-Environment Cooperative Research program, which will address a variety of transportation-related environmental issues. Also authorized is the Advanced Vehicle Technologies program, to be jointly administered by DOT and the Department of Energy, whose goal is to develop advanced vehicles, components, and infrastructure, and bring them to the commercial market. Remaining programs are continued, including the Long-Term Pavement Performance program and the International Highway Transportation Outreach program.

Technology deployment is supported by contract authority totaling \$250 million, provided over the 6 years of the Act for the Technology Deployment Initiatives and Partnerships (TDIP) program. TDIP is designed to significantly accelerate adoption of innovative technologies. The program will focus on not more than five deployment goals that will produce tangible benefits.

Strategies will be established in cooperation with public, private, and academic partners; and leveraging of Federal funds with other resources is encouraged. The program will utilize domestic and international technologies and will include technical assistance, information sharing mechanisms, and integration with dissemination of DOT research.

Training and education is broadened since the National Highway Institute (NHI) is authorized to provide its services to a broader group of transportation professionals. States are authorized to use a set aside of their apportionments to cover some expenses of their employees' training.

Transit

A new program is established to assist in the deployment of transit innovation. This program will allow the Secretary to enter into agreements with public or private research organizations, transit providers, and businesses to promote the early deployment of innovation in mass transportation services, management, operational practices, or technology that has broad applicability.

International Mass Transportation program is a new program is established to support such activities as advocacy of American transit products and services overseas and cooperation with foreign public sector entities on research.

New programs are established for study, design, and demonstration of advanced technologies, such as fixed guide way technology, bus technology, fuel cell-powered transit buses, advanced propulsion control for rail transit, and low-speed magnetic levitation technology for urban public transportation.

Bureau of Transportation Statistics (BS)

The role of the BS is expanded to include review of the sources and reliability of data used by the Department in complying with the Government Performance and Results Act. BS will establish and maintain a Transportation Data Base, a National Transportation Library, and a National Transportation Atlas Data Base, and will ensure the information it collects, analyzes, and disseminates is relevant beyond the Federal Government. Added to the topics BS will cover is the domestic impact of increasing global trade. A total of \$186 million in funding is provided over the 6 years of the Act.

University Transportation Centers

The Act provides \$191.8 million for FY's 1998-2003 for grants to establish and operate 10 regional University Transportation Centers and up to 23 other centers. After a limited competition in FY 2001, the program will comprise 26 centers. TEA-21 establishes education as one of the primary objectives of a transportation research center, institutionalizes the use of strategic planning in university grant management, and reinforces the program's focus on multi-modal transportation.

Intelligent Transportation Systems

A total of \$1.282 billion in contract authority is provided for FY's 1998-2003 to fund the Intelligent Transportation Systems (ITS) program. Of this total, \$603 million is targeted to research, training, and standards development. Programs to accelerate integration and interoperability in the metropolitan and rural areas and to deploy commercial vehicle ITS infrastructure are established and funded at \$482 million and \$184 million respectively.

In addition to the funds authorized specifically for ITS, ITS activities are eligible under other programs. Both NHS and STP funds may be used for infrastructure-based ITS capital improvements and CMAQ funding may be used for the implementation of ITS strategies to improve traffic flow. Transit-related ITS projects are defined to be capital projects and are therefore eligible for related funding. The legislated purposes of the program are, among others, to expedite integration and deployment, improve regional cooperation and operations planning, develop a capable ITS workforce, and promote innovative use of private resources.

The Act requires the development of guidelines on procurement and independent evaluation, and specifically calls for the use of the Software Capability Maturity Model, or something similar, in software acquisition. It also requires life-cycle cost analysis for projects funded from this program.

All ITS projects funded from the Highway Trust Fund must be consistent with the national architecture and available standards. With emphasis on the timely development of those standards, the Secretary is required to list critical ITS standards by June 1, 1999.

TEA-21 is primarily financed by the 18.3 cents federal gas tax. The Highway Trust Fund has two accounts, the highway account and the transit account. Of a \$21.6 billion balance, \$12.1 billion is credited to the highway account and \$9.5 billion to the transit account. The amount of the tax is divided among the three accounts as follows: the transit account - 2 cents; the general fund for deficit reduction - 4.3 cents; and the highway account receives 12 cents. There are other minor revenue inputs into the Highway Trust Fund, taxes on tires, truck and trailer sales, heavy vehicle use tax, and of course the interest earnings that accrue to the Highway Trust Fund. For this reason, air transportation is not included in TEA-21.

