

Baton Rouge–New Orleans Intercity Passenger Rail Feasibility Study 2023

135

STATE PROJECT NUMBER H.015223

LIST OF AC	RONYMS
AAR	Association of American Railroads
ADA	Americans with Disabilities Act
APM	Automated People Mover
BKI	Burk-Kleinpeter, Inc.
BNSF	BNSF Railway
BRAF	Baton Rouge Area Foundation
BR-NOLA	Baton Rouge-New Orleans
CAPEX	Capital expenditures
CATS	Capital Area Transit System
CFP	Call for proposals
CFR	Code of Federal Regulations
CN	Canadian National
Corridor ID	Corridor Identification and Development
СРКС	Canadian Pacific and Kansas City Southern
CP Railway	Canadian Pacific Railway
CRISI	Consolidated Rail Infrastructure and Safety Improvements
CRPC	Capital Regional Planning Commission
СТС	Centralized Train Control
CWA	Clean Water Act
EA	Environmental Assessment
EJ	Environmental Justice
EPA	US Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FRA	Federal Railroad Administration
FSP	Federal-State Partnership
FY	Fiscal year
GIS	Geographic Information Systems
HDR	Henningson, Durham, and Richardson, Inc.
I-10	Interstate 10
I-110	Interstate 110
I-20	Interstate 20
IMC	InterModal Center
JD	Jurisdictional Determination
KCS	Kansas City Southern
LaDOTD	Louisiana Department of Transportation and Development
LA SAFE	Louisiana's Strategic Adaptations for Future Environments
LASHPO	Louisiana State Historic Preservation Office
LDEQ	Louisiana Department of Environmental Quality
LDHP	Louisiana Division of Historic Preservation
LDWF	Louisiana Department of Wildlife and Fisheries



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LNHP	Louisiana Natural Heritage Program
MAS	Maximum Authorized Speed
MP	Mile Post
MPH	Miles Per Hour
MSY	Kenner/Louis Armstrong New Orleans International Airport
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOPB	New Orleans Public Belt
NORPC	New Orleans Regional Planning Commission
NOUPT	New Orleans Union Passenger Terminal
NPCU	Non-powered Control Unit
NPL	Non-priority List
NRHP	National Register of Historic Places
NS	Norfolk Southern
0&M	Operating and maintenance
OBS	Onboard Services
OLOL	Our Lady of the Lake Medical Center
OTM	Other track material
PRIIA	Passenger Rail Investment and Improvement Act
PRT	Pure Running Time
PSG	Passenger
PTC	Positive Train Control
R&E	Restoration and Enhancement
RAISE	Rebuilding American Infrastructure with Sustainability and Equity
RBM	Rail Bound Manganese
RCE	Railroad Crossing Elimination
ROW	Right of Way
RTC	Rail Traffic Controller
SCC	Standard Costing Category
SDP	Service Development Plan
SOC	Species of Concern
SRC	Southern Rail Commission
SRP	Scenic Rivers Permit
STB	Surface Transportation Board
Tran-SET	Transportation Consortium of South-Central States
UNO	University of New Orleans
UNOTI	University of New Orleans Transportation Institute
UP	Union Pacific
USACE	US Army Corps of Engineers
USCG	US Coast Guard
USDOT	US Department of Transportation



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USFWS	US Fish and Wildlife Service
UST	Underground Storage Tanks
VMT	Vehicle Miles Traveled
WMA	Wildlife Management Area
YOE	Year of Expenditure



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SECTION 1. INTRODUCTION

Due to increased air travel and personal automobile usage nationwide, the demand for passenger rail service between Baton Rouge and New Orleans declined in the 20th century, and service in this corridor was discontinued in 1969. The energy crisis of 1979 renewed interest in rail transportation as a fuel-efficient way to move people and goods. In anticipation of the 1984 Louisiana World Expedition/World's Fair held in New Orleans, the Louisiana–Mississippi–Alabama Rapid Rail Transit Commission was formed in 1983. After a brief period of operation between Mobile and New Orleans during 1984, intercity passenger rail was suspended again but the Commission, since renamed the Southern Rail Commission (SRC), continues to rally support for passenger rail service in the central Gulf Coast region. The Louisiana Department of Transportation and Development (LaDOTD), the New Orleans Regional Planning Commission (NORPC), the Capital Regional Planning Commission (CRPC), and municipalities and parishes continue to partner with the SRC to promote rail service in the corridor.

In 2010, the Louisiana Legislature enacted House Bill No. 1410 authorizing the formation of Louisiana Intrastate Rail Compact(s) which allows parishes and municipalities to join together "to develop a system of railways, transitways, and other transportation facilities; to provide for the powers and duties of such compacts; to authorize compacts to issue bonds and raise revenues subject to voter approval." In 2022, the Louisiana Legislature passed, and Governor John Bel Edwards signed, Act 764 (Senate Bill No. 467) which directed the LaDOTD to "prepare the scope, schedule, and budget to secure all necessary approvals and permits to begin passenger rail service between Baton Rouge and New Orleans, and [to consider whether to] apply for grants and other funds typical for passenger rail, as appropriate, and to facilitate development of the necessary platforms or stations to support passenger service."

The purpose of the **Baton Rouge-New Orleans (BR-NOLA) Intercity Passenger Rail Feasibility Study 2023** is to identify a clearly-defined process for moving the project forward to implementation. This document provides an inventory of previous and on-going efforts to reestablish passenger rail between the two largest cities in Louisiana, and connect Baton Rouge to long-distance Amtrak services such as the Crescent, the City of New Orleans, and the Sunset Limited. Critical to the success of the BR-NOLA intercity passenger rail service has been the Canadian Pacific (CP) Railway's continued commitment to support Amtrak and SRC efforts to establish passenger service between New Orleans and Baton Rouge.

This commitment was stipulated in an Agreement to Cooperate between Amtrak and Canadian Pacific Railroad (dated December 17, 2021) which was filed with the Surface Transportation Board (STB) on February 2, 2022.¹ This agreement included several good faith commitments such as determining what improvements would be required because of Amtrak operations for the start of service, cooperating in securing funding for such improvements, implementing such improvements as promptly as possible, and reviewing the performance of the service and determining schedule modifications or improvements required to facilitate a second daily round-trip Amtrak train between New Orleans (IC Junction) and Baton Rouge.

Having Amtrak operate the BR-NOLA passenger rail service will allow the LaDOTD to take advantage of Amtrak's statutory right of access to operate passenger rail service on any freight railroad under §24308 of Title 49 of the U.S. Code of Federal Regulations (CFR). According to the <u>Association of American Railroads</u> (<u>AAR</u>), other than the Northeast Corridor, Amtrak and state-supported route trains primarily operate on tracks

¹ Agreement to Cooperate between Amtrak and Canadian Pacific Railroad. Available at: <u>https://dcms-</u>external.s3.amazonaws.com/DCMS External PROD/1643835362179/303645.pdf. Accessed June 7, 2023.



owned by freight railroads, and most higher speed and intercity passenger rail projects that are under development nationwide plan to use freight-owned facilities.

The present study synthesizes and updates previous work to describe the practicalities of restoring passenger rail in this corridor within the current transportation and energy contexts by identifying infrastructure improvements necessary for passenger rail service between these two cities and evaluating the challenges, constraints, and opportunities that would sustain passenger operations on the corridor once re-established.

1.1 **Previous BR-NOLA Passenger Rail Studies and Reports**

Prior studies and reports identified the Kansas City Southern (KCS) line as the best route between Baton Rouge and New Orleans for intercity passenger rail. The total length of the route is 80 (eighty) miles, with 67.6 miles owned by KCS, 8.5 miles by Canadian National (CN), and 3.7 miles by Amtrak's New Orleans Union Passenger Terminal (NOUPT). The route is relatively flat and straight and, outside of urban areas, there are only three locations with curvature geometry requiring a speed restriction of less than 70 miles per hour (mph) for passenger rail. **Figure 1** depicts five studies and reports prepared since 2010 that explore the potential for BR-NOLA corridor passenger rail service. Each of these reports is summarized below.



Figure 1: Timeline of Previous BR-NOLA Intercity Passenger Rail Studies and Reports



1.1.1 Baton Rouge – New Orleans High-Speed Intercity Passenger Rail Feasibility Study (2010)

The **Baton Rouge–New Orleans High-Speed Intercity Passenger Rail Feasibility Study** was finalized in 2010 by Burk-Kleinpeter, Inc. (BKI) and supported by Henningson, Durham, and Richardson, Inc. (HDR) for the Southern High Speed Rail Commission. The report included an initial proposal and feasibility study for passenger rail within the BR-NOLA corridor with proposed service that would connect the BR-NOLA route to a larger Gulf Coast High Speed Rail Corridor from Houston to Atlanta (see **Figure 2** below).

In this study, the proposed route included six stops:

- Baton Rouge Terminal Station East Baton Rouge Parish (1500 Main Street; new facility)
- Baton Rouge Suburban Rail Station East Baton Rouge Parish (Interstate 10 (I-10)/Bluebonnet Road near Mall of Louisiana; new facility)
- Gonzales Town Center Ascension Parish (East Cornerview between South Irma Boulevard and North Edenborne Street; new facility)
- LaPlace St. John the Baptist Parish (Southwest of Main Street/US 61; new facility)
- Kenner Suburban Station Jefferson Parish (Kenner Avenue between George Street and Duncan Street just south of Louis Armstrong New Orleans International Airport (MSY); new facility)



• NOUPT – Orleans Parish (1001 Loyola Avenue; existing facility)

Figure 2: Extent of BR-NOLA High Speed Rail Project (Source: BR-NOLA Intercity Passenger Rail Feasibility Study, Dec. 2010)



1.1.2 Baton Rouge, La. to New Orleans, La. High Speed Rail Project (2010)

The Baton Rouge, La. to New Orleans, La. High Speed Rail Project - Structural & Geotechnical Cost Estimate for New Orleans Subdivision was finalized in 2010 by Design Nine for the KCS Railway. The purpose of this report was to provide recommendations and estimates of costs to improve drainage structures, bridges and culverts, and identify unstable subgrade areas. All these improvements would result in KCS being able to provide structures and subgrade that would allow a sustainable and maintainable 79 mph passenger train service between Baton Rouge (mile post [MP] 788.0) and New Orleans/Frellsen Junction (MP 855.7) along the KCS Railway Company's mainline, District #11, New Orleans Subdivision, Midcontinent Division.

The summary of costs estimated for the project in 2010 dollars is displayed in Table 1.

Table 1. Summary of Costs for New Orleans to Baton Rouge might speed Rait Project	
Estimated Cost to Rehabilitate Mainline Bridges:	\$119,913,197
Estimated Cost to Replace Other Structures:	\$1,348,539
Estimated Cost for Mainline Subgrade Stabilization:	\$6,505,712
Estimated Cost for Embankment and Subgrade Stabilization for Siding Extensions:	\$13,345,414
Total Estimated Cost for Mainline and Siding Extensions Bridges, Drainage Structures,	
and Subgrade Stabilization:	\$141,112,862

 Table 1: Summary of Costs for New Orleans to Baton Rouge High Speed Rail Project

1.1.3 Baton Rouge – New Orleans Intercity Rail Feasibility Study (2014)

The <u>Baton Rouge-New Orleans Intercity Rail Feasibility Study</u> was prepared in 2014 by HNTB Corporation for the NORPC, CRPC, and the Baton Rouge Area Foundation (BRAF), with the aim of developing a path to implementing intercity passenger rail. This path included developing a strategic business plan, complete with technical memoranda consisting of a summary of prior and on-going efforts, stakeholder outreach approach, funding and financing options, and a capital and operating plan.

This study recommended a different location for the Downtown Baton Rouge terminal on Main Street. The 2014 study suggested a station location on Government Street that would shorten the route by approximately one-half mile and eliminate bridge and track improvements necessary to access the Main Street location. This study also suggested moving the Suburban Baton Rouge rail station closer to Essen Lane, where a portion of the alignment is already double tracked. Furthermore, a suburban Jefferson Parish station was added at the behest of Jefferson Parish officials who requested a station stop independent of the proposed stop at Kenner/MSY. **Figure 3** depicts the updated station stops detailed in the 2014 study.





Figure 3: BR-NOLA 2014 Feasibility Study Proposed Station Stops (Source: Baton Rouge-New Orleans Intercity Rail Feasibility Study, 2014)

1.1.4 Louisiana State Rail Plan (2020)

The Louisiana State Rail Plan was prepared by the University of New Orleans Transportation Institute (UNOTI) in 2020 under the authority and guidance of the Rail Section of the LaDOTD Office of Multimodal Commerce. As the designated rail authority in Louisiana, LaDOTD is responsible for rail planning in the state and assisting freight railroads in applying for Federal funds for improvement projects. In developing and supporting the State Rail Plan, the Office of Multimodal Commerce coordinates closely with other LaDOTD divisions responsible for various rail-related functions, including highway-rail at-grade crossing improvements and grade separations.

Implementing BR-NOLA intercity passenger rail service is part of LaDOTD's strategy to reduce vehicular congestion along the Baton Rouge-New Orleans I-10 corridor. According to the 2015 Louisiana Statewide Transportation Plan, Louisiana's highway system has expanded by less than 1% in the last decade (2005-2015), but demand on the system has grown by 11 percent. Vehicle miles traveled (VMT) is projected to grow to 179 million per weekday by 2044, and 30% of those miles are likely to occur on Louisiana's interstate system. Moreover, while rural VMT declined 14% in the last decade, there was a 41% increase in urban VMT due in part to expanding urban boundaries.² Re-establishing the BR-NOLA Intercity Passenger Rail service is noted in the State Rail Plan as Louisiana's "highest priority passenger route" and "the replacement of the Bonnet Carré Spillway railroad bridge is of the highest priority in the short term." Replacement of the Bonnet Carré Spillway railroad bridge is discussed in the Infrastructure component (Section 3.1.1) of this study.

² Of note, the LaDOTD is in the process of updating the Statewide Transportation Plan subsequent to a call for proposals (CFP) issued in February 2021. The 2015 includes projections through 2044 but the updated Plan will be extended further due to significant changes in the state's demographics and transportation systems since 2015.



1.1.5 Rails to Resilience (2020)

The <u>Rails to Resilience: Evaluating New Orleans and Baton Rouge Rail Terminals and Transit Links</u> final report was issued in 2020 by the University of New Orleans (UNO) at the behest of the Transportation Consortium of South-Central States (Tran-SET). This comprehensive study drew primarily on the results of an online, opt-in survey of over 4,600 completed, in-state (Louisiana) responses that revealed insights into the current anticipated travel behaviors, modal preferences, cost and trip duration sensitivities, and origins and destinations of a geographically diverse range of likely passenger rail riders. The overarching purpose for the study was to evaluate the multimodal linkages to and opportunities for proposed terminal sites for a potential future passenger rail connection between Baton Rouge and New Orleans. In so doing, the study authors hoped to create a robust blueprint for future service.

Because connectivity, particularly multimodal connectivity, was singularly important for survey respondents, the **Rails to Resilience** final report provided detailed descriptions of station plans in Baton Rouge, Gonzales, and LaPlace, as well as reporting on progress or prospects for the Kenner/MSY and NOUPT stations. Although the proposed Suburban Jefferson Parish Station was tangentially mentioned in the 2014 Feasibility Study, the **Rails to Resilience** final report provided a more detailed examination of this station. **Section 5.1** (Station Planning) of this current study discusses all the proposed stations. The authors noted that a key determinant of whether rail connections could meet ambitious ridership targets is how effectively the rail service connects riders to their final destinations in order to reduce costs associated with travel via public transportation relative to personal automobiles.

