Commodity Movement Study

Boonslick Regional Planning Commission

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CDM Smith®

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This report was prepared by the Boonslick Regional Planning Commission under award number 05-69-04675-01 from the Economic Development Administration, U.S. Department of Commerce. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the Economic Development Administration or the U.S. Department of Commerce.

Section 1
Freight Network Inventory

The Boonslick Regional Planning Commission received an Economic Development Administration (EDA) grant to study the surrounding geographic and man-made transportation systems for the counties of Lincoln, Montgomery and Warren in the State of Missouri. The region is bordered by two major rivers, the Missouri and Mississippi Rivers; two major US interstate highways, I-70 and U.S. 61; two Class 1 rail systems, Norfolk Southern Railway and BNSF Railway; the Lambert/St. Louis International Airport; and the Port of St. Louis. Boonslick Regional Planning Commission is proactively examining the potential of freight movement and an intermodal facility within their planning region. With the expansion of the Panama Canal, this opens the freight industry to transport cargo more efficiently from Asia to the gulf ports and inland through the nation's waterway system. The following report is an overview of the freight transportation modes in the three-county Boonslick Regional Planning Commission study area. The study area is delineated on Figure 1.

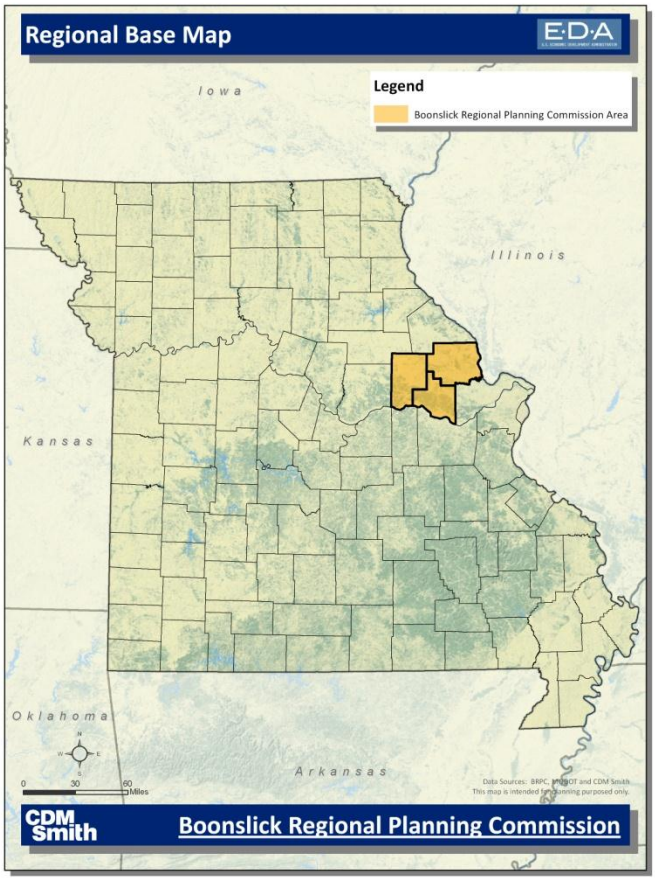


Figure 1: Boonslick Regional Planning Commission

1.1 Highway

The nation's highways are an integral part of the freight system. Even as freight enters the region by air, rail, water and highways, trucks are used to pick up and distribute freight between rail yards, airports and water ports and manufacturing plants, distribution centers and to area businesses. The primary highway routes used for freight movement in the Boonslick region are shown on Figure 2.

Table 1 highlights selected features of the region's principal freight highways. The primary regional freight corridor is Interstate 70 which reaches from coast to coast and serves as one of the nation's primary freight highways.

Interstate 70 is the only interstate facility in the region and a part of the National Network. The National Network was set up to allow conventional combinations on high volume routes utilized by large vehicles for interstate commerce and carries a significant portion of the region's traffic. Interstate 70 is comprised of four lanes through the Boonslick region with traffic volumes reaching 29,400 to 42,400 vehicles. East of SR 19 in Montgomery County, truck volumes account for 42 percent of the total traffic volume.

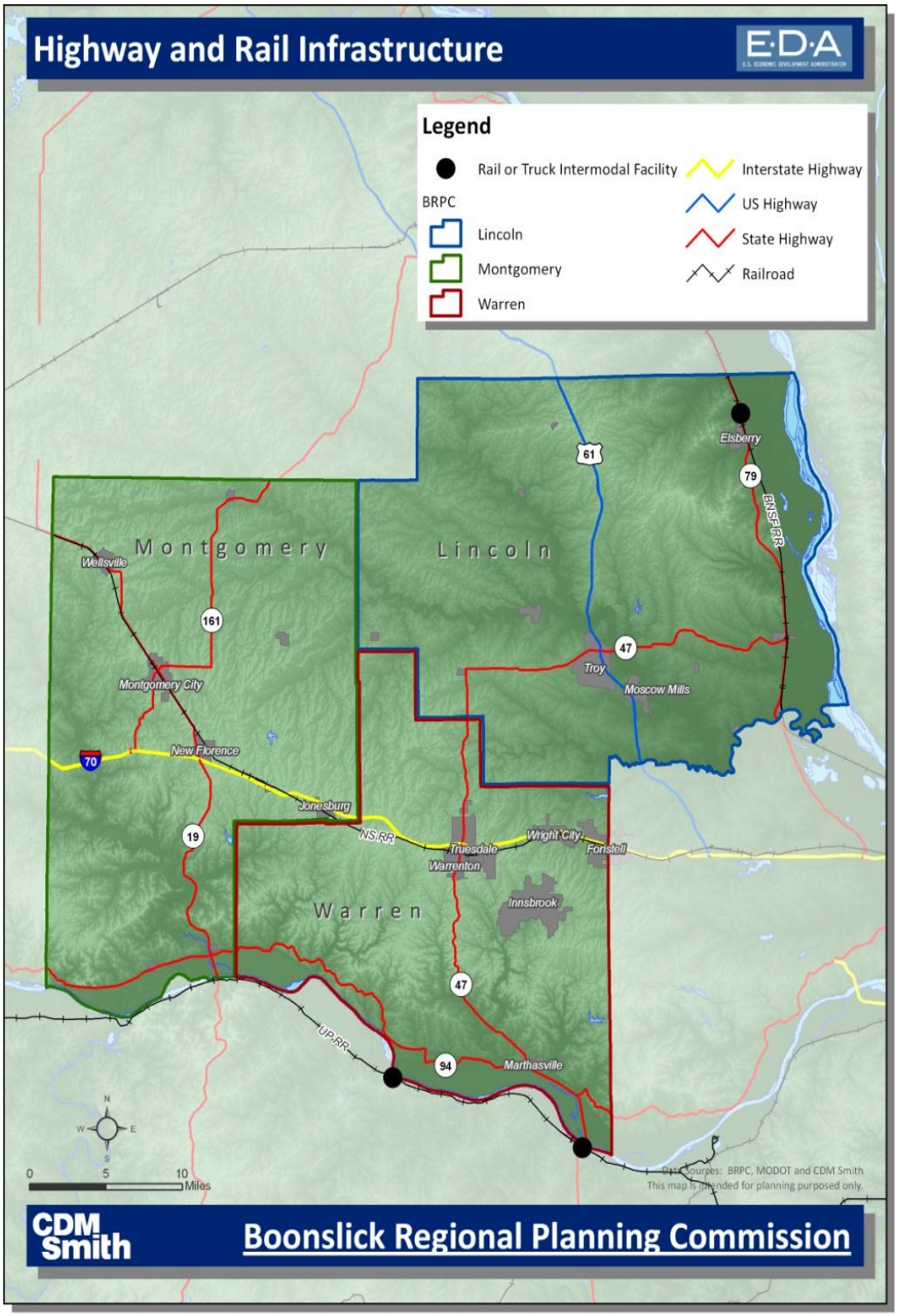


Figure 2: Highway and Rail Infrastructure

Table 1: Highway Characteristics

	Classification	National Highway Network (Yes/No)	2012 – 2013 MoDOT Commercial Vehicle Route Map	Number of Lanes	2011 Traffic Count*	2011 Truck Volumes*	Percent Trucks
Interstate 70	Interstate	Yes	Highway Network	4	29,400 to 42,400	12,400	42%
U.S. 61	Principle Arterial	Yes	Highway Network	4	13,600 to 15,200	3,331**	28.9%**
SH 19	Minor Arterial	No	Primary System	2	2,800 to 5,400	540	10.4%
SH 47	Minor Arterial	No	Primary System	2/4	6,600 to 11,400	750	10.4%
SH 79	Minor Arterial	No	Primary System	2	1,500 to 10,400	N/A	N/A
SH 94	Minor Arterial	No	N/A	2	1,600 to 7,100	N/A	N/A

*2011 MoDOT Traffic Count Map, **South of Bowling Green (outside Boonslick Region)

State Highway 19 is a two lane Minor Arterial and not part of the National Network; however, it is part of the primary system on Missouri Department of Transportation's (MoDOT's) 2012 – 2013 Commercial Vehicle Route Map. Traffic volumes range from 2,800 to 5,400 daily vehicles with 540 (10.4 percent) trucks north of the Missouri River.

