3.1 Freight and Passenger Rail Safety

This section describes the affected environment and environmental consequences for freight and passenger rail safety under both the Proposed Acquisition and the No-Action Alternative. The section is divided into three parts: *Sections 3.1.1, Freight Rail Safety*; *3.1.2, Hazardous Materials Transportation* as it pertains to freight rail; and *3.1.3, Passenger Rail Safety*.

3.1.1 Freight Rail Safety

This subsection describes the approach, affected environment, and environmental consequences for freight rail safety.

3.1.1.1 Approach

During the scoping process for this Draft EIS, elected officials, agencies, members of the public, and other stakeholders expressed concern that the Proposed Acquisition could increase the probability for rail incidents, such as collisions, derailments, or spills, because it would result in increased rail traffic on rail lines currently owned and operated by CP and KCS individually.[1] The probability of a rail incident occurring depends, in part, on the number of trains that operate on a particular rail line. The number of trains that move on a particular rail line each day is determined by many factors, including market conditions, such as the demand for particular commodities and goods. Railroad companies have the obligation to provide rail service to shippers upon reasonable request and the right to route and reroute traffic across their network as needed to safely and efficiently serve their customers. Therefore, railroads do not need to obtain Board authority to operate more or fewer trains on any particular rail line, and the Board generally cannot control the level of rail traffic on specific rail lines. Nevertheless, pursuant to the Board's environmental regulations at 49 C.F.R. § 1105.7(e)(5), when a pending proposal to acquire another railroad's rail lines would cause an increase in rail traffic on specific rail line segments that would meet or exceed the Board's thresholds for environmental review (typically an increase of eight or more trains per day or a doubling of traffic measured in gross ton-miles [GTM]), OEA analyzes the potential effects of that increase on freight rail safety and other issues.

In this case, OEA identified 29 rail line segments where the Applicants expect that the integrated CPKC system would cause a projected increase in rail traffic that would meet or exceed the Board's thresholds for environmental review. The study area for freight rail safety includes those 29 rail line segments, as shown in **Figure 2-1** in *Chapter 2*. The study area includes CP rail lines extending west from Chicago, Illinois, to Sabula, Iowa; CP rail lines extending south from Sabula to Kansas City, Missouri; KCS rail lines extending south

[1] For simplicity, this section uses the term incidents to refer to all accidents/incidents as defined in the Federal Railroad Administration's (FRA) regulations at 49 C.F.R. § 225.5.

from Kansas City to Beaumont, Texas; and KCS rail lines extending from Kendleton, Texas, to the U.S./Mexico border at Laredo, Texas.

Regulatory Approach

In conducting the freight rail safety analysis, OEA also considered the relevant regulatory and industry standards that the Applicants implement on their rail lines. FRA's Office of Railroad Safety regulates safety throughout the railroad industry, including both passenger and freight operators (49 C.F.R. Chapter II Parts 200 through 299). This includes operations, track, signaling, and rolling stock (for example, locomotives and freight cars) for common carrier railroads that are part of the general railroad system.

The Federal Railroad Safety Act of 1970 granted FRA's Administrator rulemaking authority over all areas of railroad safety. Subsequently, FRA issued regulations covering a range of critical safety railroad equipment, infrastructure, and procedures. It also established enforcement tools for railroad companies and employees who violate these regulations. FRA regulations specify minimum safety requirements for rolling stock, track, signals, operating practices, and transporting hazardous materials. Railroad track safety standards (49 C.F.R. Part 213) are based on track classifications that determine maximum operating speed limits, inspection frequencies, maintenance tolerances, and record keeping. Higher class tracks can be operated at lower speeds, so posted speeds are not always an accurate indication of track class. Railroads set their desired operating speeds for track segments via timetables or train orders. They are required to maintain those track segments according to FRA standards for specific classes of track corresponding with desired train speeds. For example, lines that are maintained to Class III standards allow a maximum operating speed of 40 miles per hour for freight trains and require track segments to be inspected at least weekly to verify compliance with FRA regulations. The number of daily trains or commodities carried is not a factor in establishing the track class.

All incidents on mainlines, at rail yards, and at intermodal facilities resulting in damages greater than FRA's current reporting threshold are reported to FRA. FRA determines the reporting threshold for each calendar year. For instance, in 2017, 2018, and 2019, the reporting threshold was $10,700. Whenever a collision, derailment, or other incident occurs, FRA investigates the incident if it meets certain general criteria. For example, FRA investigates incidents that result in the derailment of a locomotive, derailment of 15 or more cars, or extensive property damage, as well as any incidents that are likely to generate considerable public interest (FRA 2020). FRA maintains a database of incidents as reported by railroads with details about the types and locations of incidents reported. The FRA Office of Safety Analysis provides online query tools to dynamically search the incident data using selection criteria such as the railroad involved, year of the incident, and type of track where the incident occurred.

The Rail Safety Improvement Act of 2008 (RSIA) mandated the implementation of Positive Train Control (PTC), a collision avoidance system, on Class I railroad mainlines that transport five million or more gross tons of annual traffic and certain hazardous materials. PTC systems are designed to prevent train-to-train collisions, over-speed derailments, incursions into established work zones, and movements of trains through switches left in the wrong position. FRA expects that implementing PTC will decrease the number of incidents

on those rail lines. According to FRA's PTC Database, PTC was fully implemented on all KCS rail lines where it is required[2] by June 30, 2020, and on all CP rail lines where it is required by November 30, 2020.[3] Although PTC is expected to improve railroad operations safety, it has not been in place long enough for its effect on railroad safety to be observable from historical data. Therefore, OEA did not account for the effects of the implementation of PTC in the quantitative freight rail safety analysis. Because PTC will likely increase rail safety over time, OEA's decision to not account for PTC is conservative because it may cause the results to overestimate the potential safety impacts of the Proposed Acquisition.

Pursuant to 49 C.F.R. Part 1106 of the Board's regulations and the FRA regulations at 49 C.F.R. Part 244, the Applicants prepared a proposed Safety Integration Plan (SIP). The proposed SIP describes the Applicants' proposed process and timeline for merging the operations of CP and KCS, as well as the safety implications of merging these operations. During the preparation of the SIP, the Applicants met with FRA to review drafts of the proposed SIP and related materials, respond to questions, and accept recommendations. Pursuant to 49 C.F.R. §§ 1106.4(b)(1) and 244.17, on December 28, 2021, the Applicants submitted their proposed SIP to the Board and, by letter dated February 28, 2022, FRA submitted comments to the Board stating that FRA is satisfied that the proposed SIP provides a reasonable assurance of safety for the proposed transaction, consistent with governing regulations. OEA also has reviewed the proposed SIP, which is appended to this Draft EIS as **Appendix G** to allow for public review and comment on it and on FRA's comments. In the Final EIS, OEA will address any written comments on the SIP submitted during the Draft EIS comment period. If the Board authorizes the Proposed Acquisition and adopts the SIP, the Board will require compliance with the SIP as a condition to its authorization (49 C.F.R. § 1106.4(b)(4)). The Applicants then would coordinate with FRA in implementing the approved SIP, including any amendments thereto. Id. FRA would provide the Board with updates as appropriate during the acquisition implementation period and advise the Board when, in FRA's view, the integration of the Applicants' operations has been safely completed. Id.

In addition to FRA, individual states oversee public safety, especially with respect to roadway/rail at-grade crossings (grade crossings). Several railroad associations also develop and establish standards and practices for the industry, including the Association of American Railroads, the American Short Line and Regional Railroad Association, and the American Railway Engineering Maintenance-of-Way Association.

Systemwide Analysis

OEA evaluated how changes in rail activity across the U.S. portion of the integrated CPKC system would affect the probability of freight rail incidents under the Proposed Acquisition. OEA used systemwide incident data sourced from FRA's Office of Safety Analysis to calculate future incident rates under the Proposed Acquisition. These incident rates are calculated by taking the annual number of incidents and dividing them by the total annual million train-miles, as described in **Appendix F**. OEA assumed that the future incident rate

[2] The RSIA mandated the implementation of PTC on Class I railroad mainlines which transport five million or more gross tons of annual traffic and certain hazardous materials.

[3] Annual reports for the previous year are due March 31; year 2021 was not available at the time of analysis.

for 2027 would be the same as the five-year average of the historical rates. OEA calculated this rate by compiling the incident rate data from the FRA database and calculating the average of the rates from years 2015 to 2019, as described in **Appendix F**. This approach is conservative because it does not account for the fact that rail transportation safety has tended to improve over time and will likely continue to do so in the future due to the implementation of new safety measures, such as PTC. This means that the results of OEA's analysis may tend to overestimate the potential adverse safety impacts of the Proposed Acquisition. The incident rates that OEA used to assess freight rail safety impacts exclude incidents occurring at grade crossings because OEA considered those incidents separately in *Section 3.2, Grade Crossing Safety* and *Section 3.3, Grade Crossing Delay*. OEA supplemented the data with information about anticipated changes in the level of rail traffic, as described in the Applicants' Operating Plan and historical operational data that OEA obtained from FRA, including annual train-mile data, as described in **Appendix F**. The Operating Plan describes how the Applicants expect the integrated CPKC system would operate, including the projected future rail traffic on the rail lines in the combined system, expected changes in activities at intermodal facilities, and planned capital improvements to support projected increases in rail traffic.

To evaluate the probability of freight rail incidents associated with the estimated increases in freight train traffic, OEA used FRA's reported annual incident rates for the entire system for the five-year analysis period. OEA then averaged the five years of annual incident rates for both CP and KCS individually to determine the expected individual systemwide annual rates for CP and KCS, respectively, in the year 2027 under the No-Action Alternative. To determine the expected combined CPKC systemwide annual incident rate in 2027 under the Proposed Acquisition, OEA used the average of CP's and KCS's individual five-year averages (as shown in **Table 3.1-1** and as described further in **Appendix F**).

Rail Line Segment-Specific Analysis

As noted above, OEA's threshold for analyzing rail operations safety is eight or more additional freight trains per day on a rail line segment. According to the Operating Plan, the Applicants expect that 29 rail line segments would experience an increase of eight or more freight trains per day. OEA evaluated the probability of an incident occurring from the Proposed Acquisition on these rail line segments. OEA used mainline incident totals and rates from 2015-2019, sourced from FRA's Office of Safety Analysis, to calculate changes in incident rates in the 2027 analysis year by analyzing the historical trends in the annual mainline incident rates, as described in **Appendix F**. As in the systemwide analysis, OEA determined the No-Action Alternative incident rates for 2027 for CP and KCS by taking the average of incident rates across analysis years for each railroad. OEA then applied each railroad's calculated incident rate to each of their respective rail segments to determine the expected probability by segment under the Proposed Acquisition in the year 2027.