1.2 Improvements and Challenges Addressed in the Current Study

The twofold purpose of the current study is to 1) identify infrastructure improvements necessary to introduce passenger rail service between Baton Rouge and New Orleans and 2) evaluate challenges or constraints as well as opportunities for initial and sustainable passenger operations in the corridor.

Planning for stations is also considered. In 2016, the SRC (under the auspices of the Federal Railroad Administration (FRA)) awarded Baton Rouge, St. John the Baptist Parish, and Gonzales a total of \$375,000 in grant funding for station-area planning. Subsequently, the City of Gonzales (as lead applicant) and the City of Baton Rouge were also awarded a \$20 million Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant in 2022 for real-estate acquisition, design, and construction of passenger rail stations in the downtown areas of these cities. These plans will ensure safe access and better connectivity to and from the stations, improve convenience for riders, update facilities, and help leverage economic opportunities that come with station redevelopment. In addition, the cities connected along the rail route have embraced opportunities for real estate investment and resiliency offered by the proposed BR-NOLA Intercity Passenger Rail service as demonstrated by their commitment of resources for station planning and construction.

BR-NOLA Intercity Passenger Rail service promises long-term benefits including expanding employment opportunities, promoting economic growth, mitigating traffic congestion and benefiting the environment, and providing transportation choices and options for disadvantaged, suburban, and rural populations traveling to urban centers. The proposed BR-NOLA Intercity Passenger Rail service also offers a powerful catalyst for developing a statewide multimodal transportation system that will also include the proposed Interstate 20 (I-20) intercity passenger rail corridor in North Louisiana, which will offer service from Marshall/Longview, Texas to a terminus in Vicksburg, Mississippi, and the recently established intercity rail service between Mobile, Alabama and New Orleans, Finally, passenger rail service from Baton Rouge to New



Orleans will serve as another critical mode for hurricane evacuation of disadvantaged populations within communities along the rail route who do not have access to private vehicles and/or cannot drive.

This project will need consistent, reliable state operating funds to support the service. State and federal governments often provide supporting funding but the annual state and federal appropriations process can often lead to fluctuations in funding year-to-year. These fluctuations negatively impact the ability to plan for long-term developments. Additionally, political forces and economic conditions greatly influence funding both positively and negatively.

Another major challenge in implementing the BR-NOLA Intercity Passenger Rail service is the current poor condition of the two-mile-long Bonnet Carré Spillway railroad bridge and the cost associated with replacing it with a passenger rail-worthy bridge. The structure was built in 1927 and its current condition requires all rail traffic on the bridge to be speed-restricted to 10 mph to minimize impact on the structure. This speed restriction results in trains taking approximately twelve (12) minutes to cross the bridge. Previous studies of the bridge have determined that it is beyond repair and must be replaced. Though significant rehabilitation and maintenance of the Bonnet Carré Spillway railroad bridge has occurred over the years and will remain necessary as the almost 100-year-old structure continues to degrade, the structure has outlived its useful life and our evaluation indicates that it has reached a point where neither spot replacement nor complete rehabilitation are economically viable options. **Section 3.1.2** details the bridge's current conditions as well as describing strategies for replacing the existing structure with a new concrete ballasted deck bridge on an offset alignment.



SECTION 2. CANADIAN PACIFIC AND AMTRAK AGREEMENT

The CP Railway's commitment to support Amtrak and SRC efforts to establish passenger service between New Orleans and Baton Rouge was stipulated in the Agreement to Cooperate between Amtrak and Canadian Pacific Railroad (dated December 17, 2021) which was filed with the STB on February 2, 2022.³ This agreement stated that:

- Permission will be granted to operate one (1) daily round trip, not sooner than two (2) years after approval of the merger
- CP and Amtrak "acknowledge that certain improvements, which may include station(s), CTC/PTC, accelerated speeds and other improvements, may be required because of Amtrak operations to facilitate the introduction of safe, trip-time-competitive intercity passenger rail service on the KCS rail line"
- CP and Amtrak "commit to work together in good faith to determine what improvements are required because of Amtrak operations for the start of service, to cooperate in securing funding for such improvements, and to implement such improvements as promptly as possible"
- After six (6) months of operation, CP and Amtrak will review the performance of the service and determine schedule modifications or improvements required to facilitate a second daily round-trip Amtrak train between New Orleans (IC Junction) and Baton Rouge
- If schedule modifications or improvements are required to facilitate a second daily round-trip for the BR-NOLA passenger service, CP and Amtrak shall work together in good faith, to promptly implement such schedule modifications or additional improvements. Immediately following completion of such schedule modifications or agreed-upon improvements, CP and Amtrak will implement the second daily round-trip BR-NOLA Intercity Passenger Rail service train
- If CP and Amtrak agree that no further schedule modifications or improvements are required to facilitate the reliable, trip-time-competitive operation of a second daily round-trip BR-NOLA Intercity Passenger Rail service train, CP and Amtrak will implement the second daily round-trip BR-NOLA Intercity Passenger Rail service train

The STB approved CP Railway's merger with KCS in March 2023 contingent on keeping the agreements that allow Amtrak to establish passenger service on the KCS-owned Louisiana line between Baton Rouge and New Orleans. The STB's acquisition approval noted that the decision "includes an unprecedented seven-year oversight period and contains many conditions designed to mitigate environmental impacts, preserve competition, protect railroad workers, and promote efficient passenger rail." Morever, the STB observed that they "anticipate the merger will result in improvements in safety and the reduction of carbon emissions."

Having Amtrak operate the passenger rail service will allow the LaDOTD to take advantage of Amtrak's statutory right of access to operate passenger rail service on any freight railroad under §24308 of Title 49 of the U.S. Code of Federal Regulations (CFR). According to the <u>Association of American Railroads (AAR)</u>, other

³ Agreement to Cooperate between Amtrak and Canadian Pacific Railroad. Available at: <u>https://dcms-</u> <u>external.s3.amazonaws.com/DCMS</u> External PROD/1643835362179/303645.pdf. Accessed June 7, 2023.



than the Northeast Corridor, Amtrak and state-supported route trains primarily operate on tracks owned by freight railroads, and most higher speed and intercity passenger rail projects that are under development nationwide plan to use freight-owned facilities.

Amtrak's relationship with host railroads is governed by federal statute and by negotiated bilateral operating agreements. These operating agreements typically include key terms such as train schedules, standards of performance, and related incentives and penalties. Amtrak and host freight railroads each have designated staff that work together to manage the operations on these lines. Amtrak already has a strong relationship with host railroads in Louisiana and has a successful history of operating on host railroad freight lines. These lines include Amtrak's City of New Orleans, which operates on CN, the Sunset Limited which operates on BNSF Railway (BNSF) and Union Pacific Railroad (UP), and the Crescent which operates on Norfolk Southern (NS).

Amtrak included BR-NOLA Intercity Passenger Rail service in their <u>Amtrak Connects US Corridor Vision Plan</u> (May 2021), noting that "this new corridor increases mobility options for communities between Baton Rouge and New Orleans including connections with Amtrak's Sunset Limited, City of New Orleans, and the Crescent at New Orleans."⁴

⁴ Amtrak. Amtrak connects US Corridor Vision Plan. Washington, DC: National Railroad Passenger Corporation. 2021. Available at: https://media.amtrak.com/wp-content/uploads/2021/05/Amtrak-2021-Corridor-Vision-May27_2021.pdf (last accessed September 14, 2023).



SECTION 3. EXISTING CONDITIONS

Track schematics showing the existing infrastructure conditions within the corridor were prepared and can be found in **Appendix A.** Key elements of the existing rail corridor are summarized below. Shared infrastructure between passenger rail service and freight operations may require specific modifications to move both people and goods efficiently. Needed improvements to accommodate efficient passenger rail were determined in a process that models the infrastructure in a simulation of tracks, speed limits, and freight train operations.

3.1 KCS New Orleans Subdivision

The KCS segment of the rail corridor is the New Orleans Subdivision between Baton Rouge (MP 788.4) and Frellsen/IC Junction (MP 855.7) (see **Figure 3**). The railroad maintains the track to FRA Class 4 standards, which allows for maximum freight and passenger speeds of 49 and 59 mph, respectively, on rail segments without centralized train control (CTC). Lower speeds in certain locations are determined by the railroad based upon track conditions, curvatures, sight lines, grade crossings, and other constraints.

Operation of trains is governed by track warrants and yard limits in Baton Rouge and Reserve, Louisiana. The entire corridor is equipped with positive train control (PTC), which is required by the FRA for corridors hauling certain types of hazardous cargos as well as passenger trains.

Large rail-served industries on the corridor require frequent service, sometimes as often as twice per day. Significant concentrations of customers exist around Gramercy, Reserve, and Norco, Louisiana. KCS owns yards in Reserve and New Orleans (West Yard) where crews and locomotives are based to serve these clients. Daily manifest trains also operate between Shreveport, Baton Rouge, and the New Orleans Public Belt (NOPB) railroad in New Orleans.

Three (3) primary existing infrastructure components in the KCS corridor are track, structures, and at-grade crossings. A high-level summary of the existing conditions for these elements is included below.

3.1.1 Track

The existing track structure is comprised of the following elements: Standard mainline wood ties (7" x 9" x 8.5') on 19.5" inch center spacing; steel rail is primarily 115lb, continuously-welded rail from 1991; standard other track material (OTM) such as rail spikes and anchors are installed on the mainline track per Class 4 track standards; and roadbed is typically constructed of 12 inches of ballast below the tie on coarse aggregate material on a prepared subgrade material.

3.1.2 Structures

There are approximately 53 bridge structures along the 79-mile rail corridor. A majority of these bridge structures are open-deck structures on timber stringers, bents, and piers. Typical bridges over roadways have steel superstructures on concrete pier caps, timber bents, and abutments. A majority of all structures have walkways and hand railings on one side of the structure for safety of traversing from one end of the structure to the other.



A majority of the bridge structures in the BR-NOLA rail corridor are from when the line was originally constructed in the late 19th and early 20th century. At several locations, bridge components such as pier caps, stringers, bridge ties, etc., have been rehabilitated or maintained, replaced in-kind, or replaced with common components (concrete pier caps, steel stringers, etc.) over the life of these bridge structures.

There are 97 identified drainage structures within the corridor. The drainage structures are comprised of wood boxes, vitrified clay, concrete, iron, steel, and cast iron pipes. Considering these type of materials, only the concrete and steel pipes are presumed not to be original to when the line was constructed.

A major bridge structure within the corridor is the Bonnet Carré Spillway railroad bridge at MP 845.6. The current condition of this structure requires all rail traffic on the bridge to restrict their speed to 10 mph to minimize impacts to the structure. Built in 1927, the spillway bridge is 9,687 feet (1.8 miles) in length and constructed of 20-foot-long open-deck steel spans on 7-pile timber bents. Prior inspection reports outline the railroad bridge condition features:

- Approximately 36% of the timber piles are in poor condition requiring replacement
- Approximately 51% of the pier caps are in poor condition requiring replacement
- All remaining timber pier caps need to be replaced (some have been replaced with steel caps over time)
- A significant number of the stringer-to-bearing connections need to be repaired
- All of the bridge deck timbers are in poor condition and need to be replaced
- The existing steel spans need to be surfaced to create a level top of rail profile
- All of the existing jointed rail needs to be replaced with continuously-welded rail

Currently, KCS spends an average of \$1M in annual bridge capital expenditures (CAPEX) for maintenance, not including the cost of bridge inspections that have increased to quarterly to monitor current defects and ensure that catastrophic failure is not imminent.

In November 2022, an application was submitted through the FRA's Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program for funding to replace the Bonnet Carré Spillway railroad bridge with a new concrete ballasted deck bridge on an offset alignment. Although the new bridge will accommodate a single track, the construction would mirror a new CN bridge that was recently constructed in the area. These new bridge will allow for improved rail capacity along the BR-NOLA rail corridor. LaDOTD and the railroad owners are committed to constructing the new bridge with limited interference to typical shipping patterns along the rail line. Either an Offset or In-Line construction would allow the existing bridge to remain in service during construction with minimal impacts to existing freight trips. After the new bridge construction, thus improving efficiency and reliability. The new structure would also allow for Intercity Passenger Rail to return to this region for the first time since 1969.



3.1.3 At-Grade Crossings

There are 109 at-grade crossings within the KCS segment. A majority of these are public crossings, but there are also fifteen (15) private crossings. The existing warning devices range from dual gates, flashing lights with cantilevers, passive warning utilizing crossbucks, and yield signs. Most public crossings have wood or rubber crossing surfaces with asphalt approaches, while private crossings have wood or rubber crossing surfaces with gravel approaches. Signaling and communication improvements will significantly improve safety and movement of people and freight by preventing or greatly reducing site-specific hazards. Funding is being sought to address safety concerns at 46 sites, nearly one-third of the total 155 inventoried crossings along the BR-NOLA Intercity Passenger Rail corridor and including the 109 at-grade crossings within the KCS segment. **Section 4.7** (Infastructure Improvements) and **Section 6** (Implementation Plan) provide more detail on the activities planned to address safety concerns at these 46 sites.

3.2 Canadian National Baton Rouge and McComb Subdivisions

The CN segment of the corridor consists of the CN Baton Rouge Subdivision between Frellsen Junction in St. Charles Parish and Orleans Junction (MP 900.78) in Jefferson Parish, and the CN McComb Subdivision between Orleans Junction (MP 900.78) and Southport Junction (MP 908.6) in Jefferson Parish (see **Figure 3**). Although CPKC has trackage rights on a portion of this route, CN maintains dispatching on this segment.

Train data on the CN segment was not available for this study. Per the FRA at-grade crossing database, approximately nine (9) freight trains per day and four (4) intercity passenger trains operate through this segment. What is known about operations on the CN segment is that trains operate between the eastern and western railroads via the NS "Back Belt" line and the NOPB Huey Long Bridge. Most of these trains cross the CN main line through the East Bridge Junction at a maximum speed of 5 mph. This interlocking area is the most congested segment of the corridor.

Within the limits of this segment, the track structure is at-grade with primary operating speeds of 25 mph with the exception of lowered speeds for operations at East Bridge Junction. There are some bridge and drainage structures within this segment for consideration. However, no data was provided by CN regarding track, bridge, or drainage conditions. In addition, a limited number of public and private at-grade crossings are also located within this segment.

3.3 Amtrak: Southport Junction to New Orleans Union Passenger Terminal

The Amtrak segment consists of two routes, one from the east and one from the west, which combine into a single track at Carrollton Junction (see **Figure 3**). As mentioned previously, there are currently three Amtrak operations per day serving NOUPT: the City of New Orleans and the Crescent, both of which operate daily; and the Sunset Limited, which operates three (3) days per week.

The BR-NOLA service will follow the route through Carrollton Junction towards Southport Junction. The total length of this route is 3.7 miles from NOUPT. The track structure is ballast wood tie track on prepared subgrade. Timetable maximum speed on the main track is 30 mph. The segment has three (3) bridge structures over waterways and is completely grade-separated from at-grade crossings between Southport Junction and NOUPT.



3.4 Rail Travel Times Under Existing Conditions

Passenger rail service was discontinued in 1969, but interest in reviving this service has remained strong since that time. Hypothetical travel times were calculated based on using the existing track with no improvements. These travel times serve as a baseline for the service alternatives analyzed. **Table 2** is a timetable that illustrates end-to-end travel times including station dwell and schedule recovery times. Westbound travel time is 2 hours 22 minutes, while eastbound travel time is 2 hours 23 minutes.