State Highway 47 is a two lane Minor Arterial and not part of the National Network; however, it is part of the primary system on MoDOT's 2012 – 2013 Commercial Vehicle Route Map. Through the city of Troy, Highway 47 is a four lane highway. Traffic volumes range from 6,600 to 11,400 daily vehicles with 740 (10.4 percent) trucks west of Troy.

State Highway 79 is a two lane Minor Arterial and not part of the National Network; however, it is part of the primary system on MoDOT's 2012 – 2013 Commercial Vehicle Route Map. Traffic volumes range from 1,500 to 10,400 daily vehicles. No truck volumes were found on the 2011 MoDOT traffic count map.

State Highway 94 is a two lane Minor Arterial and not part of the National Network nor is State Highway 94 on MoDOT's 2012 – 2013 Commercial Vehicle Route Map. Traffic volumes range from 1,600 to 7,100 daily vehicles. No truck volumes were found on the 2011 MoDOT traffic count map.

1.2 Truck Freight Flows

The commodity flow data obtained from the Freight Analysis Framework 3 (FAF-3). The analysis was collected for the Missouri portion of the St. Louis region only. This region includes the City of St. Louis and several surrounding counties including Lincoln and Warren Counties. Boonslick region had nine firms identified from the *2005 Missouri Statewide Freight Study Technical Memoranda #2* which produce a large number of daily truck trips (50 plus trips per day). These companies are shown on Figure 3 and include Tyson Meats, Steel & Pipe Supply, Gateway Refrigeration, Coke-Cola, Ameriwood, Witte Brothers Trucking, Bodine Aluminum, Creech Brothers Trucking and Harcourt-Brace.

Among this approximately 121 million tons of truck imports, the most common commodity types include Gravel (31.9 percent), Nonmetal Mineral Products (11.4 percent), Waste/Scrap (8.8 percent) and Cereal Grains (6.3 percent). These four groups comprise the majority of truck imports from the Missouri portion of the St. Louis region. Table 2 demonstrates the top 10 commodity groups for truck ton imports from the Missouri portion of the St. Louis region.

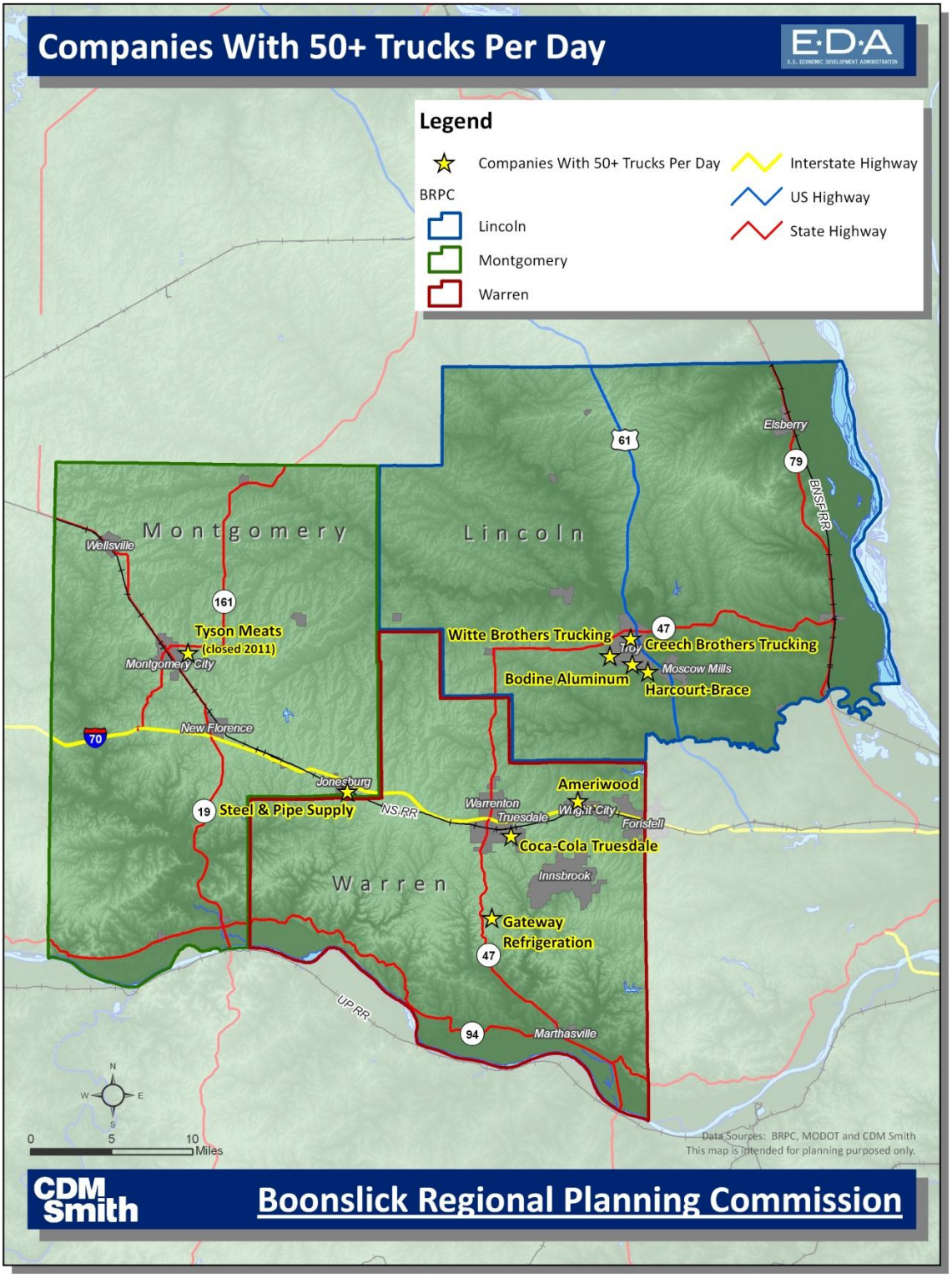


Figure 3: Companies with 50+ Truck Trips Per Day

Table 2: 2010 Top 10 Truck Imports for St. Louis defined FAF-3 Sub Region

Truck Imports by Tons			Truck Imports by Value		
		2010 Total Tons (in 1000s)			2010 Total Value (Million $)
1	Gravel	38,641.5	1	Pharmaceuticals	13,623.2
2	Nonmetal mineral products	13,847.7	2	Machinery	11,397.2
3	Waste/scrap	10,608.5	3	Motorized vehicles	8,257.7
4	Cereal grains	7,618.0	4	Mixed freight	6,860.5
5	Natural sands	6,617.7	5	Electronics	4,555.5
6	Fuel oils	3,683.1	6	Textiles/leather	3,895.9
7	Nonmetallic minerals	3,556.3	7	Articles-base metal	3,759.2
8	Coal-n.e.c.	2,890.0	8	Plastics/rubber	3,585.5
9	Other agricultural products	2,550.3	9	Base metals	3,244.3
10	Mixed freight	2,536.4	10	Other foodstuffs	3,062.2
	Other	31,218.8		Other	33,094.4
	Grand Total	**121,232.3**		**Grand Total**	**95,336.0**

Source: FHWA Freight Analysis Framework3: https://www.ops.fhwa.dot.gov/freight/freight_analysis/faf

Among this approximately 117 million tons of truck exports, the most common commodity types include Gravel (32.9 percent), Nonmetal Mineral Products (10.2 percent), Waste/Scrap (9.3 percent) and Other Food Products (3.8 percent). These four groups comprise the majority of truck exports from the St. Louis region. Table 3 demonstrates the top 10 commodity groups for truck ton exports from the Missouri portion of the St. Louis region.

