

Section 5: Freight

What are the impacts of freight on the transportation system?

The 5-County region is a vital national freight hub due to a strong goods movement transportation network with few bottlenecks. Kansas City continues to be considered the second largest rail center in the nation and is served by five of the nation's seven Class I rail carriers. The region is also one of the nation's top five trucking centers. The movement of freight and goods has continued to increase in recent years, though trucking has been gaining a larger percentage of freight movement than rail.

Commodity movement in Kansas is dominated by coal, which is 48 percent of the total freight movement by weight. Agriculture is next (11 percent), followed by nonmetallic minerals (eight percent), and food products (six percent). The primary coal movement is from coal fields in Wyoming to power plants in the eastern United States.

- 54 percent of freight in the 5-County region is passing through without any destinations in the area
- 65 percent of the freight by weight is carried on trucks

The Phase 1 report includes additional freight analysis.

RAILROADS

The locations of the railroads are shown in Figure 5-1.

The 5-County region has five Class I railroad operators: the BNSF and Union Pacific which have extensive rail operations; and the Kansas City Southern, the Norfolk Southern, and the Canadian Pacific which operates or has limited trackage rights on short rail segments. The rail infrastructure throughout the region services industry,

intermodal facilities in Edgerton, KS and Kansas City, MO, and connections to global markets. The two most significant routes through the 5-County region are the BNSF Railway's Transcontinental Route and Union Pacific Railway's East West Coal Route, shown in Figure 5-2. The BNSF Railway's Transcontinental Route runs from the southwest to northeast portion of the region connecting ports in California with Illinois. The Union Pacific major coal route operates through Douglas, Leavenworth, Johnson, Miami and Wyandotte Counties into Missouri. Both of these routes carry 80-90 trains per day.

Several shortline carriers also operate rail in the 5-County region. The Kansas City Terminal (KCT) Railway Company provides track infrastructure for switching operations. KDOT recognizes one Class III operator in the 5-County region. The New Century Air Center Railway is a Class III rail provider with industrial service via a BNSF junction at the east edge of Gardner.