Station		Corridor Mile		Station		Corridor Mile	
NOUPT	7:00 AM	0	DP	Baton Rouge, LA	9:52 AM	0	DP
Jefferson Parish, LA	7:24 AM	8.5		Baton Rouge Suburban	10:10 AM	5.3	
Kenner, LA	7:34 AM	11.4		Gonzales, LA	10:30 AM	21.8	
La Place, LA	8:09 AM	27.3		La Place, LA	11:04 AM	51.8	
Gonzales, LA	8:43 AM	57.3		Kenner, LA	11:38 AM	67.7	
Baton Rouge Suburban	9:02 AM	73.8	•	Jefferson Parish, LA	11:49 AM	70.6	•
Baton Rouge, LA	9:22 AM	79.1	AR	NOUPT	12:15 PM	79.1	AR

	Table 2:	Hypothetical	Travel	Times on	Existing	Rail	Infrastructure
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3.5 Environmental

A preliminary environmental review was conducted using publicly available data for the BR-NOLA passenger rail corridor to identify environmental and community resources present. Geospatial data was collected in a Geographic Information Systems (GIS) database and are displayed in a compiled Mapbook found in **Appendix B** of this report. An Environmental Inventory List with place names and other identifiers is also included as part of **Appendix B**.

The proposed passenger rail project consists mainly of upgrades to rail tracks within the existing rail right of way (ROW). A very limited amount of work will require additional ROW for new embankment and trackwork for Build Cases #3 and #4, and only Build Case #4 would require the acquisition of new ROW. All the proposed stations are generally located in urbanized areas where redevelopment would be beneficial. Compliance with existing local, state, and federal regulations is uncomplicated.

Because the project calls for replacement of the Bonnet Carré Spillway railroad bridge, which crosses a US Army Corps of Engineers (USACE) civil works project, this activity will likely require a National Environmental Policy Act (NEPA) review at the class of action determined by the sponsoring and cooperating agencies in support of a Section 408 permission as required under Section 14 of the Rivers and Harbors Act. There is no reason to believe that the class of action would be higher than an Environmental Assessment. The project also crosses the Maurepas Swamp Wildlife Management Area (WMA) near the Ascension Parish/St. James Parish line. This area is federally protected as high quality wetlands habitat under Section 404 of the Clean Water Act (CWA) as well as a public recreational area under Section 4(f) of the Transportation Act. Coordination will be undertaken with the USACE, New Orleans District Regulatory Division for Section 404



permitting and the Louisiana Department of Wildlife and Fisheries (LDWF) and US Fish and Wildlife Service (USFWS) for the Maurepas Swamp WMA.

The following discussion is a feasibility-level environmental review not intended to be comprehensive or compliant with NEPA regulations as adopted by the US Department of Transportation (USDOT). A comprehensive NEPA review will be undertaken by the FRA and project sponsors along with the USACE and other agencies with permitting or jurisdictional authority.

3.5.1 Land Use

The existing land use adjacent to the BR-NOLA Intercity Passenger Rail corridor varies. Highly urbanized in Baton Rouge and New Orleans, as well as in Jefferson Parish, the corridor also traverses suburban Ascension Parish before crossing into undeveloped swamp lands between Sorrento (Ascension Parish) and Gramercy (St. James Parish). Land use from Gramercy through to LaPlace and St. John the Baptist and St. Charles Parishes to the Jefferson Parish line alternates between agricultural, heavy industrial, residential, and undeveloped.

3.5.2 Hazardous Waste

The Louisiana Department of Environmental Quality (LDEQ) was established in 1979 to regulate the environment including management of hazardous waste. Since that time, LDEQ has implemented and enforced rules to identify, clean-up, and remediate underground storage tanks (USTs) and other sources of spills and releases that have or may have caused contamination to soil and groundwater. Releases of major non-petroleum products were either identified as priority sites required to be cleaned up by the responsible party under the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund), or as non-priority list (NPL) sites. No Superfund or NPL sites are located adjacent to or within the rail corridor ROW.

In addition, the US Environmental Protection Agency (EPA) established the Brownfields Program in 1995 to assess the risk of reusing NPL and locally identified sites. No brownfield sites were identified adjacent to or within the proposed rail corridor ROW.

3.5.3 Historic and Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) protects cultural resources that are listed or eligible to be listed on the National Register of Historic Places (NRHP). Section 4(f) of the Transportation Act regulates the use of these historic and cultural resources for federal transportation projects. No known historic or archeological sites are documented within the existing ROW. The rail route passes seven (7) cemeteries, nine (9) parks, three (3) private schools, and three (3) public schools including the historic Booker T. Washington School and Auditorium in New Orleans, which is adjacent to the NOUPT and is listed on the NRHP. The proposed Baton Rouge Downtown station falls within a NRHP historic district and is surrounded by NRHP-eligible sites. The rail ROW also passes through and is adjacent to several historic districts in Baton Rouge. In New Orleans, the rail ROW skirts the Mid-City Historic District before arriving at the NOUPT. It is known that the Bonnet Carré Spillway contains cultural resources that will require consideration in coordination with the Louisiana State Historic Preservation Office (LASHPO) and in accordance with Section 106 of the NHPA.



3.5.4 Public Parks and Recreation Sites

Use of publicly owned parks, public recreation areas, and wildlife refuges is also regulated by Section 4(f) of the Transportation Act. Nine (9) parks are located along the corridor, but existing conditions indicate that no park property would be directly or temporarily used. Proximity impacts from noise, access, or changes to the viewshed are not anticipated; therefore, no constructive use from the proposed property is likely. The corridor crosses through the Maurepas Swamp WMA, which is open to the public for recreational hunting and fishing by permit. No new ROW would be required within this area. Furthermore, it is unlikely that proximity impacts from noise, access, or effects on air or water quality would occur that could constitute constructive use of this property as defined by Section 4(f).

3.5.5 Water Resources

Several active water wells exist within 100 feet of the BR-NOLA rail corridor. Monitoring wells and wells for industrial and agricultural uses are found near the tracks in St. James Parish, St. John the Baptist Parish, and St. Charles Parish as well as near the Pontchartrain Expressway and at the NOUPT.

The BR-NOLA rail corridor is located in the coastal plain of Louisiana. From Ascension Parish to New Orleans, the corridor is located within the Coastal Zone Boundary and crosses through freshwater ecosystems consisting of marshlands, riverine, forested and scrub-shrub swamps, and flowing streams. The largest system crossed by the railroad is the Maurepas Swamp, a vast forested wetland between Sorrento and Gramercy associated with Lake Maurepas.

The Mississippi River is leveed for the entire length of the corridor and has little influence on the surface waters of the area except at the Bonnet Carré Spillway when the gates are opened to control river levels. Lake Pontchartrain, to the east and north of the BR-NOLA corridor, is a mix of fresh water from coastal plain rivers and salt water of the Gulf of Mexico that creates a vast estuary with a decreasing salinity gradient from east to west. When spillway gates are closed, the lake is the major influence on the Bonnet Carré scrub-shrub wetlands. The rail was built prior to establishment of Section 404 CWA protections. Therefore, wetlands present within the existing rail ROW are likely non-regulated waters or wetlands that would be deemed to be not jurisdictional except those within the spillway, which is a federal civil works project under the authority of the USACE, New Orleans District.

The BR-NOLA rail corridor crosses several streams and waterbodies. Two of these, Bayou Manchac and Blind River (both in Ascension Parish), are classified as natural or scenic streams. Scenic Rivers Permit (SRP) #943 was issued to KCS for replacement of the railroad bridge crossing Bayou Manchac in October 2015. Bankline sloping was also authorized with planting requirements as a stipulation of the permit. SRP #837 was issued to KCS for replacement of the existing timber bridge crossing Blind River with a concrete and steel bridge in 2012. A modification to SRP #837 was granted in 2013. Any upgrades to these bridges would require a modification to the existing SRPs.

Many of the other streams crossed by the BR-NOLA rail corridor are channelized and some are lined with concrete for purposes of capturing and moving stormwater out of the area. Upgrades made to any railroad bridges would not change current volumes of runoff or affect water quality. Best management practices would be implemented during construction to manage runoff and prevent pollution from discharging to existing surface waters. Any impacts, temporary or permanent, to these streams from bridge upgrades would be assessed. Coordination with the USACE Regulatory Division would result in a jurisdictional determination



(JD) for each system. The JD will determine the type of permit and required mitigation for unavoidable impacts to jurisdictional waters.

3.5.6 Floodplains

The BR-NOLA Intercity Passenger Rail line crosses through Federal Emergency Management Agency (FEMA) designated Flood Hazard Areas (1% Annual Chance Flood Hazard Area) at various points along the rail corridor. These include near Dawson Creek at Perkins Road and Pollard Parkway; the Mall of Louisiana; Ward Creek Diversion near Siegen Lane and Old Perkins Road in Baton Rouge; and at the Ascension Parish/St. James Parish line near Bayou Manchac. The rail line also enters the floodplain in Ascension Parish where the tracks cross Bayou Narcisse and in the area of the proposed Gonzales train station. The tracks remain in the flood hazard area from there to LaPlace (including the proposed LaPlace train station) in St. John the Baptist Parish and then reenter the floodplain area again at the Jefferson Parish/Orleans Parish line through to Uptown and Downtown New Orleans. The NOUPT in Downtown New Orleans would be in this flood hazard area but neither station in Jefferson Parish would be included. Any increase in fill from track improvements and new sidings would be mitigated to maintain flow and avoid creating new flooding.

3.5.7 Threatened and Endangered Species

As shown in **Table 3**, six **Federally Listed Species** occur within the parishes of concern. Critical habitat for the Gulf sturgeon is limited to Lake Pontchartrain east of the Causeway Bridge; therefore, this species would not be affected by any project activities. Occurrence of the pallid sturgeon is limited to the Mississippi River and would not be affected by the project. Occurrences of piping plover are limited to the coastal beaches of Jefferson Parish outside the project area. The red knot also prefers coastal areas but bird sightings have been documented on the shores of Lake Pontchartrain during non-breeding migration periods.



Common/Scientific			
Name	Status	Habitat	Parishes
Alligator Snapping Turtle (Macrochelys temminckii)	Candidate for Threatened Status	Well-shaded sections of large rivers, coastal marshes, and freshwater lakes and bayous	Ascension, East Baton Rouge, Jefferson, St. Charles, St. John the Baptist
Bald Eagle* (Haliaeetus leucocephalus)	Delisted	Wetland areas such as rivers, lakeshores, and marshes with large, tall trees.	Ascension, St. James
Gulf Sturgeon (Acipenser oxyrinchus desotoi)	Threatened	Groundwater springs with firm beds at spawn; cooler, deeper, slower- moving water as adults and older juveniles.	Ascension, Orleans
Inflated Heelsplitter (Potamilus inflatus)	Threatened	Flowing rivers with stable sand or silt bottoms	Ascension, East Baton Rouge
Pallid Sturgeon (Scaphirhynchus albus)	Endangered	Rivers with swift to moderate currents with firm, sandy beds	Ascension, East Baton Rouge, Orleans, St. Charles, St. James
Piping Plover (Charadrius melodus)	Threatened	Beaches and mudflats of barrier islands	Jefferson
Red Knot (Calidris canutus)	Threatened	Mudflats (open, stony tundra near wetlands while breeding)	Jefferson
West Indian Manatee (Trichechus manatus)	Threatened	Shallow, slow-moving rivers saltwater bays	Ascension, East Baton Rouge, Jefferson, Orleans, St. Charles, St. James, St. John the Baptist

Table 3: Federally Protected Species Inhabiting Louisiana Parishes Within the Project Area

(Source: LDWF 2023)

*The bald eagle receives Federal protection under the Bald and Golden Eagle Protection Act.

The West Indian manatee is protected by the Endangered Species Act as well as the Marine Mammal Protection Act. Manatee are highly mobile, and their range includes marine, estuarine, and freshwater environments. The BR-NOLA rail corridor does not overlap any documented manatee critical habitat, but any open water connected to the Gulf of Mexico could provide habitat for this species. To ensure there are no impacts to manatee locations, in-water activities will be coordinated through USFWS to determine if mitigation measures should be implemented.

Bridge improvements at locations that cross tributaries or distributaries of the Amite River in East Baton Rouge Parish and Ascension Parish should be surveyed for the presence of freshwater mussels before work commences. Habitat for the inflated heelsplitter is described as soft, stable stream bottoms in slow to moderate currents. It has been found in sand, mud, silt, and sandy gravel but not in large gravel or armored gravel.



Snapping turtles and bald eagles can be observed in the field. The largest species of freshwater turtles, alligator snapping turtles, are almost exclusively aquatic and tend to stay submerged and motionless in the water. Eagles are migratory, but monogamous pairs will use the same nest annually unless conditions deter them from this practice. These nests are large and usually built at the top of the tallest tree near water or open spaces for hunting. A visual survey of water crossings for turtles and along the corridor for eagle nests will determine if either of these species would be affected by construction activities. Prohibition of construction activities within 1,500 feet of an active eagle nest may be required if one is identified. Protection of freshwater streams and riparian habitat and prohibition of hunting turtles or disturbing nests during construction is a recommended best practice for conservation of this species.

With regard to **State Listed Species**, the Louisiana Natural Heritage Program (LNHP), part of the LDWF, maintains a list of Species of Concern (SOC). This list includes species whose occurrence in Louisiana is or may be in jeopardy, or with known or perceived threats or population declines. These species are not necessarily the same as those protected by the Federal government under the Endangered Species Act. Three species occur within the area of concern as shown in **Table 4**. The BR-NOLA rail corridor would not clear any new ROW except for Build Case #4; therefore, the probability of affecting skunks and weasels is low. All the wetlands and water bodies crossed by the rail corridor are freshwater; therefore, no terrapin habitat would be affected.

Common/Scientific			
Name	Status	Habitat	Parishes
Eastern Spotted Skunk (Spilogale putorius)	Restricted	Forested or otherwise well-covered areas, including brushy, prairie outcrops	Ascension, St. James
Long-tailed Weasel (Mustela frenata)	Restricted	Riparian grasslands, woodlands, marshes, and swamps	East Baton Rouge, St. James
Mississippi Diamond- backed Terrapin (Malaclemys terrapin pileata)	Restricted	Brackish, watery areas such as seagrass beds, marshes and mangrove estuaries	Jefferson

Table 4: Rare	Animal	Species	Inhabiting	Louisiana	Parishes	Within	the	Project Ar	rea

(Source: LDWF 2023)

3.5.8 Environmental Justice (EJ) Communities

The BR-NOLA rail corridor passes through a number of Census Tracts that contain EJ communities. Downtown Baton Rouge, Sorrento, Gramercy, LaPlace, Norco, Kenner, and New Orleans neighborhoods around Carrollton and Claiborne contain low-income, underserved, and disadvantaged households. Neighborhoods from Gramercy to LaPlace and Norco are not only affected by the BR-NOLA rail corridor but are also impacted by their proximity to numerous large petrochemical industrial facilities.

Already disproportionately burdened by lack of neighborhood cohesion and connectivity, environmental impacts including air emissions, train noise, and risk of exposure to hazardous material releases from freight movements, people in EJ communities living and traveling near the tracks will experience increased but temporary effects from construction activities associated with relocating or expanding existing train track



infrastructure. These disruptions will be mitigated by limits on times and durations of construction activities, maintenance of automobile and train traffic and access, and other measures. Intercity passenger rail service would have a neutral affect in terms of air quality because the proposed trainsets would utilize improved, cleaner, more energy-efficient engines. Improvements at railroad crossings and the addition of CTC and PTC would deliver safety benefits to these communities and increase access to job and employment opportunities across a variety of industries including construction, tourism/service industry, railroad operations, and maintenance. Some physical and economic benefits including new landscaping, lighting, and security measures would also accrue to EJ neighborhoods near proposed new passenger rail stations.



