Belmont-Ohio-Marshall Transportation Study

Freight Flows Study

Prepared by:

Bel-O-Mar Regional Council

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INTRODUCTION

The mobility of people and movement of goods is necessary for the economic vitality of a region and quality of life of its people. Locally, the transportation needs have been addressed by Long Range Transportation Plans since 1965. The current Long Range Plan was completed in 2002 and has a target year of 2025. Traditionally, mobility of people has been addressed by modeling trip making characteristics based on socio-economic factors. However, the movement of goods is addressed only through the average daily truck traffic and future growth factor for truck traffic. Extensive studies are conducted to understand trip making characteristics. Similar efforts have not been expanded in the freight planning area.

Congress, through Surface Transportation Acts, has required the incorporation of freight planning as a part of transportation planning. It is one of the required factors to be addressed in a Long Range Plan.

According to the statewide study "Freight Impacts on Ohio's Roadway System," prepared by Cambridge Systematics, Inc., "over 950 million tons of freight worth over $1.8 trillion were transported into, out of, within and through Ohio in 1998." Also, "In 2020 nearly 1.4 billion tons of freight worth over $2.8 trillion, are expected to be transported into, out of, within and through Ohio." Similar observations are made for nationwide intercity movements in another research paper by the University of Southern California.[1] The paper states that "Increased freight flows have had significant impacts on metropolitan areas". Also "Globalization, restructuring of goods supply chains and changes in warehousing practices have resulted in large overall increases in freight traffic." Because of I70, a major east-west corridor running through the study area and soon to be opened Cabela's distribution center, the impacts of increased freight flows will be felt locally.

No comprehensive freight planning study for the region is available. One of the main impediments in undertaking such a study have been a lack of data for the county or regional level analysis.

When ODOT provided freight planning data that was acquired for statewide planning, an opportunity to understand freight flows in our region was presented. This freight study is essentially based on the data prepared by Reebie Associates for the ODOT. Also included is the data derived from the statewide commodity flow survey reports by the Center for Business and Economic Research of Marshall University. The lack of detailed data on the West Virginia side and other data related issues such as using data from different sources had to be overcome in conducting this study.

This is the first attempt at comprehensive freight planning in the region. Prior to this, in 2000 freight carriers in the region were identified and surveyed for needs assessment. The

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[1] *"Integrating Heterogenous Data Sources for Better Freight Flow Analysis and Planning" Jose' Luis Ambite, Genevieve Giuliano, Peter Gordon, Quisheng Pan, Sandipan Bhattacharjee; University of Southern California, Los Angeles, CA 90089*

objective of this study is to understand local freight flows and future forecasts so that freight related deficiencies, if any, and other needs for improvement can be addressed in the next long range plan.

In this study, the description of study area is included followed by the methodology and approach used to conduct the study. Emphasis is placed on the truck and waterborne freight. Along with an analysis of freight crossing the Ohio River, the data for each county is presented and summarized for easy interpretation. A regional analysis including the through trips is presented along with a separate section of waterborne freight. Finally, the key findings from the ODOT study are presented and discussed in the light of local relevance, issues and concerns.

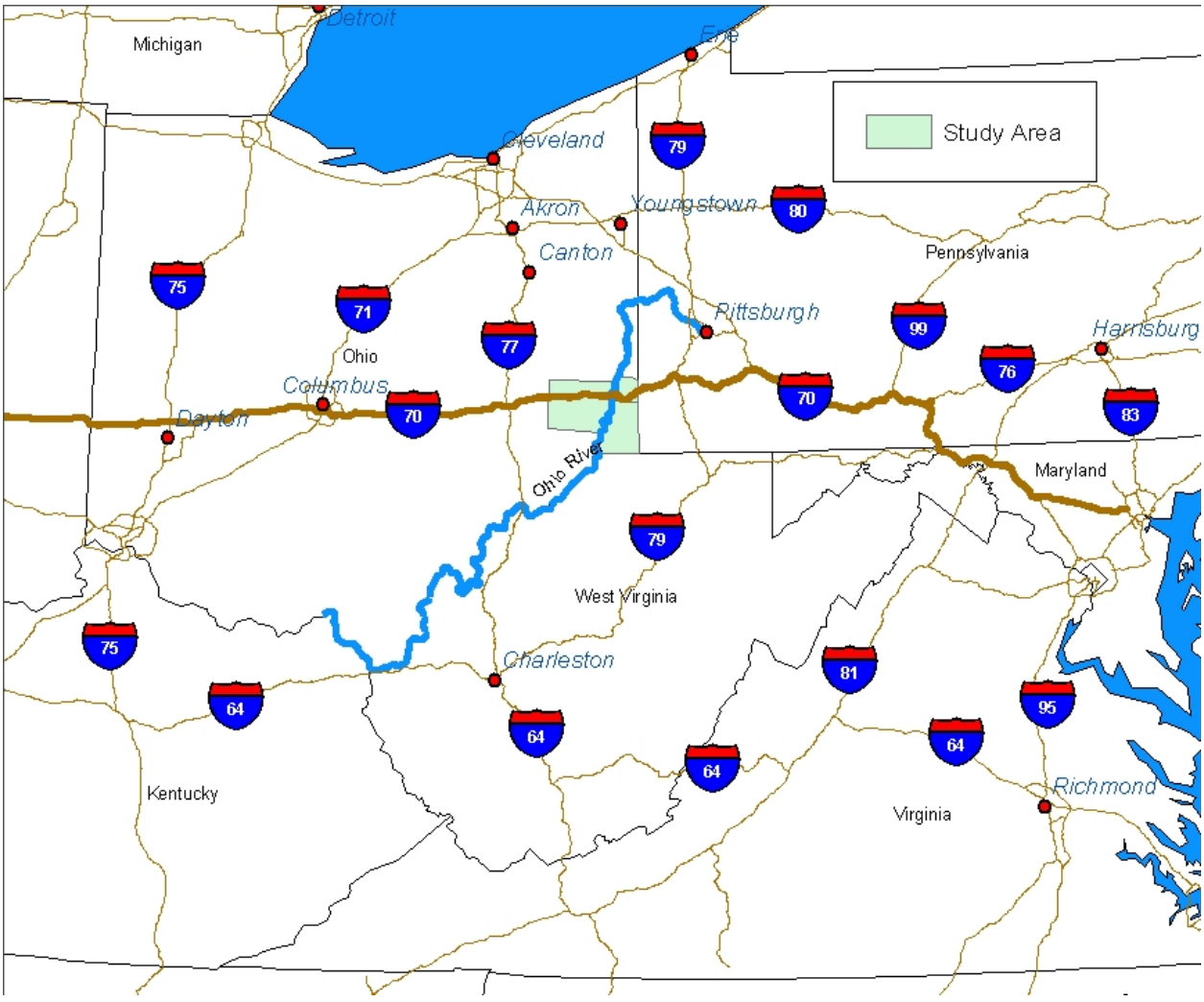
STUDY AREA

Belmont County, Ohio and Marshall and Ohio Counties in West Virginia make up the study area. The area is located on a major east-west corridor served by Interstate 70. I470 serves as a bypass for the Wheeling Metropolitan area. As shown in Figure I, the Ohio River runs along the eastern border of Ohio and separates the West Virginia portion of the study area from Belmont County. The Pennsylvania State line is less than 15 miles from the Ohio State line. There are three Ohio River bridges in the study area. One each on I70 and I470 and one connecting SR7 and WV2 in Marshall County; OH7 and WV2 are two major facilities in the north-south corridor.

The Wheeling Metropolitan Area has manufacturing and mining operations in addition to the retail and service sectors supporting a population base of over 153,000. Soon a major warehousing distribution center will be added.

Figure I
Study Area

METHODOLOGY AND APPROACH



The 1998 TRANSEARCH database by Reebie Associates is the basis for this study. The database was acquired by ODOT for statewide freight planning. Subsequently, it was made available to the Metropolitan Planning Organizations (MPOs) in the state. The freight flow data contains shipments from, to, within and through Ohio for all modes except railroads. The data provides weight and Standard Industrial Classification Code (SICC) of the commodity shipped by origin and destination. Selected chains of roadway segments traversed between an origin and destination pair of Business Economic Areas (BEAs) are included. The geographic level of the data is BEAs with the exception of Ohio and surrounding states. Within Ohio and surrounding counties in the adjacent states, data is disaggregated at the county level. The data is more reliable at the BEA level and for long haul shipments. The reliability decreases with disaggregation. Intra county and local delivery type of flows are not adequately addressed due to problems associated with collecting this level of data.

