

Freight Movement in the Hartford Metropolitan Area

A REGIONAL FREIGHT MARKET OVERVIEW

Submitted to:

Capitol Region Council of Governments,
Central Connecticut Regional Planning Agency, &
Midstate Regional Planning Agency

Submitted by:



GLOBAL INSIGHT

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I. Executive Summary

Background

Over the past two decades, both urban and intercity highway traffic in the Hartford Metro Area have continued to grow at rates far in excess of capacity expansion, leading to increasing congestion-related delays and accidents, as well as to increasing concerns about congestion implications for air quality, delivery reliability, security and vehicular incursion into residential areas. Concurrent with this trend is the migration of business and industry to suburban locales and the loss of the traditional manufacturing base in the Northeast to regions in the Sunbelt, or overseas. Similarly, the emergence of NAFTA and the shift in global trade patterns have created new high-volume and often long-distance transportation corridors. These factors are combining to alter significantly the transportation dynamics for many regions, and many agencies are finding that much of the additional traffic in their region is "through" traffic, rather than freight originating or terminating locally.

As these trends continue to alter the transportation landscape, there is an increasing recognition of the importance of freight planning for state and regional transportation agencies. Both public and private sector officials are increasingly attempting to tackle freight transportation planning issues, and there has been greater recognition of the need to: (1) identify the primary transportation issues and players in a region, and (2) promote safe and efficient freight transportation as a means of improving job retention, and increasing industrial development. This is accomplished through a shared understanding of the issues surrounding freight transportation, and the careful coordination of private and public sector transportation planning. This analysis seeks to address these two areas of need for the Hartford Metro Area, and to provide the local planning agency with the necessary research data and modeling tools to successfully incorporate freight in the regular planning process.

Objectives of the Study

Historically, there has been an understood relationship between transportation infrastructure investment and economic development. The construction of more or better logistics facilities would create a favorable business climate that would attract new shippers to the region's superior logistics opportunities. Ultimately, it is assumed that the investment becomes the catalyst for a more vigorous regional economy.

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Efforts to measure these impacts, however, have not produced the direct linkages that can be easily used to justify additional infrastructure investment. But despite the fact that the connection between investment and economic development remains somewhat intangible, public agencies continue to find benefit in freight infrastructure investment.

This study, commissioned by CRCOG in cooperation with Central Connecticut Regional Planning Agency, and Midstate Regional Planning Agency, seeks to develop (1) a baseline of freight movement activity that can be used to incorporate freight into the regional transportation planning process, and (2) a methodological framework for a successful public-private partnership in freight.

Study Methodology

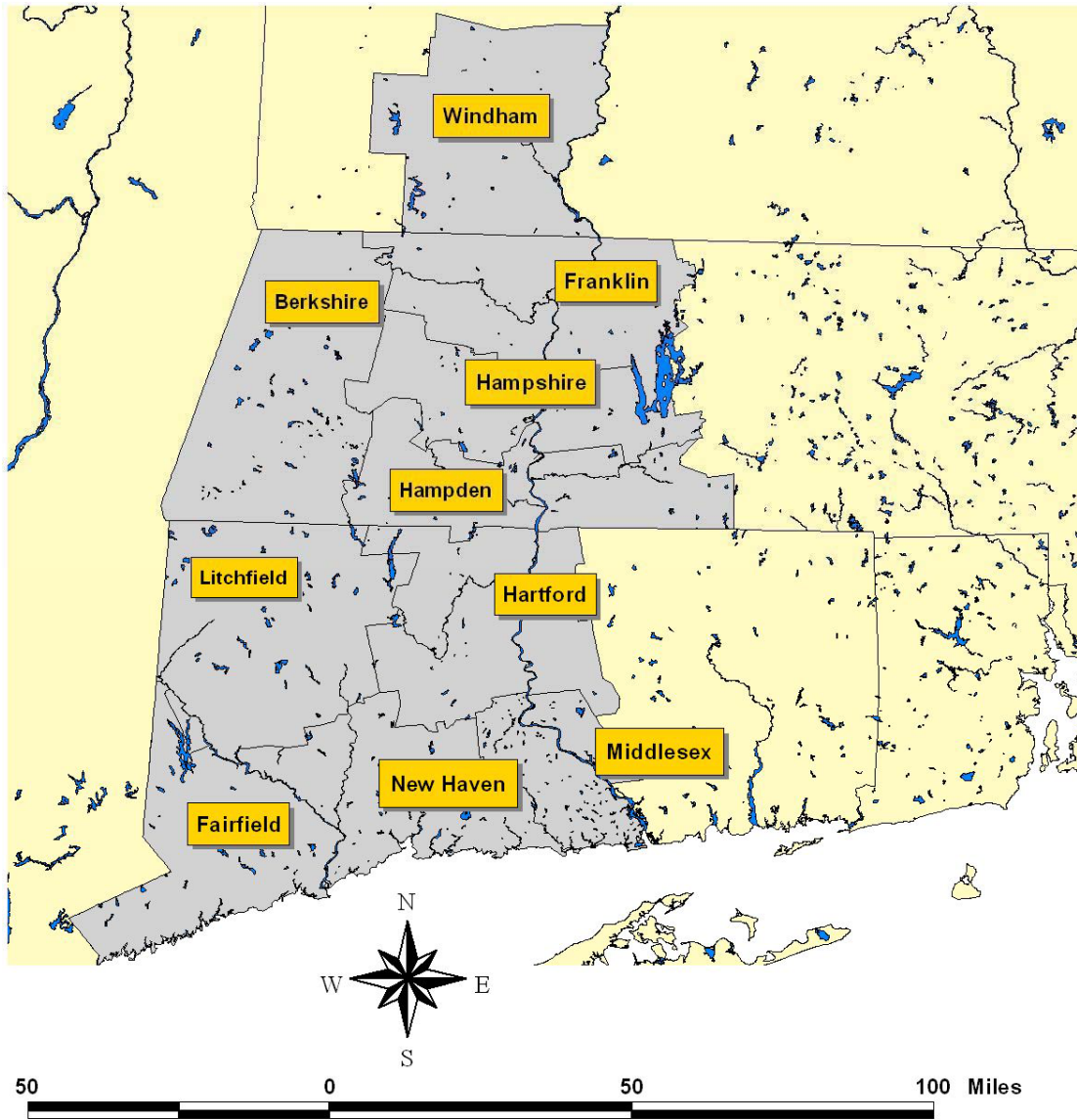
This analysis contains two primary tasks. The first of these tasks is an analysis of current freight flows in the region, a partial inventory of freight facilities in the region, a summary evaluation of freight issues for the individual modes of transport, and a series of abstracts addressing successful public-private partnerships in the freight sector.

The second task comprises a series of workshops, for CRCOG. The first of these is designed to provide an overview of the national freight market, the primary issues of freight planning at an Metropolitan Planning Organization (MPO) level, and a description of some of the tools available for MPO-level planning initiatives. The second of these will focus specifically on the results of the first task. Included in the session will be a discussion of major issues in freight movement in the region, regional and national challenges to freight movement, and an identification of possible next steps, including the identification of some possible public-private partnership initiatives for the region.

Hartford Metropolitan Area versus Study Area

This report reviews freight flows and freight issues affecting the Hartford metropolitan area. While the focus is the Hartford metro area, an analysis of freight flows is best done (1) in a national context, (2) with a multi-county, regional or Metropolitan Statistical Area concentration. As such, the 'Study Area' for this report is defined as the area shown in Figure 11, and includes most of western Connecticut, western Massachusetts, and part of Vermont. Much of the data reported in this document (including figures 2- 9 and tables 1 - 6) is based on this Study Area.

Figure 1
Study Area Counties (shaded)



Key Findings

The current composition of freight traffic in the Hartford Metro Area favors irregular route truckload movements and short-haul deliveries. Truck is the dominant form of transportation, representing some 98% of traffic moving in, out and through the region. Thus, freight analysis for the Study Area is largely a truck-centric exercise.

Although rail carload and rail intermodal transportation is available to shippers in the region, their market shares are well below national averages. This is due to several factors, including structural and network constraints for the railroads, and commodity mix, shipment size, and delivery requirements for local shippers and receivers. There are some opportunities to leverage additional rail volume for the Study Area in the near term, particularly at the nearby West Springfield Massachusetts Intermodal Facility, which currently delivers some 15,000 loads of its freight volumes to Central Connecticut.¹

The regional economy is – not surprisingly – closely tied to the major metropolitan markets of Boston and New York. As a result, most high volume corridors (for both truck and rail) are short-haul in nature.

As Connecticut's capital city, Hartford is dominated by government and service industries. Insurance remains a strong part of the downtown economy, while suburban locations have tenaciously maintained a substantial manufacturing sector. The freight transportation needs of these groups tend towards frequent small deliveries, and include a considerable portion of urban pick-up and delivery, and "rush-hour" movements.

The Bradley International Airport has been an important engine of economic growth for the region, and a sizeable portion of developable land near the facility can provide expansion opportunities. Bradley's air freight volumes are likely to remain modest however, as the narrow-body planes and regional jets that service the market provide limited potential for heavy cargo. Most air freight will continue to arrive in the Hartford Metro Area via truck delivery from New York, Newark, and Boston. US Mail, package and parcel volumes are more likely freight targets, and light manufacturing (domestically sourced) and distribution activities will continue to seek out Bradley as a cost-effective alternative to the more costly urban alternatives in the Mid-Atlantic region and New England.

¹ CSX gate survey data, courtesy Pioneer Valley Planning Commission.

II. Freight Market Overview

Traditionally, most state transportation planning agencies, State Departments of Transportation (DOT) and Metropolitan Planning Organizations (MPO) have focused their infrastructure planning on highways and given less attention to other modes for possible investment, for the fundamental reason that they control investment in highways. However, there is a growing recognition that (a) more multi-modal public planning is needed for freight movement, (b) that such planning should include rail, air and water as well as highway options for freight movement, and (c) that freight planning, if done well, can help address a wide range of issues relating to industrial development, cargo security, highway congestion, transportation safety and air quality. For this integration of multi-modal planning to be accomplished, however, transportation planning agencies will need to develop an understanding of current freight patterns, identify key transportation planning issues and players, and develop possible solutions to the problems of the present and the opportunities for the future.

Despite growing recognition of the link between transportation investment and economic development, not all transportation agencies consider economic impacts as a factor in setting policies, allocating resources, or establishing programs. In some cases, transportation agency managers may not view economic development as part of their mandate for making decisions; in other cases, a mandate is recognized but economic development goals are broad and have limited direct connection to capital programming activities. Such is no longer the case for central Connecticut, as the Capitol Region Council of Governments, Central Connecticut Regional Planning Agency, and the Midstate Regional Planning Agency have undertaken the effort to understand, and plan for the needs of the freight community.

The Hartford Metro Area

The population of the area covered by the Hartford metropolitan area is growing modestly with the bulk of the growth moving out from the central city. The major area of employment and commerce remains in the downtown district but local observation clearly indicates the movement out along spokes emanating from the center.

Hartford is interested in attracting and maintaining quality employment for its citizens. As in most of the country, some shift away from higher paying manufacturing jobs has occurred, and there is a strong desire to replace these jobs with others with equivalent wage potential. The ability to move freight freely in the region is critical to bringing new industry to the area.

As the capital of Connecticut, Hartford's economy, and hence its employment base, is significantly skewed towards Public Administration and Service sectors. The historical presence of Finance and Insurance industries and a significant manufacturing base provide diversity to the local economy, and hence the region's transportation needs. Also significant to the local economy are wholesale and retail trade activities. Warehousing and Distribution activities serving the Hartford MSA region appear to be located outside the area, creating a substantial volume of inter-regional volume. Sales and employment data for the Hartford region are displayed in Table 1.

Table 1

Sales and Employment Levels for Hartford MSA (2006-2010 Forecast)

Sales (Inflation Adjusted - 96\$)

Hartford, CT - MSA--3283	(000's of \$) 1997		(000's of \$) 2005		(000's of \$) 2010	
A Agriculture, Forestry, and Fishing	978,843	1.2%	1,218,508	1.3%	1,312,600	1.2%
B Mining	62,662	0.1%	66,368	0.1%	53,933	0.0%
C Construction	4,463,173	5.5%	4,500,825	4.7%	4,726,788	4.3%
D Manufacturing	14,386,858	17.7%	18,071,106	18.7%	22,395,860	20.5%
E Transportation and Public Utilities	5,433,721	6.7%	5,798,165	6.0%	6,288,886	5.8%
F Wholesale Trade	10,925,374	13.4%	12,012,547	12.5%	12,957,074	11.9%
G Retail Trade	11,360,265	14.0%	15,651,296	16.2%	20,127,569	18.5%
H Finance, Insurance, and Real Estate	16,000,216	19.7%	18,709,424	19.4%	19,784,094	18.2%
I Services	12,599,935	15.5%	13,877,593	14.4%	14,453,835	13.3%
J Public Administration*	5,186,631	6.4%	6,518,667	6.8%	6,902,176	6.3%
TOTAL	81,397,680	100.0%	96,424,498	100.0%	109,002,815	100.0%

* Sales for public administration measured by payroll expense

Employment

Hartford, CT - MSA--3283	1997		2005		2010	
A Agriculture, Forestry, and Fishing	15	2.4%	17	2.6%	17	2.6%
B Mining	0	0.0%	0	0.0%	0	0.0%
C Construction	26	4.0%	28	4.3%	29	4.4%
D Manufacturing	93	14.7%	81	12.4%	79	11.7%
E Transportation and Public Utilities	32	5.1%	33	5.0%	34	5.0%
F Wholesale Trade	31	4.8%	28	4.3%	29	4.4%
G Retail Trade	95	15.1%	94	14.4%	97	14.4%
H Finance, Insurance, and Real Estate	72	11.4%	76	11.7%	77	11.4%
I Services	166	26.2%	186	28.5%	200	29.6%
J Public Administration	102	16.2%	109	16.6%	112	16.6%
TOTAL	632,940	100.0%	652,366	100.0%	674,256	100.0%

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Based on the business demographics of the region, most area shippers will require multiple, frequent package and parcel deliveries. Shippers need to get products out quickly, while receivers seek to receive goods on a “just-in-time” basis. Hence the region's transportation planners will want to focus heavily on urban pick-up and delivery efficiency.

Observations indicate that there is a marked migration of population away from the city center and into the surrounding counties. This increases pressure on transportation infrastructure as personal vehicle miles traveled (VMT) expands, even as regional population has not.

With the projected expansion of downtown employment in Public Administration and affiliated service sectors, the private sector employment has begun to shift outward along similar lines, and retail trade is following. According to CRCOG, this retail exodus has been ongoing and that the retail establishments remaining in the downtown district are generally small establishments. The radial routes out of the city are attracting the development of industrial sites, increasing the pressure on these streets and highways, and increasing freight VMT.

The pressure on the transportation network resulting from VMT growth in the study region is manifested in several ways. Older facilities – physical locations, street and highway systems, zoning and use plans, and rules and regulations are in some cases inadequate for the current conditions and certainly will not meet the future growth requirements. Although such an analysis is outside the scope of this project, all of these issues must be examined with freight as a key component in the planning process.

Freight Data Analysis

The purpose of analyzing freight flow data is to establish the basic characteristics of freight demand, its future and potential to shift, and its performance requirements. The data assembled for this analysis represents current freight volumes for the Study Area. CRCOG can use these data to:

- Locate infrastructure demand conflicts and economic development opportunities;
- Identify operational planning and cross-modal synchronization opportunities for the region;
- Determine the degree of jurisdictional coordination and control required to balance these demands.

Source Data

Freight traffic data by commodity and mode has been assembled using Global Insight, Inc.' Year 2002 TRANSEARCH database. TRANSEARCH covers U.S. domestic, NAFTA trade, and major elements of inland seatriade activity. Transearch data are used by numerous state DOTs, MPOs and academic agencies, as well as by the Federal Highway Administration, and are an accepted and credible market information source among transportation providers. This database offers several distinct advantages:

- It draws from an unparalleled truck data sample, including trucks engaged in intermodal operations;
- It is produced nationally by county, thus allowing for the detailed corridor and sub-regional analysis required to accurately assess the freight impacts for the state and region; and,
- It is issued annually, so that information can be renewed readily for future analysis.

The modes captured in TRANSEARCH include truckload, LTL, and private trucks, carload and intermodal rail, air and water. Volumes are expressed in terms of tons and numbers of trucks, and by the dollar value of goods, but can be converted to loads (rail, rail intermodal and all truck modes) and even truck equipment types and configurations (for truck modes only). County-to-county traffic is flowed with routing models along highway and railroad networks, to provide identification of volumes relevant to the corridor and region. Finally, goods are specified by 2 or 4-digit commodity codes, giving a basis for forecasting, a window on industrial supply and distribution patterns, and an indication of freight service requirements.

A more complete description of TRANSEARCH is located in **Appendix 1** to this document.

Freight activity is comprised of local, regional and interregional movements. For the data analysis, we focused on regional and interregional freight activity. There are other kinds of freight movement that this study does not directly address. Several examples are home delivery from retail establishments, building and equipment maintenance, trash pick-up and removal, lawn and grounds care, and insect control.

For purposes of this analysis, we separated truck and rail freight traffic into four distinct categories. These buckets were structured to address specific questions about the

viability of transportation infrastructure investment and were maintained throughout the analysis. These segments are represented by the following:

Inbound Traffic – Traffic moving domestically *from* regions across the nation *into* specified counties in the Study Area. The structure for this data is defined as a Business Economic Area (BEA) region as the origin, and a Massachusetts or Connecticut County [reported as a Federal Information Processing Standard (FIPS) code] as the destination. Volumes are reported in tons, for all truck modes [Truckload, Less-than-Truckload, and Private Truck]. The results of the inbound traffic analysis help to determine the size of the available local market, the depth and fit of the industrial sectors served by this freight transport activity, and the measure of growth or decline in freight activity – a measure of real transportation activity, and a proxy measure for industrial *demand*.

