



Northeast Ohio Areawide Coordinating Agency
Cuyahoga Valley Scenic Railroad
Extension Engineering & Feasibility Study

Final Report

February 2025

Prepared for:

Northeast Ohio Areawide Coordinating Agency (NOACA)
1299 Superior Avenue
Cleveland, Ohio 44114

Prepared by:

AECOM
1300 East 9th Street
Cleveland, OH 44114
aecom.com

Prepared in association with:

Cambridge Systematics, Inc.,
KWest Group, LLC,
Visibility Marketing, Inc.

Copyright © 2024 by AECOM

All rights reserved. No part of this copyrighted work may be reproduced, distributed, or transmitted in any form or by any means without the prior written permission of AECOM.

Table of Contents

1.	Executive Summary.....	1
1.1	Background and Objectives	1
1.2	Stakeholder Engagement.....	2
1.3	Technical Work.....	2
1.3.1	Conceptual Engineering/Alignment Analysis	2
1.3.1.1	Track Inspection and Conditions	2
1.3.1.2	Plan Views of Track Alignment & Summary Engineering	2
1.3.1.3	Operating Plan	2
1.3.2	Estimated Costs	3
1.3.2.1	Capital Costs.....	3
1.3.2.2	Operating & Maintenance Costs.....	3
1.3.3	Environmental Screening.....	3
1.3.4	Market Assessment	3
1.3.5	Ridership.....	4
1.3.6	Regional Economic Impact	4
1.3.7	Benefit/Cost Analysis	4
1.3.8	Financial Analysis and Funding Opportunities.....	4
1.4	Next Steps	5
2.	Study Background and Objectives.....	6
2.1	Historic Context.....	6
2.1.1	Legacy Railroads.....	6
2.1.2	Cuyahoga Valley Scenic Railroad.....	6
2.1.3	Cuyahoga Valley National Park	6
2.2	Previous Studies to Extend CVSR Service	7
2.3	Project Understanding	7
2.4	Study Objectives	7
3.	Stakeholder Engagement	9
3.1	Client	9
3.2	Project Partners.....	9
3.3	Other Public & Non-for-Profits.....	10
3.4	Private Sector Entities	10
3.5	Summary of Engagements.....	11
4.	Technical Work Summary	12
4.1	Conceptual Engineering/Alignment Analysis	12
4.1.1	Track Inspection and Conditions	12
4.1.1.1	National Park Service Alignment	12
4.1.1.2	CSX Transportation Alignment	13
4.1.1.3	Cuyahoga Valley Scenic Railroad.....	13
4.1.2	Plan Views of Track Alignment & Summary Engineering	13
4.1.2.1	Track.....	14
4.1.2.2	Structures	14
4.1.2.3	Rail Signaling	14
4.1.2.4	Highway Grade Crossings	14
4.1.2.5	Rail-to-Rail Crossings.....	14
4.1.2.6	Stations.....	15

4.1.2.7	Yard and Maintenance Facility Review	18
4.1.2.8	Rolling Stock	18
4.1.3	Operating Plan	19
4.1.3.1	Travel Market Review	19
4.1.3.2	CVSR Service Profile.....	20
4.1.3.3	Service Constraints and Assumptions.....	21
4.1.3.4	CVSR Extension Service Parameters.....	22
4.1.3.5	Draft Timetables	23
4.1.3.6	Annual Service Measures	25
4.2	Estimated Costs	25
4.2.1	Capital Costs.....	25
4.2.2	Operating & Maintenance Costs.....	26
4.2.2.1	Assumptions	26
4.3	Environmental Screening.....	28
4.3.1	Purpose and Need.....	28
4.3.2	Environmental Category Review	29
4.3.3	Class of Action	30
4.4	Market Assessment	31
4.4.1	Socioeconomic Analysis	31
4.4.1.1	Population.....	31
4.4.2	Economic Trends.....	33
4.4.3	Marketplace Factors	33
4.4.3.1	Scenic and Tourist Railroads.....	33
4.4.3.2	Rail-Themed Attractions.....	34
4.4.3.3	Non-Rail Area Attractions.....	34
4.4.4	Corridor Trip Flows	34
4.4.5	Cuyahoga Valley National Park.....	35
4.5	Ridership.....	36
4.5.1	Travel Market Review	36
4.5.2	CVSR Rider Profile.....	36
4.5.2.1	Service Offerings.....	36
4.5.2.2	CVSR Ridership	37
4.5.3	Customer Survey.....	38
4.5.4	CVSR Ridership Forecast	38
4.5.4.1	No-Build Scenario.....	39
4.5.4.2	Build Scenario.....	39
4.6	Regional Economic Impact	41
4.6.1	Economic Model.....	41
4.6.2	Economic Impacts	42
4.6.2.1	Extension Capital Costs.....	42
4.6.2.2	Extension Operations and Maintenance Costs.....	42
4.6.2.3	Extension Travel Cost Savings of Riders Shifting to New Stations	43
4.6.3	Summary and Conclusions	44
4.7	Benefit/Cost Analysis	44
4.7.1	Project Benefits	45
4.7.1.1	Rider Shift to Extension Stations	45
4.7.1.2	Amenity Benefit	46
4.7.1.3	Property Value Increase Benefit	46

4.7.1.4	Residual Value of Assets.....	47
4.7.1.5	Benefit Summary.....	47
4.7.2	Project Costs.....	47
4.7.3	Quantitative Benefit-Cost Analysis.....	48
4.7.4	Qualitative Benefits.....	48
4.8	Financial Analysis and Funding Options	49
4.8.1	Capital Costs.....	49
4.8.2	Operating Costs	49
4.8.3	Revenue	50
4.8.4	Cash Flow.....	51
4.8.5	Funding Options.....	52
5.	Next Steps.....	54

Tables

Table 3-1.	Summary of Feasibility Study Meetings	11
Table 4-1.	CVRS Vehicles by Type	19
Table 4-2.	National Park Scenic Excursion Schedule, Peninsula & Boston Mill Turnbacks	24
Table 4-3.	North Pole Adventure Schedule, Peninsula & Boston Mill Turnbacks	24
Table 4-4.	Standard Cost Categories used in the Extension Costing	25
Table 4-5.	Capital Cost Summary for Corridor Extension	26
Table 4-6.	O&M Cost Comparison (in 2025\$).....	28
Table 4-7.	Cleveland Destinations Respondents would Consider using CVSR to Access.....	34
Table 4-8.	Annual CVSR Ridership by Service Type, 2019 vs. 2023.....	37
Table 4-9.	Origins of CVSR Customers, 2020-2023.....	38
Table 4-10.	CVSR Annual Ridership for Observed and 2040 No-Build Scenarios	39
Table 4-11.	CVSR Annual Ridership Forecast for 2025 Base Year, 2040 No-Build and Build Scenarios.....	40
Table 4-12.	Summary of Extension Ridership Forecasts	41
Table 4-13.	Extension Total Economic Impacts Generated by Capital Expenditures, 2025–2031.....	42
Table 4-14.	Extension Total Economic Impacts Generated by O&M Expenditures, 2032–2051.....	43
Table 4-15.	Extension Economic Impacts Generated by Rider Shift to Cleveland Stations, 2032–2051	43
Table 4-16.	Extension Total Economic Impacts for Cuyahoga and Summit Counties, 2027–2051.....	44
Table 4-17.	Extension Total Economic Impacts for the State of Ohio, 2027–2051	44
Table 4-18.	20-Year VMT-Based Benefits in 2024 Dollars (Non-Discounted)	46
Table 4-19.	Annual Benefits in 2024 Dollars	47
Table 4-20.	20-Year Operations & Maintenance Costs in 2024 Dollars.....	48
Table 4-21.	Quantitative Benefit/Cost Measures.....	48
Table 4-22.	Summary of Annual Operational Cost Estimate Comparison.....	50
Table 4-23.	Revenue Forecasts Across Cases/Scenarios.....	51
Table 5-1.	Anticipated Schedule and Estimated Costs	55

Figures

Figure 2-1.	CVSR Extension Alignment.....	8
Figure 4-1.	Station Locations Assessed	15
Figure 4-2.	Conceptual Steelyard Commons Station Site Layout	16
Figure 4-3.	Downtown Cleveland Station Conceptual Alignments	16
Figure 4-4.	Downtown Station Concept 1A.....	17
Figure 4-5.	Conceptual Site Layout for Downtown Cleveland Station on Parcel 19.....	18
Figure 4-6.	Cuyahoga Valley Scenic Railroad Map.....	20

Figure 4-7. 18-County NE Ohio Study Area..... 31
Figure 4-8. Disadvantaged Communities along Potential CVSR Extension 32
Figure 4-9. Cuyahoga Valley National Park Annual Recreation Visitors, 1978 – 2023 35
Figure 4-10. CVSR Annual Ridership..... 37
Figure 4-11. Annual CVSR Ridership Trendline from 2018-2050 for Observed, No-Build and Build Scenarios 40
Figure 4-12. Forecast of Cash Flows 52

1. Executive Summary

The Cuyahoga Valley Scenic Railroad (CVSR) provides a unique way to experience the Cuyahoga Valley National Park (CVNP). CVSR operates scheduled excursion train service between the Akron Northside Station in Akron to the Rockside Station in Independence, Ohio, through the CVNP. This Engineering and Feasibility Study assessed the extension of the CVSR service north to Downtown Cleveland.