The safety record of railroads is often measured in terms of the number of incidents per million train-miles. Million train-miles is the measurement of how many million miles all of the trains in a system have traversed annually. To determine the projected number of incidents for each segment studied, OEA multiplied the Applicants' projected average number of trains-per-day by the segment's length and by 365 days. OEA then divided this

value by one million to determine the annual million train-miles, and then multiplied by the calculated 2027 mainline annual rate of either CP or KCS, depending on the segment. This equation resulted in the projected number of incidents per year for each segment under the No-Action Alternative (taking into account organic growth expected to occur in 2027 without the Proposed Acquisition). The calculations that OEA used to determine the projected "years between incidents," are described in **Appendix F**.

Since the Proposed Acquisition is based on CP gaining control of KCS, OEA used the CP mainline projected rate for 2027 to determine the projected number of incidents per segment under the Proposed Acquisition. **Appendix F** provides additional detail about the calculations performed.

3.1.1.2 Affected Environment

The existing conditions of the current rail operations of both CP and KCS are outlined in *Chapter 2.1, Overview of Existing CP and KCS Rail Systems*. As a result of the Proposed Acquisition, the Applicants expect that the largest increases in average daily rail traffic would occur on the north-south corridor from Chicago, Illinois, to the U.S./Mexico border at Laredo, Texas (see **Figure 2-1** in *Chapter 2*).

Systemwide Analysis

For the systemwide analysis, OEA evaluated all incidents on mainlines, at rail yards, and at intermodal facilities that were reported to FRA from 2015 through 2019. **Table 3.1-1** shows the incident rates for all Class I railroads and their five-year average rates. Annual incident rates over this timeframe ranged from 1.06 to 1.7 incidents per million train-miles for CP, and from 2.62 to 4.02 incidents per million train-miles for KCS. Overall, both railroads trended downward for the five-year analysis period. For context, the combined average incident rate for both railroads from 2015 to 2019 was 2.39 incidents per million train-miles, which is below the U.S. Class I railroad average of 2.66 (FRA Office of Safety Analysis 2022).

Table 3.1-1. 2015-2019 U.S. Class I Incident Rates (per million train-miles)

Railroad	2015	2016	2017	2018	2019	Five-Year Average
CP	1.70	1.61	1.56	1.06	1.26	1.44
Burlington Northern Santa Fe Railway (BNSF)	2.28	2.09	2.01	2.14	2.21	2.15
Canadian National Railway Company (CN)	2.67	1.63	2.06	2.90	2.68	2.39
Norfolk Southern Railway (NSR)	2.21	2.6	2.33	2.76	3.31	2.64
CSX Transportation	2.63	2.84	3.14	3.71	2.36	2.94
KCS	4.02	2.62	3.68	3.40	3.03	3.35
Union Pacific (UP)	3.29	3.25	3.41	3.85	4.76	3.71
All Class I	2.69	2.38	2.60	2.83	2.80	2.66

Source: Federal Railroad Administration 2019

Of the 272 reportable incidents over the five-year review period, there were zero lay person injuries or fatalities reported by either railroad. There were zero reported crew fatalities and only nine reported crew injuries among seven incidents. This means that less than 0.03 percent of incidents produced any injury to any person at all.

Of the 14,842 railcars and 537 locomotives involved in trains in reportable incidents, only 903 (0.06 percent) railcars and 54 (0.10 percent) locomotives derailed.

Rail Line Segment-Specific Analysis

To analyze individual mainline segments that are part of the study area, OEA used FRA's method for calculating rates for incidents occurring on mainline tracks only. Annual incident rates over the five-year analysis period ranged from 0.66 to 0.83 incidents per million train-miles for CP, and from 0.48 to 2.01 incidents per million train-miles for KCS. Overall, both railroads trended downward for the five-year analysis period. **Table 3.1-2** shows the mainline annual number of incidents, the annual number of train miles, total incidents, and the incident rates for CP and KCS from 2015 through 2019. Because CP is seeking to acquire KCS, OEA used CP's five-year average incident rate (2015-2019) as the estimated incident rate for mainline segments in the combined CPKC system for the analysis year 2027. This approach is consistent with OEA's past practice and is conservative because it does not account for the fact that rail safety has generally improved over time and will likely continue to do so in the future due to the implementation of new safety measures, such as PTC.

Table 3.1-2. 2015-2019 Mainline Incident Rates

Year	Incidents	Main Track Million Train-Miles	Incident Rate per Million Train-Miles
CP			
2015	8	10.06	0.80
2016	6	8.05	0.75
2017	7	8.46	0.83
2018	6	8.96	0.67
2019	6	9.10	0.66
KCS			
2015	14	8.79	1.59
2016	4	8.32	0.48
2017	18	8.96	2.01
2018	12	8.65	1.39
2019	7	9.00	0.78

Source: Federal Railroad Administration 2019

3.1.1.3 Environmental Consequences

This section presents the expected operating volumes for the Proposed Acquisition and the No-Action Alternative and describes the environmental consequences of the Proposed Acquisition and the No-Action Alternative on freight rail safety. **Table C.1-1**, **Master Rail**

Line Segment Table, in **Appendix C** outlines the Applicants' expected changes in rail traffic due to both organic growth and Acquisition-related growth.

Proposed Acquisition

Systemwide Analysis

Under the Proposed Acquisition, the Applicants expect that most of the rail traffic growth would occur along a generally north-south corridor extending between Chicago, Illinois, to the U.S./Mexico border at Laredo, Texas. Between Bensenville, Illinois, and Sabula Junction, Iowa, the Applicants project that freight rail traffic would increase by eight trains per day, on average, under the Proposed Acquisition. Between Sabula Junction to Kansas City, Missouri, the Applicants project that traffic would increase by 14.4 trains per day, on average. The Applicants expect that the average projected growth in rail traffic would decrease moving south from Kansas City, from an additional 12.8 to 10.9 trains per day between Kansas City and Beaumont, Texas. In addition, the Applicants expect an average of 8.3 to 8 additional trains per day between Rosenburg, Texas, to the U.S./Mexico border at Laredo, Texas (see **Appendix C, Table C.1-1**, and *Chapter 2*, **Figure 2.2-1**). Under the Proposed Acquisition, OEA projects that CPKC would have a projected annual incident rate of 2.39 incidents per million train-miles across all types of track. As described in *Section 3.1.1.1, Approach* (also see **Appendix F**), OEA used the CP incident rates received from FRA for 2015 to 2019 to represent the average annual incident rate for 2027 under the Proposed Acquisition. **Table 3.1-3** below shows the calculated 2027 systemwide incident rates for CPKC under the Proposed Acquisition and for CP and KCS separately under the No-Action Alternative.

Table 3.1-3. Systemwide Incident Rates by Alternative

	Assumed 2027 Incident Rates per Million Train-miles	
Railroad	**No-Action Alternative**	**Proposed Acquisition**
CP	1.44	-
KCS	3.35	-
CPKC	-	1.44

Rail Line Segment-Specific Analysis

Under the Proposed Acquisition, CPKC would have a projected annual segment-specific incident rate of 0.74 incidents per million train-miles across the mainline. As described in *Section 3.1.1.1, Approach* (also see **Appendix F**), OEA used the CP segment-specific incident rates for 2015 to 2019 as the average annual incident rate for the Proposed Acquisition. **Table 3.1-4** below shows the calculated 2027 segment-specific incident rates for CPKC under the Proposed Acquisition.

Table 3.1-4. Mainline Incident Rates by Alternative

Railroad	Forecasted 2027 Incident Rates per Million Train-miles	
	No-Action Alternative	**Proposed Acquisition**
CP	0.74	-
KCS	1.25	-
CPKC	-	0.74

Because the Applicants expect that the Proposed Acquisition would cause average rail traffic to increase on the 29 rail line segments within the study area, OEA expects that the annual number of incidents would increase. Across all of the rail line segments, OEA estimates that the annual number of incidents would increase from approximately 17.45 to approximately 18.74. The greatest increase in the predicted number of incidents for any rail line segment would occur on segment C-OTTU-02 between Muscatine, Iowa, and Ottumwa, Iowa, where the predicted number of incidents would increase by 0.32 per year, from 0.11 under the No-Action Alternative to 0.43 under the Proposed Acquisition. This is equivalent to one incident approximately every 9.4 years under the No-Action Alternative and one incident approximately every 2.3 years under the Proposed Acquisition.

No-Action Alternative

Under the No-Action Alternative, the Proposed Acquisition would not occur, and CP would not acquire KCS. Therefore, the projected increase in rail traffic on rail lines in the study area would not occur as a result of the Proposed Acquisition. However, the Applicants expect that both the CP and the KCS networks would experience organic growth in rail traffic under the No-Action Alternative. Therefore, the number of rail incidents on rail line segments in the study area under the No-Action Alternative likely would be higher than under current conditions but lower than under the Proposed Acquisition. See **Table C.1-1**, **Master Rail Line Segment Table**, in **Appendix C** for further information. In general, OEA expects that rail lines will continue to become safer over time due to improvements in safety measures, such as the implementation of PTC.

3.1.1.4 Conclusion

Incident rates on the CP and KCS systems have declined in recent years at least likely in part due to the implementation of PTC and other industry-wide improvements in safety. OEA expects that those rates would continue to decline in the future regardless of whether or not the Board authorizes the Proposed Acquisition. As outlined in **Table 3.1-5** below, under the Proposed Acquisition, OEA expects that the number of incidents would remain low on the affected rail line segments, and even decrease on some segments. Systemwide, OEA expects that the CPKC incident rate (2.39) would remain well below the Class I average (2.66). Under the No-Action Alternative, the projected increase in rail traffic on rail lines in the study area would not occur. However, the Applicants expect that both the CP and the KCS networks would experience organic growth in rail traffic. The incident rates on KCS and CP respectively would continue or decline if safety trends continue.

As indicated in *Section 3.1.1.2, Affected Environment*, 99.9 percent of incidents during the five-year review period did not result in injuries or fatalities. OEA expects that under the Proposed Acquisition, most incidents would continue to be minor and only a small percentage would result in impacts to human health. In addition, because the projected increase in rail traffic under the Proposed Acquisition would be caused by the diversion of trains from rail lines outside of the study area and by the diversion of freight from truck transportation to rail transportation, the Applicants expect that any increase in the number of incidents on rail line segments in the study area would generally be offset by a decrease in the number of incidents on rail lines outside of the study area and by a decrease in the number of highway incidents involving trucks, which are generally less safe than trains.

