3.3 Grade Crossing Delay

This section describes the existing conditions and environmental consequences for vehicular delay at roadway/rail at-grade crossings (grade crossings) resulting from the Proposed Acquisition. If the Board were to authorize the Proposed Acquisition, the Applicants expect that rail traffic would increase and average train lengths would decrease on certain rail line segments along the combined CPKC network. Increases in rail traffic would increase the total amount of time during the day that some grade crossings would be closed to vehicle traffic, which would cause delay for drivers. However, reductions in train lengths would reduce the average time a grade crossing would be blocked by each passing train. The subsections that follow describe the approach used to analyze the impacts, the affected environment, and the impacts of the Proposed Acquisition on grade crossing delay. In assessing grade crossing delay impacts, OEA considered federal, state, and local regulatory frameworks for transportation, including the requirements of the FHWA and the FRA, which both have jurisdiction over aspects of grade crossing safety under federal law.

3.3.1 Approach

This subsection discusses OEA's approach for estimating the expected delay at grade crossings under the Proposed Acquisition and the No-Action Alternative. During the scoping process leading to the preparation of this Draft EIS, many commenters expressed concern to OEA that the Proposed Acquisition would increase delay at grade crossings due to the projected increase in rail traffic. Drivers travelling on roadways experience delay whenever passing trains temporarily block crossings. For roads with low levels of vehicular traffic, the delay that drivers experience is approximately equal to the amount of time it takes the passing train to clear the crossing, which depends on the length of the train and the speed at which it is moving. For busier roads with more vehicle traffic, delays at crossings can be made longer by the queue of vehicles waiting for the passing train to clear the crossing. The longest delays occur when a train passes through a crossing on a busy road during the hours of peak traffic. Long delays can also occur when a train stops unexpectedly due to a crash or breakdown while traversing a crossing, but such events are relatively rare.

Consistent with past practices in other acquisition proceedings and thresholds set forth in the Board's environmental regulations at 49 C.F.R. § 1105.7(e)(5), OEA defined the study area for the grade crossing delay analysis to include all rail line segments where the Proposed Acquisition would result in a projected increase in rail traffic of eight or more additional freight trains per day or a 100 percent or greater increase in annual GTM. The study area also includes rail line segments in air quality nonattainment areas and Class I areas (areas managed by the National Park Service [NPS], U.S. Fish and Wildlife Service [USFWS], U.S. Forest Service, and several Native American Tribes) that would experience an increase of the segments with three or more additional freight trains per day or a 50 percent or more increase in annual GTM as a result of the Proposed Acquisition. OEA applies a lower threshold in nonattainment and Class I areas for grade crossing delay analysis because grade

crossing delay can affect air quality by increasing the amount of time that motor vehicles spend idling at crossings.

To quantify changes in delay, OEA relied on rail traffic and vehicle traffic data projected out to the analysis year 2027. OEA then compared the predicted delay at grade crossings under the Proposed Acquisition to the predicted delay under the No-Action Alternative. OEA did not estimate delay at grade-separated crossings because those crossings do not create a potential for delay impacts. OEA did not estimate delay at private and pedestrian only crossings because of very low traffic volumes.

Consistent with past practice, OEA quantified delay impacts for grade crossings on roadways with an AADT of 2,500 or more vehicles per day. Most of the grade crossings in the study area are on roadways with an AADT of less than 2,500 vehicles per day. Because so few vehicles use crossings on those roadways, the average total increase in delay at those crossings as a result of increased rail traffic would be negligible. Although OEA did not quantify delay impacts at grade crossings with an AADT of less than 2,500 vehicles per day, **Table H.1-1** in **Appendix H** provides information for those grade crossings, and for all other grade crossings in the study area, including the estimated time that a passing train would take to pass through the crossing under the Proposed Acquisition and the No-Action Alternative. In characterizing the current and future conditions of highly trafficked grade crossings in the study area, OEA considered performance measures such as blocked crossing time per train; crossing delay per stopped vehicle; number of vehicles delayed per day; maximum vehicle queue length; average delay per vehicle in a 24-hour period; total vehicle delay per day; and level of service (LOS). LOS is a qualitative measure of motor vehicle traffic flow, indicated by letters from A to F, where A represents free flow conditions and F indicates extreme congestion. OEA calculated estimated delay time using the industry standard equations set forth in **Appendix H**, which include the following variables: AADT, train speed, train length, number of trains per day, number of railroad tracks, and number of roadway lanes.

OEA specifically considered the impact of increased delay on emergency vehicles on designated emergency routes as identified in the FRA database. In addition to delay, OEA considered site-specific conditions in analyzing the potential impacts on emergency vehicle response, including existing highway and road networks; locations of nearby grade or grade-separated crossings; and time to access the opposite side of the crossing if a train is encountered. OEA identified grade crossings and alternate routes. The distance for alternate routes was determined by the shortest alternate route. Posted speed limits along the alternate routes were determined by Google Maps Street View imagery. Impacts to emergency services were defined as a situation in which the Proposed Acquisition would completely block access to a residence or business without reasonable access via an alternate route.

