REPORT OF THE VIRGINIA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION

Central Virginia Rail Economic Development Study (2024 Appropriation Act, Item 435.C.)

TO THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA

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Central Virginia Rail Economic Development Study

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DRPT
VIRGINIA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION

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Chapter 1: Introduction

The Central Virginia Rail Economic Development Study (Study), led by the Virginia Department of Rail and Public Transportation (DRPT), aims to explore the potential of rail-centric opportunities to drive long-term regional economic growth in Central Virginia. The Study is in response to the Virginia General Assembly 2023 Special Session SB 6001/HB 6001 Item 449 C on page 537,[1] excerpted below:

> *The Department of Rail and Public Transportation, with assistance from the Virginia Economic Development Partnership, shall conduct a study to evaluate rail-centric economic development opportunities in the Bedford, Campbell, and Lynchburg region of Central Virginia, including both passenger and freight rail enhancements that encourage intermodal and other non-intermodal market opportunities that may yield long-term success and growth in the region. The Department shall submit the results of the study to the Governor and General Assembly on or before November 1, 2024.*

The study area includes the City of Lynchburg and Bedford, Campbell, Amherst, and Appomattox Counties in Central Virginia, and is referred to as the Lynchburg region or Lynchburg area throughout the Study narrative. The area boasts a dynamic labor force, an education hub, and a growing tourism industry. Combining research, stakeholder engagement, and analysis, this Study analyzes industry drivers and regional economic conditions to develop innovative concepts for rail-centric economic development that facilitate growth in well-established sectors.

Objective

The budget language mandates the evaluation of rail-centric economic development opportunities, which are defined in this Study as “opportunity concepts.” The objective of this Study is to evaluate and prioritize freight and passenger rail-centric opportunity concepts that may yield long-term regional economic growth in the Lynchburg region of Central Virginia. These concepts would capitalize on the study area’s existing infrastructure assets as well as the economic and demographic landscape of the region.

By evaluating these concepts and quantifying their economic impacts, the Study provides stakeholders with actionable recommendations for investment strategies that align with regional goals, priorities, and market needs. The Study identifies concepts that can be carried forward as projects to stimulate business growth, foster a competitive and economically diverse population and workforce, and enhance connectivity.

Research Questions

This Study focuses on freight rail and passenger rail in the Lynchburg region. The research questions of the Study are identified on the following page.

[1] 2023 Special Session Budget Bill- HB6001. Retrieved https://budget.lis.virginia.gov/item/2023/2/HB6001/Chapter/1/449/

What are the economic impacts associated with:

- Improvements to freight rail access and related infrastructure?
- Improvements to passenger rail service and related infrastructure?

Limitations

The results of this Study are limited by the following:

- Data availability for a short-term study.
- Varied timeframes to implement and see results from the opportunity concepts.

Organization of the Document

This Study develops and investigates four rail-based opportunity concepts— two freight rail and two passenger rail. The opportunity concepts are informed by insights gleaned by researching available data, stakeholder engagement, and analysis.

CHAPTER 2: BACKGROUND RESEARCH AND OUTREACH

Chapter 2 describes the foundation phase of the Study, focusing on background research and stakeholder engagement. The background research includes a comprehensive socioeconomic analysis that includes insights into population and economic trends and identifies areas where the implementation of rail-centric projects could stimulate economic growth and development. An outreach effort was conducted in parallel to engage key stakeholders to gain additional insight.

The primary objective of the research and outreach is to provide an understanding of regional economic and market conditions, laying the groundwork for subsequent phases of the Study. Chapter 2 serves as a blueprint for the remaining analysis.

CHAPTER 3: OPPORTUNITY CONCEPTS

Chapter 3 introduces, describes, and provides a screening methodology for four rail-centric opportunity concepts. The Study screens the freight rail-related opportunity concepts using historic and projected freight trends and other potential benefits including economic development, industry support, and scale of investment. The Study screens the passenger rail-related opportunity concepts using historic and projected ridership patterns, and other potential benefits, such as travel time savings, safety benefits, emissions avoided, and health benefits.

Chapter 3 also includes the multi-criteria analysis (MCA) screening approach to evaluate the opportunity concepts. This systematic framework allows for the evaluation of numerous wide-ranging types of projects against various influencing criteria.

CHAPTER 4: ECONOMIC IMPACT ANALYSIS

Chapter 4 includes the economic impact analysis (EIA) that quantifies both the direct and indirect economic impacts of the most viable freight rail and passenger rail opportunity concepts identified in Chapter 3. The EIA is conducted using IMPLAN software, which quantifies the impacts of the selected opportunity concepts in terms of employment and earnings, gross state product (GSP), economic output, and tax revenue, including direct, indirect, and induced impacts.

CHAPTER 5: SUMMARY OF FINDINGS

Chapter 5 summarizes the findings of previous chapters, including the findings of the background research and outreach, the identification of rail-centric opportunity concepts, and the findings of the EIA. EIA Chapter 5 delivers the findings in a format that is accessible for technical and non-technical audiences and includes recommended feasible options to support rail-centric economic development in Central Virginia.

Chapter 2: Background Research and Outreach

This chapter provides the background research that forms the basis of the rail-centric opportunity concepts and the EIA.

Background Research

The research includes a review of existing studies, a demographic analysis, and outreach to key industry leaders.

Review of Previous Studies

Several studies offer background information and analysis to evaluate rail-centric economic development opportunities in the study area, including:

- Bedford Passenger Rail Stop Application for Funding Under the Fiscal Year 2023-2024 CRISI Grant Program, 2024 (Town of Bedford)
- GOVA Region 2 Growth and Diversification Plan, 2023 (Virginia Department of Housing and Community Development)
- Town of Bedford Intercity Passenger Rail Stop Status Update, 2023 (Town of Bedford)
- Bedford Station RTC Analysis, 2022(DRPT/NS)
- Inland Port Study: Feasibility analysis of locating an inland port in the Commonwealth, 2022 (VEDP)
- Lynchburg Regional Business Alliance Regional Economic Development Strategy, 2022 (LRBA)
- Virginia Statewide Rail Plan, 2022 (DRPT)
- Connect Central Virginia 2045, 2020/2022 (CVTPO)
- Bedford/Franklin County Regional Passenger Rail Stop Study, 2021 (DRPT)
- Downtown Lynchburg Master Plan, 2018 (City of Lynchburg)
- Lynchburg Regional Connectivity Study, 2017 (Virginia Office of Intermodal Planning and Investment)
- Town of Bedford Comprehensive Plan, 2017 (Town of Bedford)
- Virginia Statewide Rail Plan, 2017 (DRPT)
- VTrans 2040 Multimodal Transportation Plan, 2017 (Virginia Office of Intermodal Planning and Investment)
- Amtrak Route & Service Change Financial Evaluation-Add Bedford, VA to the Proposed Roanoke, VA Extension of the Washington-Lynchburg, 2016 (Amtrak)
- Bedford County Comprehensive Plan 2030, 2015 (Bedford County)

Demographic Characteristics

The Study includes a demographic analysis that provides insight into population and economic characteristics and trends. The analysis supports informed planning, decision-making, and investment strategies about rail-centric economic development opportunities.

POPULATION

Table 1 summarizes the changes in population in 10-year increments for individual localities, the study area as a whole, and the entire state of Virginia. The study area's growth (18 percent) lagged only slightly behind that of the Commonwealth (21percent) between 2000 and 2022. Bedford County grew the most (31 percent), with growth concentrated in the eastern part of the county around Forest and in the southern part of the county around Smith Mountain Lake. The Smith Mountain Lake area attracts growth from lakefront recreation and is increasingly popular for year-round residential development.[2] Population is a key determinant of the labor market. A larger labor market makes a region more attractive for businesses and contributes to the economic viability of a region.

Table 1 Total Population 2000-2022

Population	2000	2010	2020	2022	Change (2000-2022)
Amherst County	31,900	32,400	31,800	31,400	-2%
Appomattox County	13,700	15,000	15,800	16,300	17%
Bedford County	60,400	68,700	79,000	79,800	31%
Campbell County	51,100	54,800	55,400	55,500	9%
City of Lynchburg	65,300	75,600	81,000	79,200	21%
Study Area	222,300	246,400	262,900	262,100	18%
Virginia	**7,078,500**	**8,001,000**	**8,509,400**	**8,624,500**	**21%**

Source: 2000 and 2010 from US Decennial Census, 2018-2022 from ACS 5-Year Estimates

EMPLOYMENT

Table 2 summarizes the changes in employment in 10-year increments for individual localities, the study area as a whole, and the entire state of Virginia. While Bedford County's employment (31 percent) grew more than Virginia's (22 percent) between 2000 and 2022, the study area's growth (18 percent) was slightly behind that of the state for the same period.

[2] Town of Bedford Comprehensive Plan, 2017. Page III-11. Retrieved https://www.bedfordva.gov/DocumentCenter/View/1065/Comprehensive-Plan---Adopted-June-2017-PDF

Table 2 Total Employment 2000-2022

Employment	2000	2010	2020	2022	Change (2000-2022)
Amherst County	25,300	26,400	26,300	25,800	-2%
Appomattox County	10,700	11,800	12,800	13,100	19%
Bedford County	47,500	54,200	65,100	66,200	32%
Campbell County	40,100	43,500	45,700	46,000	9%
City of Lynchburg	52,300	60,900	67,300	65,700	21%
Study Area	175,800	196,900	217,300	216,800	18%
Virginia	5,530,000	6,216,300	6,849,500	6,962,100	22%

Source: 2000 and 2010 from US Decennial Census, 2018-2022 ACS 5-Year Estimates

Like population growth, employment growth in a region demonstrates an increase in the labor market, which is critical to attract business development. Employment growth also increases earnings, which leads to an increase in consumer spending. This spending creates a cycle of goods and services to be exchanged, which contributes to an increase in aggregate demand, thus inducing economic activity.

Employment by Sector

Table 3 summarizes changes in employment by industry in the study area in 10-year increments over time between 2000 and 2020. Table 4 summarizes changes in employment by industry in Virginia as a whole. Since 2010, the study area has seen higher growth in the following industries compared to Virginia:

- Agriculture, forestry, fishing, hunting, and mining
- Retail trade
- Professional, scientific, and management, and administrative and waste management services
- Educational services, and health care, and social assistance
- Other services, except public administration
- Public administration

While manufacturing, wholesale trade, and information employment decreased at the state level between 2010 and 2020 (-5 percent, -12 percent, and -19 percent, respectively), the decrease in employment in these industries was more pronounced in the study area (-11 percent, -30 percent, and -26 percent, respectively). Further, whereas employment for “transportation and warehousing, and utilities” and “finance and insurance, and real estate and rental and leasing” industries increased between 2010 and 2020 in Virginia (17 percent and 3 percent respectively), the study area experienced an employment decrease for these industries during that time period (-5 percent and -14 percent, respectively).

Table 3 Employment by Industries in Study Area

Industry	2000	2010	Change (2000-2010)	2020	Change (2010-2020)
Agriculture, forestry, fishing and hunting, and mining	1,400	1,100	-20%	1,500	33%
Construction	8,300	8,800	6%	8,200	-6%
Manufacturing	23,200	18,600	-20%	16,600	-11%
Wholesale trade	4,000	2,700	-33%	1,900	-30%
Retail trade	12,900	13,500	5%	14,600	8%
Transportation and warehousing, and utilities	5,300	5,800	9%	5,500	-5%
Information	2,000	1,900	-6%	1,400	-26%
Finance and insurance, and real estate and rental and leasing	5,900	6,900	18%	6,000	-14%
Professional, scientific, and management, and administrative and waste management services	6,600	9,000	37%	11,200	25%
Educational services, and health care and social assistance	21,100	27,200	29%	34,200	26%
Arts, entertainment, and recreation, and accommodation and food services	6,200	9,100	47%	9,700	6%
Other services, except public administration	5,400	5,600	3%	7,000	26%
Public administration	3,300	3,700	12%	4,600	23%

Source: 2000 from US Decennial Census, 2010 and 2020 from ACS 5-Year Estimates

Table 4 Employment by Industries in Virginia

Industry	2000	2010	Change (2000-2010)	2020	Change (2010-2020)
Agriculture, forestry, fishing and hunting, and mining	42,400	42,800	1%	35,400	-17%
Construction	250,200	288,400	15%	274,100	-5%
Manufacturing	387,100	311,700	-19%	294,900	-5%
Wholesale trade	93,500	83,900	-10%	73,500	-12%
Retail trade	389,400	413,100	6%	423,500	3%
Transportation and warehousing, and utilities	158,500	162,400	2%	189,400	17%
Information	130,600	97,000	-26%	78,500	-19%
Finance and insurance, and real estate and rental and leasing	226,200	256,700	13%	265,100	3%

Industry	2000	2010	Change (2000-2010)	2020	Change (2010-2020)
Professional, scientific, and management, and administrative and waste management services	395,700	544,500	38%	663,400	22%
Educational services, and health care and social assistance	626,200	776,500	24%	926,200	19%
Arts, entertainment, and recreation, and accommodation and food services	246,000	306,300	25%	365,700	19%
Other services, except public administration	183,700	197,300	7%	220,200	12%
Public administration	282,300	343,400	22%	369,800	8%

Source: 2000 from US Decennial Census, 2010 and 2020 from ACS 5-Year Estimates

Except for educational services, and health care and social assistance, manufacturing and retail trade make up the two largest industries in the study area. Manufacturing, a production-based industry, experienced a decline in employment between 2000 and 2022 while retail trade, a consumption-based industry, experienced an increase in employment in that time.

Table 5 lists the major employers in the Lynchburg region, as defined by the Lynchburg Regional Business Alliance.

Table 5 Major Employers in the Lynchburg Region

Employer Name	Industry Sector	Principal Municipality	Number of Employees
Liberty University Schools	Universities & Colleges	Lynchburg	6,400
Centra Hospitals	General Medical and Surgical	Bedford, Danville, Farmville, Gretna, Lynchburg	3,100
BWX Technologies, Inc.	Manufacturers - Nuclear	Lynchburg	2,500
Framatome	Nuclear Products & Services	Lynchburg	1,900
Lynchburg City Schools	Schools - Elementary & Secondary	Lynchburg	1,600
Shentel	Telecommunications Services	Bedford	1,500
City of Lynchburg	Government - City	Lynchburg	1,100
Genworth	Insurance Agencies	Lynchburg	1,000
Southern Air, Inc.	Contractors - Mechanical, HVAC	Lynchburg	900

Note: Rounded to the nearest hundred.

Source: Lynchburg Regional Business Alliance, 2022, https://insidelynchburgregion.com/major-employers

Land Use Characteristics

Land use characteristics such as proximity to dense population and employment, building types, and existing infrastructure all have considerable influence in attracting businesses. Table 6 describes the land use patterns of the study area. Land use patterns are similar in Amherst, Appomattox, and Campbell Counties, with residential development along routes with access to the City of Lynchburg. Bedford County has sparse development, with more agricultural land in between developed areas. The City of Lynchburg has more intense land uses, with some mixed-use buildings in pockets of largely low-density residential. Figure 1 displays a land use map of the study area that reflects these development patterns.

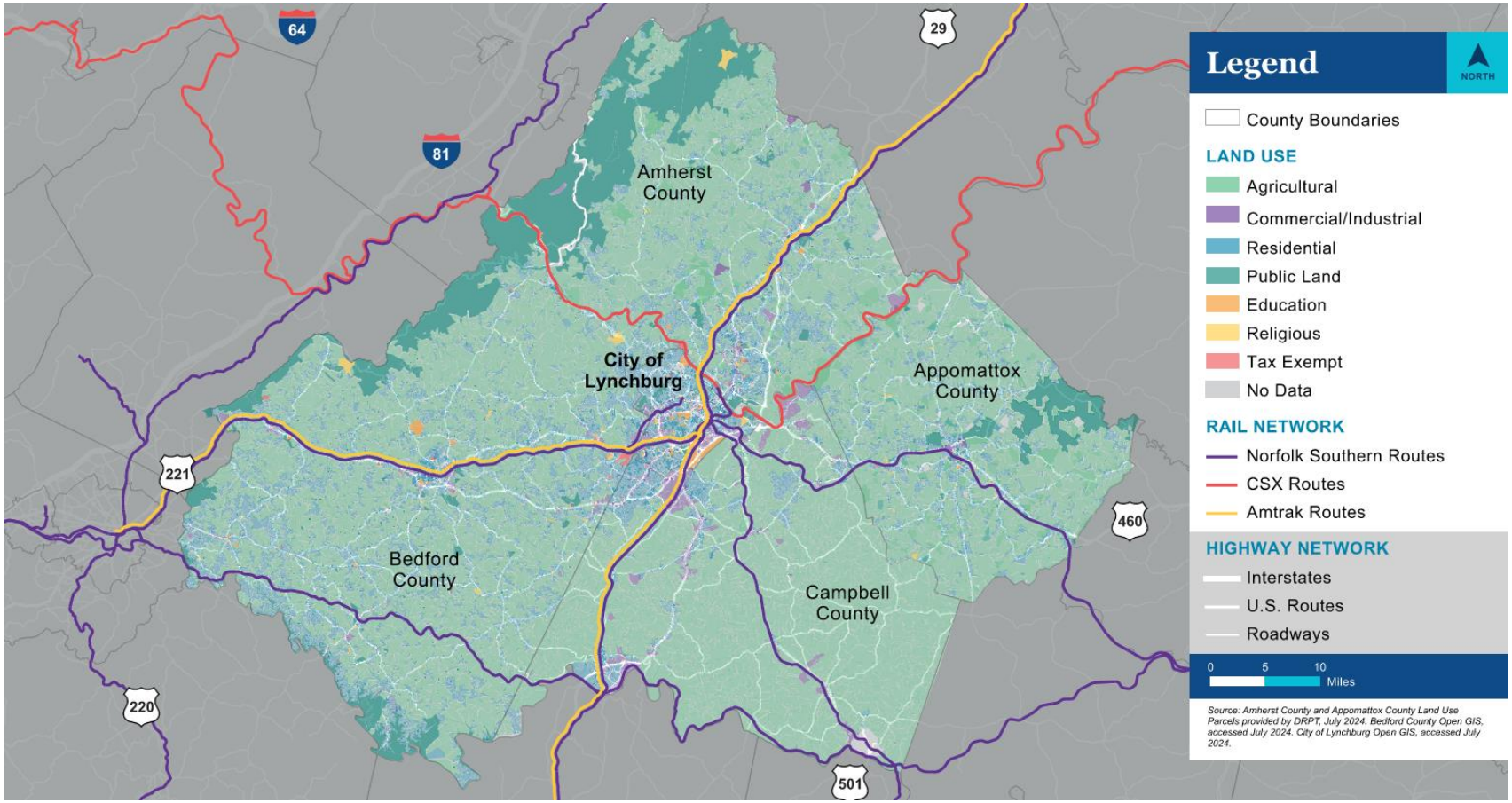
Table 6 Land Use of Study Area – Connect Central Virginia 2045

Location	Land Use
Amherst County	Much of Amherst County is agricultural, with swathes of public land draping the Blue Ridge Mountains in the northwest. Outside the Town of Amherst, residential land use is primarily along Route 29 approaching the City of Lynchburg. Commercial and industrial land are largely located along Route 29, on the central and east side of the county.
Appomattox County	Most of the Appomattox County land use is agricultural and public land. Residential and commercial uses narrowly follow Route 460 in the east, broadening on approach to the Town of Appomattox and the City of Lynchburg in the west.
Bedford County	Bedford County's more intense uses are largely on Routes 460 and 221 near the City of Lynchburg, around the Town of Bedford, and approaching Smith Mountain Lake. Apart from residential areas near the City of Lynchburg, Roanoke, and the lake, much of the county is agricultural or protected land. Commercial and industrial land is clustered closer towards the Town of Bedford and the City of Lynchburg.
Campbell County	Campbell County focuses more intense land uses around the Lynchburg Regional Airport and along Route 29. Largely rural, higher residential densities and some mixed uses occur around the City of Lynchburg line, as well as in towns like Altavista, Brookneal, and Rustburg. Commercial and industrial land are largely dispersed towards the west side of the county.
City of Lynchburg	The City of Lynchburg's more intense land uses roughly follow a horseshoe shape running from downtown to Montview and the Liberty University area and then following the Route 501 corridor. Pockets of mixed-use developments dot a largely low-density residential landscape. While largely residential, education and commercial and industrial land have a significant presence in the city.

Source: Connect Central Virginia 2045, Chapter V: Demographic and Land Use Trends, https://www.cvtpo.org/images/Transportation-Planning-and-Programming/Long-Range-Transportation/2045-LRTP/2045PlanMar3022/CCV_2045_Chapter_5.pdf

The presence of industrial land classifications in the study area is advantageous as it indicates the region is suitable for manufacturing-based industrial development that can attract similar businesses to the region, supporting the growth of freight-focused industries. Mixed-use development is indicative of creating quality places where people want to live, work, and play, thereby incentivizing population growth while allowing for higher-density land use.