For the three county study area, truck and water freight movements are of importance. Railroads have been largely abandoned and converted to trails. A CSX and Wheeling and Lake Erie line runs along the western bank of the Ohio River and crosses the river near Wheeling to reach Benwood terminus. However, due to a lack of available data and very little activity on this line, railroad freight movement is not addressed in this study. Air freight is also excluded as there is no major airport in the region and no air freight data for the region is found in Reebie's database.

Reebie's data includes only those shipments that enter, leave, stay within and pass through Ohio. It does not include shipments touching Ohio and Marshall Counties that do not enter or leave Ohio. Essentially it excludes all shipments entering or leaving Ohio and Marshall Counties from the regions east of the Ohio River. In the absence of this data, a regionwide analysis is not feasible. To fill this data divide, a study conducted by the Center for Business and Economic Research (CBER) of Marshall University[2] was utilized. This study was completed in 2002 and is anchored in the 1999 - 2000 time frame which is generally consistent with Reebie's database. The data is not as detailed, but is the best available source to fill this gap. The study is based on the 1997 state level commodity flow survey (CFS) data compiled by the Oak Ridge National Laboratories for the U.S. Department of Commerce and the Bureau of Transportation Statistics. From this data, CBER calculated inbound and outbound motor carriers flows for 20 counties in the northern West Virginia. Ohio and Marshall Counties are included.

The 1997 CFS data provides to and from freight flows between West Virginia and other BEAs. Using the inbound and outbound truck freight at the county level, estimates of inbound and outbound flows by origin and destination were prepared using proportional allocation. These estimates were prepared only for the origins and destinations east of the river. Estimates were then added to the Reebie's flows for the study area.

For the regionwide analysis, Reebie's data was first disaggregated by direction for each of the three counties in the region. Freight originating from all origins in the database with destination in one of the three counties was separated from the master database. This is the inbound freight. Similarly, the outbound freight was obtained from all origins in the region with

[2] *"Transportation and Potential for Intermodal Efficiency Enhancements in Northern West Virginia" Final Phase I Report; CBER, Marshall University.*

destination elsewhere. Through flows were obtained from the remaining origin and destination pairs. All flows that used the I70 or I470 roadway segment at the West Virginia line and did not originate or terminate in the region were considered through flows. From these datasets, freight crossing the Ohio River was also obtained.

After spending considerable time and effort, it was found that in Reebie's data, I470 was essentially the only interstate route in the entire state where no distinction could be made between the first segment (FSEG) and last segment (LSEG). This means that the directional attribute of the flows was lost. This error was visible only when a river crossing origin destination table was prepared and plotted in the GIS. Manual intervention was necessary to work around this omission. Using other fields and geographic location of the origin and destination pairs, the direction of flow was determined where necessary.

In addition to truck freight flows, water commerce data was separated from the other modes. Since Reebie's data addresses only the freight that touches Ohio, waterborne data for the Ohio River was also downloaded from the U.S. Army Corps. Of Engineers website. The 1998 data for Pike Island and Hannibal Locks and Dams is used in this study.

TRUCK FREIGHT

The analysis of truck freight flow data was conducted separately for Belmont County and Ohio and Marshall Counties. Reebie's data provided an opportunity for the detailed analysis for Belmont County. Such an analysis was not possible for Ohio and Marshall Counties due to a lack of data. The relevant data for all three counties was then combined for a regionwide analysis. An analysis of the Ohio River crossings was conducted separately and is presented first.

Freight on Ohio River Bridges

Truck shipments crossing the Ohio River were isolated from the Reebie's database. They were further disaggregated by direction based on whether they were entering or leaving the state. Based on origin and destination, an origin and destination table was generated in the GIS and all river crossings were displayed as shown in Figure II. The eastbound freight by origin is shown in Table I while the westbound freight is shown in Table II. Almost 30 million tons of truck freight crossing the river is headed east while over 15 million tons is westbound. As is evident from the shipped weight, the eastbound flow is almost twice the size of westbound flow. The eastbound freight originated from many more locations than the westbound freight. This is due to the fact that county level geography in and around Ohio provides many more origins on the west side, as Belmont County is located on the eastern border of the state. This imbalance in weight indicates that there may be significant dead heading in the westbound direction. However, this imbalance can also be indicative of travel patterns where a westbound shipment may cross the river outside the study area and cross again for destinations in the study area. Additional data will be necessary to fully understand this imbalance.

Belmont County

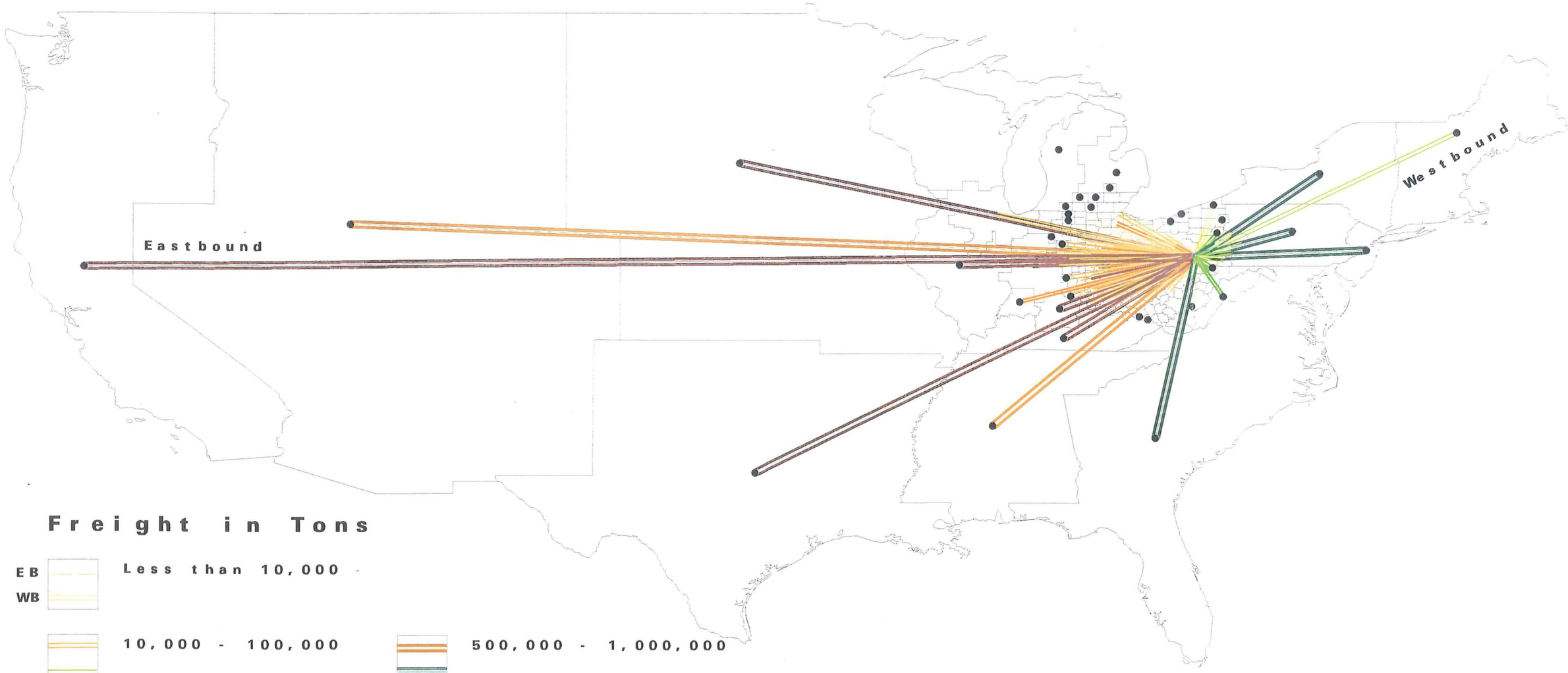
Approximately 8% (45 million tons) of all truck freight entering or leaving Ohio, enters/exits Belmont County on I70 or I470 at the West Virginia state line. Less than 1% (5 million tons) of total freight touching Ohio has origin or destination in Belmont County. As shown in Table III over 2.7 million tons originate in the County while approximately 2.2 million tons are terminated in the county. The county exports 27% more than it imports.

Table III also shows weight in short tons of all shipments to and from the county. Figure III shows percent share of selectively grouped commodities. Since Belmont County is the largest coal producer in the state, coal accounts for approximately 71% of all freight trucked from the County. Food/Farm/Tobacco Products are a distant second followed by metals.