Aviation

The aviation reauthorization bill is moving through Congress. This legislation has passed the Senate and authorized the Airport Improvement Program in Federal Fiscal Year 1999 at \$2.4 billion. The House of Representatives has passed a similar measure authorizing a one year Airport Improvement Program at \$2.3 billion.

Airport Development Needs and Financing Options

Congress has established the National Civil Aviation Review Commission (NCARC) and encouraged this body by its enacting legislation, to consider airport infrastructure needs for large, medium, and small airports, and to provide recommendations on funding alternatives for airport capacity development.

National Airport System Description and Basis of Federal Interest

The United States accounts for approximately 40 percent of all commercial aviation and 50 percent of all general aviation (GA) activity in the world. An extensive system of airports has been developed to support this system. The Secretary of Transportation, in a biennial report to Congress, is required to identify those airports that are important to national transportation and, therefore, eligible to receive grants under the Airport Improvement Program (AIP). This report--the National Plan of Integrated Airports (NPIAS)--currently designates 3,331 of the 18,292 existing airports in the United States as components in the national system.

Four objectives have guided Federal investments at airports:

1. Pursuing system goals such as safety and security;
2. Stimulating capacity projects of national significance;
3. Helping finance small and general aviation airports that are dependent on aid; and
4. Paying a major part of noise and environmental mitigation costs.

The Federal government's goal has been to provide a balanced transportation system, taking into account the diverse needs of different communities and the various segments of aviation, and coordinating planned airport development with plans for air traffic, approach and navigational aids, and other components of the air transportation system. Airports currently designated in the NPIAS include:

- 411 primary airports, which have the vast majority of scheduled commercial service and enplane more than 10,000 passengers annually each.
- 155 additional airports, which have commercial service and enplane at least 2,500 and no more than 10,000 passengers annually.
- 319 reliever airports, which provide general aviation with access to large metropolitan areas, and aid in alleviating the demand placed on limited runway capacity of congested commercial service airports.
- 2,446 general aviation airports, which play an important role in linking the vast rural areas of the nation to the national economy.

Airport Capital Needs Requirements

As part of the Federal Aviation Reauthorization Act of 1996, Congress requested that both the General Accounting Office (GAO-Airport Development Needs, April 1997) and an independent entity (Coopers & Lybrand LLP-Independent Financial Assessment, February, 1997) provide independent assessments of future airport development capital needs. Both entities reviewed three airport capital requirement studies, which had different conclusions as to the total estimated needs over the next 5 years.

Both the GAO and Coopers & Lybrand agree that there are several key reasons for the differing assessments of airport capital requirements: incompatibility and purpose of collected data, availability of data, and the underlying premise of the collection process.

In its report, Coopers & Lybrand estimated that the total average annual capital requirements for 1997-2002 would be between \$7-8 billion per year in constant 1997 dollars.

Airports and airlines are likely to continue to debate airport "needs versus demand." On the one hand, airlines and the financial community argue that projects with "real" demand get funded, and that the negotiation process results in the best determination of the size and scope of an airport's capital program.

FAA has been urged to adopt alternative means of determining the capital requirements of airports. For example, the development of performance measures for the national airport system would enable the FAA to assess the condition and requirements of the nation's airport infrastructure. While the FAA's movement toward broader application of cost-benefit analysis to target grant decisions is a step in the right direction, the development of performance measures would aid greatly in understanding the infrastructure requirements of the system.

Comparison of Three Estimates of Airport Capital Development Needs

	Estimate Made By Airport	Estimate Made By Airlines	Estimate Made By FAA
How large is the total estimated need?	\$60 billion	\$19.8 billion	\$32.7 billion
What period does the estimate cover?	1997 through 2002	1996 through 2000	1996 through 2000
What is the average annual amount?	\$10 billion	\$4 billion	\$6.5 billion
How many airports are included?	The over 3,300 existing airports in FAA's national airport system	The 421 largest commercial service airports	The over 3,300 existing airports in FAA's national airport system
What types of projects were included?	All projects, whether eligible for federal Airport Improvement Program grants or not	Almost exclusively those projects eligible for federal Airport Improvement Program grants	Only those projects eligible for federal Airport Improvement Program grants
What information was used to develop estimate?	Industry associations developed estimates for 140 hub airports through a survey and estimates for the remaining airports using data from FAA's 1996 National Plan for Integrated Airport Systems	Industry association used private database (Airport Marketing Information System) based on FAA's 1994 National Plan for Integrated Airport Systems	1996 National Plan for Integrated Airport Systems

Source: United States General Accounting Office, *Airport Development Needs*, April, 1997, p. 7.

