



# Kansas State Rail Plan

**EXECUTIVE REPORT**

Prepared for:  
**Kansas Department  
of Transportation**

Prepared by:



In association with:  
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## About the Kansas State Rail Plan

### Purpose

The Kansas Department of Transportation (KDOT) has developed the Kansas State Rail Plan to guide the state’s vision for railroad transportation and to identify strategies to achieve this vision. This Kansas State Rail Plan serves as an update to KDOT’s 2017 Kansas Statewide Rail Plan and meets federal requirements established under the Passenger Rail Investment and Improvement Act (PRIIA) from 2008.

The Kansas State Rail Plan will provide a clear understanding of the freight and passenger rail systems, how industries and people use the rail system, and the system needs, issues, and opportunities, so KDOT can make better-informed policy and investment decisions.

### Vision and Goals

The framework for developing the State Rail Plan is based on the relevant visions, goals, and objectives identified in the Kansas 2045 Long-Range Transportation Plan (LRTP). The LRTP focus areas (Figure 1) guided the development of the State Rail Plan, to align the Plan’s rail investments and recommendations with Kansas’ overarching statewide transportation guidance.

Figure 1: State Long-Range Transportation Planning Focus Area



**Safety and Security:** Enhance the safety and security of the transportation system for all users and workers.



**Freight and Economic Vitality:** Improve reliability and increase flexibility for cost-efficient movement of people, goods, and information to strengthen the Kansas economy.



**Transportation System Management:** Maximize the performance of the existing system by investing in transportation choices and intelligent transportation systems.



**Stewardship:** Continuously improve the quality of the transportation system and surrounding communities through strong partnerships and focused, lower-cost, and higher-value improvements.



**Asset Preservation:** Address risks and maintain assets through investments that both provide high-value returns and make the best use of limited funds.



**Workforce:** Get the best from our workforce by attracting and retaining talent, modeling diversity, supporting professional development, and inspiring action.

Source: CPCS, 2021.

### Stakeholder Involvement

The Kansas State Rail Plan has been developed with extensive public participation and involvement by the state’s rail stakeholders, including both freight and passenger railroads and rail users (Figure 2).

Figure 2: Kansas State Rail Plan Stakeholder Outreach

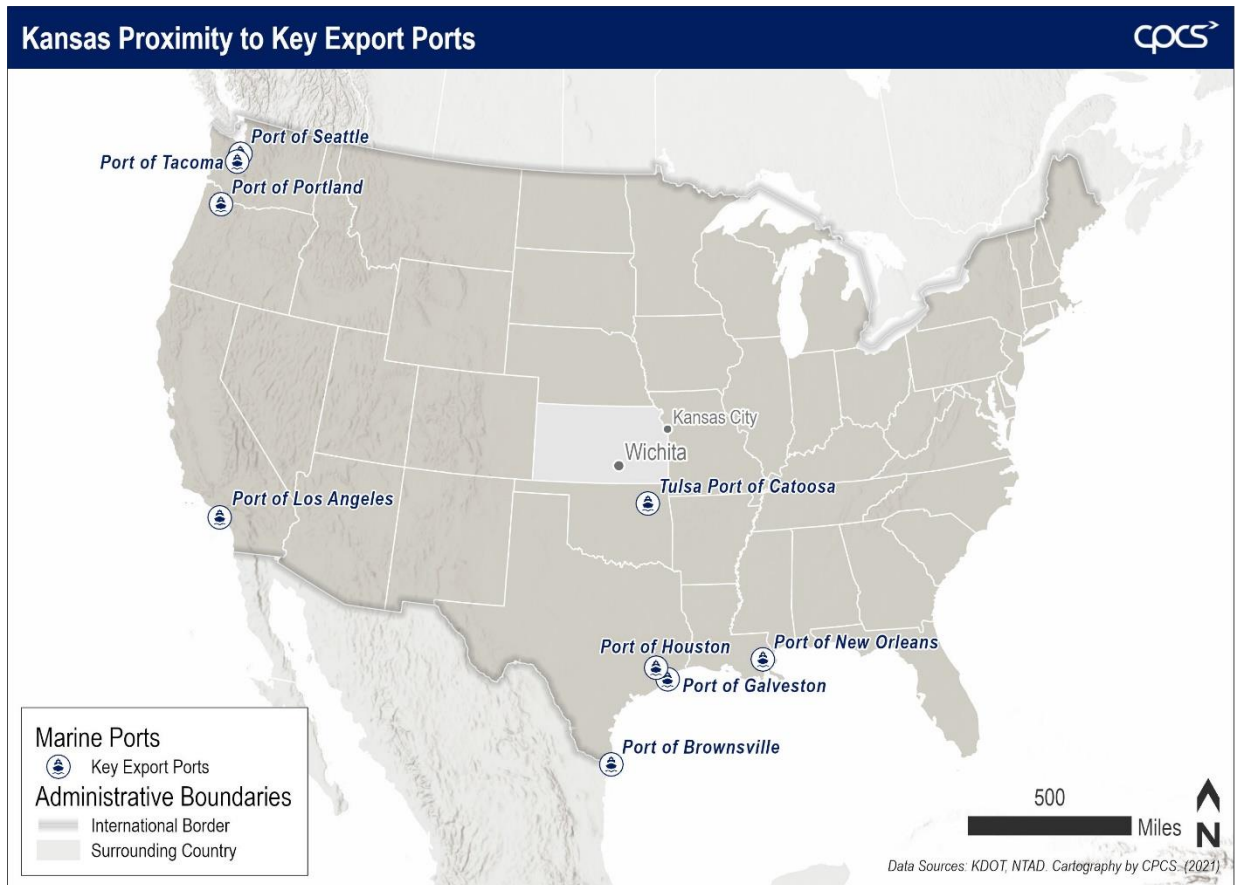


## Role of Rail in Kansas' Multimodal System

In 2020, Kansas' Class I railroads moved over 5.7 million carloads, while its short line railroads moved almost 162 thousand carloads.

Kansas' rail system supports freight movements to, from, and through the state. The rail system facilitates goods movement throughout the nation and to key international ports (Figure 3). Top commodities moved by rail in Kansas include coal, mixed freight, and cereal grains.

Figure 3: Kansas' Proximity to Key Ports



The majority of goods movement on the state's rail system – almost 86 percent – consists of freight passing through Kansas, with origins and destinations outside the state (Figure 4). The remainder of freight rail movements moves to or from Kansas, with a small share of additional movements moving within the state.