Table 3: 2010 Top 10 Truck Exports for St. Louis defined FAF-3 Sub Region

Truck Exports by Ton			Truck Exports by Value		
		2010 Total Tons (in 1000s)			2010 Total Value (Million $)
1	Gravel	38,732.1	1	Machinery	11,425.6
2	Nonmetal mineral products	12,066.0	2	Pharmaceuticals	9,091.7
3	Waste/scrap	10,975.2	3	Chemical products	7,591.6
4	Other foodstuffs	4,484.9	4	Mixed freight	6,179.0
5	Chemical products	3,849.4	5	Motorized vehicles	5,951.7
6	Nonmetallic minerals	3,700.7	6	Electronics	4,298.9
7	Fuel oils	3,561.6	7	Articles-base metal	3,602.4
8	Natural sands	3,517.6	8	Plastics/rubber	3,087.7
9	Coal-n.e.c.	3,205.5	9	Other foodstuffs	2,890.4
10	Cereal grains	2,839.4	10	Fuel oils	2,778.5
	Other	30,945.5		Other	29,894.4
	Grand Total	**117,878.5**		**Grand Total**	**86,792.5**

Source: FHWA Freight Analysis Framework: https://www.ops.fhwa.dot.gov/freight/freight_analysis/faf

1.3 Freight Traffic Outlook

The recession of 2008-2009 reduced freight movement volumes. However, the upward trend has returned. Housing starts, one of best barometers for analyzing the economy, is up. Low interest rates will likely remain, so growth will continue. However, the annualized growth rate for freight is expected to be approximately 1 to 2 percent over the next few years. Trucks move 67 percent of the freight tonnage and 74 percent of the freight value in the U.S. The trend is for trucks to slightly increase their market share of freight movement over the next 20 years. Future Federal guidelines that may restrict or reduce coal powered energy sources could alter the equation.

MoDOT also continues to look for ways to fund the improvement of Interstate 70. Future improvements of the corridor through the region could include added capacity in each direction, truck only lane considerations, and increased trucking capacity as it relates to length and loads. If the Department is successful in achieving the necessary funding for improvements, freight movements through the corridor could increase significantly as soon as the year 2020.

Section 2

Rail Network Inventory

The railroads have been an integral part of economic success throughout the State of Missouri. Missouri's central location within the nation is a key advantage to distribute freight to all reaches of the country. There are two Class I Railroads running through the Boonslick Regional Planning Commission: Norfolk Southern Railway (NS) and BNSF Railway (BNSF). In addition, the Union Pacific Railroad (UPRR) passes just outside the southern boundary of the Boonslick region. The railroad routes through the region are shown on Figure 2, and selected characteristics of the three railroads are revealed in Table 4.

Table 4: Class I Railroad Characteristics

	BNSF	NS	UP
Missouri Track Miles (Boonslick Region)	1,593 (17 miles)	344 (45 miles)	986 (35 miles) outside region
Track Rights (Missouri)	166	65	511
Daily Trains	18 - 20	8 - 12	40 - 50
Number of Tracks	single	single	double
Maximum Train Speed*	60 mph	60 mph	60 mph

*Source: 2012 Missouri State Rail Plan
Federal Rail Administration website. http://fragis.frasafety.net/GISFRASafety/default.aspx

BNSF Train Engine

BNSF Railway (BNSF) – The BNSF line parallels Highway 79 in eastern Lincoln County in the Boonslick region. This BNSF line carries approximately 20 trains daily on a single track according to the Federal Rail Administration website. There are three double-ended passing tracks located along the BNSF line in Lincoln County in Old Monroe, Winfield and Elsberry to permit train meets (i.e. trains operating in opposite directions) and to pass other trains.

The BNSF website identified two transload (bulk and break bulk) facilities in St. Louis area at Affton Trucking which offers warehouse, bulk and dimensional freight services and Burlington Junction Railroad which offers bulk and dimensional freight services located in Fenton. The nearest BNSF intermodal (container and trailers) facilities are located in Machens and Spanish Lake, both in the greater St. Louis Metropolitan area. The only terminal location within the Boonslick region is in Old Monroe serving Mueller Brothers Timber according to the BNSF website.

Norfolk Southern Railway (NS) – The NS line parallels I-70 from Floristell to New Florence where the rail line turns north and follows Highway 19 through the Boonslick region. This NS rail line carries

approximately 10 trains daily on a single track. Siding tracks located in Pendleton, High Hill and Montgomery City are available to serve local terminals or businesses.

NS does not have a transload facility near the Boonslick region. The NS container intermodal facility is associated with the inland water port in Granite City, Illinois. NS spur lines serve a grain elevator in Pendleton, a rock/aggregate facility in High Hill and both grain and warehousing facilities in Montgomery City. In the St. Louis region there are terminals at Mid-Coast Terminal in Granite City.

Union Pacific Railroad (UPRR) – The UPRR line parallels the Missouri River to the south which is just outside the Boonslick region. This line also serves Amtrak passenger trains between Kansas City and St. Louis. The UPRR line supports about 45 freight trains daily. There are two double-ended sidings located along the UPRR line -- one in Washington for Amtrak boarding and a pass track east of Morrison. In addition, there is a side track located in New Haven available to serve local grain terminal. UPRR have two transload facilities (both handle bulk and breakbulk commodities) in the greater St. Louis region including Watco Incorporated and EE-Jay Motor Transport in East St. Louis, Illinois. UPRR has its only intermodal facility near the Boonslick region in Dupo, Illinois.

2.1 Rail Freight

The commodity flow data in this discussion was obtained from the FAF-3 data. The data was collected for the Missouri portion of the St. Louis region only. This region includes the City of St. Louis and several surrounding counties including Lincoln and Warren Counties within the Boonslick planning region.

Among this approximately 30 million tons of rail imports, by far the largest commodity is coal comprising 88.0 percent of the total shown. Cereal Grains (2.8 percent), Basic Chemicals (2.3 percent) and Coal n.e.c. (1.8 percent) are the next largest commodity groups. These four groups comprise the majority of rail imports for the state of Missouri. Table 5 demonstrates the top 10 commodity groups of St. Louis region imported rail tonnage.

Table 5: 2010 Top 10 Rail Imports for St. Louis defined FAF-3 Sub Region

Rail Imports by Ton			Rail Imports by Value		
		2010 Total Tons (in 1000s)			2010 Total Value (Million $)
1	Coal	26,805.9	1	Motorized vehicles	341.6
2	Cereal grains	846.7	2	Basic chemicals	242.2
3	Basic chemicals	712.5	3	Coal	201.9
4	Coal-n.e.c.	555.3	4	Cereal grains	181.2
5	Fertilizers	371.5	5	Coal-n.e.c.	130.2
6	Newsprint/paper	239.3	6	Newsprint/paper	125.1
7	Nonmetallic minerals	177.2	7	Base metals	109.2
8	Wood prods.	118.1	8	Fertilizers	74.7
9	Other foodstuffs	94.1	9	Machinery	66.4
10	Base metals	80.4	10	Plastics/rubber	59.3
	Other	473.3		Other	285.7
	Grand Total	**30,474.7**		**Grand Total**	**1,818.0**

Source: FHWA Freight Analysis Framework: https://www.ops.fhwa.dot.gov/freight/freight_analysis/faf

The most common commodity types exported consist of Cereal Grains (29.6 percent), Natural Sands (15.7 percent), Waste/Scrap (13.1 percent) and Milled Grain Products (12.4 percent). These four groups comprise the major rail export tonnage in the Missouri portion of the St. Louis region. Table 6 contains the top 10 commodity groups for rail tonnage exported from the Missouri portion of the St. Louis region.

Table 6: 2010 Top 10 Rail Exports for St. Louis defined FAF-3 Sub Region

Rail Exports by Ton			Rail Exports by Value		
		2010 Total KTons (in 1000)			2010 Total Value (Million $)
1	Cereal grains	587.3	1	Motorized vehicles	1,474.3
2	Natural sands	311.6	2	Waste/scrap	168.1
3	Waste/scrap	259.3	3	Cereal grains	97.0
4	Milled grain prods.	246.4	4	Base metals	90.7
5	Motorized vehicles	174.8	5	Milled grain prods.	88.8
6	Chemical prods.	107.6	6	Machinery	84.7
7	Base metals	63.0	7	Chemical prods.	72.3
8	Animal feed	38.	8	Other ag prods.	69.3
9	Plastics/rubber	33.9	9	Plastics/rubber	53.8
10	Other foodstuffs	28.9	10	Other foodstuffs	19.2
	Other	133.7		Other	92.5
	Grand Total	**1,984.7**		**Grand Total**	**2,311.3**

Source: FHWA Freight Analysis Framework: https://www.ops.fhwa.dot.gov/freight/freight_analysis/faf

2.2 Rail Traffic Outlook

Nationally, rail freight tonnage has increased since passage of the Staggers Act in 1980 and provided railroads with rate-making flexibility, although traffic fell off at the commencement of the recent recession. However, after reaching a low point in 2009, rail freight volume again increased through 2011. In 2012 traffic levels were down from 2011 influenced largely by decreases in coal and grain -- the first by environmental concerns and the low price of natural gas, and the second by drought and a decrease in exports. Intermodal traffic (containers/trailers), however, was up compared with 2011 and just missed exceeding the record established in 2006. Increases in the shipment of crude oil, due to development of oil shale deposits and continued growth of ethanol production, have developed new traffic sources. While these trends have influenced statewide rail traffic, they have had little influence on rail use within the Boonslick region due to the commodity types and/or volumes involved.