3.3.2 Affected Environment

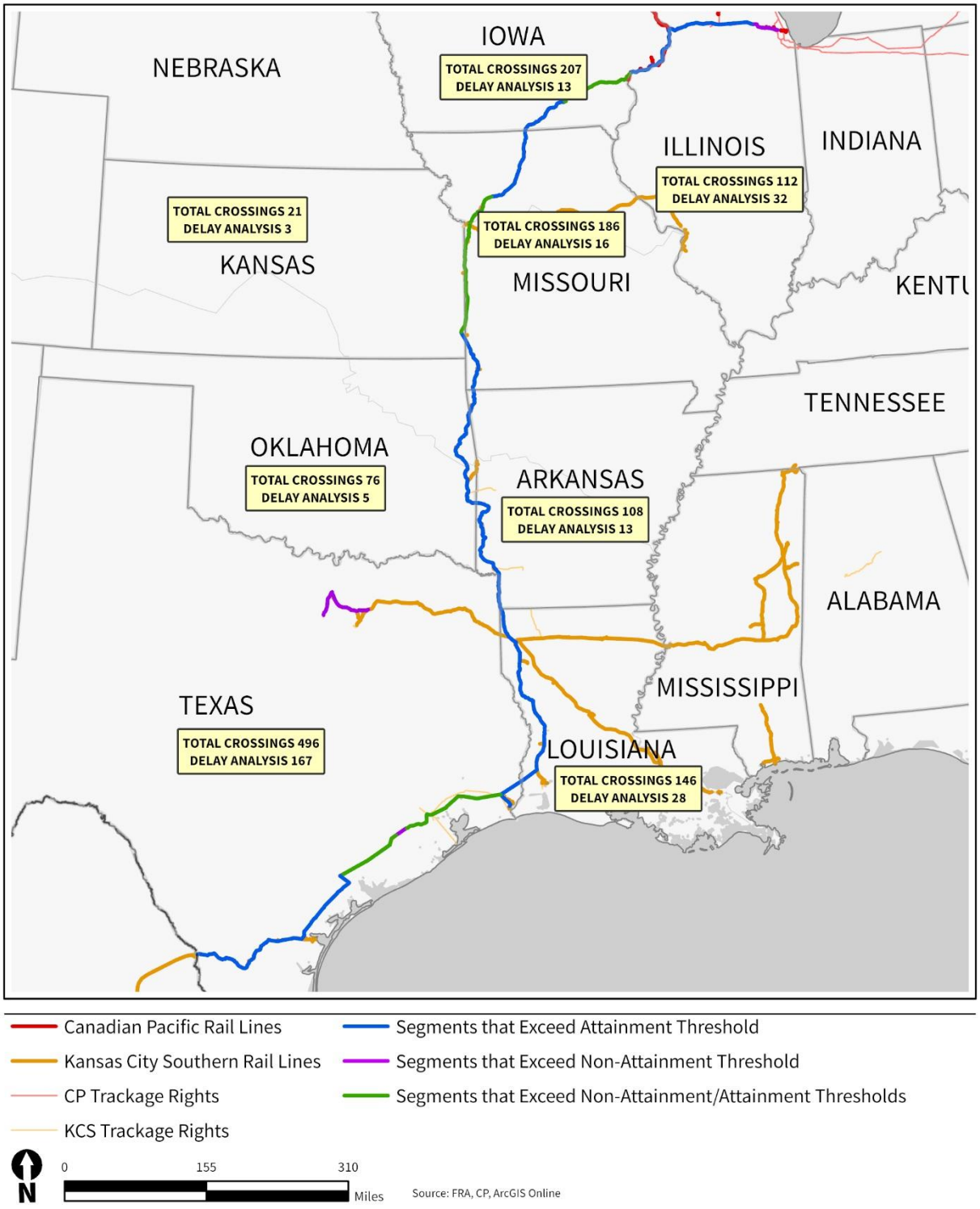
OEA identified a total of 1,352 public grade crossings in the study area. Of these, OEA identified 277 grade crossings that have an AADT of 2,500 or more vehicles per day (**Figure 3.3-1**). These 277 grades crossings are distributed along the CP mainline, extending

west and then south from Chicago, Illinois, to Kansas City, Missouri, and along the KCS mainline, extending south from Kansas City to Laredo, Texas. **Figure 3.3-1** shows the total number of grade crossings in each state within the study area, as well as the number of grade crossings in each state that met OEA's AADT threshold of 2,500 or more vehicles per day for inclusion in the grade crossing delay analysis. **Appendix H** provides a list of all grade crossings within the study area from Chicago, Illinois, to Laredo, Texas, including the 277 crossings with an AADT of 2,500 or more vehicles. These include crossings in eight states: Illinois, Iowa, Kansas, Missouri, Arkansas, Oklahoma, Louisiana, and Texas. The grade crossings in the study area range from rural crossings with low levels of vehicle traffic to urban crossings with high levels of traffic. The number of mainline tracks at the grade crossings ranges from one to two tracks and the number of highway lanes ranges from two to eight lanes. The grade crossings included in the analysis include both paved and unpaved roads and both crossings with passive warning devices (such as signs) and crossings with active warning devices.