The purpose of the Study was to:

- Prepare an engineering report and capital cost estimate,
- Provide an environmental review to determine the likely NEPA class of action should the Extension Project advance,
- Determine the market reach of the CVSR and potential future ridership,
- Examine the economic impacts and benefits of an extended tourist railroad operation to Downtown Cleveland, and
- Assess benefits and costs, and the financial feasibility to extend the route to Downtown Cleveland.

A work plan was prepared and used to guide the study based on the purposes listed above. The Study also included close coordination with NOACA's Project Partners, as well as other key stakeholders. This Final Report represents a summarized compilation of the deliverables of eight technical tasks, including sub-tasks, of the Study.

The following are the sections of Final Report:

- Background and objectives,
- Stakeholder engagement,
- Study tasks, and
- Next steps.

1.1 Background and Objectives

A review of the historic context for CVNP and CVSR is provided in Section 2. The railroad legacy in the Study corridor is strong, and over the years, railroad ownership changed several times, with the CSX Transportation (CSX) owning as of 1980. In 1984, CSX sold the Valley Railway track between Akron and Independence to the National Park Service (NPS), continuing to operate freight service north of Rockside to Downtown Cleveland.

In 1975, the Cuyahoga Valley Preservation and Scenic Railway Association, now known as the Cuyahoga Valley Scenic Railroad (CVSR), began operations. CVSR has operated under a cooperative agreement with CVNP since 1989, with CVNP responsible for ownership and maintenance of the track, and CVSR responsible for owning and maintaining the rolling stock and operating the rail service.

Cuyahoga Valley National Recreation Area was designated in 1974 and became a national park in 2000. CVNP is one of only a few national parks to be served by passenger rail.

The Study was informed by several previous studies dating back to 1994 that were commissioned by the National Park Service or CVSR.

Objectives of the Study were phrased as questions, which included:

- Whether to extend the rail line?
- What is the most appropriate route and related technical considerations?
- What will be the approximate cost to implement as well as the ongoing costs to operate and maintain?
- Are there grant programs that the Extension Project would be eligible for?
- What would be the likely NEPA class of action for future environmental analyses?

- How would the Extended service affect the market reach of the CVSR?
- What would be expected future ridership associated with the Extension?
- What economic impacts and benefits would be derived from the Extension?

1.2 Stakeholder Engagement

Communication and coordination with stakeholders followed the Stakeholder Outreach Plan prepared at the outset of the Study. Entities participating in the Study included the following three categories,

- Client – the contractual entity responsible for the study,
- Project Partners – entities that will have a direct impact on decision-making, will have a role in the implementation/operation of the Extension service, and who have contributed economically to the Study, and
- Stakeholders – entities having a range of influence and interest in the Study.

A summary of engagements is provided in Section 3.

1.3 Technical Work

The eight technical tasks are highlighted as follows.

1.3.1 Conceptual Engineering/Alignment Analysis

Three sub-tasks were included, 1) Track Inspection and Conditions, 2) Plan Views of Track Alignment and Summary Engineering Report, and 3) Operating Plan.

1.3.1.1 Track Inspection and Conditions

This task documented existing conditions of the Extension corridor from the CVSR Rockside Station north to Downtown Cleveland, which included 1.5 miles of NPS-owned trackage north of Rockside Station and the CSX Willow Industrial Track. The decision to use this alignment was based on previous studies, which concluded that it was the most direct route and would require coordination with only one railroad ownership interest.

Corridor infrastructure conditions were based on the review of previous studies and reports, CSX Valuation Maps of the Willow Industrial Track, and publicly available aerial mapping and imagery.

1.3.1.2 Plan Views of Track Alignment & Summary Engineering

This task report addressed the engineering and planning assessments to identify improvements necessary to introduce passenger trains to the Extension corridor. Infrastructure improvements covered track, signalization, bridges, grade crossings, stations, yard/maintenance facility, and rolling stock. Improvements were quantified for use as inputs to the estimation of capital costs. The development of these recommendations was informed by the Track Inspection and Conditions Technical Memorandum and by CSX indicating that track should be replaced and signals with Positive Train Control (PTC) installed. Detailed conceptual drawings of the alignment and infrastructure improvements were prepared and made a part of the Report as an appendix.

The consideration of Extension stations included an assessment of six locations that were either identified in the NOACA Request of Proposals or were suggested by Project Partners during the Study. The assessment concluded that three station locations should advance for further evaluation: Harvard Avenue, Steelyard Commons, and Downtown Cleveland. A number of parties were involved in the station location discussion, especially regarding the Downtown location. Two station locations – Steelyard Commons and Downtown Cleveland – were recommended as part of the proposed opening day service.

1.3.1.3 Operating Plan

The operating plan defined a conceptual service for the Extension that was integrated with service currently provided by CVSR. The plan assumed that, with the addition of the Extension, the CVSR excursion service would use two concurrently operated trains along the corridor: 1) Akron Northside-Boston Mill and 2) Peninsula-Downtown

Cleveland. Annual operating metrics were developed, which were used as inputs to the estimation of Operating & Maintenance (O&M) Costs.

1.3.2 Estimated Costs

Costs were estimated for the initial capital investment and for annual ongoing operations.

1.3.2.1 Capital Costs

Capital costs were developed using the Federal Railroad Administration’s (FRA) Standard Cost Categories (SCC) Budget Tool. Capital costs were estimated at \$194.1 million in 2025 dollars. This cost would be expected to rise an estimated 16 percent for a 2032 start of service. The estimated cost per mile was \$21.1 million.

1.3.2.2 Operating & Maintenance Costs

Operating and Maintenance (O&M) costs were developed based on a set of assumptions and a methodology using historical operating costs provided by CVSR. Costs were estimated for two scenarios: 1) baseline and 2) increased service for the Extension. Baseline costs were adjusted to account for CVSR transition to paid train crews from the practice before 2024 of volunteer crews. Also, starting in 2026, CVSR will be responsible for maintenance of right-of-way, which currently is handled by the National Park Service (NPS). Costs associated with operations on CSX-owned track included an estimated range, though the ultimate cost would be the result of negotiations. Costs for the increased service scenario were based on the service measures developed from the Operating Plan.

Annual estimated O&M costs were:

	Annual Costs in 2025\$, Millions
Baseline Conditions	\$6.0 M
Baseline with Paid Crews & ROW Maintenance	\$8.5 M
Increased Service – Low	\$14.8 M
Increased Service – High	\$15.9 M

1.3.3 Environmental Screening

The Environmental Screening consisted of desktop analysis of publicly available information of existing environmental conditions within the study area. A purpose and need statement was prepared. Thirteen categories of environmental concern were evaluated. The analysis concluded that the potential for adverse impacts due to the implementation of the Project would appear to be limited. Assuming these conclusions are valid using the information presented, the expected environmental NEPA Class of Action would be a Categorical Exclusion (CE), should the Project advance to development.

1.3.4 Market Assessment

The Market Assessment task provided information on the strength of the Northeast Ohio market to support the extension of CVSR service. The report includes sections that addressed the following:

- Socioeconomic Analysis - demographic and economic data of the 18-county area of Northeast Ohio.
- Marketplace Factors - research on other tourist railroads, rail-themed attractions, and other major attractions in the Greater Cleveland metro area.
- Corridor Trip Flows - documents current travel patterns in the existing CVSR and the Extension corridors to assess the strength of the travel market to support the proposed Extension.
- Cuyahoga Valley National Park - summarizes the development of CVNP, principal attractions, and information on visitation.