Figure 4: Rail Movements To, From, and Through Kansas

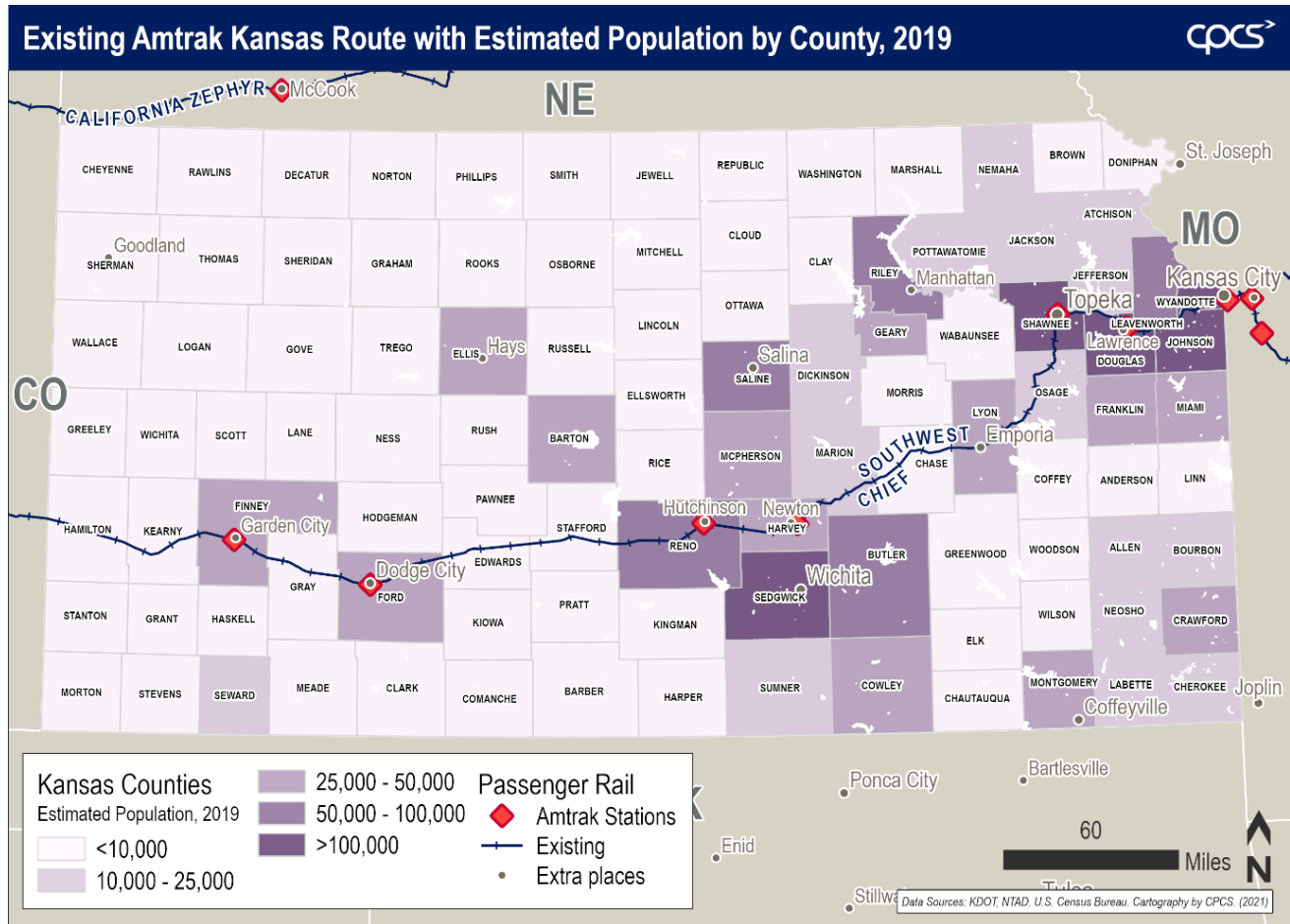


Source: STB Waybill, 2019 data; Analysis by CPCS, 2021. Note: Within KS movements classified into both Originating in KS and Destined for KS movements.

The Amtrak Southwest Chief national route, operating between Chicago and Los Angeles supports the movement of Kansas’ population – which reached 2.9 million people in 2019<sup>1</sup> – throughout the state and country. Figure 5 maps Kansas’ population by county, relative to the location of Amtrak’s passenger rail route in Kansas.

In Kansas, 53 percent of residents live within 25 miles of a passenger rail station, and 75 percent within 50 miles of a station.

Figure 5: Existing Amtrak Kansas Route with Estimated Population by County, 2019



## Kansas Rail System

### Freight System

Kansas is served by over 4,600 miles of active rail in the state, with four Class I railroads, 13 short lines, and 2 switching and terminal railroads.

Three Class I railroads – BNSF, UP, and KCS – own 2,823 active rail miles in Kansas. NS also operates over 3 miles of trackage rights in the state.<sup>2</sup> Among Class I rail, 83 percent is classified as FRA Track Class 4 or higher. Short line and switching/terminal railroads also provide key connections, with 1,800 active rail miles owned and exclusively operated, making up 39 percent of the state’s active rail

<sup>1</sup> U.S. Census, American Community Survey (ACS), 2010-2019. Analysis by CPCS, 2021.

<sup>2</sup> Note: Information pending validation by railroads.