Figure 1 Land Use Map of the Study Area



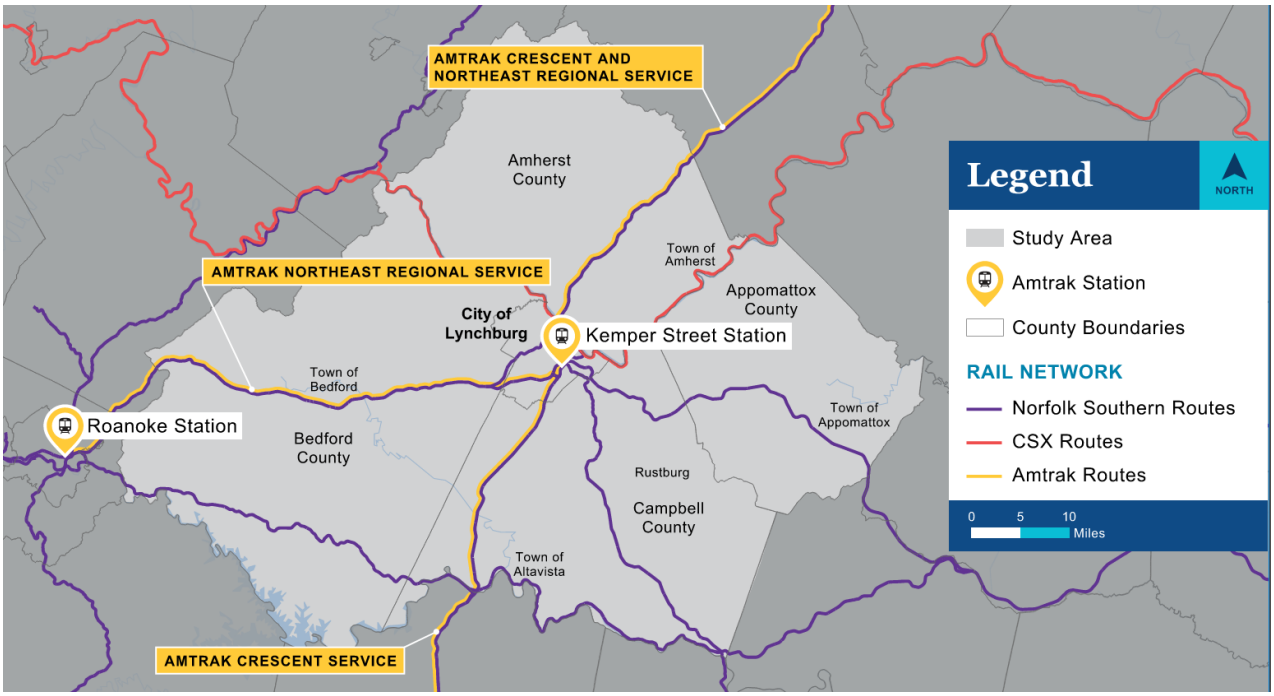
Sources: STV Inc (graphic). Amherst County and Appomattox County land use parcels provided by DRPT, July 2024. Bedford County land use parcels accessed from Bedford County OpenGIS, July 2024. City of Lynchburg land use parcels accessed from City of Lynchburg OpenGIS, July 2024.

Rail Network

FREIGHT RAIL OPERATIONS

The study area is served by two Class I freight railroads, CSX Transportation (CSX) and Norfolk Southern (NS). Both railroads provide direct access to the Port of Virginia, the deepest shipping channel on the east coast. The rail infrastructure in the study area presents an opportunity to divert freight from trucks to rail. Amtrak's Northeast Regional and Crescent routes provide passenger rail service in the study area. NS serves as the host railroad for this passenger rail service. Figure 2 displays the rail network in the study area.

Figure 2 Rail Network in Study Area



Source: STV Inc.

From an analysis of freight data published in the Virginia Statewide Rail Plan, 18 percent of freight is moved by rail in the Lynchburg Virginia Department of Transportation (VDOT) District, compared to 82 percent by truck. Approximately 13 businesses are served by freight rail in the region, ten are served by NS and three are served by CSX. The region is served by NS' Heartland Corridor, a high-capacity rail line cleared for high-cube double-stack containers, which NS uses to serve the Port of Virginia.

PASSENGER RAIL OPERATIONS

Amtrak currently operates Virginia-sponsored Northeast Regional and long-distance Crescent services through Central Virginia Lynchburg-Kemper Street Station is currently the only passenger rail train station in the study area and serves a total of six Amtrak trains daily.

Amtrak's Northeast Regional route serves the Northeast and Mid-Atlantic between Boston and Washington, DC, also known as the Northeast Corridor. The following segments connect to the Northeast Corridor: Springfield – New Haven, Washington, DC – Norfolk, and Washington, DC – Roanoke corridors. The Northeast Regional's Washington, DC - Roanoke (Route 46 to Roanoke)[3] segment serves Lynchburg's Kemper Street Station with two daily roundtrips.

Amtrak's Long Distance Crescent route connects the Northeast to the Gulf Coast, with terminal stations in New York City and New Orleans. The route stops twice a day at Lynchburg Kemper Street station – once each in the northbound and southbound directions.

Previous studies and grant applications show that expanding passenger rail service in Central Virginia could enhance the region's capacity for business attraction and economic growth and offer a viable, convenient, and sustainable alternative for passenger travel. DRPT and the Town of Bedford have evaluated project feasibility, ridership forecasting, facility planning, and estimated probable costs for a potential future passenger rail stop at Bedford between existing Amtrak stops at Roanoke and Lynchburg. In October 2024 the Town of Bedford announced it was awarded a $1,481,000 grant through FRA's Consolidated Rail Infrastructure and Safety Improvements (CRISI) program to complete National Environmental Policy Act (NEPA) compliance and preliminary engineering for a new Bedford passenger rail stop.

Road Network

Four-lane limited access highways U.S. 460, U.S. 29, and U.S. 501, and other key arterials connect the study area to the rest of the State. Absent interstate highway access in the study area, rail is an essential alternative to reach outside markets. Figure 3 displays the road network in the study area.

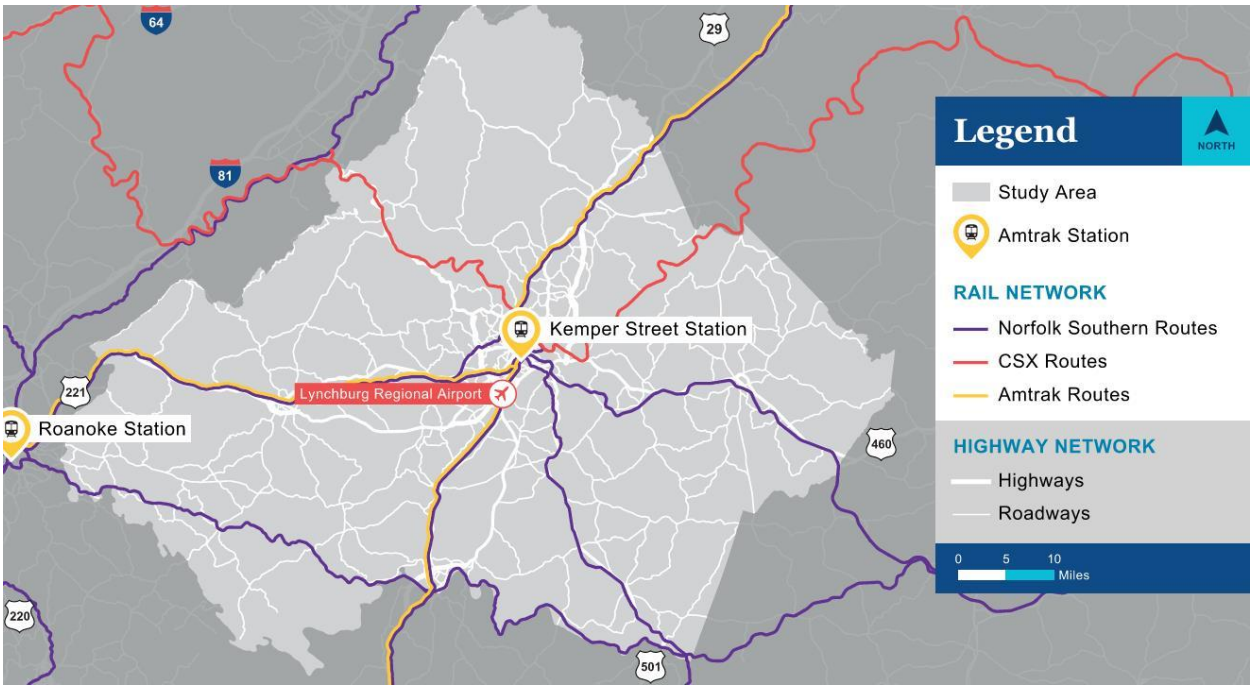
Air Freight Network

The Lynchburg Regional Airport is a public-use airport served by American Eagle with service through Charlotte International Airport. It is located partially in Campbell County and partially in the City of Lynchburg adjacent to the NS rail line. The airport does not handle significant volumes of commercial freight.[4] Air freight tends to be more viable for low-weight, time-sensitive, high-value products and as such, there is typically limited potential to interchange with rail, which serves heavy, less time-sensitive commodities.

[3] Virginia Passenger Rail Authority, Amtrak Virginia Rolls into Summer with Record Ridership, May 31, 2024. Retrieved https://vapassengerrailauthority.org/amtrak-virginia-rolls-into-summer-with-record-ridership/

[4] Lynchburg Regional Airport, Airport Master Plan Update, March 2010. Retrieved Microsoft Word - Compiled Report_WPR_Format_rev5 Addresses FAA_DOAV Comments FINAL.docx (flylyh.com)

Figure 3 Road Network in Study Area



Source: STV Inc.

Markets and Key Industries

The Lynchburg region has historically supported an industrially based economy. Manufacturing remains the top-performing industry in the region at present. The region's economy is dominated by freight-intensive industries such as manufacturing and food and beverage.[5] The movement of goods is currently heavily reliant on Virginia's highway system, contributing to increased traffic on U.S. 29, U.S. 460 (providing access toward the Port of Virginia), Interstate 81, and U.S. 501.

Key industries in the Lynchburg region include:

Food and beverage, comprising companies that distribute, process, and package food and drink products to customers.

Steel and metals, often used in construction, manufacturing, and technology, where steel is an iron-based alloy used to reinforce and create concrete, bridges, infrastructure, tools, ships, trains, cars, machines.

[5] The Top Industries in Lynchburg - Lynchburg Economic Development Authority, 2024. Retrieved https://www.opportunitylynchburg.com/the-top-industries-in-lynchburg/

Nuclear technology, focused on generating energy via nuclear power plants and reactors.

Wireless infrastructure and communication, providing cell phone towers, rooftop wireless sites, and other facilities that transmit wireless communication signals.

Financial and business support services, comprised of services like banking, mortgages, credit, payment, tax preparation and planning, accounting, investing, as well as activities benefiting companies like marketing, production, safety, cost control.

GOVA Region 2 Growth and Diversification Plan 2023 identifies the following interrelated business clusters that offer the greatest potential for sustainable, scalable, future growth in Central Virginia:

- Transportation and autonomy manufacturing
- Materials and machinery manufacturing
- Life science and biotechnology
- Information technology, engineering, and emerging technology

These are largely traded sector and supply chain industries, with high levels of export sales that support in-region production and a skill-aligned workforce.[6] According to the 2022 Lynchburg Regional Economic Development Strategy, Central Virginia aims to be more competitive for economic development projects in sectors such as advanced manufacturing, and it must take additional steps to ensure it is able to meet the anticipated future demand for this type industrial development.[7] Central Virginia's robust existing rail infrastructure makes pursuing targeted strategies to secure companies that require rail service a natural choice.[8]

Outreach

As part of the Study process, DRPT performed targeted outreach to government and industry representatives inside and outside the region to understand the transportation landscape, identify unique needs and emerging trends, and uncover opportunities for rail as a transportation solution. Through this outreach, DRPT also collected data on the

[6] Growth & Opportunity Virginia Region 2 Growth and Diversification Plan, 2023. Page 2. Retrieved https://www.dhcd.virginia.gov/sites/default/files/DocX/gova/region-two/r2-growthplan-2023.pdf.
[7] Lynchburg Regional Economic Development Strategy, 2022. Page 24. Retrieved https://www.yeslynchburgregion.org/wp-content/uploads/2022/09/Lynchburg-Regional-Economic-Development-Strategy-FINAL.pdf.
[8] Inland Port Study, Virginia Economic Development Partnership. December 2022. Page 37. Retrieved https://cardinalnews.org/wp-content/uploads/2023/01/Inland-Port-Feasibility-Study_December-2022.pdf.

types of freight and volumes moved, key routes, origins, destinations, and potential site locations for recommended opportunity concepts. Table 7 below includes a list of the entities that were consulted. DRPT further distributed a questionnaire to local businesses to solicit feedback on the viability of rail-centric economic development opportunities. The Study conducted outreach via over fifteen phone/video interviews, online surveys, and in-person meetings.

Table 7 List of Stakeholders

Type of Stakeholders	Stakeholders
Local Governments	City of Lynchburg, Town of Bedford, Campbell County, Bedford County, Amherst County
Economic Development Organizations	Central Virginia Career Works, Central Virginia Planning District Commission, Lynchburg Regional Business Alliance, VEDP
Manufacturers	AEP, Aerofin, Banker Steel, BWXT, CB Fleet, Foster Fuels, Framatome, Frito-Lay, Georgia Pacific, Glad, Graham Packaging, Hanwah Azdel, Moore & Giles,
Transportation Industry Partners	Amtrak, BB, CSX, Houff, Moffatt & Nichol, NS, Port of Virginia, VPRA

Source: DRPT.

Appendix A lists the names of stakeholders interviewed and Appendix B provides the questionnaire the Study distributed to local businesses.

KEY FINDINGS

This section summarizes the key findings and conclusions from background research and outreach.

Diversification of industries: The Lynchburg region is developing industry-specific knowledge and workforce competencies that will provide the region with a competitive and unique labor market. Two ways include attracting new residents from outside the community and fostering homegrown talent through targeted higher education programs. To enhance economic growth, the region will continue to invest in key industries which are: food and beverage, steel and metals, nuclear technology, wireless infrastructure and communication, and financial and business support services. The region will also continue to support manufacturing industries, as manufacturing continues to be the strongest export-oriented sector in the region.

Workforce training centers: The Lynchburg region, with the support of LRBA, is focusing on expanding the “Regional Workforce Center” on the campus of Central Virginia Community College (CVCC) and maximizing training programs through a multi-faceted approach, including strengthening relationships with regional partners. The region has also invested in growing the “Regional Center for Entrepreneurship” to promote innovation in the Lynchburg region. The goal of developing a strong talent pipeline will be complemented by growing and attracting diverse businesses, ensuring a competitive supply of industrial sites and buildings, and promote and connecting a

dynamic regional core through housing, and ensuring strong multimodal connectivity within and between the Lynchburg region.

Target industries through business attraction and retention: The Lynchburg region has a relatively low concentration of employment in “traded sectors.” Firms in these sectors “export” goods and services to other markets both domestic and foreign, thereby bringing new wealth into the community. These traded sectors are: manufacturing, wholesale trade, transportation and warehousing, information, financial services, professional services, and headquarter operations. Maintaining and enhancing the region’s capacity for business attraction and business retention and expansion will be an important part of this effort to improve the region’s underlying value proposition. Plans for innovative tech parks are developed for industries that are dependent on rail freight infrastructure. The study area has existing rail spurs that are not being used. There are opportunities to invest in manufacturing or warehouse buildings nearby that could benefit.

Business opportunities: The Lynchburg region has missed out on opportunities to attract advanced manufacturing companies to the region due to a lack of “move-in-ready” buildings, especially sites with at least 150,000 square feet of available space that can be expanded to 300,000 square feet. Economic development practitioners said that most competitive projects are searching for existing buildings that are move-in ready or close to it. Addressing this need in the near term will require the development of buildings built to attract businesses during construction or soon thereafter. Additionally, there are opportunities in the study area to occupy vacant industrial sites with access to rail spurs.

Regional connectivity: Amtrak service in Lynchburg is one of the region’s greatest connectivity assets. Regional stakeholders view Amtrak service as an asset for its convenient access to Washington, DC This access provides value to firms both by enabling easy business travel and by enhancing the image of the region for young talent interested in proximity to major urban centers. When it comes to freight transportation, the Lynchburg region is less reliant on air and rail than the Commonwealth overall, but approximately 1.2 times more dependent on truck movements. The Lynchburg region is crossed by Class I railroads, and although the region does not have an intermodal container rail transfer terminal, there may be other opportunities for rail-oriented development that would take advantage of the significant freight rail capacity in the region (e.g., individual industrial users or, logistics and warehousing operations that facilitate truck-rail transfers for other businesses).

Inter-city passenger rail: Bedford Amtrak rail stop plans started as a grassroots movement in the Bedford County and Franklin County communities. Passenger rail service in Bedford would provide an opportunity to attract tourism in the region due to its location close to Smith Mountain Lake, the Peaks of Otter, the National D-Day Memorial, and the Blue Ridge Parkway. Bedford County has developed construction and cost estimates for the preferred station location, and the community is seeking funding opportunities.

Transit-oriented development in Lynchburg: Lynchburg is exploring potential transit-oriented development opportunities around the Lynchburg Kemper Street station through USDOT’s Thriving Communities program. The station is adjacent to the bus

transfer station downtown where multimodal transit connectivity is available. The plans to improve transit-oriented development around the station will contribute to housing and economic development for Lynchburg and create more mobility options for the community.

Chapter 3: Concepts Development and Prioritization

Rail plays a critical role in the economy of Central Virginia—moving both freight and people, connecting the Commonwealth to markets, employment, and leisure activities. This chapter describes four potential rail-centric opportunity concepts that could facilitate economic growth and development in Central Virginia. This chapter summarizes the results of the multicriteria analysis (MCA) that identifies the three most viable opportunity concepts to be further evaluated in an EIA (Chapter 4). The MCA includes a review of possible site locations identified through research and outreach (Chapter 2) and evaluates the potential of identified sites to host the selected opportunity concepts.

Opportunity Concepts

The purpose of this Study is to evaluate rail-centric economic development opportunities, which are defined as "opportunity concepts" that have the potential to facilitate long-term regional economic growth in Central Virginia. Opportunity concepts capitalize on the study area's existing infrastructure assets as well as the economic and demographic landscape of the region. Of the four concepts identified, two focus on passenger rail, and two focus on freight rail. The concepts are:

POTENTIAL PASSENGER RAIL OPPORTUNITY CONCEPTS

- **Bedford passenger rail stop**
- **Transit-oriented development (TOD) at Lynchburg Kemper Street Station**

POTENTIAL FREIGHT RAIL OPPORTUNITY CONCEPTS

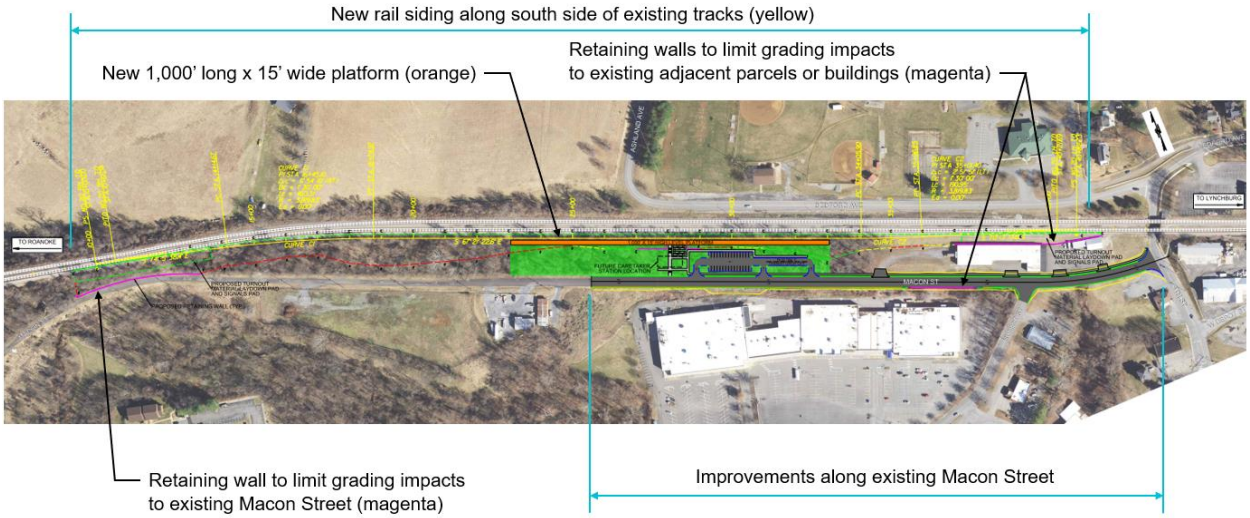
- **Rail-served site**
- **Transload facility**

BEDFORD PASSENGER RAIL STOP

The Bedford passenger rail stop concept is located in the Town of Bedford between Lynchburg and Roanoke, Virginia. Amtrak's Northeast Regional Route 46 currently operates on the Norfolk Southern railroad that runs through the town. Bedford has been without passenger rail service since 1971.

DRPT's 2021 Bedford Regional Passenger Rail Stop Study recommended a site for the Bedford passenger rail stop located approximately one mile from the central business district. The rail stop is planned to be accessible for all users of the transportation network. Based on previously conducted studies, the concept for the Bedford station includes surface parking, a caretaker-style station, an intertrack fence to deter trespassing, a platform designed for level boarding, and auto and transit drop-off facilities. Figure 4 shows the proposed location and layout.

Figure 4 Potential Bedford Passenger Rail Stop Location



Source: Town of Bedford, Bedford Rail Stop Council Briefing, November 14, 2023.

TRANSIT-ORIENTED DEVELOPMENT AT LYNCHBURG KEMPER STREET STATION

The second passenger rail opportunity concept the Study considers is a transit-oriented development (TOD) area around the Kemper Street Station in the City of Lynchburg. The Kemper Street Station is located southwest of downtown Lynchburg and offers daily intercity passenger rail service, including two daily roundtrips along Amtrak's Northeast Regional Route 46, which provides service between Washington, DC and Roanoke, and one roundtrip along the Amtrak Crescent route, which provides long-distance service between New York City and New Orleans. The Virginia Breeze's Piedmont Express line, which makes one daily round trip that connects Danville to Washington, DC also stops at the Kemper Street Station as do Amtrak Virginia Thruway buses. Further, the Greater Lynchburg Transit Company (GLTC), which provides local bus service, makes stops at the Kemper Street Transfer Station, which is adjacent to the Lynchburg Kemper Street Station. There are several cycling routes within walking distance of the station, including the Blackwater Creek Trail, the city's multimodal trail network. The City of Lynchburg owns the station and the parking facility, while NS owns the track and the platform.

The opportunity concept would open up TOD uses around the station. According to the U.S. Department of Transportation (USDOT), TOD creates dense, walkable, and mixed-use spaces near transit that support vibrant, sustainable, and equitable communities. TOD projects include a mix of commercial, residential, office, and entertainment land

uses.[9] According to the Federal Transit Administration (FTA), a "successful TOD depends on access and density around a transit station."[10] TOD at the Kemper Street Station has undergone limited project development activities to date.