1.3.5 Ridership

This task provides information on the passenger demand for service on the Extension, a key metric on the feasibility of the improvement. Four areas of research are provided in the Ridership Report, including,

- Review of potential travel markets that could be served by the Extension,
- A summary of trends and characteristics of the current CVSR ridership,
- Results of a survey of CVSR customers conducted for the Feasibility Study, and
- Development of a methodology and application to forecast Extension ridership.

Extension ridership forecasts for 2040 showed an increase in ridership ranging from 19 to 32 percent above the modeled no-build ridership. The forecasts assumed that the Extension would be served by the two stations recommended for opening day service- Steelyard Commons and Downtown Cleveland –and not Harvard Avenue.

1.3.6 Regional Economic Impact

The Regional Economic Impact task provided an analysis of the economic impacts that the Project could have on the two counties directly served by CVSR and the Extension (i.e., Cuyahoga and Summit) and the State of Ohio. The analysis used the Regional Input-Output Modeling System to estimate impacts. Key modeling inputs were capital costs, O&M costs, and monetized impacts from reduced miles traveled to access a station.

The Extension has the potential to be a strong economic stimulator to Cuyahoga and Summit Counties and more so to the State of Ohio as shown by the following measures expressed in 2024 dollars.

	Cuyahoga & Summit Cos.	State of Ohio
Direct Impact	\$331 M	\$331 M
Job-Years	2,333	3,933
Labor Income	\$140 M	\$232 M
Value Added	\$328 M	\$396 M
Output	\$602 M	\$735 M
Taxes	\$73 M	\$89 M

1.3.7 Benefit/Cost Analysis

The Benefit/Cost Analysis (BCA) served to determine whether the Extension’s monetized contributions to the region’s economy justify the costs. The BCA followed the USDOT’s Benefit-Cost Analysis Guidance for Discretionary Grant Programs. Benefits, disbenefits, and additional costs were calculated by comparing the “Build” scenario against the “No-Build” scenario.

Seven categories of Project benefits were identified and monetized for a 20-year period and expressed in 2024 dollars. Project costs included both capital and O&M in 2024 dollars. The calculated benefit/cost ratio (BCR) was 0.54. Much of this comparatively low ratio was due to the high capital costs, the relatively long period of large capital expenditures before benefits begin to accrue, and ongoing O&M cost increases.

The quantitative BCA demonstrates a shortfall of discounted benefits relative to discounted costs. The report notes that a number of qualitative benefits not included in the BCA calculations would be generated by the Extension Project, including increased tourism, improved access to the National Park, social equity, and enhanced educational opportunities.

1.3.8 Financial Analysis and Funding Opportunities

This report provides a financial analysis for implementing and operating the Extension and identified potential capital and operating cost funding sources. The financial analysis was used in forecasting cash flows for the Project Development/Construction phase as well as the 20-year period of operations. Components in the cash flow analysis

included capital costs, O&M costs, and revenues. The financial analysis determined that additional revenues, beyond that of the baseline revenue forecast, would be needed to build and operate the Extension.

As a follow-on to the need to identify and secure funding, potential sources were identified and reviewed. These included Federal discretionary grant programs, Federal non-discretionary grants, state, and other sources, including, for example, private foundations. Pursuing multiple avenues for funding was suggested. Though the Project may not be competitive for some traditional Federal passenger rail discretionary funding programs due to expected lower BCA results, other funding sources remain open to the Project.

1.4 Next Steps

This technical study has made several conclusions, including, 1) the Extension is feasible, 2) capital improvements require input from CSX, 3) the BCR could be improved if capital costs are reduced, and 4) the extended service would add qualitative benefits not captured in the BCA.

To answer open issues left from the Feasibility Study, to build community and stakeholder support, and to set up for the Project Development phase, suggested follow-on steps were suggested, including:

- Identify Project champions,
- Establish a Working Group,
- Engage railroads (CSX and NS) and private property owners,
- Develop scope, budget, timeline for next phase,
- Build Project support, and
- Pursue grant opportunities.

2. Study Background and Objectives

The Cuyahoga Valley Scenic Railroad (CVSR) provides a unique way to experience the Cuyahoga Valley National Park (CVNP). CVSR operates scheduled excursion train service between the Akron Northside Station in Akron to the Rockside Station in Independence, Ohio, through the CVNP.

This study assessed the feasibility of extending the CVSR from the Rockside Station north to Downtown Cleveland. In addition to a terminal station in Downtown Cleveland, intermediate stations were evaluated at Steelyard Commons and Harvard Avenue in Cleveland. The Extension is proposed to use the existing CSX Willow Industrial Track as well as a short stretch of railroad owned by the National Park Service (NPS).

2.1 Historic Context

2.1.1 Legacy Railroads

The historic transportation link between Akron and Cleveland was the Cuyahoga River. In 1827, the Ohio and Erie Canal was opened to further serve the commercial development of the cities. Railroads later supplanted the Canal.

The Valley Railway Company was incorporated in 1871 to connect Cleveland, Akron, and Canton, Ohio. The first passenger train ran in 1880. The railroad was reorganized in 1895 as the Cleveland Terminal and Valley Railroad Company (CT&V). The Baltimore and Ohio Railroad (B&O) took over operation of the CT&V in 1909, and the company was merged with the B&O in 1915. The B&O ceased passenger service on the line in 1962. The Chesapeake and Ohio Railway (C&O) took control of the B&O in 1963. The two railroads retained their separate identities until merging into the Chessie System in 1973. The Chessie System merged with the Seaboard Coast Line Railroad in 1980 to form CSX.

In 1984, CSX announced it would abandon the Valley Railway track between Akron and Independence. The National Park Service (NPS) purchased the 26 miles of trackage to add to the Cuyahoga Valley National Recreation Area in 1987, with the NPS paying \$2.5 million for the right-of-way. The northern terminus of the NPS-owned track is at Granger Road and Interstate 77 in Independence, Ohio, north of which CSX continued ownership of the track to Downtown Cleveland. The southern terminus of the Park Service's ownership is at the Akron Northside station. In 2000, CSX sold the 24 miles of track between Akron and Canton to Akron's METRO Regional Transit Authority. CSX still owns and uses for freight the remainder of the Valley Railway (i.e., Independence to Downtown Cleveland), which is called the Cleveland Terminal and Valley Subdivision.

2.1.2 Cuyahoga Valley Scenic Railroad

In 1967, in response to community interest for passenger train operations to be resurrected on the Valley Division, various organizations proposed a tourist railroad operation be allowed on the right-of-way, which the B&O initially refused. Backers for a scenic railroad continued to advocate for the service, and in 1975, the Chessie approved. The Cuyahoga Valley Preservation and Scenic Railway Association, now known as the Cuyahoga Valley Scenic Railroad (CVSR), began operating on the Cuyahoga Valley Line between Akron and Independence.

CVSR has operated under a cooperative agreement with CVNP since 1989, with CVNP responsible for ownership and maintenance of the track along with associated infrastructure, and CVSR responsible for owning and maintaining the rolling stock and operating the rail service. Starting in 1991, CVNP provided an annual operating subsidy of \$50,000 to CVSR, which ended in 2018.

2.1.3 Cuyahoga Valley National Park

The area was designated as the Cuyahoga Valley National Recreation Area in 1974 and became a national park in 2000. Proximity to Akron and Cleveland was one of the factors that led to the establishment of the Park as a part of the Parks to People initiative of the early 1970s, which sought to create parks in or near urban areas for people who might not be able to travel to the large national parks in America's west. CVNP is one of only a few national parks to be served by passenger rail.

2.2 Previous Studies to Extend CVSR Service

This feasibility study was informed by prior studies to extend CVSR service northward to Downtown Cleveland.

2013 Volpe CVSR Comprehensive Rail Study, Volpe, 2013 – The report noted that an extension to Cleveland would make CVNP the only national park with rail access from a major metropolitan center. Cleveland service could increase Cleveland-based excursion ridership as well as serve Cleveland-focused events and destinations. The report noted that past negotiations with CSX have not been fruitful due to liability concerns. It suggested that, if the opportunity arose, CVSR and CVNP should continue to explore the possibilities with CSX to purchase the line to Cleveland, transferring the liability to CVSR and providing operational rights for freight trains to CSX. This would require a significant capital investment and increase CVSR operating costs.

CVSR Service to Downtown Cleveland, Stone Consulting, 2008 – This study highlighted the issues to extend CVSR service, including defining a role and purpose for the expanded service. Stations at Tower City and Steelyard Commons were recommended. A service plan recommended: 1) use of the line to serve sports/cultural events as well as school groups and 2) as an extension of CVSR excursion service. The report highlighted the difficulties associated with proposing a passenger rail operation on a freight railroad, especially due to liability concerns of the railroad.