SECTION 4. SERVICE ALTERNATIVES AND EVALUATION

Four service alternatives for the BR-NOLA Intercity Passenger Rail Corridor were evaluated. These alternatives (Build Cases) include:

- One (1) roundtrip with one (1) trainset (Build Case #1)
- Two (2) roundtrips with one (1) trainset (Build Case #2)
- Two (2) roundtrips with two (2) trainsets (Build Case #3)
- Four (4) roundtrips with two (2) trainsets (Build Case #4)

Each Build Case was modeled using rail operations simulation modeling to evaluate the infrastructure needs for each service alternative and compared to two (2) existing conditions (Base Case) models. Rail operations simulation helps determine the type and amount of additional infrastructure needed to support different levels of passenger rail service in shared passenger/freight corridors. The model recreates the rail corridor in a computer simulation, with existing tracks, speed limits and freight train operations.

Models for the current study were created using Rail Traffic Controller[™] (RTC) software, developed by Berkeley Simulation Systems LLC, which is used and accepted by all major railroads and the FRA for testing and validating proposed infrastructure improvements. The models incorporated data provided from host freight railroads, LaDOTD, Amtrak and other stakeholders, including:

- Proposed passenger train schedules and station stops
- Proposed passenger train consist
- Existing freight operations and infrastructure on the corridor
- Operating requirements from freight railroads, including acceptable freight operating parameters during passenger service hours

Separate models were created for each service alternative evaluated. Each model looked at where interference between existing freight operations and the proposed passenger service was occurring. Rail infrastructure was then incrementally added in these locations to mitigate the resulting delays, until freight train performance approximately matched conditions prior to the addition of passenger train service. A list of specific infrastructure improvements for each service alternative are summarized for each modeling case.

4.1 Methodology

The RTC modeling operations simulation used for this study consists of understanding the effects of a proposed or anticipated change in infrastructure, trains, or both, on the operation of all trains that operate on a selected portion of a railroad. To understand the effects of the change, multiple operations simulation cases are prepared to enable comparisons between the alternative future conditions in which the change is implemented, and the future condition in which the change is not implemented.

Operations simulation models seek to replicate "real world" train operations. The model attempts to dispatch



trains such that each train independently obtains its best performance and outcome given its priority among all trains, within a set of rules that limit behavior of trains such as maximum speed, acceleration and braking rates determined by their tonnage and horsepower, and required station and terminal stops. The operations simulation model then delivers metrics that informs the user about the performance of trains only in the scenario that the user has defined. In order to find out how trains would operate in a different scenario, the user must redefine the scenario differently and create a new operations model. Additional data pre- and post-processing tools developed by HDR were used to automate the input and output of data from the model. These tools do not affect the dispatching or performance of trains within the RTC model itself.

Train data on the CN segment was not available for use in the rail simulations, so publicly-available information was used to develop CN track infrastructure. However, without accurate train data, a full analysis of this rail corridor segment including recommended infrastructure improvements is not currently possible.

KCS and Amtrak passenger trains were modeled to operate over this segment, but no other trains were modeled over the CN segment.⁵ For the KCS section of the rail corridor, timetables, track charts and freight train data were provided by KCS for use in this analysis. Amtrak also provided a timetable for their route segment into NOUPT.

Between Mays Yard and Southport Junction (which offers a connection with the passenger line to NOUPT) is the East Bridge Junction complex that carries additional passenger trains operating three days a week (Sunset Limited) and an estimated thirty interchange freight trains/yard transfers per day. This is the most congested segment of the rail corridor, with all of CN's train operations in New Orleans coming through Mays Yard. East Bridge Junction offers the only rail connection between Eastern (CSX, NS) and Western (CN, KCS, UP, BNSF) railroads in New Orleans.

4.2 **Operations Simulation Cases**

As shown on **Figure 4** (which includes an inset for the extent through metropolitan New Orleans), the study area for the BR-NOLA rail corridor consists of the following railroad sections:

- KCS New Orleans Subdivision between Baton Rouge (MP 788.4) and Frellsen Junction (MP 855.7)
- CN Baton Rouge Subdivision between Frellsen Junction (MP 443.5) and Orleans Junction (MP 444.2)
- CN McComb Subdivision between Orleans Junction (MP 900.78) and Southport Junction (MP 908.6)
- **NOUPT** between Southport Junction (MP 3.7) and NOUPT (MP 0.0)*

⁵ Any CN operational data added to this segment would need to be addressed in the SDP.





Figure 4: Study Area for BR-NOLA Rail Corridor



The following operations simulation scenarios were performed:

- Base Case #1-Existing Conditions: Simulates existing KCS freight operations and infrastructure in the corridor. This is used to calibrate the RTC model and reviewed with KCS engineering and operations personnel to validate that it accurately depicts existing KCS operations
- Base Case #2-Existing Conditions with One Passenger Train Round Trip: Simulates existing KCS
 operations and infrastructure with one (1) passenger round-trip added. No additional
 infrastructure improvements are included
- Build Case #1-Speed and Safety Improvements: This case adds some infrastructure improvements identified as desirable to facilitate a safe and reliable operation of the passenger train service all within the existing ROW
- Build Case #2-Two Round Trips, One Trainset: This case adds infrastructure designed to mitigate freight train delays with the implementation of one (1) or two (2) daily passenger round-trip trains using one trainset all within the existing ROW
- Build Case #3–Two Round Trips, Two Trainsets: This case adds infrastructure designed to mitigate freight train delays with the implementation of two (2) daily passenger round-trip trains using two trainsets all within the existing ROW
- Build Case #4–Four Round Trips, Two Trainsets: This case adds infrastructure designed to mitigate freight train delays with the implementation of four (4) daily passenger round-trip trains using two trainsets. These improvements will require a small amount of ROW to be acquired

Freight performance metrics will be compared between all models to help determine the impact of implementing infrastructure improvements on freight delays caused by passenger train interference. As shown on **Figure 7**, these performance metrics are shown in the form of delay.

4.3 Randomization Methodology

Randomization in the simulation is important because freight trains typically have broadly variable schedules. For example, a freight train may service a client daily, but the amount of time a crew takes to switch that client may vary widely due to the amount of work the crew needs to do.

HDR's suite of modeling software used the Python[™] programming framework to create and dispatch randomized runs. The automation encompassed the process of dispatching, collecting, and aggregating multiple runs in the model. The randomization logic was used in consultation with stakeholders to specify what types of random distributions were applied, thus aiding in capturing empirical data that helped determine the type of distribution that occurs naturally.

The randomization used in the operation simulation model consisted of:

- When KCS trains enter the modeled territory (up to one hour late)
- When KCS trains depart their original terminals (up to thirty minutes late)



- Work events for KCS trains, such as switching an industry (plus or minus twenty minutes)
- Late passenger train departure times from origin station (up to ten minutes late)
- Extended station dwell times (up to ninety seconds late)

All cases were run with randomized train schedules. Upon completion, cases were calibrated and reviewed with KCS to confirm that they reflect existing and potential future operating patterns, including their normal variability.

4.4 Passenger Train Schedule Development

Passenger train schedules were developed using the Train Performance Calculator (TPC) function of RTC, which calculates the Pure Running Time (PRT) of a passenger train. PRT is determined by the particular train consist modeled (in this case, one Amtrak P42DC locomotive and three single-level passenger cars) and the physical characteristics of the route (changes in elevation, speed restrictions) which determines how long it will take for a specific train to traverse a segment of railroad unencumbered by delays related to train meets. TPC's were run for eastbound and westbound trains for both existing and improved infrastructure cases. **Figure 5** below shows a TPC for a passenger train operating from Baton Rouge to New Orleans on existing KCS, CN, and Amtrak infrastructure.



Figure 5: TPC for Train on Existing Infrastructure



4.5 Modeling Cases

The lowest level of the horizontal axis depicts the route by station and MP as well as the time the train would arrive at each station. The second level displays the gradient of the route. The third level indicates when the engineer applies train brakes. The fourth level indicates when the engineer applies dynamic brakes (red) and uses the throttle (green). The top level in gray depicts the maximum track speed as listed in the railroad timetable. The green line shows how fast the train actually goes, with dips indicating a station stop. Two (2) other inputs determine a particular train's schedule:

- Station Dwell Time: The amount of time allocated at stations for detraining and entraining passengers. This model assumed a one (1) minute dwell time at all intermediate stations⁶
- Recovery Time: Additional time added throughout the schedule to account for unanticipated yet typical delays encountered by a passenger train, such as freight train interference or extended dwell times at stations. Recovery time can be up to 8% of the PRT, depending on the route and agreement between the passenger train operator and the host railroad

4.5.1 Base Case #1 – Existing Conditions

This model was developed using infrastructure and operations data provided by KCS. The model's operation was determined to accurately reflect typical daily operations on the railroad. **Figure 6** below displays an RTC screenshot of the rail infrastructure for this phase. Of note, these figures are not created to scale.

<u>04/FRA%20ADA%20Platform%20Guidance%204.11.2022</u> FINAL2 PDFa.pdf. The Caltrain blog post can be accessed at https://www.greencaltrain.com/2012/12/faster-service-and-more-capacity-if-caltrain-and-hsr-can-solve-platform-problems/.



⁶ FRA's ADA Intercity and High-Speed Passenger Rail Platform Construction Guidance and Lessons Learned report does not mention dwell time as a concern for disabled passengers. Rather, it provides guidelines on determining the otpimal platform length to provide accessibility and adequate space for passengers to align and board while minimizing train dwell time. A later blog post issued by Friends of Caltrain (California Train) delinates some median dwell times for their train service providers (Caltrain and BART) and the one-minute dwell time noted in the model for this feasibility study is well within the median dwell times observed by Caltrain and BART. FRA's ADA Platform Guidance can be found at https://railroads.dot.gov/sites/fra.dot.gov/files/2022-



Figure 6: Base Case #1 RTC Infrastructure

4.5.2 Base Case #2 – Existing Conditions with One Passenger Train (Round Trip)

The hypothetical schedule for one (1) round trip using existing rail infrastructure is depicted in **Table 5**. Any schedule optimization will be further developed in the SDP.

Train Number					Dwell	RT	PRT
Station	Daily	Railroad Mile	Corridor Mile				
NOUPT	7:00 AM	0.0 (ATK)	0	DP			
Jefferson Parish, LA	7:24 AM	904.2 (CN)	8.5		0:01	0:01	0:22
Kenner, LA	7:34 AM	901.3 (CN)	11.4		0:01		0:09
La Place, LA	8:09 AM	841.0 (KCS)	27.3		0:01	0:01	0:33
Gonzales, LA	8:43 AM	811 (KCS)	57.3		0:01	0:01	0:32
Baton Rouge Suburban	9:02 AM	794.5 (KCS)	73.8	+	0:01		0:18
Baton Rouge, LA	9:22 AM	789.2 (KCS)	79.1	AR		0:04	0:16
Train Number					Dwell	RT	PRT
Station	Daily	Railroad Mile	Corridor Mile				
Baton Rouge, LA	9:52 AM	789.2 (KCS)	0	DP			
Baton Rouge Suburban	10:10 AM	794.5 (KCS)	5.3		0:01		0:17
Gonzales, LA	10:30 AM	811.0 (KCS)	21.8		0:01	0:01	0:18
La Place, LA	11:04 AM	841.0 (KCS)	51.8		0:01	0:01	0:32
Kenner, LA	11:38 AM	901.3 (CN)	67.7		0:01		0:33
Jefferson Parish, LA	11:49 AM	904.2 (CN)	70.6	•	0:01	0:01	0:09
NOUPT	12:15 PM	0.0 (ATK)	79.1	AR		0:04	0:22

Table 5: Hypothetical Passenger Schedule at Existing Speeds

No infrastructure improvements were modeled in this case. There is no layover or station track in Baton Rouge, so the train would hold at the main track or be moved empty to another station location in Baton Rouge for thirty (30) minutes to allow for detraining passengers, a sweep of the train by a conductor,



changing train operating ends, entraining passengers, and departing. This assumes that the train consist has a cab (or control) car which would allow for push-pull operation. If the train needs to be wyed, additional time between arrival and departure in Baton Rouge would be needed for the train to access a wye north of the KCS Baton Rouge Yard.



Figure 7 displays randomized freight train performance metrics for each of the model cases:

Figure 7: Cumulative Delay by Freight Operations per day

4.5.3 Build Case #1 – Speed and Safety Improvements (1 round trip)

This case adds some infrastructure improvements identified as necessary to facilitate a time-competitive, safe, and reliable operation of the passenger train service, including:

- Platform installations and other improvements at all proposed stations
- Replacement of the existing Bonnet Carré Spillway railroad bridge
- Installation of CTC
- Tie and rail rehabilitation
- Curve superelevation at some locations to increase operating speed
- Realignment of main track through Norco (MP 846.3 to MP 848.6) to increase operating speed



- Replacing spring frog turnouts with power turnouts and electric locks
- Layover track in Baton Rouge would allow a location for passenger trains to lay over off the main track in Baton Rouge. The exact location of this track has not yet been determined

Table 6 compares existing train speeds on the KCS corridor segment with speeds after improvements are completed.

Host Bailroad	From Bailroad MP	To Bailroad MP	MAS 59 PSG*	MAS 79 PSG*	Difference
KCS	789.1	790.3	20	20	0
KCS	790.3	793.6	20	79	59
KCS	793.6	801.1	59	79	20
KCS	801.1	801.2	49	65	14
KCS	801.2	811.1	59	79	20
KCS	811.1	811.2	49	65	14
KCS	811.2	827.4	59	79	20
KCS	827.4	827.9	49	65	14
KCS	827.9	840.1	59	79	20
KCS	840.1	840.6	49	65	14
KCS	840.6	844.5	59	79	20
KCS	844.5	846.3	10	79	69
KCS	846.3	848.6	25	79	54
KCS	848.6	848.8	59	79	20
KCS	848.8	849.1	49	65	14
KCS	849.1	853.5	59	79	20
KCS	853.5	853.8	49	65	14
KCS	853.8	854.6	59	79	29
KCS	854.6	855.6	59	55	-4
CN	855.6	3.67	25	45	20
NOUPT	3.67	0.44	30	45	15
NOUPT	0.44	0	10	10	0

Table 6: Train Speeds Before and After Build Case #1 Improvements

*MAS is Maximum Authorized Speed; PSG is Passenger



Table 7 is a hypothetical schedule for one (1) round trip using the upgraded rail infrastructure listed above. It should be noted that the proposed schedules depicted below are preliminary.

Train Number		701					
Station		Daily	Railroad MP	Corridor Mile	Dwell	RT	PRT
NOUPT	DP	7:00 AM	0.0 (ATK)	0			
Jefferson Parish, LA		7:16 AM	904.2 (CN)	8.5	0:01	0:01	0:14
Kenner, LA		7:22 AM	901.3 (CN)	11.4	0:01		0:05
La Place, LA		7:38 AM	841.0 (KCS)	27.3	0:01	0:01	0:14
Gonzales, LA		8:04 AM	811 (KCS)	57.3	0:01	0:01	0:24
Baton Rouge Suburban	+	8:19 AM	794.5 (KCS)	73.8	0:01		0:14
Baton Rouge, LA	AR	8:31 AM	789.2 (KCS)	79.1		0:04	0:08
Train Number		702					
Station		Daily	Railroad MP	Corridor Mile	Dwell	RT	PRT
Baton Rouge, LA	DP	9:00 AM	789.2 (KCS)	0			
Baton Rouge Suburban		9:09 AM	794.5 (KCS)	5.3	0:01		0:08
Gonzales, LA		9:25 AM	811.0 (KCS)	21.8	0:01	0:01	0:14
La Place, LA		9:51 AM	841.0 (KCS)	51.8	0:01	0:01	0:24
Kenner, LA		10:06 AM	901.3 (CN)	67.7	0:01		0:14
Jefferson Parish, LA	+	10:13 AM	904.2 (CN)	70.6	0:01	0:01	0:05
NOUPT	AR	10:31 AM	0.0 (ATK)	79.1		0:04	0:14

Table 7: Hypothetical Passenger Schedule with Upgraded Infrastructure

Although passenger train speeds would be higher, passenger-associated freight delays are not expected to increase significantly between Base Case #2 and Build Case #1.