The City of Lynchburg has identified opportunities for redevelopment around the station, including the city–owned 1.7-acre parcel approximately three blocks from the Kemper Street Station, the former GLTC bus terminal, which is unoccupied and zoned for the city's industrial use. The community can leverage these assets to develop transit-supported land use. Figure 5 displays current amenities around Kemper Street Station and the City owned land in the 1-mile buffer area.

The USDOT recently awarded the City of Lynchburg funding through the Thriving Communities grant program under the Complete Neighborhood Community of Practice to further develop the TOD at Lynchburg Kemper Street Station opportunity concept. The city is in the planning process of detailing and collecting data. Any further analysis of this concept should align with the findings of the planning study funded by USDOT.

Freight Rail Opportunity Concepts

Freight opportunity concepts described below are not specific to a particular site. The Site Selection section identifies the most suitable locations in the study area to situate the identified opportunity concepts.

RAIL-SERVED SITE

Companies desiring a rail-served site for industrial development typically prioritize sites with enough acreage to develop a manufacturing and/or warehouse facility in proximity to an active railroad that can be connected by a rail spur. An existing rail spur is not necessarily a pre-requisite, but favorable topography is needed to construct a rail spur to facilitate the loading and unloading of goods onto trains, enabling efficient transportation via rail. Development may involve constructing new facilities or upgrading existing ones to better serve rail transport needs. The key factors to consider when choosing a location for a rail-served site include physical site characteristics, zoning, suitability, and total cost. The physical site must accommodate a rail spur and provide suitably flat terrain.

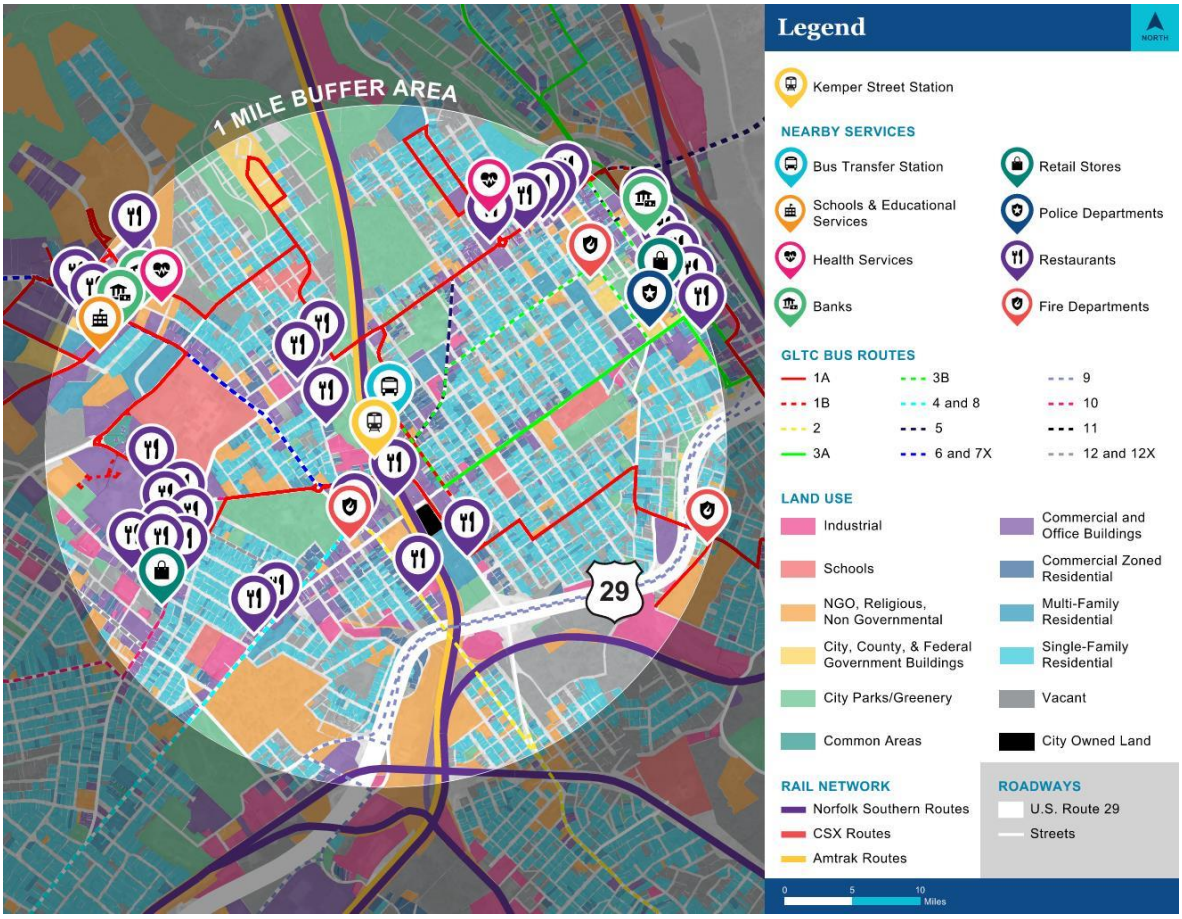
Ideally existing infrastructure would include the availability of network access to multiple transportation modes. Water, sewer, and power access are not pre-requisites to select a location for a rail-served site, but access is necessary once a site is selected. The communities considering investing in rail-served sites should be business friendly and

[9] U.S. Department of Transportation, Transit-Oriented Development, 2024. Retrieved https://www.transportation.gov/buildamerica/TOD#:~:text=Transit%2Doriented%20development%20(TOD)%20creates%20dense%2C%20walkable%2C,%2C%20sustainable%2C%20and%20equitable%20communities.

[10] GO Triangle. (2018). *Transit-Oriented Development Guidebook*. https://gotriangle.org/tod/guidebook

amenable to increasing industrial development in designated areas of the community that avoid impacts to residential and recreational uses, and natural resources. State and local laws, policies, programs, and incentives to support business development can improve the economic viability of a rail-served site. Regarding the workforce, the site should be located in an area with available skilled workers, and with access to training. Attributes that may expand the region's labor market or incentivize businesses to locate in the region, such as quality of life, ample affordable housing stock, medical services, and recreation may improve the viability of a rail-served site.[11]

Figure 5 Current Amenities around Kemper Street Station



Source: STV Inc.

TRANSLOAD FACILITY

A transload facility is a location where goods are transferred between different modes of transportation, such as from rail to truck. These facilities function as intermediaries between different transportation networks, allowing for the efficient transfer of goods from one mode of transport to another. For that reason, siting a rail to truck transload

[11] Iowa Department of Transportation, Developing a Rail-Served Facility, no date. Retrieved https://iowadot.gov/iowarail/railroads/industry/iowatoolkit/Toolkit_Developing.pdf

facility is dictated by the proximity to road and rail infrastructure, as well as proximity to industries that can make use of the facility. Transload facilities may include industry-specific warehouses, storage, and other facilities for handling of goods during the transfers.

Transload facilities are of particular benefit to regions with significant volumes of bulk commodities, allowing them to be broken down into smaller volumes and shifted between storage types. Transload facilities differ from intermodal facilities in that transload facilities commonly handle bulk freight while intermodal facilities commonly handle containerized goods. Intermodal facilities require more than 100,000 train carloads moving 2,000 miles annually to be viable while transload facilities require 1,500 annual carloads.[12]

Key factors to consider when choosing a transload facility:[13]

- Rail access
- Available property
- Road and highway access
- Relationship to / with nearby facilities
- Presence of an anchor commodity or customer
- Local trucking partners
- Community involvement

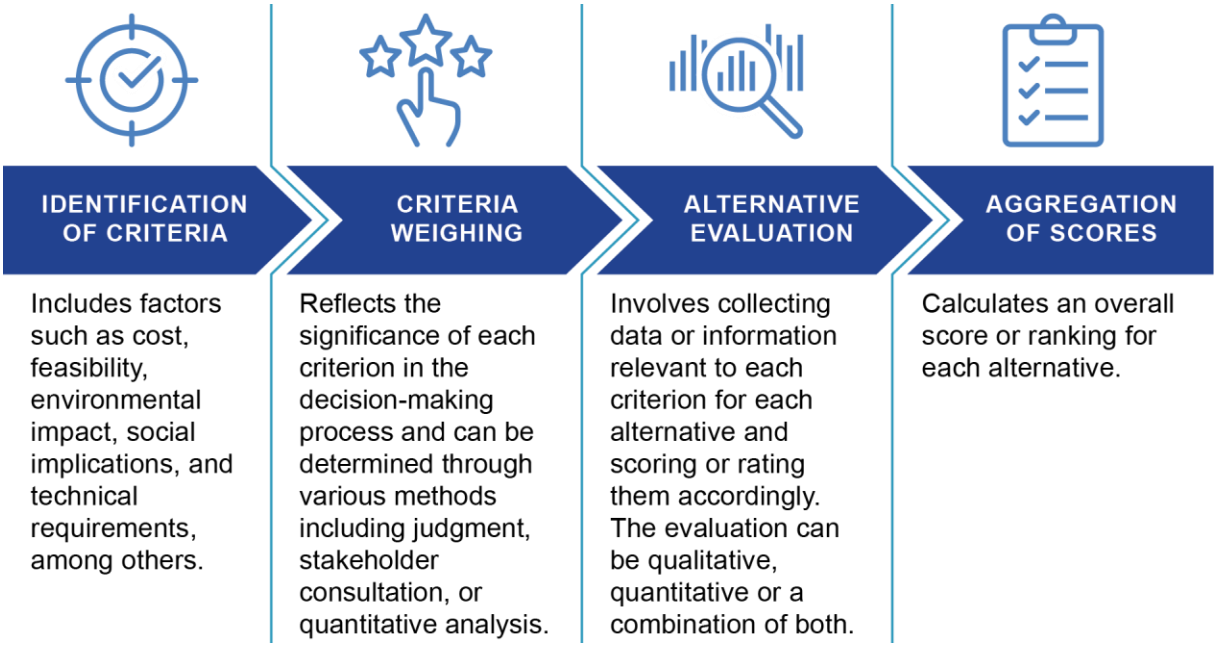
Multicriteria Analysis

A multicriteria analysis (MCA) is a decision-making technique used to evaluate and compare multiple alternatives or options based on many criteria or objectives.
For this Study, the analysis applies the MCA methodology to evaluate which of the opportunity concepts would best meet the needs and objectives of the Central Virginia region. Figure 6 describes the MCA methodology.

[12] Arkansas Department of Transportation, Locating Translad Facilities to Ease Highway Congestion and Safeguard the Environment, 2017. Retrieved https://www.ahtd.ar.gov/TRC/Final_Report/TRC1608_Locating_Transload_Facilities_to_Ease_Highway_Congestion_and_Safeguard_the_Environment.pdf

[13] Kansas Department of Transportation, Transload Facility Site Analysis Advisory Committee Meeting, no date. Retrieved https://www.ksdot.gov/Assets/wwwksdotorg/bureaus/burRail/Rail/Documents/TFSAACPresentation.pdf

Figure 6 Multicriteria Analysis Methodology



Source: STV Inc.

Identification of Criteria

The MCA includes two sets of screening criteria, with consistent criteria in the primary screening and varied criteria in the secondary screening. The evaluation of opportunity concepts includes a qualitative assessment of benefits based on industry standards. The following sections describe the primary and secondary screening criteria for passenger rail and freight rail.

PRIMARY SCREENING CRITERIA

Table 8 displays the primary screening criteria for the passenger rail and freight rail opportunity concepts.

Table 8 Primary Screening Criteria for Passenger Rail and Freight Rail Opportunity Concepts

Primary Screening Criteria
Does this align with regional strategies and policies?
Are there existing studies with a preliminary feasibility plan?
Is there availability for integration with other infrastructure?
Has the concept been developed and advanced?
Is there existing (multimodal, intermodal) connectivity?

SECONDARY SCREENING CRITERIA

Table 9 displays the secondary screening criteria and rating methodology for the passenger rail opportunity concepts.

Table 9 Secondary Screening Criteria for Passenger Rail Opportunity Concepts

Score (points)	Market growth (population, employment)	Timeline	Walkability	Ridership	Stakeholder interests	Scale of investment
3	**High** Population and employment grew at a faster rate than Virginia between 2000 and 2022.	**Short / Most Favorable** The project is expected to be operational in fewer than five years.	**High** Walk Score and Bike Score are both a minimum of walkable/bikeable.	**High** Ridership at location accounts for greater than 20 percent of ridership along Amtrak's Northeast Regional Route 46 to Roanoke.	**High** Broadly demonstrated public support.	**Small** Under $10M
2	**Moderate** Population and employment grew equal (within 1%) to that of Virginia between 2000 and 2022.	**Moderate** The project is expected to be operational in greater than five years but fewer than ten years.	**Medium** Either the Walk Score is a minimum of walkable or the Bike Score is a minimum of bikeable.	**Moderate** Ridership at location accounts for between 10 and 20 percent of ridership along Amtrak's Northeast Regional Route 46 to Roanoke.	**Moderate** A moderate rating is not applicable for this criterion.	**Moderate** Between $10M and $50M
1	**Low** Population and employment grew at a slower rate than Virginia between 2000 and 2022.	**Long / Least Favorable** The project is expected to be operational in more than ten years.	**Low** Neither the Walk Score nor the Bike Score receive a minimum rating of walkable/bikeable.	**Low** Ridership at location accounts for less than 10 percent of ridership along Amtrak's Northeast Regional Route 46 to Roanoke.	**Low** Limited demonstrated public support.	**High** Greater than $50M

Table 10 displays the secondary screening criteria and rating methodology for freight rail opportunity concepts.

Table 10 Secondary Screening Criteria for Freight Rail Opportunity Concepts

Score (points)	Market growth (population, employment)	Timeline	Industry support	Economic viability	Stakeholder interests	Scale of investment
3	**High** Concept can facilitate freight movement by two or more modes.	**Short / Most Favorable** The project is expected to be operational in fewer than five years.	**High** Comparative evaluation among survey respondents. The opportunity concept (rail-served site or transload facility) that receives more favorable responses receives a high rating.			**Low / Most Favorable** Under $10M
2	**Moderate** Concept can facilitate freight movement by one mode.	**Moderate** The project is expected to be operational in greater than five years but fewer than ten years.	**Moderate** Comparative evaluation among survey respondents. The opportunity concept (rail-served site or transload facility) that receives fewer favorable responses receives a moderate rating.			**Moderate** Between $10M and $50M
1	**Low** A low rating is not applicable to this criterion.	**Long / Least Favorable** The project is expected to be operational in more than ten years.	**Low** Limited interest among survey respondents.			**High / Least Favorable** Greater than $50M

Prioritization Analysis

The results of the prioritization analysis are summarized in the following sections. A detailed assessment of the prioritization analysis can be found in Appendix C.

PRIMARY SCREENING CRITERIA

Table 11 displays the results of the prioritization analysis of primary screening criteria for the opportunity concepts.

Table 11 Prioritization Analysis of Primary Screening Criteria

Primary Screening Criteria					
Does this align with regional strategies and policies?	**Are there existing studies with a preliminary feasibility plan?**	**Is there availability for integration with other infrastructure?**	**Has the concept been developed and advanced?**	**Is there existing (multimodal, intermodal) connectivity?**	**Score**
Bedford Passenger Rail Stop					
Yes	Yes	Yes	Yes	No	4
Transit-Oriented Development at Lynchburg Kemper Street Station					
Yes	No	Yes	No	Yes	3
Rail-Served Site					
Yes	No	Yes	No	Yes	3
Transload Facility					
Yes	No	Yes	No	Yes	3

SECONDARY SCREENING CRITERIA

Table 12 displays the results of the prioritization analysis of the secondary screening for the passenger rail opportunity concepts.

Table 12 Prioritization Analysis of Secondary Screening Criteria – Passenger Rail Opportunity Concepts

Secondary Screening Criteria						
Market Growth	**Timeline**	**Walkability**	**Ridership**	**Stakeholder interest**	**Scale of Investment**	**Score**
Bedford Passenger Rail Stop						
3	3	2	1	3	2	14
Transit-Oriented Development at Lynchburg Kemper Street Station						
2	1	3	3	1	1	11

Table 13 displays the results of the prioritization analysis of the secondary screening for the freight rail opportunity concepts.

Table 13 Prioritization Analysis of Secondary Screening Criteria – Freight Rail Opportunity Concepts

Secondary Screening Criteria						
Market growth, (population, employment)	**Timeline**	**Industry Support**	**Economic Viability**	**Stakeholder Interests**	**Scale of Investment**	**Score**
Rail-Served Site						
2	3	3	3	3	3	17
Transload Facility						
3	3	2	2	2	2	14

Results of MCA

The results of the MCA are displayed in Table 14.

Table 14 Results of Multicriteria Analysis

Compilation of Findings			
Opportunity Concept	**Screening Criteria 1**	**Screening Criteria 2**	**Total**
Passenger Rail Opportunity Concept			
Bedford Passenger Rail Stop	4	14	18
Transit-Oriented Development at Lynchburg Kemper Street Station	3	11	14
Freight Rail Opportunity Concept			
Rail-Served Site	3	17	20
Transload Facility	3	14	17

Per the results of the MCA, the following opportunity concepts advanced to the EIA conducted in Chapter 4:

- Bedford passenger rail stop
- Rail-served site
- Transload facility

While the Transit-Oriented Development at the Lynchburg Kemper Street Station opportunity concept has strong development potential, the City of Lynchburg recently received the Thriving Communities grant program under the Complete Neighborhood Community of Practice grant to further advance this concept. The Thriving Communities grant award will provide technical assistance and advance the planning stages of the opportunity concept. Upon completion of the planning work, the impacts of the opportunity concept on the study area will be further understood, allowing for the completion of an EIA.

Site Selection

After identifying the recommended freight opportunity concepts, the Study reviewed suitable locations in the study area to situate a rail-served site and transload facility using the Virginia Economic Development Partnership (VEDP) sites and buildings database, through interviews with LRBA and its member localities, and through interviews with CSX, NS, and VEDP.

DRPT engaged with representatives of VEDP, the railroads, and local/regional economic developers to further investigate the site suitability of the priority sites for

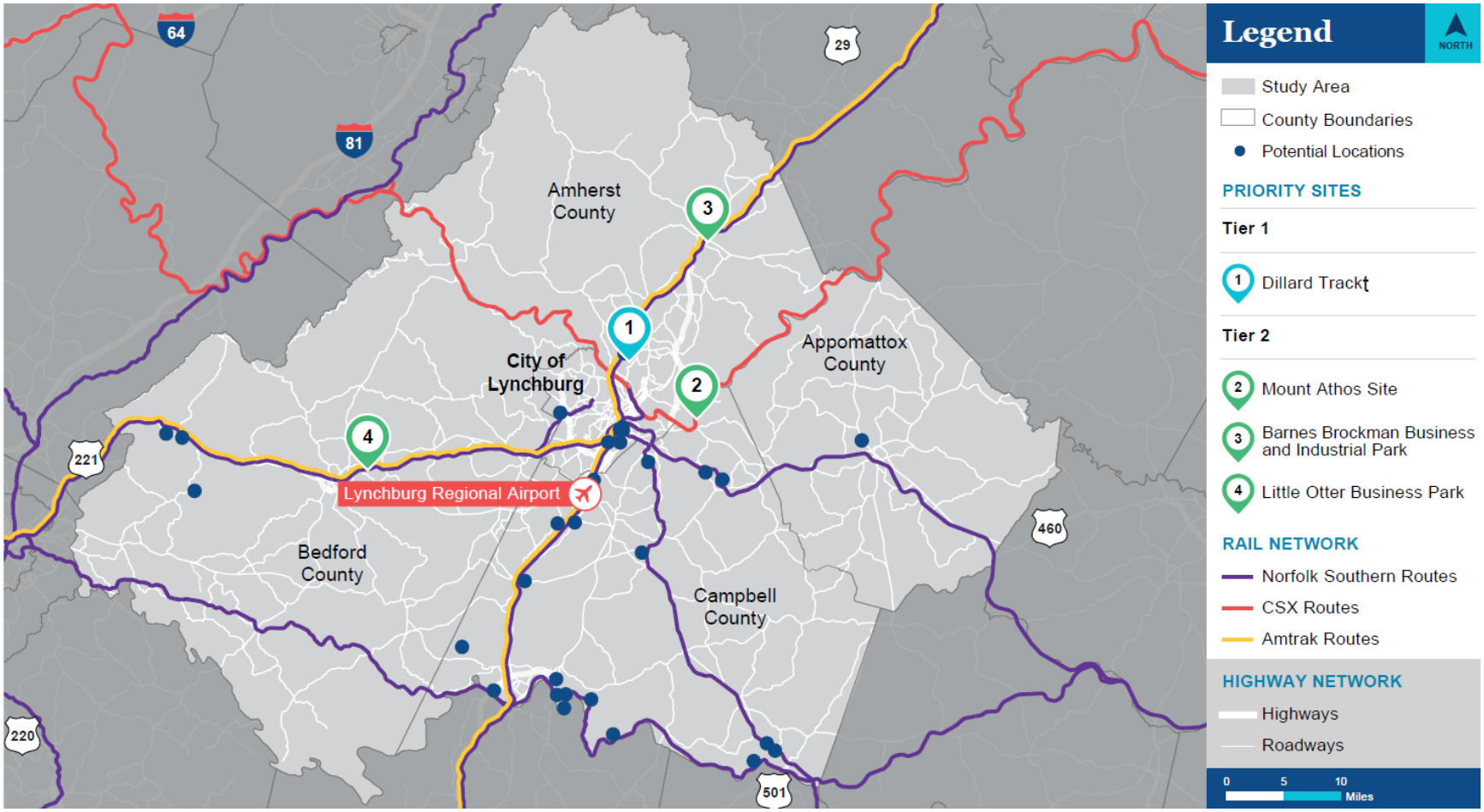
development as a rail-served site or transload facility. Table 15 summarizes the evaluation of potentially suitable sites.