The BNSF and Union Pacific have rail facilities in both Kansas and

Figure 5-1: Railroads and Intermodal Facilities

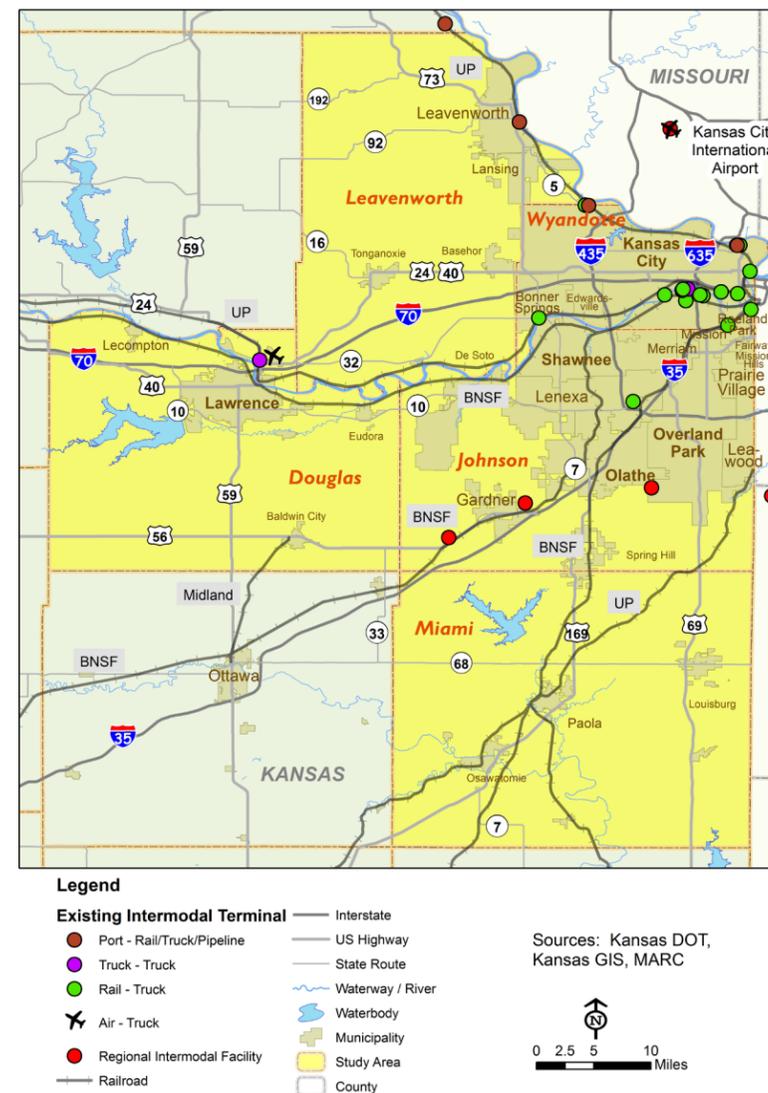
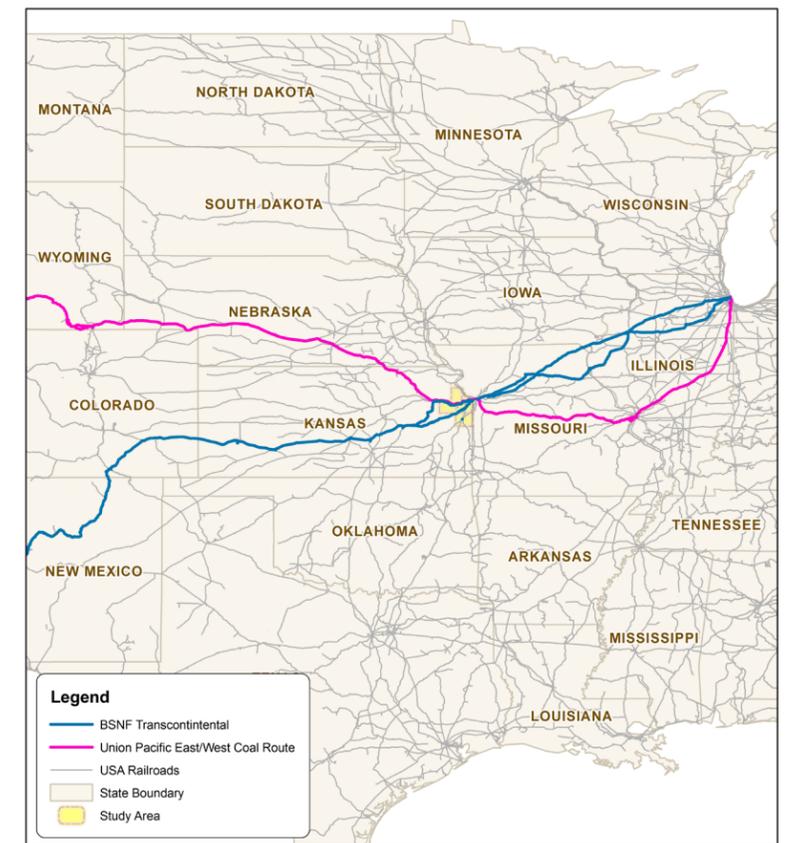


Figure 5-2: Regional Look at BNSF's Transcontinental Route and Union Pacific's Major Coal Route



Missouri. In Kansas both railroads have rail yards in the vicinity of the intersection of I-70 and I-635. BNSF's Argentine rail yard is located south of the Kansas River and Union Pacific's Armourdale rail yard is north of the Kansas River. BNSF's intermodal activities are located at the Argentine rail yard. Union Pacific's intermodal activities are located in Missouri at the Neff Rail Yards.

A new 440-acre BNSF Kansas City Intermodal Facility (KCIMF) is being developed 30 miles southwest of Kansas City at Edgerton, KS in southwest Johnson County, near I-35 and US 56. Construction of the facility began in late 2011. The facility is expected to open in 2013. The Allen Group also plans to develop 560 adjacent acres for a separate Logistics Park that would accommodate approximately 7.1 million square feet of warehousing and supporting activities upon full build out. Zoning approval requests began in mid-2010. It has been estimated that the KCIMF and Logistics park will create 8,000 jobs for the area.

On the Missouri side of the Kansas City area, both the Norfolk Southern (NS) and Kansas City Southern (KCS) Railroads have intermodal terminals. The NS has its main rail facility along M-210, east of I-435 in Missouri. The CenterPoint-KCS Intermodal Center (KCSI), which opened in March 2008, is located in Kansas City, MO on I-49/M-150. KCSI is used by KCS for the carriers' own service, as well as part of a KCS/CSX marketing agreement. KCSI provides direct rail linkage via the KCS to the new Port of Lazaro Cardenas in Mexico.