The percent share of selectively grouped inbound commodities is shown in Figure IV. The largest inbound category is referred to as Secondary Traffic (36%). Secondary Traffic is defined as freight flows to and from distribution centers/warehouses or through intermodal facilities. No further subclassification of commodities within secondary traffic is available. The next largest commodity imported is Chemicals/Plastics and Rubber followed by Coal. Even though the county exports large quantities of coal, it still accounts for the 10% of all imports to the county. Not far from coal, in terms of weight and rank, are metals.

FIGURE: II

Freight By Origin Crossing Ohio River Bridges



Freight in Tons

EB
WB — Less than 10,000

10,000 - 100,000

500,000 - 1,000,000

100,000 - 500,000

EB
WB — More than 1,000,000

Total Eastbound Freight = 29,724,647

Total Westbound Freight = 15,660,052

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P.O. Box 2086
Wheeling WV 26003

Table I
Eastbound Freight by Origin on Ohio River Bridges

Origin	Freight (Short Tons)
Adams County	27,851
Allen County	9,698
Ashland County	1,171
Athens County	278
Auglaize County	63,999
Bath County	1
Belmont County	175,918
Blackford County	12,713
Boone County	148,255
Bourbon County	1,536
Boyd County	1,906
Bracken County	802
Brown County	10,510
Butler County	392,402
Calhoun County	59
Campbell County	208,334
Carroll County	94,166
Carter County	1
Champaign County	75,767
Chicago, IL	55,722
Clark County	242,994
Clermont County	74,872
Clinton County	56,073
Coshocton County	68,774
Crawford County	832
Cuyahoga County	9,416
Darke County	144,502
De Kalb County	68
Dearborn County	49,145
Decatur County	28,441
Defiance County	3,028
Delaware County	149,168
Detroit, MI	773
East South Central	726,813
Erie County	131
Fairfield County	183,800
Fayette County	64,223
Fleming County	387
Franklin County	2,460,980
Fulton County	1,284
Gallatin County	1,660
Gallia County	405
Grant County	63,625
Greene County	109,623
Greenup County	4,657
Guernsey County	87,430
Hamilton County	2,051,525
Hancock County	33,154

Table I

Hardin County	20,679
Harrison County	55,438
Henry County	36,102
Highland County	16,325
Hillsdale County	61
Hocking County	28,919
Holmes County	66,414
Huntington County	7,200
Huron County	3,357
Illinois	2,405,228
Indiana	275,417
Indianapolis, IN	2,436,950
Jackson County	22,382
Jay County	20,232
Jefferson County	15,739
Johnson County	1
Kenton County	154,445
Kentucky	1,309,730
Knox County	47,012
Kosciusko County	1,268
Lagrange County	1
Lake County	77
Lawrence County	19,811
Lenawee County	27
Lewis County	22
Licking County	303,395
Livingston County	2
Logan County	81,642
Lorain County	2,826
Louisville, KY	2,192,621
Lucas County	14,021
Madison County	106,741
Marion County	73,421
Martin County	1,106
Mason County	35,445
Medina County	793
Meigs County	10,677
Mercer County	42,579
Miami County	198,280
Michigan	1,086
Midwest	2,682,823
Monroe County	144,818
Montgomery County	1,547,678
Morgan County	10,489
Morrow County	30
Muskingum County	199,891
Nicholas County	28
Noble County	10,345
Ottawa County	242
Paulding County	3,288
Pendleton County	737,423

Table I

Perry County	37,363
Pickaway County	194,153
Pike County	16,638
Pleasants County	31,366
Preble County	88,183
Putnam County	55
Randolph County	37,297
Richland County	18,574
Ripley County	8,202
Ross County	148,264
Rowan County	37
Rush County	6,738
Sandusky County	4,623
Scioto County	11,483
Scott County	47,635
Seneca County	2,162
Shelby County	140,818
St. Joseph County	2
Stark County	7,845
Steuben County	2
Summit County	3,993
Switzerland County	1,683
Tipton County	7,039
Trimble County	332
Tuscarawas County	136,908
Tyler County	7,343
Union County	70,182
Van Wert County	303
Vinton County	26,370
Wabash County	526
Warren County	150,674
Washington County	53,291
Washtenaw County	12
Wayne County	74,560
Wells County	19
West Mountain	819,097
West Pacific	2,498,754
West South Central	1,620,501
Wetzel County	11,855
Whitley County	40
Williams County	179
Wirt County	4
Wood County	195,375
Wyandot County	768
Total	29,724,647

Table II
Westbound Freight by Origin on Ohio River Bridges

Origin	Freight (Short Tons)
Allegheny County	2,350,627
Armstrong County	67,324
Beaver County	789
Brooke County	127,088
Butler County	132,406
Chalreston, WV	2
Crawford County	29
Erie County	2,530
Fayette County	42,578
Greene County	36,610
Hancock County	5,195
Harrison County	3,616
Lawrence County	600
Marion County	167,533
Marshall County	98,503
Mercer County	695
Monangalia County	172,641
New Jersey	1,614,487
New York	2,585,394
Northeast	67,540
Ohio County	531,971
Pennsylvania	4,319,834
Pittsburgh, PA	41,815
South Atlantic	2,734,513
Venango County	691
Washington County	131,401
West Virginia	243,403
Westmoreland County	180,237
Total	15,660,052

Table III
Truck Freight To and From Belmont County

STCC Code	Commodity	To	From	Subcategory
28	Chemicals or allied products	414,520	90,285	Chemicals/Plastics/Rubber
30	Rubber or miscellaneous plastics products	2,138	37	
32	Clay, concrete, glass or stone products	178,990	78,933	Clay/Concrete/Glass/Stone Products
11	Coal	224,102	1,932,692	Coal
1	Farm Products	0	0	Food/Farm/Tobacco Products
20	Food and kindred products	116,654	307,365	
21	Tobacco Products (excluding insecticides)	0	0	
24	Lumber or wood products (excluding furniture)	10,770	14,670	Lumber/Wood Products/Furniture
25	Furniture or fixtures	1,614	60	
35	Machinery (excluding electrical)	3,991	3,080	Machinery/Transportation Equipment
36	Electrical machinery, equipment or supplies	1,390	293	
37	Transportation Equipment	12,975	21,224	
10	Metallic Ores	0	0	Metals
14	Nonmetallic ores or minerals (excluding fuels)	0	0	
33	Primary metal products	172,430	10,648	
34	Fabricated metal products	50,080	123,109	
23	Apparel or other finished textile products or knit apparel	25	2,053	Other
38	Instruments, photographic goods, optical goods, watches or clocks	43	53	
39	Miscellaneous products of manufacturing	34	10,899	
40	Waste or scrap materials not identified by producing industry	0	0	
22	Textile mill products	331	0	
31	Leather or leather products	0	0	
41	Miscellaneous freight shipments	0	0	
26	Pulp, paper or allied products	9,050	13,372	Paper Products
27	Printed matter	1,700	662	
29	Petroleum or coal products	189,065	132,262	Petroleum/Gasoline/Coal Products
13	Crude petroleum, natural gas or gasoline	71	0	
50	Secondary Traffic	767,254	2,057	Secondary Traffic
Total		2,157,227	2,743,754	