The projected 2027 motor vehicle traffic volume for the grade crossings in the study area ranges from 2,500 to approximately 45,000 vehicles per day with an average of 9,700 vehicles per day. The current estimated delay per vehicle in 2027 ranges from 0.1 to 83.6 seconds per grade crossing with an average of 4.0 seconds per grade crossing based on projected traffic volumes and organic train growth only. The corresponding LOS ranges from LOS A to LOS F with an average LOS A based on the average delay per grade crossing.

OEA identified 28 grade crossings along designated emergency routes. For these crossings, OEA identified potential alternate routes that could be used if needed and determined the distance and posted speed limits along the alternate routes.

Figure 3.3-1. Grade Crossings for Delay Analysis on Proposed CPKC Rail System[1]



[1] Refer to **Appendix H** for a detailed list of grade crossings included in the delay analysis by state, county, and city.

3.3.3 Environmental Consequences

3.3.3.1 Proposed Acquisition

Table H.1-1 in **Appendix H** shows information for every grade crossing in the study area, including the projected increase in rail traffic, the estimated train speed and length, AADT, and the estimated time that a passing train would take to pass through the crossing under the Proposed Acquisition and the No-Action Alternative. **Table H.2-2** in **Appendix H** shows the change in average delay per vehicle that would occur as a result of the Proposed Acquisition for the 277 grade crossings on roadways with AADT of 2,500 vehicles or more.

Impacts to Grade Crossings

Across all 277 grade crossings in the study area with an AADT of 2,500 or more vehicles per day, the Proposed Acquisition would result in an average increase in delay of approximately 0.7 seconds per vehicle. Average delay would be approximately 4.7 seconds per vehicle under the Proposed Acquisition, compared to 4.0 seconds per vehicle under the No-Action Alternative. The greatest average increase in delay for any grade crossing would be 7.3 seconds per vehicle, which would occur at Crossing ID 865653R across Ripley Street in Davenport, Iowa. For some grade crossings, average delay would decrease under the Proposed Acquisition relative to the No-Action Alternative because of projected changes in train length. Specifically, the Applicants expect that Proposed Acquisition would allow train lengths to become shorter on some rail line segments, which would reduce the average time that a passing train would block a crossing. OEA assumed that average train speed would be the same under the Proposed Acquisition as under the No-Action Alternative. However, if train speed were to increase as a result of the Proposed Acquisition, then average delay at grade crossings would be lower.

The majority of grade crossings would operate at LOS A under either the Proposed Acquisition or the No-Action Alternative. Of the 277 grade crossings, OEA expects that only 22 crossings would operate at an LOS lower than LOS A under either the Proposed Acquisition or the No-Action Alternative and only five would experience a decrease in LOS as a result of the Proposed Acquisition. All five grade crossings where LOS would decrease are located on rail lines that the Applicants own.

Table 3.3-1 identifies the grade crossings at which LOS would change as a result of the Proposed Acquisition. Under the Proposed Acquisition, OEA expects that 255 crossings would operate at LOS A, 18 crossings would operate at LOS B, two crossings would operate at LOS C, one crossing would operate at LOS D, and one crossing would operate at LOS E. By comparison, under the No-Action Alternative, OEA expects that 260 crossings would operate at LOS A, 13 crossings would operate at LOS B, two crossings would operate at LOS C, one crossing would operate at LOS D, and one crossing would operate at LOS F. The Proposed Acquisition would result in an increase in the LOS at one crossing compared to the No-Action Alternative. This is the grade crossing at Phillips Road in Bloomington, Texas, which would improve from LOS F to LOS E because trains moving through this crossing would become shorter as a result of the Proposed Acquisition and would therefore block the crossing for a shorter amount of time than under the No-Action Alternative.

Appendix H presents the predicted number of stopped vehicles delayed per day, average delay per vehicle in a 24-hour period, total delay in a 24-hour period, LOS, and maximum vehicle queue by grade crossing, along with the basic train, vehicle, and roadway characteristics used in the calculation of these performance measures.

