

Final Report

South Central Pennsylvania Regional Goods Movement Study

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submitted to

Tri-County Regional Planning Commission
South Central Pennsylvania Regional Goods Movement Steering Committee

submitted by

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South Central Pennsylvania Regional Goods Movement Study: Steering Committee Membership

Note: The steering committee membership list will be inserted by the Cambridge Systematics production staff. [SCPARGMS Steering Membership Revised.doc]

"This project was financed in part by a grant from the Commonwealth of Pennsylvania, Department of Community and Economic Development."

Executive Summary

The South Central Pennsylvania Regional Goods Movement Study (RGMS) was a multi-jurisdiction effort involving the Harrisburg Area Transportation Study (HATS) Metropolitan Planning Organization (MPO), the Lancaster Metropolitan Planning Organization, the Lebanon Metropolitan Planning Organization, the York Metropolitan Planning Organization, the Adams County Rural Planning Organization, and Franklin County. The Pennsylvania Department of Transportation was also an active participant. This study was motivated by several issues, including:

- Improved understanding of how growth in freight movement impacts the economically and environmentally connected South Central PA region;
- Exploration of linkages between freight movement, land use, and economic growth;
- Development of goals, strategies, and recommendations that are consistent and equitable across the region;
- Dissemination of the benefits, costs, and issues of freight movement to politicians, stakeholders, and the general public; and,
- Enhancement of the ability to continue future freight planning efforts.

In 2003, goods valued at nearly \$1.3 trillion flowed to, from, and through the eight counties comprising South Central PA.¹ These goods consisted of consumer products heading to retail outlets, international trade, food and farm products, coal, nonmetallic minerals and other construction materials, petroleum products, automobiles, and many other types of freight. A total of 14% of the goods (measured by tonnage) were consumed in the region, 17% were produced in the region, and 69% passed through the region.² Trucks handled 88% of the tonnage, rail handled 12%, and air cargo had a negligible, yet important, amount of the total freight tonnage.

The large percentage of goods passing through South Central PA is due to the region's proximity to several major population centers and its excellent transportation network. Goods staged in South Central PA are within easy reach of New York, Philadelphia, Baltimore, Washington, Pittsburgh, and even Boston, Syracuse, Rochester, Buffalo, Erie, Cleveland, and Richmond. The area has excellent north-south access with I-81 and 83, and east-west access with the Pennsylvania Turnpike and access to I-78 and I-80. Rail service

¹ The study area included: Adams, Cumberland, Dauphin, Franklin, Lancaster, Lebanon, Perry, and York Counties.

² In this study, goods stopping at a warehouse or distribution center are considered as inbound and outbound movements, not through movements.

is also strong. The Harrisburg area is home to three major Norfolk Southern Railroad yards and acts as NS's northeastern intermodal hub. Harrisburg International Airport provides air cargo services, mostly small package service from UPS, Federal Express, and DHL.

Perhaps the major freight story in South Central PA is the rapid growth in warehouse and distribution space. Because of the tremendous access to customers and the strong transportation system, South Central PA is very attractive as a staging area for goods movement throughout the northeast. This region has over 186 million square feet of warehousing space, which is about one-quarter of the total in northern and central New Jersey. The lease rate on this space is almost \$2 per square foot less than New Jersey. Over the past 1.5 years, the square footage of available property in South Central PA grew by 17%, while New Jersey warehouse space grew by less than 1%.

Forecasts of goods movement through the year 2030 project an increase of 79.5% for truck tonnage (2.2% annual increase) and 53.8% for rail tonnage (1.6% annual increase). The lower rail rate is not an indication of rail service, but is based on the fact that commodities historically hauled by rail are growing at a slower rate than commodities hauled by trucks. For the base year of 2003, there were approximately 17,900 daily truck trips inbound to South Central PA, 17,400 outbound from South Central PA, and 49,000 passing through the region. By 2030, the inbound truck trips are projected to increase to 31,900, the outbound to 29,700, and the average daily through truck trips are forecasted at 93,100. The percentage of truck trips passing through the region is forecasted to increase 2.1% (from 58.1% to 60.2%) between 2003 and 2030. Additional warehousing space in the region could help convert a portion of these through trips to inbound-outbound trips, thereby capturing additional jobs and economic benefits from this transient freight traffic.

Accompanying this large volume of freight come many issues. These include: roadway congestion; safety concerns; increased noise; lost truck drivers on local roadways; shortages of proper truck parking areas; railroad capacity choke points; airport access; and, incompatible land uses. Offsetting these issues are the economic expansion that goods movement fosters (mostly through job creation), and the ability of retail stores, gas stations, and grocery stores to stock the products consumers desire.

By improved planning for the forecasted growth in goods movement, and by engaging the private sector carriers and shippers, a better balance can be achieved between the financial and societal benefits and costs of goods movement. Since goods movement does not respect political boundaries, the best way to accomplish this is through establishment of a regional Goods Movement Forum that brings together the key public and private sector stakeholders to address goods movement issues in South Central PA. This Forum should:

- Facilitate meaningful dialogue among public and private stakeholders to better understand existing and emerging goods movement issues;
- Balance economic growth, safety, quality of life, and quality of experience for visitors by expanded consideration of freight in transportation planning;
- Inform federal, state, county, and municipal officials, stakeholders, and the general public regarding goods movement issues and benefits;

- Identify issues, solutions, and funding sources for freight projects in South Central PA that are of local, regional, and national significance; and,
- Establish funding and a structure that allows fast-tracking of priority freight projects in the region.

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South Central Pennsylvania Regional Goods Movement Study

1.0 Introduction

This introductory chapter begins by describing the South Central Pennsylvania study region. It then discusses the importance of studying and planning for freight transportation. This chapter concludes with a discussion of the Regional Goods Movement Study goals and an outline of this report.³

1.1 The South Central Pennsylvania Study Region

In 2003, goods valued at \$161 billion flowed into South Central Pennsylvania (South Central PA), \$236 billion in goods flowed out of the region, and \$887 billion flowed through the region for a total value of nearly \$1.3 trillion in long-haul goods moving in South Central PA.⁴ These goods consisted of food and kindred products, automobiles, coal, construction materials, petroleum, consumer retail goods, and various other commodities. The inbound goods arrived from all over the U.S. and the world to support businesses and supply retail stores in the area. The outbound goods were distributed across the U.S. and the world supporting economic growth in South Central PA. As illustrated by the value of the goods, freight passing through the region greatly outpaced the local consumption and production. This is due to South Central PA's proximity to several major population centers and its excellent transportation network.

The area encompassed by this study consists of eight counties, generally referred to as "South Central Pennsylvania". The eight counties are:

³ The terms "freight" and "goods" have the same meaning in this report and are used interchangeably.

⁴ Long-haul is defined in this report as moves that originate, termination, or pass through South Central PA.

- ▶ Adams
- ▶ Lancaster
- ▶ Cumberland
- ▶ Lebanon
- ▶ Dauphin
- ▶ Perry
- ▶ Franklin
- ▶ York

These counties also make up Pennsylvania Department of Transportation's (PennDOT) District 8.

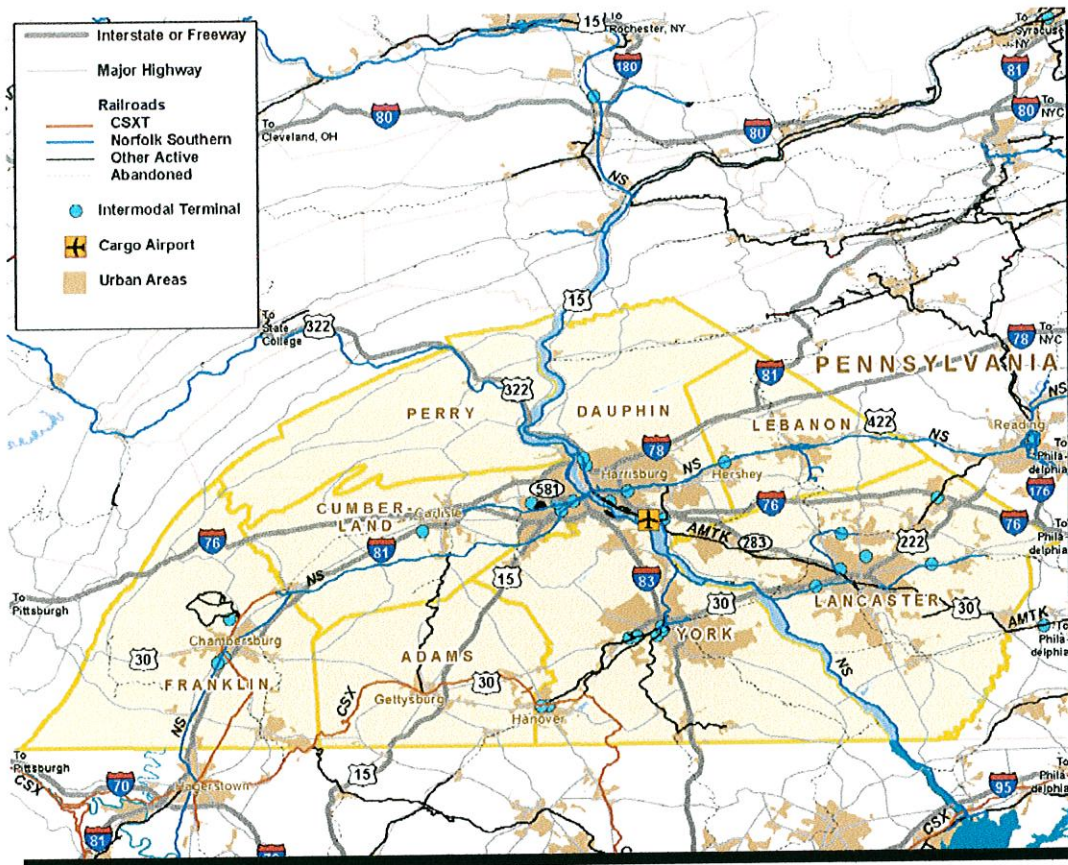
These counties are highlighted in Figure 1.1. Figure 1.1 also displays the major transportation facilities in the region. South Central PA is located at the crossroads of several major roadways and rail lines. East-west access is provided by the Pennsylvania Turnpike (I-76), and I-78. Another primary east-west route, I-80, lies just north of the region and can be easily accessed by I-81, US 15, and US 322. North-south access is available on I-81 and I-83. Other major roadways in the region include US 11/15, US 15, US 22/322, US 30, US 222, US 322, US 422, PA 283, and PA 581.

Rail service is provided by the Norfolk Southern Railroad (NS), CSX Transportation (CSXT) and the York Railway Company (YRC-part of the Genesee and Wyoming family). NS has a several lines running through the region along with three major rail yards, and other minor facilities. The major yards include Enola, which handles carload traffic, and Harrisburg and Rutherford, which handle intermodal traffic. CSXT has limited service in the region, but they have purchased land near Chambersburg and are planning a new intermodal facility. YRC is a short line railroad serving several customers in the York and Hanover areas.

In addition to the surface transportation modes, the Harrisburg International Airport offers air cargo services. It is a domestic hub for the United Parcel Service (UPS) and also handles significant Federal Express traffic. Harrisburg International Airport has plans to expand its air cargo facilities and services. Other airports in the region offer passenger service, but none provide regular freight services.

The one mode of transportation that is not pertinent to this study is waterborne transport. The Susquehanna River is not navigable within the study area and is therefore, not a directly relevant mode. The region is, however, within a 1.5 to 2.5 hour drive of four major international marine ports along the Atlantic seaboard: Baltimore, MD, Newark, NJ, Philadelphia, PA, and Wilmington, DE. Since this traffic is transported to and from the region via truck and rail, it will be included in the discussion of those modes.

Figure 1.1 Major Transportation Facilities in the South Central Pennsylvania Study Area



1.2 Why is Freight Planning Important?

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 emphasized the importance of considering freight in the transportation planning process. Since that time, the incorporation of freight issues has become more and more prevalent when considering policy, planning, and programming activities at state departments of transportation (DOT), metropolitan planning organizations (MPO), rural planning organizations (RPO), and counties. Some of the key reasons that “freight matters” in national planning, and in South Central Pennsylvania in particular, include:

1. Freight movement is an indicator of economic activity. As the economy grows, the demand for goods increases, which contributes to job growth, which contributes to further economic growth. Put another way, freight brings jobs.
2. Conversely, jobs bring freight. This study has identified one manufacturing job in South Central PA generates 12.7 trucks trips per year, one service job generates 6.4 truck trips per year, and one agriculture job generates 11.6 truck trips per year.

3. An efficient freight transportation system is a key factor in statewide and metropolitan economic competitiveness and vitality and an important consideration in business attraction and retention decisions.
4. Goods movement supports population growth. The population in South Central PA continues to grow, which creates more demand for consumer goods. Population growth between the years 2010 and 2030 is projected at 21.5% in Adams County, 28.9% in Cumberland County, 10.9% in Dauphin County, 18.1% in Franklin County, 14.9% in Lancaster County, 11.6% in Lebanon County, 24.2% in Perry County, and 16.2% in York County.⁵
5. Due to a central location and strong transportation system, South Central PA has become a critical location in the supply chain of many northeastern U.S. metropolitan regions, such as New York, western New York State, Philadelphia, Baltimore, Washington, Pittsburgh, Boston, and northeastern Ohio.
6. The growth in goods movement continues to outpace the growth in passenger movement, creating a need for additional capacity along key freight corridors and at intermodal connectors. Portions of the PA Turnpike and I-81 have more than 30% heavy truck traffic, while many roads in the study region have more than 20% trucks.⁶
7. Increased truck and automobile traffic and congestion creates the potential for more crashes, conflicts, and safety concerns among system users. Driver error, vehicle size, stopping distances and turning radii are among the many factors.
8. Heavy trucks operating on the roadways and bridges in the region increase the deterioration of the infrastructure, leading to more frequent and higher maintenance costs.
9. Increasing shipments of hazardous materials places additional burdens on emergency response units to be prepared for the variety of materials entering their region. The types of hazmats being transported changes over time as new supply chain patterns emerge, thus necessitating the need for current information.
10. Increasing truck traffic creates environmental concerns from fuel usage, to air pollution (nitrous oxides and particulate matter), to noise pollution.
11. NIMBYism (Not In My Backyard) from concerned citizens often initiate freight planning actions by raising the awareness of local politicians. Many people only focus on the negative aspects of freight movement, rather than a balanced view.

⁵ Source: Combination of U.S. Census Bureau and county data.

⁶ Source: Pennsylvania Department of Transportation (PennDOT) Highway Performance Monitoring System (HPMS) data.

Local government officials are often challenged to balance the concerns of citizens with the need to plan for freight issues within their communities.

12. From the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, to the Transportation Equity Act of the 21st Century (TEA-21) and again most recently with the passage of Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), freight issues and projects have attracted more attention and funding.
13. Warehousing and distribution centers supporting goods movement are often built near residential or other non-freight related areas. Improved land use planning that incorporates freight needs help prevent mixed land use patterns.

1.3 Goals of the South Central Pennsylvania Regional Goods Movement Study

The South Central PA Regional Goods Movement Study (RGMS) is a multi-jurisdiction effort involving HATS MPO, Lancaster MPO, Lebanon MPO, York MPO, Adams County RPO, and Franklin County. This study was motivated by several issues, including:

- An improved understanding how growth in freight movement impacts the economically and environmentally connected South Central PA region;
- Exploration of the linkages between freight movement, land use, and economic growth;
- Development of goals, strategies, and recommendations that are consistent and equitable across the region;
- Dissemination of the benefits, costs, and issues of freight movement to politicians, stakeholders, and the general public; and,
- Enhancement of the ability to continue future freight planning efforts.

To address these issues, this study was organized around the three primary goals depicted in Figure 1.2.

Figure 1.2. South Central Pennsylvania Regional Goods Movement Study Project Goals



Goal 1, Develop Essential Freight Data, involved developing a profile of current and future freight movement in South Central Pennsylvania. Given the importance of having accurate information for proceeding with the study, this goal consumed approximately half of the study resources. Specifically, it involved:

- Documenting current knowledge on freight movement and conditions, and supplement with additional available data sources;
- Developing forecasts of future freight movement volumes and patterns;
- Developing regional and county profiles of freight movement;
- Assembling a comprehensive freight database for the region⁷; and,
- Providing training on use of the comprehensive freight database.

Goal 2, Identify Policies and Strategies, included identification of the critical issues related to goods movement in the region and possible strategies. Specific recommendations and implementation strategies are addressed.

⁷ All underlying databases used to generate the graphs and maps in this report were provided on a compact disc as part of this study.

Goal 3, Outreach and Public-Private Forum, had two main components. First, a series of nine public outreach meetings were conducted to disseminate results of this study in an effort to solicit feedback and to inform concerned stakeholders of the issues. Second, a framework for creating a multi-jurisdictional, public-private partnership to continue the efforts of this study was discussed and initiated.

The remainder of this report is organized around six additional chapters.

Chapter 2: South Central Pennsylvania Regional Freight Profile – describes freight movements in the eight county region.

Chapter 3: Warehousing, Distribution Centers, and Land Use – looks at the growth and function of warehouses in South Central Pennsylvania.

Chapter 4: South Central Pennsylvania Regional Freight Forecasts – provides forecasts for growth in freight movement through the year 2030.

Chapter 5: Goods Movement Issues in South Central Pennsylvania – discusses the issues associated with goods movements, and potential impediments to economic growth.

Chapter 6: Opportunities and Strategies – offers different options available to South Central Pennsylvania.

Chapter 7: Recommendations – provides some specific recommendations for the region.

2.0 South Central Pennsylvania Regional Freight Profile

This chapter first offers a comparison of United States, Pennsylvania, and South Central Pennsylvania goods movement, with respect to the commodities hauled. It then provides a more detailed look at goods movement in the study area by mode of transportation, type of movement, top trading partners, and commodities.⁸ The final section looks at air cargo traffic at Harrisburg International Airport. Since the Susquehanna River is not navigable and international waterborne goods arrive and depart ports outside of the study area, waterborne transport is not directly discussed. It is incorporated into the discussion of the trucks and railroads that move the international traffic to and from the region.

2.1 United States, Pennsylvania, and South Central Pennsylvania Comparison

On a tonnage basis, the top commodity moved by truck in the U.S. is nonmetallic minerals.⁹ These include construction rocks, phosphates, and other nonmetallic minerals with the notable exception of coal. The second most frequently hauled commodity, again based on tonnage, is secondary traffic, which is the movement of goods from a warehouse or distribution center to a retail store, consumer location, another warehouse, or other intermediary location.¹⁰

Table 2.1 contains a comparison of the commodities most frequently moved in the U.S., Pennsylvania, and the South Central PA region by truck. Flows in Pennsylvania are generally representative of the national averages. South Central PA does differ from the national and state averages with a higher percentage of secondary traffic. This is a result of the warehousing and distribution facilities in the region.¹¹

⁸ This study looks at the long-haul movement of goods, with a special focus on long-haul truck and rail shipments. It includes shipments crossing county borders, but not intracounty moves. It includes trucks used to haul freight, but not utility trucks, garbage trucks, or local pick-up and delivery trucks.

⁹ United State freight traffic reported in this section includes U.S. freight plus Canadian and Mexican transborder freight.

¹⁰ Pipelines, which carry significant amounts of petroleum products, natural gas, and drinking water are not directly included in this study for two reasons. First, information on pipelines is generally classified, especially after the terrorist acts of 9/11. Second, while pipelines do traverse the study region, no specific issues were identified in discussions with stakeholders during the project. Pipeline traffic is indirectly included, if it starts or ends its trip on a truck or railroad traversing part of the study region.

¹¹ In the TRANSEARCH data, a move into a warehouse is considered a termination while a move from a warehouse is considered an origin.

Rail traffic in Pennsylvania and South Central PA deviates from the national averages in several ways, as illustrated in Table 2.2. The dominant commodity for the railroads nationwide is coal, which is also the case in Pennsylvania. In South Central PA, coal is a smaller percentage of the originations, but a larger percentage of the terminations. Miscellaneous mixed shipments, which is almost entirely intermodal containers and trailers, is lower than the national average for Pennsylvania and higher than the national average for South Central PA. The lower volumes in Pennsylvania are likely due to the lack of a major container port in the state, while the higher volumes in South Central PA are due to the presence of Norfolk Southern's Rutherford and Harrisburg intermodal rail yards. Originations and terminations of chemical traffic is lower in South Central PA than the national average. The "all other" category accounts for other rail commodities, such as paper, printed material, lumber and assembled automobiles and parts. This includes the automobile parts for the Chrysler Plant in Newark, DE that is railed into Rutherford yard and trucked to Newark.