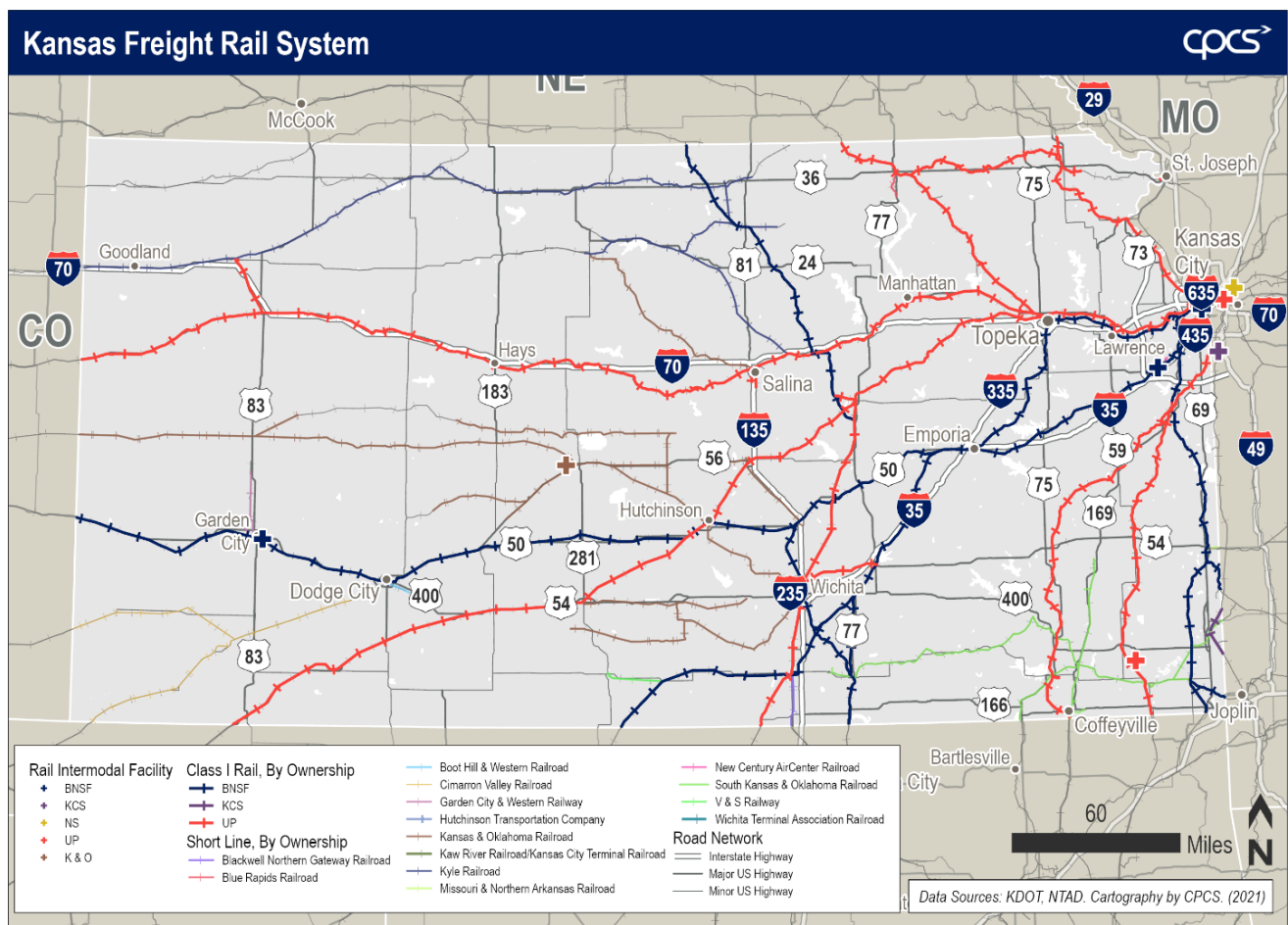
infrastructure. Among short line and switching/terminal rail, 73 percent is classified as FRA Track Class 2 or higher. Figure 6 details Kansas' active freight rail system, which is further mapped in Figure 7. There are also 142 miles of inactive rail and 3,192 miles of abandoned rail in the state.

**Figure 6: Kansas Freight Rail System (Summary Table)**

Operator Name	Operating Miles	Miles Owned (Active)	Trackage Rights Miles	Miles Leased (Operational Rights, Lessor)	Miles Leased (Operational Rights, Lessee)	No. of Sub-divisions	No. of Open Grade Crossings
<b>Class I</b>	3,827	2,823	1,005	298.5	--	61	3,801
<b>Short Line</b>	1,909	1,510	100.3	--	298.5	53	3,434
<b>Switching/ Terminal</b>	10.3	10.3	--	--	--	5	34

Source: KDOT; FRA crossing Inventory Database, 2021; Kansas Railroads, 2021. Analysis by CPCS, 2021.

**Figure 7: Kansas Freight Rail System**



## Passenger System

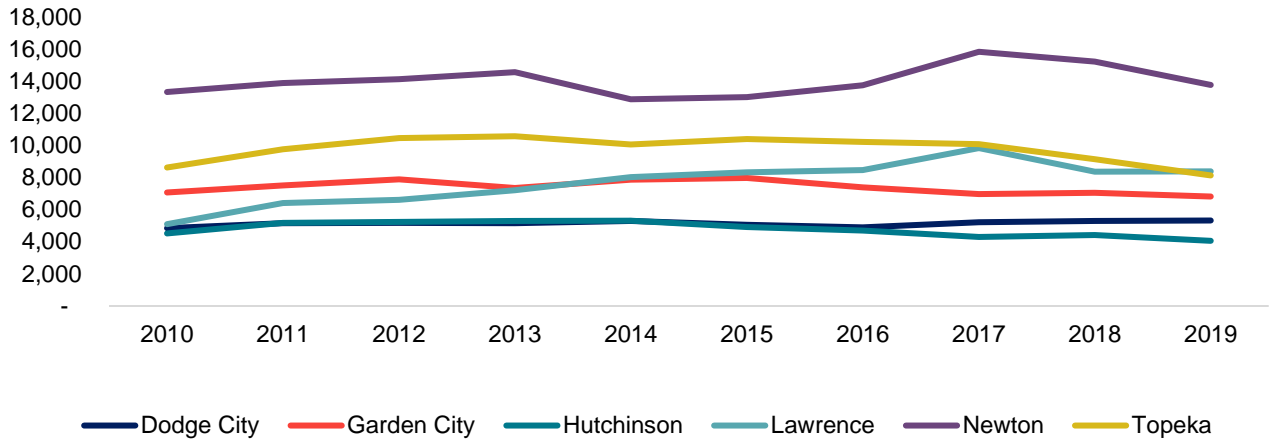
Kansas is served by one intercity, long-distance passenger rail route at six stations, operated exclusively over BNSF owned track.

Amtrak's Southwest Chief (Figure 9) operates one daily trip in each direction on its 2,265-mile route from Chicago to Los Angeles, serving many markets as it travels across the country. Tourism and business travel dominate the rider profile. For many communities in Kansas, long-distance passenger

rail provides access to destinations for passengers who are unable to drive or reach their destination conveniently through other modes.