Impacts to Emergency Vehicle Routes

OEA identified 28 grade crossings in the study area that are located along designated emergency routes (**Table 3.3-2**). While an emergency vehicle could cross any grade crossing, those designated as emergency routes are where an emergency vehicle would be more likely to cross. The designated emergency routes are identified as "emergency route" in the FRA database (FRA 2020).

On average, the grade crossing delay along emergency vehicle routes would be 2.9 seconds per vehicle (LOS A) under the No-Action Alternative, compared to 3.9 seconds per vehicle (LOS A) under the Proposed Acquisition (**Table 3.3-2**). This is an average difference of 1.0 second of delay per vehicle between the Proposed Acquisition and the No-Action Alternative. For 26 of the 28 grade crossings on emergency vehicle routes, the maximum predicted increase in average delay is 2.2 seconds per vehicle between the Proposed Acquisition and the No-Action Alternative. Those 26 crossings would continue to operate at LOS A under either the Proposed Acquisition or the No-Action Alternative.

There are only two grade crossings along a designated emergency route where the LOS would decrease under the Proposed Acquisition in comparison to the No-Action Alternative. These are the grade crossing over Flournoy Lucas Road in Shreveport, Louisiana, where the LOS would decrease from LOS A to LOS B and the grade crossing over College Street (U.S. 60 Business) in Neosho, Missouri, where the LOS would also decrease from LOS A to LOS B. For the Flournoy Lucas Road grade crossing, OEA estimates that average delay would be 8.4 seconds per vehicle under the No-Action Alternative and 10.7 seconds per vehicle with the Proposed Acquisition, which is a difference of 2.3 seconds per vehicle. For the College Street grade crossing, OEA expects that average delay would be 7.6 seconds per vehicle under the No-Action Alternative and 10.6 seconds per vehicle under the Proposed Acquisition, which is a difference of 3.0 seconds per vehicle.

All of the grade crossings along emergency vehicle routes have an alternate route (see **Table 3.3-2** for a subset of delay results presented in detail in Appendix H). The distance to access the opposite side of the crossing via alternate routes ranges from 0.19 to 5.1 miles, with an average distance of 2.1 miles. For all 28 crossings, however, the alternate route also involves a grade crossing, which could also result in delay if both routes were to be delayed by a train. Under the Proposed Acquisition, the Applicants expect that the average train length would decrease at 215 of the 277 crossings. Throughout the study area, OEA estimates that the average train length would be 8,205 feet under the No-Action Alternative and 7,158 feet under the Proposed Acquisition, which corresponds to an average reduction of 1,047 feet. The shorter train lengths under the Proposed Acquisition would reduce the average delay per train crossing and also reduce the likelihood of a train blocking both the primary and alternate crossing locations compared to the No-Action Alternative.

Table 3.3-1. Grade Crossings with Potential Decreases in LOS Under the Proposed Acquisition

State	City	Street	Crossing ID	Owner	AADT	No-Action			Proposed Acquisition		
						Trains Per Day	Average Delay per Vehicle (seconds)	LOS	Trains Per Day	Average Delay per Vehicle (seconds)	LOS
Iowa	Davenport	Perry Street	865649B	CP	4,389	8.3	5.5	A	22.7	10.9	B
Iowa	Davenport	Ripley Street	865653R	CP	11,717	8.3	7.3	A	22.7	14.6	B
Louisiana	Shreveport	Flournoy Lucas Road	329154Y	KCS	20,451	25.1	8.4	A	36.0	10.7	B
Missouri	Neosho	College Street	330102D	KCS	5,077	16.2	7.6	A	28.6	10.6	B
Missouri	Neosho	Landis Road	330120B	KCS	2,528	16.2	7.3	A	28.6	10.1	B

Table 3.3-2. Grade Crossings along Emergency Vehicle Routes

State	City	Street	Crossing ID	AADT	No-Action Alternative		Proposed Acquisition		Alternate Route	Alternate Route Distance (miles)	Alternate Route Speed Limit(s) (mph)
					Average Delay per Vehicle in 24-hour Period (seconds)	LOS	Average Delay per Vehicle in 24-hour Period (seconds)	LOS			
Arkansas	Ashdown	Main Street	330575G	4,335	2.8	A	3.8	A	Main Street Constitution Avenue Commerce Street Front Street	0.21	35
Arkansas	De Queen	East Stilwell Avenue	330524W	4,804	3.6	A	5.2	A	Stilwell Avenue Lakeside Drive Red Bridge Road 3rd Street	2.15	30 to 45
Arkansas	Siloam Springs	Jefferson Street	330375X	5,038	3.5	A	4.9	A	Jefferson Street Main Street Britt Street	0.78	25 to 30
Arkansas	Siloam Springs	Lincoln Street	330405M	6,561	3.4	A	4.8	A	Lincoln Street Ashley Street Hico Street Main Street	1.07	30 to 45
Louisiana	Anacoco	Trigger Trapp Road	329259M	4,218	2.5	A	4.2	A	Shreveport Highway Beavers Road Miers Street Miller Road Port Arthur Avenue Trigger Trapp Road	2.84	25 to 45
Louisiana	De Quincy	East 4th Street	329356W	14,267	3.0	A	4.9	A	4th Street College Street Center Street	0.21	45