Table 2.1: Truck Commodity Comparison - U.S., PA, South Central PA Region

STCC	Commodity Description	Truck Traffic					
		Originating in:			Terminating in:		
		U.S.	PA	SCPA	U.S.	PA	SCPA
14	Nonmetallic Minerals	26%	30%	30%	26%	26%	25%
50	Secondary Traffic	17%	17%	26%	17%	18%	21%
32	Clay, Concrete, Glass, Stone	11%	10%	10%	11%	11%	12%
20	Food Or Kindred Products	8%	6%	8%	8%	8%	8%
11	Coal	1%	4%	0%	1%	4%	4%
	All Other	37%	33%	25%	37%	33%	31%
	Total	100%	100%	100%	100%	100%	100%

Source: TRANSEARCH 2003 tonnages. U.S. traffic includes all U.S. freight plus Canadian and Mexican transborder freight, thus creating a closed system with originations equaling terminations.

Table 2.2: Rail Commodity Comparison - U.S., PA, South Central PA Region

STCC	Commodity Description	Railroad Traffic					
		Originating in:			Terminating in:		
		U.S.	PA	SCPA	U.S.	PA	SCPA
11	Coal	39%	60%	12%	39%	41%	35%
28	Chemicals Or Allied Products	9%	3%	2%	9%	8%	5%
14	Nonmetallic Minerals	8%	6%	46%	8%	5%	2%
01	Farm Products	8%	1%	1%	8%	5%	12%
46	Misc. Mixed Shipments	6%	3%	13%	6%	5%	11%
20	Food Or Kindred Products	5%	1%	3%	5%	8%	17%
	All Other	25%	25%	23%	25%	30%	18%
	Total	100%	100%	100%	100%	100%	100%

Source: 2003 STB Carload Waybill Sample. . U.S. traffic includes all U.S. freight plus Canadian and Mexican transborder freight, thus creating a closed system with originations equaling terminations.

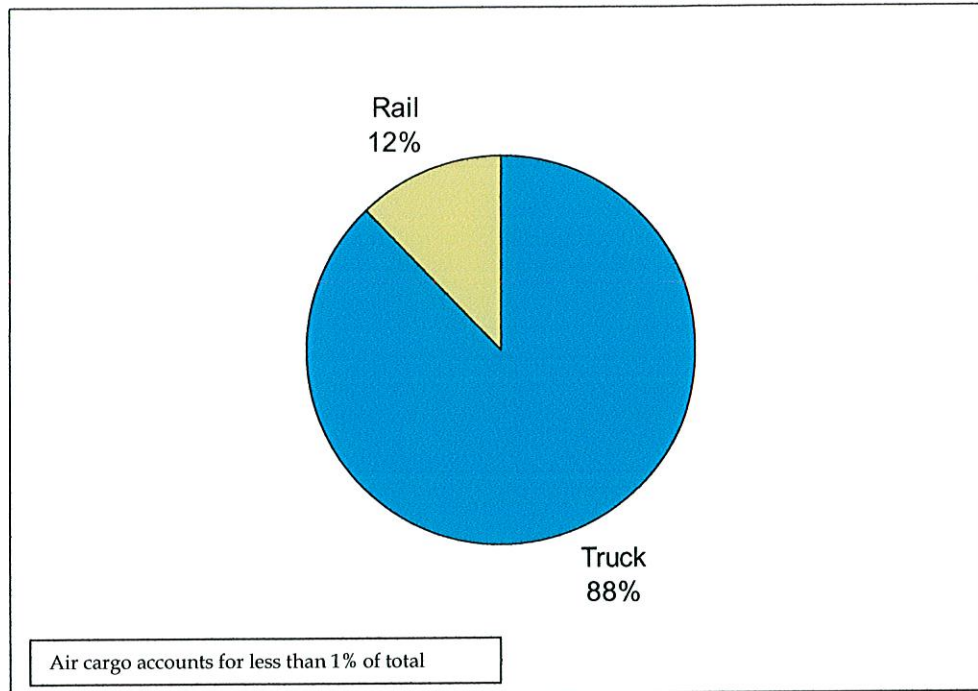
2.2 Surface Transportation (Truck and Rail) Goods Movement Profile

Trucks provide the primary source of goods movement in the South Central PA area, handling 81% of inbound goods and 93% of outbound goods. This section examines surface transportation movements by type, mode, trading partners, and commodities.

2.2.1 Shares by Mode and Type of Move

Figure 2.1 displays the share of goods moved by truck and rail in South Central PA. Truck accounted for over 400 million tons (88%) of the inbound, outbound, and through movements, while rail accounted for 56 million tons (12%). Air cargo, discussed in Section 2.4, contributed 48,000 tons. Modal share figures for each county are contained in Table 2.3. Rail shares range from a high of 46.6% in Perry County to a low of 2.9% in York County. The Perry County numbers reflect a large amount of through traffic on Norfolk Southern moving into the rail yards around Harrisburg and on to the New York market. The low rail share in York reflects a high volume of truck movements and the lack of a high density rail line.

Figure 2.1 Modal Share for South Central Pennsylvania



Source: Global Insight 2003 TRANSEARCH and the 2003 STB Carload Waybill Sample.

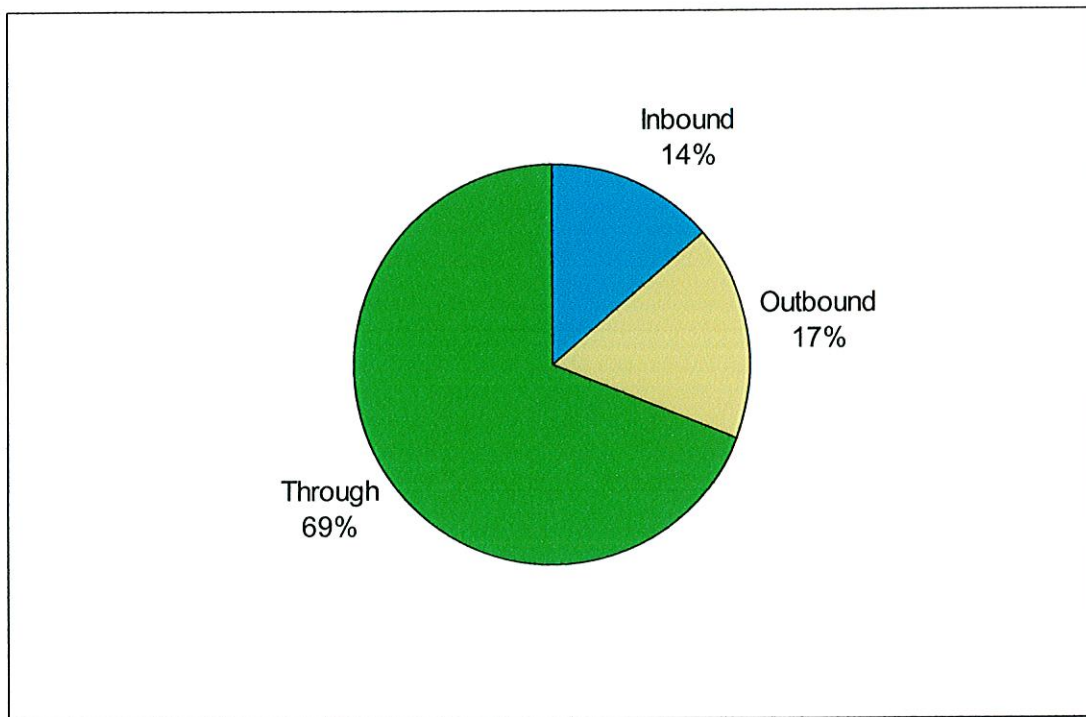
Table 2.3 Modal Share by County

	Truck		Rail	
	2003 Annual Tons (Millions)	Share	2003 Annual Tons (Millions)	Share
Adams	51.2	95.5%	2.4	4.5%
Cumberland	337.4	97.0%	10.5	3.0%
Dauphin	335.0	86.6%	51.8	13.4%
Franklin	304.2	96.5%	10.9	3.5%
Lancaster	138.7	91.3%	13.2	8.7%
Lebanon	271.1	92.4%	22.5	7.6%
Perry	47.7	53.4%	41.5	46.6%
York	163.7	97.1%	4.9	2.9%

Source: Global Insight 2003 TRANSEARCH and the 2003 STB Carload Waybill Sample. The tonnage in the table includes movements that traverse more than one county. They should not be added, since double counting will occur.

Figure 2.2 displays the share of goods inbound, outbound, and through South Central PA. Inbound movements totaled 62 million tons in 2003, while outbound movements were 79 million tons. Through movements, based on through the entire eight county region, totaled 315 million tons and accounted for 69% of all freight tonnage in South Central Pennsylvania. Shares for each county by type of move are contained in Table 2.4. Please note that in this table, through is defined on an individual county basis and not on the entire region. Through traffic is also the dominant type of move in each county, ranging from a low of 82.1% in Adams to a high of 96.6% in Lebanon. The Lebanon number reflects the fact that Interstates 78 and 81, the PA Turnpike, and the NS mainline all pass through the county.

Figure 2.2 Type of Movement for South Central Pennsylvania
Through movements based on the entire South Central PA region



Source: Global Insight 2003 TRANSEARCH and the 2003 STB Carload Waybill Sample.

Table 2.4 Type of Movement by County
Through movements based on individual counties

	Inbound 2003 Annual Tons (Millions)		Outbound 2003 Annual Tons (Millions)		Through 2003 Annual Tons (Millions)	
		Share		Share		Share
Adams	3.9	7.3%	5.7	10.6%	44.0	82.1%
Cumberland	6.0	1.7%	14.8	4.2%	327.1	94.0%
Dauphin	9.5	2.5%	11.1	2.9%	366.3	94.7%
Franklin	15.4	4.9%	5.5	1.7%	294.3	93.4%
Lancaster	10.9	7.2%	19.3	12.7%	121.6	80.1%
Lebanon	3.6	1.2%	6.3	2.2%	283.7	96.6%
Perry	2.0	2.3%	1.5	1.7%	85.6	96.0%
York	10.9	6.5%	15.2	9.0%	142.5	84.5%
Totals	62.3		79.4		n/a	

Source: Global Insight 2003 TRANSEARCH database and the 2003 STB Carload Waybill Sample. The Through tonnage includes movements that traverse more than one county. They should not be added, since double counting will occur.

2.2.2 Top trading partners

When considering the region's top trading partners, it is often best to consider the value of the goods transported. This provides a measure of the economic linkages and emphasizes the importance of a dependable transportation system between South Central PA and other regions. In 2003 there were 62 million tons of goods inbound into South Central PA, with a total value of \$161 billion. This included \$149 billion by truck and \$12 billion by rail. The 79 million tons of outbound goods had a total value of \$236 billion, including \$231 billion by moved by truck and \$5 billion moved by rail. The inbounds goods averaged \$2597 per ton, while the outbound goods averaged \$2987 per ton, providing some measure of the value added by the region. Also, as the value of goods increases they are less likely to move by rail, which is reflected in the drop of value between inbound and outbound rail.

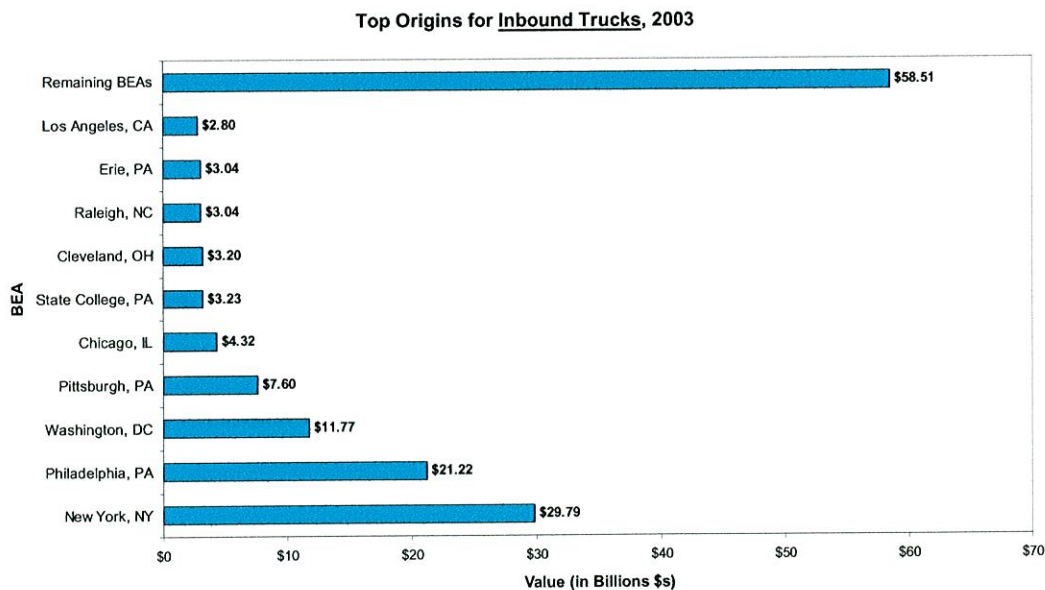
Figure 2.3 shows the top originators of goods inbound to South Central PA by truck, based on the value of the goods. The geographical units used in this table are economic regions defined by the U.S. Bureau of Economic Analysis referred to as BEAs. There are 180 BEAs in the U.S. ranging in size. BEAs are defined as economically linked areas and do not respect state borders. The New York BEA includes New York City, Long Island, regions north of New York City, northern New Jersey, western Connecticut, southern Vermont, and even parts of northeastern Pennsylvania. The Washington BEA includes Washington, DC, Baltimore, parts of western Maryland, and Adams County.¹²

¹² For this study, any South Central Pennsylvania county within a BEA was removed from the BEA when measuring freight movement. Therefore, the Washington BEA totals exclude any traffic to/from counties within the South Central PA region.

The top originator of goods inbound to South Central PA by truck was the New York BEA at \$29.8 billion. Of this total, \$24.4 billion was secondary traffic. This includes goods moving from the ports, warehouses, and distribution centers in the New York BEA, into retail stores, warehouses, and distribution centers in South Central PA. Other top commodities inbound from New York included apparel (\$645 million), miscellaneous manufacturing products (\$627 million), printed matter (\$461 million), electrical equipment (\$448 million), machinery (\$433 million), and chemicals (\$415 million). On a tonnage basis, the top commodity inbound from New York was nonmetallic minerals, often primarily used in construction. Total 2003 inbound shipments of nonmetallic minerals weighed 2.6 million tons and had a value of \$17.8 million.

The top five inbound truck moves in 2003 all were a mixture of goods going to retail stores, warehouses, and distribution centers. In addition to New York, other top moves of secondary traffic included Philadelphia (\$16.9 billion), Washington/Baltimore (\$8.4 billion), Pittsburgh (\$5.7 billion), and Erie (\$2.5 billion).

Figure 2.3 Top Origins for Inbound Trucks (annual value of goods in billions)



Source: Global Insight TRANSEARCH

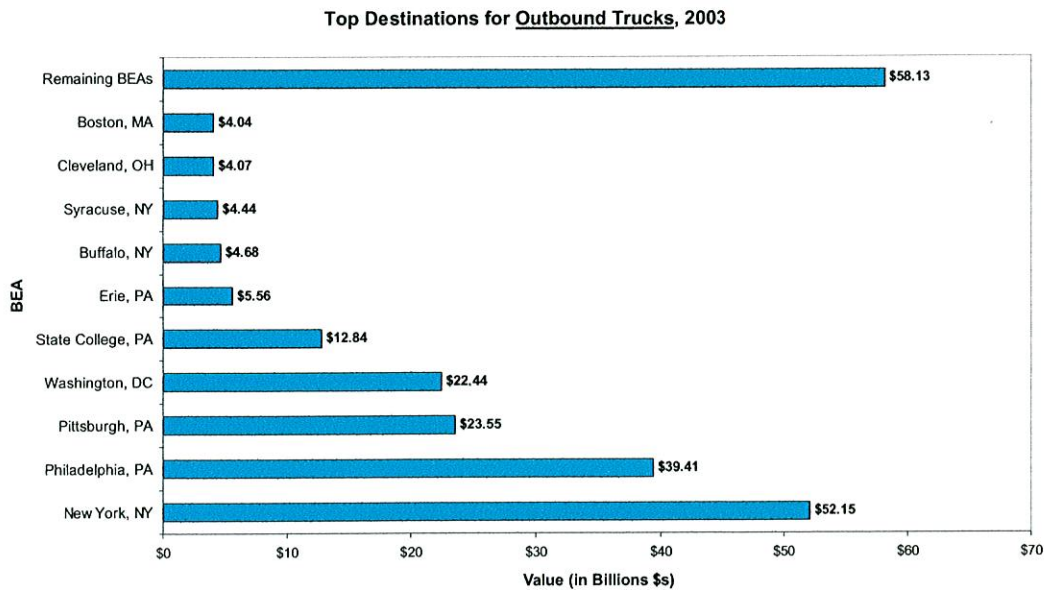
The top termination of goods outbound from South Central PA by truck was again the New York BEA, at a total value of \$52.2 billion. [See Figure 2.4] The top outbound commodity was secondary traffic (moves from warehouses and distribution centers) with a value of \$46.3 billion in 2003. Secondary traffic was also the largest commodity when measured by tonnage, with a total 2003 weight of 4.8 million tons. Other commodities

shipped to the New York BEA by truck included: food or kindred products (\$1.6 billion); pulp, paper or allied products (\$460 million); clay, concrete, glass or stone (\$450 million); lumber or wood products (\$450 million); and, chemicals (\$431 million).

The top outbound truck moves from South Central PA in 2003 involved secondary traffic from the warehouses. In addition to New York, these top recipients of traffic from the warehouse and distribution centers were Philadelphia (\$36.2 billion), Pittsburgh (\$21.6 billion), Washington/Baltimore (\$19.9 billion), State College (\$11.1 billion), Erie (\$4.7 billion), Buffalo (\$4.3 billion), Syracuse (\$3.6 billion), Cleveland (\$3.4 billion), Boston (\$3.1 billion), and Rochester (\$3.0 billion).

Based on weight, outbound truck shipments of nonmetallic minerals to the Washington/Baltimore BEA was the largest move at 9.8 million tons (\$68 million in value) in 2003, followed by nonmetallic minerals to State College at 5.7 million tons (\$40 million).

Figure 2.4 Top Destinations for Outbound Trucks (annual value of goods in billions)



Source: Global Insight TRANSEARCH

2.2.3 Top commodities

Table 2.5 contains the most prevalent commodities inbound and outbound to South Central PA by truck and rail. The largest commodity, based on tonnage, is nonmetallic minerals (24.3 million tons outbound, 11.7 million tons inbound). These include construction rocks, phosphates, and other nonmetallic minerals with the notable exception of coal. The second largest commodity is secondary traffic, goods moved from

warehouses. Note that the outbound flow of secondary traffic is twice as large as the inbound flow. The outbound flow includes several primary commodities (e.g., textiles, electronics, printed material) that is mixed at the distribution centers and leaves as secondary traffic. The inbound flow includes both goods distributed to retail stores in the South Central PA region and goods that are staged for further movement outside the region.

Another important commodity is food products. There are 7.1 million tons inbound for local consumption and further distribution, and 7.3 million tons outbound from local food processing industries and distribution centers. Other important commodities include: coal; clay, concrete, glass or stone used in construction; farm products; petroleum products; and lumber.

Table 2.5 Inbound and Outbound Commodities (annual tonnage)

STCC2	Commodity Description	Outbound Tons	Inbound Tons
14	Nonmetallic Minerals	24,273,779	11,730,373
50	Secondary Traffic	18,967,535	9,065,367
20	Food Or Kindred Products	7,319,709	7,080,411
11	Coal	0	6,379,059
32	Clay, Concrete, Glass Or Stone	6,985,390	5,445,804
1	Farm Products	4,834,468	2,890,399
29	Petroleum Or Coal Products	3,941,425	3,687,520
33	Primary Metal Products	2,864,694	0
24	Lumber Or Wood Products	2,717,420	2,093,493
26	Pulp, Paper Or Allied Products	1,971,851	2,125,515
28	Chemicals Or Allied Products	950,242	3,265,886
n/a	Remaining Commodity Groups	4,558,737	8,504,315
	Totals	79,385,250	62,268,142

Source: Global Insight 2003 TRANSEARCH and the 2003 STB Carload Waybill Sample.

2.3 Air Cargo Profile

Air cargo is used to haul lightweight, but high value, goods. This can include medical devices and supplies, pharmaceuticals, electronics, and especially, miscellaneous small parcels. Within South Central PA, the Harrisburg International Airport provides air cargo services. In 2005, the airport handled nearly 48,000 tons of air cargo, which was a slight drop over the 2004 tonnage. [See Table 2.6] Assuming approximately 10 to 15 tons per truck, these volumes generated approximately 4,000 loaded truck trips in 2005. The airport has plans to invest in expansion of air cargo services, though it faces strong competition from JFK Airport in New York, BWI Airport near Baltimore, MD, Liberty

National Airport in Newark, NJ, and the airports in Philadelphia and Pittsburgh, PA. JFK, for example, handled 2.9 million tons of air cargo in 2004, while Philadelphia International handled 1.4 million tons.¹³

While the tonnages at Harrisburg Airport are relatively small, the airport does provide an important service within South Central PA by helping to attract high technology industries that depend on reliable, fast transportation to move high valued goods.