To minimize the potential for incidents and help prevent incidents that do occur from resulting in damage to property, injuries, or fatalities, the Applicants have proposed voluntary mitigation measures committing them to funding railroad focused emergency response training for firefighters from potentially affected communities (see *Chapter 4, Mitigation*, Voluntary Mitigation [VM]-Rail-04); reviewing coverage of emergency response equipment assets across the combined network and redistributing or adding assets as necessary to improve emergency response capability (VM-Rail-05); and compliance with the SIP per FRA and Board requirements (49 C.F.R. Part 1106).

Table 3.1-5. Incident Rates on CP and KCS Segments

Rail Line Segments				Incidents per Year			Years between Incidents	
Between	**And**	**Segment Code**	**Segment Length**	**No-Action Alternative**	**Proposed Acquisition**	**Anticipated Change**	**No-Action Alternative**	**Proposed Acquisition**
Sabula Drawbridge, IA	Lake, IA	C-CHIC-01	0.7	0.00	0.00	0.00	864.49	374.77
Davis Jct, IL	Sabula Drawbridge, IA	C-CHIC-02	61.5	0.11	0.24	0.13	9.18	4.14
Randall Road, IL	Davis Jct, IL	C-CHIC-03	38.7	0.03	0.12	0.08	30.42	8.59
Bensenville Metra, IL	Randall Road, IL	C-ELGI-01	23.0	0.02	0.07	0.05	47.21	14.11
Sabula Drawbridge, IA	Clinton, IA	C-DAVE-01	17.5	0.05	0.12	0.07	19.73	8.42
Clinton, IA	Water Works, IA	C-DAVE-02	33.2	0.07	0.20	0.13	13.49	4.92
Water Works, IA	Nahant, IA	C-DAVE-03	4.5	0.01	0.03	0.02	100.16	36.51
Nahant, IA	Muscatine, IA	C-OTTU-01	24.6	0.04	0.14	0.10	23.60	7.24
Muscatine, IA	Ottumwa, IA	C-OTTU-02	82.5	0.11	0.43	0.32	9.35	2.34
Ottumwa, IA	Laredo, MO/IA	C-LARE-01	61.2	0.06	0.29	0.24	17.75	3.40
Laredo, MO/IA	Laredo, IA	C-LARE-02	41.1	0.04	0.20	0.16	26.43	5.06
Laredo, IA	Polo, MO	C-KACI-01	51.6	0.06	0.26	0.20	18.04	3.91
Polo, MO	Airline Jct, MO	C-KACI-02	42.1	0.04	0.21	0.16	22.96	4.83
Kansas City, KS	Pittsburg, KS	K-PITT-01	124.5	1.00	1.02	0.02	1.00	0.98
Pittsburg, KS	Watts, OK	K-HEAV-01	107.8	0.79	0.83	0.04	1.26	1.20
Watts, OK	Poteau, OK	K-HEAV-02	90.4	0.58	0.65	0.06	1.71	1.54
Poteau, OK	Heavener, OK	K-HEAV-03	11.6	0.08	0.08	0.01	12.96	11.83
Heavener, OK	De Queen, AR	K-SHRE-01	94.6	0.59	0.67	0.07	1.68	1.50
De Queen, AR	Ashdown, AR	K-SHRE-02	37.1	0.28	0.29	0.01	3.64	3.48
Ashdown, AR	Shreveport, LA	K-SHRE-03	83.2	0.51	0.58	0.07	1.95	1.72
Shreveport, LA	Frierson, LA	K-SHRE-04	21.8	0.25	0.21	(0.04)	4.02	4.72

Table 3.1-5. Incident Rates on CP and KCS Segments

Rail Line Segments				Incidents per Year			Years between Incidents	
Between	**And**	**Segment Code**	**Segment Length**	**No-Action Alternative**	**Proposed Acquisition**	**Anticipated Change**	**No-Action Alternative**	**Proposed Acquisition**
Frierson, LA	Leesville, LA	K-BEAU-01	91.4	0.45	0.53	0.09	2.24	1.88
Leesville, LA	De Quincy, LA	K-BEAU-02	50.6	0.25	0.30	0.04	3.95	3.36
De Quincy, LA	Beaumont, TX	K-BEAU-03	47.0	0.20	0.26	0.06	5.01	3.88
Rosenberg, TX	Kendleton, TX	K-ROSE-01	12.2	0.05	0.06	0.01	19.66	17.39
Kendleton, TX	Victoria, TX	K-ROSE-02	74.8	0.33	0.36	0.03	3.02	2.75
Victoria, TX	Placedo, TX	U-VICT-01	12.8	0.05	0.06	0.01	19.58	16.95
Placedo, TX	Robstown, TX	U-VICT-02	82.8	0.33	0.38	0.05	3.03	2.62
Laredo, TX	Robstown, TX	K-LARE-02	144.0	0.97	0.89	(0.08)	1.03	1.13

3.1.2 Hazardous Materials Transportation

This section describes the affected environment, and environmental consequences for hazardous materials transport.

3.1.2.1 Approach

The Board's regulations do not have a threshold for analyzing hazardous materials transport but do require a description of the Applicants' safety record on derailments, incidents, and hazardous spills, as well as reporting on the likelihood of an accidental release of hazardous materials. Consistent with prior rail line acquisitions, for this analysis, OEA considered all rail line segments in the U.S. portion of CPKC on which the Applicants' projected increases in the transport of hazardous materials. OEA evaluated whether the probability of a hazardous materials release would increase along the rail line segments. OEA evaluated these Applicant-identified segments to calculate the release frequencies by segment for both the No-Action Alternative and the Proposed Acquisition.

Regulatory Approach

The Applicants are required to comply with laws and regulations governing the safe transport of hazardous materials. U.S. Department of Transportation (USDOT) regulations include requirements for shipping and packaging containers for hazardous materials, emergency response information, and training. FRA enforces USDOT regulations that require shippers to transport hazardous materials in rail cars specifically designed for safety of transport (49 C.F.R. Parts 171 through 180). These include: 1) the FRA Office of Railroad Safety (49 C.F.R. Chapter II), which regulates the railroad industry; 2) the Comprehensive Environmental Response, Compensation, and Liability Act (40 C.F.R. 300), which governs the clean-up of uncontrolled or abandoned hazardous material sites, incidents, spills, and other emergency releases of pollutants and contaminants to the environment; 3) the Resource Conservation and Recovery Act (40 C.F.R. Part 264), which establishes the framework for the proper management of hazardous and non-hazardous waste from cradle to grave; and 4) the Hazardous Materials Transportation Act (49 U.S.C. 5101 et seq.), which applies to the transportation of hazardous materials in commerce, including interstate and intrastate carriers. The Applicants must also comply with FRA regulations governing track safety standards, freight car standards, and operating rules and practices, which all affect the potential for hazardous materials releases.

In addition, the transportation of hazardous materials is subject to U.S. Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA) regulations. EPA regulations address spill prevention and cleanup. Most EPA regulations address only fixed facilities rather than transport activities. However, EPA regulations in 40 C.F.R. Part 263, "Standards Applicable to Transporters of Hazardous Waste," specify immediate response actions, discharge clean-up, and other requirements for transporters of hazardous waste. The OSHA regulations in 29 C.F.R. §1910.120, "Hazardous Waste Operations and Emergency Response," specify emergency response and clean-up operations for releases, or substantial threats of releases, of hazardous substances.

Mainline Release Analysis

OEA evaluated how changes in rail activity on rail segments under the Proposed Acquisition would change the likelihood of an accidental release of hazardous materials. This included identifying rail line segments that would experience any increase in hazardous materials transport and information provided by the Applicants in the **Table C.1-1, Master Segment Table** in **Appendix C**. OEA calculated the likelihood of hazardous materials releases for both the No-Action Alternative and the Proposed Acquisition on the identified segments by applying historic release rates in number of annual releases per carload to existing operational conditions to estimate existing condition release frequencies for CP and KCS. OEA then applied the historical release rates to the projected operational conditions under the Proposed Acquisition to predict release frequencies for CPKC. OEA evaluated the estimated release frequencies under both the No-Action Alternative and the Proposed Acquisition to determine whether the increase in hazardous materials transport on identified segments would increase the likelihood of an accidental release. **Appendix F** provides details on the calculations used in the aforementioned approach.

Rail Yards Release Analysis

To evaluate potential impacts on safety at rail yards, OEA calculated the likelihood of a hazardous materials release. OEA applied the respective No-Action Alternative release rate to CP's and KCS's respective rail yards to calculate the No-Action Alternative impacts and applied the Proposed Acquisition release rate to all yards to calculate the Proposed Acquisition impacts.

3.1.2.2 Affected Environment

Releases of hazardous materials can occur because of incidents, human error, device issues, and other causes. Definitions for the causes of hazardous materials releases are included in **Appendix F**. USDOT has specific protocols for the transport of hazardous materials by rail, which is usually done by tank car. Tank car releases of hazardous materials can occur because of incidents, human error, packaging failure, and other problems. Human errors may include not closing a valve tightly or overfilling a tank. Packaging failures include situations where inner liners are compromised or containers leak. Other sources of releases include vandalism and improperly vented tank cars. USDOT regulations require railroads to submit a report each time a release occurs.

Types of Hazardous Materials Transported

As part of its review of potential impacts on rail safety, OEA reviewed the types of chemicals CP and KCS transport. Common carrier railroads, such as CP and KCS, are required to serve shippers upon reasonable request, including shippers that move hazardous materials. Therefore, CP and KCS generally cannot control what types of regulated hazardous materials they transport. Currently, each railroad transports commodities from all nine hazard classes. Class 3 (flammable liquids) make up 50 percent of hazardous materials transported annually on the CP and KCS networks. CP transports bitumen,[4] and to a lesser

[4] A dense, highly viscous, petroleum-based hydrocarbon that is found in deposits such as oil sands and pitch lakes.

extent crude oil, from Alberta, Canada to the U.S., where it is generally destined for the Gulf Coast. Liquified petroleum gas (LPG) is another common commodity moved by rail, passing through the U.S. from Alberta. It is important to distinguish between LPG transported here and liquified natural gas (LNG). LPG is stored, shipped, and transported in tanks or cylinders, which is what makes it suitable for rail shipping. LNG, by contrast, must be stored and shipped in specialized cryogenic tanks. It is then transported by pipeline. While LPG has been transported by rail for many years, rail transportation of LNG is currently prohibited in the United States under transportation regulations promulgated by the Pipeline and Hazardous Materials Safety Administration and FRA.