INTERMODAL FREIGHT RAIL GROWTH IN KANSAS

Intermodal freight carried by rail is anticipated to grow in the future. The intermodal growth in Kansas will be tied to the growth in intermodal shipments by the BNSF, and logistical issues related to shifts in freight movement between the other BNSF intermodal facilities, as well as the total volume of shipments. Time, rate of adaption, the price of fuel, backhaul and commercial considerations will influence the competitive pricing and the use of intermodal locations, as well as the option to use of water versus rail for transport. Kansas will continue to see a significant volume of intermodal through freight from Pacific ports to Chicago.

Table 5-2: Busiest At-Grade Crossings By County

County	Jurisdiction	Railroad Crossing DOT#	Operating Railroad	Trains/Day	Average Annual Daily Traffic (AADT) that uses the route	Exposure number of trains per day multiplied by the AADT	Route	Functional Classification
Douglas	Lawrence	813770T	UP	70	1594	111580	7th Street	Urban Collector
	Lawrence	813757E	UP	70	1238	86660	3rd Street	Urban Local
	Near Lawrence	813767K	UP	70	455	31850	1600 East Road	Rural Minor Collector
	Near Lawrence	005839G	BNSF	10	2874	28740	15th Street	Urban Minor Arterial
	Eudora	005829B	BNSF	10	2593	25930	Main Street	Rural Major Collector
Johnson	Olathe	006149J	BNSF	88	14424	1269312	Santa Fe Drive	Urban Principal Arterial
	Merriam	663556X	BNSF	38	23173	880574	Johnson Drive	Urban Minor Arterial
	Gardner	006162X	BNSF	88	8354	735152	Moonlight Road	Urban Principal Arterial
	Olathe	006155M	BNSF	88	6644	584672	Dennis Avenue	Urban Collector
	Olathe	006144A	BNSF	88	5964	524832	Harold Street	Urban Local
Leavenworth	Near Linwood	813763H	UP	70	2397	167790	222nd Street	Rural Major Collector
	Near Tonganoxie	813745K	UP	70	2363	165410	160th Street	Rural Major Collector
	Leavenworth	437427M	UP	37	231	8547	Dakota Street	Urban Local
	Near Linwood	813766D	UP	70	72	5040	254th Street	Rural Local
	Near Tonganoxie	813744D	UP	70	32	2240	158th Street	Rural Local
Miami	Osawatomie	439515E	UP	18	8128	146304	Main Street	Rural Major Collector
	Near Spring Hill	668596M	BNSF	38	2664	101232	223rd Street	Rural Major Collector
	Bucyrus	423017X	UP	25	3558	88950	223rd Street	Rural Major Collector
	Near Paola	668631Y	BNSF	38	1984	75392	343rd Street	Rural Major Collector
	Near Paola	423040S	UP	25	2807	70175	Hedge Lane	Rural Minor Collector
Wyandotte	Kansas City	813198G	UP	80	5276	422080	Kansas Avenue	Urban Local
	Edwardsville	813215V	UP	70	5602	392140	4th Street	Rural Local
	Kansas City	814993M	UP	60	6406	384360	Kindelburg Road	Urban Local
	Kansas City	663550G	BNSF	42	7186	301812	Lamar Avenue	Urban Collector
	Kansas City	663544D	BNSF	48	6283	301584	Southwest Boulevard	Urban Minor Arterial

Table 5-1 displays forecasted rail traffic growth, indicating an overall growth from 2007 to 2030 of 36.5 percent. The interstate inbound and interstate outbound traffic would relate to intermodal traffic handled at the Edgerton intermodal facility.

Table 5-2 identifies the busiest at-grade roadway/rail crossings by county. The highest exposure (number of trains multiplied by the number of automobiles and trucks) occur in Johnson County in Merriam, Gardner, and Olathe.

At-grade rail crossings can be a safety hazard and can cause traffic delay. Across Kansas in 2011, there were

Table 5-1: Forecasted Rail Traffic Growth

Traffic Type	2007 Tonnage (millions)	2030 Tonnage (millions)	Change (%)	Compound Annual Growth Rate (%)
Interstate Inbound	29	35	20.60%	0.80%
Interstate Outbound	21	30	44.50%	1.60%
Intrastate	1	2	25.60%	1.00%
Overhead	293	404	37.50%	1.40%
Total=	345	470	36.50%	1.40%

Source: Prepared by Wilbur Smith Associates, based on STB Waybill Sample data and adjusted IHS Global Insight forecasts

Source: Kansas Department of Transportation



33 highway-rail crossing incidents that occurred, with eight of them occurring in the 5-County region¹. There are hundreds of at-grade crossings in the 5-County region. As rail freight movement grows in the region, the volume of rail traffic will also increase, increasing the safety risk of at-grade crossings and increasing the potential delay on the roads that cross rail tracks.