Emerging Costs

The FAA anticipates that airports will or could face additional capital requirements not quantified in recent capital projections. The cost figures associated with these requirements are not yet available. Emerging areas include:

- Security - Implementing recommendations from the FAA's aviation security advisory council and the Gore Commission will likely produce new access control requirements at medium hub airports in the fiscal year 1998-1999 time frame.
- Next generation large aircraft
- NAS Hand-offs - Shifting financial responsibility to airports for facilities and equipment and operating and maintenance costs traditionally borne by the FAA continues to be considered as a potential source of cost savings for the FAA.
- Environmental Mitigation
- Surface Movement, Guidance and Control Systems (SMGCS) - A new FAA safety and capacity program to permit continued surface operations in very low visibility weather conditions.

Current Funding Sources

Most NPIAS airports in the U.S. are owned and managed by local governments or other nonfederal public authorities. The management structure of airports varies according to several factors, including size and type of airport and nature of market served. The system of airport financing in the U.S. has been distinguished by its unique partnership between public and private interests. There are basically five resources that are used separately or in combination to finance airport development:

1. Airport Cash Flow (rates and charges, concession revenue, rentals, fees, etc.)— Airport revenues include receipts from airline rates and charges such as landing fees and rentals, and revenue from airport concessions.
2. Revenue and General Obligation Bonds--In the 1950's and early 1960's, general obligation (GO) bonds were more widely used than revenue bonds for airport development. GO bonds were backed by the taxing authority of the issuer. Since the 1960's, airport revenue bonds have been the major financing mechanism for capital improvements at large, medium, and some small hub airports. The ability of an airport to utilize revenue bonds depends on a number of factors, including: debt structure; airport management, administration and scope of operations; revenue structure and financial operations, economic base; and plant.

3. Airport Improvement Program (AIP) Grants-- Until 1970, these grants were appropriated from the general fund; in that year, the Airport and Airway Trust Fund and the resulting grant program entitled the Airport Development Aid Program (ADAP) were established by Congress. Revenues for the trust fund are derived from passenger ticket taxes and other excise taxes. In FY 1997, the AIP appropriation was \$1.46 billion.
4. Passenger Facility Charges (PFCs)-- Funds from PFCs are intended to finance airport capital improvements, with emphasis placed on capacity, security and noise/environmental mitigation projects. In granting airports the authority to impose PFCs (up to \$3/passenger), the legislation adopted a PFC eligibility standard for PFC-funded projects largely similar (but not identical) to AIP eligibility.
5. State and Local Grants--Aviation aid from state governments is estimated at about \$500 million per year. State-imposed fuel taxes are the major revenue source for state aviation programs.

Estimated Airport Capital Development Expenditures

The table below outlines the capital financing from "known" sources, 1990-1996.

"KNOWN" Sources of Airport Capital Financing (in billions \$)

Funding Source	1990	1991	1992	1993	1994	1995	1996
Airport Revenue Bonds *	\$4.600	\$3.200	\$4.800	\$1.600	\$3.00	\$3.200	\$4.000
AIP	\$1.425	\$1.800	\$1.900	\$1.800	\$1.690	\$1.450	\$1.450
State/Local Grants	\$0.500	\$0.500	\$0.500	\$0.500	\$0.500	\$0.500	\$0.500
PFCs	N/A	N/A	\$0.085	\$0.485	\$0.849	\$1.046	\$1.113
Total	\$6.525	\$5.500	\$7.285	\$4.485	\$6.039	\$6.196	\$7.063

* Does not include GO bonds

AIP and the Current Budget Environment

During the past 10 years, the annual Airport Improvement Program appropriations rose from \$1.268 billion to a high of \$1.9 billion, and then declined to \$1.460 billion. The current, frugal outlook for the Federal budget has put severe downward pressure on AIP spending, as evidenced by the Administration's original proposal of a \$1 billion AIP funding level in FY 98. The pressure is particularly acute because of competition for funds from other FAA activities.