4.5.4 Build Case #2 – Two Round Trips, One Trainset

This case evaluates the impacts on freight operations with implementation of two (2) daily round-trip passenger trains using one (1) trainset. **Table 8** is a hypothetical schedule for this Build Case.


			-						
Train Number			701	703	Train Number			702	704
Station			Daily	Daily	Station			Daily	Daily
NOUPT	D	Ρ	7:00 AM	4:00 PM	Baton Rouge, LA	0	P	9:00 AM	6:00 PM
Jefferson Parish, LA			7:16 AM	4:16 PM	Baton Rouge Suburban			9:09 AM	6:09 PM
Kenner, LA			7:22 AM	4:22 PM	Gonzales, LA			9:25 AM	6:25 PM
La Place, LA			7:38 AM	4:38 PM	La Place, LA			9:51 AM	6:51 PM
Gonzales, LA			8:04 AM	5:04 PM	Kenner, LA			10:06 AM	7:06 PM
Baton Rouge Suburban	1		8:19 AM	5:19 PM	Jefferson Parish, LA			10:13 AM	7:13 PM
Baton Rouge, LA	Α	R	8:31 AM	5:31 PM	NOUPT	4	R	10:31 AM	7:31 PM
Train Turn			702	704	Train Turn			703	701

Table 8: Hypothetical Passenger Schedule with Two Round Trips, One Trainset

This service would begin as two (2) round trips and one (1) trainset. This option maximizes the use of passenger train equipment, but train schedule times may not be optimal from a ridership standpoint. Once demand is established, a second trainset could be introduced to the service (see **Table 9** and **Table 10**).

With two (2) daily round trips, the passenger-freight interactions could conceivably double depending on timing. This would likely create some significant operating issues for KCS at Reserve, where train makeup and arrivals use the main track for switching. It would also double the amount of time that trains hold the main track at the Downtown Baton Rouge Station, or laying in at another site and blocking KCS freight access to and from the Baton Rouge Yard for over two (2) hours per day.

The following infrastructure improvement was added to the model in addition to those identified in Build Case #1 to help mitigate increased passenger-associated freight delays:

 Industry siding/lead between West 10th Street (MP 835.9) by Reserve Yard to Pinnacle Polymers Road (MP 833.1): this track on the south side of the main track would permit KCS to operate at Reserve Yard and switch Pinnacle and Marathon customers without interfering with passenger train operations

4.5.5 Build Case #3 – Two Round Trips, Two Trainsets

This case adds infrastructure designed to mitigate freight train delays with the implementation of two (2) daily round-trip trains using two (2) trainsets. **Table 9** is a hypothetical schedule for two (2) round trips using two (2) trainsets.



Train Number			701	703	Train Number			702	704
Station			Daily	Daily	Station			Daily	Daily
NOUPT	۵	P	7:05 AM	4:05 PM	Baton Rouge, LA	[DP	7:00 AM	4:00 PM
Jefferson Parish, LA			7:21 AM	4:21 PM	Baton Rouge Suburban			7:09 AM	4:09 PM
Kenner, LA			7:27 AM	4:27 PM	Gonzales, LA			7:25 AM	4:25 PM
La Place, LA			7:43 AM	4:43 PM	La Place, LA			7:51 AM	4:51 PM
Gonzales, LA			8:10 AM	5:10 PM	Kenner, LA			8:06 AM	5:06 PM
Baton Rouge Suburban			8:25 AM	5:25 PM	Jefferson Parish, LA			8:13 AM	5:13 PM
Baton Rouge, LA	A	R	8:37 AM	5:37 PM	NOUPT		٩R	8:31 AM	5:31 PM
Train Turn			704	702	Train Turn			703	701

 Table 9: Hypothetical Passenger Schedule with Two Round Trips, Two Trainsets

This option provides the ability to offer schedules that may be optimal from a ridership standpoint but does not efficiently utilize passenger equipment.

With two (2) trainsets in operation, a location must be chosen for passenger trains to meet. The existing KCS siding at Montegut (MP 839.4) near LaPlace would be an ideal location as it is located midway between New Orleans and Baton Rouge. The siding must be upgraded to accommodate these meets. In addition to improvements noted in Build Cases #1 and #2, further improvements would include installing power turnouts and upgrading the siding track structure and signal at Montegut to accommodate passenger train speeds of 30 mph. The schedule in **Table 9** has planned meets at Montegut.

4.5.6 Build Case #4 – Four Round Trips, Two Trainsets

This case adds infrastructure designed to mitigate freight train delays with the implementation of four (4) daily round-trip trains using two (2) trainsets. **Table 10** is a hypothetical schedule for four (4) round trips using two (2) trainsets.

			5										
Train Number			701	703	705	707	Train Number	Train Number		702	704	706	708
Station			Daily	Daily	Daily	Daily	Station			Daily	Daily	Daily	Daily
NOUPT	D	P	7:05 AM	11:05 AM	4:05 PM	8:05 PM	Baton Rouge, LA	DP 7:00		7:00 AM	11:00 AM	4:00 PM	8:00 PM
Jefferson Parish, LA			7:21 AM	11:21 AM	4:21 PM	8:21 PM	Baton Rouge Suburban	7:09		7:09 AM	11:09 AM	4:09 PM	8:09 PM
Kenner, LA			7:27 AM	11:27 AM	4:27 PM	8:27 PM	Gonzales, LA			7:25 AM	11:25 AM	4:25 PM	8:25 PM
La Place, LA			7:43 AM	11:43 AM	4:43 PM	8:43 PM	La Place, LA			7:51 AM	11:51 AM	4:51 PM	8:51 PM
Gonzales, LA			8:10 AM	12:10 PM	5:10 PM	9:10 PM	Kenner, LA			8:06 AM	12:06 PM	5:06 PM	9:06 PM
Baton Rouge Suburban			8:25 AM	12:25 PM	5:25 PM	9:25 PM	Jefferson Parish, LA		ŀ	8:13 AM	12:13 PM	5:13 PM	9:13 PM
Baton Rouge, LA	A	R	8:37 AM	12:37 PM	5:37 PM	9:37 PM	NOUPT	AR 8:31 AM 12:31 PM 5:31		5:31 PM	9:31 PM		
Train Turn			704	706	708	702	Train Turn	703 705 707		707	701		

Table	10: H	vpothetical	Passenger	Schedule	with	Four	Round	Trips
iuote	-0.11	ypouncticat	i assenger	Schedute		1 0 01	nouna	11195

With four (4) round trips, passenger/freight interference increases dramatically. Finding a way to allow KCS trains to serve on-line industries with minimal passenger train interference could reduce passenger/freight delays significantly. The following infrastructure improvements, in addition to those for Build Cases #1, #2, and #3, were added to this model to help mitigate those delays:



- Extending Diamond Green industry lead in Norco from MP 848.4 to 849.4. KCS switches up to 56 cars in and out of this facility, sometimes twice daily, and blocks the main tracks for several hours while doing this. Extending the lead to MP 849.4, west of Harding Road, would eliminate most passenger/freight conflicts in this location
- Extending industry siding at Norco from MP 846.3 to MP 848.6. This would be north of or on the main track alignment after the main track is shifted south. There is significant switching throughout Norco, and this siding would eliminate most passenger-freight conflicts
- Replacing open deck timber trestles. With the additional passenger operations and increase in general maintenance requirement within the corridor, replacement of these structures were included for the full buildout. Ongoing negotiations and coordination between DOTD and the host railroad need to take place before any consensus around replacing the open deck bridges is determined

Based on these results, the addition of incremental improvements as passenger rail service increases would provide reliable, on-time performance of passenger trains that would maintain operational flexibility and reliability for existing KCS freight operations. The proposed full build-out for the BR-NOLA Intercity Passenger Rail service is to offer a four (4) roundtrip, two (2) trainset option (Build Case #4) for travelers traversing the rail corridor.

4.6 Travel Times Compared

Table 11 compares travel times on I-10 with passenger rail travel times for Base Case #2 which includes one roundtrip on the existing rail infrastructure. The extra time it would take to travel from Baton Rouge to New Orleans by passenger rail ranges from 53 to 73 minutes. Travel time comparisons for the reverse trip are also provided in **Table 11** along with trip times between Baton Rouge and Kenner/MSY. Base Case #2 modeled a morning departure, but the passenger rail travel times would generally be the same no matter what time of day the train would depart. If the single train were to depart in the afternoon as opposed to the morning, extra travel time on the passenger rail would range from 23 to 62 minutes.

	I-10 Travel Times				Base Case #2 - 1 RT Existing Rail Condition				
	NOUPT to BR Downtown	Kenner (MSY) to BR Downtown	BR Downtown to Kenner (MSY)	BR Downtown to NOUPT	NOUPT to BR Downtown	Kenner (MSY) to BR Downtown	BR Downtown to Kenner (MSY)	BR Downtown to NOUPT	
Morning Departures	70 - 85 min	60 - 75 min	60 - 75 min	70 - 90 min	142 min	108 min	106 min	143 min	
Midday Departures	70 - 90 min	60 - 75 min	60 - 85 min	70 - 90 min					
Afternoon Departures	80 - 120 min	65 - 100 min	60 - 90 min	80 - 120 min					
Evening Departures	70 - 85 min	60 - 75 min	60 - 70 min	70 - 90 min					



Table 12 provides a comparison of I-10 travel times with travel times based on infrastructure improvements that will allow for passenger train authorized speeds to be maximized. These passenger rail travel times compare favorably with automobile travel times at the upper end of the ranges. If it can operate reliably, passenger rail could offer the advantage of predictability as an offset to added travel time, if any.

	I-10 Travel T	Times			All Build Cases			
	NOUPT to BR	Kenner (MSY) to BR	BR Downtown to Kenner	BR Downtown	NOUPT to BR	Kenner (MSY) to BR	BR Downtown to Kenner	BR Downtown
Morning	70 - 85	60 - 75	(IVISY) 60 - 75	70 - 90	Downtown	Downtown		LONOUPT
Departures	min	min	min	min	92 min	70 min	66 min	91 min
Midday	70 - 90	60 - 75	60 - 85	70 - 90	92 min	70 min	66 min	91 min
Departures	min	min	min	min	52 11111	70 11111	0011111	
Afternoon	80 - 120	65 - 100	60 - 90	80 - 120	91 - 92	69 - 70	66 min	01 min
Departures	min	min	min	min	min	min	00 11111	91 1111
Evening	70 - 85	60 - 75	60 - 70	70 - 90	92 min	70 min	66 min	91 min
Departures	min	min	min	min	<i>52</i> mm	70 1111	00 1111	91 11111

Table 12: I-10 Travel Times Compared to All Build Cases

4.7 Infrastructure Investment

The operations methodology was outlined in **Section 4.1**, and more detailed descriptions for the improvements identified for the various service alternatives shown in **Section 4.5** are outlined below. Improvements identified on the CN segment of the route are not shown due to limited information. It was assumed that the East Bridge Junction interlocking would be able to handle the passenger frequencies noted for purposes of this study. **Table 13** depicts the proposed improvements for all service alternatives culminating with Build Case #4 (four roundtrips with two trainsets operating at 79 mph). Improvements were not identified for the Amtrak segment from Southport Junction to NOUPT, as this segment was determined to be adequate for additional passenger service.

Table 13: Proposed Improvements by Service Alternative

		Service Alternative						
	Base	Build	Build	Build	Build			
Case	Case 2	Case 1	Case 2	Case 3	Case 4			
Roundtrips	1RT	1RT	2RT	2RT	4RT			
	(one train	(one	(one	(two	(two			
Trainsets	set)	train set)	train set)	train set)	train set)			
Speed	Current Timetable	79MPH	79MPH	79MPH	79MPH			
IMPROVEMENTS								
At-Grade Crossings Improvements	х	Х	Х	Х	Х			
Baton Rouge Layover track	х	Х	Х	Х	Х			
Norco Mainline Realignment		Х	Х	Х	Х			



	Service Alternative				
30% Tie and Rail Rehabilitation (of corridor)		Х	Х	Х	Х
Roundtrips	1RT	1RT	2RT	2RT	4RT
	(one train	(one	(one	(two	(two
Trainsets	set)	train set)	train set)	train set)	train set)
Speed	Current Timetable	79MPH	79MPH	79MPH	79MPH
IMPROVEMENTS					
Corridor CTC Signalization		Х	Х	Х	Х
Bonnet Carre Spillway		Х	Х	Х	
Curve Enhancement		Х	Х	Х	Х
Replace Spring Frog Turnouts		Х	Х	Х	Х
Passing Siding/Additional Trackwork					Х
Reserve East End Lead Extension			Х	Х	Х
Montegut Siding				Х	Х
Diamond Green					Х
Norco Industry sidings					Х
Replace Open Deck Timber Trestles					х

Base Case #2 – One (1) Roundtrip operating at Existing Speeds

No specific improvements were described for this service alternative. However, it is recommended that in order for daily passenger service to operate within the rail corridor, improvements should be made associated with at-grade crossings for safety, station platforms for loading and unloading passengers, and additional trackwork at the proposed Downtown Baton Rouge station to allow the passenger train to dwell off the mainline track before returning to New Orleans.

Safety concerns at 46 sites, nearly one-third of the 155 inventoried crossings along the BR-NOLA Intercity Passenger Rail corridor, are identified for improvements. These improvements are grouped into six categories:

- 1. Closing or relocating crossings where feasible
- 2. Adding appropriate warning systems, signage, and surfacing to pedestrian crossings
- 3. Updating existing warning lights with LED bulbs and adding road striping
- 4. Updating signage at private railroad crossings
- 5. Updating the crossings with constant warning time systems
- 6. Adding crossing gates, update existing lighting, and road striping

A RCE grant application was submitted to the FRA in 2022 which included improvements that would benefit both freight and future passenger rail operations by preventing or greatly reducing site-specific hazards. The RCE grant estimated that at least two accidents per year would be avoided by the identified improvements.

Proposed passenger stations for the corridor, initially identified in the Baton Rouge-New Orleans High-Speed Intercity Passenger Rail Feasibility Study (2010) (see **Section 1.1.1**), are planned at the following locations in addition to the existing NOUPT:



- Downtown Baton Rouge
- Baton Rouge Suburban
- Gonzales
- LaPlace
- Kenner/MSY
- Suburban Jefferson Parish

Each of these locations will require a platform, a canopy, egress access to and from the platform, and parking within walking range of the planned station location. It is assumed that a new, 700-foot concrete platform would be constructed with two-thirds of the length covered with a canopy for all station locations. Additionally, an asphalt parking area of approximately 200 feet x 200 feet would be constructed. No parking or canopy was included in plans at the Downtown Baton Rouge and Gonzales station locations, as these station facilities are being constructed outside the platform with funding made available from the \$20 million RAISE grant mentioned previously.

Trackwork is proposed at the Downtown Baton Rouge station to allow the train to dwell off the mainline track when deboarding arriving and boarding departing passengers. The track will be double-ended with two No. 12 turnouts, and approximately 1,000 feet of new track will be constructed at-grade on subgrade. The track will be located north of the Government Street at-grade crossing on the east side of the existing mainline track.

Build Case #1 - One (1) Roundtrip, one (1) Trainset, operating at up to 79 mph

Improvements to operate Build Case #1 are in addition to the Base Case #2 improvements previously stated. Corridor improvements to both track and track structures will be required to achieve the desired higher operating speeds and significantly reduced travel time necessary for competitive passenger rail compared with existing conditions noted in Base Case #2. Recommended improvements are associated with installing wayside signaling, mainline trackwork, and replacement of the Bonnet Carré Spillway railroad bridge. These improvements are due to existing deteriorating infrastruture and accommodations needed to facilitate passenger rail alongside freight.