2.3 Intermodal Potential

Both of the Class 1 railroads serving the study area have intermodal facilities (trailers/containers) in the St. Louis area. Any such demand in the Boonslick region would most likely be drayed to and from the St. Louis facilities. Intermodal facilities are limited to major traffic generating locations and are limited in number in order to develop trainload volumes. A bulk commodity transload facility would be better suited for the study area.

A facility suited for the transfer of bulk commodities associated with commercial activity in the area, such as a grain elevator with the capacity to load unit trains, is more likely. Another potential type would consist of transloading between modes, perhaps combined with warehousing, either for the

purpose of local distribution or consolidation for rail carload volumes by area business not directly served by rail. A third potential would be related to marine activity and transloading between rail and barge (see the Section 4: Water Port Terminal discussion).

Selection of the type and location of such a facility will require further analysis. An assessment of the region's economic activity as related to the existing demand for rail service, potential for future rail freight generation, and commodities and volumes by location, would comprise the first step.

Section 3

Air Facility Inventory

Air cargo fulfills the need for transportation of material or goods between two points in an expeditious manner. Cargo moves in the bellies of passenger aircraft and in dedicated all-cargo aircraft on both scheduled and nonscheduled service. Products that benefit from increased speed of distribution or better stock availability that can be gained through air cargo shipping include automotive; computers; and perishable items such as flowers, vegetables and fish. All of these are high value, relatively light weight, and time critical. There are three airports that currently accommodate air cargo on a regular basis. These airports are Lambert International, Spirit of St. Louis and Mid-America Airport all shown on Figure 4.

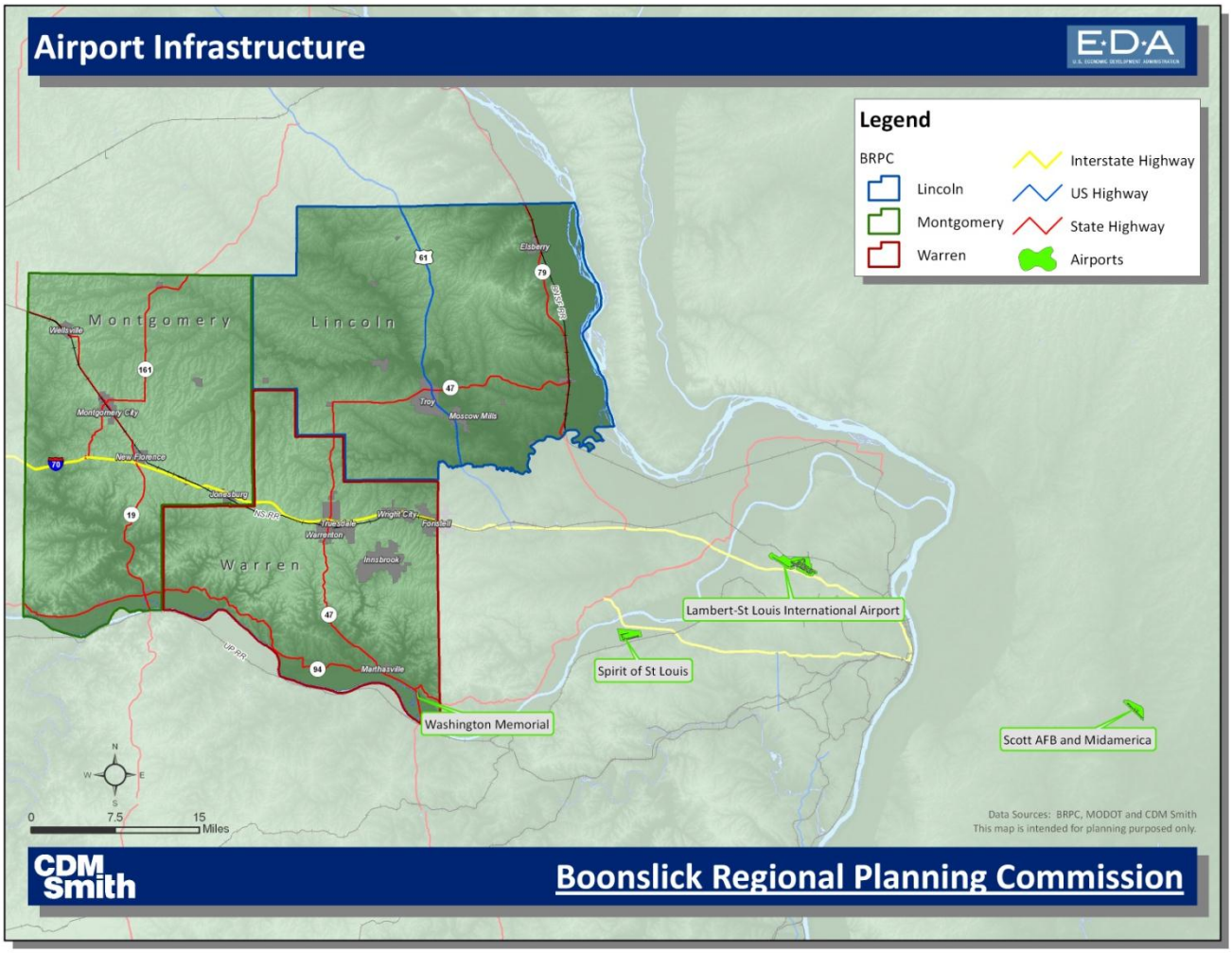


Figure 4: Airport Locations

Washington Regional Airport (FYG) – This city owned general aviation airport which is open to public use and is comprised of a single 5,000 feet long, 75 feet wide runway. The runway is supported by a full length parallel taxiway. Washington Regional Airport has the capacity to expand to a 7,000 feet long runway, expanded tarmac and additional hangars. The limited air cargo through this airport generally includes ad hoc shipments of steel components or equipment and parts for local tool dye and radio manufacturers. Air cargo shipments could increase with growth in the industrial base within the City of Washington as well as increased shipments related to medical supplies. Washington Regional Airport does not offer warehousing or air cargo terminals but has direct access to Highway 47. The airport competes with airports to the east with scheduled air cargo services as well as the express trucking industry.

Lincoln County conducted a Regional Airport Feasibility Study in 2007 which concluded that a publicly-owned, public-use airport in Lincoln County is a feasible option. The next step is to identify the location of the regional airport within Lincoln County.

Lambert International Airport (STL) – The City of St. Louis owns and operates Lambert International Airport. Lambert has four active runways of varying lengths. Runway 6/24 is 7,600 feet long and 150 feet wide. Runways 12L/30R and 11/29 are both 9,000 feet long and 150 feet wide. Runway 12R/30L is 11,000 feet long and 200 feet wide.

Lambert has three active cargo terminal areas hosting UPS, FedEx, DHL and "belly cargo" attributed to passenger airlines. Aeroterm, a third party cargo facility developer, has plans to renovate and add a new cargo ramp to accommodate Boeing 747 air cargo planes. The three major integrated express carriers: UPS, FedEx and DHL account for nearly 90 percent of the air cargo freight tons at STL. In 2010, the air cargo tonnage reached 66,473 which are up over 3 percent from 2009 total 52,024.

These totals are anticipated to increase as the first direct China Cargo Airline plane landed in Lambert on September 2011. This marked the beginning of international air cargo to/from Shanghai, China as Lambert Airport strives to be the air cargo gateway to China. While inbound flights from China are nearly always full, airports in the Midwest have difficulty in finding adequate volumes of backhaul for the return trip.

Lambert has excellent highway access through nearby Interstates 70, 170 and 270 providing access to/from warehousing and distribution centers. There are several warehousing opportunities near Lambert both in the form of developed ready to lease and undeveloped/planned warehousing space. Hazelwood Logistics Center has 150 acres served by rail, the Lindbergh Distribution Center has over 224,000 square feet of their 524,000 square feet facility of warehousing space available for lease, Aviator Business Park 160 acres served by rail with a development capacity of approximately three million square feet, and North Park has 550 acres that has a build-out potential of 5.5 million square feet of manufacturing/distribution facilities. There are potentially 19.6 million square feet of mostly warehouse space available on and off the airport property to meet the growing needs of Lambert's air cargo freight inclusive of the business parks noted above.

Spirit of St. Louis (SUS) – St. Louis County owned public use airport with two runways. One is 5,000 feet long and 75 feet wide. The second runway is 7,485 feet long and 150 feet wide. The air cargo opportunities are managed by four separate fixed based operators (FBO) who have leases with the airport. These FBOs load and unload cargo that is transported by Flight Express and Ameriflight which are regional contractors to the integrated express industry and medical supplies transport companies. Ameriflight regularly operates a Metro 4 aircraft at SUS while Flight Express operates a Cessna 210.