Outbound Traffic – Traffic moving domestically *to* regions across the nation *from* specified counties in Massachusetts and Connecticut. The structure for this data is defined as a Massachusetts or Connecticut County [reported as a Federal Information Processing Standard (FIPS) code] as the origin, and a Business Economic Area (BEA) region as the destination. Volumes are reported in tons, for all truck modes [Truckload, Less-than-Truckload, and Private Truck]. The results of the outbound traffic analysis help to determine the degree of “balance” available in the local market, the fit of the commodities shipped relative to the equipment made empty in the region, and the measure of growth or decline in freight activity – a measure of real transportation activity, and a proxy measure for industrial *output*.

Through Traffic – Interregional traffic flows that move through the region without local processing, storage, or handling. Through traffic is that freight which consumes capacity on the regional infrastructure, but which does not generally provide local manufacturing employment. The structure for this data is defined as a Business Economic Area (BEA) as the origin, and a Business Economic Area (BEA) as the destination. Volumes are reported in tons, for all truck modes [Truckload, Less-than-Truckload, and Private Truck]. The results of the through traffic analysis help identify opportunities for commercial development and areas of excessive infrastructure demand. Through traffic is additive to inbound or outbound flows, depending on the direction of travel, and serves as a proxy measure for *National economic activity*.

Local Traffic – Intra-regional traffic flows, moving from origins within the region to destinations also within the region. Local traffic generally provides the greatest proportional benefit to the region per ton, and it reflects movements from local producers to local consumers, often using local cartage services. Local transport is often comprised of regular route movements, over short hauls, with frequent stops, on urban and suburban streets. The structure for this data is defined as a Massachusetts or Connecticut County [reported as a FIPS code] as the origin, and the same county-level structure for the

destination. Like all other groups, local volumes are reported in tons, for all truck modes [Truckload, Less-than-Truckload, and Private Truck]. The results of the local traffic analysis help identify critical flows that opportunities for commercial development and areas of excessive infrastructure demand. Local traffic is additive to inbound, outbound and through traffic flows, and is the inverse of *interregional freight dependence*.

Direction of Flow

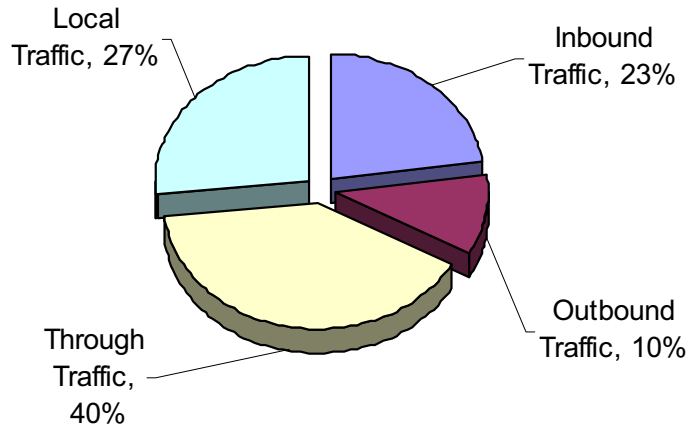
The Study Area's total traffic movements are skewed towards through traffic as opposed to originating, terminating or local, betraying the fact that the primary regional manufacturing and consumption base is outside the study region in New York and Boston. By virtue of the geographic profile of the region, and the network of Interstate Highways in the area, traffic flows from Pascagoula, MS to Portland, ME or Boston, MA to Mexico City, MX traverse the arteries of the Study Area.

Also of interest is the relative directional imbalance of traffic in the region. Inbound traffic volume is more than double outbound volumes, (not surprisingly) reflecting a consumer rather than a producer economy. The strong percentage of local traffic suggests that interregional transportation costs are high, and that local sourcing is favored by manufacturers. The high volume of local freight also suggests that wholesale and retail trade activities are a significant component of the local economy.

Figure 21 outlines the distribution of traffic moving in the region, and portrays the sizable volume of through traffic relative to inbound, outbound and local freight flows. From a transportation perspective, the Study Area appears to be a one-directional and hence high-cost market. Motor carriers serving the region, must reposition empty trailers some distance from the Study Area for backhaul loading. Rail intermodal could benefit from the imbalance, providing a lower cost repositioning for motor carriers serving the area, although the closest terminal facilities are located in West Springfield and Worcester, Massachusetts.

Figure 2

Distribution of Study Area Freight Traffic (Rail and Truck only)



Source: Global Insight, Inc. Transearch 2002 Database

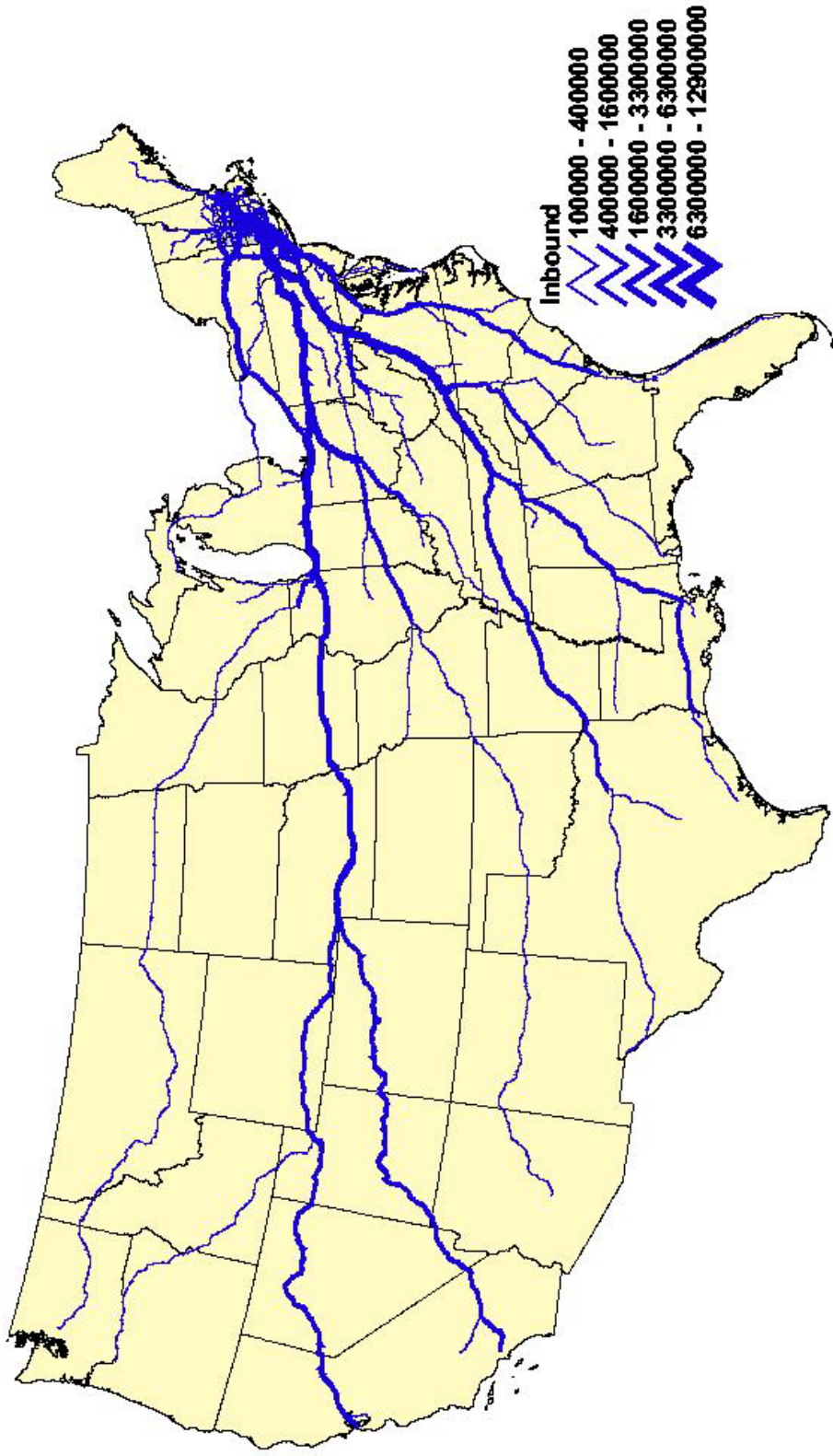
Network Distribution

Using TRANSEARCH data, we explored the motor carrier and rail traffic moving in, out and through the region. Motor carrier traffic volumes are routed to the major highway segments in the region using the Oak Ridge National Laboratory's (ORNL) highway routing model.

The application of these data provides a portrayal of regional freight flows in a national context. Figure 32 through Figure 87778 show both the national range of truck traffic flows by inbound, outbound, and through categories, and a more detailed regional display of these volumes². These data are drawn from Global Insight, Inc. TRANSEARCH 2002 database.

² Rail analysis is conducted at a BEA-level due to STB data disclosure limitations. Inbound, Outbound, Through and Local are diluted with traffic outside the study area but within the regional boundaries of BEAs. The data cannot be portrayed at a county-level, and it is thus omitted from this portion of the report.

Figure 3
Inbound Truck Traffic Volumes in Annual Tons to Study Area: National Perspective



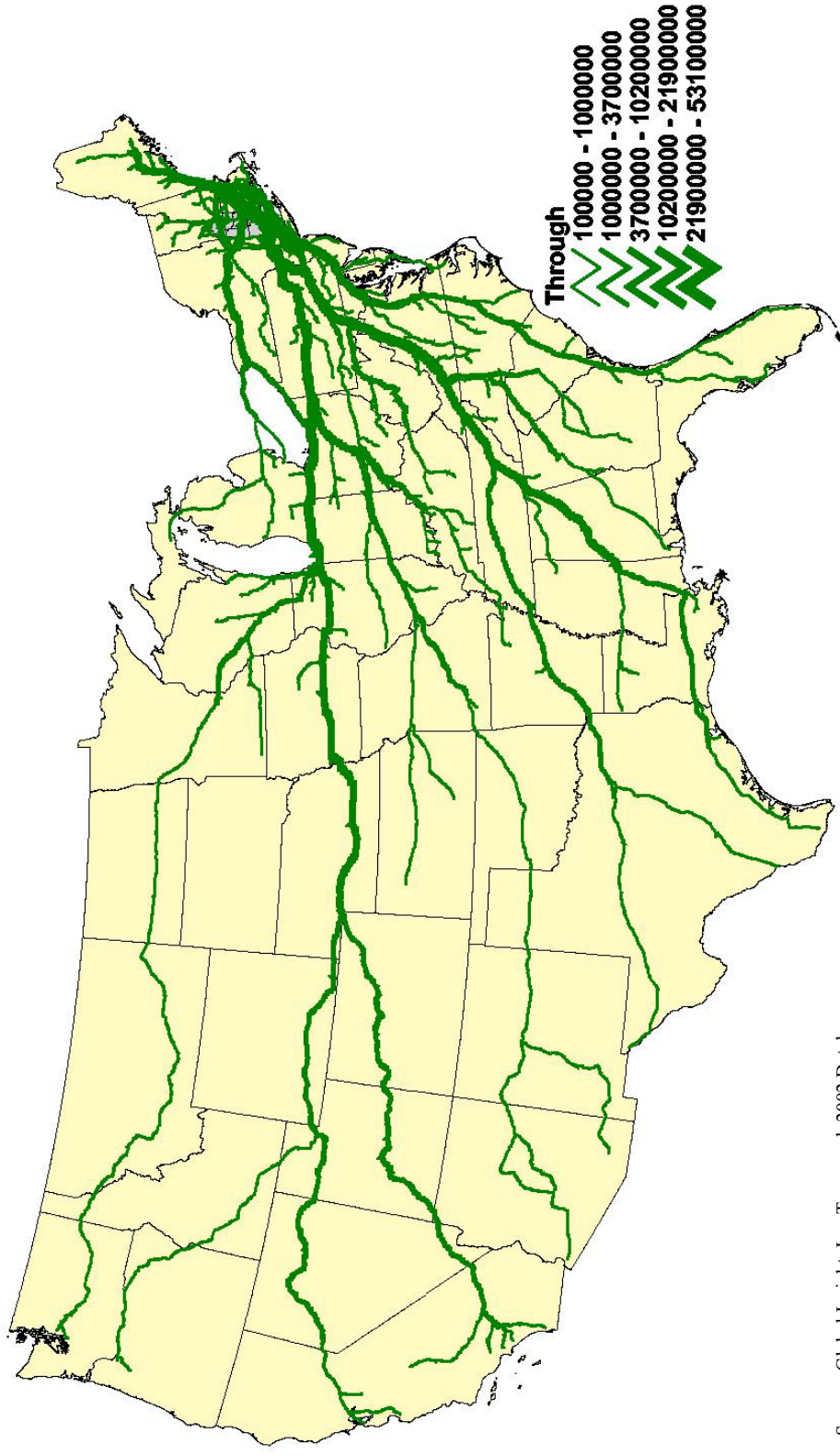
Source: Global Insight, Inc. Transsearch 2002 Database

Figure 4
Outbound Truck Traffic Volumes in Annual Tons to Study Area: National Perspective



Source: Global Insight, Inc. Transearch 2002 Database

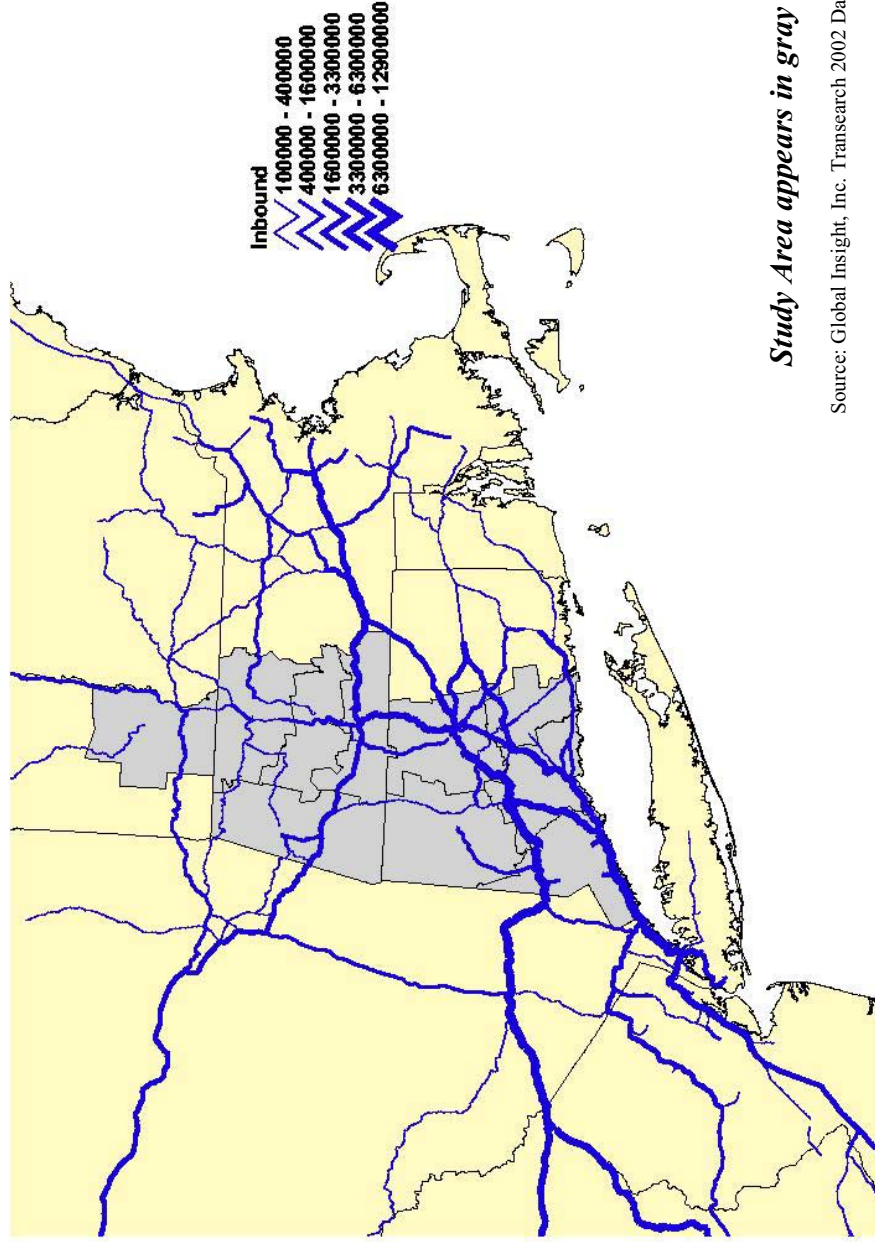
Figure 5
Through Truck Traffic Volumes in Annual Tons for Study Area: National Perspective