Trackwork involves miscellanous rehabilitation of existing rail, ties, and OTM as well as installation of new track and turnouts within the KCS segment of the rail corridor. During the hi-rail trip with KCS staff in December 2022, various locations were identified as being at risk of needing mainline rehabilitation due to the risk of flooding and poor subgrade. Multiple culverts and bridges were also identified as needing possible replacement.

In order to operate at speeds greater than existing 60 mph Class 3 passenger speeds, a CTC system needs to be implemented as an overlay with the existing PTC system already operating within the KCS segement of the rail corridor. The proposed wayside signaling will introduce new control points and intermediate signals from the KCS Baton Rouge Yard to CP Frellsen Junction where it meets with the CN Railway Baton Rouge Subdivision. With the upgrade to CTC signalization, each of the existing turnouts would be replaced with electric lock turnouts to allow the dispatcher to control the switch alignment. In addition, any of the existing



spring frogs would be replaced with new rail bound manganese (RBM) frog turnouts within the KCS segment. Another improvement to increase speed will involve increasing the superelevation on existing curves to allow for higher operating speeds. The superelevation would be increased to four (4) inches on seven (7) two-degree (2° 00') curves. This work would also include lengthening sprials at each end of the curve.

Between KCS MP 846.3 and MP 848.6 near Norco, Louisiana, there is a large industry that is served and currently requires switching on the mainline. In mitigating the freight interaction, the center track is proposed to be upgraded to mainline standards. At both the south and north ends, turnouts would be removed and replaced with No. 12 opposite hand turnouts and the track will be shifted and realigned, thus allowing for primary through movement to occur on the reconstructed center track. This reconfiguration also allows for horizontal clear distances to be maximized relative to the adjacent industry infrastructure and overhead pipe crossings within the constrained segment.

The south end of the Norco Siding and Diamond Green industry siding will require trackwork, as will the Montegut siding. The Montegut siding will require full rehabilitation and the existing siding track would have 100% track reconstruction. Turnouts would be replaced with No. 10 power-operated turnouts, and two (2) new control points with wayside signaling would be installed at the ends of the sidings.

The Bonnet Carré Spillway railroad bridge (MP 845.6) would also be replaced to remedy the current 10 mph speed restriction in the KCS segment. The existing 9,687-foot-long, single track, open deck timber, trestle bridge would be replaced with a new single track, concrete box girder, ballast deck bridge. The new bridge will remain a single track built on the same alignment through alternative bridge construction practices in order to maintain railroad operations.

Build Case #2 - Two (2) Roundtrips, one (1) Trainset, operating at up to 79 mph

Improvements to operate Build Case #2 will be in addition to the Base Case #2 and Build Case #1 improvements previously stated. These improvements will allow for additional passenger operations within the rail corridor and would be associated with installing required additional trackwork at the wye tracks leading to the KCS Reserve Yard. Due to routine scheduled switching operations between MP 835.16 to MP 825.93, approximately 4,100 feet of new track and two (2) No. 10 turnouts would be constructed on the south side of the mainline track. The existing east wye mainline turnout would be installed on the new parallel track to allow the switching movements to occur off the mainline track. Reconstruction of the MP 835.52 (Rosenwald Street) at-grade crossing and approaches would be required due to the additional track through the crossing.

Build Case #3 - Two (2) Roundtrips, two (2) Trainsets, operating at up to 79 mph

Improvements to operate Build Case #3 are in addition to those in the Base Case #2 and Build Cases #1 and #2 improvements previously stated. These improvements will allow for passenger operations to have a scheduled meet within the corridor. This additional improvement would be associated with rehabilitating the Montegut Siding to mainline standards and creating a controlled siding. The existing siding track will have 100% track reconstruction and the turnouts would be replaced with No. 10 power operated turnouts. Two (2) new control points with wayside signaling would be installed at the ends of siding.

Build Case #4 - Four (4) Roundtrips, two (2) Trainsets, operating at up to 79 mph

Improvements to operate Build Case #4 are in addition to those in the Base Case #2 and Build Cases #1, #2, and #3 improvements previously stated. These improvements will allow for increased passenger operation frequencies within the corridor and would be focused on the KCS segment associated with adding additional



trackwork at the south end of Norco Siding and Diamond Green industry siding as well as rehabilitating the existing open deck bridge structures.

Additional trackwork will extend the existing east siding south to connect to the Diamond Green industry siding and then extend the siding further south to the MP 849.47 (E. Harding Street) at-grade crossing. The total length of new track will be approximately 7,400 feet and include two (2) new No. 10 turnouts. One (1) turnout will be at the end of siding and the other would be installed to create a single crossover between the main track and the siding track. Two (2) new control points with wayside signaling would be installed at the end of the siding and at the crossover.

Thirty-three open deck structures were identified within the corridor that warrant consideration for replacement. The age and condition of the existing bridges, the frequency of maintenance and inspection required is higher than that of other bridge types results in this consideration for replacement. The increased frequency of passenger trains and growth of freight operations would come with a corresponding increase to the safety risk for performing routine maintenance and inspections. A secondary benefit would be that these replacements would create more reliable passenger service with less risk of slow orders related to ongoing maintenance. Recommended design replacements would include a ballasted concrete deck with precast box girders and precast cap and piles. Replacements would be similar to existing bridges in terms of length and number of tracks.

Replacing these bridges would benefit all rail users, replacing the open deck bridges is not essential in terms of the operation of the Build Cases that were modeled. For the purposes of this feasibility study and in line with past structure evaluations, replacement of these structures has been included in the four (4) roundtrip service alternative. Ongoing negotiations and coordination between DOTD and the host railroad need to take place before any consensus around replacing the open deck bridges is determined.

4.8 Environmental Considerations

Only Build Case #4 proposes to acquire any new ROW. Improvements proposed by the other three build alternatives would take place within the existing railroad ROW. All build alternatives would require replacement of the Bonnet Carré Spillway railroad bridge and a first phase passenger platform with shelter, parking, and access roads where needed.

4.8.1 Bonnet Carré Spillway

The Bonnet Carré Spillway was constructed by the USACE between 1929 and 1931 to control flooding from the Mississippi River. The floodway created by the Bonnet Carré Spillway contains specialized habitats that are inundated infrequently by overflow from the Mississippi River when the spillway is opened. The natural and cultural resources of the floodway are well-documented and their values understood, information that the LaDOTD will use to complete the NEPA process. In addition, replacement of the adjacent CN railroad bridge crossing the spillway offers a clear and recent picture of the varied processes for compliance with other regulations including Section 404/10 permitting for wetlands and other waters, US Coast Guard (USCG) bridge permits, Section 106 of the NHPA, and USFWS coordination for threatened and endangered species.

Because the Bonnet Carré Spillway is a federal project as defined in Section 14 of the Rivers and Harbors Act of 1899 as amended and codified at 33 USC 408 ("Section 408"), permission from the USACE for alteration of the project will be required. Based on approval by USACE for the CN bridge replacement, the LaDOTD



expects equally streamlined procedures and results. The LaDOTD is committed to the success of the bridge replacement project and is ready to start the environmental process as soon as funding is secured. The environmental process is anticipated to take around eighteen (18) months.

4.8.2 First Phase Station Platforms

The proposed service would include establishment of stations in Downtown Baton Rouge at the Electric Depot on Government Street and in the Bluebonnet-Essen-Perkins medical/health district; in Gonzales and LaPlace; at the Louis Armstrong New Orleans International Airport (Kenner/MSY); and at a not-yet determined site in Jefferson Parish. The service would terminate at the existing NOUPT. **Figures 8-14** in **Section 5** show the locations and vicinities of each individual station.

In the first phase of station development considered in this study, station platforms with a shelter, parking, and access roads would be confined to a limited footprint. Resources within the boundaries of the real estate parcels where these would be located were reviewed to determine environmental effects from each station.

This study evaluates only the first phase of station construction that would include a passenger platform with shelter, parking, and access as needed in compliance with the Americans with Disabilities Act (ADA). Full build out of the stations would be undertaken by local sponsors in the identified areas as described in **Section 5**.

Downtown Baton Rouge

The Downtown Baton Rouge Station would be located near the Electric Depot, a community gathering place with restaurants, festival space, and shops energizing Government Street at South 15th Street with daytime and nighttime activities. The property parcel is within the bounds of Mid City Redevelopment Alliance, east of downtown Baton Rouge and Interstate 110 (I-110). One location considered is a parcel described in the tax rolls as "2.11 acres of unimproved land." It sits between the KCS tracks and South 15th Street. Partially paved with gravel for use as an extension of the Electric Depot parking, the parcel is covered in grass on its northern side, which extends to the North Boulevard railroad overpass. A second possible location consists of three parcels containing a warehouse on approximately two acres. This site also abuts the North Boulevard overpass but faces South 14th Street on the west side of the KCS tracks. The only improvements necessary for the first phase of this station would be the platform and shelter, plus lighting and fencing for security. Local street access and utilities are available onsite and the parking area would be sufficient for park-and-ride. Government Street, 400 feet to the south of the two sites, offers facilities for bicycle, pedestrian, and transit users as well as motorists. A layover track would be located in the same area as the proposed station.

The Downtown Baton Rouge station location is located in **Census Tract 53**, which is historically disadvantaged and in an area of persistent poverty. Once vibrant with economic activity centered on the Gulf States Utilities power plant on the east side of South 15th Street, the area is now the focus of reinvestment as exemplified by the Electric Depot mentioned above. The introduction of a passenger rail station is consistent with the vision for redevelopment of the area. At final build-out, the multi-modal depot would be a welcome community asset supported by the recent Complete Streets makeover of Government Street by LaDOTD.

Baton Rouge Heath District

The Suburban Baton Rouge station would be located in the Baton Rouge health district on the southern portion of a vacant 13-acre parcel owned by General Health System, which operates the nearby Baton Rouge General Hospital's Bluebonnet Campus. The parcel is covered with grass with a fringe of oak trees along



Bluebonnet Boulevard. The parcel drops in elevation to cross under the Bluebonnet Boulevard railroad overpass. The south boundary of the parcel is next to an existing siding north of the railroad overpass. A short distance from I-10, Our Lady of the Lake Medical Center (OLOL), the Mall of Louisiana, Jimmy Swaggart's World Ministry Complex, and the Renaissance Hotel, this location is accessible from Picardy Avenue and Bluebonnet Boulevard. Located in **Census Tract 38.04**, the parcel is neither in a historically disadvantaged area nor in an area of persistent poverty. Planning for the Suburban Baton Rouge station has not yet advanced beyond site determination and first phase layout provided as part of this study. An access road, parking, and a drainage study would be required to develop the first phase of a station along with construction of the platform and shelter. Reactivating the defunct siding would be considered.

Gonzales

The Gonzales station is proposed for a parcel of land that once served as a rail depot for the City of Gonzales. The parcel is in the center of the city within Gonzales' traditional street grid and is accessible from Airline Highway (US Highway 61) less than 1000 feet to the east. The parcel is bounded by North Bullion Avenue, East Railroad Street, and East Ascension Street.

The main KCS track is located across East Railroad Street next to North Felix Avenue. A siding used for offloading cargo splits from the main track from the end of North Felix Street at the bridge crossing of New River. Owned by the City of Gonzales, the parcel is undeveloped, though parking, access, and utilities are already in place for the first phase of station development. The parcel is located in **Census Tract 304.04**, which is not designated as historically disadvantaged or an area of persistent poverty. However, this area is the historic center of the City of Gonzales. When Louisiana Railway and Navigation Company built its depot in this same location, they named it after Joseph "Tee Joe" Gonzales who opened a general store and post office. As a result, the village became known as Gonzales and the once isolated settlement began to grow. Today, the City of Gonzales has planned for redevelopment of this area as a mixed-use, mixed-income residential community built according to Complete Streets principles to provide for residents who can take advantage of the passenger train for long-distance and recreational travel.

<u>LaPlace</u>

Plans for the LaPlace station in St. John the Baptist Parish would locate the station on Main Street in downtown LaPlace. This area is already undergoing redevelopment at the corner of West Airline Highway (US Highway 61) and Main Street on a parcel owned by the Parish. The station location, approximately 500 feet southwest of Airline Highway, would develop a parking area accessible from Martin Drive by way of Main Street and Cardinal Street. The LaPlace Airline and Main Street Complete Streets project was selected for funding by Louisiana's Strategic Adaptations for Future Environments (LA SAFE) in 2018. LA SAFE provides a holistic approach to flood risk of all types as well as the myriad of human, economic, and environmental impacts experienced following past floods and those anticipated in the future. LaPlace's project, which proposes a 1.3-mile street improvement on Airline Highway and a 0.3-mile improvement on Main Street, will address street pavement and drainage by way of adding green infrastructure components to hold and filter stormwater runoff and extend improvements to Main Street, adding new bioretention cells, sidewalks, permeable parking, native plantings, and historic light poles and banners.

Located in historically disadvantaged **Census Tract 710**, which is an area of persistent poverty, LaPlace station area residential structures consist of small cottages, manufactured housing, and trailers. In partnership with the LDHP, St. John the Baptist Parish established an historic district along Main Street and surrounding neighborhoods to preserve and enhance the historic architectural fabric. The Parish intends to ensure that all new development would support an historically appropriate, pedestrian-friendly atmosphere.



Kenner/MSY

The proposed station at the Louis Armstrong New Orleans International Airport (Kenner/MSY) is still in the early planning stages. The Kenner/MSY station would comprise three components primarily concentrated on the airport's South Campus: a north-south connector road that would connect the South Campus to the airport's North Terminal through an airport-exclusive road; an Intermodal Transit Stop that would function as an intermodal center located adjacent to the BR-NOLA Intercity Passenger Rail stop; and a passenger light rail/automated people mover (APM) whose tracks would be located adjacent to the heavy/freight rail lines servicing the Baton Rouge to New Orleans rail corridor.

Suburban Jefferson Parish

Similar to the Kenner/MSY station, an additional station stop in Jefferson Parish is also in the early planning stages. The Suburban Jefferson Station has been proposed for a site near activity centers such as Zephyr Field along Airline Drive between Transcontinental Drive and Dickory Avenue in Metairie and the Jefferson Performing Arts Center. However, there has neither been any discussion about specific steps for station area planning or development, nor has a specific site been identified in Jefferson Parish's future land use map.



SECTION 5. PROGRAM DEVELOPMENT

5.1 Station Planning

Station planning is being undertaken by the local jurisdictions. While this study focuses on implementation without full build-out, some local jurisdictions are planning for state-of-the-art passenger rail stations with full amenities to act as catalysts for economic development. A description of each local government's concepts to date are detailed on **Figures 8-14** below.

Downtown Baton Rouge Station

Planning for the Downtown Baton Rouge Station (**Figure 8**) includes a state-of-the-art, fully multimodal passenger rail station sized and scaled appropriately to allow for and accommodate intercity passenger service. The Downtown Baton Rouge passenger rail station would be designed to meet the needs of a modern intercity passenger rail service that would include an enclosed station building, platform, on-site parking and multimodal transportation access. The proposed Downtown Baton Rouge Station will serve as a terminus rail station, connecting users to downtown destinations and providing the area with numerous economic benefits. The station will be located along Government Street in an area known as Mid City. The streets in this area tie directly into downtown, the Louisiana Capitol Complex, historic Spanish Town and Beauregard Town, and the Garden District. The site has access to regional transportation connections and to existing and planned multimodal transportation facilities. It is proximate to existing local transit on Government Street and Florida Street, and both the existing Greyhound station and Capital Area Transit System (CATS) main hub/Megabus stop are within feasible walking distance. It will also offer last mile connectivity to the central business district, the Baton Rouge airport, local colleges and universities, and other key local destinations.