The amount of air cargo and warehouse space at the Spirit of St. Louis was unknown as each fixed based operator is not required or requested to release this information to the airport. Given the limited capacity of the cargo aircraft that operate on the airport it is assumed that the volume of traffic per flight averages less than 1,000 pounds. The Spirit of St. Louis has excellent highway access to I-64.

Mid-America St. Louis (BLV) – Mid-America St. Louis is jointly owned by St. Clair County, Illinois and the U.S. Air Force where Scott Air force base is located. Scott Air Force Base (AFB) is the home of the U.S. Transportation Command (USTRANSCOM) and is the Department of Defense's headquarters for planning and coordinating military transportation requirements. The two runways measure 10,000 feet long by 150 feet wide and 8,000 feet long by 150 feet wide, respectively Mid-America is primarily used for military activity and air cargo which combine for over 75 percent of the air traffic. Mid-America has an air terminal equipped with 50,000 square feet of warehouse processing and handling space and a landside truck dock. There are 37 landside bays and 10 airside bays which is more than twice the standard based on square feet of the warehouse facility. Mid-America St. Louis has excellent highway access to I-64.

Mid-America has aspirations to become an international cargo gateway serving Asia, South America, Mexico and the Midwest. The typical outbound shipments from the U.S. to the south include industrial machinery, computer parts, vehicles and parts, oil and gas drilling equipment, and phones. The typical inbound shipments from the south to the U.S. include fish, produce, flowers, machinery and auto parts.

Columbia Regional Airport (COU) – Columbia Regional Airport is located to the west of the study area and is owned and operated by the City of Columbia providing a 5,300- foot runway. Columbia Airport was once home to Airborne Express/DHL but the operation currently does not have air cargo services since they truck their cargo to Kansas City. Warehousing opportunities exist at the nearby Ashland Industrial Park where five of the eight parcels remain undeveloped. Columbia Regional airport has excellent highway access to U.S. 63.

3.1 Air Freight Flows

The commodity flow data came from the Freight Analysis Framework 3 (FAF-3) data. The analysis was collected for the Missouri side of the St. Louis region only. This region includes the City of St. Louis and several surrounding counties including Lincoln and Warren Counties.

Of the approximately 14,000 tons of air imports, the most common commodities include Textiles and Leathers (52.6 percent), Electronics (17.4 percent), Precision Instruments (7.5 percent) and Meat/Seafood (5.4 percent). These four groups comprise the majority of air imports from the Missouri portion of the St. Louis region. Table 7 demonstrates the top 10 commodity groups for air imports by ton from the Missouri portion of the St. Louis region.

Table 7: 2010 Top 10 Air Imports for St. Louis defined FAF-3 Sub Region

Air Imports by Tons			Air Imports by Value		
		2010 Total Tons (in 1000s)			2010 Total Value (Million $)
1	Textiles/leather	7.43	1	Transport equip.	256.91
2	Electronics	2.45	2	Electronics	132.60
3	Precision instruments	1.06	3	Precision instruments	52.90
4	Meat/seafood	0.76	4	Misc. mfg. prods.	48.12
5	Machinery	0.53	5	Pharmaceuticals	46.35
6	Transport equip.	0.40	6	Mixed freight	40.48
7	Pharmaceuticals	0.33	7	Machinery	26.58
8	Misc. mfg. prods.	0.21	8	Articles-base metal	15.67
9	Motorized vehicles	0.20	9	Textiles/leather	14.64
10	Plastics/rubber	0.18	10	Plastics/rubber	13.34
	Other	0.57		Other	33.83
Grand Total		**14.12**	**Grand Total**		**681.41**

Source: FHWA Freight Analysis Framework: https://www.ops.fhwa.dot.gov/freight/freight_analysis/faf

Of the approximately 21,000 tons of air exports, the most common commodity types include Pharmaceuticals (50.1 percent), Miscellaneous Manufactured Products (22.9 percent), Transportation Equipment (6.2 percent) and Electronics (4.9 percent). These four groups comprise the majority of air exports from the Missouri portion of the St. Louis region. Table 8 demonstrates the top 10 commodity groups for air exports by ton from the Missouri portion of the St. Louis region.

Table 8: 2010 Top 10 Air Exports for St. Louis defined FAF-3 Sub Region

Air Exports by Tons			Air Exports by Value		
		2010 Total Tons (in 1000s)			2010 Total Value (Million $)
1	Pharmaceuticals	10.57	1	Transport equipment	1,482.10
2	Misc. manufactured products	4.82	2	Pharmaceuticals	394.68
3	Transport equipment	1.30	3	Electronics	80.28
4	Electronics	1.02	4	Mixed freight	74.58
5	Printed prods.	0.96	5	Machinery	65.42
6	Textiles/leather	0.64	6	Misc. manufactured products	59.70
7	Machinery	0.41	7	Textiles/leather	36.55
8	Mixed freight	0.38	8	Precision instruments	20.17
9	Articles-base metal	0.30	9	Articles-base metal	8.47
10	Precision instruments	0.25	10	Printed prods.	8.20
	Other	0.38		Other	10.25
	Grand Total	**21.11**		**Grand Total**	**2,240.45**

Source: FHWA Freight Analysis Framework: https://www.ops.fhwa.dot.gov/freight/freight_analysis/faf

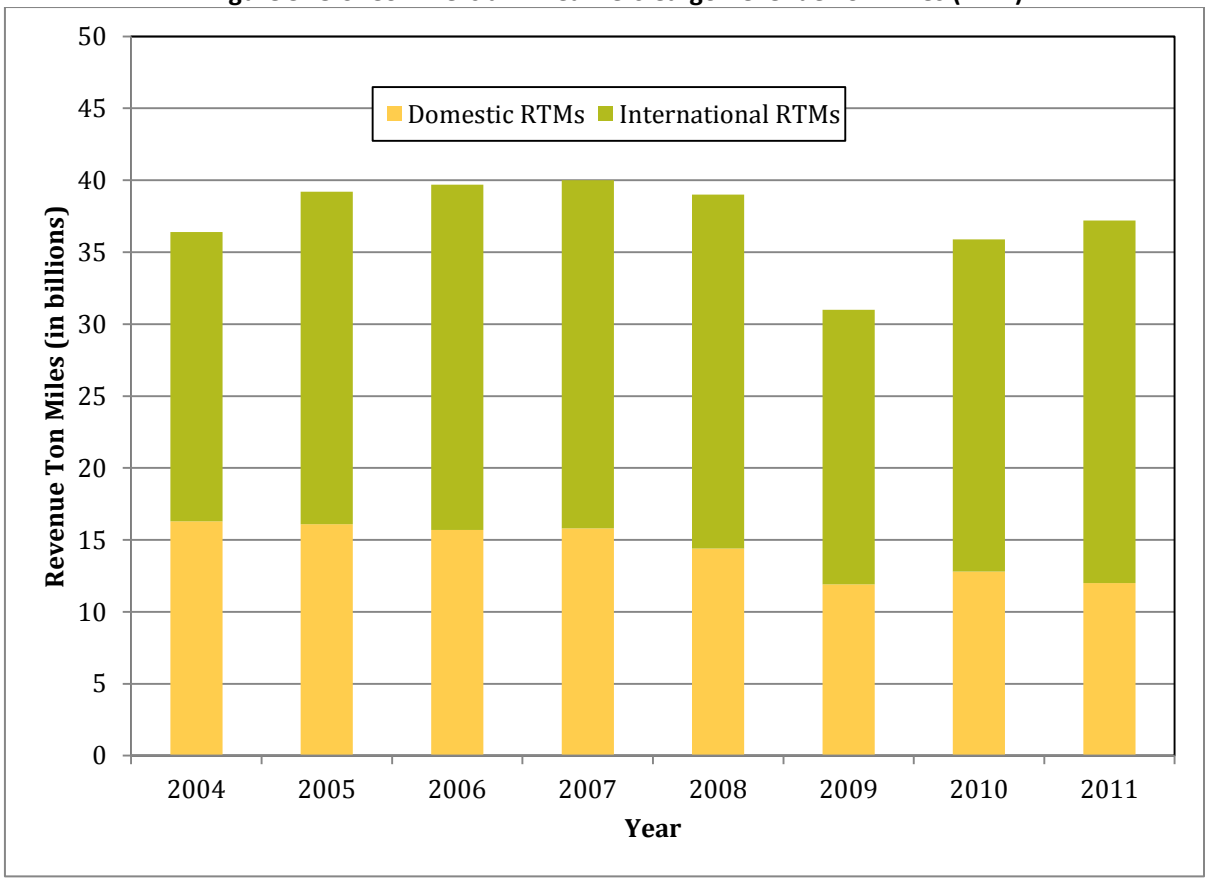
3.2 Air Freight Outlook

Washington Regional Airport is the only airport in the three county region that accommodates the movement of freight. It does not compete for air cargo service with nearby airports. Three of these airports, St. Louis-Lambert International Airport (STL), Mid-America Airport (BLV) and Spirit of St. Louis Airport (SUS), compete against each other for the region's air cargo. The Washington Regional Airport's close proximity to STL places the Airport at a disadvantage in attracting aircraft cargo operations since integrated express carriers currently find trucking times to STL, where their cargo jets are based, adequate to serve the market. These trucks act as "feeder aircraft" in the Washington Regional airport market.