Source: Global Insight, Inc. Transearch 2002 Database

Figure 6

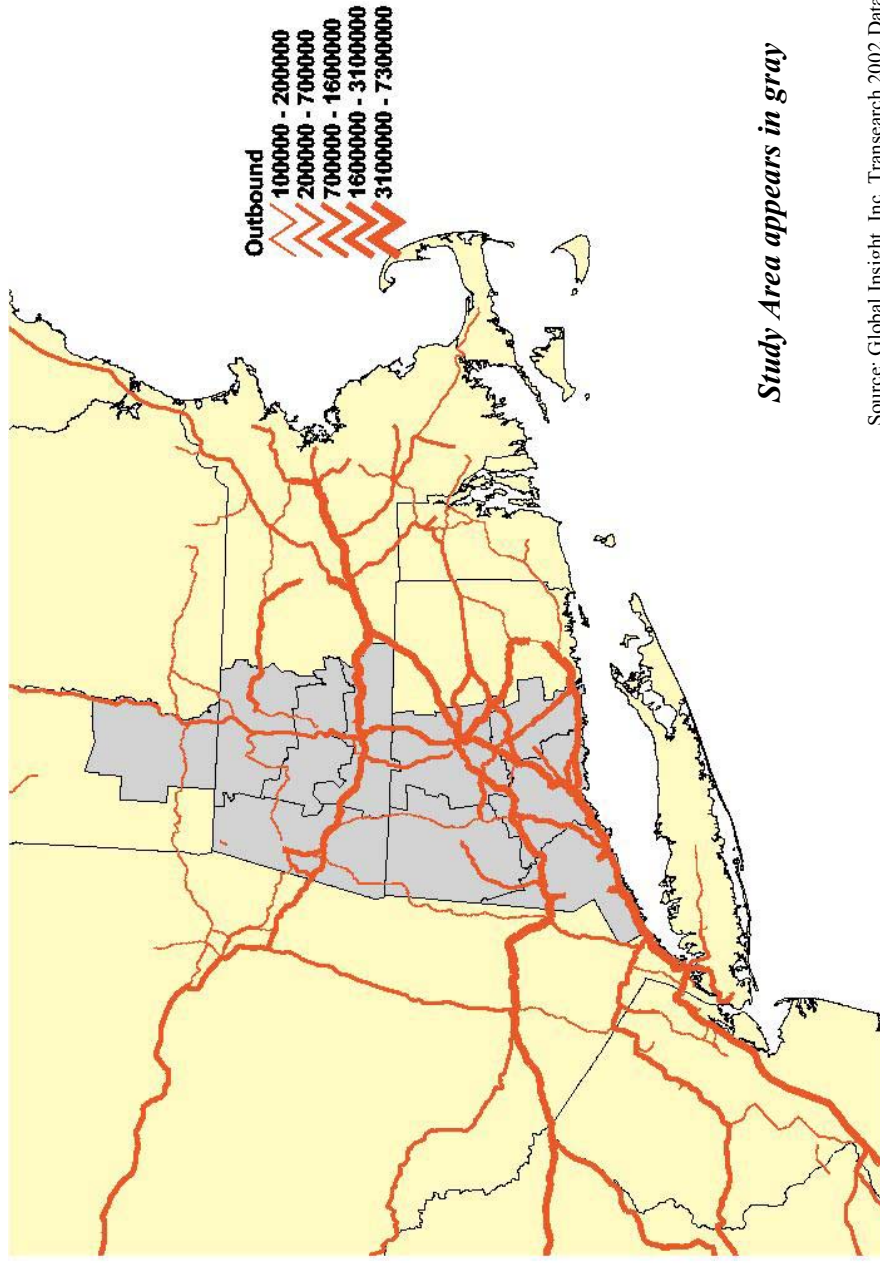
Inbound Truck Traffic Volumes in Annual Tons to Study Area: Regional Perspective



Study Area appears in gray

Source: Global Insight, Inc. Transearch 2002 Database

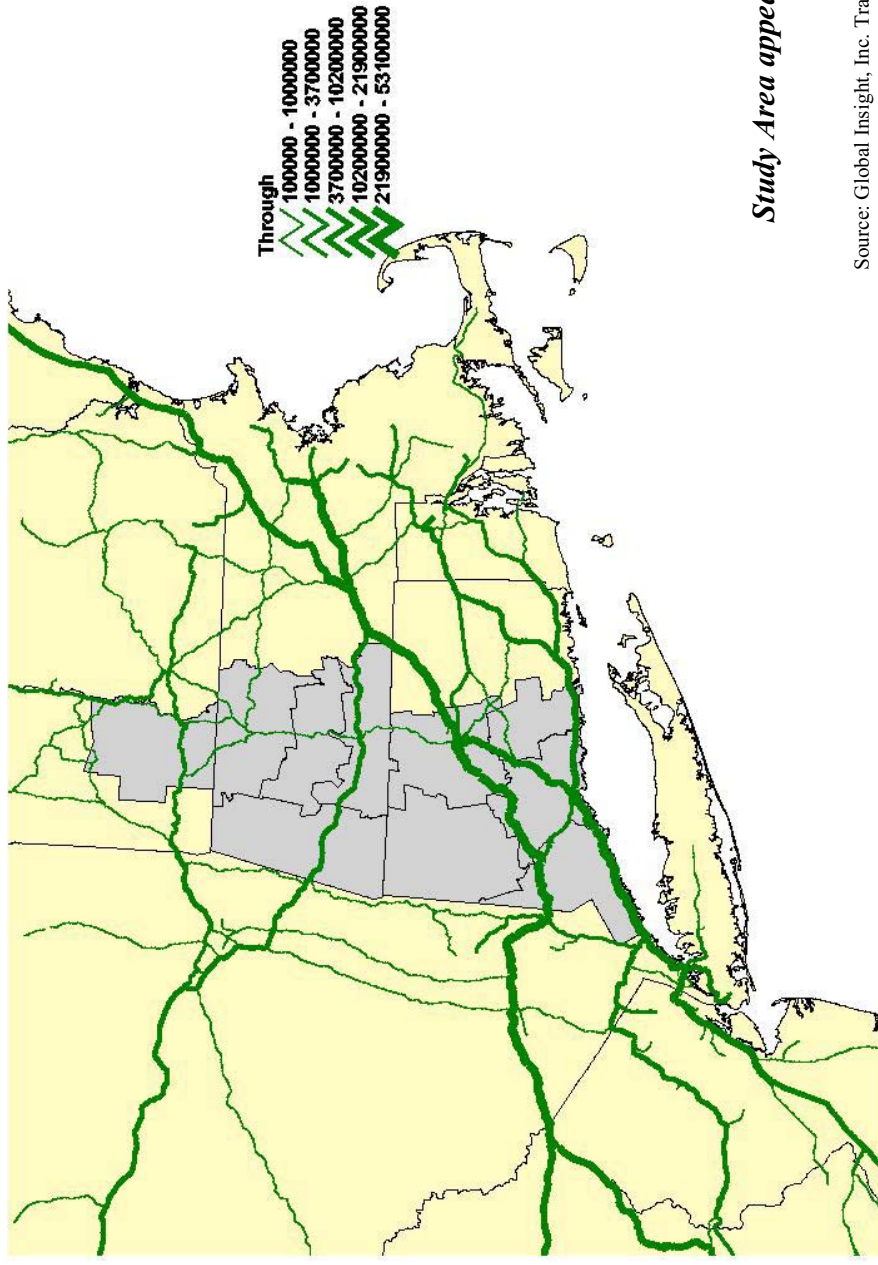
Figure 7
Outbound Truck Traffic Volumes in Annual Tons from Study Area: Regional Perspective



Study Area appears in gray

Source: Global Insight, Inc. Transearch 2002 Database

Figure 8
Through Truck Traffic Volumes in Annual Tons for Study Area: Regional Perspective



Source: Global Insight, Inc. Transearch 2002 Database

Primary Traffic Lanes

The primary originating, terminating, through and local traffic lanes in the Study Area are arrayed in Table 22 through Table 56556. These tables reflect highway and rail modes only. Water and pipeline movements were not included in the analysis, although multi-modal movements (water-truck) are captured as highway movements.

The largest volumes of freight in the region are water-truck movements of petroleum products moving in to the region from New York and Boston Harbors to storage facilities in Southern Connecticut. Additional volumes of petroleum products move out of Eastern Canada into the region by water, and are transferred to truck for delivery to storage and retail facilities throughout the region³.

The need to move significant volumes of petroleum into the region for heating and transportation uses has given rise to a number of water-truck transfer facilities along the southern Connecticut waterfront. A number of these facilities are reported in Table 8108810 in Section IV – Inventory of Freight Facilities.

In the tables below, freight re-handled by truck from warehouse and distribution centers, and truck drayage from rail intermodal and air cargo facilities is identified as Secondary Traffic. These shipments can include a wide range of different types of commodities and mixed consists. For example, shipments from a supermarket chain distribution center are likely to contain a broad range of packaged food products and other consumer items.

³ www.iwr.usace.army.mil

Table 2
Highest Volume Traffic Lanes – Study Area (All Flows)

Direction	Origin	Destination	STCC2	Commodity	Annual Tons 2002
Inbound	New York, NY	Hartford County	29	Petroleum Or Coal Products	8,908,856
Through	New York, NY	Boston, MA	29	Petroleum Or Coal Products	6,109,143
Through	New York, NY	Boston, MA	50	Secondary Traffic	2,048,387
Inbound	Boston, MA	Hampden County	29	Petroleum Or Coal Products	1,742,656
Through	New York, NY	Portland, ME	29	Petroleum Or Coal Products	1,508,921
Inbound	Boston, MA	Hampden County	32	Clay, Concrete, Glass Stone	1,314,225
Through	New York, NY	New York, NY	14	Nonmetallic Minerals	1,313,466
Local	Fairfield County	New London County	50	Secondary Traffic	1,275,625
Through	Philadelphia, PA	Boston, MA	29	Petroleum Or Coal Products	1,150,861
Inbound	Boston, MA	Hampden County	50	Secondary Traffic	1,100,552
Local	Fairfield County	Fairfield County	14	Nonmetallic Minerals	1,039,047
Local	Windham County	Hartford County	14	Nonmetallic Minerals	1,036,957
Local	Tolland County	Hartford County	14	Nonmetallic Minerals	1,036,957
Local	New London County	Hartford County	14	Nonmetallic Minerals	1,036,957
Local	Hartford County	Fairfield County	29	Petroleum Or Coal Products	1,024,031
Local	Windham County	New Haven County	14	Nonmetallic Minerals	1,021,545
Local	Tolland County	New Haven County	14	Nonmetallic Minerals	1,021,545
Local	New London County	New Haven County	14	Nonmetallic Minerals	1,021,545
Local	New Haven County	Fairfield County	14	Nonmetallic Minerals	899,306
Local	Middlesex County	Fairfield County	14	Nonmetallic Minerals	899,306

Source: Global Insight, Inc. Transearch 2002 Database

Table 3

Highest Volume Rail Carload Lanes – Study Area (All Flows)

Direction	Origin	Destination	STCC2	Commodity	Annual Rail Carload Tons 2002
Through	Lexington, KY	Other Western MA	11	Coal	271,769
Through	Houston, TX	Other Western MA	28	Chemicals Or Allied Products	218,940
Inbound	Phoenix, AZ	Other CT	33	Primary Metal Products	118,418
Inbound	Eugene, OR	Other CT	24	Lumber Or Wood Products	112,782
Inbound	Boston, MA	Other CT	33	Primary Metal Products	109,798
Through	Other Western MA	Cleveland, OH	40	Waste Or Scrap Materials	107,322
Inbound	Portland, OR	Other CT	24	Lumber Or Wood Products	92,345
Inbound	Houston, TX	Other CT	28	Chemicals Or Allied Products	82,166
Through	Other Western MA	Evansville, IN	29	Petroleum Or Coal Products	76,874
Inbound	Chicago, IL	Other CT	24	Lumber Or Wood Products	61,672
Inbound	Seattle, WA	Other CT	24	Lumber Or Wood Products	54,873
Through	Atlanta, GA	Other Western MA	14	Nonmetallic Minerals	49,707
Inbound	Jonesboro, AR	Other CT	33	Primary Metal Products	45,516
Inbound	Rochester, NY	Other CT	14	Nonmetallic Minerals	45,079
Inbound	Washington, DC	Other CT	26	Pulp, Paper Or Allied Products	44,935
Inbound	Burlington, VT	Other CT	11	Coal	41,953
Through	Montgomery, AL	Other Western MA	26	Pulp, Paper Or Allied Products	39,670
Inbound	Spokane, WA	Other CT	24	Lumber Or Wood Products	39,146
Through	Other Western MA	Bangor, ME	14	Nonmetallic Minerals	37,894
Inbound	Grand Rapids, MI	Other CT	01	Farm Products	36,977

Source: Global Insight, Inc. Transearch 2002 Database

Table 4

Highest Volume Rail intermodal Traffic Lanes – Study Area (All Flows)

Direction	Origin	Destination	STCC2	Commodity	Annual Intermodal Tons 2002
Through	Other Western MA	Chicago, IL	46	Misc. Mixed Shipments	87,799
Through	Kansas, City, MO	Other Western MA	26	Pulp, Paper Or Allied Products	48,590
Through	Chicago, IL	Other Western MA	1	Farm Products	34,824
Through	Chicago, IL	Other Western MA	46	Misc. Mixed Shipments	31,269
Through	Los Angeles, CA	Other Western MA	46	Misc. Mixed Shipments	25,465
Through	Chicago, IL	Other Western MA	20	Food Or Kindred Products	24,846
Through	Other Western MA	Denver, CO	43	Mail Or Contract Traffic	23,925
Through	San Francisco, CA	Other Western MA	46	Misc. Mixed Shipments	17,287
Through	Other Western MA	Los Angeles, CA	43	Mail Or Contract Traffic	12,564
Through	San Francisco, CA	Other Western MA	20	Food Or Kindred Products	10,828
Through	Chicago, IL	Other Western MA	27	Printed Matter	9,778
Through	St. Louis, MO	Other Western MA	27	Printed Matter	9,538
Through	Chicago, IL	Other Western MA	25	Furniture Or Fixtures	9,074
Through	Chicago, IL	Other Western MA	23	Apparel Or Related Products	8,094
Through	Columbus, OH	Other Western MA	46	Misc. Mixed Shipments	7,637
Through	Other Western MA	Chicago, IL	42	Shipping Containers	7,002
Through	Other Western MA	Kansas, City, MO	26	Pulp, Paper Or Allied Products	6,458
Through	Other Western MA	Chicago, IL	39	Misc. Manufacturing Products	6,431
Through	Other Western MA	St. Louis, MO	46	Misc. Mixed Shipments	6,386
Through	Other Western MA	Los Angeles, CA	46	Misc. Mixed Shipments	6,209

Source: Global Insight, Inc. Transearch 2002 Database

Freight Movement in the Hartford Metropolitan Area

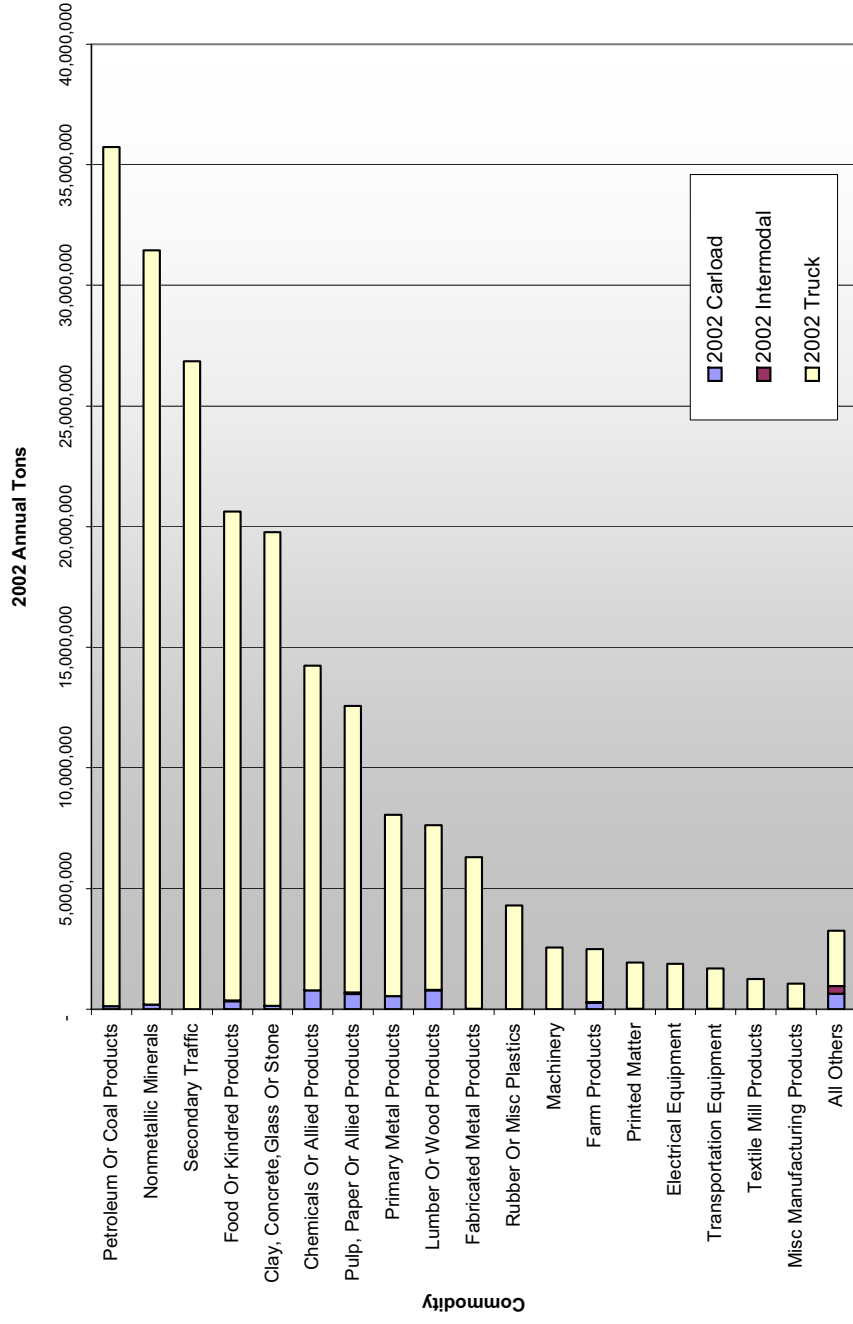
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Table 5
Highest Volume Truck Traffic Lanes – Study Area (All Flows)

Direction	Origin	Destination	STCC2	Commodity	Annual Truck Tons 2002
Inbound	New York, NY	Hartford County	29	Petroleum Or Coal Products	8,908,856
Through	New York, NY	Boston, MA	29	Petroleum Or Coal Products	6,109,143
Through	New York, NY	Boston, MA	50	Secondary Traffic	2,048,387
Inbound	Boston, MA	Hampden County	29	Petroleum Or Coal Products	1,742,656
Through	New York, NY	Portland, ME	29	Petroleum Or Coal Products	1,508,921
Inbound	Boston, MA	Hampden County	32	Clay, Concrete, Glass Stone	1,314,225
Through	New York, NY	New York, NY	14	Nonmetallic Minerals	1,313,466
Local	Fairfield County	New London County	50	Secondary Traffic	1,275,625
Through	Philadelphia, PA	Boston, MA	29	Petroleum Or Coal Products	1,150,861
Inbound	Boston, MA	Hampden County	50	Secondary Traffic	1,100,552
Local	Fairfield County	Fairfield County	14	Nonmetallic Minerals	1,039,047
Local	Windham County	Hartford County	14	Nonmetallic Minerals	1,036,957
Local	Tolland County	Hartford County	14	Nonmetallic Minerals	1,036,957
Local	New London County	Hartford County	14	Nonmetallic Minerals	1,036,957
Local	Hartford County	Fairfield County	29	Petroleum Or Coal Products	1,024,031
Local	Windham County	New Haven County	14	Nonmetallic Minerals	1,021,545
Local	Tolland County	New Haven County	14	Nonmetallic Minerals	1,021,545
Local	New London County	New Haven County	14	Nonmetallic Minerals	1,021,545
Local	New Haven County	Fairfield County	14	Nonmetallic Minerals	899,306
Local	Middlesex County	Fairfield County	14	Nonmetallic Minerals	899,306

Source: Global Insight, Inc. Transearch 2002 Database

Figure 9
Distribution of Traffic Volumes by Commodity – Study Area



Source: Global Insight, Inc. Transearch 2002 Database

III. Transportation Operations Review

The Study Area freight infrastructure carries significant tonnage of traffic through the year. The total volume is just over of 200 million tons. While all four modes of transport – truck, rail, water, and air - are represented, trucking far surpasses others in volume.