Figure 8: Proposed Downtown Baton Rouge Rail Station and Vicinity

Suburban Baton Rouge Rail Station

The proposed Suburban Baton Rouge Rail Station (**Figure 9**) will be located north of Anselmo Lane on Bluebonnet Boulevard, west of the railroad overpass. It is on Baton Rouge General Hospital property and is close to the Mall of Louisiana. The Suburban Rail Station will visibly enhance the Health District's appeal as a destination and will serve a variety of users including Our Lady of the Lake (OLOL) and Pennington Biomedical Center as part of a well-connected, vibrant healthcare center. On-street bus stops next to the station will provide last-mile connections for local and regional bus passengers.





Figure 9: Proposed Suburban Baton Rouge Station and Vicinity

Gonzales Station

The proposed station in Gonzales will be located on a site that previously served as a rail depot adjacent to the rail line on North Bullion Avenue between East Railroad Street and East Ascension Street (**Figure 10**). The planned Gonzales station facility will include an open-air station platform with enclosed areas for ticketing, passenger waiting areas, staff breakroom, restroom facilities, mechanical, electrical, and janitorial uses. The anticipated layout would provide areas for additional rain gardens and bioswales to capture storm runoff from the parking and roadway pavements. A plaza would be placed at the corner opposite the station. This plaza area could include a water feature, benches, flagpoles, and other amenities to further enhance the public landscape and amenities of the surrounding neighborhood.





Figure 10: Proposed Gonzales Station and Vicinity

LaPlace Station

The proposed LaPlace station (**Figure 11**) is planned as a Passenger Rail and Multi-Modal Transportation Center located in an area bounded by Airline Highway, Main Street, Cardinal Street, and the KCS-owned railroad line. The proposed multimodal transportation center would provide flexible space for multiple uses such as retail, public meetings and other civic uses, as well as a staging area and shelter during disaster events. Passenger rail service will provide St. John the Baptist Parish the opportunity to create a great town center in LaPlace around the proposed station and along Main Street. This town center will offer safe, interconnected walking environments with sidewalks, plazas, lighting, wayfinding, and other amenities. To the greatest degree possible, station area streets will be built as Complete Streets, thereby accommodating bicycles and feeder transit connections as well as pedestrians and cars. Station access will also be prioritized for pedestrians, transit riders, and cyclists.





Figure 11: Proposed LaPlace Station and Vicinity

Kenner/MSY Station

Plans for the Kenner/MSY Station (**Figure 12**) are currently being drafted and are comprised of three projects primarily concentrated on the airport's South Campus. The first project is a north-south connector road that would connect the South Campus to the airport's North Terminal through an airport-exclusive road. This road would be pile-supported and would serve as the foundation for a future Automated People Mover (APM). The second planned project is an InterModal Transit Stop which would function as an intermodal center located adjacent to the BR-NOLA Intercity Passenger Rail stop. The Transit Stop would also include a bus loop that would service transit buses conveying passengers and travelers to the airport or to destinations in the New Orleans-Metairie area. The third planned project, the InterCity Rail APM, is conceptualized as a passenger light rail/APM with tracks that would be located adjacent to the heavy/freight rail lines servicing the Baton Rouge to New Orleans rail corridor. The APM would provide a stop at the Airport InterModal Center (IMC) and transport passengers and travelers on a last-mile connection from the Intercity Passenger Rail stop to airport facilities and the employment center. The APM tracks would span approximately five (5) miles in a trapezoidal loop from the Kenner/MSY rail stop to the airport terminal.





Figure 12: Proposed Kenner/MSY Station and Vicinity

Suburban Jefferson Parish Station

The proposed Suburban Jefferson Parish Station would be located near activity centers along Airline Drive between Transcontinental Drive and Dickory Avenue in Metairie (**Figure 13**). Locations such as Zephyr Field baseball stadium, the Jefferson Performing Arts Center, the New Orleans Saints' training facility, and Delgado Community College's Jefferson Campus, are being considered.





Figure 13: Proposed Suburban Jefferson Parish Station and Vicinity

New Orleans Union Passenger Terminal (NOUPT)

Finally, the existing NOUPT will continue service as the terminal for the proposed BR-NOLA Intercity Passenger Rail service due to its downtown location (**Figure 14**), existing capacity, passenger amenities, and adequate connectivity to multimodal and transit connections. NOUPT currently serves three long-distance Amtrak routes and Amtrak Thruway Bus Service as well as Greyhound and Megabus intercity buses including those serving Baton Rouge. Future planning for this station includes upgrades to the platforms at NOUPT to make platforms accessible to all travelers and provide level boarding for the Sunset Limited and the City of New Orleans, making the surface of the platform the same level as the threshold of the train doors for easier boarding and detraining. The platform canopy would also be extended, and lighting, air, electrical, and water systems would be updated.





Figure 14: New Orleans Union Passenger Terminal (NOUPT)

5.2 Ridership

Ridership forecasts for each service alternative (Build Case) were developed by Amtrak. In terms of the methodology used in forecasting for new services, Amtrak relies on a multi-step approach that builds on revenues earned and costs incurred on other similar routes and then applies that experience to the new services being proposed.

The basic steps followed by Amtrak's forecasting team within Schedule and Train Set (Consist) Planning are as follows:

- Identify the route(s) most equivalent to the proposed new service
- Obtain actual data for a previous number of years determined to be most appropriate
- Adjust the data for any one-time, extraordinary events that might have affected the data
- Send this information to all relevant internal constituencies at Amtrak including Transportation, Mechanical, Marketing, Onboard Services, etc., for comments on revenue and cost data, and input these into the new route
- Create unit costs by tying cost items on a granular level to the most relevant operating measurements. Examples are:



- Ridership
- Passenger miles
- Train miles
- Locomotive miles
- Engage Amtrak's Market Research team to create a revenue forecast including key operating statistics like passengers and passenger miles for the new service, again based on similar markets elsewhere as needed and factoring in demand models and other relevant information for the particular geographic area(s)
- Apply all relevant inputs, including the revenue forecast and unit costs developed previously, to Amtrak's internal model to project costs for the new service
- Review the forecast with Amtrak's State-Supported team and adjust as agreed upon with the appropriate State-Supported senior manager
- Release the forecast to the state partner for review

Amtrak's ridership forecast at this stage in planning for the BR-NOLA Intercity Passenger Rail service included projected ridership in fiscal year (FY) 2027 as shown in **Table 14**. Two specific forecast scenarios were developed: two (2) round trips per day and four (4) round trips per day.

Forecast	Build Case #2	Build Case #4
	2 Roundtrips (79 mph)	4 Roundtrips (79 mph)
Annual Total Passengers	89,000	138,000
Annual Total Passenger Miles	5,326,000	8,639,000
Average Miles per Passenger	59	62

Table 14: FY27 Ridership Forecast⁷

Incremental boarding and alightings figures for the seven (7) Baton Rouge to New Orleans stations are shown in **Table 15**.

Table 15: Boarding and Alighting by Station

	Incremental Boarding and Alighting				
	Build Case #2	Build Case #4			
Station	2 Roundtrips (79 mph)	4 Roundtrips (79 mph)			
New Orleans/NOUPT, LA	64,000	103,000			
Jefferson Parish, LA	6,000	10,000			
Kenner/MSY, LA	8,000	13,000			
La Place, LA	9,500	17,000			
Gonzales, LA	15,500	29,000			
Suburban Baton Rouge, LA	16,500	28,000			
Downtown Baton Rouge, LA	47,000	76,000			

⁷ Due to limited time and resources, ridership forecasts were not available for Build Case #1 and Build Case #3 from Amtrak.



Amtrak Market Research and Analysis forecasted the ridership and revenue impact of the proposed BR-NOLA Intercity Passenger Rail service for FY 2027. There are no additional revenue sources for the service at this time. Total revenue forecast to be generated for Build Case #2 and Build Case #4 are provided in **Table 16**.

	Build Case #2	Build Case #4				
	2 Roundtrips (79 mph)	4 Roundtrips (79 mph)				
Annual Ridership	89,000	138,000				
Annual Ticket Revenue	\$1,761,000	\$2,785,000				
Annual Food and Beverage Revenue	\$	\$				
Total Annual Revenue	\$1,761,000	\$2,785,000				

Table 16: Forecasted Revenue (FY 2027)

5.3 Capital Cost

Capital cost was developed below based on the operations modeling and proposed schematics prepared in **Appendix B**. Those exhibits outline assumed infrastructure investment "take-offs" to implement passenger service in the corridor based on the various service alternatives evaluated.

The capital cost estimates represent an expectation of the capital cost investment related to the Baton Rouge to New Orleans from New Orleans to Baton Rouge. However, as the project progresses, adjustments will be required to better reflect specific circumstances and costs from current agreements, ongoing railroad coordination, negotiations, proposed passenger schedules, and existing infrastructure conditions.

FRA's Standard Costing Category (SCC) is separated into categories for capital projects/programs. These categories are broad enough to be applied to all service alternatives. **Table 17** displays the major categories along with the percentage of the estimated total project cost for each category:

Standard Cost Categories (SCC)	Percentage of Estimated Total Project Cost
10 Track Structures and Track	70%
20 Stations, Terminals, Intermodal	4%
30 Support Facilities: Yards, Shops, Administration	1%
Buildings	
40 Sitework, Right-of-Way, Land, Existing	2%
Improvements	
50 Communications and Signaling	16%
60 Electric Traction	0%
70 Vehicles	0%
80 Professional Services	7%
90 Unallocated Contingencies (see Figure 18)	10%

Table 17: FRA Standard Cost Categories (SCC) and Percentage of Estimated Total Project Cost

Each category is broken down into subcategory items that expand on the capital cost estimate of each major category. For purposes of this report, we have excluded categories 60 and 70 as these categories do not apply to the BR-NOLA Intercity Passenger Rail service project.



The costing approach for professional services will be based on percentages of the construction cost for categories 10 through 50. These percentages are common practice percentages for the planning level projects. **Table 18** shows the assumed percentage values that will be used.

80 Professional Services		
Item		Percentage
80.01	Service Development/Service	1%
	Environmental	
80.02	Preliminary Engineering/Project	2%
	Environmental	
80.03	Final Design	4%
80.04	Project Management for Design	1%
	and Construction	
80.05	Construction Administration and	1%
	Management	
80.06	Professional Liability and Other	0%, Negligible
	Non-Construction Insurance	
80.07	Legal; Permits; Review Fees by	0%, Negligible
	other agencies and cities.	
80.08	Survey, testing, and investigation	1%
80.09	Engineering Inspection	1%

Table 18: Professional Service by Percentage

The contingency is included to generate a project budget cost that is realistic but conservative and can be used to cover the costs of accommodating newly-acquired or revised information into the design. Overall contingencies should be adjusted as the project progresses from planning to detailed design. At the current level of project development, the contingency used will be **30%** because there are many unknown conditions such as supply chain shortages and construction difficulties that may be found as the project progresses and can lead to increased item costs.

For purposes of this project, contingency is assigned into two major categories: allocated and unallocated. Allocated contingency is added to each cost category, similar to the process used in FRA grant applications, based on an assessment of the quality of design information, means and methods, and site accessibility available for individual items of work. The report includes a 30% assumption, future refinement, and contingencies for which each of the categories will adjust.

Unallocated contingency typically includes more widespread uncertainties like schedule delays, changes in contracting environment, or other issues that are not associated with individual construction activities. **Table 19** is the contingency percentages the project team assumes for capital cost estimates:



Table 19: Contingencies

Standard Cost Categories (SCC)	Percentage
10 Track Structures and Track	30%
20 Stations, Terminals, Intermodal	30%
30 Support Facilities: Yards, Shops, Administration	30%
Buildings	
40 Sitework, Right-of-Way, Land, Existing	30%
Improvements	
50 Communications and Signaling	20%
80 Professional Services	0%
90 Unallocated Contingencies	10%

Escalation will be assumed at the defined rates shown in **Table 20** below which are compounded yearly from 2023 to the assumed conservative start of construction. For purposes of this report, it is assumed that construction will begin no later than 2028 (five (5) years) and will take a maximum of three (3) years to construct.

Table 20: Escalation Rates

Year of Expenditure (YOE)	Percentage
2024	3.0%
2025	3.0%
2026	3.0%
2027	3.0%
2028	3.0%

Table 21 shows the capital cost expectations of the capital cost investment related to the the Baton Rouge to New Orleans passenger service Alternatives 1 through 5. Of note, Alt 1 equates to Base Case #2; Alt 2 is Build Case #1; Alt 3 is Build Case #2; Alt 4 is Build Case #3; and Alt 5 is Build Case #4.



FRA Standard	Build Case 1	Build Case 2	Build Case 3	Build Case 4	Build Case 4
Cost Categories	1 RT - EXIST	181	2 8 1	2 8 1	4 K I
	Speed		(millions)		
10 Track			(
Structures and Track	\$	\$150.79	\$154.40	\$157.81	\$232.62
20 Stations, Terminals, Intermodal	\$9.03	\$9.03	\$9.03	\$9.03	\$9.03
30 Support Facilities: Yards, Shops, Administration Buildings	\$1.22	\$1.22	\$3.17	\$3.17	\$3.17
40 Sitework, Right-of-Way, Land, Existing Improvements	\$3.58	\$3.58	\$3.58	\$3.58	\$3.58
50 Communications and Signaling	\$3.10	\$35.82	\$35.82	\$39.20	\$46.12
Subtotal Construction SCC 10 – 50	\$16.93				
80 Professional Services	\$1.69	\$20.04	\$20.60	\$21.28	\$29.45
90 Unallocated Contingencies	\$1.86	\$22.05	\$22.66	\$23.41	\$32.40
Subtotal	\$20.48	\$242.53	\$249.26	\$257.48	\$356.37
Allocated Escalation	\$3.26	\$38.63	\$39.69	\$41.01	\$56.76
Total (YOE* 2028)	\$23.74	\$281.16	\$288.95	\$298.49	\$413.13
Rounded (YOE 2028)	\$23.80	\$281.20	\$289.00	\$298.50	\$413.20

Table 21: Capital Cost Expectations

*YOE is Year of Expenditure

5.4 **Operations and Maintenance**

A preliminary operations and maintenance evaluation was conducted by the study team in coordination with Amtrak for the Baton Rouge to New Orleans passenger rail service Build Case #2 and Build Case #4. Primary cost drivers, which are the basis for estimation of different operating and maintenance (O&M) costs, are detailed in **Table 22**.



Cost Driver	Cost Categories		
	Host Railroad Payments		
Train Miles	Car & Locomotive Maintenance		
Passanger Miles per Dessenger	Insurance Liability		
Passenger Miles per Passenger	Station Costs		
Ticket Revenue	Marketing		
	Fuel and Power		
Fixed Costs	Train and Enginer Crew Labor		
	Onboard Services (OBS) Crew Labor		

Table 22: Cost Category Drivers

The operating and maintenance costs were developed with the federal <u>Passenger Rail Investment and</u> <u>Improvement Act (PRIIA) Section 209</u> compliance understanding and included a number of assumptions that should be revisited as the BR-NOLA Intercity Passenger Rail service begins formal implementation. It is assumed that the BR-NOLA Intercity Passenger Rail service will utilize available equipment from Amtrak's existing equipment pool. Project sponsors will enter into an agreement with Amtrak to ensure the availability of proper equipment consists based on fleet needs. This study assumes five car consist composed of one locomotive, three coach cars, and one non-powered control unit (NPCU). **Table 23** below shows the annual operations and maintenance costs for FY 2027 with equipment charges.