The FAA budget can be divided into four major categories: operations; facilities and equipment (F&E); research, engineering and development (RE&D) and AIP. The budget for operations in FY 1997 is \$4.955 billion; the F&E budget is \$1.937 billion, RE&D is \$208 million, and AIP is \$1.46 billion.

The decision to continue AIP spending, at any level, will require a mechanism for program funding and some form of legislative change. For instance:

- Using the existing tax mechanisms would require some form of legislative protection to ensure that adequate monies flow to the grant program on a stable basis.
- Assuming the FAA were to become completely user fee financed, substantial issues (such as a waiver under current "User fee" requirements) would need to be resolved to continue a grant program that subsidizes smaller users.

Innovative Financing Techniques

In a Report to Congress prepared by the FAA in 1996, four options for innovative airport finance were identified:

- Use AIP grants to fund debt repayment reserves of airport revenue bond issues;
- Authorize Federal guarantee of airport loans, analyzed assuming tax-exempt status;
- AIP eligibility for commercial bond insurance; and
- Institute an airport loan fund.

In 1996, Congress granted the FAA authority to conduct a demonstration program and issue up to 10 AIP grants using the following innovative financing techniques:

- Use of AIP for the payment of interest;
- Use of AIP for credit enhancements, such as bond insurance; and
- Flexible non-Federal match to AIP grants.

The FAA was prohibited from issuing AIP grants as a direct or indirect loan guarantee.

Airport Infrastructure Bank

In 1995, the two principal airport trade associations (ACI-NA and AAAE) proposed the creation of the National Aviation Infrastructure Development Bank (NAIDB). Although loosely described as a "bank," it would not strictly follow traditional banking, deposit, and lending practices.

The NAIDB would be empowered to issue debt and provide funding for the FAA Facilities and Equipment (F&E) budget, the AIP budget, the Contract Tower program, and the Essential Air Service program. (It should be noted that since the NAIDB proposal was put forth, the EAS program has met its funding needs (up to \$50 million per year) through another mechanism.)

Privatization

Airports generate cash flow through two principal means: air side rates and charges, and landside revenue. Airports have long recognized the importance of public-private partnership. Airports have eagerly sought private sector investment in concessions and

have encouraged private companies to operate many of the services provided by the airports. Employees of private companies, airlines, concessionaires, and contractors account for 90 percent of all employees at the nation's largest airports.

Recent experience in Burbank, Indianapolis and Pittsburgh demonstrates the potential of further commercialization of airport assets. For example, at Pittsburgh International Airport, a private terminal operator has increased non-aeronautical revenues (food/beverage, retail and duty-free) at the airport from \$23 million in 1991 to \$66 million in 1995 while simultaneously receiving praise for customer service. At Indianapolis International Airport, the same private operator has guaranteed reductions in charges of \$32 million over the ten year management contract to the carriers using that airport.

The possible sale or lease of commercial airports in the United States to private companies has generated considerable attention in recent years. Cities such as New York and Los Angeles have considered privatizing their airports.

While several factors, including providing additional private capital for development, are motivating greater interest in privatization, legal and economic constraints currently impede the sale or lease of U.S. airports. Although the FAA has permitted and even encouraged some limited forms of privatization, such as contracting for airport management or allowing private companies to develop and lease terminals, it has, in the past, had questions about the sale or lease of an entire airport to a private entity. The FAA will ensure that an airport sponsor, in selling or leasing an airport, meets the legal obligations that the airport had made to obtain a federal grant. Chief among these obligations are restrictions on using airport revenue.

Recognizing the barriers to and the opportunity to test the potential benefits of privatization, the Congress established an airport privatization pilot program as part of the Federal Aviation Reauthorization Act of 1996. As of October 9, 1996, the Secretary of Transportation could exempt up to five airports from some legal requirements that impede their sale or lease to private entities.

Enhanced Tax-Exempt Financing

Airport revenue bonds are the single most important financing tool available to large, medium, and certain small hub airports. The nation's top airports boast an unbroken record of creditworthy financial performance, earning large and medium hub airports the status of premium-grade investments in the tax-exempt municipal bond market. Preservation of this financing tool will be essential to meeting the capital demands of the busiest airports.