Downtown Cleveland Extension Feasibility Study, Parsons Brinckerhoff, 2006 – This study identified ways to facilitate use of the CSX line for the extended CVSR service. Recommendations included upgrades of track, restoration of the second track on moveable Bridge 460 over the Cuyahoga River, and segregating freight and passenger operations where possible. A program of suggested next steps was provided.

Alternate Route Analysis, Extension of Passenger Rail Service to Downtown Cleveland, NPS & CVSR, 2000 – This report focused on identifying and evaluating railroad alignments that could be considered for the extension to Downtown Cleveland. Six alternative alignments were identified. The CSX Willow Industrial Track was deemed as the logical and most effective way to extend CVSR service to Cleveland.

CVSR Master Plan, URS, 1994 – While this report covered a variety of issues related to CVSR, of particular interest was the proposed Akron to Cleveland excursion service, which was recommended to include long-distance service between the two cities as well as short excursions originating from Akron or Cleveland. The CSX alignment was recommended for the Cleveland extension.

2.3 Project Understanding

The Feasibility Study scope included an evaluation of extending CVSR service from Rockside Station to Downtown Cleveland, using the existing CSX's Willow Industrial Track as well as a short stretch of railroad owned by the NPS. A tourist-type service was to be assumed, operated by CVSR. Three potential station locations in Cleveland were to be evaluated: Downtown, Steelyard Commons, and Harvard Avenue. A map of the Extension corridor is shown on Figure 2-1.

2.4 Study Objectives

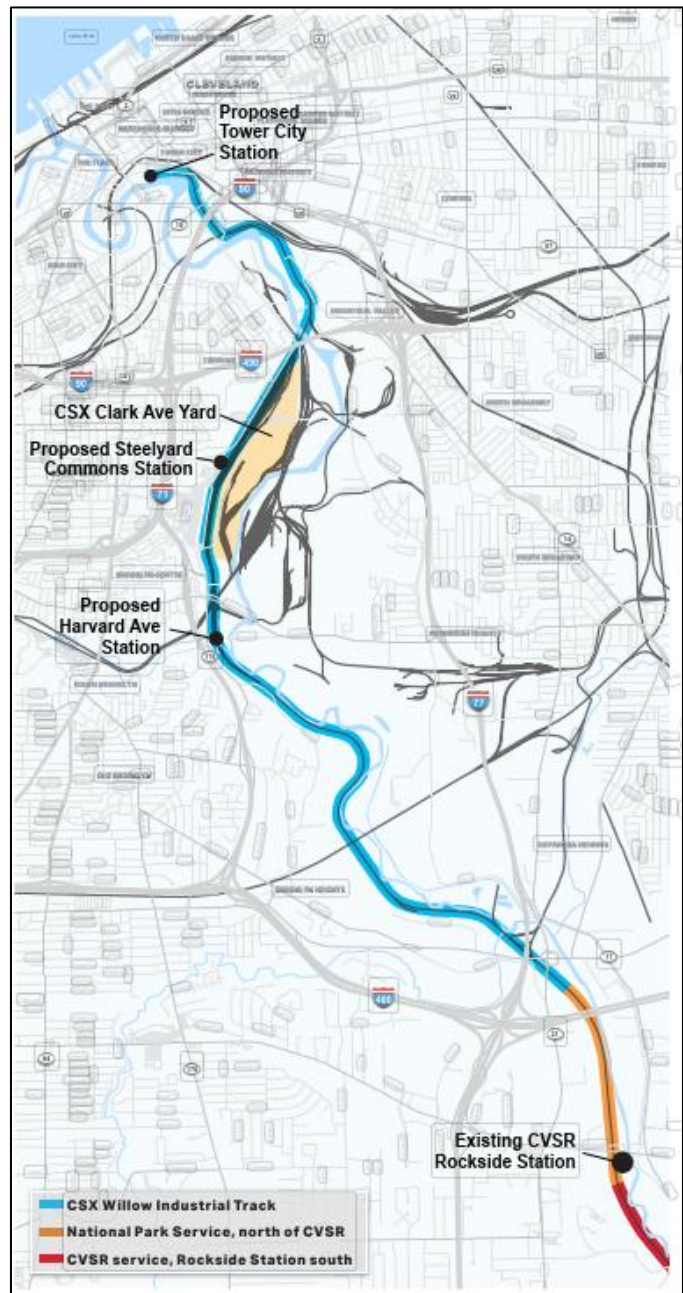
The Study's objectives were focused on answering key questions posed in the NOACA Request for Proposals. These questions included:

- Should CVSR service be extended to Downtown Cleveland?
- What is the most appropriate route and related technical considerations?
- What will be the approximate cost to implement the Extension, including the capital cost to implement as well as the ongoing costs to operate and maintain?
- Are there grant programs that the Extension Project would be eligible for?

- What would the likely NEPA class of action for future environmental analyses be based on an environmental screening?
- How would the Extension service affect the market reach of the CVSR?
- What would be expected future ridership associated with the Extension?
- What economic impacts and benefits would be derived from the implementation of the Extension?

The Study was to provide an overview of the CVSR, its operations as well as direct and indirect economic impacts and benefits to Northeast Ohio. The Study was to also document access improvements to the CVNP for disadvantaged communities in the Cleveland area. Results of the study were to be used to educate public and private partners of the economic and transportation benefits of the Extension. The Federal Railroad Administration's (FRA) Benefit-Cost Analysis (BCA) tool was applied to identify, quantify, and compare expected benefits and costs. BCAs are increasingly used as a prerequisite to receiving financial assistance under Federal investment programs.

Figure 2-1. CVSR Extension Alignment



3. Stakeholder Engagement

The Study incorporated multiple formats for engaging organizations, agencies, and groups that can add varied perspectives on the feasibility of the CVSR Extension. The different layers of entities participating in the Study are divided into three categories, including:

- Client – the contractual entity responsible for the study,
- Project Partners – entities that will have a direct impact on decision-making, will have a role in the implementation/operation of the Extension service, and who have contributed economically to the Study, and
- Stakeholders – entities having a range of influence and interest in the Study, from facilitating the use of required infrastructure (e.g., CSX), to providing necessary approvals (e.g., station land use/zoning), to assisting in funding and financing the Project (e.g., coordination of improvements with developers), to providing information on the travel markets that would be served, to entities that can serve as advocates for the Project.

3.1 Client

The Northeast Ohio Areawide Coordinating Agency (NOACA) is the Cleveland-based metropolitan planning organization (MPO) for the five-county (Cuyahoga, Lorain, Medina, Geauga, and Lake) region of Northeast Ohio. In addition to serving as AECOM's contractual client, NOACA has the role of leading transportation planning and funding for major initiatives in the region.

3.2 Project Partners

Cuyahoga Valley Scenic Railroad (CVSR) – The CVSR operates the tourist excursion railway and is a private sector, nonprofit 501(c)3 organization. Service is operated in partnership with Cuyahoga Valley National Park, who owns the rail right-of-way and infrastructure. CVSR would operate the extended service.

National Park Service (NPS) – The NPS manages the Cuyahoga Valley National Park (CVNP), which attracted 2.9 million visitors in 2023. The NPS owns the rail right-of-way and infrastructure used for the current CVSR service, as well as approximately 1.5 miles of right-of-way north of the Rockside Station, the northernmost station of the current service. The NPS holds a cooperative agreement contract with CVSR to provide the rail service. NPS indicated that they do not have a desire to take on additional track ownership and associated infrastructure maintenance that would be required as part of the proposed service Extension to Downtown Cleveland. The CVNP would be the primary destination of riders of an extended CVSR service.

Cleveland Metroparks – Cleveland Metroparks preserves and manages over 25,000 acres of Northeast Ohio natural resources and provides programs and passive recreation across the region. The proposed Extension alignment passes through a portion of the Ohio & Erie Canalway Reservation, west of the CanalWay Center, and is adjacent to a portion of the Metroparks south of the Furnace Ridge Overlook and north of the BP Pipeline refinery in Cleveland. Opportunities for improved access to the Metroparks' parks and trails would be a benefit of the proposed Extension.

Canalway Partners – Canalway Partners is a non-profit cultural heritage organization that serves as a catalyst for projects and programs within the Ohio & Erie Canalway National Heritage Area in Cuyahoga County. The proposed Extension of CVSR service would complement the parallel Ohio & Erie Canal Towpath Trail that was extended north to Downtown Cleveland in 2020. The Towpath Trail is also proximate to the Steelyard Commons area, which could host a CVSR station.