KCS has direct access to chemical products used in plastics and lubricants from the following sites: Princeton, Baton Rouge, Westlake, Reserve, Cotton Valley, and Woodlawn in Louisiana; Port Neches and Beaumont in Texas; and Vicksburg in Mississippi.

The Applicants follow USDOT regulations that specify shipping and packaging requirements that prevent hazardous materials mixing to form more hazardous compounds. USDOT regulations prohibit mixing materials in the same package or container that may cause dangerous levels of heat, flammable or poisonous gases or vapors, or produce corrosive materials. There is a prohibition against chemical mixing and release that may compromise packaging integrity. Railcars carrying materials whose mixing would be harmful are not permitted to be sequenced next to each other in the rail consist.[5]

Both CP and KCS have established hazardous materials protocols, training, and emergency response practices that address emergency preparedness, prevention, and response. These plans identify available resources and procedures for responding to a potential incident involving hazardous materials. Following the Proposed Acquisition, the Applicants would coordinate their safety and emergency response programs as described in the Applicants' application and the SIP.

Historical Hazardous Material Releases on Mainlines and in Rail Yards

CP and KCS reported 233 releases between 2015 and 2019. Of these incidents, 161 (69.1 percent) occurred in rail yards, while 72 (30.9 percent) occurred outside of rail yards. Out of the total 233 releases, 170 (73.0 percent) were non-locomotive related, and 63 (27.0 percent) were locomotive fueling/servicing related. **Table 3.1-6** shows the number of hazardous materials incidents that were non-locomotive related as reported by CP and KCS.

Table 3.1-6. 2015-2019 Hazardous Materials Incidents (non-locomotive related)

Railroad	**Hazardous Materials Incidents, 2015-2019**					
	2015	***2016***	***2017***	***2018***	***2019***	***Total***
CP	27	13	14	7	21	82
KCS	18	20	14	19	17	88

Hazardous material releases were categorized by the Applicants into five types: accident-related release, non-accident related, locomotive response, third party/adjacent property

[5] A consist is the rolling stock (railroad cars), exclusive of the locomotive, making up a train.

impacting operations, and fixed facility response (non-lading). Of the total 233 reported releases, the historical breakdown is as follows:

- Accident-Related Release: There were 21 (9.0 percent) incident-related releases. Incident-related releases are unintentional releases of a hazardous material while in transport, including loading and unloading, that are caused by a derailment, collision, or other rail-related incident.
- Non-Accident Related: There were 112 (48.1 percent) non-incident related releases. Non-incident releases are unintentional releases of a hazardous material while in transport, including loading and unloading, that are not caused by a derailment, collision, or other rail related incident. These releases can include leaks, splashes, and other releases from improperly secured or defective valves, fittings, and tank shells, as well as venting of non-atmospheric gases from safety relief devices.
- Locomotive Response: There were 62 (26.6 percent) locomotive response releases. These releases refer to spills and releases associated with the fueling and maintenance of locomotives.
- Third Party/Adjacent Property Impacting Operations: There were 32 (13.7 percent) third party/adjacent property impacting operations releases. These refer to incidents occurring on property adjacent to the railroad that directly caused a release of a hazardous material. Railroad operations and shipping processes were disrupted.
- Fixed Facility Response (Non-Lading): There were six (2.6 percent) fixed facility response (non-lading) releases. A fixed facility is a non-railroad entity where these hazardous materials are stored. Examples of fixed facilities include factories, storage tanks, and pipelines. Releases in these incidents originated in fixed facilities rather than during transport.

When reviewing accident-related releases, OEA reviewed data provided by the Applicants. OEA found that over the five-year review period for both railroads, there were only seven types of hazardous materials released, which included:

- Alcohols, N.O.S.:[6] 58,069 gallons[7]
- LPGs: 10,200 gallons
- Sodium Chlorate: 1,039 pounds
- Diesel: 820 gallons
- Crude Oil: 500 gallons
- Polymeric Beads: 45 cubic yards
- Batteries (Acid): 2 gallons
- Hazardous Waste N.O.S.: 0.5 gallons

Of the 170 non-locomotive related hazardous materials incidents, 151 were liquid releases. Almost two-thirds of all liquid releases were 10 gallons or less. Of these liquid releases:

6 N.O.S.: Not Otherwise Specified (such as ethanol)

7 53,180 of the 58,069 gallons released over the five-year period were from a single incident in February 2015.

- 16 percent were equal to or less than 1 gallon
- 58 percent were equal to or less than 10 gallons
- 78 percent were equal to or less than 50 gallons

Across all release types, excluding the single incident for Alcohols N.O.S., diesel was the biggest contributor to hazardous material releases (25,450 gallons). Locomotive response-related releases comprised 78.7 percent of the diesel releases, and only 3.2 percent were due to accident-related releases.

Only five incidents were releases of crude oil; four of the five were 100 gallons or less; and all five combined released less than 700 gallons across the 6,890 miles of the CP and KCS networks.

3.1.2.3 Environmental Consequences

The following describes the environmental consequences of the Proposed Acquisition and No-Action Alternative for hazardous materials transportation.

Proposed Acquisition

Mainline Release Rate Analysis

Table 3.1-7 shows the five-year average release rates for both CP and KCS in terms of releases per hazardous materials car-mile.

Table 3.1-7. 2015-2019 Average Mainline Release Rates

Railroad	Releases	Hazardous Materials Car-miles	Release Rate
CP			
Five-year average	5.4	207,217,406	2.61×10^{-8}
KCS			
Five-year average	2.8	102,790,252	2.72×10^{-8}

Consistent with past practice, OEA assumed that the combined CPKC system would have an average mainline release rate equal the five-year average mainline release rate for CP because CP is seeking to acquire KCS. This is a conservative assumption because it does not account for the fact that rail safety has generally improved over time and will likely continue to do so in the future with the implementation of new safety equipment and procedures. OEA used the CP five-year average release rate to estimate how the projected increase in hazardous materials carloads under the Proposed Acquisition would affect the number of predicted hazardous materials releases on specific rail line segments. Out of the 141 total rail line segments on which the number of transported hazardous material carloads would increase, 50 would experience measurable increases in the predicted number of releases. The rail line segment that would experience the greatest increase in the predicted number of releases as a result of the Proposed Acquisition is segment K-PITT-01 between Pittsburg, Kansas, and Kansas City, Missouri. That segment would experience an estimated 0.23 releases per year under the Proposed Acquisition, compared to 0.08 releases per year

under the No-Action Alternative, which is an increase of approximately 0.17 releases per year or one additional release every approximately 5.9 years. As described above in *Historical Hazardous Material Releases on Mainlines and in Rail Yards*, OEA expects that the majority of releases that would occur would be minor and would not have the potential to result in environmental impacts, injuries, or fatalities. The 10 most affected segments are highlighted in **Table 3.1-8**. See **Table F.2-2** in **Appendix F** for all affected segments.

Table 3.1-8. Top 10 Rail Line Segments with Highest Change in Acquisition-Related Releases

Segment Information			Hazardous Material (Hazmat) Carloads Per Year					Projected Releases per Year	
Segment	Railroad	Segment Length	Base Hazmat Carloads	Organic Growth Hazmat Carloads	2027 No-Action Alternative Hazmat Carloads	Acquisition-related Growth Hazmat Carloads	2027 Proposed Acquisition Hazmat Carloads	2027 No-Action Alternative	2027 Proposed Acquisition
K-PITT-01	KCS	124.50	17,716	4,677	22,392	48,313	70,705	0.08	0.23
C-CARR-01	CP	139.60	151,476	39,990	191,465	39,346	230,811	0.70	0.84
C-RIVE-02	CP	114.50	200,798	53,011	253,809	41,014	294,823	0.76	0.88
K-HEAV-01	KCS	107.80	15,643	4,130	19,773	43,850	63,623	0.06	0.18
K-BEAU-01	KCS	91.40	62,609	16,529	79,138	48,997	128,135	0.20	0.31
C-MARQ-03	CP	98.00	129,465	34,179	163,644	41,668	205,312	0.42	0.52
K-SHRE-01	KCS	94.60	17,403	4,594	21,997	42,481	64,478	0.06	0.16
C-PAYN-02	CP	97.10	180,538	47,662	228,200	40,115	268,316	0.58	0.68
C-PORT-03	CP	99.20	138,322	36,517	174,838	39,210	214,048	0.45	0.55
K-SHRE-03	KCS	83.20	21,326	5,630	26,957	46,627	73,583	0.06	0.16

Rail Yards Release Rate Analysis

OEA calculated the five-year average rail yard release rate for both railroads to be 3.29×10^{-6} releases per carload processed, as shown in **Table 3.1-9**, and described in **Appendix F**, **Table F.2-3**.

Table 3.1-9. Five-Year Averaged Rail Yard Release Rates

Railroad	**No-Action Alternative**	**Proposed Acquisition**
CP	2.42×10^{-6}	-
KCS	4.50×10^{-6}	-
CPKC	-	2.42×10^{-6}

Of the 165 rail yards in the study area, 42 yards would experience an increase in at least one carload processed per day. Using the rate outlined above, OEA calculated that of these 42 yards, 17 would experience increases in the predicted number of annual releases, ranging from an additional 0.01 releases per year to an additional 0.3 releases per year, as shown in **Table 3.1-10.**

Table 3.1-10. Rail Yards with Acquisition-Related Growth ≥1 Carloads Processed Per Day