Table 3.3-2. Grade Crossings along Emergency Vehicle Routes

State	City	Street	Crossing ID	AADT	No-Action Alternative		Proposed Acquisition		Alternate Route	Alternate Route Distance (miles)	Alternate Route Speed Limit(s) (mph)
					Average Delay per Vehicle in 24-hour Period (seconds)	LOS	Average Delay per Vehicle in 24-hour Period (seconds)	LOS			
									Lake Charles Avenue		
Louisiana	De Quincy	West 4th Street	329346R	10,896	2.3	A	4.2	A	4th Street Holly Street Canterberry Street 4th Street	0.57	--
Louisiana	De Ridder	East Fourth Street/ West Third Street	329320N	4,171	2.2	A	3.7	A	4th Street Jefferson Street 2nd St/City Hall Washington Street	0.19	--
Louisiana	De Ridder	First Street	329319U	27,095	3.2	A	5.4	A	1St St (LA-171) Jefferson Street Washington Street	0.21	--
Louisiana	Rosepine	Louisiana 10	329298D	8,436	2.0	A	3.4	A	Pitkin Highway Lebleu Road Lake Charles Highway	4.5	45
Louisiana	Shreveport	East 85th Street	329128J	2,929	4.8	A	6.2	A	East 85th Street Fairfield Avenue East 79th Street St Vincent Avenue	1.8	25 to 35
Louisiana	Shreveport	Flournoy Lucas Road	329154Y	20,451	8.4	A	10.7	B	Flournoy Lucas Road Ellerbe Road	1.60	40 to 50

Table 3.3-2. Grade Crossings along Emergency Vehicle Routes

State	City	Street	Crossing ID	AADT	No-Action Alternative		Proposed Acquisition		Alternate Route	Alternate Route Distance (miles)	Alternate Route Speed Limit(s) (mph)
					Average Delay per Vehicle in 24-hour Period (seconds)	LOS	Average Delay per Vehicle in 24-hour Period (seconds)	LOS			
									Dalton Street Forbing Road		
Louisiana	Shreveport	Norris Ferry Road	329157U	4,988	4.8	A	6.1	A	Norris Ferry Road Par Road 118/Overton Brooks Road Par Road 153 Southern Loop	4.87	45
Louisiana	Vivian	Camp Vivian Road	329006E	4,687	2.1	A	3.1	A	Camp Road Pardue Street Arkansas Avenue Pine Street	1.77	35 to 40
Louisiana	Vivian	East Arkansas Avenue	328998G	5,572	2.3	A	3.4	A	Arkansas Avenue Front Street Alabama Avenue Front Street	0.34	45
Missouri	Grandview	Main Street	329807X	6,087	2.5	A	3.6	A	Main Street 7 Street Duck Road 2nd Street	1.64	25 to 35
Missouri	Joplin	32nd Street	330061B	17,557	4.1	A	5.9	A	32nd Street Davis Boulevard 20th Street Rangeline Road	2.85	30 to 40

Table 3.3-2. Grade Crossings along Emergency Vehicle Routes

State	City	Street	Crossing ID	AADT	No-Action Alternative		Proposed Acquisition		Alternate Route	Alternate Route Distance (miles)	Alternate Route Speed Limit(s) (mph)
					Average Delay per Vehicle in 24-hour Period (seconds)	LOS	Average Delay per Vehicle in 24-hour Period (seconds)	LOS			
Missouri	Neosho	College Street	330102D	5,077	7.6	A	10.6	B	College Street La-Z-Boy Parkway Spring Street	1.90	25 to 35
Oklahoma	Stilwell	Oklahoma 51	330625H	2,987	2.8	A	4.2	A	OK 51 4720 Road 810 Road 2nd St/ OK-59	3.92	40
Texas	Alice	Flournoy Road	793651B	8,476	5.7	A	5.6	A	Flournoy Road Villegas Street Stadium Road Sain Drive Flournoy Road	1.79	30 to 50
Texas	Carrollton	Josey Lane	021765H	35,576	0.2	A	0.2	A	Josey Lane Hebron Parkway Old Denton Road Parker Road	3.14	40 to 55
Texas	Highland Village	Highland Village	021676R	12,970	0.2	A	0.2	A	Highland Village Road Brazos Boulevard Sellmeyer Lane	3.09	30 to 35
Texas	Lewisville	Garden Ridge Boulevard	021774G	7,850	0.2	A	0.2	A	Garden Ridge Boulevard Valley Ridge Boulevard Stone Hill Farms	2.74	30 to 40