Of the total surface tonnage, 98% is moving by truck. Rail service is substantially smaller at 2% of the total. Looking just at tonnage based in the area (excluding through traffic), the Study Area is a relatively small freight market with a extremely heavy reliance on the truck mode: 98% of area-based tonnage moves by truck, which is significantly above the 79% national average. The rail share of this volume is one-tenth the U.S. average, but such anomalies (albeit somewhat less severe) are more common in consumer markets along the east coast

Motor Transport

The Study Area supports over 37,000 trucks per day. The majority of trucks by unit count are classified as through traffic – nearly 15,000. The smaller inbound and outbound volumes are skewed towards inbound freight as would be expected given the demographics of the region. .

Table 6

Sum of Study Area Truck Volumes 2002

Direction	Annual Truck Units	Percentage of Total Units
Inbound	2,990,734	22.1%
Outbound	1,429,358	10.6%
Through	5,419,042	40.1%
Local	3,678,867	27.2%
Grand Total	13,518,002	100.0%

Source: Global Insight, Inc. Transearch 2002 Database

The charts in the previous section depict the modes and classifications of freight by tonnage volume, because it is the clearest way to place them on comparable footings. Nevertheless, for understanding the effect of trucking on infrastructure and in the regional network, it is preferable to examine volume in terms of number of units, or trucks. Table 66 takes trucking volumes by

weight and shows the equivalent number of vehicles in the framework of a daily count.⁴ The TRANSEARCH database that is the source of this profile will undercount the strictly local activity of some types of trucks – it will not capture service vehicles, for example, or municipal waste, or some segments of construction volume. Allowing for this, the proportion of through trucks in the Study Area is probably closer to 35% than 40%, but it is nonetheless the largest class of motor carriage volume. Compared to the average for urban markets around the country, the Study Area has an equivalent proportion of through trucks.

Contemporary trucks are substantially larger than those operated two decades ago or more, when the preponderance of commercial structures and districts in the Hartford Metro Region were designed and built. Bigger trucks now in use create issues with turning radius, apron width, parking, staging, and other questions of access.

Traditional urban sprawl presses growth outward from the city center; this is observable around the nation, and its occurrence in the Hartford region is plainly evidenced from the patterns of population and employment. Spreading growth applies direct and rising pressure to construct radial and ring roads that can become the prime corridors of freight movement, and to expand the intersection of the major downtown arteries that criss-cross the city center. For a road to be effective as a transportation artery, particularly for freight purposes where time is of high value, it must remain clear of the stop and go, frequently turning traffic that occurs as commercial development springs up around infrastructure. There is a tension between transportation requirements and development interests that this points up, and the tension is manifest at a number of levels in the system.

Through truck traffic has been described here as a significant piece of the overall volume. However, while it is large, it does not overshadow the need to understand and plan for regional and local traffic development, which is the segment with the greatest effect on the area economy.

As the centers of commerce move outward, congestion follows. Freight transportation routes become pressurized and the suppliers of freight related services seek less congested areas for their facilities. Warehouse and logistics providers begin to shift and move. Truck terminals and truck stops relocate, but with greater difficulty and at a slower pace. As all of these facilities are moving, new commercial development occurs around them; the congestion builds again and the process repeats itself.

The conflict between transportation and commercial interests shifts and grows. The service sensitive industries that are principal in the forecast employment and output growth for the region, have adopted locations in the pattern of the area, yet they are the most easily affected by

⁴ Conversion from tonnage to vehicles is calculated by applying an average payload for classes of goods by truck equipment type – an example might be the average weight of bulk chemicals in a tank trailer. TRANSEARCH portrays the tonnage volume of goods by equipment types, and payload information comes from industry sources, and the federal Vehicle Inventory and Use Survey.

the conflict. It is the role of planning to protect the needs of transportation while allowing the commercial interests to develop in a directed manner.

Time of Day Alternatives

One of the solutions to the issues of congestion and maintaining good freight operating conditions would be the application of off-peak hours for making pickups and deliveries whenever possible. While this seems like a simple and straightforward solution, it is not. There are service limitations on the times that freight can be picked up with enough time allowed for the follow-on transportation to occur in the time that is required.

Another aspect to the off-peak operation is the ability of the businesses to maintain hours and staffing to accommodate the handling of the freight. Employees are an expensive part of any operation and the crew required to maintain multiple shifts can be cost prohibitive; one local employer also pointed out that many of their people are working mothers, whose need to be home nights with family the company respects. In addition, there are issues around work scheduling, and access to the equipment and the sites within the facility where freight is delivered. Manufacturing schedules including the use of equipment play a role in this process. Hospital supplies are scheduled and delivered to the operating rooms to meet a very restrictive schedule. It isn't always possible to vary this schedule to accommodate a variation in the delivery of the freight.

In some facilities freight can be "dropped". A driver comes in with a trailer attached to his tractor. He enters what is effectively a large parking lot, leaves the trailer, picks up an empty trailer that is in the same or a nearby area, and leaves. This system creates efficiencies for the truckers. It also requires real estate and space for storing and accessing these trailers. While having this activity occur at night is a productive use of the highway, noise ordinances can make this impossible to do.

The alternative to the space and facilities for dropped trailers is to accomplish what is called in the industry a "live" load or unload. In this case the driver backs his trailer to the dock and waits while the freight is loaded or unloaded. Changes to the U.S. DOT hours of service regulations for truck drivers have a large effect when it comes to planning for the timing of freight handling, particularly for live handlings. The trucking companies, more than ever before, are applying pressure to their customers to improve the efficiency of their operations. Charges for delayed handling and for "live" loading are increasing. This shift in the economics of freight creates additional incentive for shippers to alter their methods, in line with the needs of the MPO to reduce peak hour congestion. The timing may be right to address some of these issues and create change.

Air Freight

The Bradley International Airport in Windsor Locks, CT serves more than 7 million passengers (includes departures and arrivals) on 10 scheduled air carriers, and several air charter companies. Bradley International Airport (BDL) is the second largest airport in New England, and among the fastest growing in the U.S.⁵ The scheduled passenger carriers provide direct service to 35 different markets and make numerous global connections. Freight at Bradley International Airport represents nearly 172,000 tons in 2004. The airport ranks 49th among US commercial airports in passenger enplanements, but 33rd highest in air cargo handled⁶. Freight facilities at Bradley International Airport are located on the airport grounds, and are utilized most commonly by combination carriers operating passenger service to and from BDL. These cargo connections help meet the high speed transportation needs of area industries, which depend on the rapid movement of documents, packages, and cargo. Major air cargo carriers operating out of Bradley International Airport are shown in Table 77.

Table 7
2004 Air Cargo Activity⁷ – BDL Airport

Carrier Name	2004 Tons	Percent of Total
United Parcel Service	61,722	36%
Federal Express Corporation	52,643	31%
Tradewinds Airlines	22,748	13%
Airborne Express Inc.	7,306	4%
All Others	27,423	16%
Total	171,841	100%

Source: Global Insight, Inc.

Continued development and improvement of the airport facilities for freight purposes plays an important role in attracting and retaining business with high service needs such as are presently dominant in the Hartford metro area. Generally speaking, the more “high tech” or “service” oriented the industry, the more likely it is to require air transport as part of its operating strategy. While growth in air traffic will not likely reduce the number of trucks on the highway, it is still an integral part of the transportation infrastructure requiring the same careful planning as the rest of the network.

⁵ www.bradleyairport.com

⁶ <http://www.faa.gov/> T-100D Market data for 2004. Also available at <http://www.transtats.bts.gov/>

⁷ Ibid.

For the Hartford Metro Region, as elsewhere, the universe of air freight includes three distinct types of operators, each with its own distinct network of intermediaries:

- *Cargo airlines*: sometimes called “heavy freight,” this group of operators flies dedicated freighter aircraft. The business is closely linked with freight forwarders and logistics providers, who usually perform the sales and distribution function.
- *Combination carriers*: these airlines concentrate on passengers, selling available passenger aircraft belly hold cargo capacity to forwarders and shippers. Although their cargo business is focused on heavy freight shipments, most combination carriers also offer counter-to-counter small package service, with pick-up and delivery often provided by courier services.
- *Integrated Air Carriers*: sometimes called “express freight,” these large transportation companies operate both air and ground networks, providing door-to-door service with owned and leased fleets of branded trucks. Leading integrated carriers, such as FedEx and UPS, have built their business model around guaranteed delivery times.

Each of these has well developed networks for moving freight between airport facilities and customers – either downtown or regional. Pick-up and deliveries in the region are made with vehicles optimized for the particular need, and range in size from bicycles to tractor-trailers.

Air freight moving between the airports and shippers in the region, consists of several kinds of freight including air cargo, express packages, documents, specialty cargoes, and US Mail. These can be more easily divided into “Heavy Freight” (palletized or containerized air freight generally exceeding 70 pounds) and “Package Freight” (packages weighing up to 70 pounds, i.e. packages that can be handled manually).

Heavy Air Freight

Heavy air freight or “air cargo” can be carried either in the holds of passenger aircraft or on dedicated freighters. Worldwide, 46 percent of all air freight is carried on freighters, a proportion that is expected to grow in coming years as passenger airlines restrict growth of their fleets.⁸ This market, in turn, is dominated by large, wide-body freighters, such as the B747s and Boeing MD-11s that account for nearly 40 percent of total available freighter capacity. Both Boeing and Airbus project that the greatest future growth in the world freighter fleet will be in larger, wide-body aircraft.

Wide-body air cargo is not generally available at Bradley International Airport, as passenger volumes and shorter-haul lanes typical of regional airports, are more economically supported by narrow-body commuter and regional aircraft. As a result, local heavy air freight shippers and

⁸ Boeing, *World Air Cargo Forecast, 2002-2003*.

receivers will patronize the more extensive air cargo facilities in New York (JFK), Newark (EWR), and Boston-Logan (BOS).

For local industry, the practical result of this is that heavy air freight shipments are in fact moving by truck out of Hartford. In order to make the cutoff times for departing flights at other airports, feeder trucks out of the Hartford Metro Region must leave the city during afternoon rush hours. Likewise, arriving freight often travels into the region at the morning rush hours. The end result of this condition is that I-91 to the South side and I-84 to the North of the city have particular importance to local air freight distribution. The traffic situation and potential congestion on these routes can cause serious delays in the movement of critical customer shipments.

Package Freight

Although heavy freight dominates international air cargo volumes, in the U.S., “package” or “express” makes up over 60 percent of the air freight market, and nearly all of Bradley's cargo activity. Package freight generally includes parcels, documents and specialty cargo. Parcels include boxed and bagged packages weighing less than 70 lbs., while documents include letters, reports, proposals etc. generally in envelopes, and specialty cargoes include financial documents, medical supplies, periodicals and newspapers not moving in traditional package or document transport networks.

In the past, most combination airlines have treated package freight as checked baggage, meaning that these are integrated into normal passenger baggage handling operations, and hand-loaded into narrow-body passenger aircraft holds ("bellies"). Packages were often accepted by ticketing agents at the airport and fed into the baggage conveyor system for automatic sorting. As the airlines have adjusted their operations to accommodate new security regulations, however, most have converted package cargo into a pure freight product, meaning that shipments are accepted and processed at cargo facilities rather than in the passenger terminal. Most of the Departures from Bradley cover relatively short distances, where air freight is often less cost-effective than shipping by truck. As a result, for most combination carriers, freight on narrow-body aircraft is limited to their longest flights. For Bradley International Airport, the most promising cargo lanes in terms of distance and density appear to be Dallas (DFW), and Phoenix (PHX).

Nationally, the volume of combination carrier package freight is forecast to decline. With services limited by security restrictions, occasional document shippers have shifted to overnight service from integrated carriers like FedEx and UPS, and electronic transmission such as e-mail. Remaining users are generally concentrated in the manufacturing sector, where package cargo services are used for repair parts and emergency equipment supplies.

The nation's two largest integrated air freight carriers are FedEx and UPS. Both of these carriers maintain substantial operations at Bradley, and represent over two thirds of the airport's cargo

volume⁹. Local pick-up and delivery activities, involving a substantial number of small trucks, takes place during the late morning and late afternoon rush hours in order to provide downtown delivery of parcel and package freight. This operating schedule places the majority of volume on I-84 and I-91 to and from the airport near peak commuting hours. Increasing congestion on the route may result in earlier cutoff times, and later arrivals for shippers using these time-critical services.

Given that Bradley International Airport primarily serves a regional commuter market, its current traffic profile is not particularly conducive to air cargo expansion other than package freight. The dearth of wide-body aircraft operating into and out of the facility suggests that the Airport's cargo opportunities are limited to package freight. The issue of cargo expansion for Bradley International Airport is more a function of operating aircraft limitations (with the current mix of traffic) than infrastructure.

The Airport might seek to promote heavier air cargo opportunities in high volume freight markets through the development of limited (not *daily*) scheduled domestic all-cargo services. Such niche services might seek to capture profitable volumes that currently move via combination carriers to Logan, Newark or JFK, leveraging less costly landing, handling, and ground delivery fees.

Freight Rail

Traffic in the freight rail system in the Hartford Metro Region is shaped by the position of Hartford in the eastern and national rail network, and by the structure of the network itself. Ownership, connection, and distance combine to influence the pattern and character of current and prospective freight volume. While the Hartford Metro Region is a crossroads for highway traffic, it is poorly accessible from a freight rail standpoint. As such, the ability of rail to relieve the highway, and to act as a mitigant to deficient air quality and growing congestion, is constrained by network position, vertical clearances, facility capacity, and institutional factors. The Hartford Metro Region is served by a single Class I railroad: CSX Transportation, and its related intermodal unit CSX Intermodal. Class I roads are the primary freight haulers of the country, accounting for over 90% of railway revenue. In practical terms, there are seven of them in the U.S. and Canada, and all are private enterprises who own their networks. Local carload freight delivery is often facilitated by regional and short line railroads, who provide vital and competitive service on light-density rail routes.

The orientation of CSX lines in the Capital Region is chiefly east-west along the main line from Albany, NY to Boston. CSX operations in New Haven are served via the Amtrak-owned Northeast Corridor (NEC). Regional and shortline railroads comprise the balance of rail operations in the Capital Region, including the Providence and Worcester (P&W), New England

⁹ <http://www.faa.gov/> - T-100D Market data for 2004. Also available at <http://www.transtats.bts.gov/>

Central (NECR), Connecticut Southern (CSO), and Springfield Terminal (ST) railroads. In Western Massachusetts, the Pioneer Valley railroad, and several other shortline and regional railroads operate secondary lines connecting to the CSX east-west main line.

The balkanization of rail ownership in the Capital Region hampers highway to rail traffic conversion. Network ownership and structure are basic barriers to the capability of railroads to provide an alternative to highway freight transportation, in the Hartford Metro Region and elsewhere in New England, and have to be addressed if there is to be significant new reliance on the rail system.

Relief of highways and mitigation of air quality are primary reasons for public interest in expanded rail service. The volume that the freight rail system prevents from appearing on the highways nationally is quite substantial, including a large quantity of through tonnage. Nevertheless, the challenges of position, capacity, and institutional factors leave few near term options for traffic diversion and growth. Changes to the network, and boosts to capacity brought about by new investment could change this profile. Changes to railroad ownership and operating rights (such as might occur with rail mergers or trackage/haulage rights agreements) could change it further; perhaps fundamentally. The MPO alone has little influence on these circumstances, yet its challenges are held in common with other urban areas across the nation struggling with highway congestion and non-compliant air quality.

IV. Inventory of Freight Facilities

Transfer Terminals

The Analysis Area offers a diverse portfolio of freight transfer facilities, truck, rail, rail intermodal, and pipeline and water terminals. These are primarily dedicated to the handling and transfer of bulk commodities such as petroleum, stone, plastics, food oils and industrial chemicals. The National Transportation Atlas Database (NTAD) identifies 23 facilities in the state of Connecticut, most of which are located in the study region. A list of these facilities appears in Table 8108810.