Table 15 Evaluation and Rating of Priority Sites

Site Name	Address	Suitability Rating	Description
Dillard Tract	311 Mitchell Bell Rd., Madison Heights VA (Amherst County)	Tier 1	- Site is privately owned. - Existing rail infrastructure. - Power line runs through property and there is a major substation nearby. - Recommend roadway upgrades at the intersection of Mitchell Bell Road and Virginia Route 130. - Excellent access to US 29 is an advantage.
Mount Athos Site	1100 Mount Athos Road, Lynchburg VA (Campbell County)	Tier 2	- Site could be used as a layover/transfer facility for freight from the Port of Virginia by rail. - Site is currently used as a lay down yard for steel companies.
Barnes Brockman Business and Industrial Park	173 Brockman Park Drive, Amherst VA (Amherst County)	Tier 2	- Site is owned by the Town of Amherst. - Site is near interchange with U.S. Route 60 and U.S. Route 29, making it a strategic location based on highway infrastructure. - A creek runs through the site and there are some topographic challenges, necessitating site work.
Little Otter Business Park	Forest Road and Coral Lane, Bedford VA (Bedford County)	Tier 2	- Privately owned. - Not currently served by public sewer, limiting the potential as a manufacturing, but utilities could be extended if need be. - Sewer capacity not crucial for transload facility.

Figure 7 displays the potential locations for the selected opportunity concepts as well as the rating of priority sites.

Figure 7 Potential Locations for Opportunity Concepts and Rating of Priority Sites



Source: STV Inc.

Chapter 4: Economic Analysis

The objective of the economic analysis is to determine the potential economic impacts and assess the overall return on investment of the most viable opportunity concepts documented in Chapter 3: the Bedford passenger rail stop, a transload facility, and a rail-served site.

Economic Impact Analysis

Potential economic impacts of the most viable opportunity concepts are determined through an EIA.[14]

- EIA quantifies a potential project's direct, indirect, and induced effects on employment and economic activity.
- EIA considers positive impacts of investment and not the costs to the project sponsor(s).

Common EIA metrics: job creation, labor income, gross state product (GSP), economic output, and tax revenue.

Benefit-Cost Analysis

The overall return on investment (ROI) of the most viable opportunity concepts through a benefit-cost analysis (BCA).

- BCA is a process to identify, quantify, and compare expected benefits and costs of a proposed project.
- The most widely measures to compare benefits to costs is the Benefit-Cost Ratio (BCR = Benefits / Costs)
- BCR > 1.0 means benefits outweigh, and the project could be a good investment.
- BCR < 1.0 means costs outweigh and the project might not be a worthwhile investment.
- For example, a Project with a BCA of 2.0 means that for every $1 invested, the financial benefit or return (ROI) of the Project is $2. This yields a ROI of 100 percent; for every $1 invested, the Project sponsor would receive an additional $1 back.

Justification for Both Types of Analysis

While BCA can help outline the expected costs and benefits associated with the project, it is challenging to predict all the factors or events (e.g., changes in market demand, changes in construction costs) that may impact the financial success (or failure) of the project. Therefore, the BCA must be used in conjunction with the EIA to make a well-informed decision.

[14] This analysis utilizes the IMPLAN economic model developed by Minnesota IMPLAN Group, Inc. This model can forecast how a change in economic activity or policy affects a region's economy. IMPLAN provides the types of output the analyses requires, including the spillover impacts on the rest of Virginia resulting from changes in the economy activity in the study area.

EIA provides compelling and defensible measures that help communicate the potential impact of the project on generating economic value to the state of Virginia (e.g., jobs and wage creation).

The high-level estimates yield by the EIA and BCA conducted as part of the Study can be used to:

- "Make the case" for necessary funding and support for the most viable opportunity concepts.
- Communicate the broader role of passenger rail and freight rail improvements in Virginia.
- Provide guidelines for future strategic planning. The Study outcomes provide data and a blueprint for economic developers to communicate to key stakeholders the expected benefits of investments that improve and expand passenger and freight rail.

Bedford Passenger Rail Stop Concept

This section outlines the factors driving the economic impacts of the Bedford passenger rail stop opportunity concept. It estimates the combined direct, indirect, and induced economic impacts this concept would have in the region[15] where the initial effects would occur, and the spillover effect that this concept would have in the rest of Virginia.

Concept Definition

The concept includes all the elements necessary to create a new passenger rail stop at Bedford, including the station platform, building, parking area, ingress/egress, and new tangent track sidings. NS currently owns the proposed station area property. NS has an agreement with the Virginia Passenger Rail Authority (VPRA) to sell the right-of-way necessary to develop the station. The 2021 Bedford Regional Passenger Rail Stop Study, which included extensive stakeholder outreach and collaboration with NS, identified a preferred site for the rail stop on Macon Street East. This is shown in Figure 4.

Factors that Drive Economic Impacts

The Bedford passenger rail stop is expected to generate the following economic impacts:

- **Direct and total short-term economic impacts** from capital expenditures to build the Bedford passenger rail stop over the 2026-2029 project implementation period.
- **Direct and total long-term economic impacts** from ongoing operating and maintenance (O&M) expenditures to maintain the Bedford passenger rail stop in

[15] The region for the Bedford Rail Stop concept includes Bedford, Campbell, and Roanoke counties, and the cities of Roanoke and Salem (located in Roanoke County). These three counties cover the geographic area of the ridership projections at Lynchburg, Roanoke and Bedford cities provided in the BCA in support of the Bedford Passenger Rail Stop Project application for funding under the FY23-24 CRISI grant program. This is the region where the primary economic impacts are expected to occur and therefore, it is considered the study area for the estimation of the economic impacts of this concept.

a state of good repair over the 2030-2049 operating period.

- **Direct and total long-term economic impacts** from tourist spending in the region from train passengers making leisure trips due to the operation of the Bedford passenger rail stop over the 2030-2049 operating period.
- **Direct and total long-term economic impacts** from improved business productivity and additional disposable income to be generated by the operation of the Bedford passenger rail stop over the 2030-2049 operating period.
- **Direct impacts** from reduced carbon and non-carbon emissions in the region and new station amenities due to the operation of the Bedford passenger rail stop over the 2030-2049 operating period. Emissions reduction benefits are not tied directly to economic factors but are expected to increase attractiveness of the region. Because emissions benefits and the new station amenities do not have a multiplier effect on the regional economy, they are not expected to generate wider economic impacts.

Facility Capital Costs

Economic impacts from the Bedford passenger rail stop initially occur as a result of the actual capital expenditures on the facility. Capital expenditures are of economic value to Bedford County and the rest of Virginia because infrastructure development expenditure increases the GSP and supports the creation and retention of engineering, architectural, and related professional services as well as construction-related jobs. Once the construction phase is complete, subsequent expenditures are required to operate the new station, which also results in additional economic impacts for Bedford County and the rest of Virginia.

The Bedford passenger rail stop's capital costs include design/engineering costs and construction costs (Table 1). Design/engineering costs are expected to be spent in 2026 and 2027, and construction costs are expected in 2028 and 2029. Total capital costs amount to $17.8 million in 2024 dollars, discounted to 2022 dollars at 3.1 percent.[16]

The total economic impacts from Bedford passenger rail stop's capital expenditures over the 2026-2029 period are presented in Table 2. Capital expenditures are expected to support 210 jobs in the Commonwealth of Virginia. These jobs will add $11.6 million in labor income, generate $16.2 million in GSP, lead to $33.3 million in economic output in the Commonwealth, and yield $4.0 million in federal, state, and local tax revenue over the project implementation and construction period (all in 2024$).

[16] As requested by the USDOT in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs, released in December 2023.

Table 16 Bedford Passenger Rail Stop – Capital Costs, 2026-2029 (2024$, discounted to 2022)

Year	Design and Engineering	Construction	Total Capital Cost
2026	$532,000	$0	$532,000
2027	$1,033,000	$0	$1,033,000
2028	$0	$8,266,000	$8,266,000
2029	$0	$8,018,000	$8,018,000
Total	$1,565,000	$16,284,000	$17,849,000

Source: Benefit-Cost Analysis (BCA) in support of the Bedford Passenger Rail Stop Project application for funding under the Federal Railroad Administration's (FRA) FY 2023-24 Consolidated Rail Infrastructure and Safety Improvements (CRISI).

Table 17 Bedford Passenger Rail Stop – Total Economic Impacts from Capital Expenditures, 2026-2029

Geographic Area	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Study Area*	190	$10,271,000	$13,718,000	$28,669,000	$3,453,000
Rest of Virginia	20	$1,368,000	$2,519,000	$4,669,000	$578,000
Commonwealth of Virginia	210	$11,639,000	$16,237,000	$33,338,000	$4,031,000
Year	**Employment (Jobs)**	**Labor Income**	**GSP**	**Output**	**Taxes**
2026	5	$347,000	$484,000	$995,000	$120,300
2027	10	$674,000	$940,000	$1,929,000	$233,300
2028	100	$5,390,000	$7,520,000	$15,439,000	$1,866,800
2028	95	$5,228,000	$7,293,000	$14,975,000	$1,810,700

Source: Outputs from the IMPLAN model for Virginia.

*Notes: *The Bedford-Campbell-Roanoke Region includes Bedford, Campbell, and Roanoke counties, and the cities of Roanoke and Salem. Total economic impact includes direct, indirect, and induced impacts.*

Facility Operating and Maintenance Costs

O&M costs of the Bedford passenger rail stop include the operating costs of the new station and the additional Amtrak operating costs because of the increase in route hours from stopping at the new station in Bedford. The annual operating costs of the new station are estimated at $111,300 (in undiscounted 2024$) and the additional annual

Amtrak operating costs are estimated at $21,000 (in undiscounted 2024$). The total O&M costs of the Bedford Passenger Rail Stop will amount to $1.6 million (in 2024$ discounted to 2022 at 3.1 percent) over the 20-year operating period, from 2030 to 2049.

The total economic impacts from O&M expenditures of the Bedford passenger rail stop over the 2030-2049 period are presented in Table 18. Over the 20-year operating period[17], the new stop is expected to support 20 jobs in the Commonwealth of Virginia. These jobs will add nearly $647,000 in labor income, generate $1.3 million in GSP, lead to $2.8 million in economic output in the Commonwealth of Virginia, and yield $284,000 in federal, state, and local tax revenue (2024$). The annual O&M costs are expected to support, on average, one job and generate $32,400 in labor income, $64,600 in GSP, $137,500 in output, and $14,200 in tax revenue, annually, in the Commonwealth of Virginia (2024$).

Table 18 Bedford Passenger Rail Stop – Total Long-Term Economic Impacts from Facility O&M Expenditures, 2030-2049

Geographic Area	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Study Area*	15	$552,000	$1,111,000	$2,407,000	$242,000
Rest of Virginia	5	$95,000	$181,000	$343,000	$42,000
Commonwealth of Virginia	20	$647,000	$1,292,000	$2,750,000	$284,000

Source: *Outputs from the IMPLAN model for Virginia.*

Notes: **The Bedford-Campbell-Roanoke Region includes Bedford, Campbell and Roanoke counties, and the cities of Roanoke and Salem. Total economic impact includes direct, indirect, and induced impacts.*

Tourism and Visitor Spending from Amtrak Riders

Visitors contribute to the regional economy by spending money to purchase goods and services from hotels, restaurants, retailers, transportation providers, entertainment venues, and other attractions. This section estimates the total spending by visitors arriving to the region by train because of the new Bedford passenger rail stop.

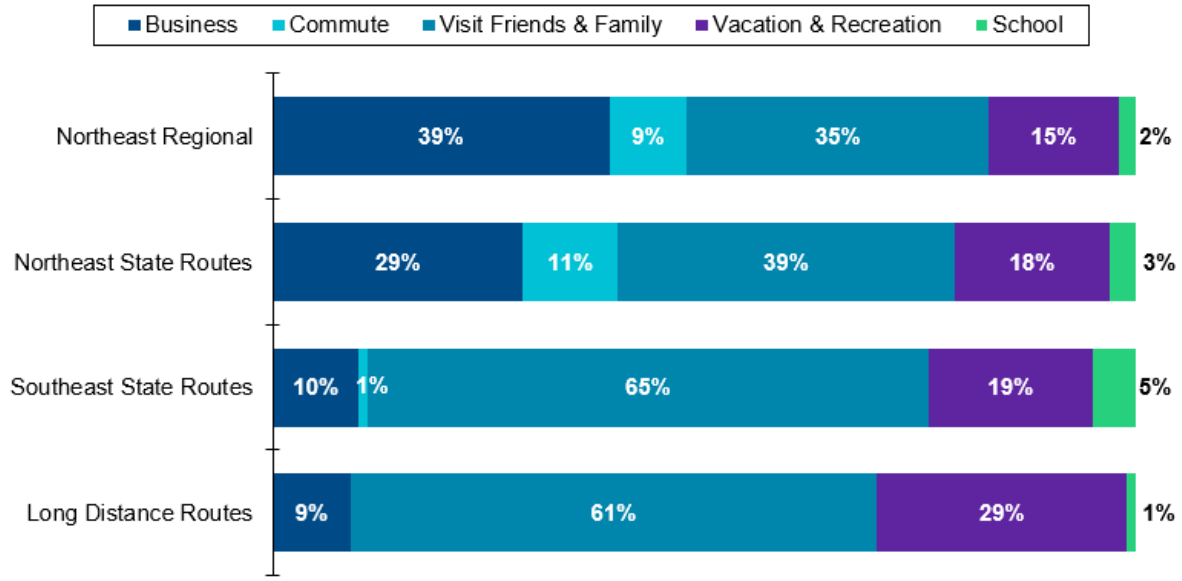
Historical data on tourist spending in Virginia by Amtrak riders indicate that 353,000 tourists who utilized Amtrak services in FY 2015 spent $2.4 million in the Commonwealth. Similar statistics in FY 2016 indicate that 331,000 tourists who utilized Amtrak services spent $2.3 million in the Commonwealth.[18] Based on this historical data, this analysis estimates the average spending by tourists. Using the distribution of

[17] The 20-year operating period comes from the Benefit-Cost Analysis (BCA) in support of the Bedford Passenger Rail Stop Project application for funding under the Federal Railroad Administration's (FRA) FY 2023-24 Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant program.

[18] Amtrak's Contribution to Virginia in FY 2015.

passenger trains by trip purpose shown in Figure 8, this analysis estimates that 57 percent of train passengers make leisure trips. This includes 39 percent of train passengers who make trips to visit friends and family plus 18 percent of train passengers who make vacation and recreation trips.

Figure 8 Distribution of Amtrak Riders by Trip Purpose by Corridor Market



Source: Amtrak's Economic Contribution in Fiscal Year 2015.

To estimate the annual number of train passengers making leisure trips, this analysis applies the share of train passengers making leisure trips (i.e., 57 percent) to the changes in ridership at Lynchburg, Roanoke, and Bedford as a result of the new Bedford Passenger Rail Stop over the period 2030-2049. Then the annual number of train passengers making leisure trips multiplied by the average spending by tourists yields the visitor spending to be generated by the new Bedford passenger rail stop. The estimated annual visitor spending totals $1.9 million (in 2024$ discounted to 2022 at 3.1 percent).

The total economic impacts from additional visitor spending as a result of the operation of the Bedford passenger rail stop over the 2030-2049 period are presented in Table 19. The new station is expected to support 20 jobs in Virginia. These jobs will add $694,000 in labor income, generate $1.4 million in GSP, lead to $2.3 million in economic output in the Commonwealth, and yield $390,000 in federal, state, and local tax revenue over the 20-year operating period. This represents, on average, 1.0 additional jobs, $34,700 in labor income, $135,800 in GSP, $68,450 in output, and $19,500 annual tax revenue in the Commonwealth of Virginia.

Table 19 Bedford Passenger Rail Stop – Total Long-Term Economic Impacts from Additional Visitor Spending, 2030-2049

Geographic Area	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Study Area*	15	$621,000	$1,237,000	$2,085,000	$359,000
Rest of Virginia	5	$73,000	$132,000	$226,000	$31,000
Commonwealth of Virginia	20	$694,000	$1,369,000	$2,311,000	$390,000

Source: *Outputs from the IMPLAN model for Virginia.*

Notes: **The Bedford-Campbell-Roanoke Region includes Bedford, Campbell and Roanoke counties, and the cities of Roanoke and Salem. Total economic impact includes direct, indirect, and induced impacts.*

Facility Users and Non-Users Impacts

RIDERSHIP FORECASTS

Ridership forecasts are developed using the 2018 baseline ridership forecast from the Bedford Regional Passenger Stop Study,[19] actual ridership data from 2021-2023, and average annual growth rates from the 2022 Virginia Statewide Rail Plan.[20] The Bedford Regional Passenger Stop Study estimated the expected changes in ridership at Lynchburg, Roanoke, and Bedford as a result of the new Amtrak stop at Bedford. To project the 2018 baseline ridership over the 2024-2049 period, actual ridership data from 2021-2023 was apportioned according to the 2018 share of ridership at each station and the average annual growth rates.[21] The changes in ridership at Lynchburg, Roanoke, and Bedford as a result of the new Bedford passenger rail stop are shown in Table 20.

[19] Virginia DRPT. Bedford Regional Passenger Rail Stop Study - October 2021.
[20] Virginia Statewide Rail Plan 2022. Retrieved Virginia Statewide Rail Plan (arcgis.com).

[21] *The Source of growth rates is the Benefit-Cost Analysis (BCA) in support of the Bedford Passenger Rail Stop Project application for funding under the Federal Railroad Administration's (FRA) FY 2023-24 Consolidated Rail Infrastructure and Safety Improvements (CRISI).*

Table 20 Impact of Bedford Passenger Rail Stop – Forecasted Changes in Annual Ridership by Station

South of Washington, DC				Through Washington, DC			
Year	Lynchburg	Roanoke (Diversions to Bedford)	Bedford	Year	Lynchburg	Roanoke (Diversions to Bedford)	Bedford
2030	6,926	(6,093)	32,476	2030	-	(13,138)	9,762
2035	7,104	(6,362)	33,612	2035	-	(13,719)	10,103
2040	7,287	(6,644)	34,788	2040	-	(14,326)	10,457
2045	7,475	(6,938)	36,005	2045	-	(14,960)	10,823
2049	7,628	(7,183)	37,009	2049	-	(15,488)	11,124

Source: *Benefit-Cost Analysis (BCA) in support of the Bedford Passenger Rail Stop Project application for funding under the Federal Railroad Administration's (FRA) FY 2023-24 Consolidated Rail Infrastructure and Safety Improvements (CRISI).*

Notes: *AAGR ridership for Lynchburg and Roanoke stations comes from the 2022 Virginia Statewide Rail Plan. AAGR ridership for Bedford station was estimated as the average of the AAGR ridership for Lynchburg and Roanoke stations.*

PUBLIC BENEFITS

The direct benefits/disbenefits of the Bedford passenger rail stop over the 20-year operating period are summarized in Table 21. The new station is expected to generate $31.2 million (2024$ discounted to 2022 at 3.1 percent)[22] in benefits over the 2030-2049 period. This analysis assumes that the distribution of Amtrak riders by trip purpose in the Northeast State Routes shown in Figure 8 is a good representation of the distribution of train passengers by trip purpose in the Bedford region. The shares shown in Table 22 are used to allocate the direct benefits/disbenefits generated by the new rail stop among commuters, business travelers, and people making "all other" purpose trips in the Bedford region.

[22] *As requested by the USDOT in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs, released in December 2023.*

Table 21 Bedford Passenger Rail Stop Direct Impacts, 2030-2049

Benefit/ Disbenefit	Change to Baseline	In 2024$ (discounted to 2022 at 3.1 percent)
Reduced Fatalities and Crashes	Reinstating intercity passenger services at Bedford will lead to a modal shift from private passenger vehicles to rail for transportation users in the region. This reduction in auto VMT on local and regional roads will lead to a reduction in road crashes in the region.	$2,423,000
Travel Time Disbenefit	The project will lead to an increase in travel time for (a) existing rail passengers on the Amtrak route from the introduction of the Bedford station and (b) new rail passengers because of longer travel times to destinations along the Amtrak route when compared to auto travel.	$-11,878,000
Vehicle Operating Cost Savings	The project will lead to a modal shift from private passenger vehicles to rail. This modal diversion will lead to vehicle operating cost savings for each diverted user because of reduced auto VMT.	$28,779,000
External Highway User Cost Savings	The avoidance of long-distance automobile travel, in addition to shorter automobile journeys to rail services (i.e., traveling to Bedford rather than Lynchburg/Roanoke) will lead to fewer cars on local and regional roads. This will reduce noise, congestion, and safety risks for external highway users.	$6,929,000
Emissions Savings	The project will lead to a modal shift from private passenger vehicles to rail for some transportation users in the region. The reduced auto VMT on local and regional roads will also lead to fewer air pollutants.	$3,998,000
New Station Amenities	New and existing intercity rail passengers at the Bedford Station will benefit from a range of amenities (e.g., electronic real-time information displays, information/emergency buttons, seating, weather protection, surveillance cameras, bike facilities, car access facilities, taxi pickup/drop-off).	$946,000
	Total Benefits/Disbenefits	$31,197,000

Source: BCA in support of the Bedford Passenger Rail Stop Project application for funding under the Federal Railroad Administration's (FRA) FY 2023-24 Consolidated Rail Infrastructure and Safety Improvements (CRISI).