¹ KDOT Department of Planning, Multi-Modal Planning Section, Rail/Freight

IMPACT OF BNSF INTERMODAL FACILITY

Trip generation on I-35 specifically attributed to the BNSF facility will increase from an estimated 5,212 trips during the opening year, to 17,080 trips by 2030, including 7,000 commercial trucks.² Currently 89 trains a day operate in the area.³ The total train traffic through the BNSF intermodal area is expected to increase by as much as 140, to 229 trains per day by 2025.⁴

² I-35 SW Johnson County Interchange Study Purpose and Need Statement

³ KC Regional Freight Outlook – Freight Directory July 2009

⁴ "Traffic Study of the Proposed Logistics Park in Johnson County, KS" HDR, March 14, 2006.

Table 5-3: Overpass with Less Than 16-Foot Vertical Clearance

County	Railroad	Route Crossing Under	Location	Minimum Vertical Clearance (feet)	Average Daily Traffic	Functional Classification	Average Trains per Day
Douglas	UP	US 40 Highway (2nd Street)	1.48 miles South of 59 N Junction	14' 2"	18,600	Urban Principal Arterial	70
Johnson	SFAZ (Embar-goed)	Lexington Avenue	In Desoto	14' 9"	6,100	Urban Minor Arterial	0
Johnson	BNSF	Wilder Road	0.03 miles North of Holiday Drive	13' 5"	1,555	Urban Minor Arterial	88
Johnson	BNSF	95th	Between Santa Fe & Widmer	15' 2"	19,835	Urban Minor Arterial	38
Johnson	BNSF	Old Highway 56	0.5 mile East of K-7	14' 7"	12,000	Urban Minor Arterial	38
Johnson	BNSF	Spruce Street	0.7 mile East of K-7	11' 3"	3,933	Urban Collector	88
Miami	UP	RS 1604 (North Pearl Street)	North Edge of Paola	13' 8"	-	Rural Major Collector	25
Miami	UP	Pleasant Valley Road	Pleasant Valley, 0.3 mile North of 379th	11' 6"	3	Rural Collector	16
Miami	UP	399th	399th, 0.1 mile West of Plum Creek	10' 2"	-	Rural Collector	19
Miami	BNSF	347th	347th, 0.2 mile West of Hedgeline	10' 2"	85	Rural Collector	38
Miami	BNSF	239th	239th, 0.1 mile East of Victory	12' 11"	-	Rural Collector	38
Wyandotte	BNSF	74th	131 South 74th Street	13' 2"	1,000	Urban Local	88
Wyandotte	BNSF	Douglas Avenue	7200 Douglas Avenue	13' 8"	522	Urban Local	88
Wyandotte	KCT	Adams Street	300' S Adams & Shawnee Avenue	12' 11"	1,000	Urban Local	15

Source: Federal Railroad Administration crossing inventory, Kansas Bridge Inventory, Kansas City Terminal, Union Pacific, BNSF

VERTICAL CLEARANCE ISSUES FOR WIND TURBINE COMPONENTS

As the wind energy industry continues to grow in Kansas as a manufacturing base and a wind power producer, managing a freight network capable of transporting the oversized wind components becomes increasingly important. The number of KDOT issued permits for loads of 150,000 pounds or more carrying wind tower components increased from less than 1,000 in 2006 to more than 7,500 in 2010.⁵ The tower sections for a typical 250 foot wind turbine tower can weigh more than 70 tons, be 120 feet long, and have a 15-foot diameter. Nacelles can weigh between 50 to 90 tons, and blades can extend 110 to 145 feet.⁶

Concerns related to transporting wind components include bridge clearance, weight loads on bridges, and additional wear and tear of pavement.

There are a number of railroad overpasses that have a vertical clearance lower than the 16-foot standard that can impede truck traffic. Table 5-3 lists the overpasses in each county where the vertical clearance impedes freight movement.