Cleveland-Cuyahoga County Port Authority - The Port of Cleveland is a bulk freight and container shipping port at the mouth of the Cuyahoga River on Lake Erie. It is the third-largest port on the Great Lakes and supports an estimated 22,000 jobs and \$4.7 billion of total economic impact in the region. The Port is interested in knowing if improvements

to the CSX Willow Industrial Track may impact freight connections with maritime shipping in the Port area. The Port serves as a financing partner on regional economic development-oriented projects.

City of Cleveland – The City is the county seat of Cuyahoga County and had a population of just over 362,000 in 2022. Approximately 5.8 miles of the 10.8 mile Extension is within the boundaries of the City as well as the three potential stations. The City will be a primary reviewer/approver of the stations' planned infrastructure, including parking and vehicle/pedestrian access improvements. The City played a key role in siting the northern terminus of the Extension, and in exploring opportunities for integrating the station within the planned Cuyahoga Riverfront Master Plan.

Cuyahoga County – Cuyahoga County is the second most populous county in Ohio with 1.2 million residents in 2022. There are 59 municipalities, villages, and townships in Cuyahoga County, the largest being the City of Cleveland. The entire Extension corridor is within Cuyahoga County.

Greater Cleveland Regional Transit Authority (GCRTA) - GCRTA provides transportation services for 150,000 to 200,000 customers on a typical weekday, through a variety of services, including: local bus, bus rapid transit, light rail, heavy rail, paratransit, and vanpools. It is anticipated that GCRTA could provide connecting service to the extended CVSR stations, including access to and egress from.

3.3 Other Public & Non-for-Profits

Ohio Department of Transportation (ODOT) – Staff from ODOT District 12 provided input on locating the Downtown Cleveland station under the Lorain-Carnegie and Innerbelt Bridges.

US Army Corps of Engineers (USACE) - Buffalo District – USACE staff briefed the Study team on the radioactive cleanup of the former Harshaw Chemical property proximate to the potential station at Harvard Avenue.

West Creek Conservancy (WCC) – The Study team explored potential synergy of WCC properties along Extension and sought advice on acquiring real estate in corridor.

3.4 Private Sector Entities

CSX Transportation (CSX) - As the owner of the Willow Industrial Track, which the CVSR is proposed to use, CSX is a critically important stakeholder. The Study sought to understand if and how an extended CVSR can be provided without negatively affecting freight operations. The Team was to engage CSX through their Public Projects process. However, CSX declined to participate in the Study, and did not authorize the Study team to conduct a corridor inspection. Rather, CSX provided their expectations for infrastructure upgrades that would be required for a future arrangement of a shared freight/passenger excursion service operation.

First Interstate Properties, LTD – First Interstate was the developer and is the owner/operator of the Steelyard Commons shopping center, a possible location of a station on the Extension.

Corix/Cleveland Thermal – Corix is the owner of the thermal energy plant that provided steam heat for buildings in Downtown Cleveland and ceased operations in 2016. When in operation, the plant received coal deliveries from CSX trains backing into the site from the north. The site is between the CSX tracks and Canal Road, north of the Eagle Avenue Bridge.

Bedrock Cleveland – Bedrock is a real estate developer leading the implementation of the Cuyahoga Riverfront Masterplan, a comprehensive multi-year plan that reimagines and transforms 35 acres along the downtown Cleveland riverfront. A Downtown CVSR station area was proposed conceptually on property owned by Bedrock identified in the Master Plan as Parcel 19. The site is south of the Cleveland Cavaliers/Cleveland Clinic Global Peak Performance Center, on which construction began during the Study. Engagement with Bedrock involved participation by representatives from their Master Plan consultants, including MKSK, Nelson\Nygaard, and Osborn Engineering.

3.5 Summary of Engagements

Table 3-1 shows the number of meetings held with Project Partners and other entities during the course of the Study. Most meetings were virtual, although several were hybrid, virtual and in-person. Working Group meetings were held most frequently, which included NOACA, CVNP, and CVSR. Two of the meetings involved site visits to the Downtown and Steelyard Commons station sites. Not every agency attended every meeting, although all invited participants received meeting notes. Working Group meetings of NOACA, CVSR and NPS were scheduled every two weeks, Partner Meetings every 6 weeks.

Table 3-1. Summary of Feasibility Study Meetings

Agency / Firm	Meetings				
	Kickoff	Partners	Working Group	Coordination	Station Planning
Northeast Ohio Areawide Coordinating Agency (NOACA)	1	6	15	3	6
Cuyahoga Valley Scenic Railroad (CVSR)	1	6	15	4	4
National Park Service (NPS)	1	6	15	2	4
Cleveland Metroparks	1	6		1	
Canalway Partners	1	6			
Cleveland-Cuyahoga County Port Authority	1	6			
City of Cleveland	1	6			6
Cuyahoga County	1	6			1
Greater Cleveland Regional Transit Authority (GCRTA)	1	6		1	
Ohio Department of Transportation (ODOT)					1
US Army Corps of Engineers (USACE) - Buffalo District					1
West Creek Conservancy (WCC)				1	
CSX Transportation (CSX)				*	
First Interstate Properties, LTD					1
Corix/Cleveland Thermal					1
Bedrock Cleveland					4
MKSK (Bedrock consultant)					2
Nelson\Nygaard (Bedrock consultant)					1
Osborn Engineering (Bedrock consultant)					1

*Communication via email, meeting scheduled but cancelled by CSX.

4. Technical Work Summary

The Study included eight technical tasks listed below (two other tasks covered the non-technical work, *Project Management Plan* and *Stakeholder Outreach Plan*). This section summarizes each of the technical tasks, highlighting principal findings. Note that the summary text is drawn for the completed task deliverables; additional detail on the individual topics is included in the Task Report documents.

1. Conceptual Engineering/Alignment Analysis
2. Capital and O&M Cost Estimates
3. Environmental Screening
4. Market Assessment
5. Ridership
6. Regional Economic Impact Analysis
7. Benefit/Cost Analysis (BCA)
8. Financial Analysis and Funding Options

4.1 Conceptual Engineering/Alignment Analysis

The task to identify and evaluate the infrastructure improvements that would be needed to operate passenger rail service on the extension corridor involved three separate sub-tasks, 1) Track Inspection and Conditions, 2) Plan Views of Track Alignment and Summary Engineering Report, and 3) Operating Plan.

4.1.1 Track Inspection and Conditions

This task documented existing conditions of the Extension corridor from the CVSR Rockside Station north to Downtown Cleveland. The rail alignment assessed was the CSX Willow Industrial Track and the 1.5 miles of NPS-owned trackage north of Rockside Station. The decision to use this alignment was based on previous studies (see Section 2.2), which concluded that this was the shortest, most direct route, and would require agreement with only one railroad ownership interest.

The proposed plan for evaluating the corridor was to obtain relevant information from the CSX through the railroad's Public Projects process and to request a Right of Entry permit to conduct an on-site inspection of the Willow Industrial Track. Following numerous attempts to engage the CSX, the railroad indicated that they would not participate in the Study and would not provide a Right of Entry onto railroad property for the inspection to be performed. CSX provided capital investment recommendations to the Study, specifically that new track, signals and Positive Train Control (PTC) should be assumed. These recommendations lessened the need for assessing the existing track condition.

Corridor infrastructure conditions were instead based on the review of previous studies and reports, CSX Valuation Maps of the Willow Industrial Track, and publicly available aerial mapping and imagery.

Separate assessments of infrastructure were made for: 1) NPS segment between Rockside Station and Willow and 2) CSX from Willow to Downtown Cleveland (see map on Figure 2-1).

4.1.1.1 National Park Service Alignment

A summary of primary infrastructure elements of the 1.5 miles of NPS segment includes:

- **Track** – single track mainline with no turnouts or sidings with a maximum operating speed of 10 mph.
- **Signals** – none.
- **Structures/Bridges** – none.
- **Highway/Rail Grade Crossings** – one public highway at-grade crossing at Old Rockside Road and one private crossing at MP 65.00.
- **Rail-to-Rail Crossings** – none.

4.1.1.2 CSX Transportation Alignment

The CSX Willow Industrial Track from MP 66.29 to MP 74.51 (approximately 8.2 miles), connecting with the NPS-owned trackage at Willow at MP 66.29. The CSX operates freight rail service in/out of their Clark Avenue Yard in Cleveland, serving two customers at Willow. Passenger trains do not operate on the CSX Willow Industrial Track.