Table 2.6 Harrisburg International Airport Volume Statistics

Category	2005	2004	% Change
Scheduled Aircraft (airplanes)	9,315	11,855	-21.43%
Regional Aircraft (airplanes)	38,254	36,794	3.97%
Military Aircraft (airplanes)	8,255	8,520	-3.11%
General Aviation (airplanes)	71,190	71,411	-0.31%
Total Passengers (passengers)	1,316,235	1,398,629	-5.89%
Air Freight Loaded (tons)	25,379	25,047	1.33%
Air Freight Unloaded (tons)	22,472	23,538	-4.53%
Total Air Freight (tons)	47,851	48,585	-1.51%

Source: Harrisburg International Airport, February 9, 2006.

¹³ JFK and PHL Source: Federal Aviation Administration Airports and Air Traffic Statistics.

3.0 Warehousing, Distribution Centers, and Land Use

This chapter provides background on warehouses and distribution centers, their role in the freight transportation system and local economic development, and their presence in the South Central Pennsylvania region. These facilities, which can be upwards of one million square feet, are increasingly important in delivering products to businesses and consumers and can be excellent employment and tax revenue generators. This chapter also looks at land uses issues, in particular the locations of freight generating industries in the study region and the site location criteria for warehouses and distribution centers. Additional material on the role of warehouses and distribution centers in goods movement can be found in Appendix A.

3.1 What are Warehouses and Distribution Centers?

Warehouses and distribution centers (DCs) are structures primarily used for the receipt, temporary storage, possible modification/customization, and distribution of goods that are enroute from production sites to consumption sites. The distinction between a Warehouse and DC can sometimes be vague. Warehouses tend to provide a storage function, while DCs are used to break down long-haul shipments for local delivery and consolidate local pick-ups for long-haul moves. Another feature of warehouses and DCs is that they are often sites where value is added to the products moving through them. Examples of value added activities include final assembly, customization of products, and preparing products for the stores (including packaging, pressing of clothes, and tagging). Preparing products for stores is often referred to as “shelf readying.”

There are three types of warehouses and DCs:

- *Public warehouses*, which are open to all customers seeking to store their goods;
- *Contract warehouses*, which handle two-to-three larger customers; and
- *Private warehouses*, which handle products for a single customer.

Warehousing operations vary considerably in size, ranging from just a few thousand square feet to buildings that are over one million square feet. Warehouses may contain temperature-controlled space, which is essential for maintaining perishable food.

Warehouses and DCs can be located at or adjacent to airports, ports and rail yards to support or add value to cargo operations. While some warehouses may have rail sidings for the direct receipt or shipping of products, the vast majority of the freight moving from warehouses and distribution centers tends to be handled by trucks. Accordingly, quick and reliable access to major roadways, particularly the Interstate Highway System, is crucial in siting warehouse operations.

3.2 Warehouse and Distribution Center Location Considerations

Determining the best location for a new facility involves careful analysis and consideration due to the large capital expenditures and the long-lived nature of the investment. The location decision factors vary by the type of facilities; with different site selection criteria used for locating headquarter, research, distribution, retail and back office/support facilities. Steps in the basic process can include:

- Define the company’s business strategy and the role of the facility in that strategy.
- Develop site selection criteria, beginning with a macro-level selection to determine a specific region and followed by a micro-level or local level assessment to identify several sites.
- Undertake location specific assessment.
- Begin detailed discussions, which can include the availability and extent of public sector incentives (e.g., economic development and tax incentives/programs and planned/proposed investments in transportation, utility and telecommunications infrastructure within the specified time frame for site development).

These analyses are now aided by the widespread availability of substantial databases with socio-economic, demographic, transportation, land use, and location-specific information. Conway Data, as an example, has developed a 90 page checklist of the processes and analyses that a firm may undertake for site selection.¹⁴

While transportation infrastructure and access are generally the most important criteria, other factors are also considered critical in the site selection process. *Area Development* conducts an annual corporate survey regarding site selection criteria. The findings from the most recent four years of the survey are shown in Table 3.1. The ratings in Table 3.1 are based on the number of respondents selecting that criteria as “very important” or “important”.

**Table 3.1: Rankings of Site Selection Criteria
2002-2005 Annual Area Development Corporate Surveys**

Ranking	Site Selection Factor	2005 Rating	2004 Rating	2003 Rating	2002 Rating
1	Highway accessibility	91.4	90.2	88.9	86.6
2	Labor costs	87.9	96.4	89.7	89.9

¹⁴ <http://www.conway.com/cheklist/>

Ranking	Site Selection Factor	2005 Rating	2004 Rating	2003 Rating	2002 Rating
3	Availability of skilled labor	87.2	89.1	89.0	90.9
4	State and local incentives	86.0	87.5	92.7	88.0
5	Availability of broadband telecom services/internet	85.7	80.7	67.4	66.7
6	Corporate tax rate	85.0	84.4	85.1	84.6
7	Occupancy or construction costs	83.7	83.6	86.3	82.4
8	Tax exemptions	83.6	83.3	86.2	88.2
9	Proximity to major markets	83.2	72.7	80.0	83.7
10	Energy availability and costs	82.8	85.8	80.8	80.9
11	Availability of telecommunications services	79.8	82.3	77.9	76.1
12	Cost of land	79.1	76.6	77.3	74.0
13	Low union profile	77.0	75.5	71.6	69.4
14	Availability of land	75.0	75.7	78.1	75.2
15	Environmental regulations	71.1	80.7	72.9	76.7
16	Right-to-work state	69.7	69.5	60.8	58.0
17	Proximity to suppliers	66.7	62.4	58.5	61.8
18	Raw materials availability	62.3	64.9	55.8	56.0
19	Training programs	59.6	50.4	47.3	44.7
20	Availability of long-term financing	56.5	63.0	57.5	60.0
21	Availability of unskilled labor	50.6	59.4	55.8	55.1
22	Accessibility to major airport	50.0	53.8	53.1	54.0
23	Proximity to technical university	30.2	32.4	34.0	33.4
24	Railroad service	28.9	26.9	27.9	22.6
25	Waterway or oceanport accessibility	20.2	21.1	18.5	19.3

Source: *Area Development* Corporate Surveys.

Note: All figures are percentages and are the total of "very important" and "important ratings of the *Area Development* Corporate Survey and are rounded to the nearest tenth of a percent

These criteria are not specific to all types of facilities. Hence, access to rail, ocean and other freight operations may be extremely important for siting a distribution center but not important in siting a corporate headquarter or research facility. Nevertheless, the survey indicates that highway accessibility – a major advantage of the Tri-County Area – has grown in importance in site selection. Labor considerations, the availability of tax incentives, telecommunications infrastructure, tax rates, proximity to markets, energy costs, and construction costs are also essential considerations.

Table 3.2 contains a checklist of the primary criteria for warehouse and distribution center site selection. The table is subdivided into “macro” and “micro” factors, where:

- *Macro-level* factors draw prospective businesses to a region; and
- *Micro-level* factors affect the attractiveness of specific sites for economic development.

Table 3.2 is a comprehensive checklist, and includes criteria that are both found and not found in South Central PA. The reason for including items not found in the region is to allow comparison of South Central PA to other regions that might be competing for the same development. Following the table is a more detailed discussion of the most important criteria for siting warehouses and distribution centers.

Table 3.2 Checklist of Warehouse and Distribution Center Site Location Criteria

<p><i>Macro-Level (Regional Considerations)</i></p> <ul style="list-style-type: none">• Transportation Access and Facilities<ul style="list-style-type: none">○ Highways (Interstate and/or 4 lane limited access)○ Class I Railroad Service○ Domestic Air Cargo○ International – Deepwater Port and Air Cargo○ Scheduled Passenger Service for business travel• Proximity to Market(s)<ul style="list-style-type: none">○ Must be proximate to at least one major metropolitan area.○ Must be within one-days drive of other metropolitan areas• Labor<ul style="list-style-type: none">○ Availability of labor for facilities○ Cost of labor○ Degree of unionization• Land

- Availability of properties
- Cost of properties
- Ease of property development
- Incentives and Taxes
 - Availability of Incentives
 - Corporate Tax rates
- Construction
 - Cost of construction
 - Ease and time frame for obtaining approvals
- Utilities Costs
- Availability of High-Speed Telecommunications and Internet Services

Micro-Level (Site Specific Considerations)

- Property Size
 - Single Distribution Center (DC) – 50 acres
 - Distribution Center/Industrial Park or Integrated Logistics Center – 400 or more acres.
- Cost of Property
 - Land Cost
 - Site Preparation Costs
 - Wetlands/soil conditions
 - Is environmental mitigation required?
- Transportation Infrastructure and Access
 - Highway Access
 - Within 15 minute access to Interstate or 4-lane highway. Immediate access highly desired.
 - Access roads must be minimally suitable for trucks with 53-foot trailers, 13 foot and 6 inch clearance.
 - Proximity to Intermodal Rail Facility
 - Single DC – non-critical; Within one hour drive
 - Distribution Center/Industrial Park -- non-critical; Less than 30 minute access to intermodal rail facility can be attractive
 - Integrated Logistics Center – must be adjacent to at least one intermodal rail facility
 - Direct Rail Spurs and Service
 - Needed only for specific users/purpose built facilities

- Proximity to Deepwater Port
 - International/Import Oriented DC – within one hour drive. Immediate access highly desirable
 - Regional DC – non-critical
- Proximity to Domestic and International Air Cargo Operations
 - Critical Parts DC – within 30 minute drive of airport; immediate access highly desirable (critical parts are items that can shut down an operation, industrial process, or other business process, leading to large capital losses).
 - Master/National DC – within one hour drive of air cargo airport.
 - Regional DC – non-critical
- Transit Access
 - Public transit or van pools between DC and major employee residential areas highly desired
- Roadway Congestion – the more congestion, the less desirable the location
- Utilities
 - Availability of electrical power, sewer, telecommunications, and water service.
 - Cost of electrical power, sewer, telecommunications and water service

Source: A. Strauss-Wieder, Inc.

The key considerations in site selections for warehouse and distribution center operations in South Central PA are:¹⁵

- Availability of appropriately sized properties – Current and future warehouse needs drive the size of the property required. Large land parcels suitable for development are needed for modern warehouses and distribution centers – while some 100,000 square foot warehouses can be built on properties consisting of as little as 5 acres, most warehouse and DC buildings require considerably larger parcels. Generally, new warehouses and DCs exceed 300,000 square feet in size. Many approach or exceed 1 million square feet in size. The larger sized buildings are particularly evident in the SPCA Region.

A building in this size-range may house a single tenant or be subdivided for multiple tenants. Multi-tenant flexibility also enables companies to expand and contract their leased space dependent on business conditions.

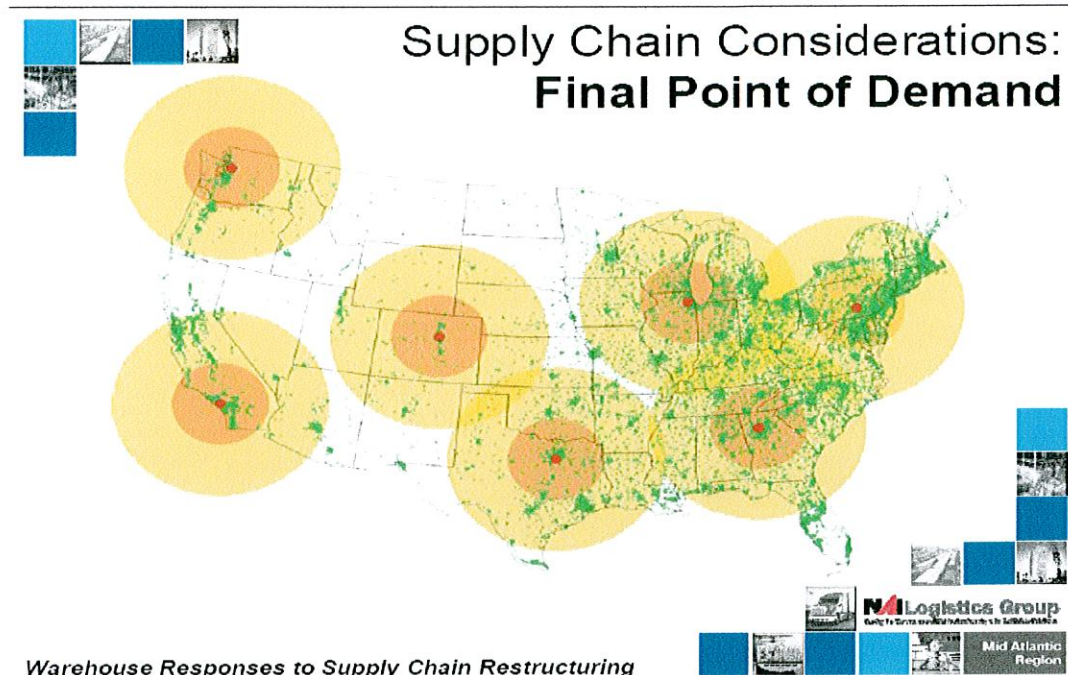
¹⁵ Source: Research by A. Strauss-Wieder, Inc.

In addition to the actual structure, sufficient space must exist on the site for truck staging and employee and visitor parking. Further, room for expansion must exist on the property, either by expanding into additional segments of the building or through the construction of an addition to the structure. The ability to expand is a key consideration in site selection. Companies do not want to move their warehousing operations nor do they want to locate in several buildings in multiple locations. Consolidation of operations is one of the key drivers towards the larger building sizes. Accordingly, properties ranging from 40-to-100 acres may be required for a single development, taking into account the land coverage permitted in different locations. Ideally, parcels consisting of several hundred acres are most desired – several warehouses can be constructed on the site to create a campus setting and provide adequate space for corporate expansions.

- Property cost – The cost of the property, including the cost of the approvals, permits and site preparation are an overriding consideration. Large warehouses need a large amount of land. Lower property costs have driven site selection, for example, locations in Pennsylvania have become more competitive with New Jersey sites because of land and development costs.
- Speed of the approval and permitting process – Once a decision has been made on a site, the warehouse operator and developer want to start construction and be completed as quickly as possible. Potential delays in approval and permitting can reduce the attractiveness of sites. Conversely, programs that facilitate the permitting and approval process and minimize associated costs can attract development to an area. Pennsylvania has attracted the attention of industrial developers through the Keystone Opportunity Zone (KOZ) program, which reduces the tax burdens of selected locations and may streamline approval processes. In general, a developer will prefer a zoned site over a non-zoned one.
- Property conditions – Property conditions, such as the existence of wetlands or environmental contamination, factor into site considerations. The primary concerns are the cost and time involved in the mitigation of environmental contamination, creating flat areas for buildings, or the need for pilings. Similarly, historical and cultural impacts also factor into site considerations.
- Proximity to major population areas – Most DCs serve retail stores and related businesses, which are located proximate to dense population clusters. South Central PA can reach the New York-New Jersey-Philadelphia cluster, as well as other locations in New England, the Midwest and Middle Atlantic states, as illustrated in Figure 3.1.

Figure 3.1 Proximity of Logistics Centers to Customers

Circles represent the approximate distance a truck can travel in a day (inner circle is an out-and-back trip, outer circle is a one-way trip); green dots represent customer locations.



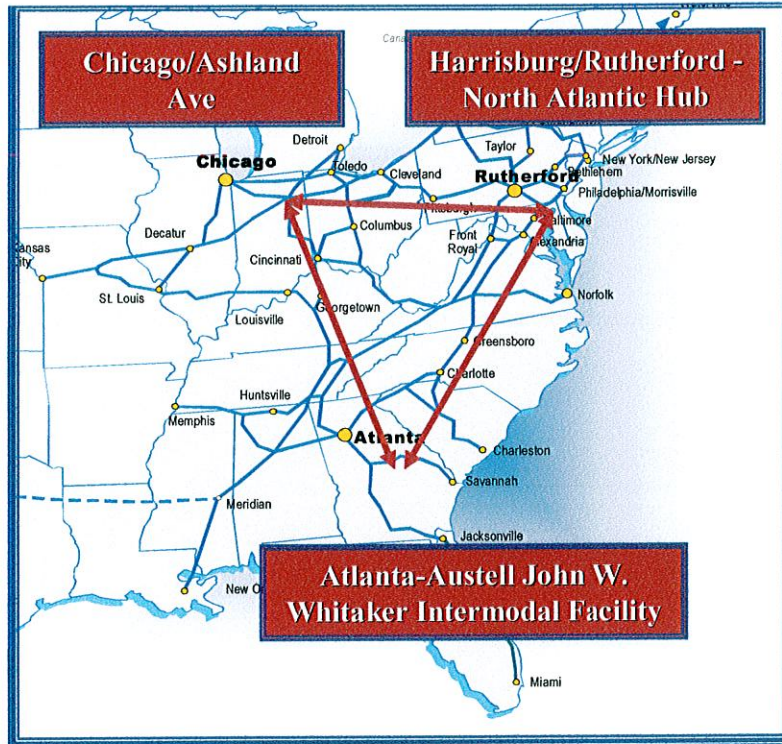
Warehouse Responses to Supply Chain Restructuring

Source: John Van Buskirk, NAI Logistics, "Warehouse Response to Supply Chain Restructuring," TRB, January 2006.

- Roadway access - Nearly all of the shipments leaving warehouses and distribution centers depart in trucks. Access to the major highways, particularly the Interstate Highway System is essential. Ease of access, including the condition of the local roads connecting to the highways, is a key consideration in site selection. The South Central PA region has a unique confluence of highways, including I-78, I-81, I-83 and the Pennsylvania Turnpike.
- Access to long distance modes - Ports and airports are the gateways for international trade. Major rail lines and yards provide cost efficient long distance domestic movement. Warehouses tend to exist where goods shift modes and where large concentrations of customers can be served. The South Central PA region has several major rail yards. Major Atlantic coast ports can also be accessed from the region - the Port of New York and New Jersey (the largest port on the East Coast), the Port of Philadelphia, the Port of Baltimore, and the Port of Wilmington. South Central PA's concentration of rail activity, combined with easy access to major population centers, makes the location

highly desirable. Figure 3.2 illustrates the importance of South Central PA to the Norfolk Southern Railroad's operations.

Figure 3.2 Norfolk Southern Railroad Intermodal Operations



Source: Steve Eisenach, Norfolk Southern Railroad, "Freight as a Good Neighbor," TRB, January 2004.

- Availability and access to labor - Warehouses undertaking value added activities or covering large service areas require a greater number of workers. Insufficient availability of workers can sink warehouse deals. A lack of available workers in the South Central PA area was noted during the study's private sector structured dialogue, including the loss of several major projects in the area.
- Additional factors influencing warehouse location include: availability of sewer and water hook-up; availability of service providers, especially trucking companies;

The South Central PA region is proximate to a unique clustering of ports, international air cargo, rail operations, roadways and population centers. As noted previously, this confluence of factors increases the attractiveness of the area for warehousing and DC activities.

3.3 Warehouses and DCs in the South Central PA

As shown in Table 3.3, over 186 million square feet of industrial property exists in the South Central PA region, as of the first quarter of 2006. The market shows considerable strength:

- The square footage of available property has grown by 17 percent since the second quarter of 2004.
- Nearly 55 percent of the properties are in excess of 200,000 sq. ft.
- 2.1 million square feet of space is currently under construction - 800,000 in Cumberland County, 800,000 in York County and 500,000 in Franklin County. Speculative construction (buildings constructed before a tenant is identified) continues throughout the area - DP Partners, ING/Exel, and Liberty Property Trust are advancing developments. According to CB Richard Ellis, Liberty plans a new industrial park with over one million square feet in Franklin County.
- The availability rate has declined from near 10 percent in 2004 to 6.5 percent in 2006.
- The net asking lease rate has risen from \$3.88/sq. ft. to \$3.99/sq. ft.

Table 3.3 Industrial Space as of First Quarter 2006

County	Square Feet	Availability Rate	Lease Rate
Cumberland County	43,980,480	6.9%	\$4.05
Dauphin County	34,092,593	6.7%	\$3.99
Franklin County	10,600,540	7.5%	\$4.26
Lancaster County	39,331,445	4.9%	\$4.47
Lebanon County	5,800,179	8.0%	\$2.90
York County	52,258,899	6.6%	\$3.80
Totals for SCPA	186,064,136	6.5%	\$3.99
Central/Northern New Jersey for Comparison*	783,173,411	6.8%	\$5.75

Source: CB Richard Ellis

* New Jersey information is for the fourth quarter of 2005.