Yard Information			Cars Processed Per Day					Projected Releases per Year	
Yard Name	Railroad	State	Base	Organic Growth	2027 No-Action Alternative	Acquisition-Related Growth	2027 Proposed Acquisition	2027 No-Action Alternative	2027 Proposed Acquisition
Advance	KCS	Louisiana	38.0	10.0	48.0	1.1	49.1	0.08	0.04
Arbela	KCS	Mississippi	147.7	39.0	186.7	2.1	188.8	0.31	0.17
Artesia	KCS	Mississippi	370.2	97.7	468.0	2.2	470.1	0.77	0.42
Ashdown	KCS	Arkansas	46.2	12.2	58.4	7.9	66.2	0.10	0.06
Baton Rouge	KCS	Louisiana	413.4	109.1	522.5	5.2	527.7	0.86	0.47
Bensenville Yard	CP	Illinois	1,139.2	300.7	1,439.9	367.7	1,807.6	1.27	1.60
Blue Island	CP	Illinois	9.4	2.5	11.9	1.4	13.2	0.01	0.01
Bossier City	KCS	Louisiana	63.1	16.6	79.7	1.5	81.2	0.13	0.07
Calumet	CP	Illinois	180.9	47.8	228.7	2.0	230.7	0.20	0.20
Chicago	CP	Illinois	408.2	107.8	516.0	3.8	519.7	0.46	0.46
Chicago Clearing	CP	Illinois	705.6	186.3	891.9	2.0	893.9	0.79	0.79
Cordova	CP	Illinois	6.9	1.8	8.7	3.4	12.1	0.01	0.01
Cottage Grove	CP	Minnesota	103.3	27.3	130.6	8.6	139.2	0.12	0.12
Cotton Valley	KCS	Louisiana	12.7	3.3	16.0	1.4	17.4	0.03	0.02
Dallas	KCS	Texas	78.7	20.8	99.5	8.4	107.9	0.16	0.10
Davis Junction	CP	Illinois	15.4	4.1	19.5	1.2	20.7	0.02	0.02
Det Con Term	CP	Michigan	26.3	6.9	33.2	23.2	56.5	0.03	0.05
Geismar	KCS	Louisiana	33.8	8.9	42.7	1.3	44.0	0.07	0.04

Table 3.1-10. Rail Yards with Acquisition-Related Growth ≥1 Carloads Processed Per Day

Yard Information			Cars Processed Per Day					Projected Releases per Year	
Yard Name	Railroad	State	Base	Organic Growth	2027 No-Action Alternative	Acquisition-Related Growth	2027 Proposed Acquisition	2027 No-Action Alternative	2027 Proposed Acquisition
Gibsland	KCS	Louisiana	45.4	12.0	57.3	1.3	58.6	0.09	0.05
Glenwood	CP	Minnesota	259.8	68.6	328.4	6.3	334.8	0.29	0.30
Hughes Springs	KCS	Texas	29.3	7.7	37.0	3.3	40.3	0.06	0.04
Intl Freight Gate	KCS	Missouri	98.0	25.9	123.8	19.3	143.1	0.20	0.13
Kendleton	KCS	Texas	90.1	23.8	113.9	2.2	116.1	0.19	0.10
Mason City	CP	Iowa	124.4	32.8	157.3	21.4	178.7	0.14	0.16
Milwaukee	CP	Wisconsin	141.2	37.3	178.5	10.5	189.0	0.16	0.17
Minneapolis Humbo	CP	Minnesota	53.6	14.2	67.8	1.0	68.8	0.06	0.06
Muscatine	CP	Iowa	226.7	59.9	286.6	5.4	291.9	0.25	0.26
Nahant	CP	Iowa	363.7	96.0	459.8	8.4	468.1	0.41	0.41
New Orleans	KCS	Louisiana	364.1	96.1	460.2	6.3	466.5	0.76	0.41
Ottumwa	CP	Iowa	217.8	57.5	275.3	1.0	276.3	0.24	0.24
Pittsburg	KCS	Texas	14.7	3.9	18.6	2.7	21.3	0.03	0.02
Port Arthur	KCS	Texas	245.4	64.8	310.2	209.4	519.6	0.51	0.46
Port Neches	KCS	Texas	245.7	64.9	310.6	2.1	312.7	0.51	0.28
Princeton	CP	Iowa	7.7	2.0	9.7	1.5	11.2	0.01	0.01
Schiller Park Yard	CP	Illinois	58.6	15.5	74.0	76.5	150.6	0.07	0.13
Shoreham Yard	CP	Minnesota	70.6	18.6	89.2	28.7	117.8	0.08	0.10
Shreveport	KCS	Louisiana	1,245.4	328.8	1,574.2	80.7	1,654.9	2.58	1.46

Table 3.1-10. Rail Yards with Acquisition-Related Growth ≥1 Carloads Processed Per Day

Yard Information			Cars Processed Per Day					Projected Releases per Year	
Yard Name	**Railroad**	**State**	**Base**	**Organic Growth**	**2027 No-Action Alternative**	**Acquisition-Related Growth**	**2027 Proposed Acquisition**	**2027 No-Action Alternative**	**2027 Proposed Acquisition**
Sibley	KCS	Louisiana	19.9	5.3	25.2	1.4	26.6	0.04	0.02
St. Paul	CP	Minnesota	1,805.1	476.6	2,281.7	69.7	2,351.3	2.01	2.08
Thief River Falls	CP	Minnesota	97.0	25.6	122.6	6.1	128.8	0.11	0.11
Tracy	CP	Minnesota	176.1	46.5	222.6	21.7	244.3	0.20	0.22
Wylie	KCS	Texas	260.7	68.8	329.6	137.0	466.5	0.54	0.41

No-Action Alternative

Under the No-Action Alternative, the Proposed Acquisition would not occur, and CP would not acquire KCS. Therefore, the projected increase in rail traffic on rail lines and projected increase in operational activities at rail yards would not occur as a result of the Proposed Acquisition. However, the Applicants expect that both the CP and the KCS networks would experience organic growth in rail traffic under the No-Action Alternative. Therefore, the number of hazardous material releases along rail lines and in rail yards under the No-Action Alternative likely would be higher than under current conditions but lower than under the Proposed Acquisition. Across all of the CP and KCS rail line segments in the study area, OEA projects that a total of 10.36 total releases would occur per year under the No-Action Alternative compared to 12.88 releases per year under the Proposed Acquisition. Across all of the rail yards in the study area, OEA projects that a total of 23.50 releases would occur per year, compared to 24.99 releases per year under the Proposed Acquisition.

3.1.2.4 Conclusion

As outlined in **Table F.2-2** and **Table F.2-5**, OEA expects the number of hazardous material releases would remain low on both the affected rail line segments and yards. On rail segments, OEA expects that CPKC release rates would range on average from 1.02 releases per year to zero releases per year, with some segments likely to see a reduction in average number of releases. OEA expects that rail yards would also have low release rates, averaging from 2.82 releases per year to near zero releases per year, and some yards are likely to have a reduction in average number of releases.

Based on the information in *Section 3.1.2.2, Affected Environment*, 91 percent of releases were not accident related (for example, the releases were in a yard or a shipper's facility). OEA expects that most incidents would be minor, and the majority of releases would not be caused by train accidents. The Applicants expect that the Proposed Acquisition would increase the volumes of certain hazardous commodities on rail lines in the study area, but the majority of that traffic is already moving by rail on other carriers' lines. The Applicants forecast that the efficiencies created by the Proposed Acquisition would allow CPKC to capture a portion of the hazardous material traffic from those other carriers to the combined CPKC system. Therefore, OEA expects that any potential increase in the number of releases along rail line segments on the combined CPKC network would be partially offset by a reduction in the number of releases along other rail lines owned and operated by other railroad companies. In addition, to the extent that the transportation of hazardous materials could be diverted from truck to rail as a result of the Proposed Acquisition, the probability of a release occurring would decrease because rail transportation is generally safer than truck transportation.

To further minimize the potential release of hazardous materials and the potential for a hazardous materials release to affect human health and the environment, the Applicants have proposed voluntary mitigation measures to reduce potential adverse impacts, including a commitment to notify appropriate federal, state, and local agencies in the event of a reportable hazardous materials release (VM-Rail-02) and the commitment to conduct training workshops for emergency responders in communities through which dangerous goods are transported (VM-Rail-03). Additionally, a condition requiring completion of the

SIP process and compliance with the SIP per FRA and Board requirements (49 C.F.R. Part 1106) would reduce the probability of incidents occurring (VM-Rail-02).

3.1.3 Passenger Rail Safety

This section describes the affected environment, and environmental consequences for passenger rail safety.

3.1.3.1 Approach

The Applicants do not expect that the Proposed Acquisition would result in an increase in passenger rail traffic on rail lines in the combined CPKC network.[8] However, the Proposed Acquisition could affect passenger rail safety because it would cause an increase in the average daily number of freight trains on rail lines that passenger trains also use. In general, increased freight rail traffic on rail lines that are used for passenger service has the potential to increase the probability of collisions between freight and passenger trains.

The threshold for passenger rail safety analysis here is an increase of one or more freight trains per day due to the Proposed Acquisition of KCS by CP, on rail line segments where freight and passenger rail operations share tracks. OEA applied this analysis threshold, also used in previous mergers, as a conservative benchmark to identify potential impacts on passenger rail in shared corridors. The Applicants' Operating Plan identifies nine rail line segments with passenger rail service that would exceed OEA's threshold for analysis due to the Proposed Acquisition.

As part of the passenger rail safety analysis, OEA reviewed current operating agreements between the Applicants and passenger service operators on rail line segments in the study area. Operating agreements set parameters for each railroad's movements and track occupancy to address the inherently competing interests of the freight and passenger rail service. Operating agreements establish protocols for using track sections during certain times of day and identify operating priorities and dispatching responsibilities among other provisions. The existing operating agreements between passenger rail service operators and the Applicants that OEA reviewed preclude actions by the Applicants that would result in a reduction in established commuter or intercity passenger rail service frequency. The agreements allow for increases in intercity passenger service in some cases, and commuter passenger rail service, only in established time periods.

Table 3.1-11 shows the nine rail line segments on which the Applicants share trackage with a passenger rail operator that would increase above the analysis threshold under the Proposed Acquisition. Two intercity passenger rail services (Amtrak Sunset Limited and Empire Builder) and two commuter rail services (Metra Milwaukee District West Line and Metro Transit Northstar) operate on segments where freight traffic would increase above the analysis threshold due to the Proposed Acquisition. Therefore, OEA analyzed those

[8] OEA is aware that Amtrak intends to increase passenger rail service on certain rail lines within the CPKC network in the future. However, those potential increases in Amtrak service would not occur as a result of the Proposed Acquisition and therefore are appropriately considered in *Section 3.14, Cumulative Impacts*.

segments to determine the impact of the Proposed Acquisition on the passenger rail services that operate over these segments.

To evaluate potential impacts to passenger rail safety resulting from the Proposed Acquisition, OEA calculated a nationwide freight and passenger train collision rate (nationwide incident rate) in collisions per million passenger train miles. The nationwide incident rate covers the most recent 10 years of data from January 1, 2008, to December 31, 2018, and only includes collision incidents between freight and passenger trains. The potential nationwide incident rate includes head-on, rear-end, and side-collisions between passenger and freight trains. Passenger train incidents unrelated to freight trains that occurred on shared rail line segments are not included. The nationwide incident rate does not include other incident types such as fire, collisions with obstructions, and derailments that are not initially caused by a freight and passenger train collision.