Table 8

Freight Mode Transfer Terminal Facilities in Connecticut

DESCRIPTION & LOCATION	MODE1	MODE2	Railroad ID
Cilco Terminal: Bridgeport	Water	Highway	
Shell Oil Co: Bridgeport	Water	Highway	
Sprague Energy Corp: Stamford	Water	Highway	
Star Enterprise/Texaco: E Hartford	Pipeline	Highway	
Citgo Petroleum Corp: Rocky Hill	Pipeline	Highway	
Amerada Hess Corp: Wethersfield	Pipeline	Highway	
Northeast Petroleum: Wethersfield	Pipeline	Highway	
Amerada Hess Corp: New Haven	Water	Highway	
Getty Petroleum Corp: New Haven	Water	Highway	
Gulf Oil: New Haven	Highway	Pipeline	
Northeast Petroleum: New Haven	Water	Highway	
New Haven Terminal Inc: New Haven	Water	Highway	
Q River Terminal Inc: New Haven	Highway	Water	
Wyatt Inc.: New Haven	Pipeline	Highway	
Mobil Oil Corp: New Haven	Water	Highway	
Chemical Leaman T.L.: North Haven	Highway	Rail	CSXT
Portanova Inc: Waterbury	Rail	Highway	ST
A. Anastasio & Sons: New Haven	Rail	Highway	CSXT
Amerada Hess Corp: Groton	Water	Highway	
Meehan Overseas Term'l: New London	Highway	Water	
Louis Dreyfus Energy Corp: Norwich	Water	Highway	
Newco Lumber Co: South Windham	Rail	Highway	NECR
C.C. Lounsbury Inc: Willimantic	Rail	Highway	NECR

Source: National Transportation Atlas Database, 2001

These facilities represent significant sources of freight activity for the study region, and offer substantial incremental potential for congestion mitigation. The private sector operators also represent attractive candidates for public-sector outreach, and an ongoing dialogue about freight issues in the region.

West Springfield Intermodal Terminal

In addition to the facilities identified in NTAD, a significant transportation asset in the region is the CSX West Springfield Intermodal Terminal.

Intermodal services involve the transloading of containers and truck trailers (the former is a box, and the latter is a box with wheels) between motor carriers and railroads. Trucks perform pickup and delivery at customer sites and rail terminals; railroads carry the trailer or container over long distances between terminals. This form of service is the largest source of revenue for Class I railways today, and their main growth market. It is also the most competitive with over-the-road truck transportation and for that reason, if railways can offer alternative freight capacity and provide material relief to the highway system, intermodal services will be the critical method by which this is done.

Under CSX, the facility handles some **37,000 annual lifts** in a 31-acre footprint¹⁰, comprised almost exclusively of domestic trailers and containers. The railroad (CSXT) currently operates a mix of Containers On Flat Cars and Trailers On Flat Cars services between the Midwestern United States and New England. Although CSXT theoretically connects numerous city pairs between the two regions, two primary corridors represent the preponderance of the traffic; they are Chicago, and St. Louis.

Current service in these corridors is provided by two pairs of East-West trains (one pair equals one inbound and one outbound train): Q116/117 and Q114/115. These train operations are largely unchanged since CSX's absorption of Conrail assets in New England. From Chicago and St. Louis, connections are made to western rail carriers for Pacific Coast and Southwestern markets including California, Oregon, Washington, Texas and Mexico.

The railroad's focus on two select high-density corridors represents the natural evolution of a strategy that seeks to employ the scarce resources of the company for the most profitable traffic available. Although a significant amount of excess capacity exists in rail networks generally, the relative complexities of CSX's wide-ranging intermodal operations make it difficult to simultaneously exploit unused train, terminal and route capacity. Thus, a significant management effort is expended to balance available capacities with available traffic volumes.

A recent CSX-sponsored survey of motor carrier operators into and out of the West Springfield Terminal indicates that approximately 50%, or some 15,000 annual truckloads of freight, move from that facility to the Hartford Metro Region¹¹. Thus CRCOG and PVPC are closely linked for rail intermodal activity. Multi-jurisdictional efforts to improve this facility and to market it to

¹⁰ Merrick Neighborhood Redevelopment Plan -- Rail Yard Operational Assessment; October 14, 2003; Vanasse Hangen Brustlin, Inc. (VHB)

¹¹ CSXI West Springfield intermodal yard "gate" survey conducted fall, 2003; courtesy Pioneer Valley Planning Commission.

local shippers should help expand the opportunity for highway to rail conversions, and to improve air quality. Likewise, land use planning in the area surrounding Bradley Airport should consider the nearby access to the West Springfield Terminal, and make these sites attractive for high-volume distribution and manufacturing that might not otherwise be targeted for the region.

CSX appears to be pursuing a logical strategy for intermodal market development in New England. The firm is focusing its energies and its limited resources on those corridors that provide the greatest operating income. The factors that have influenced the company's commercial choices include terminal capacity, train capacity, line capacity, line clearances, and empty equipment availability. To some degree, each of these factors exists in the intermodal corridors currently serviced through the West Springfield Terminal. Changing this *status quo* will require an added expense that when weighed against the railroad's other available investment alternatives may delay desirable improvements to the West Springfield Terminal, and thus additional economic development for Central Connecticut.

V. Opportunities for Expanded Rail Intermodal Operations

The great majority of motor freight travels only a short distance, and is thus not conducive to intermodal transportation. Likewise, many motor freight movements occur in volumes and at frequencies not generally appropriate for intermodal service. Intermodal market penetration then, is a function of two primary factors: (1) relative length of haul and (2) concentration of volume in traffic lanes. As the distance between the origin and the destination increases and lane volume (density) grows, intermodal service becomes more competitive relative to highway, and its cost advantage increases. Analyzing the relative lengths-of-haul and lane densities of traffic moving into, out of and through the region can help identify untapped opportunities for rail service.

The opportunity for rail intermodal expansion is closely tied to the volume of "dry van" truck freight moving into and out of the region. The more the regional market is comprised of dry van freight, the more likely the traffic can be converted to rail intermodal movement.

As outlined in Figure 98 above, the composition of regional traffic reflects substantial volumes of bulk liquid, bulk solid and flatbed traffic, not likely to be containerized for rail intermodal movement. Conversely, the number of bulk transfer facilities in the Study Area (see Table 8108810 above), and the substantial volume of local bulk truck movements reflects rail-truck and water-truck intermodal services are well established.

In addition to the commodity composition of traffic, analyzing the distance and density profiles of regional freight activity helps to identify rail intermodal opportunities. Logically, as distance increases, rail alternatives become more competitive vis-à-vis truck. Likewise, the more dense the particular lane with motor carrier volume, the more likely the recurrent nature of rail intermodal movement becomes attractive. Figure 109 reflects the relative mileage and density characteristics of the traffic moving in the Connecticut counties in the Study Region.

Figure 10
Distribution of Hartford Metro Area Highway traffic by Lane Distance and Density

Connecticut Counties in Study Region

Route Miles	Lane Density (Annual Tons)			Grand Total
	<100,000	100,000-400,000	>400000	
0-250	3,741,791	4,109,880	64,151,869	72,003,540
250-500	2,326,786	714,588	642,848	3,684,223
500-750	2,016,508	557,505		2,574,013
750-1000	2,648,091	406,326	303,408	3,357,824
1000-1250	1,668,989			1,668,989
1250-1500	1,268,964	162,940	204,241	1,636,145
1500-1750	531,280		200,940	732,220
1750-2000	228,279	177,535		405,814
2000-2250	91,518			91,518
2500-2750	83,441	102,765		186,207
2750-3000	470,870	168,340	815,757	1,454,967
3000-3250	331,401		585,018	916,419
2250-2500	187,709			187,709
Grand Total	15,595,626	6,399,879	66,904,082	88,899,587

Rail Intermodal Competitive Lanes 

Source: Global Insight, Inc.

The current mileage distribution of traffic offers some, but only limited opportunities for rail intermodal conversion, as over 88% of the region’s traffic moves in lanes of less than 750 miles. This high volume of short-haul traffic signals not only that the Hartford Metro manufacturing and consuming economies are closely linked to shippers and receivers in the Boston and New York metropolitan areas, but also that intermodal services to these regions compete effectively for traffic originating and terminating in the Study Area. A broader analysis of the traffic suggests that CSX is not competing effectively for the available long-haul freight in the Study Region, capturing a relative market share of 2.2% of all truck and intermodal traffic movements in excess of 750 miles originating and terminating in the region. This compares to 24% nationally for lanes of this length.

Using average modal market share factors for traffic lanes across the nation, it is possible to develop an estimate of divertible highway traffic based on the distance and density characteristics of regional volumes. Such an analysis for the Hartford Metro region is shown in Figure 1111101011.

Figure 11
Potentially Divertible Highway Volumes in Hartford Metro Region

Connecticut Counties in Study Region

Round Miles	Lane Density (Annual Tons)			Grand Total
	<100,000	100,000-400,000	>400000	
0-250	-	-	-	-
250-500	-	-	-	-
500-750	-	-	-	-
750-1000	-	-	95,206	95,206
1000-1250	-	-	-	-
1250-1500	-	-	72,811	72,811
1500-1750	-	-	-	-
1750-2000	-	40,965	-	40,965
2000-2250	-	-	-	-
2250-2500	-	23,712	-	23,712
2500-2750	-	38,843	629,245	668,088
2750-3000	-	-	451,262	451,262
3000-3250	-	-	-	-
3250-3500	-	-	-	-
Grand Total	-	103,521	1,248,523	1,352,044

Rail Intermodal Competitive Lanes 

Source: Global Insight, Inc.

Figure 1111101011 displays that there is an opportunity for regional rail intermodal expansion. These are found in lanes with annual truck densities of 100,000 to 400,000 annual tons and lengths of haul in excess of 1500 miles, and in lanes of greater than 400,000 annual tons and lengths of haul of greater than 750 miles. These characteristics generally provide the economic and operational conditions that are favorable to rail intermodal operations. Several of these market opportunities exist between the Hartford Metro Region and markets currently serviced by CSX Intermodal, such as San Francisco and Los Angeles, CA; Chicago, IL; St. Louis, MO; Cleveland, OH and Dallas and Houston, TX as well as unserved markets such as Detroit, MI; Atlanta, GA and Jacksonville, FL. The CSX rail network cannot effectively serve some of these markets, while others lack terminal capacity to allow for market expansion. As CSX looks to expand its network of intermodal terminals and trains; these markets appear to offer the promise of additional baseload volumes to the West Springfield facility.

Figure 12
Summary of Hartford Metro Region Rail Intermodal Diversion Opportunity

Data Metric	2002		Approximate Loads
	Approximate Tons	Percent	
CT Counties in Study Region			
Total Originating and Terminating Truck Tons in CT Study Region	88,899,587	100.0%	5,926,639
Truck Tons <750 Miles	78,261,776	88.0%	5,217,452
Truck Tons >750 Miles	10,637,812	12.0%	709,187
Rail Intermodal Tons in CT Counties ¹	263,813	100.0%	18,844
Rail Intermodal >750 Miles in BEA ²	244,559	92.7%	17,468
Rail IMX + Truck tons >750 in CT Counties	10,882,370	100.0%	725,491
Rail IMX as % of IMX & Truck >750 in BEA in CT Counties	10,882,370	2.2%	777,312
National Average I/M Market Share in Lanes > 750 Miles	2,611,769	24.0%	186,555
Estimated Rail Convertible Truck Volumes³	1,352,044	12%	96,575

¹ Estimated, based on data provided by CSX
² Estimated using STB Carload Waybill data for region
³ Convertible volumes based on Global Insight algorithms developed for FHWA TS&W analysis

Source: Global Insight, Inc.

Shippers consider many factors in making mode choice decisions, and as such, any quantification of divertible traffic volumes represents an estimate. The volumes do however, suggest that there is a real opportunity to increase rail intermodal market share: something many shippers are probably already analyzing in today's \$3 per gallon fuel cost environment.

VI. Public-Private Freight Partnerships

Background

Transportation infrastructure is able to stimulate economic development, and this is one of the motivations for investment in it. Nevertheless, the logistical support of commerce requires clear routes between districts, and the ability to move large vehicles freely and reliably, under the constraints of pickup and delivery windows and with productive utilization of freight assets.

Given the private ownership of many essential transportation facilities, it is clearly necessary for freight planning to involve both private and public sectors. And while key representatives of cargo shipping, trucking and railroad companies have a strong interest in seeing increased investment from the public sector, they are keenly aware of the current shortcomings of public-private cooperative relationships in freight infrastructure planning.

Analyzing successful public-private transportation investments can help agencies better understand the opportunities and challenges of incorporating freight in the planning process.

To that end, the study team gathered information on transportation infrastructure projects completed or underway in other areas of the country. The objective here was to identify the types of transportation projects being undertaken, the process by which they were developed, the effectiveness of their performance, and the pitfalls of their implementation.

The well publicized results of several public-private partnerships in transportation infrastructure - such as the Alameda Corridor Project or the Chicago Area Consolidation Hub - suggest that some groups have been able to find a common ground for success. For this analysis, we sought the advice and input from the parties involved in the success of these initiatives to identify the best practices for forming public-public and public-private partnerships for implementing successful intermodal transportation projects.

The projects selected for analysis span the nation. They are primarily intermodal in nature, and many involve rail or rail intermodal activities. The projects selected for analysis are outlined in Table 8.

Table 8
Selected Public-Private Freight Projects

Project	Location
Alameda Corridor Transportation Authority	CA
CalTrans and the I-91 Corridor Development	CA
Freight Mobility for Seattle / Tacoma	WA
Stark County Development - NeoModal Intermodal Terminal	OH
Virginia Inland Port	VA
UPS Chicago Area Consolidation Hub (CACH)	IL

Source: Global Insight, Inc.

Key Findings

For the projects reviewed success has been contingent upon a variety of factors. These include financing strategies, team building, effective communication of the advantages of the project’s goals to diverse interests, and effective project governance.

ISTEA funding and innovative financing is credited as a vital element in the success of at least one program. In one case this was in the form of a non-recourse loan from the state, which set up a revolving loan fund. In others financing came from private sources or a mix of private and government entities, and government bonds were issued for the Alameda project. Since

transportation infrastructure projects require very large amounts of money, considered financing strategies are a must. These take time to track down and build. Often they will also require cooperation among a set of agencies or groups to accomplish. Over all, funding is recognized as a central underpinning to a successful project, just as lack or withdrawal of funding is a “worst nightmare” scenario. And promised or planned funding did disappear or threaten to disappear in several cases.

Public private partnerships typically are not short-term affairs, either in the planning or implementation stages. They grow out of a need that may develop slowly over time and be perceived and acted on independently from many points of view, or as a response to a more immediate occurrence or decision. Most of the projects described began with informal sharing of ideas in the late 1980s or early 1990s. All of them were completed. While the number and interests of active groups may be diffuse, in these projects administration of the actual project itself tended to be quite central, usually with one party having responsibility.

Partnerships require trust, tolerance and team building as well as patience and knowledge of the “other’s” business. In the cases comprising a series of projects – Alameda Corridor and the Seattle FAST – a whole chain of entities had to build group-working relationships in the context of committees and over time. Governance was more centralized, but the consensus building and outreach among professionals never ceased. One facilitator advises to look for combinations of people/organizations that will be effective for a given task. Another strongly recommends a centralized agency to manage the work. When asked how their experiences might apply to other endeavors, several spokespersons counted building relationships, communication and cooperation and personal trust as significant and necessary to the success of public private partnerships.

Most partnerships do face at least one major crisis, and often have to deal with changed circumstances over the course of a project. In two of the cases, after months of work, committed funding sources disappeared and had to be renegotiated. In another case a project was completed in one set of market circumstances and assumptions that changed radically and required a whole new approach in order to keep the business alive. Their advice: have some financial and personnel flexibility to be able to keep going while you devise another strategy.

Most public private partnerships need to pay attention to public perceptions and concerns and have outreach programs in place to communicate the framework and decisions of an endeavor. Over and over again the importance of building and maintaining relationships between professionals, among agencies and with the public was seen as an essential ingredient to success. As one person said, “Talk early. Talk often. Listen. Tell the truth.”

The detailed abstracts relating to the research into the public-private benchmarks projects are attached as Appendix 2 to this document.

VII. Conclusions

Its role as a crossroads of Interstate 84 (I-84) and Interstate 91 (I-91) brings to Hartford a set of challenges in dealing with the various aspects of traffic, particularly highway congestion and air quality, as their major sources originate outside of the region. Thus there is a significant need to influence the overhead flow of through traffic through the region, to minimize its negative impact on local economic activity and quality of life.

This need for through traffic management creates a distinct requirement for cooperation with other cities within Connecticut and with neighboring states, in the formation and implementation of rail and highway development plans. States surrounding Connecticut have the ability, through their individual policy decisions, to influence the volume of traffic in the Hartford Metro Area. It is therefore incumbent on area planners to be involved and attentive to the projects in surrounding regions – such as is already the case with the Pioneer Valley Planning Commission. In fact, the interests of other MPO groups along the I-84 and I-91 corridors are directly in line with those of CRCOG, as traffic moving "through" to the New York and Boston regions is an issue across the state. These common interests suggest the need for organizations to ally, in seeking comprehensive solutions to transportation and air quality challenges.

For CRCOG, a number of regional issues would seem to dominate transportation planning. These issues encompass the problems of the current congestion, and the opportunities of economic expansion:

- **Dominance of Truck Freight:** The Hartford metro is extremely reliant on truck freight, with nearly 98% of the tons moving into the region dependent on highway transport. While it will be difficult in the short run to shift noticeable volumes of freight to other modes, CRCOG should begin an aggressive effort to expand rail and water alternatives for the region. This would include:
 - **Further expansion of bulk transfer capabilities for rail-truck and water-truck movements.** The substantial volume of highway transported petroleum products in the region reflects a substantial the use of the region's intermodal infrastructure. Longer haul petroleum movements suggest that conversion opportunity still exists. While expanding rail-truck and water-truck intermodalism may not reduce the number of trucks on the highway in the short term, it will reduce truck VMT, and promote the use of alternative transport modes. Longer term results could include conversion to rail carload transport for high volume movements, and a relocation of shipper and receiver facilities towards improved (and lower cost) transportation infrastructure, further reducing truck VMT.
 - **Close Coordination with Pioneer Valley Planning Commission (PVPC) efforts to promote improvements in CSX West Springfield Intermodal Terminal.** PVPC's efforts to improve access and infrastructure at CSX's West Springfield intermodal facility have a significant bearing on the ability to provide highway congestion relief with rail as over 50% of the traffic currently handled at this

facility originates or terminates in the Hartford Metro area. Cross-state coordination and support of this effort should help reduce regional VMT, and can provide an additional stimulus for economic development in the region near Bradley International Airport.