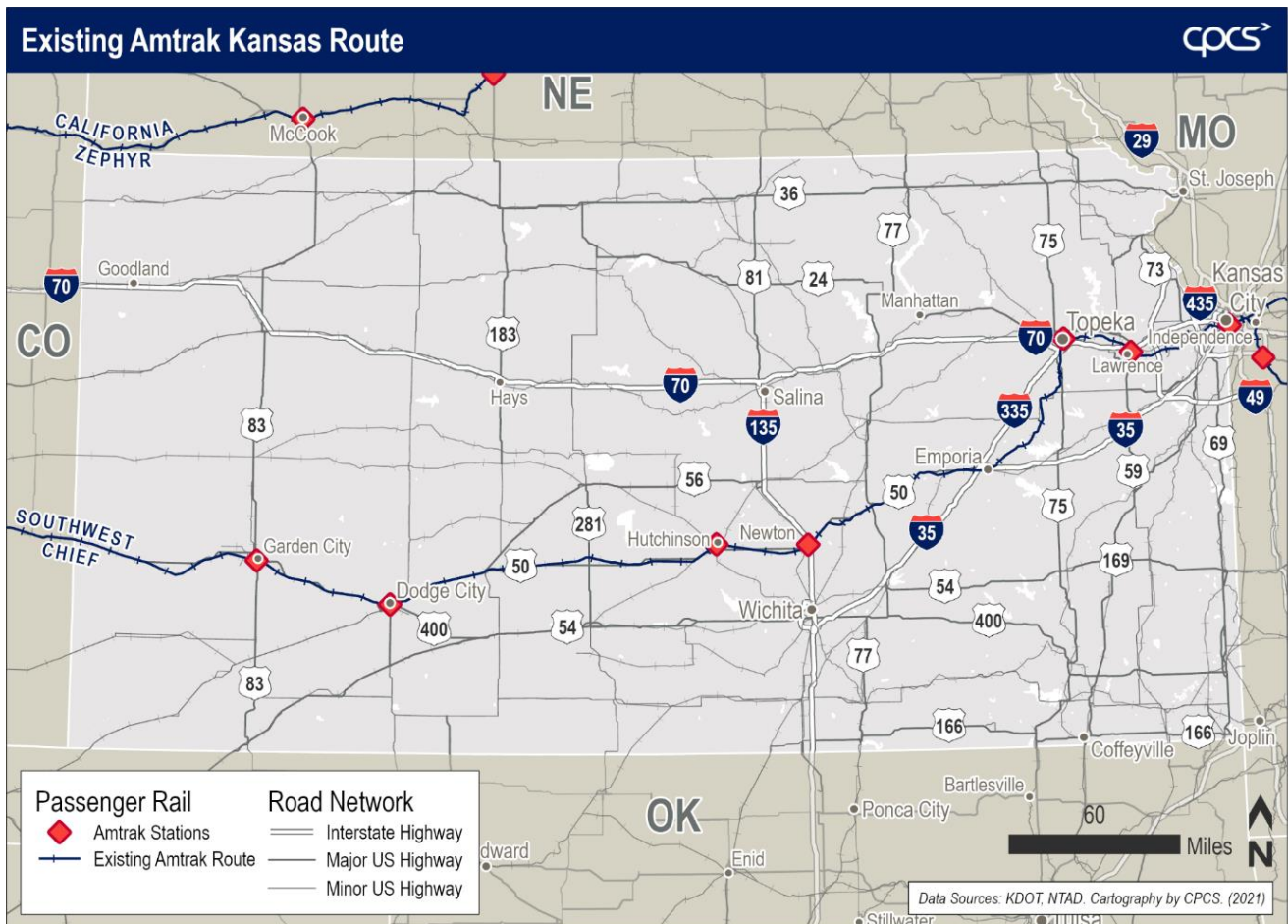
The six Amtrak stations in Kansas all handle substantial numbers of riders, even though most Southwest Chief stops are scheduled in the middle of the night. Ridership at the six stations in Kansas is shown in Figure 8.

**Figure 8: Southwest Chief Ridership at all Kansas Stations, 2010-2019**



Source: Amtrak and Rail Passengers Association. Note: Data shows combined boarding and alighting passengers.

**Figure 9: Existing Amtrak Kansas Route**



## Rail System Assessment

The Kansas rail system assessment focuses on benchmarking Kansas' freight and passenger rail system performance through goal areas identified by 2045 LRTP. Various data sources have been used to calculate evaluation measures, and where applicable, data analysis is validated through input solicited from stakeholders. The results of the assessment informed the understanding of the state's rail system Strengths, Weaknesses, Opportunities, and Threats and guided the identification of recommendations and investment opportunities for KDOT presented later in this Plan.

## Planning for the Future

### Trends

Various trends will continue to impact Kansas' freight and passenger rail system use and operation in the future. A snapshot of key trends is presented below.



**Population:** Kansas' population is growing, though at a slower rate than the nation's population growth. Population growth in Kansas is concentrated in the state's urban areas of Kansas City, Topeka, Wichita, Manhattan, and Lawrence. However, 83 counties (79 percent) in Kansas, located in the state's more rural areas, have experienced population declines due to a combination of natural population decrease (more deaths than births) and out-migration to other Kansas counties and nearby states.



**Income:** Median household income in Kansas has grown in the past decade, though at a slower pace than the national rate. In 2019, Kansas' median household income reached \$59,597, compared to \$62,843 nationally.



**Workforce Requirements and Shortages:** Train crew size has been debated in recent years. However, in 2019, a Federal ruling found that states may mandate crew requirements within their borders. Select states (California, Washington, and Nevada) mandate a minimum two-person crew to operate a freight train. Kansas has not instituted any crew size requirements; KDOT's proposed Crew Requirements regulation was denied by the Kansas Attorney General in September 2020. KDOT continues to monitor this issue as it relates to overall workforce shortages, rail system safety, and the efficient operation of longer trains.



**Disruptive Events:** Turbulent events impact all parts of the freight transportation system. Disruptive events in 2021, including the COVID-19 pandemic and its impact on workforces throughout the freight supply chain, West Coast and inland port congestion, as well as major weather events such as winter storms, flooding, and wildfires, forced railroads to curtail, re-route, and reschedule services, reducing traffic volumes on the rail system. Freight system resiliency and planning for the unexpected have never been more important as disruptive events continue to mount.



**Positive Train Control:** PTC is a safety system that tracks the speed and movement of trains and can automatically stop a train to prevent specific human-error accidents. In December 2020, FRA announced that PTC technology is in operation on all of the over 57,500 required freight and passenger railroad route miles. PTC technology is expected to prevent train-to-train collisions, derailments caused by excessive speed, accidents that can occur if trains are routed down the incorrect track, and unauthorized train movements on tracks undergoing maintenance, promoting a safer rail system for Kansans in the future.



**Longer Trains:** Today, most Class I railroads in the US employ some form of precision scheduled railroading (PSR). The goal of PSR is to streamline operations, by pre-blocking traffic at the origin, and bypassing intermediate switching as much as possible. While PSR allows railroads to operate with fewer train crews and far smaller locomotive and carshop workforces, it also results in moving traffic in fewer, but longer, trains. Average train length has increased over the past decade, leading to concerns about blocked traffic at road crossings, as well as increased complexity for braking and other operations.