Table 3.1-11. Existing (2019) Freight and Passenger Traffic on CP and KCS Lines that Exceed Board Thresholds for Analysis

Rail Line Segment				Rail Line Corridor	Rail Segment Owner (Trackage Rights)	Passenger Service Provider	Existing Train Traffic (trains per day)		
Between	And	Segment Code	Segment Length				Passenger Trains	Freight Trains	Total Trains
Tower B12, IL	Bensenville Metra Station, IL	C-ELGI-02	4.6	Chicago Union Station to Big Timber Station (Elgin, IL)	Metra	Metra	58 (Weekday)	29.4	87.4
Bensenville Metra Station, IL	Randall Road, IL	C-ELGI-01	23.0	Chicago Union Station to Big Timber Station (Elgin, IL)	Metra	Metra	57 (Weekday)	3.2	60.2
St. Paul Yard, MN	Northtown, MN	B-TWIN-01	14.7	Chicago to Seattle/Portland via Minneapolis (Amtrak), Minneapolis to Big Lake (Northstar)	BNSF (CP)	Amtrak, Metro Transit	14	16.7	30.7
River Jct, MN	Newport, MN	C-RIVE-02	114.5	Chicago to Seattle/Portland via Minneapolis	CP	Amtrak	2	16.2	18.2
Newport, MN	Minneapolis, MN	C-RIVE-01	16.5	Chicago to Seattle/Portland via Minneapolis	CP	Amtrak	2	13.7	15.7
Beaumont, TX	Rosenberg, TX	U-BEAU-01	120.1	New Orleans to Los Angeles via Minneapolis	UP (KCS)	Amtrak	0.9	8.5	9.3
De Quincy, LA	Beaumont, TX	K-BEAU-03	47.6	New Orleans to Los Angeles via Houston	KCS	Amtrak	0.9	8.7	9.5
Marquette, IA	River Jct, MN	C-MARQ-01	28.4	Chicago to Seattle/Portland via Minneapolis	CP	Amtrak	2	4.7	6.7
Hoffman St. Paul, MN	Fordson Jct, MN	C-MEPA-01	4.9	Chicago to Seattle/Portland via Minneapolis	CP	Amtrak	2	1	3

Sources: Amtrak (2019), Metra (2019), Metro Transit (2019), Canadian Pacific Railway (2021), ArcGIS (2019)

OEA determined the nationwide incident rate as approximately 0.0047 collisions per million passenger train miles or approximately 2.2 years between incidents throughout the U.S. passenger rail network. To predict future collision frequencies, OEA applied the nationwide incident rate to estimated operations on rail line segments shared between passenger and freight trains, specifically, to segments that would potentially increase in freight train traffic of one train or more per day under the Proposed Acquisition. OEA's approach to predicting passenger rail safety conservatively assumes freight and passenger rail operations are mixed throughout the day even though in many cases they have separate operating windows by time period in accordance with their operating agreements. OEA predicted incident frequencies using incident rates per year and intervals between collisions in years on the nine rail line segments where passenger and freight trains share trackage with an increase of one or more freight trains per day due to the Proposed Acquisition. First, OEA multiplied the national incident rate by the total train miles in the future with the Proposed Acquisition (2027), divided by the total train miles in the existing conditions for each of the nine segments. That number was then multiplied by the total train miles on a segment basis to obtain the predicted annual collision rate. The results are also expressed in terms of the estimated number of years between predicted collisions, which was obtained by dividing 1 by the annual rate (**Table 3.1-13**). **Appendix F** further explains the safety analysis calculation methods.

3.1.3.2 Affected Environment

For the existing conditions in 2027 for passenger rail services, OEA used 2019, the last full year before the COVID-19 pandemic began in early 2020, which led to significant service reductions on commuter and intercity passenger rail lines throughout the U.S. Full pre-pandemic passenger rail service has not been restored as of June 2022; therefore, 2019 schedules were conservatively assumed. Passenger rail services in the project area include intercity rail services and commuter rail services. There are 47 rail segments where CP or KCS freight operations share trackage with passenger rail services. **Table F.3-1** in **Appendix F** contains a table of these 47 rail segments. According to FRA collision data between 2015 and 2019 (the most recent available five-year time frame), no collisions between a freight and passenger train occurred on any of these 47 shared rail segments.

Intercity Rail Service

The National Passenger Railroad Corporation (Amtrak) operates long haul and short haul intercity passenger rail services in the U.S. Amtrak trains operate on trackage on which CP also operates in New York, Illinois, Wisconsin, and Minnesota. Amtrak operates on track where KCS trains also operate in Illinois, Louisiana, and Texas. Per the Rail Passenger Service Act of 1970, as amended, Amtrak intercity passenger rail trains have operating priority over freight trains.

In New York, Amtrak's Adirondack Service operates on a 178-mile segment that CP owns between Schenectady and Rouses Point near the Canadian border. Amtrak's Ethan Allen service between New York City and Rutland, Vermont, also operates on a 60-mile portion of the same segment between Schenectady and Whitehall. Both services operate daily with one train in each direction. None of the New York segments on which Amtrak operates

meet the Board's threshold for passenger rail operation environmental analysis because the projected increase in freight is less than one train per day.

In the Midwest, the Amtrak Empire Builder operates on a 384-mile segment from Rondout, Illinois, to St. Paul, Minnesota, and through Wisconsin, where CP operates. The Empire Builder is a daily long haul Amtrak service that operates between Chicago and Seattle/Portland via Minneapolis. Some segments of the Empire Builder are owned by BNSF, on which CP has operating rights. The Amtrak Hiawatha Line also operates on a 53-mile portion of the segment between Rondout, Illinois, and Milwaukee, Wisconsin. Amtrak operates 14 Hiawatha trains and two Empire Builder trains per day over those segments. In Illinois, northeast of St. Louis, Missouri, the Amtrak Lincoln and Texas Eagle services use KCS trackage on a 20.8-mile-long segment between Godfrey and East St. Louis. KCS has trackage rights from UP on the northern portion of the segment between Godfrey and East Alston. Amtrak operates eight Lincoln Service and two Texas Eagle trains per day on this segment. Two Amtrak services, the Lake Shore Limited and Capitol Limited, use a 151-mile segment of NSR trackage on which CP has operating rights, between northeastern Illinois and Butler, Indiana.

In New Orleans, Louisiana, Amtrak operates the Sunset Limited and the City of New Orleans services daily in each direction on an eight-mile segment of CN trackage on which KCS has operating rights. In Texas, Amtrak's long haul Sunset Limited service operates six times per week over a 120-mile segment of UP track between Beaumont and Rosenberg, on which KCS also has operating rights, and a KCS-owned 1.8-mile segment in and just east of Beaumont. Sunset Limited service operates between New Orleans and Los Angeles via Houston.

Commuter Rail Service

There are two existing commuter rail operators in the project area that share trackage with CP: the Northern Illinois Railroad Corporation (Metra) in the Chicago, Illinois, area and Metro Transit in the Minneapolis, Minnesota area. One planned future commuter rail service, the Dallas Area Rapid Transit (DART) Silver Line, would overlap with KCS trackage (segment KALLI-03) in the area of Plano, Texas. DART anticipates that Silver Line service will begin in 2023.

Under an operating agreement with Metra, CP has trackage rights across approximately 67.3 miles of track owned by Metra on two of its lines, the Milwaukee District-West (MD-W) line and the Milwaukee District-North (MD-N) line. The MD-W line runs from Chicago Union Station to Big Timber Station in Elgin, Illinois. CP has operating rights on 34.3 miles of the MD-W line. In 2019, the MD-W line had an estimated 5.9 million annual passenger trips, or approximately 20,600 weekday riders, and operated 58 daily trains. The MD-N line runs from Chicago Union Station to Fox Lake, Illinois, and Metra and CP share operations for 47 miles on the line. Metra owns 33 miles of the line from Union Station to Rondout, Illinois, and CP owns 17 miles from Rondout to Fox Lake. In 2019, the MD-N had an estimated 6.5 million annual passenger trips, or approximately 22,100 weekday riders, and operated 63 daily trains.

CP has trackage rights on a BNSF-owned segment shared with Northstar, a 40-mile commuter rail line that connects downtown Minneapolis and Big Lake, Minnesota, which is operated by Metro Transit. As of 2019, Metro Transit operated 12 Northstar trains on weekdays and six trains on weekend days, carrying 787,000 passengers per year in 2018.

3.1.3.3 Environmental Consequences

The following describes the environmental consequences of the Proposed Acquisition and the No-Action Alternative for passenger rail safety.

Proposed Acquisition

Two Amtrak intercity services, the Empire Builder and the Sunset Limited, and two commuter rail services, the Metra MD-W line and the Metro Transit Northstar line, operate on rail line segments that would experience freight traffic increases above the analysis threshold for passenger rail safety of one or more additional freight trains per day, on average.

Amtrak's Sunset Limited service operates over a 1.8-mile portion of the 47.6-mile-long segment K-BEAU-03 through Beaumont, Texas. It also operates over segment U-BEAU-01, which extends 120 miles from Beaumont through Houston, Texas to Rosenberg, Texas. Although UP owns segment U-BEAU-01, KCS has operating rights over the segment (**Figure 3.1-1**). The Applicants expect that the Proposed Acquisition would increase freight traffic on segment K-BEAU-03 and segment K-BEAU-01 by an average of 11 freight trains and 7.6 freight trains per day, respectively (**Table 3.1-12**).

Amtrak's Empire Builder service operates on five segments shared by CP that would potentially experience an increase in freight trains as a result of the Proposed Acquisition (**Figure 3.1-2**). Segments C-RIVE-02 and C-MARQ-01, which connect at River Junction, Minnesota, would potentially increase by six freight trains per day for a total of 25.1 and 13.3 combined passenger and freight trains per day, respectively (**Table 3.1-12**). Segment C-MEPA-01 would potentially increase by 3.6 freight trains per day to 4.6 freight trains (6.6 trains total including two daily passenger trains). Segment C-RIVE-01 has shared trackage between passenger and freight trains on 13.5 miles of its 16.5-mile extent and would potentially increase by 4.6 freight trains per day for a total of 19.1 freight trains, and 21.1 total trains, including two daily passenger trains (**Table 3.1-12**). Segment B-TWIN-01, a BNSF-owned segment in Minneapolis over which CP has operating rights, would potentially increase by 5.6 freight trains per day as a result of the Proposed Acquisition, for a total of 23.1 CP trains daily and 37.1 trains overall, including intercity and Northstar commuter trains.