- **Track** – currently designated as FRA Excepted Track, which limits freight trains to a maximum of 10 mph and no occupied passenger trains can be operated. The existing track between Willow and RD Tower at MP 70.2 is single track with a number of secondary tracks located off the Willow Industrial Track; secondary tracks do not appear to be in service. North of RD Tower to the north end of the Clark Avenue Yard includes a single track with several yard tracks and sidings along the west side, particularly adjacent to Clark Avenue Yard. North of Clark Avenue Yard to the end at MP 74.51, the alignment is on a single track with no usable sidings. The track crosses the Cuyahoga River navigation channel at MP 72.46 via a lift bridge (rolling bascule) that is normally in the up position. In 2023, CSX filed for abandonment of the northern 1.3 miles of the Willow Industrial Track, from MP 73.21 to MP 75.51. As stated in the Surface Transportation Board (STB) filing proceedings, CSX intended to sell the abandoned track to the City of Cleveland.
- **Signal** – there is no railroad signal system in place along the CSX Willow Industrial Track except at the two Norfolk Southern (NS) diamond crossings, at RD Tower at MP 70.2 and at MP 72.4 near W. 3rd Street at the north end of Clark Avenue Yard. The signals that control these crossings are currently under the control of CSX and NS train crews operating per the applicable Railroad Employee Timetable instructions.
- **Structures/Bridges** – there are two CSX undergrade bridges that span waterways, Bridge 457 over West Creek and Bridge 459 over Big Creek. Bridge 460 over the Cuyahoga River is a lift (rolling bascule) bridge. Recent CSX Bridge Inspection Reports were not available.
- **Highway/Rail Grade Crossings** – there are four public roadway crossings: Harvard Avenue, Old Denison Road, Beltline Avenue, and W. 3rd Street. Seven private crossings were documented.
- **Rail-to-Rail Crossings** – there are two crossing of the NS with the CSX Willow Industrial Track, at RD Tower (MP 70.20) and at W. 3rd Street (MP 72.24).
- **Passenger Rail Stations** - none.

CSX serves two customers in the Willow area: Ash Grove Cleveland Terminal (cement) and Manufactures Wholesale Lumber. Both customers are generally served twice a week, generally on Sunday and Tuesday. CSX delivers raw materials to both, not finished products.

There are two other customers served by the CSX that are not located on the Willow Industrial Track but use the Willow Industrial Track at the north end of Clark Avenue Yard to switch interchange cars into and out of the yard from the facilities. The industries are Cleveland-Cliffs Steel Mill and CSX Transflo (transload bulk commodities between rail car and truck). Both customers are located east of the north end of Clark Avenue Yard and are generally served daily by CSX.

4.1.1.3 Cuyahoga Valley Scenic Railroad

Another element of rail infrastructure relevant to the proposed Extension is CVSR's Fitzwater Maintenance Yard in Brecksville, Ohio, where locomotives and passenger cars are serviced, maintained, and stored. CVSR's vehicle storage is sufficient for the current operating condition.

The deliverable for this task is *3-1. Track Inspection & Condition Technical Memorandum*.

4.1.2 Plan Views of Track Alignment & Summary Engineering

The *Plan View of Track Alignment and Summary Engineering Report* covers the engineering and planning assessments to identify the improvements necessary to introduce passenger trains to the Extension corridor. Infrastructure improvements described covered track, signals, bridges, grade crossings, stations, yard/maintenance facility, and rolling stock. Improvements were quantified to serve as inputs to the estimation of capital costs. The development of improvement recommendations was informed by the *Track Inspection and Conditions Technical Memorandum*, which was completed without CSX input, aside from assuming replacing track and installing signals with Positive Train Control (PTC). A companion document (Appendix A) includes detailed drawings of alignment and

infrastructure improvements. Drawings are at a scale of 1" =100' and cover 32 sheets, which are ordered from north to south.

4.1.2.1 Track

Recommendations for track improvements covered mainline track and sidings.

- **Mainline Track** – The existing single-track of the Willow Industrial Track as well as the NPS trackage will be replaced with new track, including rail, ties, ballast and other track materials (OTM). The upgraded trackage may be capable of higher speeds than originally anticipated but will be maintained to the level of FRA Class 2 (30 mph maximum speed for passenger trains) based on CVSR operating speeds. Also to be upgraded will be an existing track on the west side of the main in the vicinity of Clark Avenue Yard, which will be extended across Bridge No. 460. The extended siding will reconnect to the Willow Industrial Track north of the bridge. This will allow the simultaneous operation of CVSR service and the CSX switching operation for Transflo and Cleveland-Cliffs at Clark Avenue Yard.
- **Sidings** – Existing sidings at Steelyard Commons and in Clark Avenue Yard will be upgraded to allow for a maximum of 30 mph operation. The upgrade of the sidings will include rail, ties, ballast, and OTM. New sidings of various lengths will be installed for the new stations at Harvard Avenue, Steelyard Commons and Downtown Cleveland (note that the Harvard Avenue siding will not be included if it is decided to defer implementation of this station). New sidings will consist of new sub ballast, ballast, ties, rail, OTM and surfacing, as well as #10 turnouts.

4.1.2.2 Structures

An allowance for the rehabilitation of the two undergrade bridges (No. 457 and Br. No. 459) has been assumed without benefit of knowing the current condition since the CSX did not allow inspection or provide recent bridge inspection reports. The rehabilitation cost for the bascule Br. No. 460 is expected to be higher due to the electrical and mechanical components needed to operate the lift structure and the re-installation of the second track for passenger train operations. Any improvement would need to be permanently fixed to the bridge before lifting, and Bridge Permits would be required from the United States Coast Guard (USCG) and an Individual Permit from the United States Army Corps of Engineers (USACE). The construction schedule for the work would need to be coordinated with the regulatory agencies as well as with businesses or other stakeholders that would be impacted by the bridge being in the down position, particularly Cleveland Cliffs.

4.1.2.3 Rail Signaling

Correspondence from CSX indicated that the Study should assume that new signals with PTC would need to be installed. Based on CSX Valuation maps and aerial mapping, the corridor analysis determined that, at a conceptual level, signalization with PTC requirements could be met by implementing a centralized traffic control (CTC) system between Willow and the north end of the line. CTC is a rail signaling system that is controlled by a dispatcher and uses a combination of Control Points (CPs)/Interlockings and intermediate signal locations to control train movements. Controls and indications from the railroad signal system will be interfaced with CSX's railroad dispatch system. This improvement will also include equipping CVSR locomotives with CTC and PTC capabilities.

4.1.2.4 Highway Grade Crossings

Improvements to the five public grade crossings will include new track, new grade crossing surface, new roadway approaches, and new warning devices that are compatible with the new wayside rail signal system. Pavement markings and signage will be in accordance with the requirements of the Manual on Uniform Traffic Control Devices (MUTCD). The Study assumed that the automatic warning devices will be two-quadrant gates with mast-mounted flashing lights. Improvements to the eight private crossings will include new track, new grade crossing surface, new roadway approaches to the crossing, and new grade crossing signage in accordance with the Public Utilities Commission of Ohio (PUCO) requirements. Warning signs including crossbucks and stop signs are included in the capital cost estimate.

4.1.2.5 Rail-to-Rail Crossings

The two rail-to-rail crossings at RD Tower and W. 3rd Street will be upgraded with new diamond crossings and approach signals that are consistent with the new wayside signal system to be installed. The upgraded crossings will allow for continuous operation within FRA Class 3 trackage.

4.1.2.6 Stations

The consideration of new Extension stations included an assessment of six locations (see Figure 4-1) that were identified in the NOACA Request of Proposals (3 locations) or were suggested by Project Partners during the Study. The assessment concluded that the following three station locations should advance for further evaluation:

- **Harvard Avenue Station** - The southernmost station location evaluated is near the Harvard Avenue/CSX crossing. The site is 5.4 miles north of the Rockside Road Station. The surrounding area is primarily heavy industrial uses, major transportation infrastructure, and brownfields. Several advantages of the site include proximity to the Towpath Trail, connections to three Greater Cleveland Regional Transit Authority (GCRTA) bus routes, connections to east side neighborhoods via Harvard Avenue, and proximity to Cleveland Metroparks Zoo, two miles to the west.

The most significant factor in the evaluation of the Harvard Avenue location is the former Harshaw Chemical Company plant site which encompasses a significant portion of this area. During the summer 2024, the United States Army Corps of Engineers (USACE) Buffalo District began remediation of radioactive waste, which is expected to restrict reuse of the site until 2029 at the earliest.