## Strengths, Weaknesses, Opportunities, and Threats

Based on data and stakeholder inputs, Figure 10 identifies Kansas' top Strengths, Weaknesses, Opportunities, and Threats (SWOT) for the freight and passenger rail system.

**Figure 10: Kansas Rail System SWOT**

Strengths
<ul style="list-style-type: none"> <li>• Kansas' central location makes the state critical to goods movement nationwide. Passthrough rail movements reached almost 250 million tons in 2019.</li> <li>• Kansas' short line rail system makes up 39 percent of the state's active rail infrastructure and transported 2.7 percent of total carloads in Kansas. Short lines provide competitive shipping costs and lower emissions compared to trucks.</li> <li>• The majority of Kansas' rail system meets FRA track class standards (class 4 or higher for Class I and class 2 or higher for short lines). Additional Class 4 track upgrades are expected to further improve efficiency and operations.</li> <li>• Passenger rail ridership in Kansas has remained steady despite national declines in ridership.</li> <li>• The passenger rail system in Kansas is accessible to its residents, with 75 percent living within 50 miles.</li> <li>• KDOT coordinates and partners with railroads on large capital projects for rail improvements and accommodations, and administers Section 130 funds for highway-rail grade crossing projects.</li> <li>• KDOT supports and on occasion has provided matching funds for federal grant applications.</li> <li>• KDOT administers several state-funded rail programs that allocate funding to assist short lines and shippers with rail system maintenance and upgrade projects and siding improvements.</li> <li>• Kansas rail stakeholders emphasize positive feedback for KDOT's existing rail-dedicated workforce and the rail programs administered by KDOT.</li> </ul>
Weaknesses
<ul style="list-style-type: none"> <li>• Occurrence of freight and passenger rail incidents at highway-rail grade crossings.</li> <li>• The majority of Kansas' freight and passenger rail system remains single track, with a need for more double track to account for maintenance needs and network disruptions. Insufficient number and length of sidings on Kansas' rail system also leads to blocked crossings and rail stoppage.</li> <li>• At many locations statewide, rail maintenance and issues cannot be serviced during night hours when it is dark.</li> <li>• Kansas is a small market due to lower population in rural areas and is unable to support frequent passenger rail service. The existing schedule for passenger rail service in Kansas is largely in the middle of the night, and low on-time performance for the Southwest Chief causes reliability issues for passengers.</li> <li>• Due to annual carload volumes and revenues, short lines have difficulty making investments for needed rail infrastructure maintenance and upgrades. Currently, less than one-third of the active short line system is known to be at the industry-standard 286K capable.</li> <li>• Difficulty recruiting and maintaining Kansas' private sector rail workforce, due to factors including rural job locations, undesirable and/or unreliable work hours, a limited pool of workers with rail experience, and a post-COVID-19 workforce shortage. A limited/diminishing public sector rail-dedicated workforce limits the ability to focus staff time on freight and passenger rail efforts.</li> </ul>
Opportunities
<ul style="list-style-type: none"> <li>• Advance policy and program recommendations in line with state long-range transportation planning focus areas – safety and security, transportation system management, asset preservation, freight and economic vitality, stewardship, and workforce.</li> <li>• Improve highway-rail grade crossings.</li> <li>• Provide and/or support efforts to secure funding support for rail projects.</li> <li>• Work with railroads to identify opportunities to invest in infrastructure improvements.</li> <li>• Improve economic efficiency and benefits for Kansas rail system users.</li> <li>• Improve ability to attract businesses to locate or expand in Kansas.</li> <li>• Coordinate Kansas' rail workforce to accomplish State Rail Plan goals.</li> <li>• Monitor and support opportunities to implement new rail technologies.</li> <li>• Evaluate opportunities to support planned and potential railroad projects that may address quantitatively-identified needs on Kansas' freight and passenger rail network.</li> <li>• Enhanced grant funding opportunities for rail infrastructure improvements, passenger rail expansion, and highway-rail crossing improvements through the federal Bipartisan Infrastructure Law (BIL).</li> </ul>



**Threats**

- Trains are getting longer, increasing the likelihood of blocked grade crossings when trains are stopped.
- Port and container volume growth (e-commerce boom), combined with system disruptions (COVID-19 and others), impact the availability of equipment and capacity. A shortage of containers, boxcars, chassis, and other equipment limits capacity and threatens efficient and reliable rail movements.
- Increasing customer demand and growing traffic put increasing stress on aging rail infrastructure, especially on the short line system. Meanwhile, the existing limited speed and weight capacity of rail lines, as well as aging rail facilities and equipment, limit the ability to capture growing customer needs and demands.
- Rates are highly controlled by Class I's, exacerbated by potential mergers.
- COVID-19 has resulted in less passenger train service and lagging passenger volumes.
- Private sector workforce challenges, exacerbated by a lack of reliability of train schedules.
- Turnover or retirement of public and private sector rail-dedicated workforce threatens the loss of institutional knowledge and efficiency of future rail efforts and programs administered by KDOT.

**Action Plan**

**Policy and Program Recommendations**

KDOT identified 20 policy and program recommendations to guide next steps for freight and passenger rail planning, project identification, funding strategies, safety improvements, and emissions reductions in Kansas (Figure 11). These recommendations are informed and validated by data analysis and stakeholder outreach efforts, including through RPAC, freight and passenger rail consultations, and an agriculture stakeholder roundtable. Each recommendation is classified into one of seven policy areas, each of which enhances various KDOT focus area(s) in alignment with the state’s overall transportation vision and goals.

**Figure 11: Policy and Program Recommendations**

ID	Policies and Programs
<i>Improve highway-rail grade crossings</i>	
P-1	<b>Work with railroads to develop a corridor approach for grade crossing projects</b> (e.g., grade crossing upgrades on line segments stretching 20-50 miles).
P-2	<b>Follow through with the recommendations of the ongoing Grade Crossing Safety State Action Plan</b> , which may include recommendations for crossings (including blocked crossings) and corridors.
P-3	<b>Partner and coordinate with other state departments on Operation Lifesaver</b> to improve awareness about and enhance safety at grade crossings.
P-4	<b>Identify active grade crossing locations and install signs, active warning devices, or other technologies to improve safety.</b> This may include improved lighting to improve visibility or signage to direct drivers to other crossings that are open or grade-separated, among others.
P-5	<b>Administer Section 130 funds</b> for improvements at Kansas highway-rail grade crossings.
<i>Provide and/or support efforts to secure funding support for rail projects</i>	
P-6	<b>Advance investments identified in the Kansas State Rail Plan’s Rail Service Investment Plan</b> , in partnership with freight rail stakeholders.
P-7	<b>Develop a program to fund emissions reduction investments in rail</b> (e.g., retrofit engines, electric locomotives).
P-8	<b>Continue funding programs</b> for short line railroads and railroad shippers (RSIF, SLRIF, Economic Development, Cost Share).
P-9	<b>Work with short lines and other state and local agencies to leverage partnerships and coordinate and secure funding for rail projects</b> , including by providing non-federal match funds.