It is clear from the legislation that is now proceeding through the United States Congress and the above information relative to airport development needs and financing opportunities that there will be a continued non-funded need to ensure airport adequacy. The potential for using passenger facilities charges, privatization and oftentimes tax increment financing have been suggested as options to try to increase the revenue needs. And because of the extensive use of commercial and private aviation in the United States, legislators at all levels will be very attentive to the progress that is made throughout the airport system.

Summary

It is obvious that in reviewing the European efforts and status, that they are embarked on a very ambitious, future oriented, and worthy endeavor to improve, construct and perpetuate their intermodal transportation system.

The information from the White Paper reflects a vision of desired outcomes for the United Kingdom and to some degree the overall European Union. Discussions and other materials point to some improvements and successes in the EU. However, there are areas of concern relative to congestion, freight flows, regulations, financing and the environment. These are analyzed in terms of effects and consequences, but lack when suggesting methods to correct. Unfortunately, this vision and other information is not associated with concrete funding sources or methodologies, and provides only generalized direction for potential funding sources, e.g. tolls, parking fees, greater charges on company provided cars, and suggested but unexplained innovative financing techniques. The White Paper also recognizes the desire to reduce the taxation burden on the individual by shifting it elsewhere through innovative techniques, etc. While the vision and the suggested outcomes are certainly worthwhile and can be supported by a majority, the vagueness in securing financing can lead to frustration, concern about potential revenue sources, and cause stagnation in moving forward. ISTEA and its successor, TEA-21, also lay out a future vision, but proceed to take six year pieces that are funded under each of the respective acts.

The following significant features reflect the convergence and divergence of the European transportation efforts and status as contrasted with TEA-21. First, TEA-21 assures that a guaranteed level of federal funds through federal fiscal year 2003 is available for transportation investment. In the European situation, funds have been invested in the Channel Tunnel, the underground, bus systems, but the prospective funding scenarios are not defined other than continuing current transportation revenue sources.

TEA-21 provides safety programs that promote seat belt use, 0.08 percent blood alcohol drunk driving standards, as funded examples. The European situation goes more to suggesting the provision of security and safety, but does not provide direction or funding.

TEA-21 invests in research and its application to maximize performance of the transportation system. Considerable emphasis is placed on intelligent transportation systems to improve operations and management to promote a seamless intermodal transportation system. The European situation has the same goals and provides some funding through research programs for ITS systems, mainly under the Sustainable Urban and Regional Freight Flows research project.

TEA-21 embarks upon new policy and funding areas such as border crossings and corridor infrastructure, transportation infrastructure finance innovation, and access to jobs that target areas of special interest for the nation. The European situation

obviously has to deal with border issues because of the fifteen different European nations and clearly is concerned about transportation infrastructure and finance innovation, but as yet no provision of a solid framework to direct this debate towards new revenue has occurred. It is recognized that the existing funding sources will continue to provide revenue, but this amount is inadequate to meet the needs. The value added revenue tax is a new source that can be used throughout the European Union, but does not generate the funding necessary to address the transportation needs. There are efforts that have been undertaken to provide public and private funding to specific projects, e.g. Channel Tunnel, that have encountered difficulties.

TEA-21 perpetuates motor carrier safety and the motor carrier safety assistance program to promote performance based activities and allowing the flexibility states need to invest in areas providing the greatest potential for crash reduction, based on their own circumstances, as well as sponsoring federal and state enforcement tools. A significant amount of funding in excess of \$600 million over six years has been provided for this effort. The European situation recognizes the need to do this, but does not provide additional funding beyond what is currently in effect.

TEA-21 perpetuates a highway trust fund where states are guaranteed a minimum return of 90.5 cents for every dollar collected from transportation users. In Great Britain, it was noted that 26 billion pounds were received from British motorists per year with only 6 billion pounds being returned to the transportation system.

TEA-21 again reiterates the National Highway System composed of 163,000 miles of rural and urban roads and designates funding for that system. In the British situation, they have a desire to have a core network of roads that will be officially designated, but as yet, that has not occurred nor has a specified funding source been targeted to maintain this system. Furthermore, there is discussion of devolution of decision making which is contrary to the current United States direction.

TEA-21 has various other programs that provide direct funding to the Interstate System, perpetuates the surface transportation program, the bridge replacement and rehabilitation program, transit program, rail programs, high speed rail, etc., and places specific amounts of money towards those programs. While the counterpart European situation is focusing on those same desires, there is not identified specificity for the programs nor identified new funding sources.