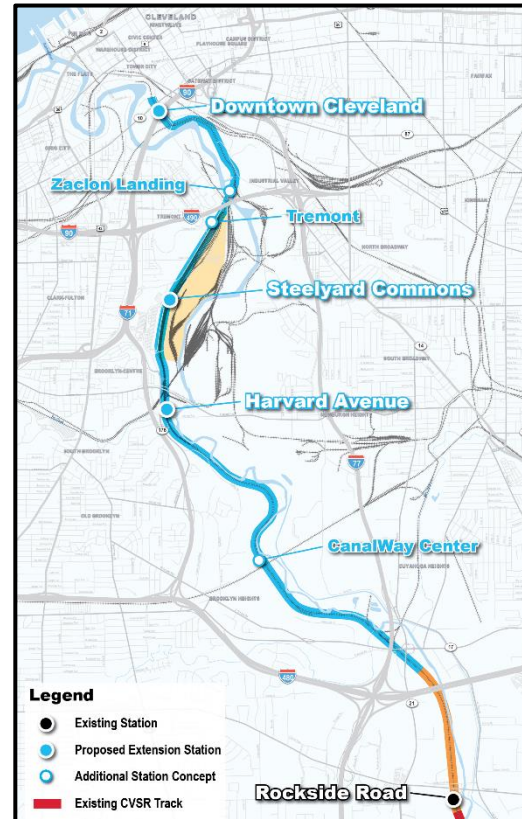
The remediation activities on the Harshaw property greatly reduced the options for a potential station location, limiting it to areas west of the CSX and north of Harvard Avenue. An approximately 2-acre privately-owned site currently used by an adjacent business as a parking lot/storage yard may be physically feasible for a station shelter, platform, and parking. However, given the existing conditions and future constraints around the Harvard Avenue site, as well as its proximity to the Steelyard Commons station site (1.2 miles to the north), the Harvard Avenue station location is not viewed as a practical option for the initial implementation phase of the Extension. This location should remain under consideration as a longer-term station opportunity that is accessible to both east and west side neighborhoods and capable of supporting a community-led vision for the redevelopment of the Harshaw Chemical site and other surrounding properties.

- **Steelyard Commons Station** - Located 1.2 miles from the Harvard Avenue Station location, Steelyard Commons is a popular retail shopping center, situated between major freeways (I-71 and OH-176). This transformational real estate initiative, which began in 2007, converted a massive former steel mill and brownfield site into a 120-acre shopping center. The Steelyard Commons location is adjacent to the Towpath Trail and offers direct access to major freeways, existing adjacent retail and dining amenities, connections to three GCRTA bus routes, and free parking.

The original Steelyard Commons development plan envisioned a CVSR station at the northeast corner of the shopping center. First Interstate Properties – Steelyard Commons’ owner and management firm – noted that it remains interested in a station as part of the shopping center and expressed willingness to support the efforts of the Study along with future efforts for the service Extension. The site already includes several amenities that could support a future station, including: an 80-space parking area dedicated for CVSR passengers and Towpath Trail users, public restrooms located in an adjacent retail out-building, and the Steel Heritage Center – located at the proposed station site that includes several outdoor interpretive exhibits that explore the City’s connection to the steel industry.

Figure 4-2 presents a conceptual layout of the station that will include sheltered waiting space for CVSR passengers just south of the Steel Heritage Center or just to the south or east of the dedicated parking lot. A

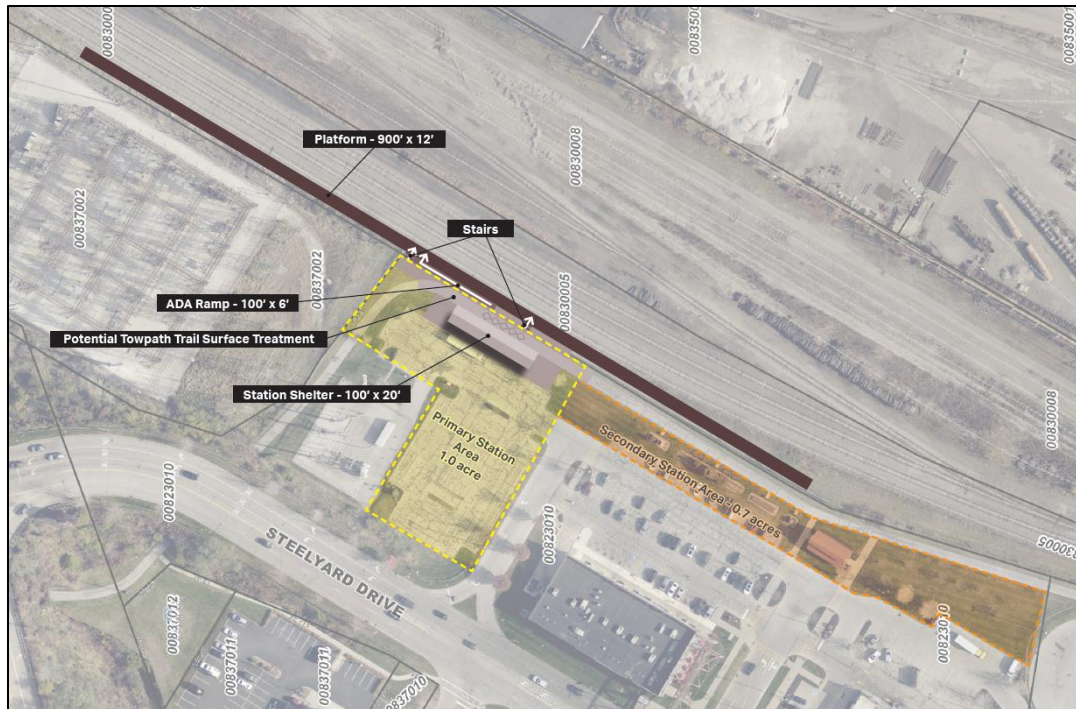
Figure 4-1. Station Locations Assessed



layout consideration will be placement of the platform on tangent track. Additional design considerations will need to address passenger accessways, as well as a safe pedestrian crossing of the Towpath Trail.

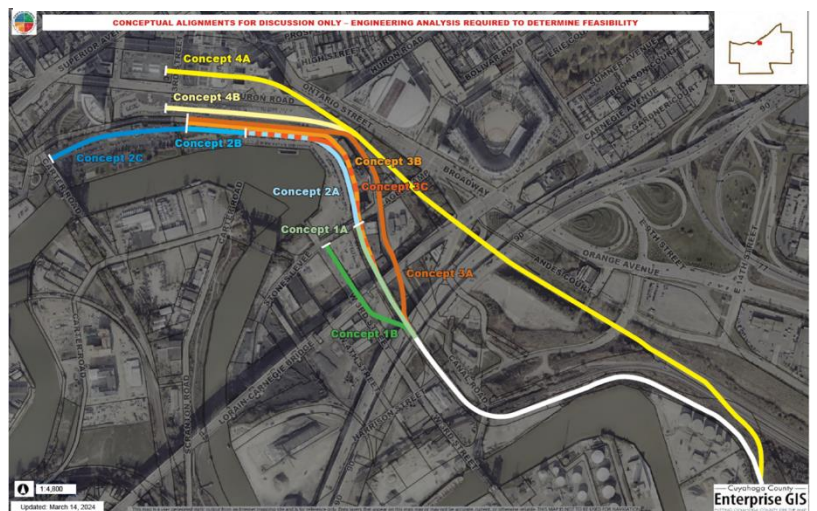
Because of its easy access to the highway system, the availability of parking, and a location immediately along several transit routes, Steelyard Commons is well positioned to serve as a station for riders accessing CVSR from areas throughout Cuyahoga County and beyond.

Figure 4-2. Conceptual Steelyard Commons Station Site Layout



- Downtown Cleveland Station** – Located 2.5 miles from the proposed Steelyard Commons station, the Extension’s northern terminus will be a key station, serving the core of the Cleveland area. Due to the significance and dynamic nature of the area around the proposed Downtown Cleveland station location, the Study thoroughly vetted alternative alignment and location options. A high-level desktop analysis was conducted of ten concepts, as shown in Figure 4-3. Through discussions with NOACA, Partners and real estate developer Bedrock Cleveland (Bedrock), nine of the ten concepts were deemed to be impractical and/or cost prohibitive due to various existing physical constraints, operational challenges, and planned development – most notably Bedrock’s Cuyahoga Riverfront Master Plan.