ID	Policies and Programs
P-10	<b>Explore application of American Rescue Plan Act (ARPA) federal funds to short line rail</b> (potentially funds available for broadband, so could perhaps similarly be applied to the short line network, to improve private network with public benefits).
<i>Work with railroads to identify opportunities to invest in infrastructure improvements</i>	
P-11	<b>Coordinate with freight rail stakeholders to identify locations and opportunities for lighting at yard facilities, grain elevators, and other rail facilities</b> to enable crews to service facilities during night hours.
P-12	<b>Identify opportunities to rehabilitate inactive rail lines.</b>
<i>Improve economic efficiency and benefits for Kansas rail system users</i>	
P-13	<b>Develop a program to consolidate containers</b> to address container shortages.
P-14	<b>Conduct an economic study for new transload facilities in Kansas.</b>
P-15	<b>Identify infrastructure investment opportunities to expand access to Class I rail lines.</b>
P-16	<b>Conduct a study to identify opportunities to improve rail connections between Kansas and the Tulsa Port of Catoosa.</b>
P-17	<b>Evaluate opportunities statewide to construct unit train tracks.</b>
<i>Improve ability to attract businesses to locate or expand in Kansas</i>	
P-18	<b>Identify and prepare sites in Kansas for large-scale industrial development.</b> This includes partnering with railroads to identify mega-sites and conduct due diligence (e.g., environmental testing, access to utilities, community support, etc.) to secure rail projects in the state.
P-19	<b>Continue to develop business attraction packages,</b> in collaboration with other agencies and rail users, by proactively identifying rail improvement opportunities to incentivize businesses to locate or expand in Kansas.
P-20	<b>Identify potential locations for additional Class I certified sites.</b>
<i>Coordinate Kansas' rail workforce to accomplish State Rail Plan goals</i>	
P-21	<b>Develop staffing plan for the KDOT Freight and Rail Unit.</b> This may include dedicating additional staff, succession planning to pass on institutional knowledge.
P-22	<b>Coordinate efforts with public and private rail stakeholders to promote rail workforce.</b>
<i>Monitor and support opportunities to implement new rail technologies</i>	
P-23	<b>Encourage the adoption of new rail technologies to improve system operations.</b> This may include technologies to monitor locomotives to identify maintenance and repair needs before issues arise and technologies to improve visibility into rail movements.

## Rail Service Investment Plan

### *Kansas' Rail System Funding and Development*

KDOT works with various public and private stakeholders to maintain and improve Kansas' freight and passenger rail system.

**KDOT advocates for rail system improvements, supports and has on occasion provided matching funds for federal grant applications, and administers several state-funded programs that allocate funding to rail system improvement projects.**

KDOT coordinates and partners with railroads on large capital rail improvement projects. Since 2000, KDOT has awarded more than \$87 million to support freight rail projects in the state through the state Rail Service Improvement Fund (RSIF). KDOT's new Short Line Rail Improvement Fund (SLRIF) has also provided over \$9.4 million to support the state's short line rail system. Freight rail projects are also eligible for funding through KDOT's Cost Share and Economic Development Programs. Through these programs, KDOT has provided funding to rail projects statewide, as illustrated in Figure 12.

Over the past two decades, KDOT has also provided support to federal grant applications, with freight rail projects securing \$48.6 million in funds from federal competitive grant programs for the short line system infrastructure improvements (Figure 13), and the Southwest Chief passenger route in and near Kansas securing \$61.2 million in federal grants (Figure 14). KDOT also administers funds for highway-rail grade crossings through the Section 130 program.