The air cargo market faces stiff competition, not just among air carriers, but from alternative shipping modes such as trucks, container ships, and rail cars.

Figure 5 shows the trend in air cargo activity by U.S. air carriers. The quantity of air cargo shipped increased more than 3 percent (measured in revenue ton miles) from 2010 to 2011resulting in 37 billion revenue ton miles. That increase in air cargo, a continuation of growth from the low point of 2009, was led by international air cargo, which grew more than 9 percent year over year. Domestically, air cargo revenue ton miles contracted more than 6 percent from 2010 to 2011, an indication that yet another segment of aviation is struggling to recover from the recession.

Figure 5: U.S. Commercial Air Carriers Cargo Revenue Ton Miles (RTM)



Source: FAA Aerospace Forecast Fiscal Years 2012-2032, March 2012.

High fuel prices have slowed demand for air cargo somewhat and negatively impacted cargo carriers just as it has for passenger airlines. In addition, other factors in the U.S. air cargo industry have resulted in a more mature market that is not expected to produce high growth rates. Four primary factors contributing to industry maturity are discussed below.

Vertical Integration – As the air cargo industry has matured, the rapid growth experienced in the 1980s and 1990s has moderated and the industry has shifted from opening new markets to optimizing existing ones. Many companies are looking at vertical integration for opportunities. UPS started as a trucking company and expanded into air cargo, while FedEx began as an integrated express company that is now expanding into trucking through the acquisition of several companies, including RPS and American Freightways. In response to the needs of supply-chain managers, many suppliers of overnight package delivery now offer time-definite cargo services in the form of two- or three-day delivery.

Modal Shift – Air cargo is facing greater competition from trucks, as the cargo industry shifts focus from integrated express to time-definite service and more emphasis is placed on cost-saving measures. This is especially relevant on longer routes where trucks are supplanting the aircraft that traditionally moved cargo. This modal shift is particularly pronounced within the integrated express carrier community. Less-than-truckload (LTL) companies have become major competitors to air freight. These companies enjoy a significant cost advantage over air cargo carriers because of lower capital costs for equipment and lower wage scales. To compete effectively in this segment, FedEx Express has formed its own LTL subsidiary, FedEx LTL. Other larger LTL companies competing for time-definite shipments include ABF Freight System, Inc., Yellow Freight System, and Con-Way. The United States Postal Service (USPS) has also increased the use of trucks to transport mail, finding that mail can be transported by truck for 80 percent less than air transportation costs.

Declining Availability of Belly Space on Domestic Carriers – While 50 percent of international air cargo is transported on passenger aircraft, only a small percentage of air cargo is carried on domestic passenger aircraft in the U.S. This is because fewer wide-body aircraft are in use on domestic routes in North America. The increased use of regional jets offers limited cargo capacity. Higher load factors, which mean more passenger baggage, further reduce belly cargo capacity. In August 2010, new security rules went into effect requiring 100 percent screening of all cargo transported on U.S. domestic passenger aircraft, creating an additional obstacle for providers of air cargo belly space.

Decrease in USPS Mail Volume – The USPS has scaled back the amount of mail it moves by air for a number of reasons. Reduced capacity offered by regional jets has resulted in the USPS relying more heavily on trucks than aircraft. Historically, mail traveling more than 500 miles made use of aircraft, but with the proliferation of regional jets reducing air cargo capacity, the threshold for the use of trucking for mail has shifted to up to 800 miles. In the past, USPS formed several business alliances and capacity agreements with multiple all-cargo carriers, blurring the distinction between postal and private delivery. However, in August 2001, FedEx Express and the USPS initiated an exclusive strategic alliance. Through a business agreement, the USPS allows FedEx Express to locate FedEx overnight service collection boxes at post offices nationwide. FedEx Express, in return, provides space on FedEx Express airplanes for the transportation of Express Mail, Priority Mail, First-Class Mail, and some International Mail. This agreement yielded approximately 3.5 million pounds of mail each day for FedEx Express, enough to fill 30 DC-10-30 freighters. In addition, the increased use of email and overnight delivery services like DHL has decreased the amount of mail carried on passenger aircraft by the USPS.

Section 4

Water Port Terminal

The lock and dam systems of the Upper Mississippi and Missouri Rivers that allow for commercial navigation were built in the 1930s and 1940s. Construction of the locks and dams spurred economic growth along the rivers and provided farmers in Missouri and other agriculture producers in the central U.S. inexpensive, efficient access to world markets. Inland water transport is an efficient means of moving bulk commodities such as grain, fertilizer, aggregate and petroleum products. Although there are no physical ports in the Boonslick region, St. Louis is the third largest inland water port in the United States due to its location at the confluence of the Mississippi River and Missouri River.

4.1 Public Port Authorities

Missouri has 14 public port authorities and numerous private ports along both the Missouri and the Mississippi Rivers. Waterborne freight can transport high volumes of cargo in one shipment and minimizes environmental impacts through the use of less fuel which will become increasingly important with tougher environmental regulations and standards. This makes waterborne freight relatively cost efficient and environmentally sound option.

River Barge

Missouri has 14 public Port Authorities in various conditions of operational readiness. Some Port Authorities have only acquired land and others are fully operational with rail and truck intermodal capabilities. The Missouri Port Authorities are shown on Figure 6. The Pike County/Lincoln County Port Authority has been established and is working to identify the best location for the placement of the physical port; however, it is not shown on Figure 6 since it does not have a physical location identified yet. There is a public ferry service known as the Winfield Ferry which transports vehicles across the Mississippi River between Batchtown, Illinois and Lincoln County, Missouri east of Winfield.

4.2 Private Terminals

The Boonslick region has four private water terminals in close proximity[1], but only the Winfield Grain Company is located on the Mississippi River about one mile below Lock and Dam 25. It is used principally for the shipment of agricultural grain including wheat, corn, soybeans, flax seed and other farm products. On the Missouri River, Montgomery County hosts Hermann Sand and Gravel, Incorporated located about one mile downstream of Highway 19. Primary commodities include

[1] http://www.ndc.iwr.usace.army.mil/ports/data/port_facilities_no_milepoints.xlsx

aggregate materials (sand, gravel, stone, rock and limestone), oils (fuel and lubricants) and forest products (lumber, logs and wood chips). The final two private terminals are both associated with the Washington Sand Company located about a half mile upstream of the Highway 47 Bridge. The primary commodity is aggregate materials including sand, gravel, stone, rock, soil and limestone.

4.3 Water Freight Flows

The commodity flow data came from the Freight Analysis Framework 3 (FAF-3) data. The analysis was collected for the Missouri side of the St. Louis region only. This region includes the City of St. Louis and several surrounding counties including Lincoln and Warren Counties.