Table 22 Distribution of Amtrak Riders by Trip Purpose in the Bedford-Campbell-Roanoke Region

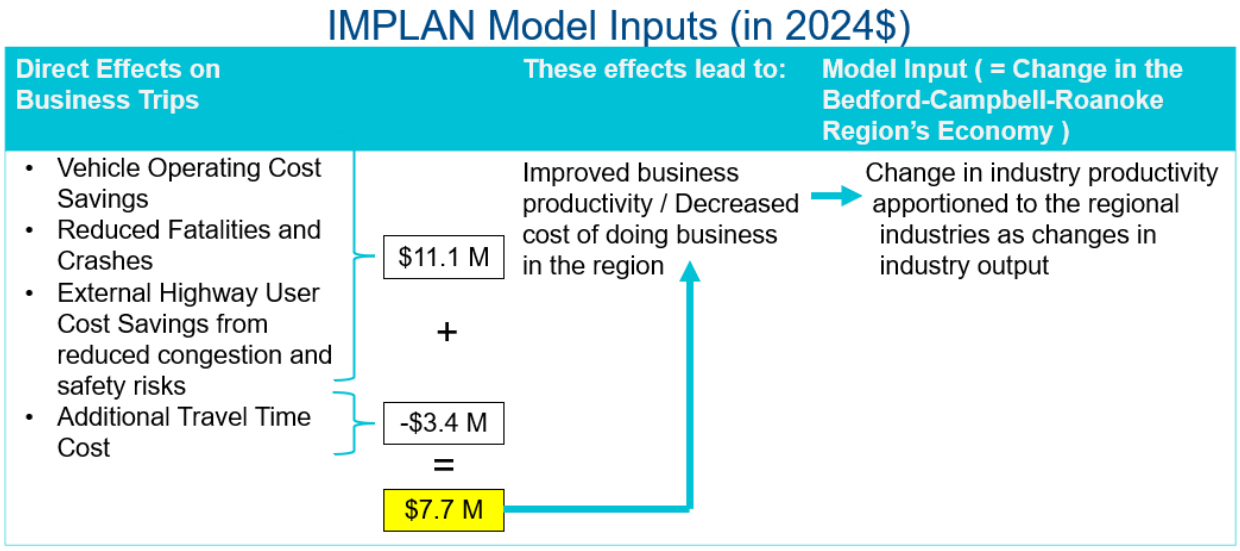
Trip Purpose	Proportion of Trip Purposes
Commuting to Work	11%
Business Travel	29%
All Other Purposes*	60%

Source: *Analysis based on the distribution of Amtrak riders by trip purpose in the Northeast State Routes provided by Amtrak's Economic Contribution in Fiscal Year 2015. Retrieved https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/nationalfactsheets/Amtrak-Economic-Contribution-Brochure-083016.pdf*

Notes: **All Other purposes include visiting friends & family, vacation & recreation, and school trips.*

Figure 9 and Figure 10 illustrate how benefits are translated into model inputs for IMPLAN. The direct economic impacts on business trips resulting from the operation of the Bedford passenger rail stop are translated into the necessary model inputs for IMPLAN in Figure 9. The indirect and induced benefits arising from the direct benefits are forecast using the IMPLAN model for the Commonwealth of Virginia. The model generates estimates of the total economic benefits of reduced vehicle operating costs, traffic crashes, and congestion, in terms of jobs, personal income, GSP, economic output, and tax revenue.

Figure 9 Bedford Passenger Rail Stop – Model Inputs for Business Trips

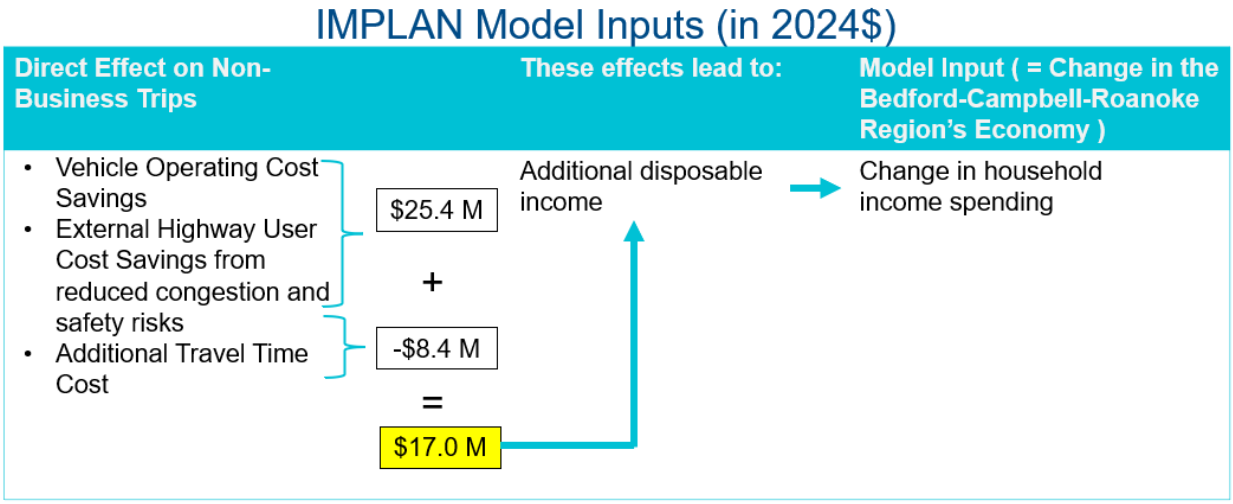


Source: Cambridge Systematics.

The direct economic impacts on non-business trips (i.e., commuting to work and all other trip purposes) resulting from the operation of the Bedford passenger rail stop over a 20-year operating period are translated into the necessary model inputs for IMPLAN in

Figure 10. The indirect and induced benefits arising from the direct benefits are forecast using the IMPLAN model for the Commonwealth of Virginia. The model generates estimates of the total economic benefits of reduced vehicle operating costs, congestion, and traffic crashes in terms of jobs, personal income, value added (or GSP), economic output, and tax revenue.

Figure 10 Bedford Passenger Rail Stop – Model Inputs for Non-Business Trips



Source: Cambridge Systematics.

The total economic impacts from improved business productivity and additional disposable income resulting from the operation of the Bedford passenger rail stop over the 2030-2049 period are presented in Table 23. Considering these factors, the new station is expected to support 90 jobs in the Commonwealth of Virginia. These jobs will add $4.3 million in labor income, generate $8.4 million in GSP, lead to $16.4 million in economic output in the Commonwealth, and yield $2.0 million in federal, state, and local tax revenue over the 20-year operating period. This represents, on average, 5 additional jobs, $213,000 in labor income, $420,800 in GSP, $819,000 in output, and $97,500 in tax revenue, annually, in the Commonwealth of Virginia.

Table 23 Bedford Passenger Rail Stop – Total Long-Term Economic Impacts from Improved Business Productivity and Additional Disposable Income, 2030-2049

Geographic Area	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Study Area*	80	$3,667,000	$7,412,000	$14,520,000	$1,720,000
Rest of Virginia	10	$593,000	$1,003,000	$1,859,000	$230,000
Commonwealth of Virginia	90	$4,260,000	$8,415,000	$16,379,000	$1,950,000

Source: *Outputs from the IMPLAN model for Virginia.*

Notes: **The Bedford-Campbell-Roanoke Region includes Bedford, Campbell, and Roanoke counties, and the cities of Roanoke and Salem. Total economic impact includes direct, indirect, and induced impacts.*

Grand Total Long-Term Economic Impacts

Table 24 presents the grand total long-term economic impacts to be generated by the Bedford Passenger Rail Stop O&M expenditures, improved business productivity, and additional disposable income. The new station is expected to support a total of 130 jobs in the Commonwealth of Virginia. These jobs will add $5.6 million in labor income, generate $11.1 million in GSP, lead to $21.4 million in economic output in the Commonwealth, and yield $2.6 million in federal, state, and local tax revenue over the 20-year operating period.

Table 24 Bedford Passenger Rail Stop – Grand Total Long-Term Economic Impacts, 2030-2049

From	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Facility O&M Expenditures	20	$647,000	$1,292,000	$2,750,000	$284,000
Additional Visitor Spending from Passenger Trains making leisure trips	20	$694,000	$1,369,000	$2,311,000	$390,000
Improved Business Productivity and Increased Disposable Income	90	$4,260,000	$8,415,000	$16,379,000	$1,950,000
Commonwealth of Virginia	130	$5,601,000	$11,076,000	$21,440,000	$2,624,000

Source: *Outputs from the IMPLAN model for Virginia.*

The Bedford passenger rail stop will also increase the attractiveness of the region not explained by economic factors. Specifically, the new station will reduce carbon and non-carbon emissions, valued at $3.9 million (in 2024 dollars discounted to 2022 at 3.1

percent) over the 2030-2049 period[23] which will help improve air quality and public health in the region. The new station amenities, valued at $6.9 million (in 2024 dollars discounted to 2022 at 3.1 percent) over the 2030-2049 period[24] will improve the quality and comfort to be experienced by existing and new rail users. These benefits do not have a multiplier effect on the regional economy and therefore, they are not input into the IMPLAN economic model for the Bedford-Campbell-Roanoke region.

Return on Investment

Table 25 shows that the Bedford passenger rail stop is an efficient investment. Each dollar invested in the Bedford passenger rail stop would return $1.95 in benefits to the study area.

Table 25 Bedford Passenger Rail Stop – Benefit-Cost Ratio and Return on Investment

Item	Value
Bedford Passenger Rail Stop Construction Costs, 2026-2029 = C	$17.8 million (2024$, discounted to 2022)
Bedford Passenger Rail Stop Benefits, 2030-2049 = B	$34.8 million (2024$, discounted to 2022)
Net Present Value (NPV) = B - C	$17.0 million (2024$, discounted to 2022)
Benefit-Cost Ratio (BCR) = B / C	1.95
Return on Investment (ROI) = [(B – C) / C] x 100%	95%

Source: Benefit-Cost Analysis (BCA) in support of the Bedford Passenger Rail Stop Project application for funding under the Federal Railroad Administration's (FRA) FY 2023-24 Consolidated Rail Infrastructure and Safety Improvements (CRISI).

Transload Facility Concept

This section presents the factors driving the economic impacts of the transload facility concept, the transload facility build-out[25] capacity, the estimated facility capital and O&M costs, the staffing requirements, and the direct and total (combined direct, indirect, and induced) economic impacts to be generated by this facility.

[23] Benefit-Cost Analysis (BCA) in support of the Bedford Passenger Rail Stop Project application for funding under the Federal Railroad Administration's (FRA) FY 2023-24 Consolidated Rail Infrastructure and Safety Improvements (CRISI).

[24] Ibid.

[25] Build-out refers to the state in which the facility has been fully constructed and in use.

Concept Definition

A rail-to-truck transload facility is a location where goods and supplies are transferred between rail and truck. Transload facilities act as intermediaries positioned in between the transportation networks of one mode and another, allowing for the effective transfer of goods from one mode of transportation to the other. They are frequently intentionally located to enable the movement of goods between railroads and other modes of transportation, such as trucks (and in other cases, ships). They may include facilities for warehousing, storage, and handling of goods during the transfer.

Factors that Drive Economic Impacts

The envisaged transload facility is expected to increase business activity in the study area and the Commonwealth of Virginia. For the purposes of this element of the Study, the study area comprises Amherst, Appomattox, Bedford, and Campbell counties and the City of Lynchburg. The stimulus to the increased business activity will include:

- Short-term economic impacts generated by the transload facility construction expenditures in the study area and spillover impacts in the rest of Virginia.
- Long-term economic impacts generated by the ongoing facility O&M and staffing expenditures in the study area and spillover impacts in the rest of Virginia.
- Long-term economic impacts generated by the freight transportation cost savings on industries in the study area and spillover impacts in the rest of Virginia.
- External benefits which will be national and include reduced carbon emissions and reduced transportation-related fatalities and injuries.

Build Out Facility Capacity

Based on analysis of the 2022 Virginia Statewide Rail Plan data from the Freight Analysis Framework Database version 5 (FAF5), it was determined that an estimated 395,000 tons per year could be transloaded in the region. Capacity requirements for the transload facility are developed based on this level of freight and anticipated freight types, Table 26 presents these requirements.

Table 26 Transload Facility - Estimated Facility Build-out Capacity

Item	Value
Rail length to load and unload trains (feet)	4,000
Estimated number of freight trains per day (a)	0.538
Number of railcars per train (b)	25
Number of days per year the facility will be open for business (c)	260
Tons per railcar (d)	113
Facility Build-out Capacity (tons per year) = (a) x (b) x (c) x (d) =	395,000

Source: STV analysis based on information from the stockholder interviews.

To accommodate this amount of transload freight, a warehousing/cross-docking facility of approximately 107,000 square feet (sf) and approximately 15,000 square feet of

office administration/freight arrangement space is included in the facility build-out, for a total of 122,000 square feet of space.

Facility Capital and Operating & Maintenance Costs

FACILITY CAPITAL COSTS

The total construction cost of the build-out transload facility is estimated at $15.6 million (2024$), The estimated construction costs include the following:

- 4,000 ft of rail @ $2 million per mile[26] = ~ $1,515,150
- 106,960 sf warehouse @ $70 per sf [27] = $7,487,200
- 14,760 sf office/admin space @ $70 per sf [28] (assume as part of warehouse structure) = $1,033,200
- Sitework, utilities, engineering, planning, and design, 5 percent contingency[29] = $5,547,940

The construction of the build-out transload facility is expected to occur over one year.

FACILITY OPERATING & MAINTENANCE COSTS

In addition to the one-time construction costs, there will be ongoing O&M costs to be approximately $525,382 per year (2024$). The estimated annual O&M costs include the following:

- Warehouse and office O&M is $4/sf x 121,720 sf[30] = $486,880/year
- 4,000 ft of rail maintenance @ $2.77/ft[31] = $11,066/year
- Assume 2 lane miles of road in the facility @ 13,718/lane mile[32] = $27,436/year

FACILITY STAFFING

The staff to run the build-out transload facility and move freight is 82 full-time employees. Broken down by type, staff for the facility includes:

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26 TRB: National Cooperative Rail Research Program (NCRRP) Report 1: Alternative Funding and Financing Mechanisms for Passenger and Freight Rail Projects (2015). Retrieved https://nap.nationalacademies.org/read/22149/chapter/5.

27 How Much Does It Cost to Build a Warehouse? Retrieved https://strongbuildingsystems.com/how-much-does-it-cost-to-build-a-warehouse/.

28 How Much Does It Cost to Build a Warehouse? https://strongbuildingsystems.com/how-much-does-it-cost-to-build-a-warehouse/.

29 Estimate based on “Rail-Truck Transload Facility Project BUILD FY2019 Grant Application Spokane, Washington Benefit Cost Analysis Appendix B”. Retrieved https://business.spokaneairports.net/core/files/business/uploads/files/Appendix%20B%20-%20BCA%20Summary.pdf.

30 Warehousing and Fulfillment: Warehousing Services Costs, Pricing, Rates and Fees. Retrieved https://www.warehousingandfulfillment.com/resources/warehousing-services-costs-pricing-rates-and-fees/.

31 Railroad Costs- Train Magazine. Retrieved https://cs.trains.com/trn/f/111/p/158493/1751148.aspx.

32 Reason Foundation: 27th Annual Highway Report: Maintenance Disbursements per Mile. Retrieved https://reason.org/policy-study/27th-annual-highway-report/maintenance-disbursements-ratio/.

- 71 warehouse workers (warehouse size: 106,960 sq ft; assume 1 warehouse worker per 1,500 sf)[33]
- 10 admin workers (13.8 percent x 71 warehouse workers)[34]
- 1 worker for groundskeeping/maintenance (assumed)

Expected Freight to be Handled by the Facility

The amount of freight expected to be handled by the facility was determined by the types and amounts of cargo best suited for transloading in the central Virginia region. Sizing the facility to handle the freight required surveying and interviewing businesses in the region, who are significant users of transportation services, by compiling and analyzing the information contained in the 2022 Virginia State Rail Plan, and analyzing commodity flow data extracted from the FAF5, Data Tabulation Tool.[35]

Based on analyses of this information, candidate commodity types, tonnage shares, and shipment distances are identified. Table 27 details these freight types likely to be transloaded if a facility were built in the region.

[33] Metropolitan Concept. Measuring Employment. Local Planning Handbook. *How to Measure Employment Intensity and Capacity (November 2016)*. Appropriate rate = 1,500 square feet per warehouse worker.

[34] U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW). Transportation arrangement and support types of employment to warehousing employment is 13.8percent of warehouse staff workers based on state-wide ratio of warehouse workers to transportation arrangement and support personnel.

[35] Freight Analysis Framework 5: https://faf.ornl.gov/faf5/dtt_total.aspx.

Table 27 Distribution of Commodities by Shipping Distances in the 'Rest of Virginia" in 2025 (Forecast)

Commodity Type	Share of Total Commodity Tonnage in Central VA, 2022	250-499 miles	500-749 miles	750 – 999 miles	1,000 - 1,499 miles	1,500 - 2,000 miles	Over 2,000 miles
Waste or Scrap Materials	35%	86.6%	10.4%	0.2%	0.2%	0.1%	2.8%
Logs, Lumber, Wood Products	29%	2.6%	3.7%	91.5%	0.0%	2.2%	0.0%
Chemicals or Allied Products	16%	61.6%	8.3%	9.1%	18.3%	0.6%	2.1%
Pulp, Paper, or Allied Products	14%	0.5%	49.1%	21.2%	0.0%	25.7%	3.5%
Clay, Concrete, Glass, or Stone	5%	84.1%	14.4%	1.5%	0.0%	0.0%	0.0%

Sources: (1) Share of total commodity tonnage in Central Virginia come from 2022 Virginia Statewide Rail Plan; and (2) Distribution of commodities by shipping distance in the "rest of Virginia" come from the Freight Analysis Framework Database, version 5 (FAF5).

Estimated Direct Impacts

The direct impacts of the transload facility will include the aforementioned direct capital (one-time) outlays, the ongoing annual operations and maintenance expenditures, and the employment of personnel to staff the facility.

Direct impacts also include the reduction in total shipping costs to the businesses in the study area and in the Commonwealth of Virginia. To determine the shipping cost savings associated with the 395,000 annual tons envisaged to move through the build-out transload facility, this effort identified the difference in shipping rates between truck and rail, multiplied by ton-miles of freight. The commodities and shipping distances previously presented in Table 27 are applied to the 395,000 annual tons to be moved through the build-out transload facility to estimate annual ton-miles for that freight. The freight transloaded through the build-out facility equates to approximately 271.6 million ton-miles of freight.

The ton-miles are multiplied by the difference in ton-mile shipping costs between truck and rail to determine the reduction in shipping costs for the transloaded freight. The following freight rates are used in the calculations:

- Rail shipping rate, 4.6 cents per ton-mile[36]
- Truck shipping rate, 10.6 cents per ton-mile[37] (calculated as $2.44 per mile / 23 tons freight load, 10.6 cents per ton-mile)
- Net truck to rail transload shipping cost savings for businesses, 6.0 cents per ton-mile

The annual shipping cost savings to businesses is estimated at $16.3 million per year. These cost savings are then distributed among the industries using or producing the commodities by applying the U.S. Bureau of Transportation Statistics Transportation Satellite Accounts (TSAs) that detailed the direct requirements of transportation services per dollar of industry output.[38] The TSAs are used to allocate the transportation cost savings among the industries in the region and determine the direct impacts on each industry's output. These changes in industry output are used to perturb the IMPLAN model to determine the total (combined direct, indirect, and induced) economic impacts.

Estimated Total Economic Impacts

The direct impacts described in the previous section are run through IMPLAN to calculate the total (combined direct, indirect, and induced) economic impacts of the transload facility in the study area, the rest of Virginia, and the entire Commonwealth of Virginia.

Table 28 shows the total short-term economic impacts of construction expenditures during the one-year of construction. In summary, the construction of the transload facility in the study area will generate 220 jobs, worth $9.6 million in labor income, and increase GSP by $13.3 million for the Commonwealth (all in 2024$). Of these impacts, 95 percent of the jobs, 92 percent of wages, and 89 percent of GSP increases occur within the study area.

Table 29 shows the total long-term economic impacts of annual O&M Cost and staffing of the transload facility in the study area. Annual operation (including staffing) of the transload facility will generate 200 jobs worth $8.6 million and increase GSP by $12.1 million for the Commonwealth annually (all in 2024$). Of these impacts, 95 percent of the jobs, 92 percent of wages, and 88 percent of GSP increases occur within the study area.

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36 U.S. Bureau of Transportation Statistics: Average Freight Revenue per Ton-Mile. Retrieved https://www.bts.gov/content/average-freight-revenue-ton-mile.

37 UBER Freight: A guide to freight trucking rates in 2024. Retrieved https://www.uberfreight.com/blog/freight-trucking-rates-guide/.

38 U.S. Bureau of Transportation Statistics: Transportation Satellite Accounts. Retrieved https://www.bts.gov/satellite-accounts.

Table 28 Transload Facility - Total Short-Term Economic Impacts of Construction Expenditures over the One-year Construction Period

Geographic Area	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Study Area*	210	$8,800,000	$11,800,000	$25,000,000	$3,200,000
Rest of Virginia	10	$800,000	$1,500,000	$2,900,000	$300,000
Commonwealth of Virginia	220	$9,600,000	$13,300,000	$27,900,000	$3,500,000

Source: *Outputs from the IMPLAN model for Virginia.*

Notes: ** Study rea comprises four counties (Amherst, Appomattox, Bedford, and Campbell) and the City of Lynchburg. Total economic impact includes direct, indirect, and induced impacts.*

Table 29 Transload Facility - Long-Term Economic Impacts of Annual O&M Cost and Staffing, 20 Years

Geographic Area	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Study Area*	190	$7,900,000	$10,700,000	$22,700,000	$2,800,000
Rest of Virginia	10	$800,000	$1,400,000	$2,600,000	$300,000
Commonwealth of Virginia	200	$8,600,000	$12,100,000	$25,300,000	$3,200,000

Source: *Outputs from the IMPLAN model for Virginia.*

Notes: **The study area comprises four counties (Amherst, Appomattox, Bedford, and Campbell) and the City of Lynchburg. Total economic impact includes direct, indirect, and induced impacts.*

Table 30 shows the total long-term economic impacts of annual freight transportation cost savings of a transload facility in the study area. The impacts of reduced freight costs would boost employment by 75 jobs worth $4.9 million in labor income and increase GSP by $9.1 million for the Commonwealth (all in 2024$). Of these impacts, 80 percent of the jobs and wages increases and 82 percent of GSP increase occurs within the study area.

Table 30 Transload Facility – Long-Term Economic Impacts of Annual Freight Transportation Cost Savings, 20 Years

Geographic Area	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Study Area*	60	$3,900,000	$7,500,000	$20,400,000	$1,800,000
Rest of Virginia	15	$900,000	$1,600,000	$3,200,000	$400,000
Commonwealth of Virginia	75	$4,900,000	$9,100,000	$23,600,000	$2,200,000

Source: *Outputs from the IMPLAN model for Virginia.*

Notes: **The study area comprises four counties (Amherst, Appomattox, Bedford, and Campbell) and the City of Lynchburg. Total economic impact includes direct, indirect, and induced impacts.*

Grand Total Long-Term Economic Impacts

Table 31 presents the annual total long-term economic impacts to be generated by the transload facility's annual O&M expenditures, staffing, and freight transportation cost savings. The transload facility is expected to support a total of 275 jobs in the Commonwealth of Virginia annually. These jobs will add $13.5 million in labor income, generate $21.2 million in GSP, lead to $48.9 million in economic output in the Commonwealth, and yield $5.4 million in federal, state, and local tax revenue annually (all in 2024$).