Figure 12: Kansas Rail Projects Funded by State Programs

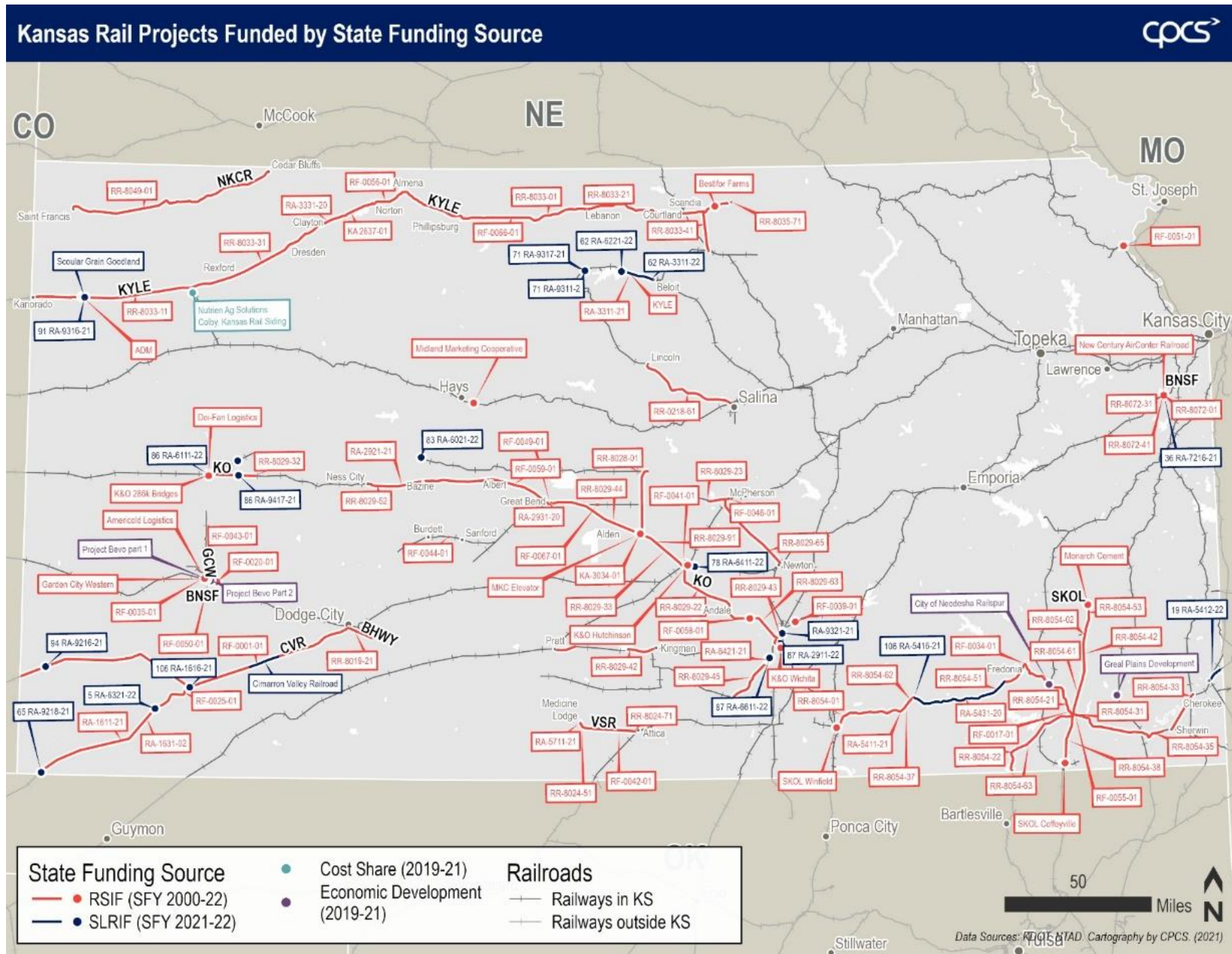


Figure 13: Kansas Short Line Rail Projects Funded by Federal Grant Programs

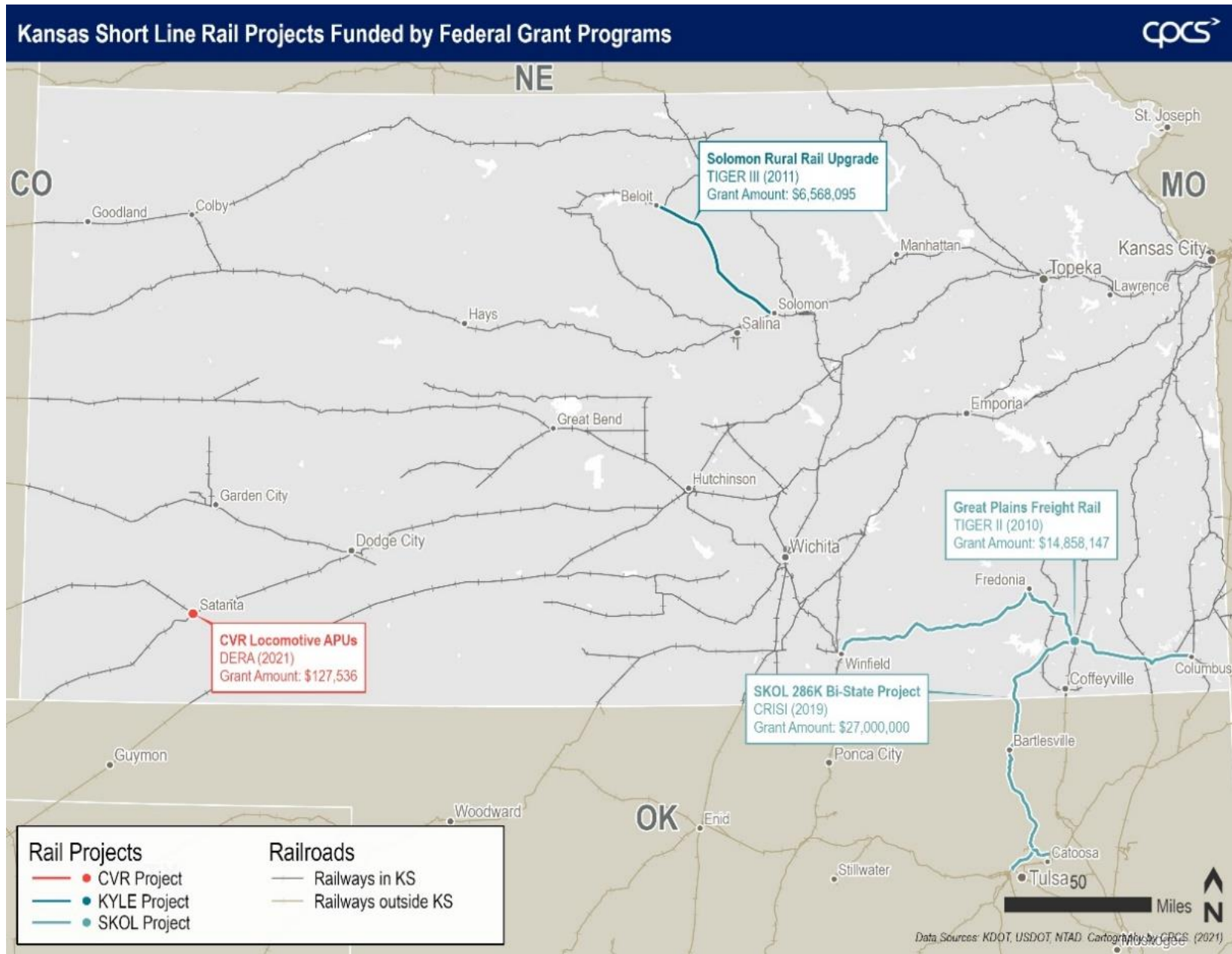
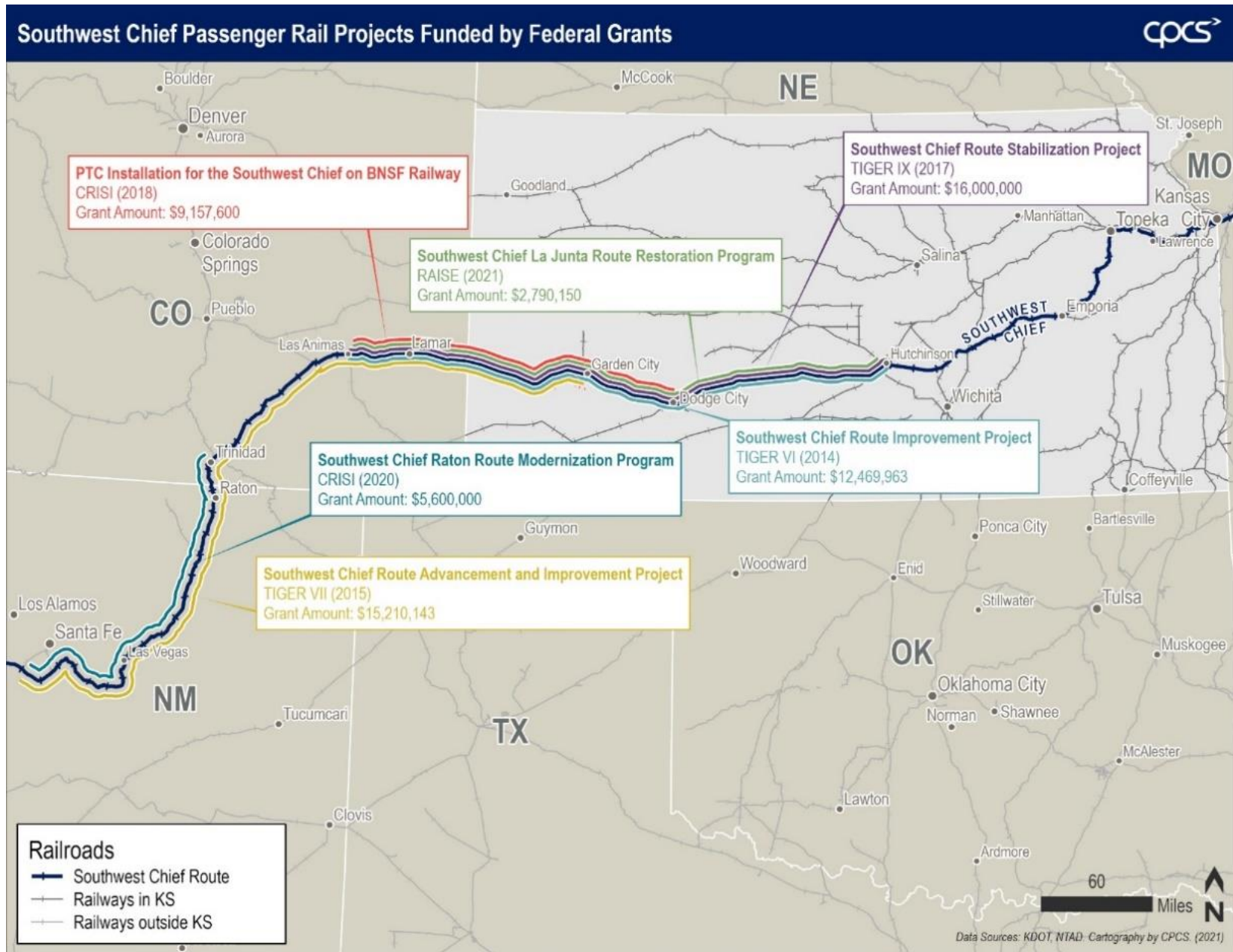