- **Nature of Regional Freight Needs:** With few heavy manufacturing activities or primary industries in the area, the Hartford Region's freight infrastructure is utilized by wholesale, retail, and service logistics providers. The regional infrastructure then must provide high speed, dependable logistics support. To the degree possible, land use and highway planning efforts should seek to segment these activities from commuter corridors, and to consolidate the frequent pick-up and delivery activities in concentrated service centers.
- **Impacts of Through Traffic:** The region's high concentration of through traffic means that local freight service demands (and hence economic development) can be obstructed by external volumes. The lack of a bypass corridor in the Hartford region allows through freight volumes to crowd-out local operating activities, and increases operating costs for shippers, receivers and carriers. Designating additional through routes in the area or extending Route 3 north to interchange with I-84/384 (and bypassing the congested I-84/I-91 interchange in downtown Hartford) could help relieve the impact of through traffic on local pick-up and distribution activities. Alternatively, the volume of through traffic and the convergence of highways in Hartford could provide an opportunity to expand regional distribution activities. The availability of large land parcels in the region around Bradley airport and South Windsor offers the potential of expanded warehousing and distribution activity, perhaps at the cost of additional congestion in those regions.
- **Freight Flow Imbalances:** The volume of inbound traffic to the region is nearly twice the volume of outbound traffic. This creates a situation where motor carriers are forced to reposition trucks to locations outside the region for backhaul loading. Trucking firms generally surcharge inbound heavy markets because of this added cost. While CSX's West Springfield intermodal service can provide economical backhaul to select Midwestern markets, most of the region's freight remains handicapped. As CRCOG seeks to promote economic development, these *existing* discounted backhaul freight rates can offer an economic incentive for shippers moving freight to the west. Similarly, targeting economic development to capture these logistical savings will benefit existing shippers and receivers. For transportation providers, ideal freight markets are those that provide balanced inbound and outbound flows among like truck types, and geographies. The Freight Advisory Council, currently being formed by CRCOG, can help serve as a forum for freight information exchange, and an aide to promoting regional freight transportation efficiency. These might include:
 - Identify opportunities for regional freight consolidation
 - Consolidation of warehousing
 - Load consolidation
 - Leverage regional freight volumes for preferred carrier pricing and service

- Coordinated pick-up and delivery scheduling
- Collective volume bargaining
- Regional "core" carrier selection

Air Cargo at Bradley International Airport. The vast majority of air cargo at Bradley International Airport represents mail and package volumes. With the density of heavy air cargo facilities in the New York - New England region [each with a high volume of international and domestic wide-body aircraft], it seems unlikely that BDL would be successful competing head-on for heavy air cargo. A more reasonable strategy might be to focus on niche opportunities such as refrigerated air cargo (flowers, specialty foods, etc.) or special handling cargos that utilize charter services (machinery, live animals). The former could be coordinated with the existing narrow-body carrier network (such a strategy might for example, require the construction or expansion of temperature controlled storage and handling facilities on the airport grounds), while the latter requires participation of all-cargo carriers, not currently serving BDL. Other regional airports are contemplating a similar strategy, even to the point of hiring outside firms to promote air freight development in the region.

This review of goods movement in the Hartford Metro Area is a first movement toward active, purposeful accommodation of freight transportation for the area. Freight is a class of economic activity that makes other activity possible and for many sectors, is essential to their productivity and competitiveness. There are cases cited in this report where logistics performance goes beyond even that, and directly improves the quality of life for the local citizenry. The challenges presented by freight also have solutions, though they may be difficult in themselves to locate and implement.

As CRCOG seeks to institutionalize freight planning in its processes, these are major points for strategic development. Other steps can be taken immediately – the identification, selection and implementation of quick start initiatives can proceed now, not only because they are useful in themselves, but also because the responsiveness they demonstrate to the logistics community will strengthen its connection to public planning. Other initiatives, such as the exploration of off-peak initiatives can be designated a project for a newly formed Freight Advisory Council, perhaps in concert with the local Council of Logistics Management, or surrounding public agencies.

The final workshop in this study will seek to examine the major issues of freight transportation in the Hartford Metro Area based on the data collected in this task, and sharpen the recommendations for strategy. From that, The Capital Region Council of Governments should be in a position to design an immediate and long-range program of action for the region. The potential benefits to transportation capacity deserve more than passing attention.

**GLOBAL INSIGHT, INC
TRANSEARCH DATABASE**

APPENDIX 1

TRANSEARCH INSIGHT

Building from the original TRANSEARCH, the national database of freight traffic flows that Reebie Associates (and now Global Insight, Inc.) created and has maintained and provided to the transportation industry for 18 years and drawing on its experience with custom database development, the team researched information needs and data sources in the government and commercial markets and the capabilities of state-of-the-art software. The results of the effort have been to make available a national county-to-county and zip code-to-zip code data product. Key user needs like currency of the data, its reliability, flexibility in terms of seeing details of the traffic composition or relatively broad data summaries, and affordability can be satisfied.

Issued annually, the data can cover all modes and commodities, including empty truck movements, international shipping, and truck shipments of non-manufactured goods. Features like external trip ends, vehicle miles traveled, gross ton-miles, and forecasts can be provided, and traffic routed along major modal corridors can be displayed.

The database maps commodity flows (2, 3 and 4 digit STCC) in short tons between geographic entities (states, counties, BEA's) by mode (rail car, rail intermodal, truck load, less than truck load, private truck, air and water) for current year and forecast years. All volumes shown in tons are in short tons, for 2000.

A variety of data sources are used to compile the database ranging from government agencies to private sector industry associations and the carriers themselves, as shown in Figure A1.11.

The data sources vary by the different modes of transportation. The primary source for railroad data is the Carload Waybill Samples gathered from about 4% of total rail car traffic. Global Insight, Inc. sources this data from the Surface Transportation Board. This data is compiled to provide both volumes and patterns of flow.

The primary source for waterborne commodity flows is the Waterborne Commerce Statistics compiled by the Army Corps of Engineers. This data tracks the flow of commodities along domestic lakes, rivers and canals, and is used to develop both volumes and patterns of flow.

Figure A1.1

TRANSEARCH DATABASE DATA SOURCES

Mode	Data Source	Agency/Organization
Rail	– Carload Waybill Sample	– Surface Transportation Board
Water	– Waterborne Commerce Statistics	– U.S. Army Corps of Engineers
Air	– FAA Airport Originating Tonnages – Airport to Airport Flows – Commodity Flow Survey – TRANSEARCH	– Office of Airline Statistics (DOT Form 41) – BTS Office of Airline Information – Bureau of Transportation Statistics – Global Insight, Inc.
Truck	– Carrier Data Exchange Program – TRANSEARCH – Annual Survey of Manufactures – Freight Locater Data Service – General Statistics for Verification – Commodity Flow Survey	– Global Insight, Inc. – Global Insight, Inc. – U.S. Census Bureau – Global Insight, Inc. – Industry Associations – Bureau of Transportation Statistics

The air data is compiled from four major sources. The first is FAA (Federal Aviation Administration) airport originating tonnages primarily from Form 41 reports and compiled by the Office of Airline Statistics (Federal). This source establishes volume estimates at airports. The second source is airport-to-airport (ATA) flows compiled by the BTS Office of Airline information. These data are used to establish flow patterns. The third source is from Commodity Flow Survey (CFS) data, used to define the commodity types. The fourth source is Global Insight’s TRANSEARCH Database, which supplements the CFS data.

The trucking data process is more complex and comes from a wide variety of sources developed over the course of 20 years. However, there are four primary sources. The first is a data exchange program Global Insight has with motor carriers, which is used to estimate patterns and volumes. The second source is a variety of industry associations (timber, plastics, chemical, automotive, etc.), which provide overall volume information for the respective industry sectors. The third major source is from the Annual Survey of Manufactures, primary employment and output data by industry, distributed at the state and local level. This data maps production and consumption of commodities and is used to calibrate the trucking flows. The Freight Locater data service is a database of industrial facilities and their exact location. This data supplements the previously mentioned sources to help calibrate the flows of goods between specific geographic entities.

TRANSEARCH Data Issues and Limitations – Reebie Associates recently developed a finer detailed version of its TRANSEARCH database in an FHWA sponsored project known as the Intermodal Freight Visual Database. It breaks down origin and destination market areas to the

county level and is compatible with GIS applications. It has been incorporated into TRANSEARCH, with its most current base year as 2003. This database (a version developed especially for this project based on TRANSEARCH 2001 County-level data, indexed to 2002) based on commodity and geographic performance patterns.

For this study, TRANSEARCH data were identified at varying levels of detail. It is generally understood that large databases of this kind are never perfect, and TRANSEARCH is not an exception to the rule. It is, however, the best available source of its kind in the cognizance of the study team. TRANSEARCH is in use by virtually all major U.S. railroads and by more than a hundred motor carrier companies and several container shipping lines and air cargo carriers. State and federal planning agencies, as well as port authorities, equipment suppliers, investment banks and judicial and regulatory bodies also use it.

TRANSEARCH reports provide a broad picture of freight traffic movements in the United States. Various publicly available sources, as well as Global Insight's proprietary motor carrier data exchange information, are used in the development of the TRANSEARCH database. Understanding the nature of particular sources when using TRANSEARCH data is important to interpret the information correctly. The following guidelines should be helpful in gaining that understanding.

Freight Rehandled By Truck From Warehouse and Distribution Centers Is Identified as STCC 5010 and Referred to as Secondary Traffic at a 4-digit STCC level or STCC 50 at a 2-digit STCC level. Many of these types of facilities handle a wide range of different types of commodities, and outbound shipments may also be of mixed consists. For example, shipments from a supermarket chain distribution center are likely to contain a broad range of packaged food products and other consumer items.

The Truck Portion of Truck/Rail Intermodal Activity Is Shown as STCC 5020 at a 4-digit STCC level or STCC 50 at a 2-digit STCC level. This activity includes two segments: the truck shipment, by trailer or container, from true origin to the intermodal railhead, and from the intermodal railhead to final destination. The Rail Intermodal mode reveals the origin and destination points on the rail system, not the ultimate origin and destination.

STCC 5030 Is Used to Identify the Truck Drayage of Air Freight Traffic 5020 at a 4-digit STCC level or STCC 50 at a 2-digit STCC level. Both the true origin to airport, and airport to final destination are included. Origins and destination for movements classified in the air mode are airports. Volumes that are transloaded from one aircraft to another are not shown at the transloading point.

Large Portions of Today's Intermodal (TOFC or COFC) Traffic Are Reported In Non-Commodity Categories. Commercial arrangements in the railroad industry have fostered the use of "third parties" such as consolidators and forwarders. Such traffic typically is labeled as "Freight Forwarder Traffic", "FAK" (Freight: All Kinds), or "Miscellaneous Mixed Shipments". The specific commodities moving under these arrangements are not identified in the public use data sources.

Shipments Made Up Of Several Commodities Will Be Credited To The Dominant Commodity. This occasionally occurs in the commodity identification of rail shipments. In these instances, the tonnage attributed to the predominant commodity is greater than it should be, and the other commodities in the shipment are understated.

To Provide Maximum Product Identification, Commodities Are Shown At the Greatest Level of STCC Detail For Each Code. Truck data is available and shown at the 4-digit level for the manufacturing sector. Rail data, however, can be shown at 5-digits. Because of the desire to include the greatest amount of detail possible, commodities in a traffic lane may be identified at different levels of detail for each mode. When this occurs, tonnages shown at the more detailed levels should be combined with those displayed at the more aggregate levels to gain a complete picture of modal share for the commodity. All freight traffic flow information in the study is expressed at the 4-digit STCC commodity code level, or consolidated to a 2-digit, or no commodity detail level.

Tonnage Data in Each Cell Should Be Used as an Indicator of Relative Value—since many of the sources for traffic flow information use sample data. Consequently, the more specific the definition of a particular flow, the greater its sampling variability. The more aggregated the definition of the Geography/Mode/ Commodity combination, the more reliable the results.

State-To-State Movements Of “Primary” Freight At The 2-Digit STCC (or SIC) Level Provide The Best Picture Of Primary Freight Moves In The Data Base. Analysts and planners, however, want and need more disaggregate pictures of the flow activity. Not all of the data used in TRANSEARCH comes into the process beneath the state level or with more than 2-digit commodity/industry classification.

**ABSTRACTS FROM SELECTED FREIGHT
FOCUSED PUBLIC-PRIVATE PARTNERSHIP
PROJECTS**

APPENDIX 2

NEOMODAL - NORTHEAST OHIO

1. **Description of Public-private partnership initiative:** The Northeast Ohio Intermodal Terminal is a 28 acre intermodal transfer facility located in Navarre, Ohio. At the time it was planned the area was served by three Class I railroads. Built with federal funds in 1995 and owned by Stark Development Board (SDB), it faced difficulties when Conrail was sold and traffic diverted elsewhere. In summer of 2000 the Wheeling and Lake Erie Railroad (W&LE) and Canadian National (CN) railroads signed an agreement to supply train service to/from the terminal. Neomodal is also a designated Foreign Trade Zone (#181).
2. **Timing of Project:** The process began in the early 1990s when a large manufacturer in the region became frustrated in its efforts to expand. To assist it in moving a rail spur, the state was instrumental in gaining funding. Construction of the facility occurred in 1995 and took about six months to complete. The project was on time and on budget.
3. **Completion Status:** The intermodal transfer facility was built in 1995.
4. **Beneficiaries:** Local and regional economy benefited with preservation of jobs, new jobs when Fleming Foods undertook its major expansion. The Neomodal Terminal, which is part of a designated Foreign Trade Zone, was expected to act as a magnet for new business.
5. **Financial:** The state of Ohio applied for an ISTEA grant and the state made a non-recourse loan to Stark Development Board to build Neomodal. In turn Stark had the responsibility to run Neomodal efficiently and to market it effectively. After operations start-up any profits (net toll fees) were to go back into a revolving loan fund that was set up by the state of Ohio. Those funds in turn were designated for three agencies, a local (NE Ohio) transportation agency, the Ohio Erie Canal Corridor and a third. The facility was built within the budget. Financial arrangements took about two years from start to finish.
6. **Participants:** While the state of Ohio retained oversight, Stark Development Board hired the engineers and architects. They had help with the design of the terminal from Norfolk Southern and CSX railroads, who at the time wanted to gain a presence in the Cleveland area.

When the project began the area was served by three Class I railroads; Conrail, Norfolk Southern and CSXT. However, when Conrail was broken up, its Collingwood Terminal

was taken over by CSX, which moved its business there, and the Neomodal terminal languished. A turning point came in 2000 when W&LE and CN signed an agreement to use Neomodal. W&LE has a lease to operate the facility. A subsidiary of the Wheeling Corporation, Intermodal Operators, Inc. runs Neomodal on a day to day basis.

7. **Political Issues:** Ohio Department of Transportation and a Senator from Ohio worked together to apply for (federal) ISTEA funding for the project.
8. **Source of Idea:** In the early 1990's a large manufacturing firm in Stark county wanted to expand its operations, but was unable to do so because a rail line was at the edge of their property and they did not wish the expense of moving it. If the firm were to leave, 400 jobs would be lost. On the other hand, if it undertook its expansion, it would be adding another 200 jobs. In part because of the size of the economic impact involved, the Ohio Department of Transportation investigated the issues and brought in an Ohio senator. They decided to apply for an ISTEA grant to move the rail spur to allow expansion of the company (Fleming Food Co.). When this project was successfully completed Ohio applied for and received full funding - \$11 million – for a demonstration project, to build an intermodal transfer facility. Existence of the facility was to relieve congestion, lower emissions and noise pollution
9. **Administration:** Once the funding was available Stark Development Board, a private developer, received a non recourse loan. Stark had primary jurisdiction over the course of the project.
10. **Best Practices:** The innovative financing was a major key. The money was made available for the project from ISTEA funds by the federal government via the state government, who then provided a non-recourse loan to a private corporation, Stark Development Board to design, build and operate the terminal.

The Neomodal Terminal is a Foreign Trade Zone site (#181).

11. **Worst Nightmares:** The project was conceived in an environment where three Class I railroads served the area. Norfolk Southern and CSXT were both eager for a presence in the Cleveland region, to be able to compete with Conrail for traffic. However, when Conrail was broken up NS and CSXT went from being partners with Neomodal to being competitors. Conrail's nearby Collinwood (Cleveland) Terminal was taken over by CSXT, which moved its business there, and the Neomodal facility languished. Prior to the acquisition of Conrail Neomodal had been handling about 6,000 containers a year from CSXT, who was trying to develop an intermodal traffic market in the region. When the traffic was shifted to Collinwood, Neomodal was left with a business base of about 600 lifts.

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Stark Development Board undertook several major actions to try to offset these events. During the acquisition process it filed with the Surface Transportation Board to protect Neomodal, but was unsuccessful. The Stark Development Board also remained in contact with CSXT and Norfolk Southern and continued to negotiate for their business, but no offers were made or taken. The enterprise has continued its active search for customers and has been able to survive in a bare bones mode. The original budget for the project had made provision for some extra funds, which had not been spent. In addition Stark asked for and received additional money from Ohio (about \$250,000).

A turning point came when Wheeling & Lake Erie Railroad gained trackage rights from Surface Transportation Board into Toledo, OH. There it can interchange traffic with CN. In 2000 W&LE signed an agreement with CN to provide domestic and international service, and both carriers are now intensively marketing their services and rates and the Neomodal facility. SDB is also expanding its marketing efforts, to take advantage of the CN system.

12. **Application:** The financing arrangements designed for the facility were of great significance to the success of the project. The state of Ohio received ISTEA funds from the federal government. In turn the state set up a revolving loan fund. It made a non-recourse loan to Stark Development Board to build and operate the terminal. Once the terminal was operating toll fee revenues were to be used for operating and other expenses. Any profit was to go back into the revolving loan fund to be used for other projects. In the Neomodal instance, these profits were to be designated to three specific agencies.