Figure III

Truck Freight from Belmont County

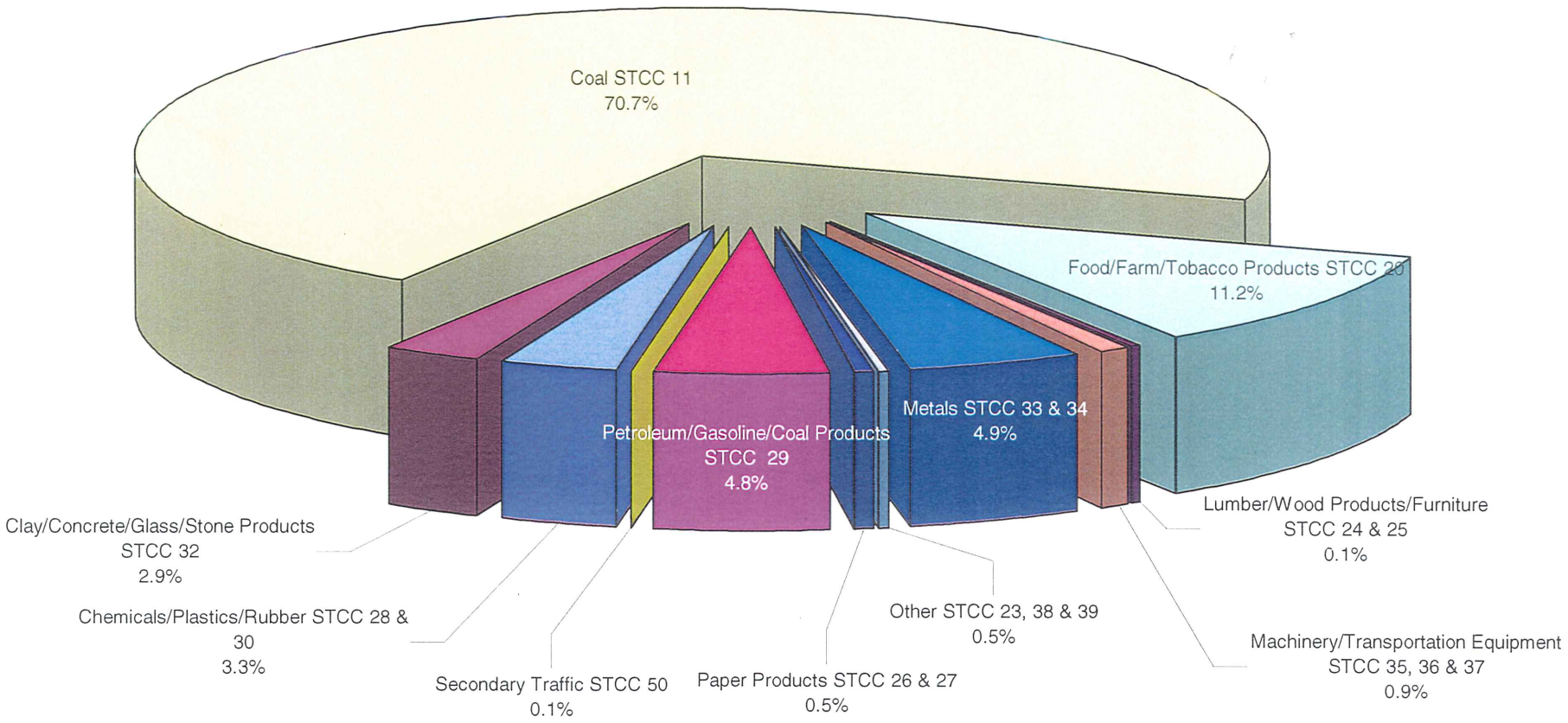


Figure IV

Truck Freight to Belmont County

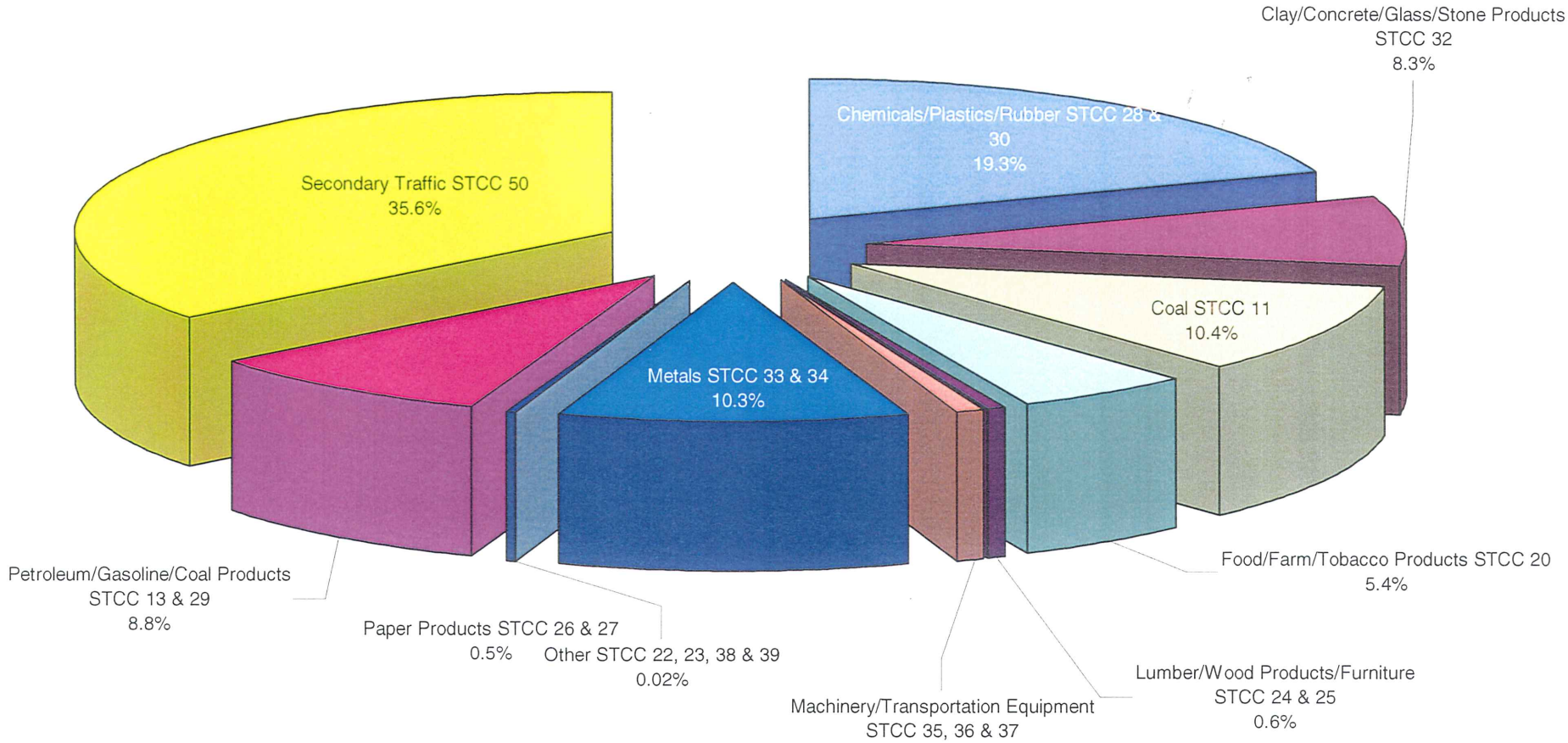
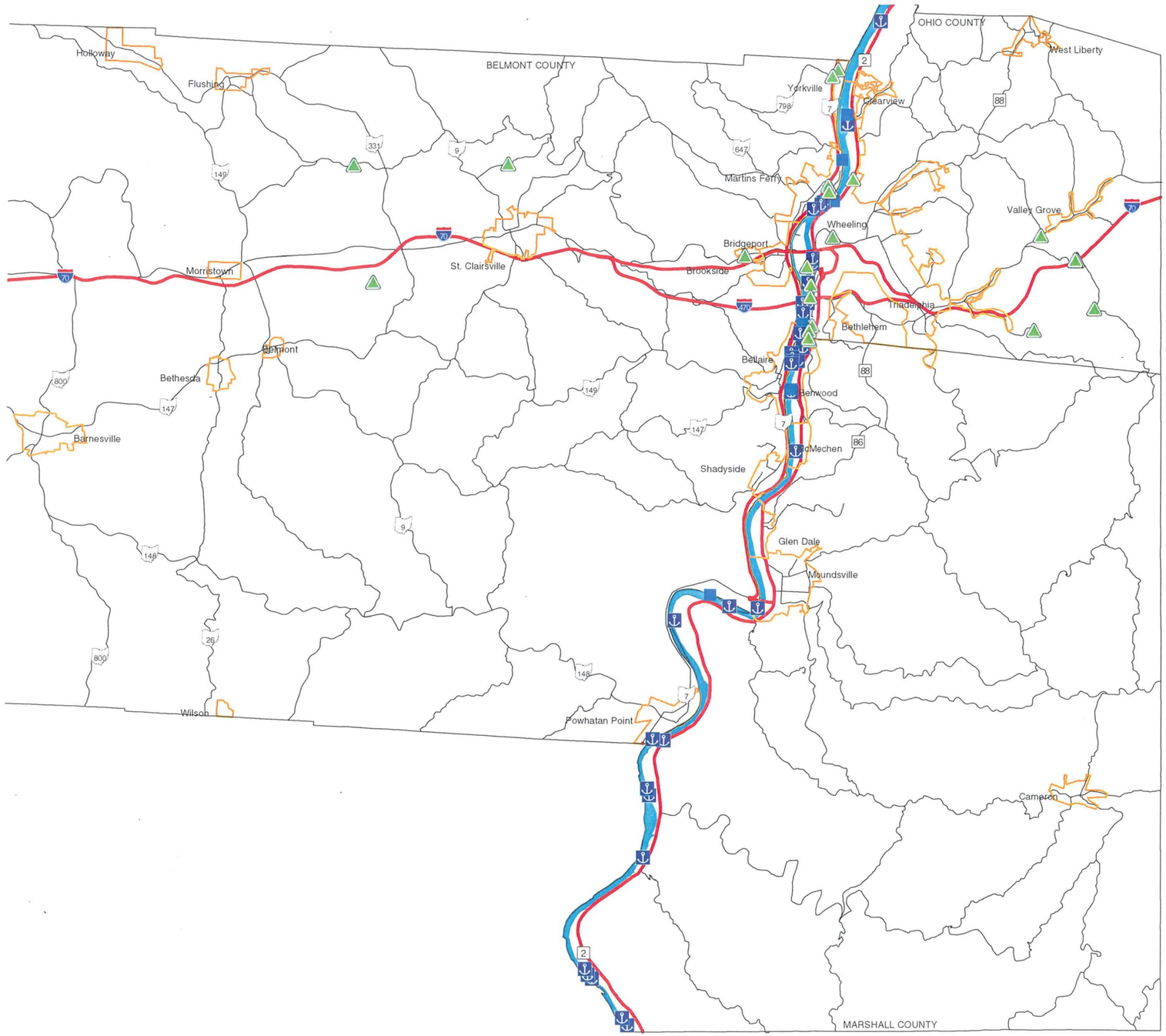