Note: Adams and Perry County data was unavailable. Warehousing in these counties is relatively small.

In comparison, the largest distribution center market proximate to the South Central PA region is northern and central New Jersey. The New Jersey market has in excess of 783 million square feet, has a similar availability rate and a much higher average asking lease rate of \$5.75/sq. ft. Note that the New Jersey market is closer to the Ports of New York/New Jersey and Philadelphia, as well as central to the most affluent and dense concentration of population in North America.

Recent warehouse transactions in the South Central PA region include:

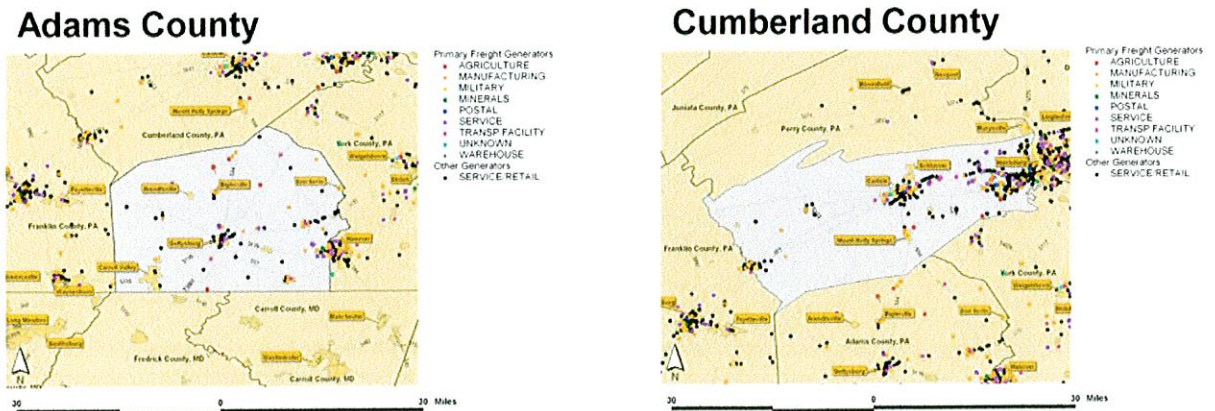
- I&G Direct Real Estate in Chambersburg, PA with 862,450 sq. ft.
- C&S Wholesale Grocers in Harrisburg, PA with 770,000 sq. ft. The company also recently completed a transaction for 1,215,923 sq. ft. in Allentown, PA.
- Borders in Carlisle, PA for 598,474 sq. ft.
- Crown Bolt in Carlisle, PA for 300,000 sq. ft.
- Kuehne + Nagel in Carlisle, PA for 208,000 sq. ft.
- Logisco in York, PA for 203,000 sq. ft.
- Malt-O-Meal in Camp Hill, PA for 120,000 sq. ft.

3.4 Major Freight Generators in South Central Pennsylvania

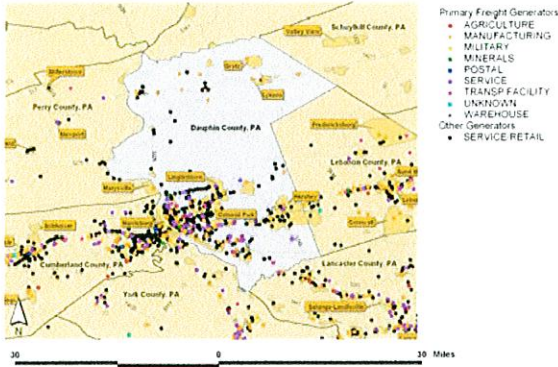
Figure 3.3 displays the major freight generating industries for each of the eight counties in South Central PA. This information was obtained from Dun and Bradstreet's InfoUSA business information database, enhanced with Global Insight's Freight Locator estimates of freight tonnages, and reviewed by each of the counties in the study area. The maps contain colored coded dots representing major freight generating industries with 50 or more employees in the following sectors: agriculture, manufacturing, military, minerals, postal, service/non-retail, transportation facilities, unknown, warehouse, and service/retail.

Two primary land use observations are evident from reviewing the maps. First, freight generating industries tend to cluster in cities and towns. This can be seen in locations such as Carlisle, Hanover, Harrisburg, Lancaster, and York. The other observation is that freight generating industries tend to cluster along major roadways, such as U.S. 30 and I-83.

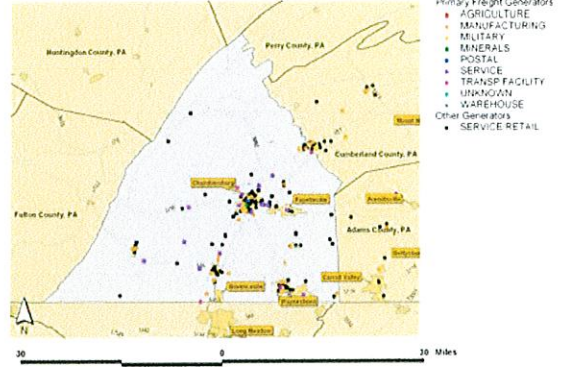
Figure 3.3. Locations of Major Freight Generators in South Central Pennsylvania



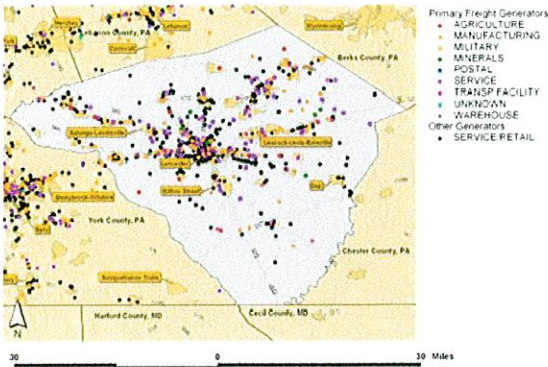
Dauphin County



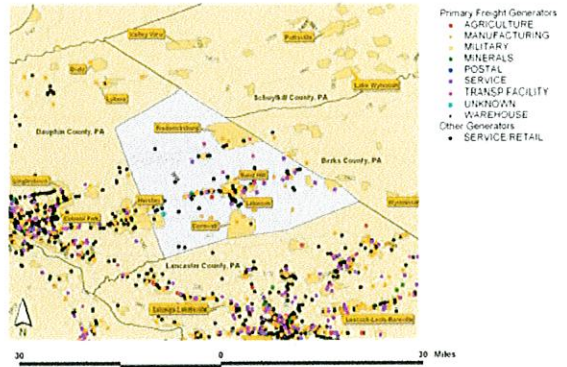
Franklin County



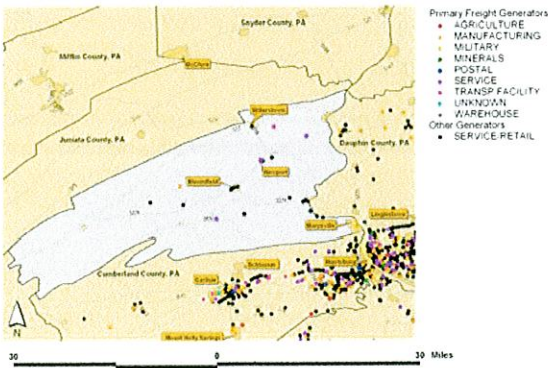
Lancaster County



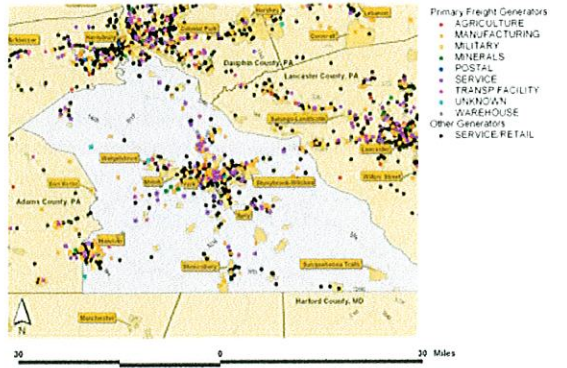
Lebanon County



Perry County



York County



Source: Dun & Bradstreet InfoUSA and Global Insight Freight Locator . Displays freight generating industries with 50 or more employees.

4.0 South Central Pennsylvania Regional Goods Movement Forecast

This chapter first offers a comparison of growth in freight volumes for the United States versus South Central Pennsylvania. It then provides a more detailed look at growth in freight movement in the study area by mode of transportation, type of movement, commodities, and growth on primary roadways. The chapter concludes with a summary table of the key growth trends by county.

4.1 South Central PA versus National Forecasts of Goods Movement

The U.S. Federal Highway Administration (FHWA) Office of Freight Management released a study entitled *The Freight Analysis Framework (FAF)*, which was a comprehensive look at freight flows across the country. This framework was based on 1998 movements, and included forecasts through the year 2020.¹⁶ Nationwide in 1998 there were 13.2 billion tons of goods moved by surface transportation (truck and rail) with a total value of \$8.1 trillion. Truck accounted for 82.4% of this total, while rail hauled the remaining 17.6%. Truck tonnage was forecasted to grow by 76.8% (2.6% annually) and rail by 55.4% (2.0% annually) by the year 2020. This growth is determined by economic forecasts of the commodities being moved and do not consider transportation factors such as congestion, capacity, quality of service, rates, or fuel costs. In other words, it looks at the underlying growth in demand on an unconstrained transportation network.¹⁷ The fact that truck shipments are growing at a faster rate than rail shipments is driven by faster growth rates for the underlying goods transported by truck, predominately consumer goods moving as secondary traffic from and between warehouses and distribution centers.

The South Central PA Regional Goods Movement Study used a base year of 2003 and developed forecasts through 2030. The same methodology was applied as in the FAF, with the forecasts being determined by economic rather than transportation factors. The results in South Central PA are consistent with, though slightly lower than, the national projections. Overall, the amount of tons hauled by trucks is projected to grow by 79.5% between 2003 and 2030, for an average annual growth rate of 2.2%. Rail traffic is projected to grow by 53.8% during the same period, for an average annual growth rate of 1.6%. [See Figure 4.1] One reason the South Central PA goods movement forecasts are lower than

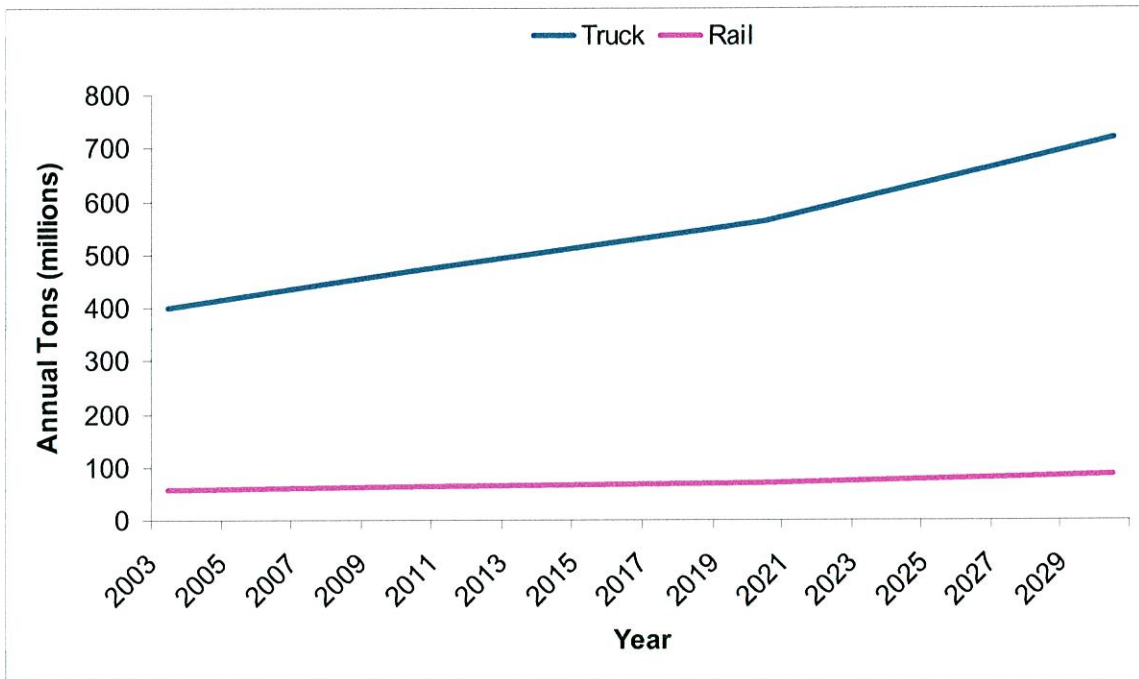
¹⁶ The Freight Analysis Framework 2 (FAF²) is in preparation. Base year numbers have been released, but the forecasts through 2035 are not yet available. More information on FAF and FAF² can be found at: http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

¹⁷ Growth in demand on an unconstrained network is typical for an initial planning study. To consider capacity constraints in the transportation network requires data and forecasts for both freight and passenger service, and a travel demand model.

the national rates is that the population and economic development in southern states is growing at a faster rate than northern states, thereby raising the national average. A second reason is that the FAF forecast are becoming outdated and do not reflect economic changes since 1998.

Figure 4.1 Growth in Truck and Rail Shipments in South Central PA

Truck tonnage is projected to grow by 79.5% from 2003 to 2030. Rail tonnage is projected to grow by 53.8% from 2003 to 2030. Forecasts were provided for the years 2010, 2020, and 2030.



Source: Global Insight forecasts of TRANSEARCH.

4.2 Forecasts by Mode, Traffic Type, Commodity, and Major Roadways

An average annual 2.2% growth rate in truck shipments and a 1.6% average annual growth rate for rail shipments through the year 2030 will place a tremendous strain on an already congested transportation network in South Central PA. Tables 4.1 and 4.2 show the growth by county. In Table 4.1, the forecasts are provided for each county by surface mode of transportation (truck and rail). In Table 4.2, the forecasts are provided for each county for type of traffic (inbound, outbound, and through).

The growth in truck tonnage is outpacing the growth in rail tonnage in every county, except Perry. In Perry County, the rail growth is buoyed by strong growth in rail intermodal traffic, and solid growth in coal traffic passing through to Dauphin county and east coast locations. Adams County is the only county to show a decline in rail traffic. This is due to projected declines in both inbound farm products and outbound nonmetallic minerals moving by rail. This is based on the underlying demand for these goods, and not a reflection of the quality of rail service.

Table 4.1 Growth in Truck and Rail Freight by County Through 2030

	Truck			Rail		
	2003 Annual Tons (Millions)	Percent Change by 2030	Average Annual Change	2003 Annual Tons (Millions)	Percent Change by 2030	Average Annual Change
Adams	51.2	73.2%	2.1%	2.4	-20.8%	-0.9%
Cumberland	337.4	80.0%	2.2%	10.5	35.3%	1.1%
Dauphin	335.0	80.7%	2.2%	51.8	60.6%	1.8%
Franklin	304.2	77.3%	2.1%	10.9	41.1%	1.3%
Lancaster	138.7	82.8%	2.3%	13.2	50.2%	1.5%
Lebanon	271.1	81.9%	2.2%	22.5	59.9%	1.8%
Perry	47.7	57.7%	1.7%	41.5	65.8%	1.9%
York	163.7	87.1%	2.3%	4.9	25.7%	0.9%

Source: Global Insight forecasts of TRANSEARCH. The tonnage in the table includes movements that traverse more than one county. They should not be added, since double counting may occur.

All counties in South Central PA are projected to grow in inbound, outbound, and through traffic, with two exceptions. [See Table 4.2] Outbound freight traffic from Adams County is projected to decline due to lower truck and rail shipments of nonmetallic minerals. Outbound freight traffic from Perry County is also expected to decline, also due to lower projections for shipments of nonmetallic minerals. In most instances the growth in freight traffic passing through South Central PA is outpacing the growth in inbound and outbound freight. Summaries descriptions of inbound, outbound, and through freight for each county are provided in Table 4.4.

Table 4.2 Growth in Inbound, Outbound, and Through Freight by County Through 2030

Through is defined as freight movements that pass through the county

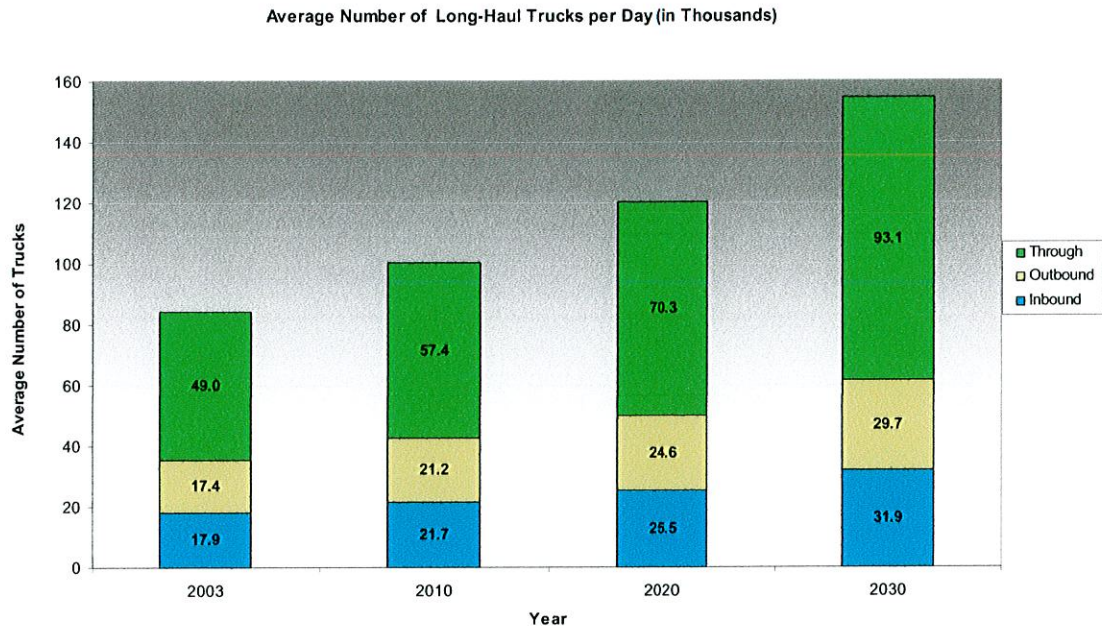
	Inbound			Outbound			Through		
	2003 Annual Tons (Millions)	Percent Change by 2030	Average Annual Change	2003 Annual Tons (Millions)	Percent Change by 2030	Average Annual Change	2003 Annual Tons (Millions)	Percent Change by 2030	Average Annual Change
Adams	3.9	55.7%	1.7%	5.7	-12.2%	-0.5%	44.0	80.7%	2.2%
Cumberland	6.0	59.2%	1.7%	14.8	65.4%	1.9%	327.1	79.6%	2.2%
Dauphin	9.5	129.7%	3.1%	11.1	30.3%	1.0%	366.3	78.1%	2.2%
Franklin	15.4	43.2%	1.3%	5.5	90.8%	2.4%	294.3	77.5%	2.1%
Lancaster	10.9	108.7%	2.8%	19.3	70.4%	2.0%	121.6	79.0%	2.2%
Lebanon	3.6	79.4%	2.2%	6.3	10.8%	0.4%	283.7	81.7%	2.2%
Perry	2.0	66.6%	1.9%	1.5	-16.7%	-0.7%	85.6	62.7%	1.8%
York	10.9	104.3%	2.7%	15.2	88.7%	2.4%	142.5	83.5%	2.3%

Source: Global Insight forecasts of TRANSEARCH. The tonnage in the table includes movements that traverse more than one county. They should not be added, since double counting may occur.

In Figure 4.2, the average annual tonnage is converted into average daily truck trips, again subdivided by inbound, outbound, and through. For the base year, there are 17,900 (21.2%) daily truck trips inbound to South Central PA, 17,4000 (20.6%) outbound from South Central PA, and 49,000 (58.1%) passing through the region. By 2030, the inbound truck trips are projected to increase to 31,900 (20.6%), the outbound to 29,700 (19.2%), and the average daily through truck trips are forecasted at 93,100 (60.2%). The percentage of truck trips passing through the region is forecasted to increase 2.1% (from 58.1% to 60.2%) between 2003 and 2030. The addition of more warehousing space in the region could help convert a portion of these through trips to inbound-outbound trips, thereby capturing additional economic benefits from this transient freight traffic.

Figure 4.2 Growth in Average Daily Trucks by Inbound, Outbound, and Through Shipments

Through is defined as freight movements that pass through the South Central PA region



Source: Global Insight forecasts of TRANSEARCH.