Table 3.3-2. Grade Crossings along Emergency Vehicle Routes

State	City	Street	Crossing ID	AADT	No-Action Alternative		Proposed Acquisition		Alternate Route	Alternate Route Distance (miles)	Alternate Route Speed Limit(s) (mph)
					Average Delay per Vehicle in 24-hour Period (seconds)	LOS	Average Delay per Vehicle in 24-hour Period (seconds)	LOS			
									Parkway Justin Road		
Texas	Refugio	FM 774 Empresario	427570V	6,004	5.1	A	4.9	A	Empresario Street Mesquite Street Purisima Street Osage Street	0.47	40
Texas	Richardson	Alma Road	753757M	14,802	0.2	A	0.2	A	Alma Road Plano Parkway Central Expressway Renner Road	2.4	40 to 45
Texas	Richardson	Custer	789628A	14,203	0.2	A	0.2	A	Custer Parkway Plano Parkway Alma Drive Renner Road	3.23	40
Texas	Wylie	Country Club Road	789648L	13,583	0.2	A	0.2	A	Country Club Road Farm to Market Road 544 West Gate Way Brown Street	5.1	40 to 45
Texas	Wylie	Springwell Parkway	331279Y	13,223	0.2	A	0.2	A	Springwell Parkway Riverway Lane McCreary Road Farm to Market Road 544	2.65	30 to 35

Delay Impacts from New Sidings

If the Board authorizes the Proposed Acquisition, the Applicants plan to make certain capital improvements within the existing rail right-of-way (ROW) to support the projected increase in rail traffic. Those planned capital improvements include extending 13 existing sidings, adding 11 new sidings, adding an industrial working track at one location, and adding double track at one location. Where these planned capital improvements would cross roadways, it is possible that the stopped trains could block crossings.

Blocked crossings occur when a stopped train impacts the flow of vehicles or pedestrians at crossings for an extended amount of time. This is most common at sidings where trains stop to allow other trains to pass by on the main track. Blocked crossings can impact public safety, especially if there are no feasible alternate routes. Blocked crossings can also pose a safety issue to pedestrians who try to go under or cut through trains to get to the other side of crossings. Further, blocked crossings may cause trucks to take detours on local streets that might not be equipped to handle trucks.

Table 3.3-3 shows a list of the 25 planned capital improvements and identifies grade crossings that would be blocked by stopped trains and the average dwell times of those stopped trains. The Applicants have indicated that the average dwell times would range from 24.03 to 97.58 minutes. Of the 18 grade crossings that could be blocked by stopped trains, seven crossings involve businesses, facilities, or residences that could be completely isolated due to a stopped train if the Applicants do not develop alternate access during final engineering and design, while the other 11 crossings currently have alternate routes, ranging from 1.22 to 8.85 miles in length. The alternate route distance is based on the distance from one side of the crossing to the other via the nearest alternate route. One planned siding extension, located near Loring, Louisiana, would involve relocating the western endpoint of the siding so as to avoid blocking a grade crossing that is currently crossed by the existing siding; however, this siding extension would cross a different grade crossing near its eastern endpoint, as shown in **Table 3.3-3**.

Table 3.3-3. Potential Blocked Grade Crossings at Planned Capital Improvements

City, State, Crossing	Crossing ID	Alternate Route (yes/no)	Average Dwell Time (min)		Distance to Opposite Side of Crossing via Nearest Alternate Route (miles)	Alternate Route Speed Limit (mph)	Comments
			No-Action Alternative	Proposed Acquisition			
Asbury, Missouri							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
MP 247 (Baron), Oklahoma							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
Bellevue, Iowa							
334th Street	376106K	No	n/a	n/a	n/a	n/a	This grade crossing could impact approximately 30 to 40 residences along Smith's Ferry Road. While there is no current alternate route, the Applicants intend to relocate the crossing by approximately 0.5 miles to avoid impacts.
Blue Valley, Missouri							
17th Street	329764G	Yes	73.18	73.18	1.5	35	Alternate route available.
Camanche, Iowa							
Beaver Channel Parkway	865539R	No	48.62	34.62	n/a	n/a	This grade crossing could impact one business driveway. While there is no current alternate route, the crossing could be relocated by approximately 0.25 miles to avoid impacts.
Cave Spring, Oklahoma							
N4660 Road	330640K	Yes	51.10	51.10	8.33	--	Alternate route available.