FIGURE: V

LOCATION OF FREIGHT TERMINALS AND OHIO RIVER DOCKS



Freight Terminals

Ohio River Docks

- Idle
- Used

National Highway System (NHS)

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It is important to note that the Reebie's data does not include intra county freight such as local deliveries.

Ohio and Marshall Counties

Reebie's data covers adjacent counties in the surrounding states. However, the data covers only those shipments that pass through and either originate or terminate in Ohio. This excludes all shipments to and from New England and other Atlantic States that originate or terminate in Ohio or Marshall Counties. Shipments to and from the East and West South Central States are also effected. To account for this gap, the in and out freight estimates for these counties prepared by Marshall University's CBER from the commodity flow surveys were used. No pass through estimates were available. The pass through traffic in the east - west directions was obtained from the Reebie's data, however the pass through traffic, mainly on WV2 in the north - south direction is omitted by lack of data. Table IV shows to and from freight flows for Ohio and Marshall Counties.

Table IV
Ohio and Marshall Counties To and From Truck Freight

County	Inbound (Tons x 1000)	Outbound (Tons x 1000)
Marshall	208	807
Ohio	5,585	1,760

Marshall County ships almost four times more in weight than it receives. Ohio County on the other hand receives three times more than what it ships. Due to a lack of data, commodity specific analysis was not feasible. However, it can be assumed that due to the urban nature of Ohio County, it is likely to have a high volume of secondary traffic. In Marshall County shipments to and from power and chemical plants will make up a large portion of overall freight movement. Bulk materials such as coal and metal ores are going to be an exception as bulk materials are usually shipped on barges.

Table IV also implies that Ohio County generates significantly more commercial traffic than Marshall County. Additional commercial traffic will be generated with the opening of Cabela's store and distribution center.

Regional Analysis

In excess of 57 million tons of freight was moved through, within, into and out of the three county region in 1998. This is over 10% of the total truck freight that was on Ohio roads. Most of this freight (8%) was passing through. Almost all of the through freight was on I70 and I470. Due to the lack of data, through freight in the north-south direction is omitted. As shown in Table V, inbound freight is significantly (50%) higher than the outbound freight. In contrast, in the State of Ohio, this difference is only 6%. In Belmont County, more freight is shipped out than shipped in.

The significant difference at the regional level is attributed to the large deficit in Ohio County. Also in Belmont County, 90% of the freight is pass through while regionwide, 77% of the freight is pass through. In comparison, only 34% is through freight in the State of Ohio. Internal freight movement is not separated due to the shortcoming of both data sources in addressing short haul local freight deliveries.

In the year 2000, all freight carriers in the region were identified and surveyed for needs assessment. The location of these freight carriers in the region is shown in Figure V.

Table V
Truck Freight To, From and Through the Region

County	Inbound (Tons x 1000)	Outbound (Tons x 1000)	Through (Tons x 1000)
Belmont*	2,157	2,744	N/A
Marshall**	208	807	N/A
Ohio**	5,585	1,760	N/A
Bel-O-Mar Region	7,950	5,311	44,213

Source: * *Reebie Associates data*
** *Marshall University CBER Estimates from CFS*

The percent share of inbound, outbound and through freight is graphically shown in Figure VI. The spatial extent of the incoming and outgoing freight is also shown in Figures VII and VIII. The freight from all origins entering the region is shown in Figure VII while freight to all destinations leaving the region is shown in Figure VIII.

Figure VI
In, Out and Through Freight

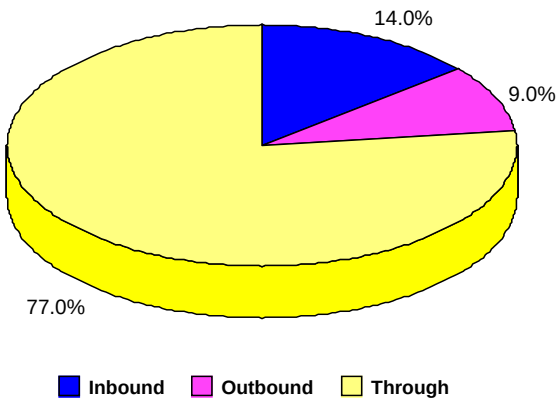
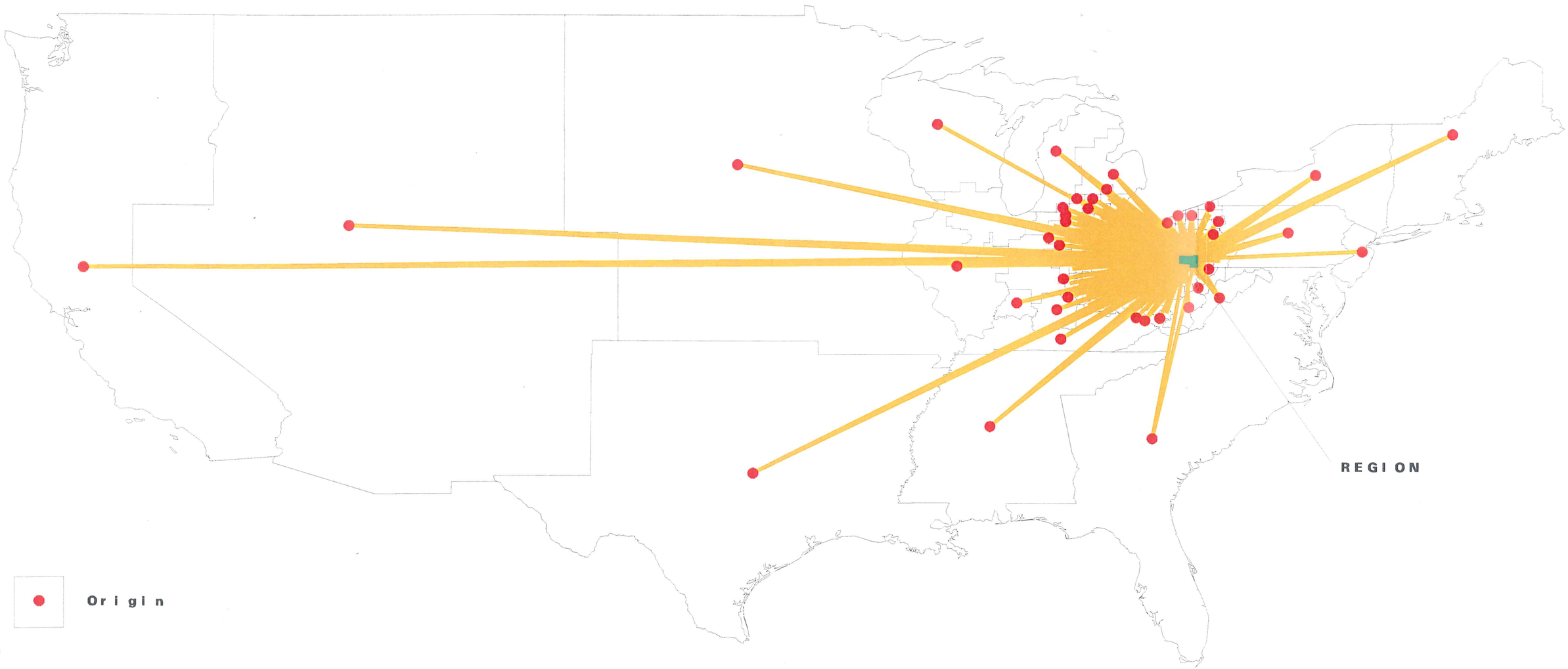