Growth in through truck trips is further broken out by commodity in Table 4.3. The highest growth is projected in machinery, with the largest volumes moving between New York and Philadelphia to and from Los Angeles. Other large movements of machinery are between the New York market and locations in the Midwest (Indianapolis, St. Louis) and Texas (Dallas, Houston). Growth is also projected to occur in electrical equipment, secondary traffic, and rubber and plastic products. Other through movements include empty containers (STCC 42) being returned from various regions through South Central PA to the ports at New York, Philadelphia, and Baltimore and petroleum products (STCC 29) moving from Louisiana and Texas to the New York and Philadelphia markets. Understanding the growth by commodity and geography can help to target warehouse and distribution center development aimed at these expanding markets.

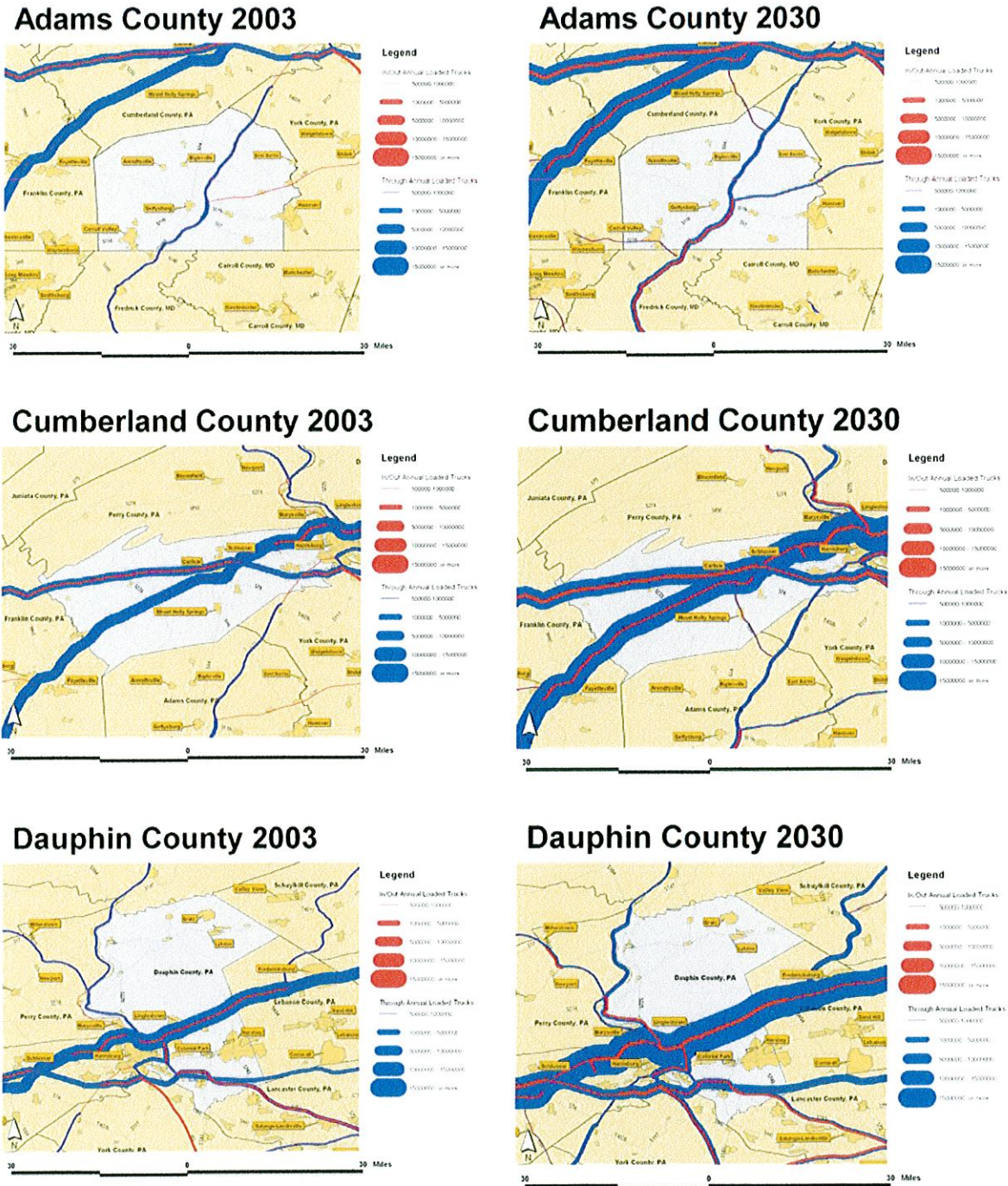
Table 4.3 Growth in Average Daily Through Trucks by Commodity
Through is defined as freight movements passing through the South Central PA region. Commodities projected to have more than 1000 average daily trucks in 2030 are shown.

STCC2	Commodity Description	Average Daily Truck Units 2003	Average Daily Truck Units 2030	Pct Change
11	Coal	717	1,253	74.8%
14	Nonmetallic Minerals	4,245	6,226	46.7%
20	Food Or Kindred Products	5,051	8,805	74.3%
24	Lumber Or Wood Products	2,313	2,529	9.3%
26	Pulp, Paper Or Allied Products	1,684	2,303	36.7%
28	Chemicals Or Allied Products	5,121	6,948	35.7%
29	Petroleum Or Coal Products	4,309	6,690	55.3%
30	Rubber Or Misc Plastics	1,859	3,802	104.5%
32	Clay, Concrete, Glass Or Stone	3,462	6,037	74.4%
33	Primary Metal Products	2,494	2,801	12.3%
34	Fabricated Metal Products	1,607	2,550	58.6%
35	Machinery	996	8,498	753.3%
36	Electrical Equipment	775	3,217	315.3%
37	Transportation Equipment	1,581	2,531	60.1%
42	Shipping Containers	4,663	8,149	74.7%
50	Secondary Traffic	5,038	15,942	216.4%
	Totals	45,915	88,279	92.3%

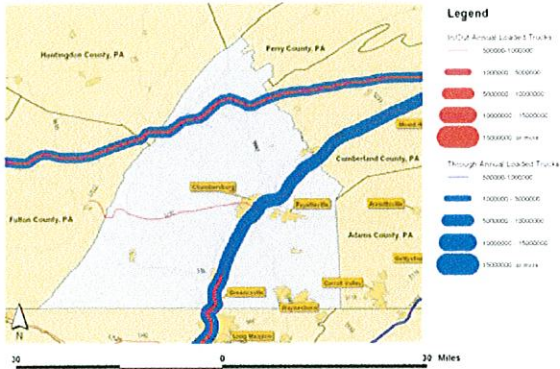
Source: Global Insight forecasts of TRANSEARCH.

Figure 4.3 is a series of traffic density maps showing the annually number of trucks assigned to major roadways in the study area. For each county, the 2003 base year truck volumes are displayed on the left-hand side and the 2030 forecast on the right-hand side. The maps display truck trips inbound and outbound to the region in red, and truck trips passing through the region in blue. The scales are constant on each map, with the largest category being 15 million or more annual trucks.

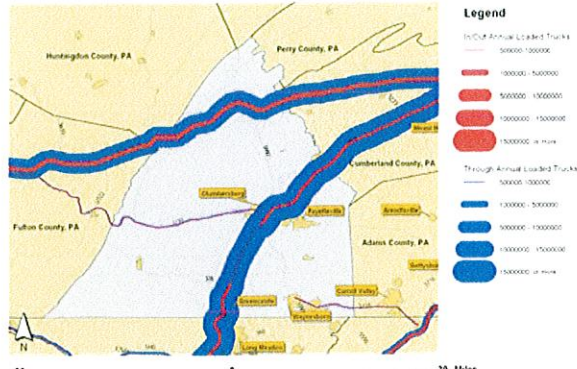
Figure 4.3 Growth in Annual Trucks on Major Roadways by County
Through is defined as freight movements that pass through the South Central PA region



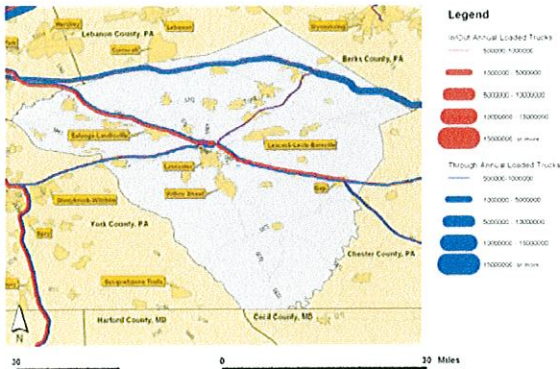
Franklin County 2003



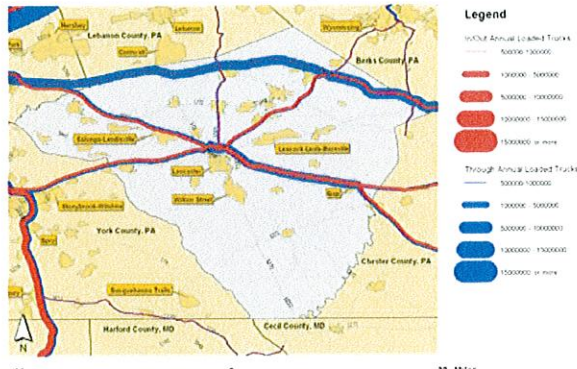
Franklin County 2030



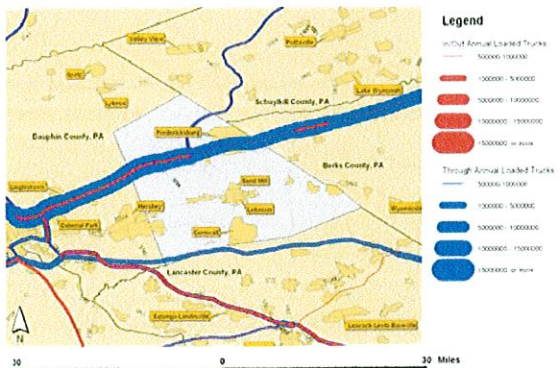
Lancaster County 2003



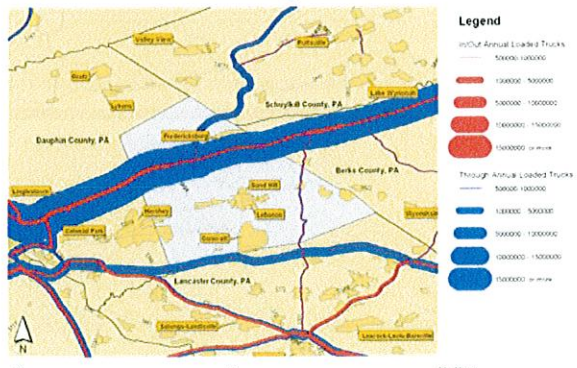
Lancaster County 2030



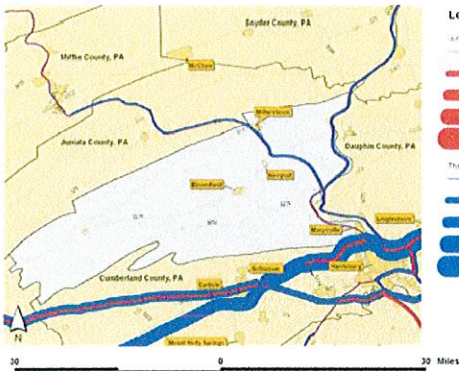
Lebanon County 2003



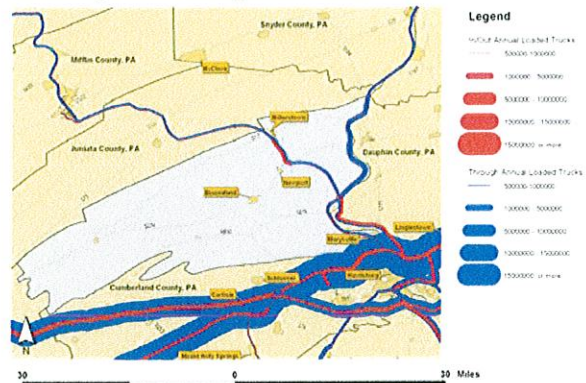
Lebanon County 2030



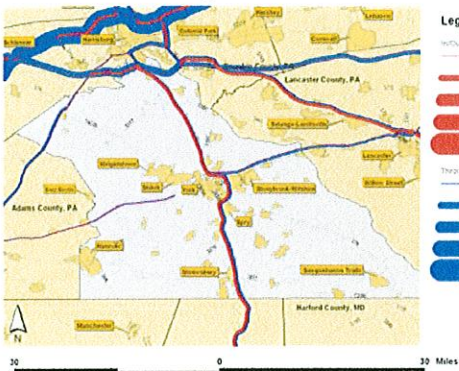
Perry County 2003



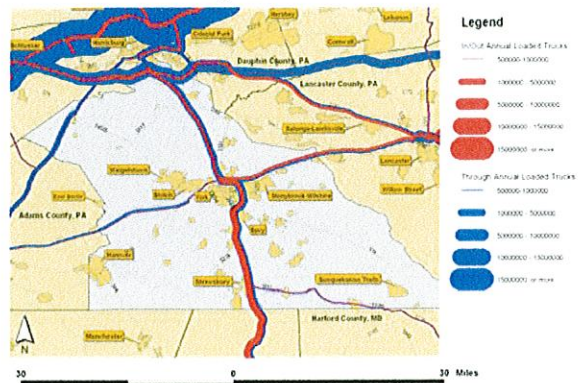
Perry County 2030



York County 2003



York County 2030

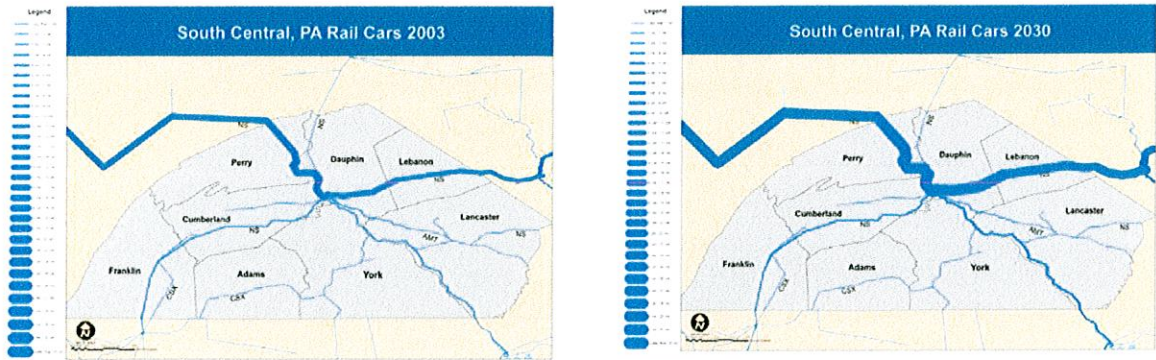


Source: Global Insight forecasts of TRANSEARCH.

Figure 4.4 shows the base year and 2030 forecast for rail traffic in the study area. The largest growth is projected on the NS mainline running through Perry, Dauphin, and Lebanon counties. The scales are constant on each map, with the largest category being 30 million or more annual rail cars.

Figure 4.4 Growth in Annual Railcars in South Central PA

Base Year 2003 on left, forecast for 2030 on right. Maximum category is 30 million or more annual railcars.



Source: Global Insight analysis and forecasts of the STB Carload Waybill Sample

Table 4.4 contains a summary of the main trends contained in the previous charts, tables and maps, broken out by county.

Table 4.4 Summary of Primary Forecast Trends by County

Through is defined as freight movements passing through the county.

County	Inbound Freight	Outbound Freight	Through Freight	Roadway Growth
Adams	Increase in trucks hauling most commodities, especially secondary traffic and construction material. Increase in rail shipments of food. Decrease in truck and rail moves of farm products.	Decrease in truck and rail moves of nonmetallic minerals. Gains in outbound truck moves of food and farm products.	Increased through rail movements of construction materials. Increased through truck moves of nonmetallic minerals, secondary traffic, food, and chemicals.	Increasing inbound/outbound trucks on U.S. 15, especially south of U.S. 30 Increasing through trucks on U.S. 30, especially east of U.S. 15 Less through truck volume than neighboring counties

County	Inbound Freight	Outbound Freight	Through Freight	Roadway Growth
Cumberland	Large gains in truck movement of secondary traffic, gains also in food, petroleum, and construction material. Rail traffic declines of inbound farm products, food products, and chemicals.	Large gains in outbound truck movement of secondary traffic. Decline in rail shipments of food products, metal products, farm products, and transportation equipment. Rail gains in loaded and empty containers.	Truck through movements of secondary traffic, food products, nonmetallic minerals, petroleum, and chemicals all show large gains. Rail shows gains in coal and food products.	<p>Most trucks on I-81 pass through South Central PA</p> <p>Growth on I-83, PA 581, and PA 34/94 by 2030</p> <p>PA Turnpike in Cumberland County mostly handles through traffic, but also significant local traffic</p>
Dauphin	Gains of inbound truck shipments of secondary traffic and food products. Gains in inbound rail moves of containers and trailers, food products, and chemicals.	Gains in truck moves of secondary traffic, food, and petroleum. Losses in truck traffic of nonmetallic minerals. Gains in outbound rail moves of containers and trailers, food products, and chemicals. Loss in primary metal products shipped by rail.	Truck shipment gains in secondary traffic, food products, nonmetallic minerals, petroleum, and chemicals. Gains in through rail shipments of coal, food products, and chemicals.	<p>Key freight routes include I-81, I-83, PA Turnpike, US 22/322 and PA 283</p> <p>I-81 and PA Turnpike east of Harrisburg are dominated by through trucks</p> <p>I-83 is projected to increase in through trucks by 2030</p> <p>PA 283 has large percentage of inbound/outbound trucks</p>

County	Inbound Freight	Outbound Freight	Through Freight	Roadway Growth
Franklin	Gains of inbound truck shipments of nonmetallic minerals, construction materials, and secondary traffic. Increase in rail movement of coal and food products.	Growth in truck shipments of construction material, nonmetallic minerals, and a large growth in farm products. Rail shows increases in outbound moves of coal, waste and scrap materials, and farm products.	Increases in secondary traffic, food products, petroleum, nonmetallic minerals, and chemicals passing through in trucks. Rail through moves show gains in coal, food products, and construction materials.	<p>PA Turnpike in Franklin County mostly handles through traffic, but also significant inbound/outbound traffic</p> <p>I-81 is mostly through traffic, and moderate inbound/outbound traffic south of Greencastle and north of Chambersburg by 2030</p> <p>Through trucks starting to use US 30, by the Year 2030</p>
Lancaster	Increased inbound rail movements of food products, farm products, and pulp and paper. Increased inbound truck movements of secondary traffic, construction material, coal, food products, and petroleum.	Outbound rail shows the largest increase in waste and scrap materials. Outbound truck shows increases in nonmetallic minerals and food products. Truck moves of farm products and construction materials show slight declines.	Through rail shipments show large increase in coal, and smaller increase in chemicals, farm products, and food products. Through truck shipments show an increase in secondary traffic, nonmetallic minerals, food products, and petroleum.	<p>PA Turnpike predominately handles through traffic</p> <p>Routes 30 and 283 predominately handle local traffic</p> <p>Local traffic projected to grow on US 15</p> <p>Inbound/outbound traffic projected to grow on US 222 and PA 501</p>

County	Inbound Freight	Outbound Freight	Through Freight	Roadway Growth
Lebanon	Rail shipments are projected to increase in food products, nonmetallic minerals and chemicals, and decline in farm products. Truck shipments show a large gains in secondary traffic, and smaller gains in petroleum, food products, and construction material.	Outbound rail shows a slight decline in nonmetallic minerals. Outbound truck shipments show large gains secondary traffic, small gains in farm products, large losses in nonmetallic minerals, and small losses in food products.	Through rail shipments show strong growth in container and trailer traffic. Through truck traffic shows rapid growth in secondary traffic, and strong growth in food products, petroleum, chemicals, and nonmetallic minerals.	Most I-78 and I-81 freight (current and forecasted) is through traffic PA 501 traffic growing (mix of South Central PA inbound/outbound and through) PA Turnpike predominately handles through traffic
Perry	Growth in inbound truck shipments of food products, petroleum, and nonmetallic minerals. No inbound rail shipments.	Decline in truck shipments of nonmetallic minerals, offset by gains in farm products and secondary traffic. No outbound rail shipments.	Additional through truck shipments of nonmetallic minerals, secondary traffic, petroleum, and food products. Increases in rail shipments of coal and secondary traffic.	US 22/322 and US 11/15 are primary freight routes Both US 22/322 and US 11/15 handle significant regional through traffic
York	Increase in rail shipments of coal. Large increase of truck shipments of secondary traffic, construction material, coal, food products, and petroleum.	Increase in rail shipments of construction material, waste and scrap, and chemicals. Increases in outbound truck shipments of secondary traffic, nonmetallic minerals, construction materials, petroleum, and food products.	Decrease in through rail shipments of nonmetallic minerals. Increase of through truck shipments of secondary traffic, nonmetallic minerals, food products, petroleum, and construction material.	Increasing truck traffic on I-83, adding some through traffic by 2030 Inbound/outbound traffic growing on US 30 and PA 851 east of I-83 Through traffic growing on US 15 and US 30 west of the city of York

5.0 Goods Movement Issues

The current and projected movement of freight in the South Central Pennsylvania region creates many issues, impacting nearly every resident, visitor, carriers, and shipper. These issues range from congestion on the roadways, to impediments to economic growth, to safety, to quality of life for residents and quality of experience for visitors. This chapter discusses the major issues identified during the study.