Table 31 Transload Facility – Annual Total Long-Term Economic Impacts, 20 Years

From	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Annual O&M Expenditures	200	$8,600,000	$12,100,000	$25,300,000	$3,200,000
Annual Freight Transportation Cost Savings	75	$4,900,000	$9,100,000	$23,600,000	$2,200,000
Commonwealth of Virginia	275	$13,500,000	$21,200,000	$48,900,000	$5,400,000

Source: *Outputs from the IMPLAN model for Virginia.*

Return on Investment

Table 32 shows that the transload facility is an efficient investment. Each dollar invested in the transload facility would return $1.46 in benefits.

Table 32 Transload Facility – Benefit-Cost Ratio and Return on Investment

Item	Value
Transload Facility Construction Costs, 2025 = C	$15,400 thousand (2024$, discounted to 2022)
Transload Facility Benefits, 2026-2045 = B	$22,500 thousand (2024$, discounted to 2022)
Net Present Value (NPV) = B-C	$7,100 thousand (2024$, discounted 2022)
Benefit-Cost Ratio (BCR) = B / C	1.46
Return on Investment (ROI) = [(B – C) / C] x 100%	46%

Note: Benefits limited to freight cost savings to Virginia businesses. The analysis covers 20 years of benefits and assumes a 10 percent per year ramp up (increase) to full capacity by year 10.

Other Benefits

In addition to the regional economic impacts described in the previous sectopm, shipping the 271.6 million ton-miles of freight by rail versus truck is estimated to reduce harmful emissions and transportation-related fatalities and injuries beyond Central Virginia.

EMISSION DAMAGE COST SAVINGS

The shift in moving 271.6 million ton-miles from truck to rail has a significant reduction in harmful emissions. Table 33 presents the emissions rates (in grams per ton-mile) for freight truck and freight rail for relevant pollutants and the monetization rates used in this analysis to estimate the emission damage cost savings to be generated by the build-out transload facility.

The emissions reduction resulting from the operation of the build-out transload facility is estimated to amount to $9.2 million annually (in 2024$). This includes an annual reduction of carbon emissions of 32,000 metric tons.

Table 33 Freight Emissions and Reductions Due to Transloading

Pollutant Type	Freight Truck Emission Rates in 2019 (grams/ton-mile)	Freight Rail Emission Rates in 2019 (grams/ton-mile)	Emissions Reductions in Metric Tons	Emissions Damage Unit Cost in 2024 ($/metric ton)
Hydrocarbons (HC)	0.02	0.0083	3.2	$2,621
Carbon Monoxide (CO)	0.19	0.0564	36.3	$80
Nitrogen Oxides (NO_X)	0.45	0.2182	63.0	$21,597
Particulate Matter (PM_{10})	0.02	0.0075	3.4	$116,700
Carbon Dioxide (CO_2)	140.70	21.57	32,361.2	$250

Sources: (1) Emission rates come from A Modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001–2019, January 2022, Prepared for the U.S. National Waterways Foundation. Prepared by the Texas Transportation Institute's Center for Port and Waterways at Texas A&M University; (2) Monetization rates for NOX and CO2 in 2022$ come from the "U.S. DOT, Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023" inflated to 2024 dollars using U.S DOT inflation adjustment factors from the U.S. DOT Bridge Investment Program Benefit-Cost Analysis Tool (BIP BCA Tool v1.0.4 January 2024).; (3) Monetization rate for HC / VOC in 2018$ come from the U.S. DOT, Benefit-Cost Analysis Guidance for Discretionary Grant Programs, January 2020"- inflated to 2024 dollars using U.S DOT inflation adjustment factors from the U.S. DOT Bridge Investment Program Benefit-Cost Analysis Tool (BIP BCA Tool v1.0.4 January 2024)"; and (4) Monetization rate for CO and PM10 come from California Life-Cycle Benefit/Cost Analysis Model, Version 8.1. Office of Transportation Economics, Division of Transportation Planning. March 2022, inflated to 2024 dollars using U.S DOT inflation adjustment factors from the U.S. DOT Bridge Investment Program Benefit-Cost Analysis Tool (BIP BCA Tool v1.0.4 January 2024)."

TRAFFIC CRASH COST SAVINGS

There are significant differences between crash rates per ton-mile between truck and rail. Table 34 presents the crash rates for freight truck and freight rail and the monetization rates used in this analysis to estimate the safety benefits to be generated by the build-out transload facility.

Table 34 Freight Crash Rates and Reductions Due to Transloading

Safety Measure	Freight Truck Crash Rates	Freight Rail Crash Rates	Crash Rate Reduction Rail Versus Truck	Monetization Rates (2024$)
Fatality Rate	2.2212 fatalities per billion ton-miles	0.4793 fatalities per billion ton-miles	1.7419 fatalities per billion ton-miles	$13,020,800 per fatality
Injury Rate	55.1714 injuries per billion ton-miles	4.6207 injuries per billion ton-miles	50.5507 injuries per billion ton-miles	$222,700 per injured person (severity unknown)

Sources: (1) Crash rates come from A Modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001–2019, January 2022, Prepared for the U.S. National Waterways Foundation. Prepared by the Texas Transportation Institute's Center for Port and Waterways at Texas A&M University; and (2) Monetization rates in 2022$ come from the "U.S. DOT, Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023" inflated to 2024 dollars using U.S DOT inflation adjustment factors from the U.S. DOT Bridge Investment Program Benefit-Cost Analysis Tool (BIP BCA Tool v1.0.4 January 2024).

The estimated annual reductions in fatalities and injuries associated with the build-out transload facility are:

- 0.5 fewer fatalities per year valued at $6.2 million (in 2024$).
- 14 fewer persons injured per year valued at $3.1 million (in 2024$).

The avoided fatalities and persons injured resulting from the operation of the build-out transload facility is estimated to amount to $9.3 million annually (in 2024$).

Rail-Served Site Concept

This section presents the factors driving the economic impacts of the rail-served site concept, the rail-served site build-out capacity, the estimated facility capital and O&M costs, the staffing requirements, and the direct and total (combined direct, indirect, and induced) economic impacts to be generated by this facility.

Concept Definition

Developing rail-served industrial sites preserves prime locations that are uniquely suited for industrial development because of their existing direct connection to rail infrastructure. These sites can be designed to facilitate the loading and unloading of goods onto trains, promoting efficient transportation via the existing rail network with minimal investment.

Factors that Drive Economic Impacts

Implementation and operation of this facility will generate:

- Short-term economic impacts generated by facility construction expenditures ($1.5 million, in 2024$) in the study area and spillover impacts statewide.
- Long-term economic impacts generated by freight transportation cost savings on industries in the study area and spillover impacts in the rest of Virginia.
- Long-term economic impacts generated by ongoing facility maintenance expenditures in the study area and spillover impacts in the rest of Virginia.

Build Out Facility Capacity

The rail-served site is estimated to handle 55,000 tons per year in freight. The Study estimates the tonnage moved using data from the DRPT Open Data Portal, which shows that companies that ship by rail in the study area shipped an average of 12,000 tons through the study area in 2017.[39] The Study escalates this tonnage by 2 percent annually in accordance with the projected growth outlined in the 2022 Virginia Statewide Rail Plan, amounting to 13,750 tons moved per business in 2024. The Study estimates the rail-served site will serve four businesses based on an assessment of aerial imagery of potential rail-served sites, amounting to 55,000 tons annually.

Facility Capital and Operating & Maintenance Costs

FACILITY CAPITAL COSTS

The capital cost of the rail-served site is estimated using the data obtained through the stakeholder interviews.[40] As shown in Table 35, total construction cost of the rail-served site is estimated at $1.5 million (2024$).

[39] Service: Tonnage by Commodity: Lynchburg, Virginia Department of Rail and Public Transportation Open Data Portal, 2022.

[40] Stakeholder interviews. NS Interview.

Table 35 Rail-served Site Capital Costs (2024$)

Expense Type	Detailed Computation or Assumption	Estimated Cost (2024$)
Railway Improvements	$300 per linear foot of track multiplied by 1,400 ft of branch length	$400,000
Switch	Average of lower cost of switch track ($300,000) and upper cost of switch track ($1,200,000)	$800,000
Sitework		$100,000
Planning/Design	8 percent of the combined cost of railway improvements, switch and sitework cost	$100,000
Contingency	8 percent of the combined cost of railway improvements, switch and sitework cost	$100,000
Total		$1,500,000

Source: Computations and estimates are based on the data collected during the stakeholder interviews conducted as part of this study.

The annual maintenance costs for the rail-served site are estimated at $20,000 per year (2024$) for the 0.26-mile rail spur and includes track and property maintenance activities.[41]

Expected Freight to be Handled by the Facility

The Study is agnostic as to the type of freight handled by the site, but given market conditions in the region, it is likely that it could include metal products and food-related products.

Estimated Direct Impacts

Direct impacts include the reduction in total shipping costs to businesses in the Study area and the rest of Virginia to determine the shipping cost savings associated with the 55,000 annual tons envisaged to move though the rail-served site. The analysis assumes that the rail-served site would reduce truck transport to alternative locations by 46 miles. This equates to approximately 2.5 million ton-miles per year. The ton-miles are multiplied by the truck shipping cost per ton-mile to determine the shipping cost

[41] The Study applied a maintenance cost per mile of $73,800 per mile using estimates from the FRA's 2004 Technical Monograph: Estimating Maintenance Costs for Mixed High-Speed Passenger and Freight Rail Corridors report (adjusting to 2024$). Retrieved https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/15003/Technical%20Monograph%20-%20Estimating%20Maintenance%20Costs%20for%20Mixed%20High-Speed%20Passenger%20and%20Freight%20Rail%20Corridors%20%28UNPUBLISHED%29.pdf

savings to businesses using the rail-served site. The truck shipping cost used is 10.6 cents per ton-mile42 (calculated as $2.44 per mile / 23 tons freight load = 10.6 cents per ton-mile).

The annual shipping cost savings to businesses is estimated at $268,200 per year. The analysis distributes these cost savings among the industries anticipated to use or produce the commodities by applying the U.S. Bureau of Transportation Statistics Transportation Satellite Accounts (TSAs), which details the direct requirements of transportation services per dollar of industry output.[43] The TSAs are used to allocate the transportation cost savings among the industries in the region and determine the direct impacts on each industry's output. These changes in industry output are used as inputs to the IMPLAN model to determine the total (combined direct, indirect, and induced) economic impacts.

Estimated Total Economic Impacts

The direct impacts run through IMPLAN to calculate the total economic impacts of the rail-served site, the rest of Virginia, and the entire Commonwealth of Virginia.

Table 36 shows the total short-term economic impacts of construction expenditures during the one-year of construction. In summary, the construction of the rail-served site will generate 12 jobs worth $600,000 and increase GSP by $1.2 million for the Commonwealth (all in 2024$). Of these impacts, 95 percent of the jobs, 92 percent of wages, and 89 percent of GSP increases occur within the study area.

Table 36 Rail-Served Site - Total Short-Term Economic Impacts of Construction Expenditures over the One-Year Construction Period

Geographic Area	Employment (Jobs)	Labor Income (2024$)	GSP (2024$)	Output (2024$)	Taxes (2024$)
Study Area*	11	$500,000	$1,000,000	$2,400,000	$200,000
Rest of Virginia	1	$100,000	$200,000	$300,000	$100,000
Commonwealth of Virginia	12	$600,000	$1,200,000	$2,700,000	$300,000

Source: *Outputs from the IMPLAN model for Virginia.*

Notes: **The study area comprises four counties (Amherst, Appomattox, Bedford, and Campbell) and the City of Lynchburg. Total economic impact includes direct, indirect, and induced impacts.*

Given the small magnitude of business savings in shipping costs and the low amount of maintenance the rail-served site requires, nearly all regional economic impacts are expected to come from site development and construction.

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42 UBER Freight: A guide to freight trucking rates in 2024. Retrieved https://www.uberfreight.com/blog/freight-trucking-rates-guide/.

43 U.S. Bureau of Transportation Statistics: Transportation Satellite Accounts. Retrieved https://www.bts.gov/satellite-accounts.

Return on Investment

Notwithstanding the low ongoing impacts on a regional level, the shipping cost savings relative to the investment required for the rail-served site shows a positive return on investment (albeit minimal) as shown in Table 37. Each dollar invested in the rail-served site would return $1.40 in benefits.

Table 37 Rail-served Site – Benefit-Cost Ratio and Return on Investment

Item	Value
Rail-served Site Construction Costs, 2025 = C	$1.5million (2024$, discounted to 2022)
Rail-served Site Benefits, 2026-2045 = B	$3.6 million (2024$, discounted to 2022)
Net Present Value (NPV) = B-C	$2.1 million (2024$, discounted to 2022)
Benefit-Cost Ratio (BCR) = B / C	**1.40**
Return on Investment (ROI) = [(B – C) / C] x 100%	**140%**

Note: Benefits limited to freight cost savings to Virginia businesses. The analysis covers 20 years of benefits and assumes no ramp up to full capacity.

Concluding Remarks

This economic analysis applies a data-driven, transparent process to demonstrate the direct and total economic impacts of investing in the most viable opportunity concepts. The analysis provides compelling and defensible measures to communicate the multiple ways the most viable opportunity concepts generate economic value to the Commonwealth of Virginia. The high-level estimates measured in this analysis can be used to:

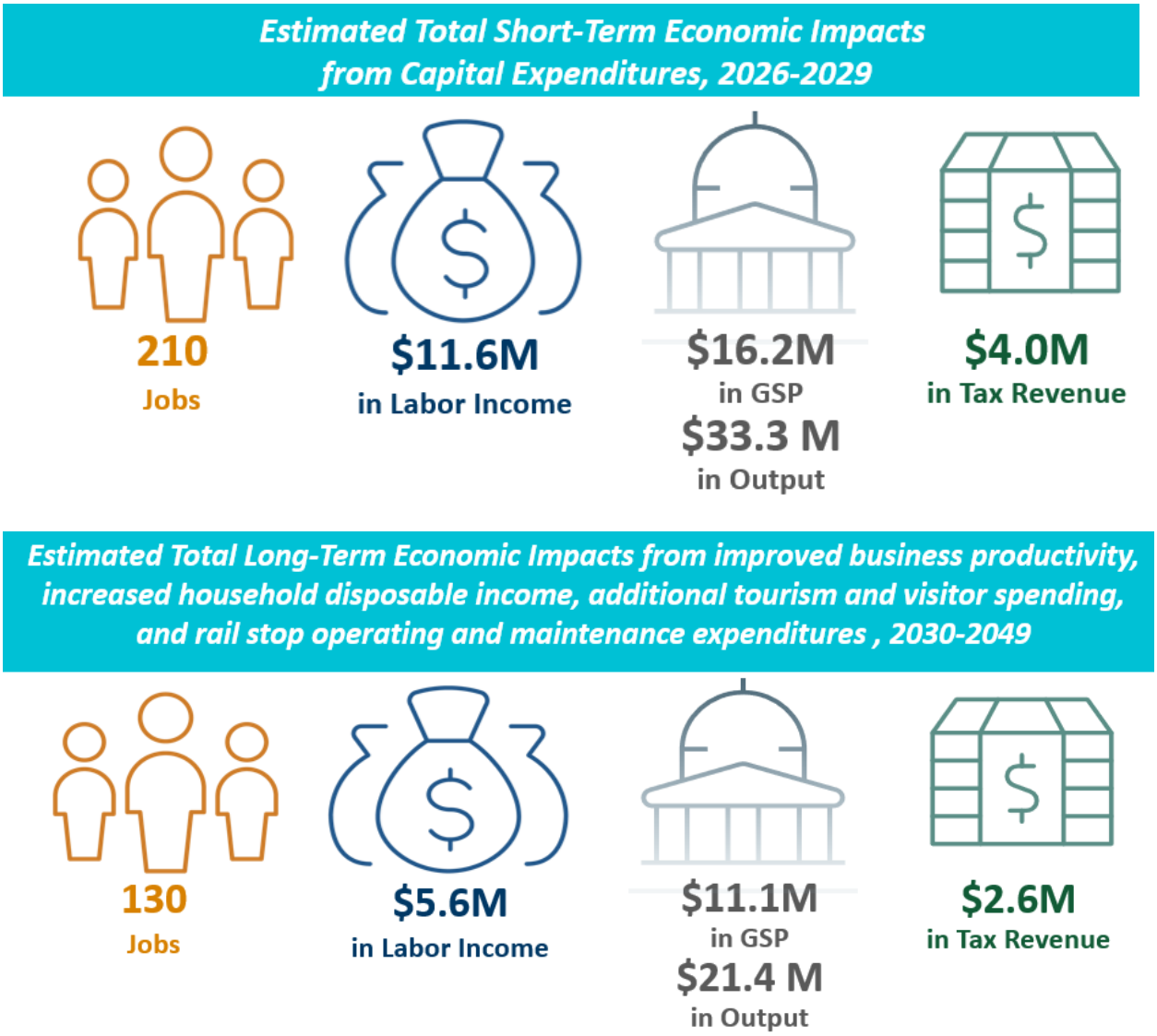
- Support the need to fund the most viable opportunity concepts.
- Communicate the broader role of passenger rail and freight rail improvements in Virginia.
- Provide guidelines for future strategic planning. The Study outcomes will enable public and private entities involved in economic development for the Central Virginia region to communicate the expected benefits that could result from investment to improve and expand passenger and freight rail to elected officials and key stakeholders.

Each dollar invested in the Bedford passenger rail stop is expected to return $1.95 in benefits to the study area. The rail stop will generate economic value to the Commonwealth of Virginia in the short and long term as follows:

- In the short term, the rail stop is expected to support 210 additional jobs in the Commonwealth over the 2026-2029 construction period. These jobs would add $11.6 million in labor income, $16.2 million in GSP, $33.3 million in economic

output, and $4.0 million in tax revenue to the Commonwealth over the construction period (all in 2024$).

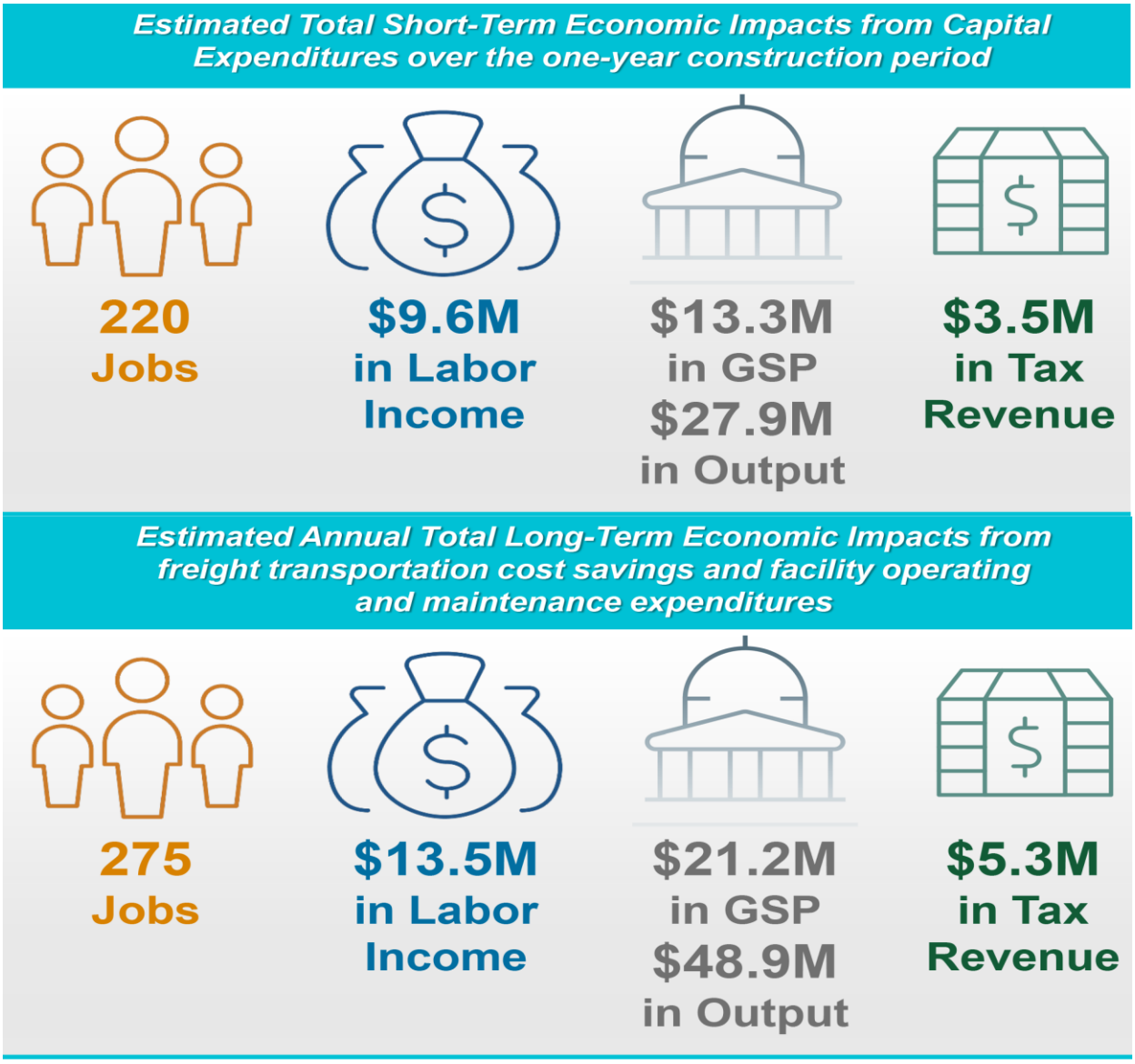
- In the long term, the rail stop is expected to support 130 additional jobs in the Commonwealth over the 2030-2049 period. These jobs would add $5.6 million in labor income, $11.1 million in GSP, $21.4 million in economic output, and $2.6 million in tax revenue to the Commonwealth over the 20-year operating period. (all in 2024$)



Source: Outputs from the IMPLAN model for Virginia.