Table 3.1-12. Post-Acquisition Freight and Passenger Traffic on CP and KCS Lines that Exceed the Board's Analysis Threshold

Rail Line Segment				No-Action Alternative - 2027 Train Traffic (trains per day)			Proposed Acquisition - 2027 Train Traffic (trains per day)			Change in Freight Train Traffic
Between	And	Segment Code	Segment Length	Passenger Trains	Freight Trains	Total Trains	Passenger Trains	Freight Trains	Total Trains	
De Quincy, LA	Beaumont, TX	K-BEAU-03	47.6	0.9	9.3	10.2	0.9	20.3	21.1	11.0
Bensenville Metra Station, IL	Randall Road, IL	C-ELGI-01	23.0	57	3.4	60.4	57	11.4	68.4	8
Beaumont, TX	Rosenberg, TX	U-BEAU-01	120.1	0.9	9.3	10.1	0.9	16.8	17.7	7.6
Tower B12, IL	Bensenville Metra Station, IL	C-ELGI-02	4.6	58	30.5	88.5	58	37.0	95.0	6.4
River Jct, MN	Newport, MN	C-RIVE-02	114.5	2	17.1	19.1	2	23.1	25.1	6
Marquette, IA	River Jct, MN	C-MARQ-01	28.4	2	5.3	7.3	2	11.3	13.3	6
St. Paul Yard, MN	Northtown, MN	B-TWIN-01	14.7	14	17.5	31.5	14	23.1	37.1	5.6
Newport, MN	Minneapolis, MN	C-RIVE-01	16.5	2	14.5	16.5	2	19.1	21.1	4.6
Hoffman St. Paul, MN	Fordson Jct, MN	C-MEPA-01	4.9	2	1	3	2	4.6	6.6	3.6

Sources: Amtrak (2019), Metra (2019), Metro Transit (2019), Canadian Pacific Railway (2021), ArcGIS (2019)

Figure 3.1-1. Shared Passenger/Freight Segments that Exceed the Board's Analysis Threshold – Beaumont to Rosenberg, Texas

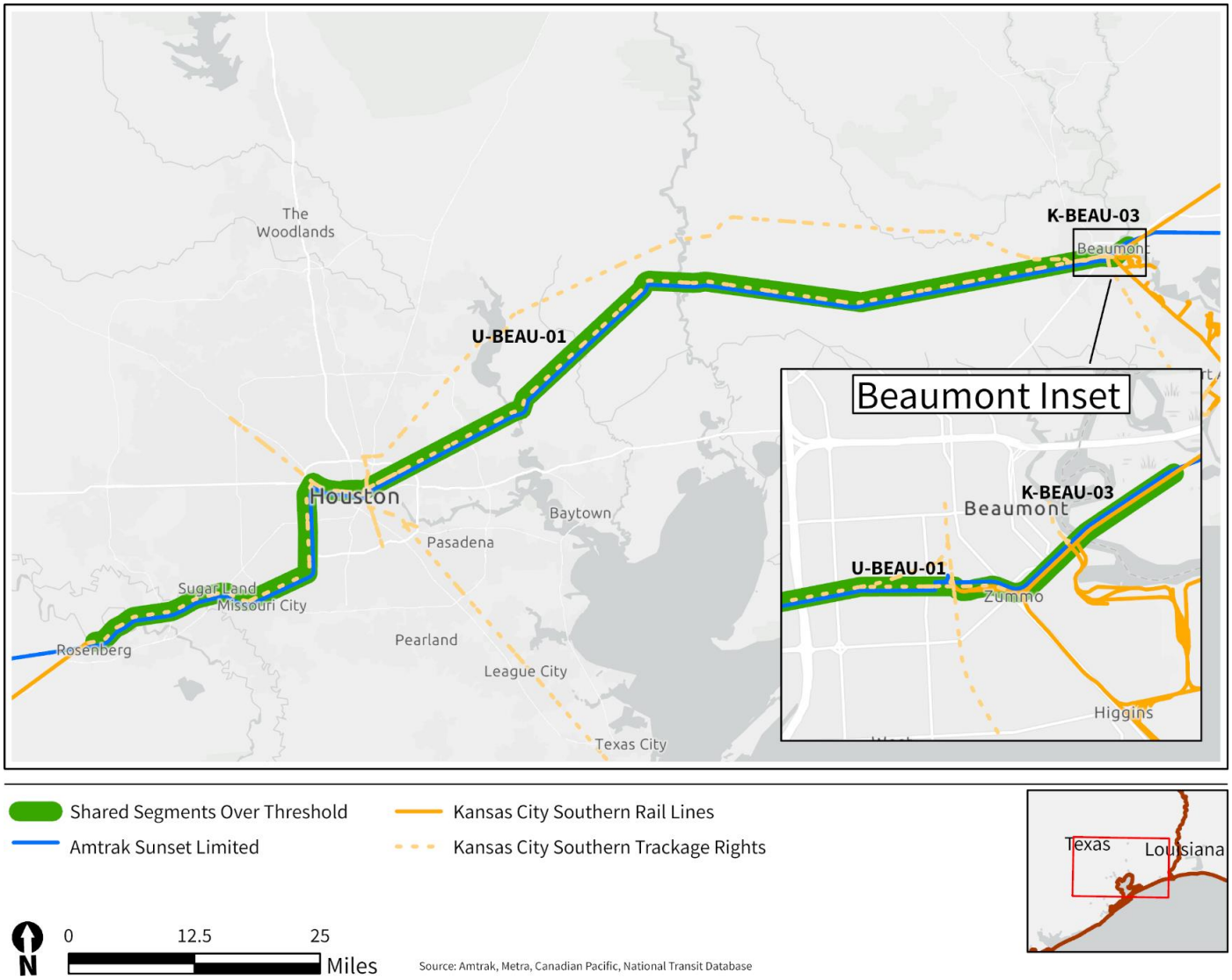
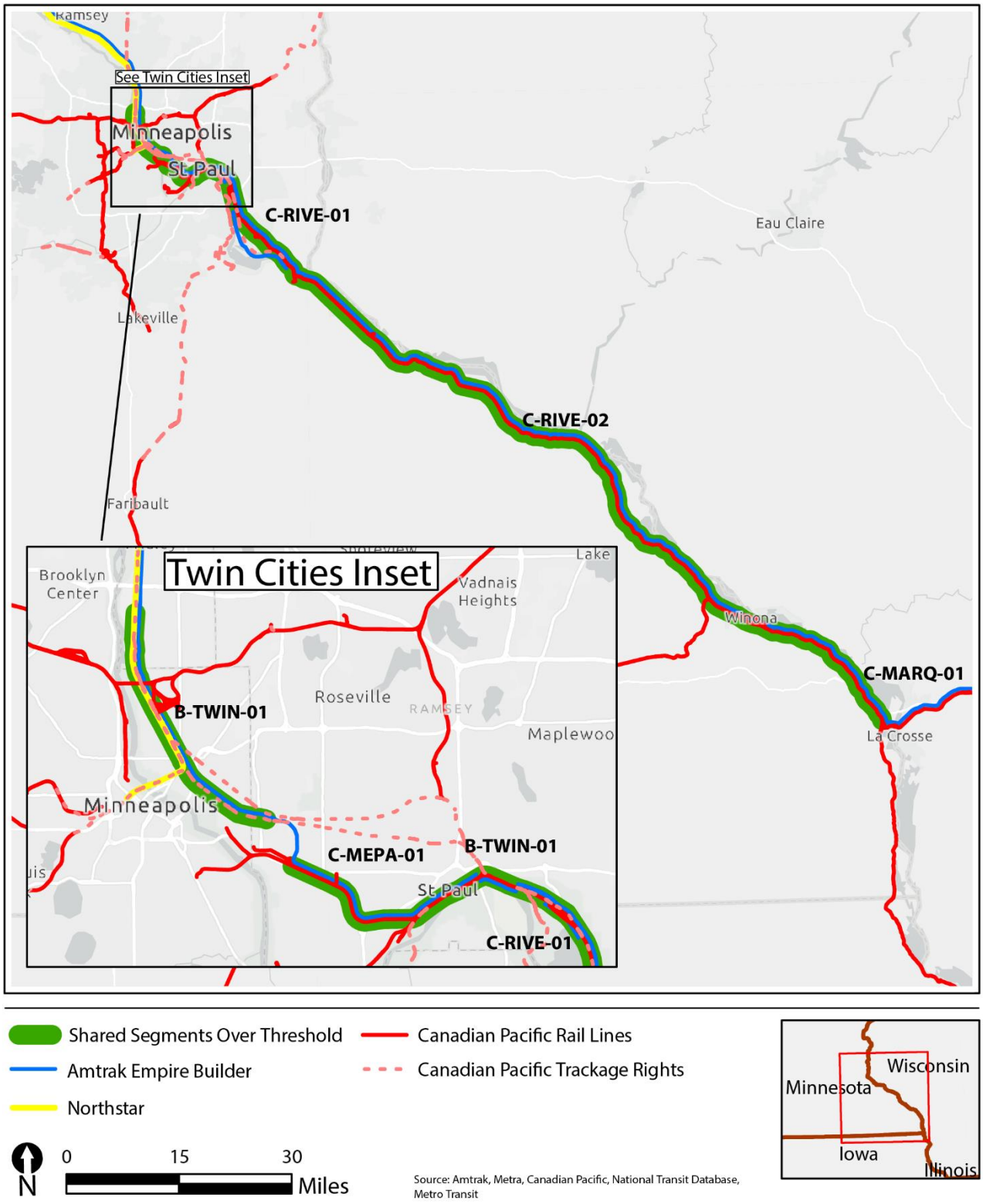


Figure 3.1-2. Shared Passenger/Freight Segments that Exceed the Board's Analysis Threshold – Minneapolis to La Crescent, Minnesota



The Metra MD-W line operates on two track segments (C-ELGI-01 and C-ELGI-02) where rail traffic would increase as a result of the Proposed Acquisition (**Figure 3.1-3**). Segment C-ELGI-01, which is 23 miles long and stretches from Metra's Bensenville Station to the last stop on the MD-W line in Elgin, Illinois, would experience a projected increase of eight daily freight trains, on average, for a total of 11.4 daily freight trains. Including 57 daily Metra passenger trains on the MD-W Line, this segment would have 68.4 daily trains under the Proposed Acquisition (**Table 3.1-12**). C-ELGI-02, a 4.6-mile segment east of C-ELGI-01 and west of Chicago Union Station, would experience a projected increase of 6.4 freight trains per day as a result of the Proposed Acquisition, which would result in a daily total of 37 freight trains per day, on average. Metra operates 58 passenger trains per day on segment C-ELGI-02, for a combined total with freight operations of 95 total trains per weekday. Segments C-ELGI-01 and C-ELGI-02 are double tracked at a minimum and Centralized Traffic Controlled, which maximizes available track capacity. Metra and CP's operating agreement over Metra-owned tracks provides full operating rights to Metra during a.m. and p.m. peak period operating windows, in addition to several scheduled trips outside the peak periods.[9] Metra uses all tracks on the corridor to provide local and zone-express commuter service[10] to and from Chicago Union Station. CP is obligated to protect these windows to avoid interfering with scheduled Metra trains. All freight traffic growth resulting from the Proposed Acquisition would need to adhere to the established agreement with Metra and be scheduled around the agreed upon operating times.