5.1 Trucking Issues

Truck parking areas

Truck drivers are limited to the amount of time they can drive based on Hours of Service Rules. According to the Rules, when their time is up, a driver must park the truck and rest. This is the reason trucks are often seen parked along interstates at rest areas, weight stations, and other pull-offs. Some areas can be unsafe, presenting dangers for the drivers. Safe locations where truck drivers can rest during their journey are needed to improve driver safety and provide security for their shipments.

A related problem is that during the extreme heat of summer or cold of winter, the drivers must keep the trucks idling to provide air conditioning or heat. This burns fuel and reduces air quality, in fact one estimate is one billion gallons of fuel per year is burned by idling truck engines.¹⁸ A technology to combat this is known as Truck Electrified Parking (TEP). TEP provides electrical power to trucks through outlets, allowing the trucker to operate heat, air conditioning, televisions, refrigerators, and other electrical appliances. The cost is about \$1.00 per hour, compared to \$3.00 per gallon of diesel that is burned (idling burns about one gallon per hour).¹⁹ The Federal Highway Administration (through SAFETEA-LU) and the Environmental Protection Agency are potential funding sources to develop more TEP locations.

Improved truck driver directions

Long-haul truck drivers often travel to unknown areas, which increases the chance that they become lost for part of the trip. This was identified as a serious problem during the South Central PA RGMS study. It adds significant truck vehicle miles traveled to the roadways as the drivers search for their customers, which burns fuel, creates additional pollution, increases congestion, presents safety problems, and causes additional deterioration of the roadways. One solution is to create a regional truck map that would show the primary truck routes and key trucking customers. A second solution would be

¹⁸ Washington State Department of Ecology, "Focus on Reducing Engine Idling at Truck Stops," October 2005.

¹⁹ Ibid

to improve signage to the most frequently visited truck locations. Another solution would be to create an information center that would provide drivers with improved directions.

Traffic congestion

Truck drivers are often paid by the mile (billboards in the South Central PA area advertise truck driver jobs at a rate of \$0.53 per mile), which means they are not making as much money when sitting in congestion. This results in trucks running earlier in the morning, during the midday, and later at night to try to avoid congested rush hours. This is not always possible though, as they often have time windows when shipments must be delivered and picked-up. Between the additional fuel used and the less efficient utilization of the drivers' time, congestion drives up the cost of transportation, thereby driving up the cost of goods.

Interstate 81

I-81 is a much studied roadway, especially the high volume of trucks which is at 40% in some areas. Virginia has spent significant effort studying this problem, and are considering (1) adding a third lane in each direction; (2) adding a separated truck only toll lane in each direction; and, (3) investing in the parallel Norfolk Southern Rail line to divert some of the freight movement. Pennsylvania has been considering adding a third lane, in part to accommodate the large truck volumes. Any efforts need to be coordinated among the Tennessee, Virginia, West Virginia, Maryland, and Pennsylvania. The freight forecasts provided in Chapter 4 of this study, combined with passenger forecasts from other studies, should support the decision on whether or not additional lanes are needed.

Driver Shortage

A serious problem in the trucking industry is a shortage of drivers. One estimate places the shortage at 110,000 drivers by the year 2014.²⁰ The problem is that truck driving is a difficult lifestyle - long hours away from home, safety and security concerns, federal regulations (drug testing, hours of service rules, commercial driver license), and in many cases low pay. The competition for truck drivers is the construction industry, which offers a more desirable lifestyle. Trucking companies are using many strategies, including efforts to increase pay and benefits, improved scheduling, extensive training, and bonuses for safety. Another strategy for reducing truck drivers is to place long haul truck trailers on flatbed railcars, then drivers are only needed at the rail origin and destination for the local pick-up and delivery.

5.2 Railroad Issues

Norfolk Southern Hub: Rutherford, Harrisburg, and Enola

²⁰ Mark Wagner, Vice President, Schneider National, presentation at the Transportation Research Forum annual meeting, New York, NY, March 24, 2006.

Norfolk Southern operates three major terminals in the study area. Enola is a hump yard used to classify carload traffic. Rutherford and Harrisburg are intermodal yards used to handle intermodal (containers and trailers) traffic. These yards are key locations in the NS network, and form their North Atlantic Hub (see Figure 3.2), where these containers and trailers are grounded for truck deliveries. Rutherford generates 562 lifts per day (the physical lifting of a container off a rail car or onto a truck), while Harrisburg generates 512 lifts per day.²¹ The majority of these containers and trailers generate truck moves to eastern locations. Strategies and investments to help keep these trailers and containers on the railroad closer to their destination will divert some trucks from the roadways. One such strategy identified in the Wilmington-Harrisburg Study was the creation of a NS Triple Crown intermodal terminal in Newark, DE near the Chrysler Assembly Plant.

Lemoyne Connector

Another congestion reduction strategy concerning Norfolk Southern is the Lemoyne Connection. Currently, rail traffic on the Lurgan Branch of NS operations crosses the Susquehanna, circles Harrisburg, and crosses the river again to access the Enola yards. The Lemoyne Connector has been proposed by NS in order to reduce redundant movement and reduce associated congestion. The proposed connector will free capacity on rail lines in the Harrisburg area, thereby improving efficiency on the intermodal system.

Keystone Corridor

PennDOT, through the Public Transit Division, is undertaking an analysis to determine the cost of raising clearances on the Keystone Corridor – the Amtrak rail line connecting Philadelphia and Harrisburg. The study will evaluate the construction costs and economic benefits of the project. To date, the project team has compiled an inventory of the 87 overhead structures between ZOO Tower in Philadelphia and the Harrisburg Train Station. Field inspections are underway to develop cost estimates for the clearance improvements, and an evaluation of current and forecast traffic flows has begun. The objective of the analysis is to determine if the regional economic benefits of the clearance improvements can justify public investment in the project. These benefits will largely accrue from diversion of freight from trucks to rail and the prevention of possible future diversion of rail to trucks.

CSX Intermodal Center in Franklin County

CSX Corporation has purchased land near Chambersburg and is planning to build a logistics center. The scale and scope of this center is unannounced at this time, but it will place additional truck traffic on local roadways around the center, which should be carefully planned to minimize impacts on residents.

²¹ Source: Norfolk Southern Railroad.

5.3 Air Cargo Issues

Harrisburg International Airport handles approximately 48,000 tons of air cargo each year. This traffic arrives mostly in dedicated freighters. Belly freight (i.e. in the cargo hold of a passenger plane) used to be more prevalent, but has declined since 9/11 for security reasons. Most of the 48,000 tons of cargo is high value, small package shipments involving carriers like UPS, Federal Express, and DHL. Although the volumes are small compared to truck and rail traffic, air cargo does provide a significant service that can help attract high paying white collar and high technology jobs to a region.

The airport views the cargo business as complementary to the passenger business, and is seeking to expand operations. Under Phase I, additional warehouse space will be added along with other improvements to better support existing business. Phase II will open up the west end of the property for expansion of cargo business.

To support this growth, the airport is interested in improved access to the PA Turnpike and the introduction of a true multi-modal (ground, air, and rail), cargo facility to the west end. Both of these improvements would support the movement of goods and help attract more air cargo to the airport.

5.4 Impediments to Economic Growth

At a meeting with representatives of the South Central PA area Council of Supply Chain Management Professionals, several issues related to economic growth in the area were identified. These included:

Incompatible land use

Local zoning ordinances in South Central PA can create incompatible land use situations with industrial sites located adjacent to residential developments with no buffer area in between, and both land use types sharing the same access roads. This forms a lose-lose situation. The residents don't want the commercial activity and high truck volumes in their neighborhoods. The commercial operators don't want the safety, security, and mitigation expenses associated with the proximity to non-commercial areas. This incompatible land use can discourage warehouse and land use development, impacting local jobs and economic expansion.

Solutions that have been adapted in other regions include buffer zones and creating pre-zoned warehouse districts. Mixed use neighborhoods, designed with buffer zones could be designed, incorporating restrictions that insure any new warehouse or distribution center must be located a sufficient distance from residential areas to allow for a transition between land uses. Similarly, new residential development must allow a transitional buffer between existing commercial uses. Sufficient distance is dependent upon the goals

of the community, availability of land, and the desire to use other mitigation devices such as sound walls.²²

Another approach is to create pre-specified districts where warehousing and distribution centers are clustered. Taking this concept to an extreme, a popular design in Europe are “freight villages” where long-haul shipments are brought to the fringe of an urban area and then broken down into smaller vehicles for final delivery. The process is reversed for outbound shipments, where smaller vehicles pickup the goods in the region and deliver them to the freight village for consolidation and long-haul movement. This creates a separation of long-haul freight activity from local freight activity. The railroads are moving in this direction, replacing land constrained urban yards with new integrated logistics centers (ILC). The Burlington Northern Santa Fe has been successfully operating an ILC in Joliet, IL and CSXT recently announced an ILC in Winter Haven, FL that will serve both the Orlando and Tampa markets.

Fragmented governments

Parcels of land suitable for warehouse and distribution center development can often be located across judicial boundaries creating difficulties for the developer. It can also be the case that the land is in one jurisdiction, but water, sewer, electrical or transportation access crosses other jurisdictions. Dealing with these fragmented governments can greatly slow, and in some cases halt, development.

A potential role for a centralized freight planning organization is to help developers navigate these local issues, thereby spurring economic growth in appropriate areas. While the freight planning organization may not have authority in these matters, they can act as a facilitator among the various parties to coordinate land use and transportation issues. This issue could also be largely eliminated if pre-specified warehouse districts were created, as discussed in the previous section.

Labor shortage

One of the surprising items discovered during this study is a serious labor shortage potentially impacting the development of warehousing and distribution centers in South Central PA. This is particularly an issue in Cumberland and Dauphin Counties where the workforce is not sufficient to support the rapid growth in warehouse space. This is causing new development to occur in other central Pennsylvania regions, as will be discussed in the next section.

One possible labor source could be drawn from the excess of workers in the Adams County fruit industry. This population has seen job opportunities decrease as the fruit industry faces increasing international and domestic competition. Although this might be

²² This should not be construed to mean that all mixed land use should be avoided. Some instances, such as residential and retail, make sense under the right conditions.

an ideal fit to transition a portion of these workers into warehousing jobs, a primary obstacle appears to be immigration related issues.

5.5 Next Frontiers for Warehousing and Industrial Space

Driven in part by the labor shortage, the next frontiers for warehousing and distribution growth were identified as;

- South on I-81 at the Plainfield exit and near Marion and Shippensburg: this area has good north-south access on I-81, and can easily reach I-70 and the PA Turnpike for east-west travel.
- North on I-81 at Hazleton, Tremont, and Minersville: this area has good north-south and east-west access, and a readily available work force. This region, outside of the South Central PA study area, appears to have the greatest potential for economic growth due to warehousing and distribution center development.
- Lebanon County: another area with an available labor source, Lebanon County has good east-west access on the PA Turnpike and I-78, but north-south access is not as strong as other areas.

5.6 Hazardous Materials Response Planning Issues

The U.S. DOT has nine classes of hazardous materials: explosives, gases, flammable/combustible liquids, flammable/water reactive solids, oxidizers, poisons, radioactive, corrosives, and other. These hazmats flow through South Central PA every day in trucks and in railcars, serving both local markets and the larger markets in Philadelphia, New York/New Jersey, Baltimore, and Washington, DC. Emergency responders in the region need to have a good understanding of the types of hazardous materials or “hazmats” being transported in the region so they are better prepared in the event of an accident or incident. Better information allows them to have proper training and materials to handle incidents involving hazmats regularly traveling in the region, and proper contact lists for alerting appropriate response teams for incidents involving materials outside of their capability.

Most firefighters are trained at an operational level, which teaches defensive strategies for confining a spill, but not actually stopping or cleaning it. The goal is to minimize harm to the public until teams with more specialized training can arrive. The training also includes identification of hazardous materials. Knowing what materials are involved and understanding their characteristics are essential for proper protective and defensive measure. Analysis of freight movements can help focus training and equipment on the hazmats most common to a region.

Discussions with several emergency responders in the South Central PA region identified a better knowledge of hazmats originating and terminating at industries within their region, than on hazmats passing through their region. There is also a difference in knowledge by mode.

Hazmats moving by rail are better understood than hazmats moving by truck since there are a limited number of rail carriers. The railroads work with the local emergency responders to educate them on the types of materials being transported in their region and who to contact in the event of an accident or incident. CSX Transportation, for example, publishes a highly confidential booklet entitled "Community Awareness and Emergency Planning Guide." This booklet describes the major hazmats moved by the railroad, emergency response contact information, on-scene incident response guidelines, and information on population protection, passenger-commuter train considerations, and bridge and tunnel issues. The booklet, along with face-to-face railroad meetings, are available to any official emergency response team requesting the information. Norfolk Southern offers similar services.

Few hazmats travel by air cargo, but there are instances of highly valuable material moved in freighters. Past practices of moving flammable or dangerous goods in the belly of passenger planes has mostly been halted for security and safety concerns. Any hazmat moved by air carriers is subject to strict FAA regulations and the materials are well documented and known in advance.

The largest issues with understanding hazmats typically involve those moved by truck. Although the trucking companies are required to take certain precautions moving these materials, and the drivers are required to obtain special training and permits for transporting different classes of hazmats, the wide variety of shipments and large number of carriers make it difficult to gather information on the types and volumes of shipments in the region. The trucks may have placards on the sides indicating the nature of the material, but this is only required if the hazmat is being carried in enough quantity to exceed thresholds set for the particular material. Placards may only indicate the general hazard class and not the specific material being transported, in which case, they may not provide sufficiently detailed information. It is also important to recognize that Turnpike tunnels in South Central PA may have materials restrictions that affect truck movement.

Hazmats traveling by truck can be thought of in different classes:

- Local Shipments: Materials used, stored, or manufactured locally. This class is typically best understood by local emergency response teams since it involves local industries and regular shipments of the same materials.
- Transient Shipments: Hazmats passing through South Central PA for use or storage in other locations. This class is often less understood by local emergency response teams since it can involve a wide range of hazardous materials transported to many different locations by trucking companies not based in the region. Many of the emergency responders in South Central PA have addressed this problem by gather data in one of two ways. First, emergency response teams, such as Adams County, have conducted truck

intercept surveys where drivers on specific roadways are stopped and asked what they are carrying and where they are going. The negatives aspects of intercept surveys are the expense, potential safety problems, and they assume that the survey day(s) are typical of the entire year. The positive aspects is that they reveal detailed, real-time information that can not be obtained by any other source. A second method is to analyze a commodity flow database to estimate the types and quantities of hazmats that pass through a region on an annual basis. York and Perry Counties are currently using this approach. Commodity flow analysis has the advantage of being representative of an entire year, and it is less costly and safer than an intercept survey. The disadvantage is that it is modeled information that may not be as accurate as an intercept survey.

- Special Permit Shipments: Certain hazmats require special permits (e.g., nuclear waste, explosives). PennDOT maintains these permits and they can be made available to emergency responders in a county. Within South Central PA, several of the larger emergency response units regularly obtained this information, while the smaller units often did not have the available staff to monitor this information.
- Military hazmats: Military shipments are generally classified information (e.g., shipments of munitions). For areas housing a military base, the emergency responders can work with local military logistics teams to improve preparedness. For military shipments passing through a region, the information on hazmat shipments is difficult, if not impossible, to obtain.

5.7 Quality of Life/Quality of Experience: Practices for Better Integrating Freight Facilities and Operations with Community Concerns

The increased movement of goods, particularly on roads, on rail lines and through the ports, has not gone unnoticed by affected populations. Communities are often reacting more adversely to the increased and more visible amount of freight movement, voicing concerns that it interferes with their quality of life or other activities in the area. South Central PA (Gettysburg, Hershey, and areas around Lancaster in particular) has the additional need to maintain and enhance the quality of the experience for visitors whose tourism dollars are a significant part of the local economy.

Additional issues for communities, as identified in the 2003 Transportation Research Board (TRB) report, *Integrating Freight Facilities and Operations with Community Goals*, include traffic flow and congestion; safety and security; air quality and the environment; achieving economic development goals; noise, excessive light and vibrations; and concerns about land use and value.

Integrating freight transportation facilities and operations with community goals can be complex. There is no "one size fits all" solution for making freight operations and facilities "good neighbors" within their communities. Indeed, solutions for better

integrating freight operations and leveraging their economic development potential may vary among locations within a given region.

The TRB report identified a wide range of practices to balance or mitigate the presence of freight facilities and operations, which can serve as a starting point for local discussions. Examples of these practices include:

- Traffic flow and congestion: Replacing railroad-highway at-grade crossings with grade separations; motivating shippers to adopt strategies that reduces heavy truck usage on most congested roadways and at most congested times; reducing empty truck moves through programs to find return shipments, and scheduling truck appointments to pick up or deliver shipments.
- Safety and security: Undertaking public education programs such as Operation Lifesaver and the NoZone; creating highway watch programs to leverage the presence of trucks into an added security net for all motorists; and strengthening cargo inspections. The development or expansion of truck rest areas can also improve safety by reducing the need for drivers to pull to the shoulders of roads when their legal number of operating hours has been reached.
- Economic development: Combining economic and transportation system development; retaining existing industrial areas; redeveloping brownfields; and hiring locally for freight transportation project construction and on-going operations.
- Air quality: Implementing “green” practices, such as electrical hook-ups at truck rest areas and using alternatively fueled equipment; reducing the need to idle trucks and locomotives; and promoting beneficial reuse of dredged materials from ports.
- Noise and vibrations: Modifying the hours of freight operations to when residents are not home; installing sound walls; limiting the hours of loading dock operations; installing hush kits on cargo aircraft; and creating whistle-free quiet zones or installing wayside horns at railroad-highway grade crossings.
- Land use and value: Creating buffer zones to transition between freight/industrial uses and residential uses; creating neighborhood investment funds; requiring developers to make the necessary highway access improvements for trucks.

As noted in the TRB report, communication is one of the keys to success. Having a common understanding of the issues, educating and building awareness, working together and organizing to craft the solutions, and continuously checking to see if the solutions remain effective ensure that freight transportation facilities and operations can be integrated with community needs and goals.

The first step in the process is having a sound, factual foundation for discussion.

5.8 South Central PA Highway Bottlenecks

The Pennsylvania Department of Transportation (PennDOT) provided the study team with an initial list of the top highway freight bottlenecks in South Central PA. This list was updated and revised by the Steering Committee.²³ The top freight bottlenecks on South Central PA roadways are:

<p>Adams County</p> <ul style="list-style-type: none"> - US RT. 15 and US RT. 30 - US RT. 30 and SR 94 - US RT. 30 thru Gettysburg Square - US RT. 30 and New Oxford – Roundabout - SR 97 and SR 194 	<p>Cumberland County</p> <ul style="list-style-type: none"> - I-83 and I-581 - US 15 and I-581 - I-81 at Exit 29 - I-81 and PA 581 - US RT. 11 and PA TPK (Miracle Mile) - US RT. 11 and I-81 - US RT. 15 and Slate Hill Rd - I-81 and SR 34 - St. Johns Church Road and Railroad - I-81 and PA 465 (Exit 44) - US 11/15 between 21st Street in Camp Hill and Perry County line - PA 34 at Sunnyside Drive
<p>Dauphin County</p> <ul style="list-style-type: none"> - I-83 and 19th Street - Eisenhower Interchange (I-83/I-283/US 322) - I-283 and PA 283 - I-81 and SR 39 (Exit 77) - I-83 and US RT. 22 - I-81 and SR 743 (Exit 80) - US RT. 22 and SR 0039 - PA 147 and PA 225 (two intersections) - US 22/322 and PA 39/Industrial Road - US 322 and PA 743 (Hershey) 	<p>Franklin County</p> <ul style="list-style-type: none"> - I-81 and SR 997, Exit 20 - I-81, Exit 5 and PA SR 16 - I-81, Exit 24 and SR 696 - SR 16 and SR 997

²³ Inclusion of a bottleneck on this list does not imply funding from PennDOT, South Central PA Steering Committee members, or other source.