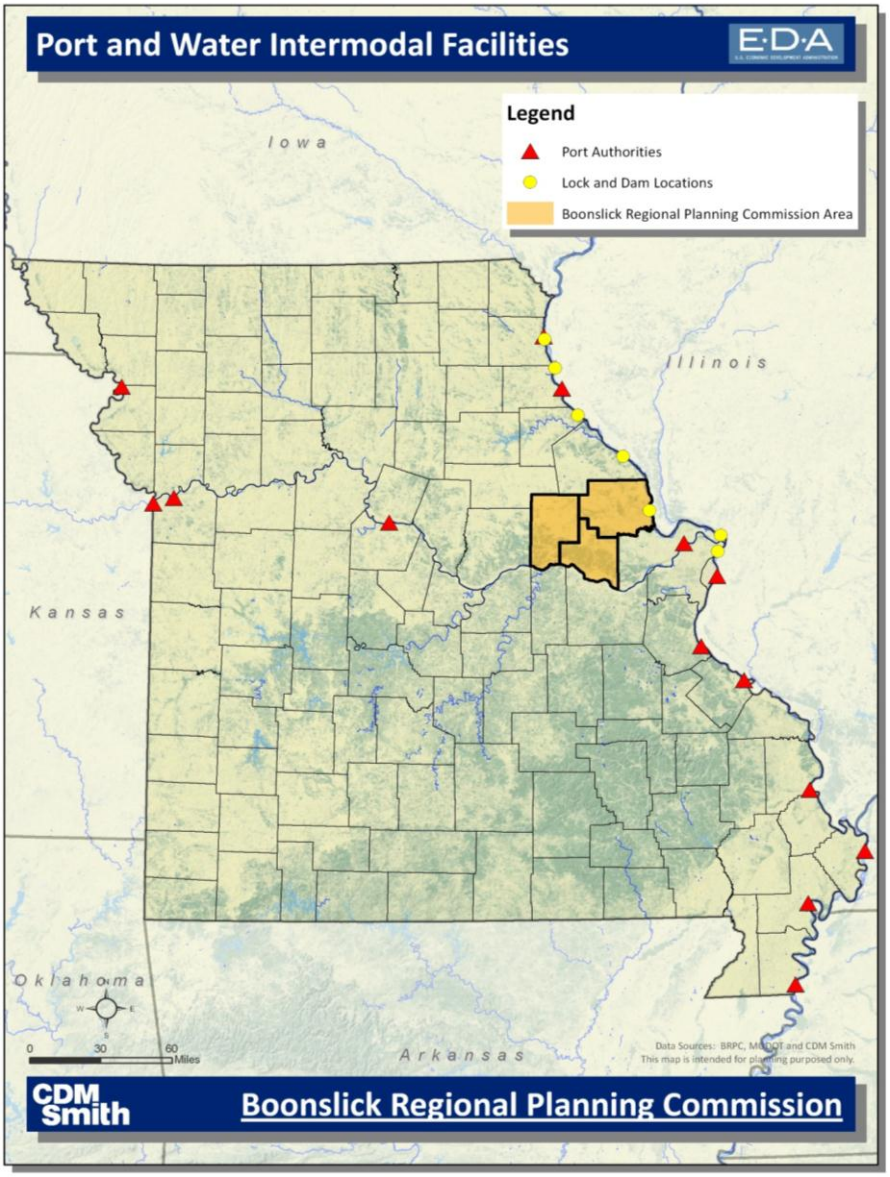


Figure 6: Missouri Port Authorities

Of the approximately 4 million tons of water imports, the most common commodity types include Natural Sands (35.3 percent), Coal n.e.c. (33.2 percent), Coal (20.6 percent) and Nonmetallic Minerals (7.2 percent). These four groups comprise the majority of water imports from the Missouri portion of the St. Louis region. Table 9 demonstrates the top commodity groups for water imports by ton from the Missouri portion of the St. Louis region.

Table 9: 2010 Top Water Imports for St. Louis defined FAF-3 Sub Region

Water Imports by Tons			Water Imports by Value		
		2010 Total Tons (in 1000s)			2010 Total Value (Million $)
1	Natural sands	1,337.0	1	Coal-n.e.c.	200.8
2	Coal-n.e.c.	1,257.7	2	Coal	27.6
3	Coal	783.0	3	Fertilizers	23.7
4	Nonmetallic minerals	273.5	4	Nonmetallic minerals	5.7
5	Fertilizers	105.5	5	Natural sands	3.7
6	Nonmetal min. prods.	35.7	6	Nonmetal min. prods.	3.7
Grand Total		**3,792.8**	**Grand Total**		**265.3**

Source: FHWA Freight Analysis Framework: https://www.ops.fhwa.dot.gov/freight/freight_analysis/faf

Of the approximately 7 million tons of water exports, the most common commodity types include Cereal Grains (36.2 percent), Other Agricultural Products (33.7 percent), Natural Sands (25.9 percent) and Metallic Ores (2.2 percent). These four groups comprise the majority of water exports from the Missouri portion of the St. Louis region. Table 10 demonstrates the top commodity groups for water exports by ton from the Missouri portion of the St. Louis region.

Table 10: 2010 Top 10 Water Exports for St. Louis defined FAF-3 Sub Region

Water Exports by Tons			Water Exports by Value		
		2010 Total Tons (in 1000s)			2010 Total Value (Million $)
1	Cereal grains	2,628.84	1	Other agricultural products	552.9241
2	Other agricultural products	2,448.18	2	Cereal grains	372.1351
3	Natural sands	1,880.91	3	Basic chemicals	207.8365
4	Metallic ores	161.10	4	Motorized vehicles	14.7234
5	Basic chemicals	121.30	5	Natural sands	5.5175
6	Milled grain products	11.26	6	Metallic ores	5.0843
7	Motorized vehicles	1.81	7	Base metals	3.8173
8	Base metals	1.09	8	Milled grain prods.	3.3065
9	Nonmetallic minerals	0.76	9	Misc. manufactured products	0.9023
10	Misc. manufactured products	0.14	10	Precision instruments	0.124
	Other	0.14		Other	0.09
Grand Total		**7,255.44**	**Grand Total**		**1,166.47**

Source: FHWA Freight Analysis Framework: https://www.ops.fhwa.dot.gov/freight/freight_analysis/faf

4.4 Water Freight Outlook

The following market discussion is a summary of the Missouri River Freight Corridor Assessment and Development Plan which identified over 1.3 million tons of commodities that could be moved on the river annually over the next ten years. The traditional market commodities include Agricultural Dry Bulk (Cereal Grains, Soybeans, other Oilseeds, and other Grains), Non Metallic Mineral Products (Clay, Cement, Salt), and other Non- Agricultural Commodities (Dry Fertilizer, Petroleum Products, Gravel & Crushed Stone). The emerging market commodities include Coal, Alfalfa Pellets, Dried Distillers Grains, Liquid Fertilizer, Ethanol, Over-Dimensional and Over-Weight Cargo and Container-on-Barge.

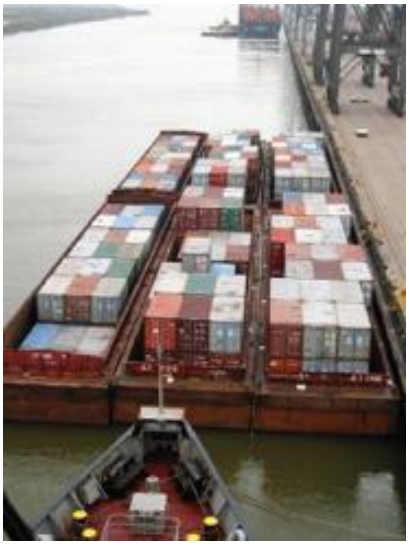
Cement and Clay demand are closely tied to domestic economic conditions, so growth in these volumes could be expected to increase with an improving U.S. economy. Cement, Clay, Salt and Fertilizer are particularly attractive since barge carriers can benefit from complementary opportunities. Fertilizer movements will bring covered barge equipment upstream. This leads to back haul opportunities for other commodities.

Those terminal locations with covered storage can increase freight in salt and fertilizer. One of the additional benefits of these commodities is that demand can occur throughout the normal navigation season. The expected added tonnage would represent over 130 covered hopper barges into the system; a valuable asset to use for many outbound commodities. Total market demand for sand and petroleum commodities can be expected to increase with an improving economy – perhaps beyond what is indicated above for projected growth.

Emerging Markets

Dried Distillers Grains with Solubles (DDGS), the by-product from ethanol production, is an emerging market with growing demand and supply in close proximity to the Missouri River. DDGS primarily moves to markets by rail and truck, but barge is gaining in market share. A modest penetration potential of 50,000 tons (5 percent of current market size) in bulk is projected for Lower Mississippi River (LMR) export. Capturing significantly more of this particular market is possible.

Alfalfa pellets are price sensitive with other growing regions. Like other similar crops, large volumes have responded rapidly to the market place during periods of strong pricing advantage. One of the key components of pricing advantage is transportation, and water transportation can result in significant cost savings over other modes.



Container-on-Barge

The Liquid Fertilizer market could shift back to water with appropriate infrastructure development and throughput capacity. Liquid Fertilizer originates from the Lower Mississippi River and the McClellan-Kerr system and can take advantage of both foreign and domestic producers. Ethanol as an emerging market is mainly distributed by truck and rail with some transportation opportunity with barge; plants near the Missouri River can change the supply chain and potentially reduce transportation cost and increase destination options. Ethanol destinations include major refining complexes and blended product demand distribution centers, which frequently have waterway access.

4.5 Container-on-Barge

Potential for immediate Container-on-Barge movement may include empty container repositioning to destinations that have demand for empties to fill with exports: Memphis, Baton Rouge and potentially Minnesota. Container-on-Barge service is supported by open hoppers and could provide backhaul opportunities should coal or project cargoes develop as inbound freight to the system. Container on Barge could move in a market with scheduled weekly service of multiple barges at maximum weights for shipper freight cost advantages. The initial five year estimate includes a potential 70,000 tons annually. There are a number of Container-on-Barge benefits:

- Barges can maximize the container's weight and cubic capacity
- Allows for shallow draft operations
- Lower fuel and transportation costs – environmentally friendly
- Improved safety

Container-on-Barge also has some challenges to overcome including:

- Availability of containers
- Total transit time
- Supply chain perceptions
- Inland port terminal capabilities

Over Dimensional Over Weight Cargos (ODOW) -The cargo types moving on the highways that could move on the water include metal shapes, coolers and chillers, cylindrical tanks of all types, military equipment and wind energy components to name just a few. The market volume could be expected to increase as freight capabilities develop and new routes are established.