Table 3.3-3. Potential Blocked Grade Crossings at Planned Capital Improvements

City, State, Crossing	Crossing ID	Alternate Route (yes/no)	Average Dwell Time (min)		Distance to Opposite Side of Crossing via Nearest Alternate Route (miles)	Alternate Route Speed Limit (mph)	Comments
			No-Action Alternative	Proposed Acquisition			
MP 431 (Dawn), Missouri							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
Deer Creek, Iowa							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
Gentry, Arkansas							
Private Crossing	330361P	Yes	31.50	31.50	1.22	--	Alternate route available.
Floyd Moore Road	330360H	Yes	31.50	31.50	3.6	--	Alternate route available.
MP 186 (Goodman), Missouri							
Splitlog Road	330150T	Yes	38.34	38.34	8.85	--	Alternate route available.
Blackstock Lane	330148S	No	38.34	38.34	n/a	n/a	This grade crossing would impact three residences. No alternate route is currently available.
Private crossing	330147K	Yes	38.34	38.34	5.0	--	Alternate route available.
Grandview, Missouri							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
Heavener, Oklahoma							
Stand Pipe Road	330789Y	Yes	97.58	97.58	6.31	--	Alternate route available
Nichols Lane	330788S	No	97.58	97.58	n/a	n/a	This grade crossing would impact one farm including its

Table 3.3-3. Potential Blocked Grade Crossings at Planned Capital Improvements

City, State, Crossing	Crossing ID	Alternate Route (yes/no)	Average Dwell Time (min)		Distance to Opposite Side of Crossing via Nearest Alternate Route (miles)	Alternate Route Speed Limit (mph)	Comments
			No-Action Alternative	Proposed Acquisition			
							residence. No Alternate route is currently available.
Private Crossing	330787K	No	97.58	97.58	n/a	n/a	This grade crossing would impact a sewer treatment plant. No alternate route is currently available.
Laredo, Missouri							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
Letts, Iowa							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
Loring, Louisiana							
Private Crossing	329231W	Yes	56.90	56.90	5.5	--	Alternate route available.
Mansfield, Louisiana							
Private Crossing	329180N	No	34.20	34.20	--	--	This grade crossing would impact one residence. No alternate route is currently available.
MP 75 (Monroe), Illinois							
North Bennett Road	372324D	Yes	44.97	44.97	5	--	Alternate route available.
Moravia, Iowa							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
MP 377 (Mena), Arkansas							

Table 3.3-3. Potential Blocked Grade Crossings at Planned Capital Improvements

City, State, Crossing	Crossing ID	Alternate Route (yes/no)	Average Dwell Time (min)		Distance to Opposite Side of Crossing via Nearest Alternate Route (miles)	Alternate Route Speed Limit (mph)	Comments
			No-Action Alternative	Proposed Acquisition			
Polk 76 Road West	330448F	Yes	24.03[1]	24.03	6.8	--	Alternate route available.
Newtown, Missouri							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
Ottumwa, Iowa							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
MP 71 (Turkey River), Iowa							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.
Spiro, Oklahoma							
Bailey Road	330709D	Yes	37.05	37.05	3.72	--	Alternate route available.
Singer, Louisiana							
Private driveway	329334W	No	34.82	34.82	n/a	n/a	This grade crossing would impact one residence. No alternate route is currently available.
MP 255 (Washington), Iowa							
None	n/a	n/a	n/a	n/a	n/a	n/a	No impacts.

[1] No dwell time data for Mena; assumed similar dwell times nearby siding in Potter, which is along the same Shreveport subdivision.

Impacts from Rail Yards

Most of the rail yards located in the study area would experience minimal increases in rail yard activity as a result of the Proposed Acquisition. However, four rail yards—Bensenville and Schiller Park in Illinois, Detroit Container Terminal in Michigan, and Wylie in Texas—would experience increases in rail yard activity that would exceed thresholds for environmental review (**Table 3.3-4**). The delay analysis accounted for the projected increase in truck traffic and rail traffic that could be associated with the increase in activity at rail yards under the Proposed Acquisition. Specifically, the delay analysis included any projected increases in truck traffic and rail traffic at crossings near these rail yards. The following is a summary of the expected delay for grade crossings near the rail yards under the Proposed Acquisition and the No-Action Alternative.

- Bensenville and Schiller Park Yards: There are four grade crossings that exceed the threshold for delay analysis in Bensenville and Franklin Park, which are proximate to the Bensenville and Schiller Park rail yards in Illinois. For these four grade crossings, the average delay per vehicle would be 3.7 seconds per grade crossing under the Proposed Acquisition compared to 3.4 seconds per grade crossing under the No-Action Alternative. Only one of the four crossings (York Road in Bensenville) is located along a truck route and associated with a projected increase in truck traffic; approximately another 200 trucks per day under the Proposed Acquisition compared to the No-Action Alternative.
- Detroit Container Terminal: There are no grade crossings that exceed the thresholds for delay analysis near the Detroit Container Terminal in Michigan.
- Wylie Yard: There are six grade crossings that exceed the threshold for delay analysis in Wylie, which are proximate to the Wylie rail yard in Texas. For these six grade crossings, the average delay per vehicle would be 0.2 seconds per grade crossing under the Proposed Acquisition compared to 0.2 seconds per grade crossing under the No-Action Alternative. These grade crossings are not along major truck routes. As such, there is not a projected increase in truck traffic at these crossings under the Proposed Acquisition.