The Metro Transit Northstar commuter line shares approximately 5.7 miles of segment B-TWIN-01 with freight and Amtrak trains. This segment, specifically the BNSF Midway Subdivision that is part of the BNSF-owned and -dispatched Twin Cities Division, would potentially see an increase of 5.6 freight trains per day as a result of the Proposed Acquisition, for a total of 23.1 CP trains daily. With growth in freight traffic as a result of the Proposed Acquisition, the segment would total 37.1 freight and passenger trains per day (**Table 3.1-12**). This analysis conservatively assumes that freight and commuter rail operations share approximately 5.7 miles of the B-TWIN-01 segment; however, the Northstar service typically only overlaps with CP operations for approximately 1.2 miles because many CP trains access Shoreham Yard and the CP Paynesville Subdivision by diverting to or from B-TWIN-01. CP's yard and the junction with the Paynesville line use tracks on the east side of the corridor and Northstar typically operates on the west side of the corridor.

As a result of the Proposed Acquisition, the predicted annual collision rate would increase and the interval between collisions (years) would decrease for each of the nine identified segments (**Table 3.1-13**). Segment U-BEAU-01 would have the highest predicted annual collision rate of 0.007002 and the shortest interval between collisions (142 years). Segment C-MEPA-01 would have the lowest predicted annual collision rate of 0.000124 and the longest interval between collisions (8,083 years) in the future with the Proposed Acquisition.

9 Metra a.m. peak corresponds to trains arriving in Chicago between 6:30 a.m. and 9:30 a.m., and p.m. peak corresponds to trains departing Chicago between 3:00 p.m. and 7:00 p.m. on weekdays.

10 Zone-express commuter service skips some local stops to provide faster overall trip times. These trains typically operate during the peak periods only and may pass a local train if the track infrastructure and capacity is available.

No-Action Alternative

Under the No-Action Alternative, the Proposed Acquisition would not occur, and CP would not acquire KCS. However, the Applicants expect that both the CP and the KCS networks would experience organic growth in freight rail traffic under the No-Action Alternative as a result of general economic growth. Because of this organic growth, the Applicants expect that the average volume of freight rail traffic would increase on 41 of the 47 rail segments on which CP or KCS operate and share trackage with passenger rail services (**Table F.3-2** in **Appendix F**). OEA assumed that there would be no change to the passenger rail service under the No-Action Alternative compared to the existing conditions. Under the No-Action Alternative, the lowest predicted interval between collisions (years) was 250 years on segment C-RIVE-02, (a 0.003995 annual collision rate) and 39,003 years on segment C-MEPA-01, (a 0.000026 annual collision rate) as summarized in **Table 3.1-13.**

Figure 3.1-3. Shared Passenger/Freight Segments that Exceed the Board's Analysis Threshold – Chicago to Elgin, Illinois

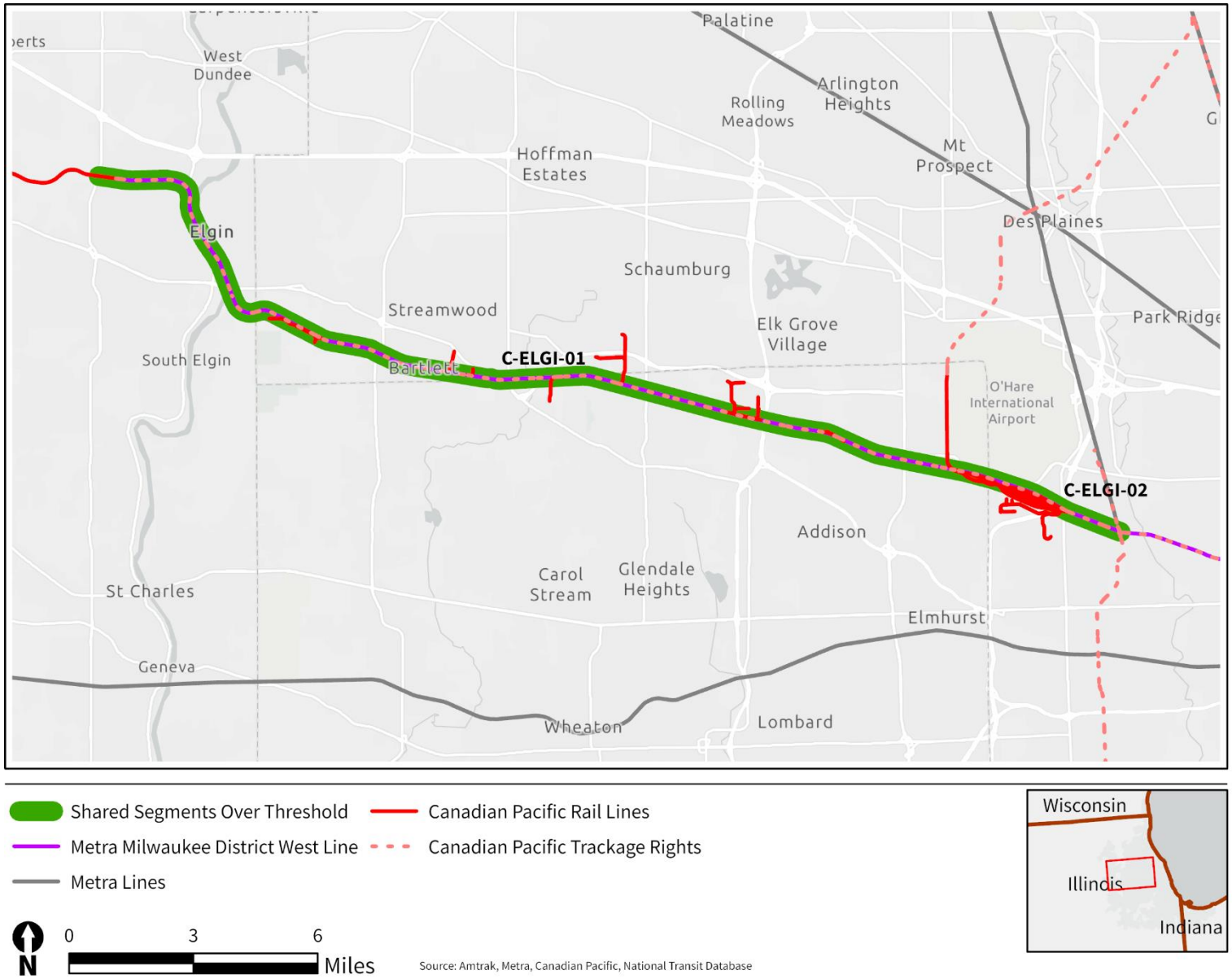


Table 3.1-13. Predicted Intervals Between Collisions

Rail Line Segment					Collisions Per Year		Years between Collisions	
Between	And	Segment Code	Segment Length	Length of Passenger Rail Operations on Segment (miles)	No-Action Alternative	Proposed Acquisition	No-Action Alternative Predicted Interval	Proposed Acquisition Predicted Interval
De Quincy, LA	Beaumont, TX	K-BEAU-03	47.6	1.8	0.000034	0.000148	29,177	6,753
Bensenville Metra Station, IL	Randall Road, IL	C-ELGI-01	23.0	23.0	0.002019	0.002715	495	368
Beaumont, TX	Rosenberg, TX	U-BEAU-01	120.1	120.1	0.002294	0.007020	436	142
Tower B12, IL	Bensenville Metra Station, IL	C-ELGI-02	4.6	4.6	0.000634	0.000743	1,576	1,345
River Jct, MN	Newport, MN	C-RIVE-02	114.5	114.5	0.003995	0.006906	250	145
Marquette, IA	River Jct, MN	C-MARQ-01	28.4	3.6	0.000050	0.000166	20,022	6,017
St. Paul Yard, MN	Northtown, MN	B-TWIN-01	14.7	7.7 (Amtrak) 5.7 (Northstar)	0.000376	0.000547	2,660	1,828
Newport, MN	Minneapolis, MN	C-RIVE-01	16.5	13.5	0.000411	0.000671	2,433	1,489
Hoffman St. Paul, MN	Fordson Jct, MN	C-MEPA-01	4.9	4.9	0.000026	0.000124	39,003	8,083

3.1.3.4 Conclusion

OEA concludes that the probability of a collision between freight and passenger trains would be very low under the Proposed Acquisition. The Applicants expect that the Proposed Acquisition would result in an increase in one or more freight trains per day on nine rail segments that share trackage with a passenger rail operator and thus meet the Board's analysis threshold. The probability of a collision occurring on any of those nine rail line segments would be very low under either the Proposed Acquisition or the No-Action Alternative. Across all nine rail line segments, OEA predicts a total of 0.98 collisions per 100 years between freight and passenger trains would occur each year under the No-Action Alternative. By comparison, OEA predicts a total of 1.90 collisions per 100 years across all nine rail segments in the future with the Proposed Acquisition. The Applicants' voluntary mitigation measures, as set forth in *Chapter 4, Mitigation*, would minimize the potential for passenger rail impacts. In addition, the Applicants would be required to complete the SIP process and implement the SIP, when it is finalized, and the SIP includes provisions that address safety on rail lines that are shared with passenger trains. FRA would monitor the Applicants' implementation of the SIP during the operations integration period, consistent with the governing FRA regulations at 49 C.F.R. Part 244 and the Board's regulations at 49 C.F.R. Part 1106. Given this mitigation, and because the probability of a collision between freight and passenger trains would be very low on any rail line segment in the combined CPKC network, OEA concludes that additional mitigation to address such impacts is unnecessary.