TRUCKING

Since freight shipped by truck uses the highway system, these movements are subject to the same delays as other motorists. The primary locations of highway system delay are listed in Table 5-4. These delays occur during the peak

Table 5-4: Highway System Delay Locations

Metropolitan Area	Location
Kansas City	I-35 between U.S. 69 and I-635
Kansas City	I-435 between K-10 and I-35
Kansas City	U.S. 69 between I-435 and I-35
Kansas City	I-70 (KS Turnpike)/K-7 Interchange
Kansas City	U.S. 56 through Gardner, KS
Kansas City	I-435/K-10 Interchange
Kansas City	I-35/I-435 Interchange
Kansas City	I-70/U.S. 24
Lawrence	K-10/U.S. 40 Interchange
Lawrence	K-10/Massachusetts Street Intersection

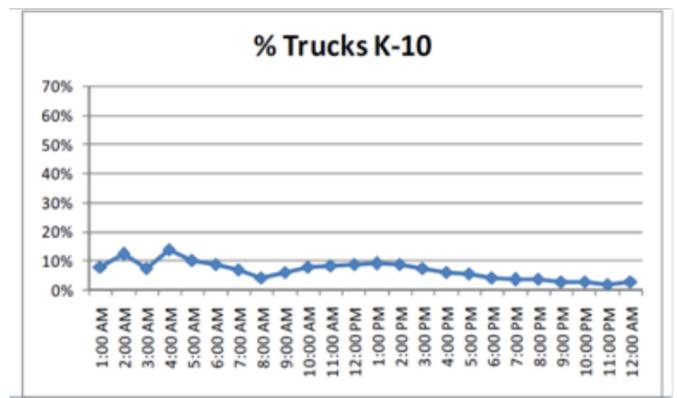
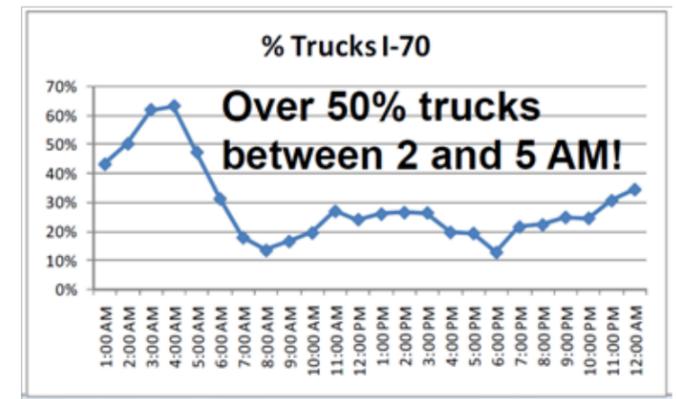
Source: Kansas Department of Transportation SMFS

⁵ "Wind industry could take toll on Kansas highways". Metz, Christine. Lawrence Journal World. March 24, 2011

⁶ "The Permitting Process for Transporting Heavy Equipment" Spitzzeri, Joseph. Johnson & Bell, Ltd.

commute travel periods. For a majority of the day, the highways are unimpeded for freight movement. Truck traffic on I-70 and K-10 in the 5-County region peaks in the early morning with over 50 percent of trucks occurring between 2:00 AM and 5:00 AM on I-70, as seen in Figure 5-3. The temporal distribution of trucks on K-10 is more constant, but still exhibits a peaking behavior in early morning.

Figure 5-3: Truck Percentages on I-70 and K-10



Source: KC Regional Freight Outlook Advisory Committee Meeting, March 5, 2009

Truck counts were identified at various locations throughout the region and Table 5-5 shows a list of roadway volumes. It is anticipated that the majority of truck traffic in and out of the intermodal facilities will occur between 10:00 AM and 3:00 PM.

Table 5-5: Roadway Volumes

Roadway	Total Volume	Truck Volume	% Truck Volume
I-35 south of I-435	116,000	8,760	8%
I-435 east of US-69	148,000	6,350	4%
K-7 north of K-10	22,800	1,600	7%
K-10 west of De Soto	28,200	1,340	5%
I-70 east of Lawrence	29,700	4,490	15%
I-35 east of I-635	109,300	7,730	7%
I-435 north of K-10	70,700	5,570	8%
I-70 east of I-435	57,900	6,350	11%
US-69 north of Louisburg	14,600	1,800	12%
K-7 at Lansing	19,600	1,000	5%

Source: Kansas Department of Transportation

INCREASE IN AIR CARGO

The region is expected to see an increase in air cargo from the KCI Airport with a master plan in place to build an integrated logistics and warehousing facility known as the KCI Intermodal Business Centre. The 690-acre multi-use phased development was announced in June 2007 and will offer 5.4 million square feet of buildings upon completion, for logistics, air cargo storage, office, warehousing and light manufacturing facilities. The air cargo and air freight facilities will be built adjoining the runways.

The first phase of development will include 1.8 million square feet of space on approximately 180 acres. The entire project is expected to cost more than \$216 million. It is expected to make the airport a Foreign Trade Zone. Construction on the first building of the project was started in July 2011.