13. **Contact:** Steve Paquette, President Stark Development Board. TEL: 330-453-5900

VIRGINIA INLAND PORT AT FRONT ROYAL

1. **Description of Public-private partnership initiative:** The Virginia Inland Port, an intermodal container transfer facility, opened in 1989. It is a US Customs designated port of entry and a Foreign Trade Zone, located by an interstate highway and about 220 miles west of Norfolk and Hampton Roads, Virginia, where much of its container traffic originates and terminates. After its opening the population of this rural area spoke out about its expectation that the port would be treated as an opportunity for regional economic development. Therefore Virginia Port Authority (VPA) hired a firm to develop a strategic plan and hired marketing and sales personnel for a campaign to sell the facility.
2. **Timing of Project:** The immediate driving force behind development of VIP was competition for cargo, especially that from Baltimore. Norfolk was apparently missing out on winning traffic because transportation costs were higher to move freight by truck from Norfolk. Virginia Ports had to come up with a way and then a site that would answer these issues.

According to Virginia Ports Authority (VPA), active research on the potential of Virginia Inland Ports began in 1984 with meetings in Rotterdam and England to discuss operations and marketing of intermodal terminals and inland ports. Over time VPA began expanding its vision to promote and increase maritime commerce. While it had started by marketing the Port of Virginia to shippers, it moved into marine terminal development, actually constructing and operating facilities, thereby gaining rental and leasing income. VPA generates net income.

Plans for an Inland port were announced in summer of 1987 and the port opened March 1989.

3. **Completion Status:** The port has been in business since March 1989.
4. **Beneficiaries:** The project began as a way to increase revenues for VPA, which is an agency of the Commonwealth of Virginia.

Because of local interest, however, the concept widened into a regional economic development project. According to James Davis of the Virginia Inland Port, results of a questionnaire to recently arrived manufacturers and other facilities indicate that Virginia Inland Port has been one element of the decision to move into the area. This decision "...has spurred nearly \$400 million in private sector capital investments." Most of the

new business is warehouse and distribution facilities, but there is some manufacturing activity as well. VPA does have a community liaison person in place at Front Royal to ensure an ongoing dialog with the local infrastructure and economic development people.

5. **Financial:** Financing of the inland port came from the Commonwealth Port Fund and VPA port revenues. Original cost was estimated at \$7.3 million for acquisition and development of the site. Soil conditions and rocky terrain (underground caverns) required an additional \$6 million for completion.
6. **Participants:** The Virginia Ports Authority and its creation, Virginia International Terminals, Inc. (VIT) were seeking ways to increase their revenues by increasing market share of the Ports of Virginia. They were the agencies that initiated financing and construction of the facility.

As of 1998 the Virginia International Terminals, Inc. (VIT) operates the facility. VIT is a private not-for-profit company. Its first profit was made in the fiscal year ending June 30, 1994. Their revenues are what pays the day-to-day operations of the VPA. VIT links the operations of the inland port with its own and is thereby able to coordinate container movements with rail availability and ship line departures and arrivals, and can track moving cargo. This also allows VIT to monitor the volume of business for particular customers. VIT is responsible for maintenance on equipment at the port, but VPA is responsible for the grounds and buildings.

VPA fosters outreach to local economic development officials.

7. **Political Issues:** Virginia Port Authority, the state's port authority, was created in 1952 by the Virginia General Assembly. It is responsible for gaining business for the Port of Virginia and income for the Commonwealth and was the immediate driving force behind development of VIP. Today VPA owns Newport News Marine Terminal, Norfolk International Terminals, Portsmouth Marine Terminal and Virginia Inland Port.

Virginia Inland Ports Mission and Strategic Plan (1995) recommended VPA create an Economic Development Center to aid in regional economic development.

VPA created the Virginia Inland Port Advisory Conference, which has members from business and rail and ship lines. One of its important responsibilities is to act as an information-sharing center.

8. **Source of Idea:** Virginia Port Authority was searching for ways to increase its market share of waterborne commerce. Members of VPA went to Rotterdam and England with a representative of Norfolk Southern Railroad (NS) to learn how and with what success

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marketing and operations of European transfer facilities and inland ports were accomplished. In tandem with this endeavor it was necessary to understand Virginia as a potential market for freight traffic. Results of an earlier study (1980s) had shown that Virginia was not a large consumer or producer state (low population density and lack of manufacturing).

VPA moved on other fronts as well. To assure itself of being attractive to carriers, it developed and maintained relationships with carriers, did market research, investigated equipment issues, demonstrated possible cost savings for alternate container handling methods, and improved its cargo-handling facilities. However, it also needed to expand them. The rail carrier Norfolk Southern had been investigating ways to increase its market penetration in marine cargo, as well.

VPA commissioned a market study to focus VPA and NS efforts to locate an inland port. A later report concluded that the growth potential was in the Midwest and southeast; and that most freight traffic moved through the state rather than originating or terminating there. The market study showed that the Ohio Valley area offered a potential additional 100,000 container moves. Additional telemarketing and sales contents revealed almost double that – 190,000 containers per year. The goal set was to capture 8 – 10% of the market. VIP has about 19,000 lifts per year.

While the marketing plan originally envisioned international traffic, early in the port's existence traffic was a 50/50 domestic and international mix. VPA and NS worked together to implement the domestic service. It is now 100% international traffic.

9. **Administration:** VPA is the umbrella organization. VIT, a creation of VPA, is the operations arm. VPA has also created a Virginia Inland Port Advisory Conference.
10. **Best Practices:** According to Mr. Robert Bray of VPA, the European Common Terminal (ECT) recommendation was always to control the inland port rail and run the train on schedule at all costs.

Mr. Jim Davis of the VIP Staff credits a hard-working visionary market department for much of the success of the port. A number of the port's larger customers are not from the area and were persuaded in by the marketing department's efforts.

Outreach and education were and remain active elements of VPA strategy. For example there are contacts with importers and exporters as they often control transportation decisions; as well as to ship lines, trucking companies and freight forwarders and brokers. Currently active outreach also includes local business leaders and rail and ship carrier personnel. There is also a full time economic development person who travels throughout the US.

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The inland port must be a US Customs designated port of entry and have Foreign Trade Zone status.

11. **Worst Nightmares:** VPA was fortunate in having the backing of the Virginia government. The local community was skeptical and resistant at the beginning of the process. Continuing efforts at education and providing lines of communication helped to allay fears.
12. **Application:** With the proviso that each situation and project is unique a spokesperson from VPA did say that the port has current inquiries about their creation and operations from organizations in South Carolina and Pennsylvania. In fact one innovation of agencies looking into the possibilities of an inland port is to bring along local opponents to view the Virginia Inland Port's facilities and operations.
13. **Source:** Bray, J. Robert, *Virginia Inland Port: The Case for Moving a Marine Terminal to an Inland Location*, September 1996.
14. **Contact:** Mr. James Davis, VIP. TEL: 800-883-7678.

ALAMEDA CORRIDOR - CALIFORNIA

1. **Description of Public-private partnership initiative:** The 20-mile Alameda Corridor connects the ports of Long Beach and Los Angeles with rail yards east of LA. While the construction of the Corridor began in 1997, the inception of the concept is about two decades old. The Corridor reduces the miles of rail in the area by about one quarter, cuts out about 200 rail-highway crossings, will alleviate the need for cross town truck moves of cargo. In addition to easing freight and passenger congestion, there will be significant reductions in air and noise pollution.
2. **Timing of Project:** Construction on the first of the series of Corridor projects began in 1997. The Corridor opened to rail traffic in spring of 2002.
3. **Completion Status:** Planned Corridor projects were completed as of spring of 2002, although some minor additions/adjustments are being made. According to Alameda Corridor Transportation Authority (ACTA), the Authority has agreed to additional project work to make the Alameda Corridor “more efficient.”
4. **Beneficiaries:** The region, local residents, carriers and the general public all benefit. Significant changes are: less congestion, far fewer grade crossings, expedited freight movements between ports and rail yards, lower air and noise pollution, construction on-the-job training. The web site for Alameda Corridor lists nine benefits. These include greater efficiency of cargo distribution; removal of 200 highway rail crossings; reductions in rail, truck and auto emissions, reductions in noise from rail; thousands of jobs over the course of the project; an achieved goal of 22% participation by Disadvantaged Business Enterprises (DBEs), outreach and job training programs.
5. **Financial:** The Alameda Corridor was completed within its budget of \$2.4 billion. Half the money was raised by issuing bonds; the remainder came from government or quasi government sources. Includes (from ACTA website):
 - \$1.2 billion from revenue bonds issued by Alameda Corridor Transportation Authority;
 - \$394 million from ports of Long Beach and Los Angeles;
 - \$347 million in grants for Los Angeles County Metropolitan Transportation Authority (LAMTA);

- \$400 million 30-year loan from US DOT;
- \$154 million in other state and federal sources plus interest income.

According to ACTA, debt will be repaid through use fees levied on the railroads. Over thirty years these fees are to increase annually, from a minimum of 1.5% up to three percent per year, depending on inflation. Current charges are \$15 per loaded 20-foot equivalent container; \$4 for each empty container and \$8 per car for other loaded rail cars (e.g., tankers, hoppers).

6. **Participants:** The Alameda Corridor Transportation Authority (ACTA), a Joint Powers Authority created in August 1989, built the corridor. The Authority is comprised of members of the Los Angeles County Metropolitan Transportation Authority, a member from each City Council (Carson, Compton, Huntington Park, Long Beach, Los Angeles, Lynwood, South Gate and Vernon), and representatives from the ports of Long Beach and Los Angeles. More than 124 engineering and construction firms participated in the series of projects that make up the Alameda Corridor.

As of now maintenance and operations is the responsibility of a committee made up of people appointed from Burlington Northern Santa Fe Railway, the Union Pacific, Port of Long Beach and Port of Los Angeles.

7. **Political Issues:** Alameda Corridor Transportation Authority (ACTA) is a joint-powers agency created in 1989 for the project. It was responsible for outreach to both the public and government agencies at all levels and for coordinating all aspects of the project. ACTA and each of the eight cities along the route of the Corridor, and the County of Los Angeles signed Memorandums of Understanding that outlined administrative details such as procedures for building permits. The cities are: Carson, Compton, Huntington Park, Long Beach, Los Angeles, Lynwood, South Gate and Vernon. The Agency also facilitated cooperation among other players – the contractors and construction companies, ports of Long Beach and Los Angeles, Union Pacific and Burlington Northern Santa Fe. A member of Los Angeles Metropolitan Transportation Authority (LAMTA) is part of the Authority.
8. **Source of Idea:** A history of shared ideas and concerns and relationships in the region preceded the initiation of the series of projects that make up the Alameda Corridor. From informal debates and meetings, the process went forward to initiating research studies, to pinpointing possible objectives, to forming a governing body to oversee the project.

In 1981 Southern California Association of Governments (SCAG) created the Ports Advisory Committee (PAC), which undertook both highway and rail access studies. The PAC included representatives from local and federal (US Navy and Corps of Engineers) governments, from the ports of Los Angeles and Long Beach, and rail and trucking

industries. In 1985 the Alameda Corridor Task Force (ACTF) was created. Its membership was also made up of concerned public and private organizations, and expanded to include California Public Utilities Commission and the cities along the corridor. ACTF recommended creation of a joint powers Authority to have design and construction responsibility. Alameda Corridor Transportation Authority was created in August of 1989.

9. **Administration:** Currently Alameda Corridor Transportation Authority (ACTA) is a joint-powers agency. It has design and construction authority. Members of the Authority come from Los Angeles County Metropolitan Transportation Authority, from each City Council (Carson, Compton, Huntington Park, Long Beach, Los Angeles, Lynwood, South Gate and Vernon) along the Corridor, Los Angeles Metropolitan Transportation Authority (LAMTA), and representatives from the ports of Long Beach and Los Angeles.
10. **Best Practices:** The most important elements in the process were cooperation and coordination among a diverse set of public and private constituencies. A history of informal and formal dialogs provided a backbone to build on. Many of the organizations involved are competitors – for customers, for funding, for scheduling and sequencing of projects – but they were able to work together as partners on a project to benefit a wider set of interests.

ACTA was created specifically for this project. It is a joint powers agency that has overseen the process of design and construction of the Corridor.

11. **Worst Nightmares:** Lack of funding might have killed the project. But the \$400 million dollar loan from the US Department of Transportation made it possible to gain adequate funding from other sources.

Given that to date the results seem to have met all expectations, the ACTA would probably not make any significant changes in approach.

12. **Application:** The Alameda Corridor program has been recognized by the U.S. Department of Transportation as an example of a successful, large-scale public works program, in part for its public benefits, and because it has been on-time and on-budget. Staff who have been part of the project make these recommendations:

- Create a governing agency with responsibility for the design and construction of the project (in the case of the Alameda Corridor this was ACTA);
- Build and maintain communication and cooperation among many jurisdictions (an absolute necessity);
- Sell the public on the benefits of the project.

13. **Contact:** Philip Hampton; email phampton@adlerpa.com

CHICAGO AREA CONSOLIDATION HUB OR CACH

- 1. Description of Public-private partnership initiative:** In Hodgkins, IL near Chicago, United Parcel Service (UPS) initiated building of a 1.9 million square foot operating facility, called Chicago Area Consolidation Hub or CACH, as a national distribution center to expedite its East West traffic. UPS located its facility by the BNSF's Willow Springs Yard. Once construction began it became clear that infrastructure changes had to be made to allow optimum access and use of the facility. UPS paid for the 1.25-mile feeder road/interchange that led to/from interstate highway 294, and improved signals in the area. It and a consortium including Burlington Northern Santa Fe Railway, two municipalities in the Chicago area, Illinois Department of Transportation and other government authorities shared the cost of improved interchanges (UPS paid for one-third of the interchange).
- 2. Timing of Project:** Conceptually the project "began" in the mid 1980's, as UPS began thinking about its need for a national consolidation point, of sufficient size to make the project worthwhile, in a geographically accessible area, near a major arterial interstate, with adequate rail connections and with an available, sizable labor force. The building began on July 29, 1991 and the first package moved on March 31, 1995. The process was on time, despite some unforeseen obstacles.
- 3. Completion Status:** The Hub is complete.
- 4. Beneficiaries:** UPS, local population and commuters were the anticipated beneficiaries of the project. UPS built the facility to improve its ability to deliver packages. Service levels are up. The company was given incentives by the state; in return UPS guaranteed 2700 full time equivalent jobs (80% part time, 20% full time). There are a total of 9000 employees. Part time employees do get medical, dental and optical benefits and if they send for their prescriptions by mail part of this is reimbursed. There are also education assistance programs and courses provided onsite. Working with two of the public transit entities UPS got bus service for its employees out to the facility, and UPS reimburses its employees for part of their fares. UPS agreed to build a connector road – 75th street - to connect Willow Springs Road at one end of the property to Santa Fe Drive at the southeast tip of the property. The road is one mile long. The road was then turned over to the village of Hodgkins, who maintains it. The existence of the road has ancillary benefits as it allows emergency vehicles – EMT, fire and police - an easier path to get from one part of town to another. The access road and interchanges aided both the company and the commuters by expediting freight shipments and relieving congestion. UPS underwrote costs for signalization and turning lanes to aid traffic flow. A highway rail grade separation, rail over road, (cost shared by UPS and BNSF) and highway access (costs shared with UPS, state and the toll authority) to the rail terminal were provided. UPS gained some property and sales tax abatements. UPS pays

real estate taxes to Hodgkins, and the town in turn has been able to lower taxes to its residents. Residents pay no property tax (there are taxes for education and the like).

5. **Financial:** The UPS facility was \$150 million paid entirely by UPS. For Transportation Costs: Public funding was 71%; UPS was 28%. Grade Separation \$15.3 million –IDOT and BNSF shared the costs, Illinois Department of Transportation (IDOT) providing \$8 million, BNSF the remainder Interchange \$10.8 million; IDOT \$2.5 million; Hodgkins Municipality \$5.5 million; Illinois State Toll Highway Authority \$2.8 million; Total Cost of Transportation: \$26.3 million
6. **Participants:** A number of parties were involved in the process. Design and construction of the building revolved around the 65-mile conveyor system, which was designed by UPS engineers. Power Construction was the general contractor for the project. UPS is responsible for the ongoing maintenance and operation of the building, although some contractors assist the company.
7. **Political Issues:** The site of CACH was originally the site of the Willow Springs Fisher Body Plant of GM. The factory had been in existence for about 40 years. It was the Illinois Dept. of Commerce and Community Affairs (DCCA) who contacted UPS about purchasing the land and buildings. Jim Thompson, the then governor, was aggressively seeking to enlarge the business base in the state. To sweeten the pot the state offered funds to build an off ramp from I-294.

In turn DCCA involved other agencies: Illinois Department of Transportation and the IL state Toll Highway Authority, an independent body responsible for maintenance and operation of the interstate funded by tolls collected.

There were some strong objections on the part of local citizens, who were concerned about noise, vibrations, and traffic. In fact, at one point the UPS CEO was burned in effigy. One of the decisions made by UPS to allay fears was to build a one-half mile berm and to plant 100 trees to soften the effect of the construction. In fact Mr. Johl says that a couple of years after the opening of the facility he was in a nearby neighborhood and stopped by a convenience store for something, where he met one of the local opponents to the building. She did not know CACH had been open for two years.

8. **Source of Idea:** The project “began” in the mid 1980’s, as UPS began thinking about its need for a national consolidation point, of sufficient size to make the project worthwhile, in a geographically accessible area, near a major arterial interstate, with adequate rail connections and with an available, sizable labor force. The land and building purchased was the site of the Fisher Body plant of GM. The factory had been in existence for about 40 years. The Illinois Dept. of Commerce and Community Affairs (DCCA) contacted UPS about the site. The state offered funds assist UPS.

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UPS built its facility but recognized other improvements were necessary to make it viable. It also had received incentives from the neighboring towns of Willow Springs and Hodgkins to build there.

9. **Administration:** UPS was the driving force behind the project. The company developed and maintained ties with the major players – local citizens, municipal and state government and the BNSF railroad, and negotiated the transportation related funding.

10. **Best Practices** – Having one entity (UPS) work closely with all partners and maintain those contacts with all – villages, state, railroads. All had input. UPS expected more support than it actually got. For example, while the CACH was going to bring employment opportunities, townspeople were very concerned about the effect of so large a facility on the area. Population in Willow Springs and Hodgkins was smaller than the expected number of employees at the facility and local people worried the facility would overwhelm the area. Besides congestion there were also concerns about air and noise pollution both during construction and after operations at the building commenced.