Missouri River Sample - In 2010, Missouri River water freight moving only included 334,000 tons of traditional commercial commodities translates to more than 13,000 truckloads or 3,000 rail cars of tonnage on the river. The total freight identified as transferable to water transport in the next five years includes more than 800,000 tons of traditional commodities and more than 500,000 tons of emerging market freight per year. Combined with 334,000 tons already being moved on the Missouri River from 2010, the additional 1.3 million tons of commercial freight on the river would pull an additional 52,000 truckloads per year off of Missouri highways. Moving this tonnage by water would result in an estimated 42 percent fuel use reduction; directly and positively impacting freight rates as well as the consumption of petroleum; not to mention projected benefits in reduction of highway maintenance, congestions, and injuries and fatalities.

Section 5

Boonslick Regional Port Terminal

Boonslick Regional Planning Commission has potential to develop a viable water port within its boundaries within the next 20 years. Missouri's most successful ports tend to have intermodal facilities and good access to both highway and rail connections. Hence, location of a new port will be a very important decision. It will require an investment in both dockside and landside improvements. The construction of offices and storage facilities, purchasing equipment (lifts, cranes, conveyers, etc.) and providing utilities are only some of the landside improvements that will be required. Construction of dockside moorings, dredging and on-going maintenance are some of the dockside investments that will need to be made. In addition, marketing to attract users/customers will be vital to a new port's success.

Capitalizing on emerging market areas in addition to the more traditional freight cargo may put a new waterways port an advantage over existing ports that have not yet identified the emerging commodities or have not invested in appropriate landside storage or equipment that may be required.

For inland waterway ports, adequate channel depth for barge tows is critical to their success. The U.S. Army Corps of Engineers manages the Missouri River water flow and strives to maintain eight-foot navigation channel depths between Kansas City and the mouth of the Missouri River. It is challenging to maintain adequate channel depth for barge traffic in years of extreme weather occurrences such as drought or when there is excessive snow and spring rains when the Missouri River flows are fast moving. In times of drought or excess rainfall, navigation on the Missouri River can be halted. This is one of the reliability risks involved with waterborne freight on the Missouri River.

The Mississippi River requires a 9-foot channel to maintain waterborne commerce. Severe drought or excessive rains can impact transport on the Mississippi River as well. Even without excessive weather problems, freight on Mississippi River must deal with the delays navigating through the Mississippi River's lock and dam system, also managed by the U.S. Army Corps of Engineers.

There is tremendous capacity in inland waterway barge tows compared to truck and rail. Each full standard tow (15 barges and a tow boat) transports the equivalent of 225 rail cars or 900 semi-trucks. The high volume efficiency of the inland water mode also results in less fuel consumption and fewer air emissions than rail or truck per ton and per ton mile of freight moved.

There are many opportunities and potential markets projected to see growth across the region. The forecasts are for freight growth across all modes over the next 20 years. Boonslick Regional Planning Commission would capitalize on the emerging inland waterways terminal commodity markets building on a foundation of traditional waterborne freight commodities handled on the rivers through the development of a new regional port terminal with good highway and rail connections.

5.1 Southeast Missouri Port Example

One of Missouri's most successful ports includes the Southeast Missouri Port (Semo Port). The website, SemoPort.com, describes the Semo port as follows:

> Semo Port is located near Cape Girardeau at Scott City, Missouri. The 1,800 feet slack water harbor is located 48 miles upstream from Cairo Illinois (Ohio River) and 147 miles downstream from St. Louis (Illinois River and Missouri River).
>
> Semo Port Railroad, Inc. is a common carrier switching railroad which serves Semo Port and nearby industries. It connects with the two major western rail systems, Union Pacific Railroad and the Burlington Northern Santa Fe Railway. The Semo Port Railroad is a wholly-owned subsidiary of Semo Port.
>
> Semo Port has ready access to all five modes of transportation: river, rail, highway, pipeline, and air. Interstate highways 55, 57, and 24 are located nearby. Texas Eastern pipelines for petroleum products and natural gas are one mile away. The regional airport is four miles by direct highway.
>
> Land is available for lease to port-related industries, terminals, and distribution facilities. Team tracks are available for rail-truck transfer of cargo. Several companies operate terminals and provide cargo transfer between barge, rail, and truck.

Southeast Missouri Port - Today

Today Semo Port encompasses 500 acres. However, it was only 20 years ago when the port was beginning to develop. The initial planning for the Semo Port began in the late 1970's, nearly 35 years ago. Like many ports, the potential port within the Boonslick area will start small and develop over time. The development of a new regional port may not take as long with national energy concerns, grant opportunities, infrastructure loans and other established public and private financial assistance available that was not available 30 or more years ago.

Southeast Missouri Port - 1994

5.2 Boonslick Port Location

Most inland waterways ports are linear along a river to maximize the use of the river front. Some of the basics for new port location include ability to develop above the 500 year flood level, highway access and eventual access to heavy rail, adequate navigation channel depth, workforce availability and funding. The Mississippi River as it passes Lincoln County is lined with conservation areas including:

- Prairie Slough Conservation Area
- Upper Mississippi Conservation Area
- Leach Memorial Conservation Area
- BK Leach Memorial Conservation Area
- Sandy Island Conservation Area
- Cuivre Island Conservation Area

By avoiding these sensitive areas, the options for a port location within Lincoln County are reduced. One potential area to investigate is between Lock and Dam 25 and Cuivre Island Conservation Area which has access to the Highway 79 and the BNSF railroad tracks.

Along the Missouri River, the large majority of adjacent land appears to be in low lying floodplains potentially requiring additional flood protection improvements. Highway access will likely be via State Route 92, 19 or 47. Another consideration is future rail access. The existing rail service parallels the Missouri River on the south side which will require truck drayage or a new rail bridge spanning the river to provide a rail spur.

Location is critical in terms of attractiveness to users, based on access to road and rail network. Another important factor is environmental suitability of the site for permitting, including any legacy environmental issues that would require mitigation, or risks from adjoining property. New cargo ports ideally are not close to existing or potential residential development or recreational or institutional (e.g. schools or health care facilities) to minimize future conflicts between industrial operations at a port and compatible land use of neighboring lands, including across the river.

5.3 Boonslick Port Schedule

A new port will require a significant amount of time and energy prior to construction start. The high level schedule estimate is between 7 to 15 years assuming there are no major administrative, legal or funding delays. The first 5 to 10 years will be site location, property acquisition, environmental evaluations, permitting and securing funding. The actual construction of the dockside and landside improvements as well as purchasing conveyers, cranes and other loading/unloading equipment is anticipated to be a one to four year process. If phased construction is used and starts with a simpler operation is planned then initial construction time can be on the shorter side.

5.4 Boonslick Port Hurdles

As in all proposed facilities in and surrounding the Missouri or Mississippi Rivers, the environmental process will require an extensive and lengthy study to satisfy the National Environmental Protection Agency (NEPA). The study process can take up to five years depending on the environmental impacts found at the studied site location and possible mitigation requirements as necessary. The federal government continues to look for ways to reduce and simplify the study process and requirements as noted in the new Federal Transportation Bill, MAP-21 legislation. Still, the process will enable many resources and requirements to receive approval of the Corps of Engineers and the federal government.

Permitting will also be a hurdle as mitigation requirements from the aforementioned NEPA study will entail coordination and cooperation from many regulated agencies on both the State and Federal level.

Finally, hurdles in the form of funding, land acquisition, and competition from other ports could delay the process of locating the appropriate site and moving forward with the required NEPA process. Early engagement of all possible stakeholders will key in moving this type of facility forward and into a successful inland water port.

5.5 Boonslick Port General Costs

Depending on land acquisition, environmental permitting, and legal costs, development to initial operation is likely to range from between $3 to $20 million. Items including land, utilities, water and

roadway improvements, eventual rail spur, docks, berth dredging from federal navigation channel, if needed, conveyers, cranes, etc. are some upfront considerations. Ongoing annual operating budgets are likely to be between 10 to 20 percent of initial development costs, unless a private port operator tenant can be attracted. In which case the operating costs and maintenance will be less, depending on what is negotiated.

5.6 Boonslick Port Funding Opportunities

State and federal port grant programs would be preferred for assisting with new port financing. During the recent economic recovery, the U.S. Department of Transportation made several grants to marine port improvement projects as part of the TIGER grant program. Traditional local port funding includes municipal bond-funded capital and then port fee revenue streams to cover ongoing operating costs and debt service. Public private partnerships are possible if the future revenue streams are certain enough to attract partial or full private investors, typically conducted as a long-term operating lease with the public port authority retaining ownership as landlord.

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