	Build Case #2	Build Case #4
	2 Roundtrips	4 Roundtrips
Cost Type	(millions)	
Third Party Costs	\$1.92	\$3.84
Route Costs	\$3.00	\$4.93
Additive Costs	\$0.62	\$1.01
Operating and Maintenance Costs	\$5.54	\$9.79
Equipment Capital Use Charge	\$0.93	\$0.93
Total Operating and Maintenance Costs with Equipment	\$6.46	\$10.71

Table 23: Operating and Maintenance (O&M) Cost Summary

5.5 **Finances and Revenue**

Revenue and operating cost forecasts were used to produce the following ten (10) year funding outlook for Build Case #2 and Build Case #4. It is assumed that operations costs will be funded through state and local funding and FRA's Restoration and Enhancement (R&E) Grant Program in the future. Restoration and Enhancement Grant funding for the first seven (7) years will offset part of state and local operating support requirements. **Table 24** illustrates the funding outlook for Build Case #2, while **Table 25** illustrates the outlook for Build Case #4.



	0&M	Revenue	Total Operating Support	Federal R&E	State	Local
Year	(millions)					
2027	\$6.46	\$1.76	\$4.70	\$4.23	\$0.47	\$
2028	\$6.70	\$1.80	\$4.90	\$3.92	\$0.98	\$
2029	\$6.95	\$1.83	\$5.12	\$3.58	\$1.54	\$
2030	\$7.21	\$1.87	\$5.34	\$3.20	\$1.07	\$1.07
2031	\$7.48	\$1.91	\$5.58	\$2.79	\$1.39	\$1.39
2032	\$7.67	\$1.94	\$5.82	\$2.33	\$1.75	\$1.75
2033	\$8.06	\$1.98	\$6.08	\$1.82	\$2.13	\$2.13
2034	\$8.37	\$2.02	\$6.35	\$	\$3.17	\$3.17
2035	\$8.70	\$2.06	\$6.64	\$	\$3.32	\$3.32
2036	\$9.04	\$2.10	\$6.93	\$	\$3.47	\$3.47

Table 24: Build Case #2 - 2 Round Trips with 2 Trainsets

Table 25: Build Case #4 - 4 Round Trips with 2 Trainsets

	0&M	Revenue	Total Funding	Federal R&E	State	Local
Year	(millions)					
2027	\$10.71	\$2.64	\$8.07	\$7.26	\$0.81	\$
2028	\$11.09	\$2.69	\$8.40	\$6.72	\$1.68	\$
2029	\$11.49	\$2.75	\$8.74	\$6.12	\$2.62	\$
2030	\$11.90	\$2.80	\$9.10	\$5.46	\$1.82	\$1.82
2031	\$12.33	\$2.86	\$9.48	\$4.74	\$2.39	\$2.39
2032	\$12.78	\$2.91	\$9.87	\$3.95	\$2.96	\$2.96
2033	\$13.25	\$2.97	\$10.28	\$3.08	\$3.60	\$3.60
2034	\$13.75	\$3.03	\$10.71	\$	\$5.36	\$5.36
2035	\$14.26	\$3.09	\$11.17	\$	\$5.58	\$5.58
2036	\$14.80	\$3.16	\$11.64	\$	\$5.82	\$5.82



SECTION 6. IMPLEMENTATION PLAN

Implementing the BR-NOLA passenger rail service will take several phases to complete. Several elements are already in motion to achieve this goal which are highlighted below:

- The cities of Baton Rouge and Gonzales received federal RAISE grant funding in 2022 for implementing two (2) of the seven (7) intercity stations within the rail corridor
- LaDOTD submitted a RCE grant application in October 2022 that addressed several key at-grade crossing safety concerns along the KCS segment of the rail corridor by enhancing 46 at-grade warning devices
- LaDOTD submitted a FY 2022 CRISI grant application in November 2022 for funding replacement of the Bonnet Carré Spillway railroad bridge which will allow increases to both current freight operations and future passenger services
- Amtrak negotiated with CP to allow operations of up to two (2) daily round trips on the current KCS segment beginning two (2) years after March 2023 when the CP and KCS merger was approved by the STB
- LaDOTD submitted a Corridor Identification and Development (Corridor ID) application in March 2023 for acceptance into the program of corridors that would implement intercity passenger rail across the United States
- LaDOTD submitted a FSP grant application in April 2023 for final design and construction of infrastructure improvements to implement up to two (2) daily roundtrips using one (1) trainset at speeds of up to 79 mph. Once demand is established, a second trainset can be introduced to the service
- LaDOTD has contracted with a consultant to complete NEPA review of the rail corridor for infrastructure improvements and station locations associated with the rail corridor
- The next step towards passenger service implementation is to use elements from this present study to prepare a FRA-approved Service Development Plan as well as preliminary engineering plans for infrastructure improvements identified relating to track, structures, drainage, at-grade crossings, and wayside signaling and communications. A key component during this next step will be to continue coordination with all railroads involved in the BR-NOLA corridor to validate necessary infrastructure improvements and to mitigate freight impacts
- Construction must be completed before the first train service can begin. In order for construction to proceed, a key step known as an environmental assessment (EA) for the overall corridor must commence. The EA process is as follows:
 - NEPA environmental clearance, which is anticipated by the end of 2023, will address the proposed station locations;
 - Pre-NEPA for the overall corridor, which incorporates all infrastructure improvements proposed for the project, will be completed by the end of 2024;



Baton Rouge-New Orleans Intercity Passenger Rail Feasibility Study 2023

- At this point, the NEPA EA process will begin;
- The overall timeline of this step is scheduled to be one (1) year and will finish no later than the end of 2025, after which time planning and construction will commence;
- The NEPA process must be concluded and approved before construction starts. Therefore, it is anticipated that most construction will be completed by 2027

Understanding federal grant funding cycles and opportunities is a significant component of implementing this project. Assuming that the BR-NOLA rail corridor is accepted into the Corridor ID program, this corridor will already be advancing on elements associated with Steps 2 and 3. If local funding is secured and the project is selected for FSP grant funding, final design and construction leading to implementation of the project to the current CP and Amtrak agreement can likely proceed. The initial phase of implementation will provide up to two (2) roundtrips: an initial roundtrip being planned for rollout in 2027 and a second roundtrip added six months afterwards based on agreement between the newly-merged CP (CPKC) and Amtrak.

Figure 15 depicts a conceptual high-level timeline schedule showing implementation of passenger service from the initial one (1) roundtrip to the proposed four (4) roundtrips. It is possible that a proposed second roundtrip could conceivably be implemented six (6) months after initial service startup. However, it should also be noted that all parties must agree on this implementation and that the service is operating as expected. An additional caveat to implementation of a second roundtrip is completion of additional infrastructure. It is assumed that two (2) RTs could begin service if necessary funding was available for implementation prior to construction being completed.



Figure 15: Proposed Implementation Schedule

***SDP** is Service Development Plan; **EA** is Environmental Assessment *Of note: Final Engineering, Bidding, and Construction may include FSP FY 2023, FY 2024 and FY 2025 required infrastructure improvements and funding to implement passenger service for up to four (4) roundtrips.



SECTION 7. OTHER CONSIDERATIONS

During development of this study, several concurrent events that could affect the BR-NOLA Intercity Passenger Rail service were taken into consideration.

7.1 New Orleans to Mobile: Amtrak

Amtrak is advancing restoration of intercity passenger rail service along the Gulf Coast between Mobile, Alabama, and New Orleans, Louisiana. Extending this service to Baton Rouge was considered for this study.

One of the current challenges facing Amtrak is finding enough existing passenger equipment to support the planned near-term expansion of Amtrak service. In order to minimize Baton Rouge to New Orleans equipment needs in the short term, a schedule was developed using the proposed Gulf Coast Service trainset to operate a round trip to Baton Rouge during the trainset's layover in New Orleans.

This schedule used a hypothetical Gulf Coast schedule (see **Table 26**) with an arrival time into NOUPT of 9:53 am and arriving in Baton Rouge at 12:42 pm. This schedule assumes a station dwell at NOUPT of not less than thirty (30) minutes to detrain passengers, clean the trainset, entrain passengers, and depart. This dwell time would also allow for through passengers to be served, thus providing almost uninterrupted single ticket service for passengers traveling between Baton Rouge and Mobile.

In order for this schedule to work, a layover track off the KCS main track will need to be found in Baton Rouge to store the train for the one hour and fifty-five minutes (1:55) duration before it departs Baton Rouge at 2:37 pm and returns to NOUPT to resume its scheduled Gulf Coast Service route departing at 5:31 pm. It is also assumed that the trainset will be push-pull capable. If not, the train will need to be wyed north of the Baton Rouge yard and in New Orleans, either during train arrival/departure or during an extended station dwell.

Station			Station		
Gulf Coast Service	9:53 AM	AR			
NOUPT	10:20 AM	DP	Baton Rouge, LA	2:37 PM	DP
Jefferson Parish, LA	10:44 AM		Baton Rouge Suburban	2:55 PM	T
Kenner, LA	10:54 AM		Gonzales, LA	3:15 PM	
La Place, LA	11:29 AM		La Place, LA	3:49 PM	
Gonzales, LA	12:03 PM		Kenner, LA	4:23 PM	
Baton Rouge Suburban	12:22 PM	•	Jefferson Parish, LA	4:34 PM	I
Baton Rouge, LA	12:42 PM	AR	NOUPT	5:00 PM	AR
			Gulf Coast Service	5:31 PM	DP

Table 26: Hypothetical Gulf Coast Service Schedule



SECTION 8. NEXT STEPS

The current feasibility study evaluates impacts to freight operations, outlines various passenger operations relating to speed, frequency and equipment, and discusses program development items such as stations, ridership and revenue, and capital cost. Lastly, this study lays out a possible implementation plan for how the proposed BR-NOLA passenger rail service can be implemented to full build-out. The project team has developed the following next steps for the project to further define, strengthen stakeholder support, and enhance the Baton Rouge to New Orleans rail corridor favorably for passenger service implementation.

8.1 Advance coordination with CN Railway in the New Orleans terminal area

The corridor segment along the CN McComb Subdivision between New Orleans Junction and Southport Junction is a critical segment to evaluate potential impacts to freight operations due to passenger service. This project team was unable to obtain any data from CN Railway regarding existing operations that could be included in this feasibility study. A key next step, therefore, will be to advance this coordination and gain existing information for input into the analysis already performed.

8.2 Further coordinate proposed passenger schedules

Through ongoing coordination with Amtrak, several comments were received regarding departure times from NOUPT and arrival times into Baton Rouge. As a next step, additional coordination should be conducted with Amtrak around the proposed schedules for better connections at NOUPT and any impacts to proposed infrastructure, ridership, and revenues. Ultimate selection can be documented in the SDP.

8.3 Perform station planning for locations exclusive of Baton Rouge and Gonzales

DOTD will further define and outline the parameters for each station and its preferred location, and will develop a plan view sketch of the station layout for inclusion in the SDP. This will involve stakeholder engagement with local station communities.

8.4 Passenger Service Agreements

DOTD will continue advancing agreements related to implementing passenger services in the corridor. This includes any agreements or memorandums of understanding with host railroads, Amtrak as the operator, station communities, and other stakeholders. The objective of these service agreements is to continue showing readiness to proceed with the Corridor ID and Federal-State Partnership grant programs.

8.5 Prepare Draft SDP in advance of Corridor ID (CID) selection

This feasibility report and other ongoing efforts offer helpful models for developing a draft SDP that the project team will combine into an initial document that will demonstrate the corridor's readiness to proceed into Step 2 and 3 of the CID process once selected. Anything that can be done prior to CID selection will be beneficial in advancing corridor implementation and beginning passenger rail operations by 2025 per the implementation plan included as **Section 6** of this feasibility study.



APPENDIX A: TRACK SCHEMATICS

The following pages depict proposed schematic drawings demonstrating locations of improvements along the corridor that require implementation. Each proposed level of service is noted at the beginning of **Section 4: Service Alternatives and Evaluation**.

In addition, the cover page of this Appendix includes a legend defining the proposed schematic conditions showing improved at-grade crossings, structures, track improvements, and operational changes such as speed and wayside signaling.







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ABBREVIATIONS

BD

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BRIDGE TYPE ABBREVIATIONS

BALLAST DECK OPEN DECK DECK PLATE GIRDER (MULTIPLE) THRU GIRDER CONCRETE BRIDGE I-BEAM SWING BRIDGE STEEL BRIDGE THRU-PLATE GIRDER TWIN DECK GIRDER THRU PLATE GIRDER (4 STRINGERS) THRU PLATE GIRDER (2 STRINGERS) PILE TRESTLE DECK GIRDER DECK PLATE GIRDER I-BEAM GIRDER (ROLLED) DECK TRUSS TIMBER PILE BRIDGE "E" GIRDER LIFT SPAN BRIDGE

GENERAL ABBREVIATIONS

ANSAS CITY AND SOUTHERN RAILWAY
NORFOLK SOUTHERN RAILWAY
CSX TRANSPORTATION
CANADIAN NATIONAL RAILWAY
RAILWAY SUBDIVISION
TRACK
EAST BOUND
WEST BOUND
MAINTENANCE OF WAY
CROSSOVER
UNIVERSAL CROSSOVER
POWER OPERATED CROSSOVER
HAND THROW TURNOUT
ELECTRIC LOCK TURNOUT
POWER OPERATED TURNOUT
ONE-WAY LOW SPEED DIAMOND

CROSSING ABBREVIATIONS

CROSS BUCKS CROSS BUCKS WITH STOP SIGNS FLASHING LIGHT SIGNALS CANTILEVERED FLASHING LIGHT SIGNALS WITH GATES

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DECK PLATE GIRDER (MULTIPLE)
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TIMBER PILE BRIDGE
"E" GIRDER
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GENERAL ABBREVIATIONS

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APPENDIX B: MAPBOOKS

The following pages depict proposed route maps for each of the segments of the BR-NOLA passenger rail corridor. These maps are divided up into the following map groups:

Group A: Floodplain (FEMA) and Coastal Zone (OCM) maps

Group B: Justice40 Maps

<u>Group C</u>: Inland Waterbodies, Boat Launches, Wildlife Management Area(s), Banks and Piers, and Federal Lands

Group D: Land Cover Maps

Group E: Places of Interest

Group F: Soil Maps

Group G: Wetlands and Waters

In addition, each individual map contains a comprehensive legend delineating relevant information for the particular segment of the passenger rail corridor as it relates to the group under which it is included.



GROUP A Floodplain (FEMA) and Coastal Zone (OCM) Maps





Baton Rouge to New Orleans Passenger Rail - Floodplain (FEMA) and Coastal Zone (OCM) Maps



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Baton Rouge to New Orleans Passenger Rail - Floodplain (FEMA) and Coastal Zone (OCM) Maps





GROUP B

Justice 40 Maps









Baton Rouge to New Orleans Passenger Rail - Justice 40 Maps







GROUP C Inland Waterbodies, Boat Launches, Wildlife Management Area(s), **Banks and Piers, and Federal Lands**

















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GROUP D

Land Cover Maps





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GROUP E

Places of Interest









Baton Rouge to New Orleans Passenger Rail - Places of Interest Maps



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Soil Maps



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Page 1 of 6 MP 785-800







Page 2 of 6 MP 800-815





Page 3 of 6 MP 815-830







Page 4 of 6 MP 830-845



Baton Rouge to New Orleans Passenger Rail - Hydric Soil Rating (NRCS) Maps




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Baton Rouge to New Orleans Passenger Rail - Hydric Soil Rating (NRCS) Maps



Page 6 of 6 MP 860-875

GROUP G

Wetlands and Waters









Baton Rouge to New Orleans Passenger Rail - Wetlands (NWI) and Waters (NHD) Maps