<p>Lancaster County</p> <ul style="list-style-type: none"> - SR 462 and US RT. 30 - PA 23 and SR 772 - US RT. 30 and SR 441 - US RT. 30 and SR 741 - SR 501 and SR 772 (Lititz Square) - PA 72 and PA 772 (Manheim Square) - US RT. 30 and SR 41 - PA 741 and PA 462 - PA 741 and PA 23 - US 322 and PA 23 - Centerville Road from PA 23 to PA 462 - PA 272 and PA 372 - PA 741 and PA 896 - US 222 and Marshall/Keller Aves. - PA 72 and Keller Ave. 	<p>Lebanon County</p> <ul style="list-style-type: none"> - SR 419 and SR 501 - PA 72 and Lebanon City (RR – at Grade Crossings) - PA 72 and Lickdale Interchange - SR 72 and SR 419 - US RT. 422 and SR 501 - US RT. 22 and RT 343 N. B. - US RT. 422 and SR 934
<p>Perry County</p> <ul style="list-style-type: none"> - US RT. 11/15 in Perdix and US RT. 11/15 and SR 850 - SR 34 and SR 850 - US 11/15 and US 22/322 	<p>York County</p> <ul style="list-style-type: none"> - I-83 and US RT. 30 - I-83 and SR 462 Interchange, Exit 19 - I-83 and PA Turnpike - I-83 and SR 74 - US RT. 15 and SR 74 N.B. - US RT. 15 and SR 74 S.B. - SR 116 and SR 94 – Hanover - US RT. 30 and North Hills Road - SR 181 and SR 921

6.0 Sustaining a Goods Movement Program in South Central PA

The primary question that must be answered is “at what level do the participants in the South Central PA Regional Goods Movement Study want to use freight planning to address goods movement issues, either as a group or individually?” The South Central PA Regional Goods Movement Study (RGMS) Steering Committee expressed a strong desire and need to continue the multi-jurisdictional freight planning efforts begun by this study. This section first looks at the structure of a regional goods movement forum and then presents specific steps for building a freight planning program.

6.1 Establish Goods Movement Forum

One of the primary outcomes of this study is to lay the foundation for an on-going Goods Movement Forum in South Central PA. This Forum would be the focal point for coordinated freight planning in the region. There are, however, several questions that must be addressed.

Establishment of a Mission Statement and Goals

One of the first steps in establishing any organization is to establish goals and a mission. In the case of a Goods Movement Forum encompassing multiple jurisdictions, these goals and mission should not conflict with existing goals of the Pennsylvania Department of Transportation (PennDOT) and with goals of the participants in the South Central PA RGMS.

PennDOT is completing a statewide Pennsylvania Mobility Plan.²⁴ This is a multimodal framework for improving transportation throughout the Commonwealth. Within this plan, there are five broad goals that offer guidance to transportation investments in Pennsylvania. They are:

- Goal 1:** Move People and Goods Safely and Securely
- Goal 2:** Improve Quality of Life by Linking Transportation, Land Use, Economic Development, and Environmental Stewardship
- Goal 3:** Develop and Sustain Quality Transportation Infrastructure
- Goal 4:** Provide Mobility for People, Goods, and Commerce

²⁴ “Pennsylvania Draft Mobility Plan: Leading Transportation Change”, Statewide Long-Range Transportation Plan 2006-2030, Pennsylvania Department of Transportation, undated.

Goal 5: Maximize the Benefits of Transportation Investments

Building on the Mobility Plan goals, the members of the South Central PA RGMS Steering Committee identified a set of goals important to their respective areas during a brain storming session. These goals should form a basis for identification of the final goals adopted by the Forum.

- Quality of experience for visitors: visitors to the area should, to the extent possible, be isolated from goods movement to enhance the experience of the trip.
- Quality of life for residents: residents should be able to enjoy the economic benefits of growth in goods movement, and have desired goods available in stores, without sacrificing their quality of life.
- System preservation (transportation/land use): the existing transportation system should be balanced with land use goals to retain the character of the region.
- Safety and security: Safety of users of the transportation system remains a top priority in any planning or change.
- Maintain and improve level of service: congestion should not become significantly worse than current situations on the area roadways.
- Understand impact of intervention: performance monitoring measures need to be implemented to detect changes in the transportation system when no action is taken, and changes in the transportation system when improvements are made.
- Transportation network should not impede flow: the transportation system should not impede the flow of people or goods, either serving the region or passing through the region.
- Support economic goals: the transportation system should be designed to support economic growth in the region.
- Right sizing and context sensitive design: projects should be designed to the appropriate size (not over or under built), with care taken to protect environmental, aesthetic, and other concerns.
- Work within budgets: any improvements to the transportation system must be fiscally responsible.

As the South Central PA Goods Movement Forum begins activity, it needs to build on these goals to establish a mission. What is the purpose of this Forum? What short term activities should the Forum try to accomplish? What long term activities? What activities should remain outside the Forum? It is recommended that the mission of the group include:

- Facilitate meaningful dialogue among public and private stakeholders to better understand existing and emerging issues, identify system bottlenecks and safety concerns, and better plan the future transportation system;
- Balance economic growth, safety, quality of life for residents, and quality of experience for visitors by expanded consideration of freight transportation, and its projected rapid growth, in the transportation planning process;
- Inform elected officials, stakeholders, and the general public regarding goods movement issues and benefits. This can be through public meetings, newspapers, radio, television, reports, etc.;
- Identify issues, solutions, and funding sources for freight projects in South Central PA that are of local, regional, and national significance. The Forum should be the source of identification of freight projects through continued dialog with the private sector, and analysis and modeling of freight data; and,
- Establish priority projects for fast-tracking and funding. The Forum should be the place where the private sector knows they can implement changes to improve the transportation system.

Develop the Structure of the Goods Movement Forum

Development of the South Central PA Goods Movement Forum raises several issues, especially since this is a multi-jurisdictional venture.

The first issues is who should lead the effort? What may work best is to rotate the designation of lead agency among the public sector participants in the effort. This will allow fresh ideas to be implemented and prevent one organization from focusing the efforts on their concerns. A two year rotational scheme with a chair from the lead agency and a vice-chair from the next lead agency would offer a good balance of both change and stability.

Membership in the Forum should be open, though perhaps official voting members should be restricted to public agencies and companies, and not private citizens. The public agencies should include all the MPOs, RPOs, and counties in the study, along with PennDOT and FHWA. Private companies should include the railroads, trucking companies, and shippers. Shippers were one area under represented on the South Central PA RGMS Steering Committee.

Finally, and this is often the most difficult, a funding mechanism needs to be established to support mutually identified projects. This should draw from a combination of federal state, local, and private funds as needed. What often works best, is to establish a pooled funds account from the local public agencies that can be applied to fast track projects (perhaps with a private match as needed.) This was the approach taken by the Susquehanna Regional Transportation Partnership, a multi-jurisdictional public transit organization where each agency contributed to a pooled fund using federal Congestion and Air Quality Mitigation (CMAQ) money.

Initiation and Activities of the Goods Movement Forum

Another set of questions that must be addressed early in the formation of the South Central PA Goods Movement Forum, are: how should the group initially form; what short-term activities should the group undertake; and, what long-term activities should the group undertake.

The Forum will logically begin with the South Central PA Regional Goods Movement Study Steering Committee. This represents the core group of freight planning professionals in South Central PA. This group should be expanded to include additional private sector participants, especially area shippers and real estate brokers. Additional public sector participation, especially groups focused on economic development such as area Chambers of Commerce, should be approached.

Meetings can be held in a single location, though moving to different venues offers an opportunity to attract different viewpoints and reinforce the regional nature of the Forum. Regular meeting dates published well in advance will increase attendance. The group might consider quarterly major meetings, with more frequent small meetings as needed. The smaller meetings are especially important during initialization of the Forum, when private sector participation is not as necessary.

During the early inception of the Goods Movement Forum, activities could include:

- An annual Goods Movement Dinner evening where members of the Council of Supply Chain Management Professionals, public sector representatives, and other interested stakeholders can meet in a more casual atmosphere.
- Arrange for field trips and speakers at the meetings to better understand freight operations and issues.
- Develop an on-going goods movement data collection program. This initially may not involve collecting new data, but more an exercise in identifying available and new sources of freight data. This can include federal, state, and local freight data that becomes available through new reports and studies.
- Develop an on-going performance monitoring program. Measures might include: truck vehicle miles traveled; truck percentage by roadway; accidents involving trucks; hours of truck delay; lifts and cars processed at rail yards; air cargo volumes; and square footage of warehouse and distribution center space. Performance monitoring is critical to detecting trends and understanding the impacts of changes.
- Continue to provide information to officials and public on freight issues. This should involve a multimedia approach using meetings, presentations, reports, press releases, radio interviews, and television broadcasts.
- Develop a regional trucking map to help minimize the occurrences of lost truck drivers. Distribute this map to the Pennsylvania Motor Truck

Association, at rest areas and truck stops, and make it available on the internet. This map should include frequently visited locations, size and weight restrictions, hazardous material restrictions, etc. Services catering to truck drivers might be willing to advertise on the map, providing a potential revenue source to fund the effort.

- Develop overdimensional trucking restriction maps for local municipalities that have special concerns.

Longer term activities for the Goods Movement Forum might include:

- Identify and initiate freight infrastructure projects
 - Capacity expansion (roadway and rail)
 - Safety improvements
 - Separation of through from local freight movement
 - Truck parking areas, including truck electrified parking (TEP)
- Identify and initiate freight information projects
 - Real-time driver directions (through vs. local, time of day, weather)
 - Identification of hazardous material shipments and routings
- Identify and address economic growth vs. quality of life and quality of experience tradeoffs
 - Address the warehouse/distribution center labor shortage (this falls outside the role of a traditional Goods Movement Forum, but raising the issue to the appropriate agencies is within the role.)
 - Address incompatible land use issues (consider designated warehouse regions, freight villages)
 - Act as a facilitator for fragmented government issues
 - Adopt policies that better integrate goods movement and community concerns
- Seek funding at the federal, state, local, and private level to address specific projects. Consider a pooled fund for rapid response to low cost improvements.

Appendix B describes the FAST program in the Puget Sound area. This is a good example of a multi-jurisdictional organization formed to address goods movement issues.

6.2 Establish Regional Freight Planning Program

There are many potential paths for individual or multiple MPOs to follow when implementing a freight program. One potential path is developed as part of a National Cooperative Highway Research Project contains the following fourteen steps.²⁵

Step 1: Assign a Freight “Lead” or Point of Contact (POC)

A freight technical lead should be designated within the MPO to act as the liaison between the MPO and the freight industry, other agencies and stakeholders. The time commitment of this position will be determined by the magnitude of the MPO’s freight program. The time commitments should be made in the MPO’s Unified Planning Work Program (UPWP) on an annual basis to insure attention is given to freight concerns.

Step 2: Establish Goals and Objectives for Freight Program

Freight goals and objectives should be developed as one of the first steps of a freight program. The goals and objectives will be refined as the freight program is developed.

Step 3: Develop a Regional Freight Profile

It is important to quantify the characteristics of a region’s freight system and supporting market forces, and to start separating fact from speculation. This should include the collection of qualitative and/or quantitative data from available sources and new surveys.

Step 4: Engage the Private Sector

The private sector freight industry should be engaged in the process and given the opportunity to contribute to the freight program development, especially since planning decisions can greatly impact business practices. This should include informal outreach to stakeholders through interviews, surveys, workshops, and/or formalized inclusion through the formation of a freight steering or advisory committee.

Step 5: Define Freight Issues/Needs/Deficiencies

The region’s freight issues, needs, and deficiencies should be identified based on a review of the physical and operational data provided in Step 3. This should be verified with the private industries identified in Step 4 to ensure reasonableness.

²⁵ Adapted from National Cooperative Highway Research Program Report #8-47, “Guidebook for Freight Policy, Planning, and Programming in Small- and Medium-Sized Metropolitan Areas,” Advanced Copy, December 2005.

Step 6: Key Decision Point

Steps 1 through 5 provide a preliminary program direction, a description of the freight system, and an identification of the region's freight needs and deficiencies. At this point in the process, the MPO should review the results of the previous steps to determine appropriate next steps; specifically, what type of freight program is appropriate for the region.

Step 7: Refine Program Goals and Objectives

The preliminary goals and objectives established in Step 2 should be reviewed to incorporate the specific type of the program identified in the Step 6 evaluation.

Step 8: Develop Ongoing Freight Data Collection/Tool Development and Improvement Program

The freight planning program must have an ongoing, reliable stream of data and information to drive the analyses that allow for project identification and evaluation. This is important even for those MPOs that may not be developing a full, comprehensive freight program using Steps 7 through 14. A data collection program can be as simple as collecting truck counts regularly, collecting information from freight stakeholders on key freight issues or bottlenecks, or updating readily available numbers on an annual basis. Alternatively, it could be much more complicated, using truck trip diaries, commodity flow data purchases, freight travel demand models, or other techniques.

Step 9: Establish Performance Measures

Performance measures are necessary for the ongoing evaluation of how well the freight planning program is addressing its goals and objectives. Because data collection activities are a key component of performance measure development, this step should follow Step 8. In fact, based on the identified performance measures, staff should review the results of Step 8 to ensure the data collection program will provide all necessary data.

Step 10: Identify Freight Projects and Strategies of Regional Significance

MPO staff should work with regional freight stakeholders to identify potential freight projects for inclusion in the MPO transportation improvement program. These could be infrastructure projects or operational strategies, such as improved signage, parking areas, or truck network designations.

Step 11: Develop Criteria with Which to Evaluate Freight Projects and Strategies

The projects identified in Step 10 need to be ranked and prioritized before they can be integrated into the traditional transportation planning documents, including long range transportation plans (LRTP) and transportation improvement programs (TIP). Freight-specific criteria should be developed to evaluate and rank these projects. These criteria

should deal specifically with freight issues, however, ultimately they should be incorporated into existing MPO project evaluation and prioritization processes.

Step 12: Integrate Freight Projects and Needs into Existing Planning Programs

The ultimate goal of an integrated freight program is to successfully integrate freight needs and projects into the project development and implementation processes within an MPO. This is accomplished through the development of freight or intermodal elements of an LRTP, the programming of freight projects in a TIP, or a specific line item for a freight staff person in the Unified Planning Work Program (UPWP). Developing an entirely new process for freight projects is generally unsuccessful.

Step 13: Fund and Deploy Projects

Project delivery helps to legitimize a freight planning program and helps to keep the private sector engaged in the process. Deploying successful freight improvement projects also can maintain momentum for an MPO or regional freight planning program.

Step 14: Develop Process for Regular Update of the Freight Program

Any freight planning program must be updated on a regular basis. Once integrated into the existing transportation program within an MPO, the freight planning program should be reevaluated to ensure that it is meeting the freight needs of the MPO.

7.0 Recommendations

The members of the South Central Pennsylvania Regional Goods Movement Study Steering Committee agreed there is a strong need to further develop and maintain freight planning activities in the region. The following list recommends several broad-based policy-level recommendations. These recommendations, along with the data and findings previously described in this report, are intended to serve as a starting point for future freight planning efforts in the region.

Develop a Vision for the Future of Goods Movement in South Central Pennsylvania

Recommendation #1: The participants in the South Central Pennsylvania Regional Goods Movement Study (South Central PA RGMS) should adopt a set of goals that are consistent with the Pennsylvania Department of Transportation (PennDOT) Mobility Plan, and with the member MPOs, RPO, and County Transportation Plans. Furthermore, this set of goals should be consistent with and support land use and economic development goals within the region.

Recommendation #2: Freight planning efforts in South Central PA should promote a balanced multimodal system, supporting highway, rail, and air transportation.

Recommendation #3: The South Central PA region should, as a matter of broad transportation policy, recognize its willingness to invest public funds in transportation improvements that support private industries, provided that such improvements achieve appropriate public benefits.

Create a Governance Structure to Identify Issues, Disseminate Information, and Guide Investments

Recommendation #4: The participants in the South Central PA RGMS should establish an on-going South Central PA Goods Movement Forum to jointly address freight issues across the entire eight county region. This will require addressing issues previously raised, concerning mission, structure, and initiation of the Forum.

Recommendation #5: The South Central PA Goods Movement Forum must engage the private sector shippers, carriers, and other key stakeholders as participants in this effort. This includes participation at Forum meetings, and additional activities such as an annual dinner, invited speakers, and facility tours.

Recommendation #6: A key function of the South Central PA Goods Movement Forum will be to disseminate vital information about goods movement to key decision

makers, stakeholders, and the general public. This should involve a multimedia approach using meetings, presentations, reports, press releases, radio interviews, and television broadcasts.

Recommendation #7: The South Central PA Goods Movement Forum will provide a focal point for coordination of freight planning activities with neighboring jurisdictions, both within and outside of Pennsylvania.

***Develop and Maintain Data and Tools to Monitor and Forecast
Goods Movement***

Recommendation #8: The South Central PA Goods Movement Forum should maintain an ongoing freight data collection and tool development effort that supports informed decisions about policy and investment choices. Initially this effort should focus on readily available data sets, such as the data assembled for this study and data collected for other purposes. Future efforts should involve the Goods Movement Forum organizing data collection efforts for specific purposes. The Goods Movement Forum participants should also collectively, or individual, begin to incorporate additional freight movement data and methods into existing travel demand modeling efforts. This can build upon PennDOT's efforts, or existing efforts within the MPOs, RPO, and County.

Recommendation #9: The South Central PA Goods Movement Forum should establish performance measures to evaluate trends in regional goods movement. This can draw from PennDOT Highway Performance Monitoring System truck counts, safety records, or data gathered from other initiatives. The South Central PA Goods Movement Forum should collect their own data in the future for specific measures. Measures might include - truck vehicle miles traveled, truck percentage by roadway, accidents involving trucks, hours of truck delay, lifts and cars processed at rail yards, air cargo volumes, and square footage of warehouse and distribution center space. This should be tracked as a time series.

Recommendation #10: The South Central PA Goods Movement Forum should monitor the movement of hazardous material in and through the region and provide this information as a service to the area emergency response teams. This information can be obtained from commodity flow databases, truck intercept surveys, hazmat permits and other sources.

Recommendation #11: The South Central PA Goods Movement Forum should support improved communication with the trucking industry to reduce the frequency of lost truck drivers. Initially this can involve development of a regional truck map that highlights primary truck routes and key truck destinations. Future efforts might involve web based or real time communication with the drivers.

Establish a Realistic Funding Program to Implement the Freight Planning Program

Recommendation #12: Each of the public sector participants in the Goods Movement Forum should contribute to a pooled funds bank that can be used to quickly address low cost solutions benefiting goods movement in the region. The Goods Movement Forum should furthermore adapt a private sector funds matching policy if a project directly benefits specific businesses.

Recommendation #13: The South Central PA Goods Movement Forum should take the lead in identifying large scale projects of regional or national significance within South Central PA and work to secure Federal, state, local, and private funding for these projects.

Maintain a Continuing Commitment to Freight Program Delivery

Recommendation #14: Each public sector participant in the Goods Movement Forum should have a portion of their time dedicate to goods movement issues. This should be explicitly specified in the Unified Planning Work Program or other appropriate budget mechanism.

Recommendation #15: Each of the public sector participants in the Goods Movement Forum should ensure that freight projects are considered in their transportation improvement program, and the Forum should work together to ensure that freight projects receiving funding are consistent in the goals of the Goods Movement Forum.

Recommendation #16: Each of the public sector participants in the Goods Movement Forum should ensure an expanded discussion of freight issues in their long range plan, and the Forum should work together to ensure that the freight portions of each long range plan are consistent throughout the region.

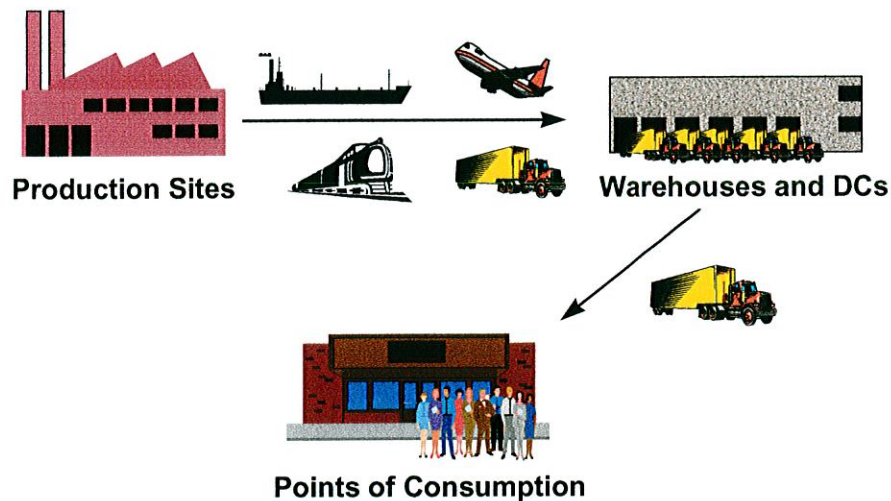
Appendix A: Role of Warehouses and Distribution Centers in Goods Movement

As shown in Figure A.1, goods are produced throughout the world (usually at the least cost location) and generally moved through warehouses and distribution centers (DCs) to points of consumption. Points of consumption can include industrial operations, retail stores in a given market area, and direct delivery to consumers. Warehouses are found around major production facilities (such as auto assembly operations) to act as the local staging area to support uninterrupted and timely production at the adjacent plant. In this role, the warehouse replaces the need for local production of parts and supplies for the production facility.