FIGURE: VII

Inbound Truck Freight To The Region



Inbound Freight : 7,950,227 Tons

SOURCE: 1998 TRANSEARCH Database by Reebie Associates and Marshall University CBER 2002 Study

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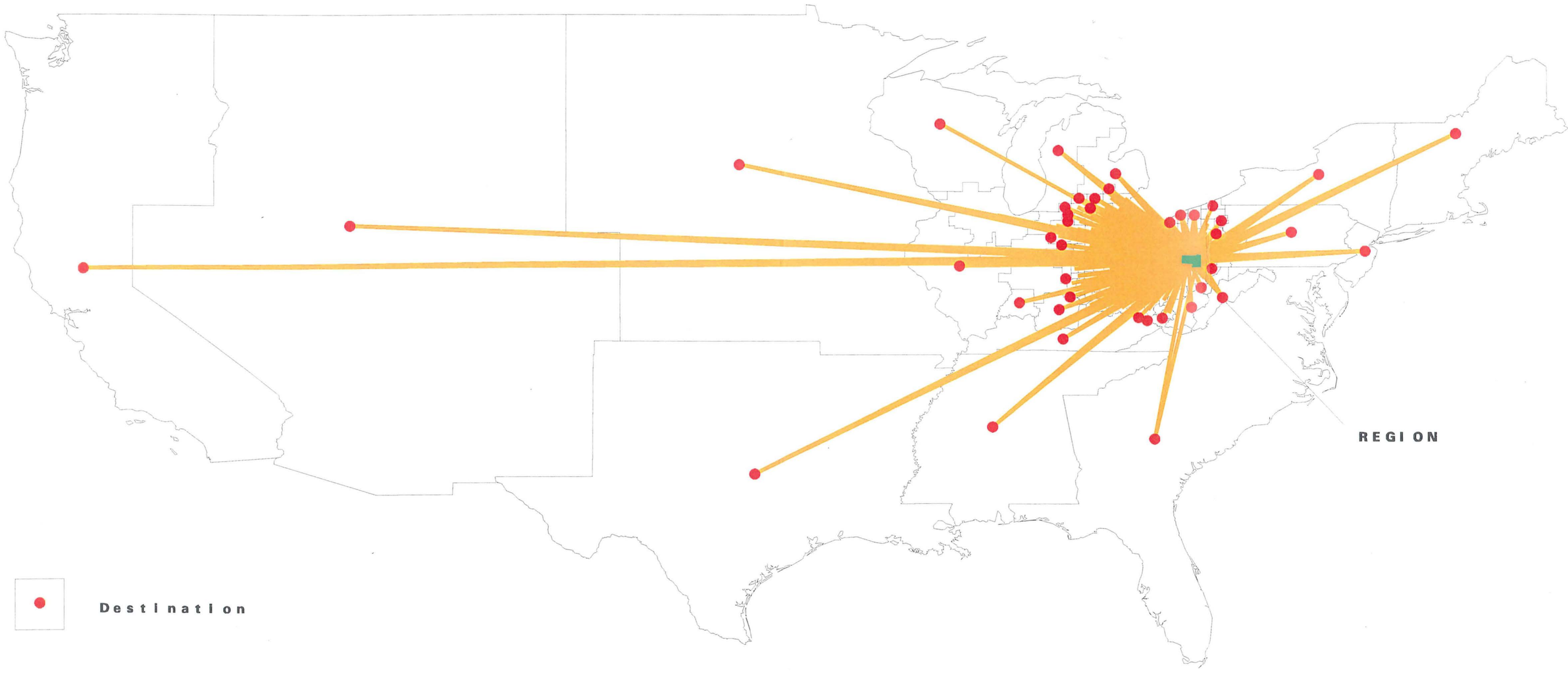
FIGURE: VIII

Outbound Truck Freight From The Region



Outbound Freight : 5,310,815

SOURCE: 1998 TRANSEARCH Database by Reebie Associates and Marshall University CBER 2002 Study

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Although Reebie's data and Marshall University's data is not ideal for a side by side comparison at a disaggregated level, it is evident that significantly more commercial interaction occurs with regions east of the Ohio River. This fact can also be reinforced by imbalance in shipments crossing the Ohio River shown in Figure II. A lack of origin destination and commodity level data precluded any commodity specific and distance shipped (short haul vs. long haul) analyses.

Through Truck Freight

I70, being a major east-west corridor, carries a large volume of through freight. In Ohio, I70 ranks third in Truck Ton Miles. Locally, a large truck volume is observed on I70 and I470. In 1998, the average daily truck traffic (ADTT) crossing the Ohio River on these facilities was 14,870. Over 57 million tons of truck freight crossed the river in the same year. Of this, 44 million tons were pass through. Looking at the wide gap between the eastbound and westbound river crossing (refer to Figure II), it can be assumed that a significant portion (up to 30%) of ADTT may be empty trucks, however independent verification of this may be necessary.

Reebie's data was used for disaggregating through freight, therefore, commodity level detail was available. This data is presented in Table VI and Figure IX. The largest commodity passing through the region is agriculture related. One out of every five shipments through the area is loaded with Food, Farm or Tobacco Products. It is followed by Chemicals, Plastics and Rubber (15%) and Metals (14%). The pass through secondary traffic is less than 10% of the total through freight. This is in contrast to the Belmont County inbound secondary traffic at 36%. This reinforces the fact that secondary traffic includes freight that travels short distances because it is more intra than inter region. Secondary traffic increases in urban and decreases in rural areas.

Although no formal grouping of hazardous materials is done, almost 20% of the total pass through freight may be classified as hazardous. I70 is a major facility on the National Highway System and a vital commercial link. Preservation and maintenance of this facility is not only vital for the study area, it is equally important for the overall commerce and trade among economic regions in the country.

WATERBORNE FREIGHT

The Ohio River is the only major navigable waterway that runs along the borders of Ohio and West Virginia in the study area. Several million tons of freight moves on the 981 miles of this river. Many ports and docks are located on the river. The local docks are shown in Figure V. Two dams with large lock chambers are located on each side of the study area. Pike Island dam is located at the northern end of the study area and Hannibal dam is just a few miles south of the study area. There are 38 docks in the region. Table VII shows number of docks in each county along with their status.

Table VI

Truck Freight Through the Study Area

STCC Code	Commodity	Tons	Subcategory
28	Chemicals or allied products	4,885,831	Chemicals/Plastics/Rubber
30	Rubber or miscellaneous plastics products	1,855,856	
32	Clay, concrete, glass or stone products	4,136,801	Clay/Concrete/Glass/Stone Products
11	Coal	212,134	Coal
1	Farm Products	1,111,460	Food/Farm/Tobacco Products
20	Food and kindred products	7,890,363	
21	Tobacco Products (excluding insecticides)	16,632	
9	Fresh Fish	0	
24	Lumber or wood products (excluding furniture)	1,171,231	Lumber/Wood Products/Furniture
25	Furniture or fixtures	323,409	
35	Machinery (excluding electrical)	988,838	Machinery/Transportation Equipment
36	Electrical machinery, equipment or supplies	887,656	
37	Transportation Equipment	3,220,388	
10	Metallic Ores	0	Metals
14	Nonmetallic ores or minerals (excluding fuels)	0	
33	Primary metal products	4,365,500	
34	Fabricated metal products	2,135,867	
23	Apparel or other finished textile products or knit apparel	236,110	Other
38	Instruments, photographic goods, optical goods, watches or clocks	207,947	
39	Miscellaneous products of manufacturing	330,422	
40	Waste or scrap materials not identified by producing industry	0	
22	Textile mill products	188,668	
31	Leather or leather products	123,001	
41	Miscellaneous freight shipments	0	
43	Mail or contract traffic	0	
46	Miscellaneous mixed shipments	0	
26	Pulp, paper or allied products	2,007,965	Paper Products
27	Printed matter	959,536	
29	Petroleum or coal products	2,786,322	Petroleum/Gasoline/Coal Products
50	Secondary Traffic	4,171,259	Secondary Traffic
Total		44,213,196	