While there would be a 25 percent to 100 percent increase in rail yard activity in these four rail yards under the Proposed Acquisition, only one of the crossings is along a truck route and associated with a projected increase in truck traffic under the Proposed Acquisition. Based on this analysis, OEA concluded there would be a minimal increase in average delay per vehicle at the proximate grade crossings under the Proposed Acquisition compared to the No-Action Alternative.

Table 3.3-4. Grade Crossings Near Rail Yards

Yard Name	State	2027 No-Action Alternative Cars Processed Per Day	Acquisition-Related Growth Cars Processed Per Day	2027 Proposed Acquisition Cars Processed Per Day	Acquisition-Related Growth Percentage Cars Processed Per Day
Bensenville Yard	Illinois	1,427.7	367.7	1795.5	25.8
Schiller Park Yard	Illinois	74.0	76.5	150.6	103.4
Detroit Container Terminal	Michigan	33.2	23.2	56.5	70.0
Wylie	Texas	323.1	137.0	460.0	42.4

3.3.3.2 No-Action Alternative

Under the No-Action Alternative, the Board would not authorize the Proposed Acquisition and CP would not acquire KCS. The projected increases in rail traffic on existing rail lines and the projected increases in activity at rail yards would not occur as a result of the Proposed Acquisition. Similarly, the Applicants would not make the planned capital improvements associated with the Proposed Acquisition under the No-Action Alternative. However, rail traffic could increase on rail lines and road traffic could increase at the crossings within the study area in the future due to changing market conditions, including general economic growth. CP and KCS could also make capital improvements along their respective rail lines in the future without seeking Board authority if needed to support rail operations. Grade crossing delay could also increase under the No-Action Alternative as a result of increased road traffic if population growth occurs. Delay at grade crossings would increase under the No-Action Alternative as a result of increased rail and road traffic due to organic growth.

3.3.4 Conclusion

Although the Proposed Acquisition has the potential to cause increased delay at grade crossings due to the projected increase in rail traffic, OEA expects that this impact would be minor. OEA evaluated potential impacts at 277 grade crossings that would experience an increase in rail traffic of eight or more trains per day and concluded that the Proposed Acquisition would result in a decrease in the LOS at only five of those grade crossings. OEA predicts that the Proposed Acquisition would cause the LOS to decrease from LOS A to LOS B at all five of these crossings. Because LOS B corresponds to stable flow, OEA concludes that the Proposed Acquisition would result in minor adverse delay impacts at these grade crossings but would not warrant mitigation. OEA notes that, because most of the projected increase in rail traffic on the combined CPKC network would be diverted from other rail lines outside of the study area, the Proposed Acquisition could potentially result in decreased delay at grade crossings on those other rail lines.

For the 28 grade crossings on designated emergency routes, OEA concluded that grade crossing delay caused by the Proposed Acquisition would have a minor impact on the

provision of emergency services because, on average, the grade crossing delay along emergency vehicle routes would be 2.9 seconds per vehicle (LOS A) under the No-Action Alternative, compared to 3.9 seconds per vehicle (LOS A) under the Proposed Acquisition and because all of these crossings have alternative routes, no mitigation is warranted. The Proposed Acquisition would also not result in adverse impacts on grade crossings near rail yards where rail yard activity would increase.

The Proposed Acquisition would result in delay impacts at 18 grade crossings where the Applicants intend to add a new passing siding or extend an existing siding. Among these, seven have the potential to completely isolate residences, businesses, or other buildings if the Applicants do not develop alternate access routes during final engineering and design. The Applicants have committed to abide by federal rules requiring railroads to not block public crossings for longer than 10 minutes unless it cannot be avoided (see *Chapter 4, Mitigation*, Voluntary Mitigation [VM]-Grade Crossing-02) and to investigate the potential to create alternative access for properties whose sole access would be blocked more than once a week by a train stationary for longer than 10 minutes at a single location, where practical (VM-Grade Crossing-04). In addition, the Applicants have committed to consult with local transportation officials regarding detours and associated signs, as appropriate and practical, during the construction of the planned capital improvements to allow for the quick passage of emergency vehicles (VM-Grade Crossing-05). These mitigation measures would minimize the impacts on grade crossing delay resulting from the planned capital improvements. Because impacts related to grade crossing delay would be minor and would be minimized by the mitigation measures proposed by the Applicants, OEA is not recommending any additional mitigation measures for grade crossing delay.