Each dollar invested in a transload facility in the study area would return $1.47 in benefits to the study area. The transload facility will generate economic value to the Commonwealth of Virginia in the short and long term as follows:

- In the short term, a transload facility is expected to support 220 additional jobs in the Commonwealth over the one-year construction period. These jobs would add $9.6 million in labor income, $13.3 million in GSP, $27.9 million in economic output, and $3.5 million in tax revenue to the Commonwealth over the construction period (all in 2024$).
- In the long term, a transload facility is expected to support 275 additional jobs in the Commonwealth annually. These jobs would add $13.5 million in labor income, generate $21.2 million in GSP, lead to $48.9 million in economic output, and yield $5.4 million in tax revenue in the Commonwealth annually over a 20-year period (all in 2024$).



Source: *Outputs from the IMPLAN model for Virginia.*

Each dollar invested in a rail-served site in the study area would return $1.43 in benefits to the study area. A rail-served site is also expected to generate economic value to the Commonwealth of Virginia over the one-year construction period. In the short term, the site is anticipated to support 12 additional jobs in the Commonwealth over the construction period. These jobs would add $600,000 in labor income, $1.2 million in GSP, $2.7 million in economic output, and $300,000 in tax revenue to the Commonwealth over the one-year construction period (all in 2024$). The long-term economic impacts from freight transportation cost savings and site annual O&M expenditures are minimal.

Chapter 5: Summary of Findings

The Study evaluates and prioritizes freight and passenger rail-centric opportunity concepts that may yield long-term regional economic growth in Central Virginia, which includes the City of Lynchburg and Bedford, Campbell, Amherst, and Appomattox Counties. The intent of these opportunity concepts is to capitalize on the study area's existing infrastructure assets as well as the economic and demographic landscape of the region.

The study area connects to the rest of the Commonwealth by the four-lane limited access highways that support the uninterrupted flow of freight (U.S. 460, U.S. 29, and U.S. 501) and other key arterials. Two Class I railroads, CSX, and NS, pass through the study area. Central Virginia's has robust rail infrastructure to pursue targeted strategies to secure companies that require rail service.

Regarding passenger rail, the City of Lynchburg is more reliant on highway infrastructure and private automobile use for passenger movements than is the Commonwealth of Virginia as a whole. Expanding passenger rail service to Central Virginia can enhance the region's capacity for business attraction and economic growth.

The background research and outreach activities form the basis of the MCA, which screens the four opportunity concepts aimed at facilitating rail-centric economic growth; the MCA selects the following opportunity passenger and freight rail concepts to move forward in the EIA:

- Bedford passenger rail stop
- Transload facility
- Rail-served site

Economic Analysis

The Study concludes that adding a passenger Rail stop to the Lynchburg region at Bedford is expected to support 210 additional jobs in Virginia over the 2026-2029 construction period, contributing $11.6 million in labor income, $16.2 million in GSP, $33.3 million in economic output, and $4.0 million in tax revenue to Virginia in that period (all in 2024$). The Bedford passenger rail stop is expected to support 130 additional jobs over a 2030-2049 operations period, contributing $5.6 million in labor income, $11.1 million in GSP, $21.4 million in economic output, and $2.6 million in tax revenue in that period (all in 2024$). Each dollar invested in the Bedford passenger rail stop is expected to return $1.95 in benefits.

A transload facility in the study area is expected to support 220 additional jobs in Virginia over a one-year construction period, contributing $9.6 million in labor income, $13.3 million in GSP, $27.9 million in economic output, and $3.5 million in tax revenue in that period (all in 2024$). A transload facility is expected to support 275 additional jobs in Virginia over a 20-year operating period, contributing 13.5 million in labor income, generate $21.2 million in GSP, lead to $48.9 million in economic output, and yield $5.4 million in tax revenue in that period (all in 2024$). Each dollar invested in a transload facility is expected to return $1.47 in benefits.

A rail-served site is expected to support 12 additional jobs in Virginia over a one-year construction period, contributing $600,000 in labor income, $1.2 million in GSP, $2.7 million in economic output, and $300,000 in tax revenue in that period (all in 2024). The long-term economic impacts from freight transportation cost savings and site annual O&M expenditures are minimal. Each dollar invested in a rail-served site is expected to return $1.43 in benefits.

The benefits of developing rail-served sites and transloads is twofold and goes beyond what is captured in the EIA. Rezoning a site and making it industry-ready can keep incompatible uses such as housing or retail from sprouting up along railroads and causing conflicts for communities in the future. Communities can channel heavy industrial development to places that are uniquely positioned to handle the transportation and utility needs of these industries. Ultimately this makes a region more livable and minimizes the downsides of industrial development, such as roadway congestion and incompatible land uses.

Appendix D presents the findings of the economic analyses for each opportunity concept evaluated.

Potential Funding Opportunities

The Commonwealth offers funding programs that could support the development of the selected three opportunity concepts.

- DRPT's **FREIGHT Program** is designed to support rail infrastructure investments to expand the Virginia freight rail network. Funding requires a 30 percent local match by the applicant. Eligible applicants include freight rail operators, the Virginia Port Authority, local governments, non-profit organizations, and private companies. Applicants may use funding to support environmental review, engineering, and design (a minimum 30 percent design must be complete prior to award), right-of-way acquisition, signal improvements, construction of railways and rail facilities, as well as procurement of railroad equipment and rolling stock.[44]
- DRPT's **Rail Industrial Access (RIA) Program** promotes truck diversion to rail by providing grant assistance to connect new or expanding businesses to the freight railroad network. Funding requires a 30 percent local match by the applicant. Eligible applicants include private businesses or commercial entities, local governments, local departments of economic development, and railroads. Applicants may use funding to support the engineering, sitework, or construction of track to new commercial or industrial facilities as well as improvements to substantially expanding existing commercial or industrial facilities.[45]
- VEDP's **Business Ready Sites Program** (VBRSP) is a discretionary program to

[44] More information on eligibility can be found in the DRPT Freight Rail Grant Funding & Procedures documentation. Retrieved https://drpt.virginia.gov/wp-content/uploads/2023/07/drpt-freight-rail-grant-funding-and-procedures.pdf

[45] More information can be found in the Rail Industrial Access Application Guidance & Procedures documentation. Retrieved https://drpt.virginia.gov/wp-content/uploads/2024/03/RIA-Application-Guidance-and-Procedures-April-2024-UPDATE.pdf

promote development and characterization of sites to enhance the Commonwealth's infrastructure and promote its competitive business environment. The program's goal is to identify and assess the readiness of potential industrial sites in alignment with the goals outlined in the Governor's economic development plan. VBRSP grants are available to assist with the costs associated with the initial assessment and the development required to increase a site's suitability for industry as defined by the Commonwealth's Site Development Program Guidelines. Grants are considered on a competitive basis and made at the discretion of the VBRSP Project Review Committee and the Funding Approval Committee.

- **SMART SCALE** is a process that helps Virginia meet its most critical transportation needs using limited tax dollars. It evaluates potential transportation projects based on key factors like how they improve safety, reduce congestion, increase accessibility, contribute to economic development, promote efficient land use, and affect the environment. The anticipated benefits of a project are calculated and the projects are scored and ranked. This information is used by the Commonwealth Transportation Board to help guide and inform their project selection decisions. While railroad operators are not eligible to submit projects for SMART SCALE, Metropolitan Planning Organizations (MPOs) and Planning District Commissions (PDCs) are eligible to submit projects, along with counties, cities, and those towns that maintain their own infrastructure.

Next Steps

The EIA of the selected opportunity concepts suggests the Bedford passenger rail stop, a transload facility, and a rail-served site have the potential to drive long-term regional economic growth in Central Virginia. The Study uses planning level estimates to conduct the EIA of the freight rail opportunity concepts; the findings are sensitive to the capital and operations and maintenance cost estimates. The Study recommends detailed site evaluation and a market analysis to further assess the infrastructure needs, economic viability, and cost estimates of the opportunity concepts. For freight concepts this will require close coordination with the host railroad to understand market potential and the needs of rail customers. Passenger projects also require close coordination with the railroads, along with Amtrak, the passenger service provider.

There is momentum behind each of these concepts that can drive next steps.

- In October 2024 the Town of Bedford announced it was awarded a $1,481,000 grant through FRA's Consolidated Rail Infrastructure and Safety Improvements (CRISI) program to complete National Environmental Policy Act (NEPA) compliance and preliminary engineering for a new **Bedford passenger rail stop**.
- Amherst County reported that it has had recent industry interest in the Dillard site, which topped this study's list of suitable rail-served sites in the Lynchburg region. The interested companies were planning expansions that ranged in estimated capital investment between $300 million and over $1 billion, and between 150 and 600 jobs. This level of investment and job creation at a **rail-served site** in the Lynchburg area could substantially boost the public benefit of

site enhancements to attract industry.

- Given that NS is the dominant railroad in the region with major north-south and east-west district lines that meet in Lynchburg, the community could plan to coordinate with NS to explore potential opportunities for **transload** access. This could start by identifying companies that may not be shipping by rail today but are engaged in business sectors that are well-suited for rail. Localities could help by identifying candidate locations that fit the profile identified in Chapter 4.

Acronyms

Abbreviation	Definition
AAGR	average annual growth rate
BBR	Buckingham Branch Railroad
BCA	benefit-cost analysis
BCR	benefit-cost ratio
BCR	Bay Coast Railroad
BIP	Bridge Investment Program
BRE	business retention and expansion
CA	Chesapeake and Albemarle Railroad
CHW	Chesapeake Western Railway
CO	carbon monoxide
CO_2	carbon dioxide
CRISI	Consolidated Rail Infrastructure and Safety Improvements
CSX	CSX Transportation
CVCC	Central Virginia Community College
CVTPO	Central Virginia Transportation Planning Organization
CWRY	Commonwealth Railway
DHCD	Virginia Department of Housing and Community Development
DRPT	Virginia Department of Rail and Public Transportation
EIA	economic impact analysis
FRA	Federal Railroad Administration
FREIGHT	Freight Rail Enhancements to Increase Goods and Highway Throughput
FTA	Federal Transit Administration
FY	fiscal year
GLTC	Greater Lynchburg Transit Company
GOVA	Virginia Growth and Opportunity
GSP	gross state product
HC	hydrocarbons
IMPLAN	impact analysis for planning
LRBA	Lynchburg Regional Business Alliance
MCA	multi-criteria analysis
NCVA	North Carolina and Virginia Railroad
NEPA	National Environmental Policy Act
NOx	nitrogen oxides
NPB	Norfolk and Portsmouth Belt Line Railroad
NPV	net present value
NS	Norfolk Southern Railway Company
OIPI	Virginia Office of Intermodal Planning and Investment
O&M	operating and maintenance
PDO	property damage only

Abbreviation	Definition
PM10	particulate matter that are 10 micrometers or less in diameter
RIA Program	Rail Industrial Access Program
ROI	return on investment
RPF Program	Rail Preservation Fund
RTC	rail traffic controller
SAM	social accounting matrices
SV	Shenandoah Valley Railroad
TOD	transit-oriented development
TSA	U.S. Bureau of Transportation Statistics Transportation Satellite Accounts
USDOT	U.S. Department of Transportation
VEDP	Virginia Economic Development Partnership
VMT	vehicle miles traveled
VPRA	Virginia Passenger Rail Authority
WW	Winchester and Western Railroad

Appendix

Appendix A – List of Interviews

Organization	Date	Representative(s)
Lynchburg Regional Business Alliance	February 16, 2024	Megan Lucas - CEO & Chief Economic Development Barry Butler - Director of Government Relations
Buckingham Branch Railroad	February 29, 2024	Brian Freeman - Manager of Sales and Marketing Jim VanDerzee – Manager of Industrial Development
City of Lynchburg	February 29, 2024	Marjette Upshur – Director of Economic Development
Moffatt & Nichol	February 23, 2024	Pierce Homer
Town of Bedford	February 23, 2024	Mary Zirkle – Director of Planning and Community Lead
CSX	February 23, 2024	Lassiter - Manager, Industrial Development, KY-MD-VA-WV-DC
Amtrak	March 4, 2024	Jeff Gerlach – Senior Planning Director Adam Krom – Director Planning – National Network Joseph Barr - Director of Network Development-East at Amtrak Anna Lynn Smith - Vice President, Strategy and Planning
Houff Corporation	March 5, 2024	Neil Houff - President
Port of Virginia	March 1, 2024	Chris Gullickson - Director, Development and Transportation Policy
Norfolk Southern	March 19, 2024	Scott Plum - Strategic Plan Manager
Central VA Planning District Commission	April 30, 2024	Mariel Fowler – Senior Planner Kelly Hitchcock – Planning and Development Director Alec Brebner
Virginia Economic	June 19, 2024	Michael Dreiling, Vice President of Real Estate Solutions John Loftus, Director, Sites and Buildings

Organization	Date	Representative(s)
Development Partnership		Eric Jehu, Vice President Transportation and Logistics
Campbell County Economic Development	September 5, 2024	Nina Rezai, Economic Development Manager
Economic Development Authority of Amherst County	September 9, 2024	Victoria Hanson, Executive Director

Appendix B – Local Business Questionnaire

Business Information: Please provide some basic information about your business.

- Industry Sector (select all that apply):
    i. Agriculture
    ii. Construction
    iii. Energy
    iv. Manufacturing
    v. Mining/Quarrying
    vi. Retail
    vii. Technology
    viii. Transportation Provider
    ix. Warehousing/Storage
    x. Wholesale
    xi. Other
- Number of Employees
- Annual Revenue (in thousands)

Cargo Transported: Please specify the types of cargo your business transported in the year 2023. Check all that apply.

- Raw materials
- Finished goods
- Perishable goods
- Chemicals/hazardous materials
- Machinery/equipment
- Consumer goods
- Other

Means of Transportation: Indicate the primary means of transportation used for transporting your cargo in 2023. Check all that apply.

- Trucks
- Rail
- Ocean freight
- Air freight
- Other

Rail Served Sites: Would your business consider utilizing a rail-served site for transporting your commodities? Please select one of the following options:

- Yes, our business would benefit from utilizing a rail-served site for transporting our commodities.
- Maybe, it would depend on factors such as current infrastructure, business demand, and potential economic benefits.
- No, I don't believe our business would utilize a rail-served site for transporting

our commodities.
- Unsure/not applicable.

Transload Facility: Would your business benefit from access to a transload facility in Central Virginia for transferring cargo between different modes of transportation (e.g., truck to rail, rail to ocean freight, etc.)? Please select one of the following options:

- Yes, our business would greatly benefit from a transload facility.
- Maybe, it would depend on features such as location, cost, and available services.
- No, a transloading facility is not necessary for our business operations.
- Unsure/not applicable.

Potential Future Rail Service Availability: What percentage of your truck shipments would you be open to transferring to rail if rail access was an option?

Origin-Destination Cargo in 2023: Enter the name and indicate the origin and destinations of each of the top 3 commodities transported by your business in 2023. Then, select the modes transported.

- Commodity 1 Name:
- Commodity 1 Origin (city, state):
- Commodity 1 Destination 1 (city, state):
- Commodity 1 Destination 2 (city, state):
- Commodity 1 Modes Transported (check all that apply):
  - Rail
  - Truck
- Commodity 2 Name:
- Commodity 2 Origin (city, state):
- Commodity 2 Destination 2 (city, state):
- Commodity 2 Modes of Transportation (check all that apply):
  - Rail
  - Truck
- Commodity 3 Name:
- Commodity 3 Origin (city, state):
- Commodity 3 Destination 1 (city, state):
- Commodity 3 Destination 2 (city, state):
- Commodity 3 Modes of Transportation (check all that apply):
  - Rail
  - Truck

Cargo Volume in 2023: Please cross-reference the commodity numbers with those in question 7 and indicate the corresponding annual volume range. It's mandatory to respond to Commodity 1, while Commodities 2 and 3 are optional.

- Commodity 1
  - 100 tons or less
  - 101-500 tons
  - 501-1,000 tons
  - 1,001-2,500 tons
  - 2,501 tons-5,000 tons
  - 5,001 tons or more
- Commodity 2
  - 100 tons or less
  - 101-500 tons
  - 501-1,000 tons
  - 1,001-2,500 tons
  - 2,501 tons-5,000 tons
  - 5,001 tons or more
- Commodity 3
  - 100 tons or less
  - 101-500 tons
  - 501-1,000 tons
  - 1,001-2,500 tons
  - 2,501 tons-5,000 tons
  - 5,001 tons or more

Contact Information (Optional): If you would like to be contacted for further discussions or to receive a summary of the survey results, please provide your contact information below. Otherwise, you can leave this section blank.

Appendix C – Multicriteria Analysis Technical Approach

Bedford Passenger Rail Stop

PRIMARY SCREENING CRITERIA

Does this align with regional strategies and policies?

Yes. The concept aligns with Bedford County regional strategies and policies found in Bedford County's Comprehensive Plan for 2030 (2015), identified in the Goals, Objectives, and Strategies Consolidated found on page 159.

Are there existing studies with a preliminary feasibility plan?

Yes. The Bedford passenger rail stop concept has completed various feasibility studies, a rail traffic controller (RTC) freight capacity assessment, and multiple ridership assessments. Notable studies include:

- Bedford Intercity Passenger Rail Service Study, November 2016 (DRPT)
- Bedford/ Franklin County Regional Passenger Rail Stop Study, October 2021 (DRPT)
- Bedford Station RTC Analysis, 2022 (DRPT/NS)

Is there availability for integration with other infrastructure?

Yes. The rail stop will connect with Virginia-sponsored Amtrak Northeast Regional Route 46 to Roanoke. The rail stop will also be designed to connect with other modes of transportation, including active transportation.

Has the concept been developed and advanced?

Yes. The opportunity concept is well studied, through the following publications:

- Bedford Intercity Passenger Rail Service Study, November 2016 (DRPT)
- Bedford Regional Rail Stop Study, August 2020 (DRPT)
- Amtrak Northeast Regional Proposed Bedford VA Station, September 2021 (Amtrak)
- Bedford Regional Passenger Rail Stop Study, October 2021 (DRPT)
- Bedford/Franklin County Regional Passenger Rail Stop Study, October 2021 (DRPT)

The Town of Bedford requested $1,481,000 in FY 2023-2024 Consolidated Rail Infrastructure and Safety Improvements (CRISI) Track 2 funding to advance this concept through the National Environmental Policy Act (NEPA) evaluation and preliminary engineering, supported with a local match of $375,000. If awarded, the project will proceed with Final Design and Construction for service implementation in 2030.

Is there existing (multimodal, intermodal) connectivity?

No. There is no existing intermodal or multimodal connectivity.

SECONDARY SCREENING CRITERIA

Market Growth

The population of Bedford County grew by 31 percent between 2000 and 2022, compared to 21 percent for Virginia as a whole. Employment during this period also grew by 32 percent, compared to 22 percent for Virginia.

The Bedford passenger rail stop receives a high (3) rating for this secondary screening criterion.

Timeline

The concept's complete timeline includes project development activities, such as planning, engineering, and construction. This concept has undergone extensive planning, and while a timeline has not been developed for the concept, the passenger rail stop is relatively small and has begun the planning stage.

The Bedford passenger rail stop concept receives a short / most favorable (3) rating for this secondary screening criterion.

Walkability

Bedford has a Walk Score of 71 (very walkable) and a Bike Score of 37 (somewhat bikeable). A Transit Score for Bedford is not currently available. While Bedford is very walkable, the Bike Score classification as somewhat bikeable and lack of a Transit Score brings down its overall rating for walkability.

The Bedford passenger rail stop concept receives a moderate (2) rating for this secondary screening criterion.

Ridership

Ridership numbers in the Lynchburg, Bedford, and Roanoke stations in Central Virginia are displayed through the following two tables. Table 38 is a baseline forecast of passenger on and off forecasts along Amtrak's Northeast Regional Route 46, which does not currently include a passenger stop at Bedford station (indicated by zeros in the table).

Table 39 displays passenger projections with passenger service to the Bedford station. Boardings and alightings are a representation of station-level activity and are equal to double the number of annual trips, as each trip has both a boarding and alighting location.

The forecast shows that Bedford Station ons/offs are projected to be 25,400 (12,700 riders), but some of those counted are existing riders to the route who would divert to a Bedford station for convenience.

Summing projected activity at the stations in the region along the route (Lynchburg, Bedford, Roanoke, as displayed in Table 39) and subtracting the base ons/offs (no Bedford station, as displayed in Table 38) yields the incremental route ons/offs, which amount to 20,100. Table 39 divides the incremental route ons/offs by 2 to show the annual net new riders to the system: 10,050, which is approximately 28 new riders per day (Amtrak's methodology for per day calculations assume a 350-day year).

The net new ridership that could be generated from a Bedford rail stop represents about 6 percent of the current ridership on Amtrak's Northeast Regional Route 46 train between Alexandria and Roanoke.

Table 38 Baseline Forecast – Annual Boarding and Alighting (2018)

Station	South of Washington (including to/from Washington, DC)	Through Washington, DC)	Total
Lynchburg	35,800	8,700	44,500
Bedford	0	0	0
Roanoke	33,500	24,800	58,300
Total	**69,300**	**33,500**	**102,800**

Table 39 Build Forecast – Annual Boarding and Alighting (2018)

Station	South of Washington (including to/from Washington, DC))	Through Washington, DC)	Total
Lynchburg	40,600	8,700	49,300
Bedford	19,800	5,600	25,400
Roanoke	30,300	17,900	48,200
Total	**90,700**	**32,200**	**122,900**
Incremental Route Ridership = (build-base)/2			10,050

Due to its relatively low ridership potential, the Bedford passenger rail stop concept receives a low (1) rating for this secondary screening criterion.

Stakeholder Interests

Stakeholder interest in a new Bedford passenger rail stop is high. According to the Bedford Regional Passenger Rail Stop Study (2021), the Town of Bedford, Bedford County, and Franklin County formed the Bedford/Franklin Regional Rail Initiative in 2014 to support the rail stop.

Due to the extensive public support for the rail stop, this concept receives a high (3) rating for this secondary screening criterion.

Scale of Investment

The investment includes total costs necessary to advance the concept from conceptual design through operation. Costs include project development activities such as design, engineering, and environmental review, as well as construction, operations, and maintenance costs. Total capital costs over the 2026-2029 construction period amount to $17.8 million in 2024 dollars, discounted to 2022 at 3.1 percent.