Figure 14: Southwest Chief Passenger Rail Projects Funded by Federal Grants



**Freight Rail Project Opportunities**

An evaluation of data analysis and performance measures, stakeholder consultations, and projects submitted for federal or state funding informed the identification of freight rail project opportunities for Kansas. Project opportunities were then classified into one of three categories based on project readiness – Ready Rail Projects, Rail Projects in Development, or Other Rail Project Opportunities. Figure 15 identifies Kansas’ freight rail project opportunities.

**Figure 15: Freight Rail Project Opportunities**

Project / Railroad	Description
<b>Ready Rail Projects</b>	
V&S Railway	Major rehabilitation (20 miles).
Southwest Kansas Infrastructure Upgrade Project (CVR) <sup>3</sup>	Improve track conditions (85 miles).
KYLE Railroad Gateway <sup>4</sup>	Replace track (23.5 miles).
SKOL Rail Upgrade	Upgrade rail (37 miles).
Rail Crossing Elimination in Olathe	Grade separation.
Rail Crossing Elimination in Wellington	Grade separation and at-grade closures.
Planning for Rail Crossing Elimination in Emporia	Concept design and preliminary engineering for grade separations and at-grade crossing closures.
<b>Rail Projects in Development</b>	
CVR	Joint elimination/flash-butt welding of rail (41 miles)
CVR	Additional rail replacement of 85#/90# rail in unit train route (24 miles)
CVR	Additional rail replacement of 85# rail (51.5 miles)
CVR	Upgrade turnouts (116.1 miles across three subdivisions)
K&O	Improve weight compliance, up to the industry 286K standard.
KYLE	Mainline crosstie upgrades and replacements (6 across multiple subdivisions)
KYLE	Mainline rail upgrades and replacements (3 across multiple subdivisions)
KYLE	New siding
KYLE	Cut and slide
SKOL	286K project to serve planned Bartlett Grain soybean processing facility just south of Cherryvale.
<b>Other Rail Project Opportunities</b>	
286K Upgrade	Improve weight compliance of short line railroads up to 286K standard
FRA Track Class Upgrade	Upgrade FRA track class of short line railroads.
Sidings	Build new and/or extend existing rail sidings
Grade Crossing Upgrade	Improve highway-rail grade crossing infrastructure – upgrade crossing surface.

<sup>3</sup> KDOT has been awarded a CRISI Grant Application for this project, with \$10,991,971 in federal funds awarded and \$500,000 in matching funds from KDOT.

<sup>4</sup> KDOT has been awarded a CRISI Grant Application for this project, with \$9,367,113 in federal funds awarded and \$500,000 in matching funds from KDOT.

Project / Railroad	Description
Grade Crossing Upgrade	Improve safety at highway-rail grade crossing locations by upgrading safety devices and adding overhead lighting at crossings.
Transload Facility	Construct new or expand existing transload facility

Source: KDOT, WATCO (SKOL and K&O), Jaguar (CVR), Genesee & Wyoming (KYLE), CPCS, 2021

### Passenger Rail Project Opportunities

Passenger rail project opportunities include passenger rail projects that KDOT has begun to implement, combined with additional opportunities identified through stakeholder consultations. Figure 16 provides a list of the potential passenger rail project opportunities in Kansas.

**Figure 16: Passenger Rail Project Opportunities**

<i>Service Development Plan Update – Heartland Flyer Extension</i>
<i>Amtrak Connects US Heartland Flyer Extension Project</i>
<i>Connections Between the Southwest Chief and Front Range Services</i>
<i>Extension of Missouri River Runner to Kansas Destinations</i>
<i>Passenger Rail Station Improvements</i>

### Next Steps

KDOT has a long history of working with rail and industry stakeholders on rail projects and programs in the state. KDOT will continue to advocate for rail system improvements, support and provide matching funds for federal grant applications, and administer state-funded programs that allocate funding to rail system improvement projects to maintain and improve Kansas’ freight and passenger rail system.