Figure IX

Truck Freight Through the Study Area

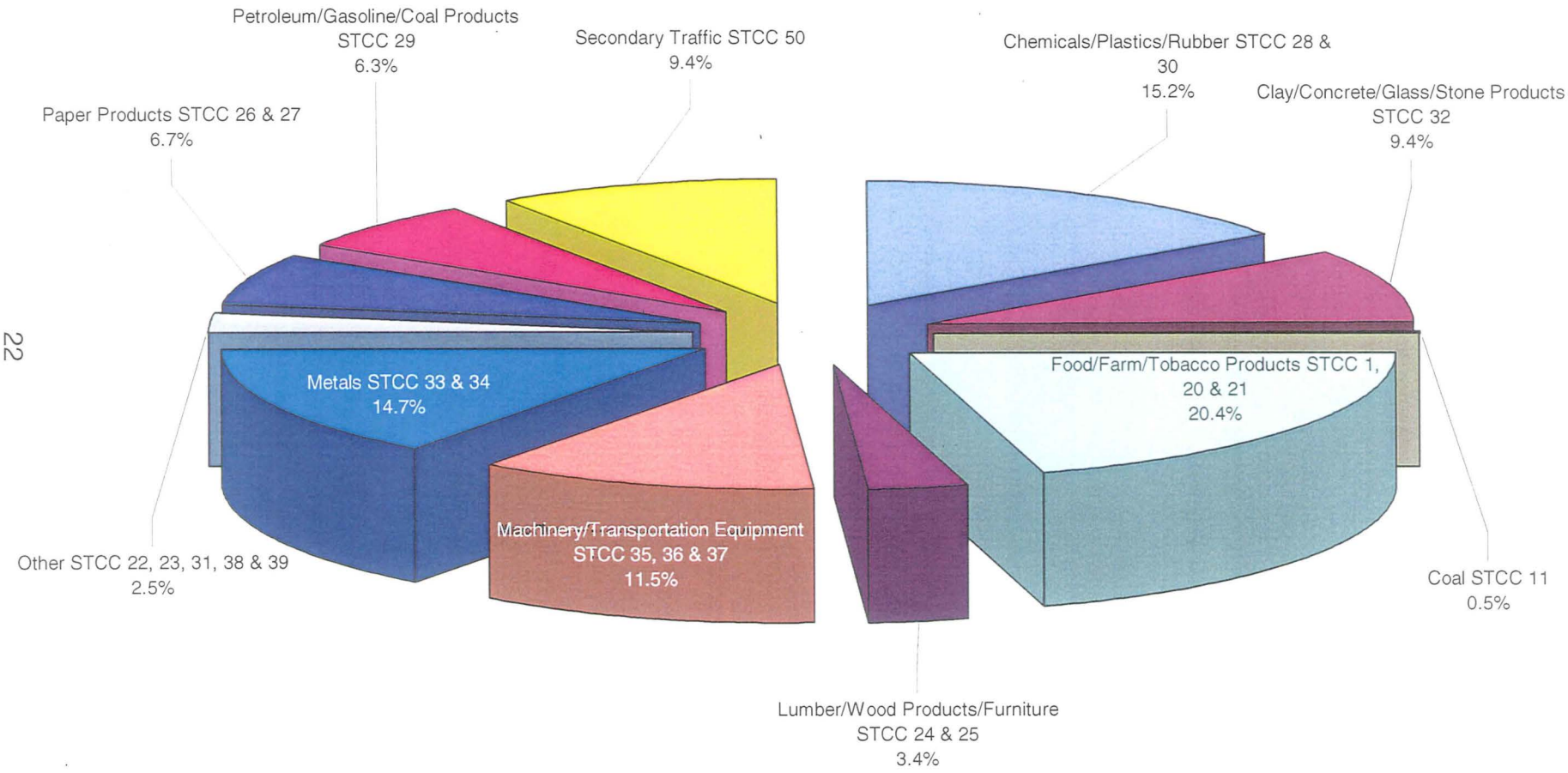


Table VII
Ohio River Docks by County and Status

County	In Use	Idle	Total
Belmont	13	3	16
Marshall	14	1	15
Ohio	5	2	7

Source: U.S. Army Corps of Engineers, Water Resources Support Center

During the year 1998, over 48 million tons of freight moved on barges between the Pike Island and Hannibal locks. The directional split of the river traffic and other relevant data is presented in Table VIII below. Barges are counted separately from the vessels and empty barges are included in the count. At Hannibal, 30% of the barges were empty. Downbound empty barges out-numbered upbound empty barges by approximately 3 to 1. This is consistent with the surface freight movement where the eastbound freight is twice the size of westbound freight. Just as with the surface freight, eastbound water freight is significantly larger than westbound freight.

Table VIII

Lock Performance Monitoring System (LPMS)
Summary 1998

Ohio River Lock		Vessels	TOTAL Barges	Tonnage (Tons x 1000)
Pike Island	Upbound	3,511	24,411	33,394
	Downbound	3,518	23,998	9,628
River Mile 84.2	Total	7,029	48,399	43,022
Hannibal	Upbound	2,875	23,702	29,114
	Downbound	2,875	23,487	18,506
River Mile 126.4	Total	5,750	47,189	47,206

Source: U.S. Army Corps of Engineers

In 1998 a wide variety of commodities made up the river freight and are shown in Table IX. In the study area, coal by far was the largest commodity shipped on barges. Of all the inbound and outbound freight, coal had the largest share at 75%. Even in the most recent available

Table IX

Water Freight To and From the Study Area

STCC Code	Commodity	To (Tons)	From (Tons)	Subcategory
28	Chemicals or allied products	225,190	1,369	Chemicals
32	Clay, concrete, glass or stone products	81,824	0	Clay/Concrete/Glass/Stone Products
11	Coal	5,272,054	8,764,602	Coal
24	Lumber or wood products (excluding furniture)	16,774	0	Lumber/Wood Products/Furniture
10	Metallic Ores	3,020,927	0	Metals
14	Nonmetallic ores or minerals (excluding fuels)	516,533	20,787	
33	Primary metal products	38,217	52,038	
34	Fabricated metal products	23,464	49,943	
40	Waste or scrap materials not identified by producing industry	76,663	145,800	Other
41	Miscellaneous freight shipments	18,658	0	
26	Pulp, paper or allied products	6,972	0	Paper Products
29	Petroleum or coal products	304,327	88,634	Petroleum/Gasoline/Coal Products
Total		9,601,603	9,123,173	

waterborne data for the year 2001, 69% of all waterborne freight on the Ohio River was coal with petroleum being a distance second (5%). Other waterborne shipments include Aggregate, Grain, Chemicals, Ores, Minerals and Metals.

Reebie's waterborne data shows that coal's share of all waterborne freight in Ohio was 44%. This data also includes freight on great lakes and other navigable waterways in Ohio. However, when the local data is disaggregate from the State, 96% of all waterborne freight originating from the study area is coal. Commodity shares for the study area are presented in Figures X and XI. This is consistent with the fact that Belmont County is the largest coal producing county in the State of Ohio and West Virginia is the second largest producer of coal in the country. The shipments of metallic or nonmetallic ores to the study area are also significant. They make up 37% of all inbound freight. It is clear from these facts that the river commerce is vital in sustaining local metal industry and mining operations. It can also be assumed that for bulk commodities water is the preferred mode.

FUTURE FREIGHT FLOWS

The key findings related to future flows are reproduced from the statewide study titled "Freight Impacts on Ohio Roadway System". The relevant findings are then discussed in the light of local relevance, issues and concerns. The growth factors used for the statewide flow will most likely be reflected in the projected truck traffic in the study area. A reconciliation with projections on the West Virginia side will be made for consistency in the study area.

Key findings

- Overall freight movements are expected to increase by 47.4 percent form 1998 - 2020, from 950 million tons to 1.4 billion tons. This represents an average annual growth rate of 2.2 percent.

- Through movements, which accounted for 34 percent and 45 percent of Ohio's movements by weight and value, respectively, in 1998 are expected to grow faster than other types of movements. By 2020, through movements are expected to account for 36 percent of the weight and 47 percent of the value shipped within Ohio.

- Inbound and through movements by value also are growing rapidly (2.7 percent and 2.9 percent annually from 1998 - 2020, respectively). Rapid growth rates in the value of inbound and through shipments will lead to greater numbers of trucks on Ohio's roadways, as higher-value shipments often occur by truck.

- Shipments of bulk commodities, particularly coal and metallic ores, are expected to account for less of Ohio's overall tonnage and value by 2020. However, such bulk commodities are still expected to make up over 50 percent of Ohio's imports (be weight) in 2020.