The predominant use of warehouses is to support retail operations, which can include “bricks and mortar” stores, mail/phone orders and Internet purchases. The larger warehouses, with facilities of 500,000 square feet or far greater, can serve extensive service areas. In some applications, a small number of very large distribution centers will supply a company’s facilities throughout North America. Many retail oriented DCs are located in the South Central PA region, including a 1.2 million sq. ft. Target warehouse and a recently completed 1 million sq. ft. Amazon.com DC.

The role of warehouses and DCs in distribution and international goods movement has dramatically changed in recent years, as has the definition of what is a point of consumption. These changes and the current role of warehouses and DCs are described below.

Figure A.1: Warehouses and DCs in the Goods Movement Process



Source: A. Strauss-Weider, Inc.

Traditionally, warehouses acted as storage and staging facilities. Goods that came off the production lines waited in warehouses for use. For example, a department store may have kept a variety of items in stock at its warehouse. Manufacturers may have maintained warehouses to stage inputs to their production lines and store finished products.

While the storage and staging functions still exist, the key objectives of today's warehouses and DCs are:

- Velocity – expediting the movement of goods;
- Customer service – ensuring that the products are “shelf-ready” to customer requirements and potentially handling returns; and
- Adding value – assembling and customizing products moving through the facility.

Velocity had its genesis in the “just-in-time” (JIT) movement – a management practice that seeks to minimize the amount of inventory kept on hand, thereby reducing inventory carrying costs. In its formative years, JIT meant substituting transportation for inventory. Today, with sophisticated telecommunications, computer and tracking equipment, JIT seeks to minimize the inventory and transportation costs. The overarching philosophy is to keep the inventory in motion; use tracking capabilities to manage the inventory while it is transit; maintain flexibility in transportation that allows for shifts in delivery instructions; and to add value to products where storage functions must occur.

Within the warehouse, velocity translates into moving products through the facility as efficiently and quickly as possible. This can involve the use of bar codes, radio frequency (RF), and voice command/recognition technologies to track the products moving through the building and optimize employee movements (e.g., screens in forklifts or voice commands/recognition in headsets to instruct drivers where to go and what to pick). Conveyors, automated checking systems and an overall warehouse management system (WMS) are also used to expedite product handling.

Customer Service has become a key driver of warehouse management and practices. Today, many retailers and manufacturers require product packaging, labeling, ticketing and delivery with exacting standards. Penalties can be incurred when these standards are not met. To meet these new requirements, warehouses and DCs are now becoming the final stage of the production line for many goods. Goods are customized, assembled and made shelf ready for retailers in response to customer requirements that are transmitted directly to the warehouse. In addition, warehouses increasingly handle customer returns and damaged products, a practice called “reverse logistics.” The value added activities at warehouses and DCs reflect the new customer service requirements.

Adding Value is the crucial component of modern warehouses and DCs and can be a major generator of employment at these facilities. Warehouses may have hundreds of employees, sometimes in two shifts, undertaking value added activities at their facilities.

Examples of value added activities include:

- Assembly and customization – private labeling packaging of stereo components that are shipped in bulk to the warehouse; assembly of knife sets from individual knives shipped in bulk to the warehouse; production of gourmet gift packages that combine products from multiple stores; assembly of product displays; and furniture assembly.
- Packaging and Ticketing – blister packing of kitchen gadgets; stuffing and preparation of handbags and luggage; individual book picking and packing to replenish stores and fill Internet orders; pressing and hanging of garments; and adding tickets and pricing labels to customer specifications.
- Product Repair – removing broken liquor bottles from cartons and removing damaged paper from the outer layers of paper rolls.

These activities demonstrate that the production process has become bifurcated, with most of the industrial activity occurring at the least cost location internationally and the final elements of the production line occurring nearer to the point of use. In essence, warehouses and DCs are the “new manufacturing” jobs in the US and have become increasingly sought by economic development agencies.

Storage is still required in some cases – the optimal size of the production run or the optimizing of transportation costs may determine product costs.

Appendix B: FAST – A Regional Goods Movement Organization Example

This is an overview of the Freight Action Strategy for the Seattle-Tacoma (FAST) Corridor program. The multi-organizational structure, which has been highly successful in identifying, funding, and completing freight projects in the Puget Sound Region, provides a potential blueprint for the South Central PA region.

This section includes:

- Program goals and structure;
- The formation of FAST;
- Agency participation;
- Project selection; and
- Accomplishments.



Much of the material in this summary is from the research conducted by team members during the development of the National Cooperative Highway Research Program project, Improving and Financing Access to US Cargo Hubs and published as report 497 by that organization, as well as discussions and observations on the FAST experience and reviews of the current status of this unique multi-organization effort.

A. Program Goals and Structure

The FAST Corridor program is a joint planning activity of the Puget Sound Regional Council (PSRC), the metropolitan planning organization for the area, and the Washington State Department of Transportation. The program recognizes the importance of goods movement and freight mobility in the economic well being of the State of Washington.

FAST, similar to the South Central PA area, focuses on a broad geographical corridor near the north-south rail lines connecting Everett to Tacoma and identified that most of the mobility issues are in a corridor between Tacoma and Seattle. The FAST Corridor focuses on the points where goods are transferred between transportation modes, such as rail yards and ports, or where roads and railroad tracks intersect. FAST members determined that these intersection points and intermodal nodes were often the bottlenecks in their area's freight transportation system.

Equally important, the FAST members recognized early on that bottlenecks and gaps in the freight system were not the responsibility of a single agency; rather, a true partnership

among agencies was needed to resolve these issues. The Memorandum of Understanding for the FAST program, a document developed and signed by all member organizations, recognizes the need for partnerships: "The FAST Corridor is a partnership, because the problems we are addressing are too large for any one agency to attempt to solve alone."

B. The Formation of FAST

The origins of FAST can be traced to early 1994, when a Regional Freight Mobility Roundtable was convened by PSRC and the Economic Development Council of Seattle and King County. The Roundtable was conceived as a public-private forum for dialogue and consultation, rather than as an advisory group to a particular agency or project. Participants in the Roundtable included non-profit organizations, shippers, carriers and public agencies such as the University of Washington, the Boeing Company, Safeway, Weyerhaeuser Company, Burlington Northern Santa Fe (BNSF) Railroad, Union Pacific Railroad, UPS, American President Line, K-Line America, West Coast Trucking, Puget Sound Truck Lines, the Washington Trucking Association, and the Ports of Seattle, Tacoma and Everett. Federal agencies include the Federal Highway Administration, US Maritime Administration, Federal Railroad Administration, and Federal Transit Administration. The Washington State Department of Transportation, Puget Sound Regional Council and local governmental agencies are also very involved.

C. Early Activities to Move the Group Forward

One of the first actions taken by the Roundtable was the identification of regional freight mobility issues and the development of a preliminary matrix of potential improvements. This matrix was divided into four categories – infrastructure, institutional, regulatory and financing.

These recommended improvements were presented as part of a Regional Freight Mobility Conference in September of 1994. The action packages presented at this Conference were then incorporated into the Metropolitan Transportation Plan in 1995, which later enabled these projects to be eligible for federal funding.

Roundtable members also participated on a statewide freight advisory committee convened by the legislature in 1996. The Washington State legislature, also concerned about goods movement and freight mobility, sponsored four studies in western Washington State in 1996, three of which were within the Corridor. One of these studies was the Tacoma Tideflat Circulation Study, which identified the access issues in the vicinity of Port of Tacoma Road and the potential Overpass project. The statewide advisory committee also played a key role in developing and assessing proposals for a new state level freight program and projects that should be undertaken as part of that program.

The State legislature additionally created the Freight Mobility Strategic Investment Board (FMSIB) based on the recommendations of the advisory board. FMSIB, which competitively allocates state funds to projects located within state-designated freight corridors, plays a key role in financing freight projects.

D. The FAST "CAST"

The public sector created the FAST Corridor Interagency Staff Team (FAST CAST) in early 1996 to turn the recommendations and priorities of the Roundtable into actions. The Cast primarily consists of public agencies with the two Class I railroads acting as ex-officios. All of the affected municipalities are part of the FAST CAST. Note that the railroads have financially contributed to some FAST projects.

The FAST CAST plays a crucial role in selecting the projects to be undertaken; providing a cooperative, collaborative environment for input, problem identification and problem solution; and obtaining the funding needed to undertake the projects selected. Through their years of working together, the FAST CAST members have together become the facilitator for freight mobility improvements.

E. Phase I Project Selection

The FAST CAST started their work by first getting everyone together to report on the projects that each agency was considering and areas being analyzed. Through this discussion, the group learned that the majority of the projects involved grade separations.

The next step was to identify the approach that should be adopted by the group to carry out the freight projects in the FAST Corridor. Some members assessed the approach used in the Alameda Corridor project in California. Other approaches were also discussed. The Texas Transportation Institute (TTI) was hired by the FAST CAST to assist them in their discussions. As part of this effort, TTI and the FAST CAST convened a one-day seminar where experts discussed strategies that had been used elsewhere in the US to deal with similar issues.

Moving quickly, the FAST CAST, by the fall of 1996, commissioned the development of a capacity model for the Corridor to identify where the problems where most severe. Simultaneously, the members began working with TTI to develop a set of project selection criteria. The timing of the project selection was crucial – the state legislature was soon to begin a new funding cycle and efforts to shape the TEA-21 legislation were beginning.

The evaluation criteria had three goals:

- Provide a consistent basis to assess projects proposed by different jurisdictions;



- Identify high-priority projects that were ready to be implemented; and
- Determine the potential size and composition of a longer-term program to achieve the Corridor strategy.

The selection criteria for the Phase I project focused on grade separations – this was the predominant project type previously identified by the group. The selection criteria adopted and applied by the FAST CAST in early 1997 were:

- **General Mobility:** Potential to reduce delay; queuing; and cross-Corridor arterial.
- **Freight Mobility:** Truck use and mainline railroad benefit.
- **Safety:** Intersection safety and emergency services access.
- **Community/Environmental:** Community support; residential displacement, strategic economic impact and emissions reduction.
- **Cost Effectiveness:** The capital cost of the project and the benefits generated.

These criteria were applied to the nearly 45 crossings previously identified by the FAST CAST members, leading the selection of 15 high priority projects, which could fit in the six-year action plan. Port access initiatives, which grew from the State sponsored studies, were also added into the list under consideration for the high priority projects. Because the criteria were applied uniformly, the FAST CAST membership, which included public agencies and local communities, agreed to support the selected projects.

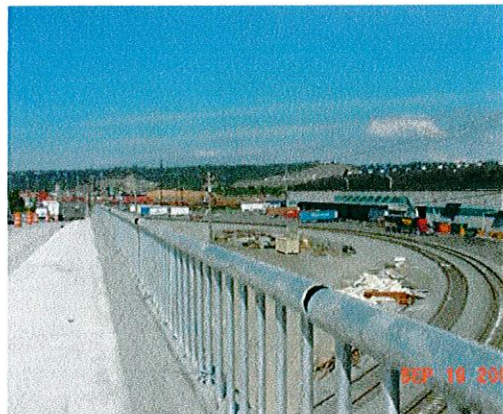
In January 2006, the Puget Sound Regional Council became the lead administrative support for FAST. The Washington Department of Transportation and the Council previously shared administration. The reorganization did not affect the close working relationship of the two agencies.

F. Accomplishments

Of the 15 projects selected for Phase I, seven were all under construction and slated for construction to begin in 2005.

The FAST CAST then moved to Phase II, selecting 10 new projects. These projects focus on establishing reliable truck routes. Two of the Phase II projects involved intelligent transportation systems (ITS) and are being implemented. The remaining Phase II projects are in design, with one in design and construction.

**Port of Tacoma Road Overpass
The First Phase I Project Completed**



The FAST effort has been extraordinarily successful in terms of:

- Bringing together the numerous organizations and stakeholders in the area.
- Identifying and obtaining federal funding.
- Using multiple funding mechanisms for projects.
- Obtaining private sector investments in some projects.
- Moving projects forward quickly from issue identification to completion of the physical improvements.

Appendix C: South Central PA Regional Goods Movement Study Glossary of Terms

Availability rate - the percentage of warehousing or industrial space available for lease or purchase.

BEAs - a set of geographic areas consisting of one or more economic nodes—usually metropolitan areas—and the surrounding counties that are economically related to the node. These economic areas encompass all counties and county equivalents in the United States. The definitions are established by the U.S. Bureau of Economic Analysis.

Choke Point - a location on a highway or rail network experience recurring delays. Also referred to as a bottleneck, especially on the highways.

Distribution Center (DC) - a central location for dispersing a companies products. Distribution centers can serve a local area, a region, the entire nation, or international locations depending upon the supply chain strategy of the company. Another feature of DCs is that they are often sites where value is added to the products moving through them. Examples of value added activities include final assembly, customization of products, and preparing products for the stores (including packaging, pressing of clothes, and tagging). Preparing products for stores is often referred to as “shelf readying.” The distinction between a Warehouse and DC can sometimes be vague. Warehouses tend to provide a storage function, while DCs are used to break down long-haul shipments for local delivery and consolidate local pick-ups for long-haul moves.

Hump yard - a railroad yard that uses gravity to classify inbound railcars to outbound trains. The cars roll down a hump and are switched to the appropriate outbound track. Norfolk Southern’s Enola Yard in Harrisburg is a hump yard.

Hush kits - a device for reducing engine noise on aircraft, trucks, or other heavy equipment.

Inbound Traffic - goods originating outside of a region and terminating within a region. These goods are consumed in the region either by businesses or residents.

Intermodal Yard - a railroad yard that handles intermodal containers and trailers. Norfolk Southern’s Rutherford Yard and Harrisburg Yard are intermodal yards.

Lifts Per Day - a measure used to indicate volume at an intermodal yard. A lift is the physical act of picking up container or trailer with a crane to transfer it to/from trains to trucks or to/from an intermediate storage location.

Local Traffic - goods both originating and terminating in a region.

Nonmetallic minerals - quarried minerals, such as sand, gravel, stone, and clay.

Operation Lifesaver - a nonprofit organization, partially funded by the railroads, to educate the public on the dangers of railroad-roadway grade crossings. Volunteers around the country make presentations at community meetings, schools, and other venues to promote safety.

Outbound Traffic - goods originating within a region and terminating outside of a region. These goods are produced by the businesses in the region.

Primary Metal Products - includes steel, iron, tin, manganese, aluminum, brass and other metals that have been processed for construction or industrial use. This includes steel beams, wires, bars, pipes, etc.

Rail Modal Share - the share of the total freight traffic in a region handled by rail.

SCPA RGMS - South Central Pennsylvania Regional Goods Movement Study.

Secondary Traffic - the movement of goods from a warehouse or distribution center to the final customer, or to another warehouse or distribution center. The final customer is typically a retail outlet. Secondary traffic often contains a mixture of goods (clothes, electronics, sporting goods, etc.) that can not be give a single commodity classification. The term secondary is in contrast to the primary movement, from a factor to the warehouse of distribution center.

Supply Chain - a coordinated system of organizations, people, activities, information and resources involved in fabricating and moving a product or service from supplier to customer. The entities of a supply chain typically consist of manufacturers, service providers, distributors, sales channels (e.g. retail, ecommerce) and consumers (end customers).

TEUs - twenty foot equivalent units. A standard measure for containers. A 40 ft container is two TEUs.

Through Traffic - goods neither originating nor terminating in a region, but only passing through. Also referred to as overhead traffic.

TRANSEARCH - A U.S. county-to-county level commodity freight flow database. TRANSEARCH includes origin county, destination county, commodity group and mode of transportation. It is provided by Global Insight, Inc. (formerly Reebie Associates, Inc., thus the nickname "Reebie Data".)

Truck Electrified Parking (TEP) - environmentally-friendly sources of power at truck stops that reduce driver/company costs and reduce harmful diesel emissions from idling engines. TEPs allow drivers to use grid-supplied electrical power through electrical outlets mounted on pedestals at the parking space. A driver can plug in to these outlets at truck stops and rest areas and receive the power needed to operate heating, air conditioning and other electrical appliances such as televisions, microwaves and refrigerators.

Truck Modal Share – the share of the total freight traffic in a region handled by trucks.

Wayside Horn – a horn permanently mounted at a road-rail grade crossing that focuses sound onto the roadway, reducing the noise to nearby residential areas. Wayside horns negate the need for the engineer to blow the train whistle at the crossing.

South Central Pennsylvania Regional Goods Movement Study: Steering Committee Membership

Mr. Eulois Cleckley - FHWA-HQ	Mr. Richard Schmoyer - Adams County
Mr. Matthew Smoker - FHWA - PA	Mr. Kirk Stoner - CCPC
Mr. Carmine Fiscina FHWA-Philadelphia	Mr. Phil Tarquino - FCPC
Mr. John Bork - FHWA	Mr. Christopher Neumann - LCPC
Mr. Dennis McGee FMCSA-PA	Mr. Glenn Taggart - LCPC - PROJECT FACILITATOR
Mr. Patrick Quigley FMCSA-PA	Mr. David Royer - LCPC
Mr. Paul Lang FHWA-DE Division	Mr. Jonathan Fitzkee - Lebanon County
Ms. Tameka Macon FHWA - NJ	Ms. Felicia Dell - YCPC
Mr. Robert Hannigan - PennDOT Central	Mr. Donald Bubb - YCPC
Mr. Brian Wall - PennDOT Central	Mr. Jeph Rebert - YCPC
Mr. Dan Walston - PennDOT Central	Mr. Rick Crawford - Norfolk Southern Corporation
Mr. Walt Panko - PennDOT Central	Mr. William Shafer - Norfolk Southern Corporation
Mr. Jeff Reed - PennDOT Central	Mr. James Runk - PAMTA
Mr. Terry Adams - PennDOT 8-0	Mr. Donald Siekerman - PAMTA
Mr. Greg Vaughn - PennDOT 8-0	Mr. Craig Zumbrun - South Central Assembly
Mr. Dennis Sloand - PennDOT 8-0	Ms. Megan Ardary - South Central Assembly
Deputy Secretary Sharon Daboin - PennDOT BRFP &W	Mr. Daniel Marcucci - South Central Assembly
Mrs. Elizabeth Bonini - PennDOT BRFP&W	Mr. David Spaulding - SARAA
Mr. Thomas Stettler - PennDOT BRFP&W	Ms. Kimberly Smith - Genesee & Wyoming Railroad
Mr. Daniel Smyser - PennDOT Motor Carrier	Mr. Robert Reilly - Congressman T. Platts Office
Mr. Timothy Smith - PA Turnpike Commission	Mr. Thomas Tillett - Congressman J. Pitts Office
Mr. George Hannon - PA Turnpike Commission	Mr. David Hunt - Cambridge Systematics
Mr. Timothy Scanlon - PA Turnpike Commission	Mr. Donald Ludlow - Cambridge Systematics
Mr. Herbert Packer - Office of PennPORTS	Mr. James Blair - Global Insight, Inc.
Mr. Carl Millard III - HATS/TCRPC	Mr. Bengt Muten - Global Insight, Inc.
Mr. Timothy Reardon - HATS/TCRPC	Ms. Jillian Wilson - Global Insight, Inc.
Mr. Jim Szymborski - HATS/TCRPC	Mr. Mike Harris - PB Farradyne
Mr. Andrew Merkel - Adams County	Ms. Ann Strauss-Wieder - A. Strauss-Wieder

FHWA - Federal Highway Administration
FMCSA - Federal Motor Carrier Safety Administration
PennDOT BRFP &W - PennDOT Bureau Rail Freight, Ports and Waterways
CCPC - Cumberland County Planning Commission
FCPC - Franklin County Planning Commission
FHWA - Federal Highway Administration
FMCSA-PA - Federal Motor Carrier Safety Administration
HATS/TCRPC - Harrisburg Area Transportation Study/Tri-County Regional Planning Commission
LCPC - Lancaster County Planning Commission
YCPC - York County Planning Commission
PAMTA - PA Motor Truck Association
SARAA - Susquehanna Area Regional Airport Authority