The Bedford passenger rail stop concept receives a moderate (2) rating for this secondary screening criterion.

POTENTIAL BENEFITS

In the context of transportation investments, economic benefits are often derived from projects that result in a reduction in vehicle hours traveled (VHT) or vehicle miles traveled (VMT). While the addition of an infill station at Bedford implies additional travel time for passengers traveling to and from Roanoke, resulting in a disbenefit for existing passengers, the Bedford passenger rail stop is expected to result in a reduction in VMT. The Bedford passenger rail stop is expected to deliver the following benefits:

- Safety: rail is a safer mode of travel than private automobile, and as such, the project will deliver benefits resulting from the reduction in VMT.
- Vehicle operating costs: passengers diverted from private automobiles will realize operating costs avoided from the reduction in VMT.
- Emissions avoided: rail emits fewer emissions per passenger mile than private automobile and as such, the project will result in emissions reductions associated with the reduction in VMT.
- Marginal social costs: private automobile use has a higher marginal social cost associated with noise pollution, pavement wear, and congestion compared to passenger rail. The project will result in reductions in the marginal social costs of noise pollution, pavement wear, and congestion associated with the reduction in VMT.
- Improved connectivity: passenger rail access brings opportunities to individuals wanting to travel locally or across the country. The project will provide travelers with improved connections between Roanoke, Virginia and Washington, DC
- Enhanced transportation options: the project provides travelers an alternate mode of transportation, supporting flexibility in travel arrangements.
- Economic development and tourism: intercity passenger rail stations boost economic development in surrounding areas. They can also induce visitor volumes, which lead to increased tourism revenue for hospitality-related businesses.
- Real estate development: the presence of a passenger rail stop stimulates real estate development as well as property investment in the vicinity.
- Community revitalization: the presence of passenger rail stops can be a catalyst for revitalization efforts to improve the quality of life of residents.
- Improved access: the addition of a passenger rail stop provides easier access to transportation for residents, especially those with limited mobility or disabilities.

Transit-Oriented Development at Lynchburg Kemper Street Station

PRIMARY SCREENING CRITERIA

Does this align with regional strategies and policies?

Yes. This concept aligns with the regional strategies and policies outlined in:

- Downtown Lynchburg 2040: in 2040, downtown Lynchburg aims to be "a bustling and thriving urban core," serving both tourists and locals – a goal of a TOD in Lynchburg.
- Lynchburg Comp Plan: Kemper Street is zoned as a Community Business District (B-3), suitable for TOD.

Are there existing studies with a preliminary feasibility plan?

No. There is no existing feasibility study to support a TOD in Lynchburg.

Is there availability for integration with other infrastructure?

Yes, although it depends on the location TOD is being constructed. TODs typically have strong integration with existing infrastructure. In this instance, a TOD in Lynchburg would link with other public transportation systems.

Has the concept been developed and advanced?

No. This concept has been minimally developed and advanced. The concept of a TOD requires extensive planning through multiple stages of development.

The USDOT awarded the Central Virginia Planning District Commission (CVPDC) a Thriving Communities Grant under the Complete Neighborhood Community of Practice, which will provide the CVPDC with technical assistance to transform the 12th Street Corridor. The 12th Street Corridor includes 12th Street from Fort Avenue to Church Street and Kemper Street, from 12th Street to Park Avenue.

The Lynchburg Comprehensive Plan identifies the zoning regulations in each neighborhood of Downtown Lynchburg. Kemper Street is currently zoned as Community Business District (B-3), which allows for shopping centers, restaurants, supermarkets, and mixed-use development. While a B-3 classification is amenable for mixed use, re-zoning to an Urban Commercial (B-4), which does not have parking requirements, may be favorable to support advancement of the concept.

Is there existing (multimodal, intermodal) connectivity?

Yes. There is existing multimodal connectivity at the Lynchburg station. This connectivity includes access to the Kemper Street Station, the Kemper Street Transfer Station, providing local bus service, and the Blackwater Creek Trail.

SECONDARY SCREENING CRITERIA

Market Growth

Due to the same rate of population and employment growth between Lynchburg and the Commonwealth of Virginia (within 1 percent) between 2000 and 2022, the TOD at

Lynchburg Kemper Street Station receives a moderate growth (2) rating for this secondary screening criterion.

Timeline

Although there is no fixed timeline to complete a TOD, TODs are considered long-term investments that require multiple stages of development, including planning and community engagement, real estate development, potential rezoning, and infrastructure development.

Due to the multiple stages necessary to realize a TOD, the concept of a TOD at Lynchburg Kemper Street Station receives a long / least favorable (1) rating for this secondary screening criterion.

Walkability

Downtown Lynchburg has a Walk Score of 85 (very walkable), a Bike Score of 61 (bikeable), and a Transit Score of 28 (some transit). Due to its high Walk Score and satisfactory Bike Score, TOD at Lynchburg Kemper Street Station receives a high (3) rating for this secondary screening criterion.

Ridership

It is estimated that ridership can increase up to 55 percent when there is a TOD placed in an area due to the increased amount of both tourists and residents being encouraged to use public transportation.[46]

TOD encourages residents to drive 20-40 percent less than they used to and use transit 4-10 times more than those in areas that do not have TOD.[47]

Table 40 includes ridership numbers for Kemper Street Station between FY 2005 and 2023, with forecasted ridership numbers for FY 2024 to 2026.

Table 40 Historic Data – Ridership Values

Fiscal Year	Ridership Kemper Street Station
2010	58,348
2011	76,179
2012	86,498
2013	93,337
2014	86,302
2015	84,975

[46]Optimizing Land Use Allocation of Transit-Oriented Development (TOD) to Generate Maximum Ridership, 2020. Retrieved https://doi.org/10.3390/su12093798
[47] Transit-Oriented Development, 2024. Retrieved https://www.transit.dot.gov/TOD

Fiscal Year	Ridership Kemper Street Station
2016	82,786
2017	82,251
2018	58,160
2019	54,632
2020	31,361
2021	28,459
2022	48,326
2023	73,424
2024 (forecast)	81,998
2025 (forecast)	83,317
2026 (forecast)	84,855

Source: US Bureau of Transportation Statistics, Amtrak Ridership, 2005-2022. Retrieved Amtrak Ridership | Bureau of Transportation Statistics (bts.gov); Ridership projections were provided by Adam Krom on April 12, 2024.

In 2021, the Kemper Street Station accounted for a quarter of ridership on Amtrak's Northeast Regional Route 46, dropping only slightly to 21 percent in 2022.[48]

Due to its high ridership volumes on the route, the TOD at Lynchburg Kemper Street Station receives a high (3) rating for this secondary screening criteria.

Stakeholder Interests

Due to the lack of feasibility studies available, there is little information on how a TOD in Lynchburg would benefit stakeholders. As such, the TOD at Lynchburg Kemper Street Station concept receives a low (1) rating for this secondary screening criteria.

Scale of Investment

While a cost estimate has not been completed for the TOD at Kemper Street Station, cost of implementing a TOD tend to be in excess of $100 million (2024$).[49] These costs include public and private expenditures. The higher costs of dense infill development have previously been referenced as a barrier to TOD implementation.[50]

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[48] Amtrak, Amtrak FY22 Ridership, 2022. Retrieved https://media.amtrak.com/wp-content/uploads/2022/11/FY22-Year-End-Revenue-and-Ridership.pdf
[49] Senate Committee Reviews How TOD Can Be Financed and Built in America, 2024. Retrieved https://enotrans.org/article/senate-committee-reviews-how-tod-can-be-financed-built-america/
[50] Transit Cooperative Research Project, Transit-Oriented Development in the United States, 2018. Retrieved Transit_Oriented_Development.pdf (ctaa.org)

Due to the potential investment range, the TOD at Kemper Street Station concept receives a high investment (1) rating for this secondary screening criteria.

POTENTIAL BENEFITS

TOD at the Kemper Street Station is expected to boost the area and surrounding neighborhoods economically via mixed land use and increased residential and commercial property values. TOD improves accessibility for all modes of transit, lessening automobile dependency, which has the potential to reduce VMT. TOD at the Kemper Street Station can deliver the following benefits:

- Safety: transit is a safer mode of travel than private automobile, and as such, the project will deliver safety benefits resulting from the reduction in VMT.
- Vehicle operating costs: transit riders diverted from private automobiles will realize operating costs avoided from the reduction in VMT.
- Emissions avoided: transit emits fewer emissions per passenger mile than private automobile and as such, the project will result in emissions reductions associated with the reduction in VMT.
- Marginal social costs: private automobile use has a higher marginal social cost associated with noise pollution, pavement wear, and congestion compared to passenger rail. The project will result in reductions in these categories, and an associated reduction in VMT.
- Improved connectivity: transit access brings opportunities to individuals wanting to travel locally or across the country. The project will provide travelers with improved connections between Roanoke, Virginia and Washington, DC
- Enhanced transportation options: TOD increases access to alternate modes of transportation, supporting flexibility in travel arrangements and through mixed-use development. TOD has the potential to lessen travel demand for select trips.
- Economic development and community revitalization: TOD enables increased density and mixed-use development, which can be a catalyst for economic development opportunities that attract visitors and improve the quality of life for residents. TOD land use can also result in the recovery of underperforming land uses. Increases in property values would deliver fiscal benefits to the City of Lynchburg.
- Improved access and social equity: TOD enhances amenities to support transit, pedestrian, and bike travel, improving accessibility for those without access to a personal vehicle, as well as non-motorized users of the transportation network. TOD can decrease socioeconomic disparities by providing access to affordable housing choices nearby.
- Health benefits: TOD contributes to improved public health results by encouraging walking and biking and reducing air pollution.
- Environmental sustainability: beyond emissions reductions, TOD aids in land conservation, natural resource production, and environmental impact mitigation by encouraging smart growth and decreased vehicular usage.

Rail-Served Site

PRIMARY SCREENING CRITERIA

Does this align with regional strategies and policies?

Yes. The rail-served site aligns with regional strategies and policies outlined in the Inland Port Feasibility Study.

Are there existing studies with a preliminary feasibility plan?

No. There are no existing studies with a preliminary feasibility plan for rail-served site.

A market analysis could be conducted to better understand the market demand for, and the magnitude of benefits associated with, a rail-served site. Identifying a potential site, cost estimates, and freight operators and businesses that would benefit from a rail-served site would further advance the concept.

Is there availability for integration with other infrastructure?

Yes. It is assumed the rail-served site will integrate with existing infrastructure.

Has the concept been developed and advanced?

No. The rail-served site concept has not been previously developed and advanced.

Is there existing (multimodal, intermodal) connectivity?

Yes. It is assumed that the rail-served site will facilitate connectivity to the freight network.

SECONDARY SCREENING CRITERIA

Market Growth

The Study takes a comparative approach to evaluate market growth for the rail-served site and transload facility concepts. Because much of freight movements in the study area are by truck, and rail-served sites do not facilitate multimodal freight movement, the rail-served site concept receives a moderate growth (2) rating for this secondary screening criteria.

Timeline

The project timeline includes planning, engineering, and construction. Timelines are scored based on total length of time until project opening, including timeline to construction (planning duration) and duration of construction.

Timelines vary depending on the size of the project. According to the Iowa DOT, track construction can range from 11 to 17 months.

Because the timeline to implementation is less than five years, the rail-served site concept receives a short / most favorable (3) rating for this secondary screening criterion.

Economic Viability, Industry Support, and Stakeholder Interests

A market study has not been conducted to assess the economic viability of a rail-served site, so the Study takes a comparative approach between the rail-served site and transload facility concepts to evaluate these secondary screening criteria.

The Study uses the local business surveys described in Chapter 2 as a proxy to rate the economic viability of a rail-served site. Of the responses received, 57 percent of

respondents indicated they would benefit from utilizing a rail-served site, and 43 percent of respondents indicated they might benefit from utilizing a rail-served site. No respondents indicated they would not benefit from utilizing a rail-served site.

Comparatively, 43 percent of respondents indicated they would benefit from utilizing a transload facility and 57 percent of respondents indicated they might benefit from utilizing a transload facility. Similarly, no respondents indicated they would not benefit from utilizing a transload facility.

Because a higher percentage of survey respondents indicated they would benefit from a rail-served site compared to a transload facility, the rail-served site concept receives a high (3) rating for these secondary screening criteria.

Scale of Investment

The cost to develop a rail-served site depends on several factors, including but not limited to proximity to existing rail infrastructure, the grade at the site, terrain, and number of turnouts needed. Because site-specific cost estimates have not been developed for the rail-served site, the Study takes a comparative approach to evaluate scale of investment for the rail-served site and new transload facility concepts.

The Study assumes a rail-served site requires less investment to develop than a transload facility, and as such, the rail-served site concept receives a low / most favorable (3) rating for this secondary screening criterion.

POTENTIAL BENEFITS

Rail-served sites can deliver the following benefits:

- Cost efficiency: rail transport is often more cost-effective than other modes of transportation, especially for bulk or heavy goods.
- Accessibility to markets: rail connections facilitate movement of goods to and from ports, distribution centers, and other key transportation hubs.
- Reduced traffic congestion: businesses can help alleviate vehicular traffic congestion by utilizing rail transport, particularly for freight transportation.
- Environmental sustainability: rail transport emits fewer pollutants per ton-mile compared to truck.
- Reliability and predictability: rail transport is known for reliability and predictability, with fixed schedules and dedicated routes.
- Flexibility and scalability: businesses can expand, or contract operations as needed without significant infrastructure investment because rail infrastructure accommodates a wide range of freight volume and types.
- Land use efficiency: rail-served sites are suitable for heavy industrial or manufacturing activities because they have larger lot sizes and higher weight-bearing capacity compared to non-rail served sites. This maximizes land use efficiency and allows consolidation of operations into a single site, reducing the need for multiple facilities.
- Job creation and economic development: attracting businesses, generating investment, and fostering industrial growth can all stimulate job growth and economic development by developing rail-served sites.

Transload Facility

PRIMARY SCREENING CRITERIA

Does this align with regional strategies and policies?

Yes. The rail-served site aligns with regional strategies and policies, such as the VTrans 2040 Multimodal Transportation Plan, 2017.

Are there existing studies with a preliminary feasibility plan?

No. There are no existing studies with a preliminary feasibility plan for the transload facility development.

A market analysis should be conducted to assess the viability of a transload facility. Identifying a potential site, cost estimates, and freight operators and businesses that would benefit from a transload facility would further advance the concept.

Is there availability for integration with other infrastructure?

Yes. It is assumed the transload facility will integrate with existing infrastructure.

Has the concept been developed and advanced?

No. The transload facility concept has not been previously developed and advanced.

Is there existing (multimodal, intermodal) connectivity?

Yes. It is assumed that the transload facility will facilitate connectivity to the freight network.

SECONDARY SCREENING CRITERIA

Market Growth

The Study takes a comparative approach to evaluate this secondary screening criterion for the rail-served site and new transload facility concepts. Because much of freight movements in the study area are by truck, and transload facilities facilitate the multi-modal movement of freight, the new transload facility concept receives a high growth (3) rating for this secondary screening criterion.

Timeline

Typically, development of a new transload facility takes one to two years. Because the timeline to implementation is less than five years, the rail-served site concept receives a short / most favorable (3) rating for this secondary screening criterion.

Economic Viability, Industry Support, and Stakeholder Interests

Because a market study has not been conducted to assess the economic viability of a rail-served site, the Study takes a comparative approach to evaluate these secondary screening criteria.

As described under these secondary screening criteria for the rail-served site concept, the Study uses the local business surveys described in Chapter 2 as a proxy to rate the economic viability of a transload facility.

Because a lower percentage of survey respondents indicated they would benefit from a transload facility compared to a rail-served site, the rail-served site concept receives a moderate (2) rating for these secondary screening criteria.

Scale of Investment

The cost to develop a transload facility depends on several factors, including but not limited to proximity to existing rail infrastructure, rail infrastructure investments needed, as well as equipment needs. Because site-specific cost estimates have not been developed for the transload facility, the Study takes a comparative approach to evaluate this secondary screening criterion for the rail-served site and transload facility concepts.

The Study assumes a transload facility requires more investment to develop than a rail-served site, and as such, the transload facility concept receives a moderate investment (2) rating for this secondary screening criterion.

POTENTIAL BENEFITS

Rail-served sites can deliver the following benefits:

- Highway user effects: the movement of freight by rail reduces travel time and vehicle operating costs for those remaining on roadways.
- Highway system effects: freight rail reduces long-distance truck travel creating direct benefits to the highway system.
- Environmental sustainability effects: rail is more fuel efficient than trucks, reducing dependency on fossil fuels. Rail also emits lower emissions of air pollutants per freight ton-mile than trucks.
- Safety effects: rail fatality, injury, and property damage only (PDO) crash rates are lower than truck fatality, injury, and property damage only crash rates.
- Rail freight shipping cost effects: rail provides a lower shipping rate per ton-mile relative to trucking, reducing freight shipping costs.
- Production cost savings: rail provides access to wider markets, which adds to economies of scale in production, distribution, and consumption.
- Market size effects: rail increases modal competition and access to a larger and more diverse base of inputs such as raw materials, parts, energy, and labor, and broader market for diverse input.

Appendix D – Economic Assessments

The economic assessment of each opportunity concept includes an EIA and a BCA, which are further described in the subsequent sections.

Economic Impact Analysis

An EIA quantifies the viable opportunity concept's direct, indirect, and induced impacts on employment and economic activity. While it considers the positive impacts of the investment as a stimulus to the local economy rather than a cost to the Project sponsor, it does not consider the extent to which a positive impact in one region (or industry) may be accompanied by offsetting losses in another region (or industry). Common metrics to report the total economic impacts include job creation, labor income, gross state product (GSP), economic output, and tax revenue.

This analysis utilizes the IMPLAN economic model developed by Minnesota IMPLAN Group, Inc. This model can forecast how a change in economic activity or policy affects a region's economy.

The IMPLAN economic model is an economic impact assessment software system that, when combined with background IMPLAN® Data Files, can generate local-area Social Accounting Matrices (SAM) and SAM-based multipliers. IMPLAN expands upon the traditional input-output models to trace the flow of money between institutions, such as transfer payments from governments to businesses and households, and taxes paid by households and businesses to governments in a given time period.

IMPLAN multipliers are used to analyze the changes in final demand and their ripple effects throughout the local economy at a specific point in time. The multipliers are coefficients that describe the response of the local economy to a change in demand or production. IMPLAN multipliers estimate three components of total change in final demand or production within the local economy:

- Direct impacts measure changes within the affected industry (e.g., spending by the construction industry to develop a new passenger rail station). Direct impacts are entered through events in IMPLAN. The events describe the actual change in production that is being modeled.
- Indirect impacts capture industry-to-industry interactions in response to altered demands of the directly impacted industry (e.g., employment with companies that support the construction industry).
- Induced impacts reflect changes in household spending as total income and population adjust due to a direct industry impact (e.g., the wages of construction employees lead to spending on mortgage, groceries, and entertainment).

IMPLAN can be used to assess the economic impact of investment in a particular industry (e.g., building a new transload facility in Central Virginia will increase spending by the construction industry in the region) or transportation system improvements that reduce the cost of doing business in a region due to reduced travel delays and transportation cost. Since IMPLAN cannot directly use transportation inputs (e.g., changes in vehicle miles traveled, travel delays) to estimate economic impacts, "pre-processors" have been developed to convert the transportation inputs into a form that can work within IMPLAN.

This analysis applies the IMPLAN economic model for the entire Commonwealth of Virginia, which includes all counties, main cities, metropolitan areas, congressional districts, and zip codes in the Commonwealth. A region can be defined by selecting zip codes, but this is of limited value because of minimal amounts of standard economic data that are available below the county level. The geographic regions used in this economic analysis include the regions in Virginia where the original impacts occur (or the primary region) and the 'rest of Virginia' to capture the spillover effect that the opportunity concepts would have beyond the primary region.

IMPLAN multipliers compute the direct, indirect, and induced effects on employment, labor income, value added, output, and tax revenue generated per dollar of direct spending for labor, goods, and services. Total economic impacts are equal to the summation of the direct, indirect, and induced impacts.

- Employment measures the number of full-time and part-time annual average jobs for both employees and self-employed workers.
- Labor income measures the employee compensation (e.g., the wages and benefits paid to wage and salary employees) and proprietor income (e.g., the profits earned by self-employed individuals).
- Value added is the combination of labor income, other property type income (e.g., corporate profits, interest income, and rental payments), and indirect business taxes (e.g., taxes collected by businesses on behalf of the government). It can also be defined as GSP, which is the sum of value added from all industries in the Commonwealth.
- Output is the value of production and is equal to value added plus intermediate expenditures (e.g., the monies spent purchasing goods and services to create an industry's production).
- Tax revenue measures the property and sales tax revenue to the local government, as well as changes in income tax revenues and taxes on production and imports for the federal and state government, which are realized when local resident and business activity changes.

Since IMPLAN is a static model, the EIA presented in this Study does not consider the economic, industrial, and demographic changes, or changes in business costs that may occur in Virginia over the next 20, 25, or 30 years.

Benefit-Cost Analysis

A BCA identifies, quantifies, and compares the expected benefits and costs of the most viable opportunity concepts over an analysis period. The analysis period includes the design/engineering, construction, and operation phases of the concept. This means that on the cost side, it includes capital expenditures plus operating costs beyond the completion of the opportunity concept.

The BCA converts potential gains (benefits) and losses (costs) of the most viable opportunity concepts into monetary units and compares them. The following common benefit-cost evaluation measures are included in this BCA:

- Net present value (NPV) compares the net benefits (benefits minus costs) after being discounted to present values using the real discount rate assumption. The

NPV provides a perspective on the overall dollar magnitude of cash flows over time in today's dollar terms.

- Benefit-cost ratio (BCR) expresses the relation of discounted benefits to discounted costs as a measure of the extent to which a project's benefits either exceed or fall short of the costs. The present value of incremental benefits is divided by the present value of incremental costs to yield the BCR. A BCR more than 1.0 means benefits outweigh cost, and the concept could be a good investment. A BCR less than 1.0 means costs outweigh benefits and the concept might not be a worthwhile investment. For example, a project with a BCR of 2.0 means that for every $1 invested, the financial benefit or (ROI) is $2.