- As was the case in 1998, the value of Ohio's exports are expected to be greater than the value of its imports in 2010. However, Ohio is expected to import roughly the same value

Figure X

Water Freight from the Study Area

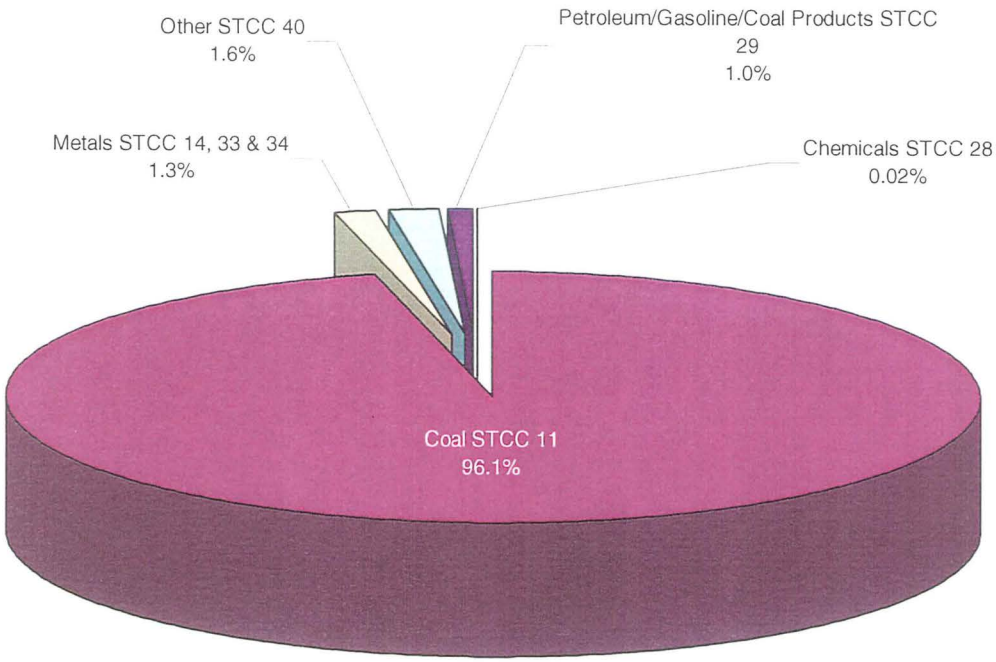
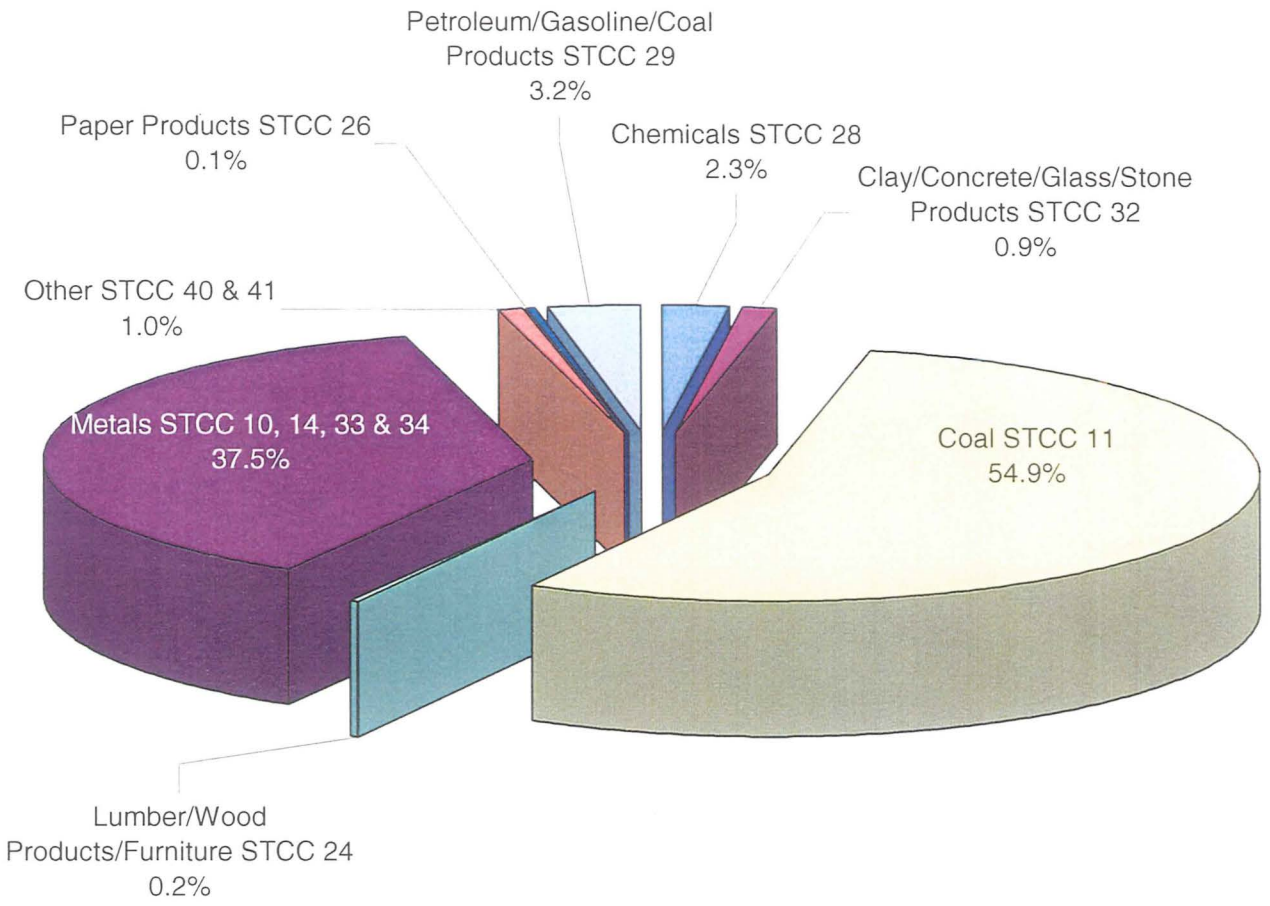


Figure XI

Water Freight to the Study Area



as it exports by 2020. This may be attributable to strong growth in the import of durable manufactured goods and inbound warehousing shipments.

- As was the case in 1998, approximately one-third of Ohio's freight shipments are expected to move from point-to-point within the state (intrastate movements) in 2020.

- Truck's mode share of overall shipments is expected to increase from 73 percent (by value) in 1998 to over 80 percent (by value) in 2020.

- Durable manufactured goods and warehousing shipments are growing at the most rapid pace, and will account for a greater share of Ohio's overall tonnage and value by 2020.

- Two counties along the U.S. 35 Corridor, Jackson and Fayette, will experience rapid growth in all types of truck movements by 2020.

- In 2020, through truck movements will continue to be dominated by the shipment of durable manufactured goods from the South Atlantic Region to Chicago and from the West Pacific Region to New York and New Jersey.

- Coal's share of the overall shipment tonnage is expected to decline from 20 percent in 1998 to 14 percent in 2020. At the same time, the percentage of warehousing shipments is expected to increase from 14 to 24 percent.

- As was the case in 1998, Ohio is expected to remain its own largest trading partner in 2020.

Two findings have significant impact on the local area. Both findings deal with bulk commodities that include coal and metals. Both of these are projected to decline. Also coal's share of the overall shipments is projected to decline from 20% to 14%. Both of these commodities are critical for the economic vitality of the area. Belmont County is the largest coal producer in the State of Ohio and West Virginia is the second largest coal producing state in the country. Therefore, a drop in coal shipments will have significant effect on the local economy. Both coal and steel industries have undergone substantial restructuring. Steel is a national infrastructure based commodity and coal has always been touted as one of the indigenous resources for energy independence. AEP recently committed more than $1 billion to install selective catalytic reduction systems on two of its West Virginia coal-fired power plants. Substantial investments have been made locally in the Wheeling-Pitt Steel facilities and Weirton Steel has been acquired by International Steel Group. It is possible the origin and destination regions may change, but it is unlikely there will be a significant drop in shipments of these commodities to and from the area.

The finding that durable manufactured goods and warehousing shipments will account for a greater share of Ohio's overall tonnage by 2020 is also of interest locally. Soon to be opened, Cabela's regional distribution center in Ohio County will increase local share of this activity. This increase will have to be followed and adequately addressed in the long range plan.