TEA-21 perpetuates innovative finance programs through the state infrastructure bank and the transportation infrastructure finance and innovation act through which credit assistance and flexible terms can be provided to public-private sponsors; direct loans and loan guarantees and lines of credit can be set up to assist in transportation improvements. The British white paper suggests innovative financing techniques, but does not come down to the specificity as outlined in TEA-21.

Other issues such as welfare to work, access to jobs, and training is developed and initially funded in TEA-21. The European status recognizes a need to do some of these things, but has yet to identify a direction to allow their efforts to move forward.

TEA-21 provides a host of different funded environmental programs such as congestion mitigation and air quality improvement, transportation enhancement, bicycle transportation and pedestrian walkways, recreational trails, national scenic byways, and transportation and community preservation pilot projects that all basically go to an issue of trying to improve the environmental conditions for the nation. The European issues that were raised recognize congestion, carbon dioxide releases, and global warming are all concerns, but as yet do not structure programs to address those issues.

Research and technology is also funded in TEA-21, as well as requiring Bureau of Transportation Statistics to discuss many issues, including a relevant issue regarding domestic impact of increasing global trade. Additionally, university transportation centers are funded to establish a minimum of 26 centers whose primary objectives will be transportation research, to institutionalize the use of strategic planning, to reinforce the program's focus on multimodal transportation. The European status recognizes the need for research and innovation, and in fact is doing some of this under several different grants with the University of Westminster and various European educational institutions and consulting firms.

It is also clear that with the current airport development legislation that is proceeding through Congress that many questions and concerns are being raised about safety, compatibility with the newer airplanes, adequacy of the system, security, etc. And, unlike TEA-21, these issues are being currently reviewed and analyzed with a clear understanding that there are more needs than revenues. There have been recent experiences in many airports that demonstrate a potential of future commercialization of airport assets. In addition, there are hosts of other potential financing techniques that may prove useful to increasing revenues for airport development use.

Initial Conclusions

It is apparent in reviewing the above information that both the European Union and United States are embarked on a very ambitious, future oriented direction for passenger and freight mobility. It is also certainly recognized by all parties that it is in a global market that we compete against one another, but there also must be cooperation to allow the seamless flow of freight and people. The Eurodollar, soon to come into effect for the 15 European countries, will have a significant impact on competitive aspects in a global sense. Additionally, the continuing maturity of the North American Free Trade Act among the United States, Canada and Mexico, with potential future extensions, into Central America will likewise have an impact on global markets.

It is important that the EU and North America cooperate and collaborate in this competitive, global marketplace. Although this may seem unusual in a competitive environment, it is a must in terms of equipment standards, information exchange, and use of common protocols in moving both commodities and people. The ultimate goal is service to the customer, and this cannot fully occur without universal buy-in that involves coordination for trips that will cross not only national boundaries, but employ multiple modes in doing so. The entire journey must be a seamless experience.

It is clear from reviewing the airport connectivity needs in the White Paper that they are attempting to allow both customers and staff to access the airport through intermodal means and cut down on the use of single occupant vehicles. It also appears that there is financing that will be forthcoming to allow this to occur.

In terms of the development in the United States, because of the much larger and extensive nature of our airport system, the revenues are targeted toward infrastructure development in the airports. These capital infrastructure needs have traditionally been those expenditures required to comply with federal mandates for safety and security regulations, maintain the infrastructure, accommodate growth, meet user requirements, incorporate technological enhancement or improvements, and mitigate noise and other environmental impacts.

One of the issues driving this will be the introduction of larger commercial aircraft, which will significantly impact the larger airports. This will have impacts upon runways, taxiways, and aproned pavements which will require strengthening and widening and the associated land for greater separations of runways and taxiways; as well as airfield signage and lighting. It is anticipated the larger planes will be in operation in approximately Year 2003.

As noted from the information provided, there is considerable concern about the adequacy of revenues to address these existing and emerging needs. This appears to be an area that will be significantly debated in Congress, in the EU, and in the private sector of both arenas over the next two to five years.

The analysis of the information presented lends itself to cooperative discussions, meetings, and exchanges of information between North America and the European Union to foster the exchange of commodities and methodologies to ensure the efficient, effective movement of people and goods between origins and destinations.

At this time, it appears the United States is in a position to actually implement more of the initiatives because of identified and secure funding. The European Union may well observe United States policies, programs, methodologies, etc. and utilize those components that are applicable and useful within the European Union.

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