11. **Worst Nightmares:** Negotiations with Governor Jim Thompson’s administration had been smooth. The state government had been aggressively seeking businesses to augment the state’s revenues. However, the state was facing some serious financial troubles in the early 1990s and fiscal restraints were going to be necessary. At the same time Jim Thompson decided not to run for another term. The newly elected governor, Mr. Edgar, was a financial conservative. All financial agreements came up for review including those for UPS, and all agreements had to be re-negotiated. This took between eight months and one year. In late 1990 UPS and the state of Illinois also signed a formal private-public written agreement.

12. **Application:** Much of the process involves adjusting and working with unique local issues. However, UPS would use the practices it developed if it were to build another facility. The most significant advice is to start working immediately on building relationships with local and state governments.

13. **Most Important Advice:** Talk early. Talk often. Listen. Tell the truth.

14. **Contact:** Mike Johl, Community Relations Manager, UPS TEL: 708-387-4374.

PRIVATE TOLL ROAD, ROUTE 91 EXPRESS LANES - CALIFORNIA

1. **Description of Public-private partnership initiative:** This construction project, “91 Express Lanes Toll Road,” is described as America’s first toll road to employ variable congestion pricing. Tolls are recorded and collected electronically along a 10-mile, four-lane road set in the median of Route 91 in southern California, between State Route 55 (Costa Mesa Freeway) in Orange County and the Riverside County line. The toll rate varies depending on traffic volume and direction. The project is a partnership between the California Department of Transportation (Caltrans) and a private group called California Private Transportation Company (CPTC). Orange County Transportation Authority (OCTA) has recently offered to buy the toll road for \$207.5 million.
2. **Timing of Project:** The framework within which this and other public private ventures could occur began with passage of Assembly Bill 680 in July of 1989. The idea was to encourage private infrastructure investment at a time when California transportation infrastructure was in need of maintenance and upgrading, but state revenues were down and citizens opposed to increased taxes. The Bill allowed Caltrans to enter into contracts to build toll roads. In September 1990 California Private Transportation Company submitted its proposal for the SR91 Toll Road, and in December 1990 and January 1991 CPTC and Caltrans signed Franchise Agreements. Construction began in July of 1993 and in December of 1995 Route 91 Express Lanes were opened to the public. The project came in on time and within budget. In April 2002 OCTA agreed to the possibility of purchasing the toll road project for \$207.5 million.
3. **Completion Status:** The toll road was complete and opened to public December 27, 1995
4. **Beneficiaries:** The toll road is expected to ease auto congestion along I-90 in the Orange, - Riverside, and San Bernardino counties, especially for commuters. This is a variable priced toll road and as of November 2001 tolls ranged from \$1.00 to \$4.75. HOVs pay a reduced toll (50%).
5. **Financial:** California Private Transportation Company (CPTC) is a limited partnership, a private company comprised of Kiewit Diversified Group, Inc. (later called Level 3 Communications, Inc.), a subsidiary of Peter Kiewit Sons, Inc.; Granite Construction Inc.; and a French toll road company with a subsidiary in California, Compagnie Financiere et Industrielle des Autoroutes (Cofiroute Corporation).

CPTC paid for all the construction, approximately \$134 million. No state funds were used. The project was completed within the budget.

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Financing was provided by a group of banks and lenders including Citicorp USA, Deutsche Bank, CIGNA Investments, Banque National de Paris, and Societe Generale. \$65 million came from 14-year variable rate bank loans and \$35 million in 24-year loans. Senior debt obligations are expected to be paid by the year 2008.

However, before the road was opened, CPTC transferred ownership to Caltrans, who then leased it back to CPTC for 35 years. The road has been declared part of the California State Highway System. CPTC is responsible for maintenance and operations expenses and for the expenses of the California Highway Patrol, estimated to be about \$120 million over the 35-year contract.

The Express Lanes reached cash flow break even two and one half years after opening. Revenues were \$20.1 million and expenses \$8.7 million. In 1999 there was a slight dip in revenues, to \$19.5 million. It is CPTC's view that more than \$1 billion in net revenues could be realized by 2030, when the Franchise Agreement is due to expire.

In addition CPTC pays property taxes to Orange County. These have amounted to \$6.8 million in tax revenues in the past six years.

In return for taking the risk and responsibility for the Toll Road, CPTC signed a Franchise Agreement with the State of California. One of the provisions is a "non compete" clause; the state agreed that Caltrans could not make any freeway improvements that would compete with the Toll Road. The franchise agreement extends to the year 2030.

- 6. Participants:** The sponsors are Caltrans and Orange County Transportation Authority.

CPTC is responsible for maintenance and operations expenses and for the expenses of the California Highway Patrol, estimated to be about \$120 million over the 35-year contract

In April 2002 OCTA agreed to the possibility of purchasing the toll road project for \$207.5 million.

- 7. Political Issues:** Assembly Bill 680, passed in 1989 by the state legislature, gave California Department of Transportation (Caltrans) the authority to enter into agreements with private parties to develop, construct and operate four demonstration toll road transportation projects. Two of these have been terminated, one because of political opposition. As of summer of 2002, construction on the third is expected to begin in late 2002.

In September 1990 California Private Transportation Company submitted its proposal for the SR91 Toll Road, and in December 1990 and January 1991 CPTC and Caltrans signed

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Franchise Agreements. Construction began in July of 1993 and in December of 1995 Route 91 Express Lanes were opened to the public. The project came in on time and within budget.

While the state and local transportation agencies have public relations and media employees who do issue information, there was no formal outreach for the project.

8. **Source of Idea:** The project itself was made possible by the passage of Assembly Bill 680 in July of 1989. The idea was to encourage private infrastructure investment at a time when California transportation infrastructure was in need of maintenance and upgrading, but state revenues were down and citizens opposed to increased taxes. The Bill allowed Caltrans to enter into contracts with private companies to build toll roads to ease congestion on highways. While the private sector would take on the risk, it could expect a good rate of return on its investment. In September 1990 California Private Transportation Company submitted its proposal to build the SR91 Toll Road, a ten-mile stretch in the median of the very congested 91 Riverside Freeway. In December 1990 and January 1991 CPTC and Caltrans signed Franchise Agreements. Construction began in July of 1993 and in December of 1995 Route 91 Express Lanes were opened to the public.
9. **Administration:** California Private Transportation Company submitted its proposal to California Department of Transportation and in December 1990 entered into a franchise agreement with Caltrans. CPTC was created by three companies, two of them transportation contractors and the third a private toll highway operator. CPTC built the toll road. By agreement with the state the road was declared part of the California State Highway System. CPTC pays for Caltrans and California Highway Patrol services along the 10 mile road. When the road was completed CPTC transferred ownership to the state and the state leased it back to CPTC with exclusive non-compete rights to operate the road for a period of 35 years.
10. **Best Practices** – Assembly Bill 680 recognized that California needed to improve its transportation infrastructure without cost to its taxpayers, and offered private capital an opportunity to invest. The project won a number of awards, including: “Deal of the Year” from Institutional Investor Magazine; “Innovations in American Government Award” from Ford Foundation, Harvard University; “Toll Innovation Award” from International Bridge, Tunnel and Turnpike Association, “Innovative Project Award” from Institute of Transportation Engineers; “Distinguished Innovative Project” from National Council of Public/Private Partnerships.
11. **Worst Nightmares:** While construction and operation of the toll road has been a success, there have been two significant points of contention:
 - An unresolved conflict between government and private entities regarding planning and the signed Franchise Agreement; and

- A legal battle between state and private entities about type of organization and revenue producing methods that can be used.

In 1997 Caltrans District 12 proposed to build Auxiliary Lanes along the same 10-mile stretch of highway where the 91 Express Lanes were located. CPTC contacted District 12 to tell it that such a project would violate the non-compete clause of the Franchise Agreement in effect until the year 2030. The state agreed that it would not develop competing lanes unless there was a documented safety need. The Auxiliary Lanes were acknowledged by Caltrans to be an option to lessen congestion. Since passage over the proposed lanes did not involve tolls, CPTC saw this as a drain on its customer base. According to CPTC, for over a year attempts by CPTC to discuss the issues involved were ignored. In about 1997 CPTC had decided to sell its franchise. Riverside County Transportation Commission (RCTC) contemplated but rejected the idea of purchase. Meanwhile CPTC had hired Lehman Brothers to recommend sale options. The research indicated a sale to a non-profit organization was the preferable alternative. NewTrac was formed in 1998. The issue of the Auxiliary Lanes however, had to be resolved before any progress in the sale. Since the parties were unsuccessful in resolving the problem outside the courtroom, in 1999 CPTC sued Caltrans for \$100 million.

In 1999 New Trac asked both RCTC and OCTC to support NewTrac's application for tax-exempt status. Both did. The two county agencies also voted to accept the idea that a non-profit might purchase the franchise rights of 91 Express Lanes. No tax payer dollars are at risk in such a sale. However, the tax exempt funding rather than private funding for a project where the state received no revenues proved to be very unpopular and the sale was stopped. According to Ward Elliott, a professor of Claremont McKenna College, through all the "commotion", "the toll lanes themselves have continued to operate flawlessly."

Obviously both controversies have repercussions for private investment. CPTC's position is that it is unrealistic to expect to attract private enterprise to invest in public projects if they are to have no protection for their investment. Some government people feel that Assembly Bill 680 was a bad idea from the start.

In early 2002 Orange County Transportation Commission voted to purchase the 91 Express Lanes for \$207.5 million. The Legislature will have to approve a law that gives Orange County the right to charge tolls, which will be used to finance the purchase.

12. **Application:** Certainly this project has had its ups and downs. In itself it has proved a success because it has lessened congestion to the Riverside and Orange County commuters who used the road, at no taxpayer cost. Successful completion and operation of the project has demonstrated it is one possible way to combat congestion. According to the CPTC the operating revenues are paying off its construction debt. Some innovations have been successfully tried. For example, the means to collect tolls are via electronic devices called

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transponders, which transmit information on the vehicle and account to a reader at the toll “booth”. This is transferred to a data bank and the amount is debited to the user’s account. And CPTC has experimented with variably priced tolls and so can serve as an example to those interested in the concept.

13. **Sources:** Press Releases, Newspaper articles, Legislative Testimony before the California Senate Transportation Committee and California Assembly Transportation Committee

FREIGHT ACTION STRATEGY FOR SEATTLE-TACOMA CORRIDOR (FAST)

1. **Description of Public-private partnership initiative:** The FAST corridor comprises about 25 separate projects. One, the SR 509 Port of Tacoma Road, has been completed and seven others are under construction. The purpose of the Freight Action Strategy for the Seattle-Tacoma (FAST) Corridor is to move freight from the ports to the mainlines more safely and efficiently. The emphasis in this project is to replace grade crossings with grade separations.
2. **Timing of Project:** Efforts on the part of multiple groups to understand the changes and congestion in the region began about 1994 and 1995. Especially the Puget Sound Regional Council (PSRC) and the Ports were concerned that mobility issues were affecting the ports' competitive stance. Then in 1994-1995 BNSF decided to open an abandoned line that went through the City of Auburn. The acrimony caused by this decision turned into a court case that went to the US Supreme Court over the issue of whether a city had a say in the re-opening of long abandoned rail. Interestingly during this time both the railroad and the city were sitting down together to discuss mutual concerns about grade separations. In 1995 the State Legislature created a Freight Mobility Committee. Thus, by 1995 various people and levels of government were discussing their concerns about mobility, congestion, and safety. At the Port of Tacoma Paul Chilco was beginning to talk about the "large picture" integrating local concerns into regional ones.

In 1997 Texas Transportation Institute (TTI) was hired to develop a matrix to prioritize projects that the different agencies and jurisdictions had identified. Here again the emphasis was on how a given project would work not only locally but also regionally. There was still no funding for these projects. However, based on the TTI Report, there were 20 signatories (ports, railroads, state, regional and local organizations) to a Memorandum of Understanding that outlined a funding strategy and recognized the sequencing of possible projects. Although the agreement expired in the fall of 1998 the intent and content continued to be adhered to.

Applications for funding were submitted under the conditions of TEA-21 in 1998. Original estimates were for \$360 million. The state DOT agreed to contribute 50% of the cost, the Federal government 25%, BN agreed to a corridor wide contribution of 5%, and the ports and other local and state bodies to the other 20%. The federal grant awarded allowed for fungibility-money could be moved around among the projects and the Port of Tacoma also agreed to that. BN, however, refused.

The state's share of the funding bill was to be \$4 million. Unfortunately in the fall of 1998, at the time there was to be a referendum for bonds to raise the money, a counter Initiative 695 won at the polls and at least half of the expected FAST funding disappeared. At this

point FAST was at some risk. The fungibility clause was an enormous help to getting some projects off the ground to show federal and local people that the FAST organization could work through the funding issues and successfully complete one project. Some contractors even agreed to delay their starts (based on the earlier TTI study). The SR-509 was deemed a significant start to the effort, because it would not only free mainline capacity, but also had a high visibility in the area.

Construction for SR 509 began June 5, 2000 and was completed in October 2001. Cost was \$19.3 million.

3. **Completion Status:** The SR-509 project is complete. According to the web site describing the FAST Corridor, there are a total of 25 projects, of which 15 have been designated FAST Phase I. Two projects located in Auburn are slated to be opened in August and October of 2002. Another, in Everett, has an expected completion time of December 2002-January 2003. Other projects are underway, several expected for completion in late 2003 or early 2004. Individual projects have been prioritized and approximate start dates assigned over the three-year period.
4. **Beneficiaries:** The region's problems with congestion will be ameliorated. Big benefits will go to the Ports of Seattle and Tacoma and BNSF and UP railroads. Shippers can expect more efficient moves of their cargo and an advantageous imbalance of containers (lower charges for container use). According to Dan Pike, since 70% of all the imports into the two ports are transshipments to the Midwest and beyond, receivers in the Midwest and east will benefit from faster delivery, as well.
5. **Financial:** Who participated in the financing? Percentage of public versus private investment. Within budget or over budget? How was financing accomplished? Leasing, bond issue, loan etc.

FAST projects are funded by federal entities (27%) and 73% a combination of public and private sources. Total expected cost would be \$400 million. Sources of funds are the Port of Tacoma, Puget Sound Regional Council, Federal Highway Administration, US Department of Transportation and the BNSF and UP railroads. The SR 509 project was \$19.3 million.

6. **Participants:** A number of agencies were involved in planning and design. These include Office of Urban Mobility; Washington DOT; Puget Sound Regional Council (PSRC); Seattle Tacoma region MPO; and Freight Mobility Roundtable, a committee of public and private sector representatives, provides a mechanism for collaboration and input.

The Contractor is Balfour Beatty Construction and the Engineer Fred Tharp. There are a total of about 45 subcontractors, subconsultants and suppliers, including engineering firms, trucking companies and materials.

Ongoing maintenance and operations for each project is the responsibility of the city that has jurisdiction.

7. **Political Issues:** Many agencies – local, regional, state and federal – are involved, as well as two rail carriers and a committee especially created for the course of the project. These are:
 - Port of Tacoma;
 - Puget Sound Regional Council (PSRC);
 - FHWA;
 - BNSF, UP;
 - Office of Urban Mobility, Washington Department of Transportation (DOT);
 - Freight Mobility Roundtable, a committee of public and private sector representatives, provides a mechanism for collaboration and input. The group is co-sponsored by the Puget Sound Regional Council and the Seattle Economic Development Corporation.

8. **Source of Idea:** Efforts on the part of multiple groups to understand the changes and congestion in the region began about 1994 and 1995. Especially the Puget Sound Regional Council (PSRC), railroads and the Ports were concerned that mobility issues were affecting the ports' competitive stance. In 1995 the State Legislature created a Freight Mobility Committee. At the Port of Tacoma Paul Chilco was beginning to talk about the "large picture" integrating local concerns into regional ones. Although no funding existed to resolve the problems, in 1997 several of the concerned parties agreed to hire TTS to develop a matrix to prioritize the projects that different agencies and jurisdictions had identified. While the basic ideas about solutions have not changed, changing circumstances in funding availability have altered or delayed the start of individual projects.

9. **Administration:** There is a body of representatives from 12 cities, three counties, Puget Sound Regional Council and Washington DOT, plus a trucking association, representatives from the railroads and from the Freight Mobility Board. Since July 1998 they meet monthly, but can do so more or less often depending upon the need. Dan sets the agenda and tries to keep the meeting on track, with emphasis on focusing on the larger picture and reaching consensus. When prioritization of grant requests is to be considered the meetings are especially well attended. Players are known to each other and various crises faced together in the past four years have cemented relationships.

10. **Best Practices:** The most important element of success is to allow time to develop personal trust among members of local bodies. When things go wrong or agreed upon priorities have to change there will be enough flexibility to isolate and resolve the problems. Make your expectations realistic. Don't promise more than you can deliver. Inclusion. Expect a lot of hard work.
11. **Worst Nightmares:** Funding. The state's share of the funding bill was to be \$4 million. Unfortunately in the fall of 1998, at the time there was to be a referendum for bonds to raise the money, a counter Initiative 695 won at the polls and at least half of the expected FAST funding disappeared. At this point FAST was at some risk. The fungibility clause in the federal grant was an enormous help to getting some projects off the ground to show federal and local people that the FAST organization could work through the funding issues. Some contractors even agreed to delay their starts in order to get at least one successful completion. The SR-509 was deemed a significant start to the effort, because it would not only free mainline capacity, but also had a high visibility in the area.
12. **Application:** Certainly in broad terms we can offer observations that might increase the effectiveness of any public private partnership project. These are:
- Be aware of how the process can work.
 - What combinations of people/organizations will prove effective?
 - Once you get the right people to the table, make sure you keep them, or at least that turnover is small enough so that the institutional memory continues.
 - Have a solution before you go looking for money (one advantage is that the solution will probably come at the cost of time and cooperative effort. Consensus can be strength.
13. **Contact:** Dan Pike, Washington DOT, Office of Urban Mobility. TEL: 206-389-3224

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