Figure 4-3. Downtown Cleveland Station Conceptual Alignments



A Downtown station area along the Concept 1A alignment emerged as the preferred alternative for this Study following several stakeholder meetings. Figure 4-4 presents the Conceptual 1A alignment with two station location options (i.e., Parcel 19 and ODOT parcels).

As part of these discussions, Bedrock shared a high-level station concept developed through their Cuyahoga Riverfront Master Plan work that proposed a station, platform, parking, and other complementary amenities on property owned by Bedrock, which is identified as Parcel 19 in their master planning work. Bedrock has continued to express support for the Extension and has noted Parcel 19 as the desired location for the future CVSR Downtown Cleveland Station in its Master Development Plan.

The Parcel 19 area totals approximately 1.2 acres with generally flat topography, which would allow for flexibility in siting and designing of a station building, platform, parking, and pedestrian/vehicular access from W. 3rd Street. Additionally, per ODOT, any improvements on the site would need to be located away from the Lorain-Carnegie Bridge to allow for access to perform inspections and maintenance. Figure 4-5 presents a conceptual site layout for the station on Parcel 19. Future environmental and engineering analysis along with formal agreements would be necessary to determine the ultimate design and configuration of the station area.

Figure 4-4. Downtown Station Concept 1A

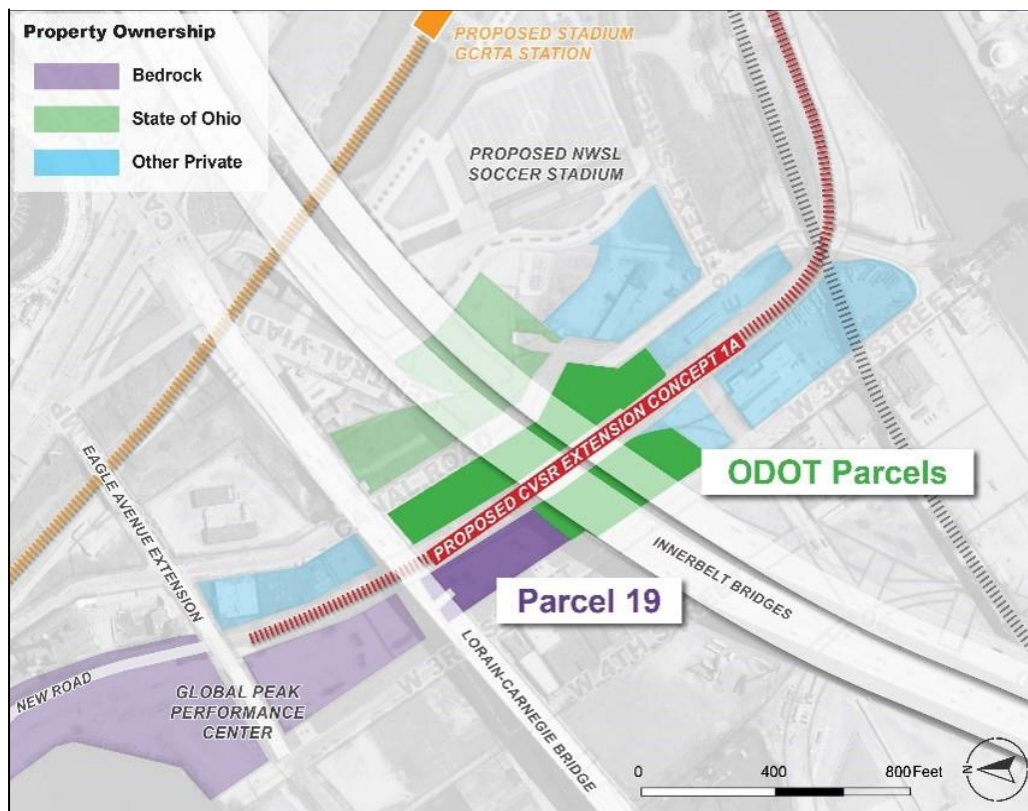
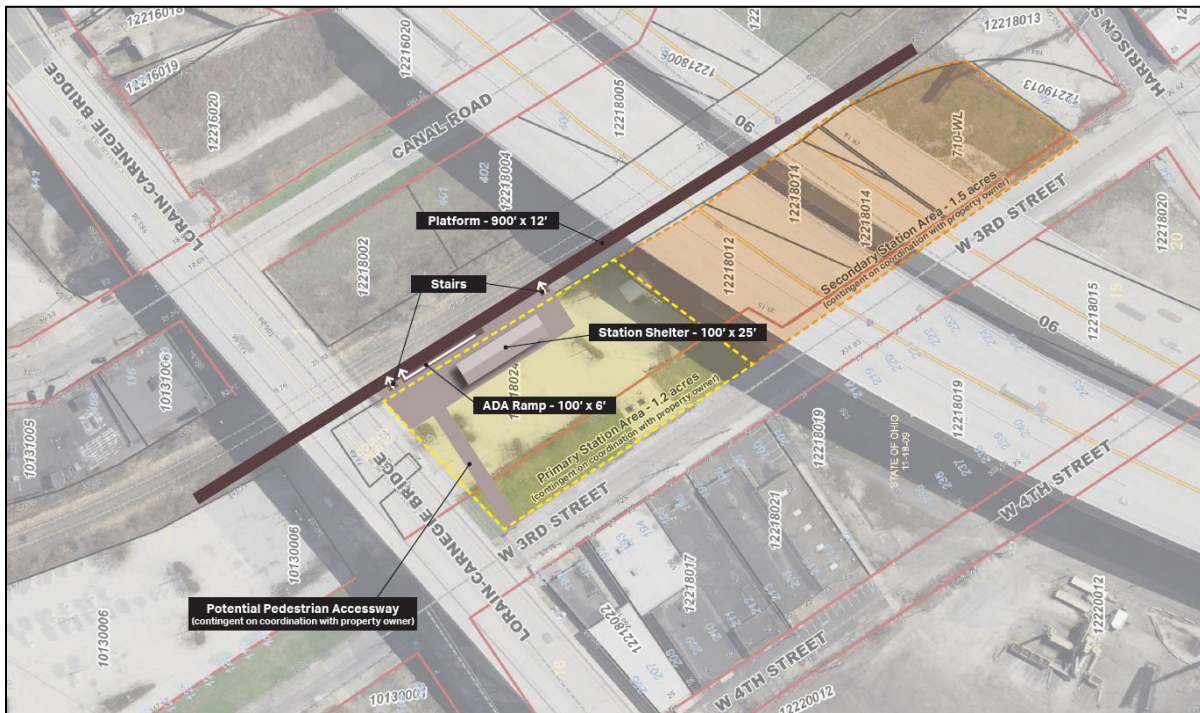


Figure 4-5. Conceptual Site Layout for Downtown Cleveland Station on Parcel 19



In addition to the privately-owned Parcel 19 location, the Concept 1A option provides access to several adjacent parcels owned by the Ohio Department of Transportation (ODOT) on the west side of the tracks (fronting W. 3rd Street). The ODOT parcels total approximately 1.5 acres and could serve as either an alternative station location to the Parcel 19 site or to provide supplemental station amenities, including parking. Use of the ODOT parcels would need to avoid the landing area of four of the Innerbelt Bridge piers. Additionally, any improvements made on the ODOT property would need to be sited in a way that allows access to the bridges for short- and long-term maintenance and repair needs. Under typical circumstances, ODOT would maintain fee ownership of the parcels while entering into a user agreement with CVSR or another entity for use of the property.

- **Station Design Considerations** - Existing passenger stations on the CVSR corridor are served with open-air shelters, low-level platforms, parking, and pedestrian access. Considerations for this Study proposed similar passenger accommodations for waiting space. Station facilities will similarly include parking, lighting, signage, and pedestrian access accommodations. A difference from current CVSR stations will involve use of ADA-compliant high-level passenger platforms at Extension stations.

4.1.2.7 Yard and Maintenance Facility Review

CVSR maintains and stores their locomotives and passenger cars at the Fitzwater Maintenance Yard in Brecksville, Ohio. It is understood that vehicle storage is sufficient for the current operating condition. There are no plans at this time to expand the Fitzwater Maintenance Facility other than installing a Wye Track to turn locomotives and passenger cars.

4.1.2.8 Rolling Stock

Table 4-1 lists current rolling stock by type owned by CVSR. CVSR recently purchased two Alco locomotives from Grand Canyon Railway and plans to purchase three additional locomotives. It is CVSR's intent to have a uniform locomotive fleet in order to standardize the locomotive maintenance and spare parts inventory. New passenger cars are purchased as funds and cars become available.

At a minimum, new PTC on-board equipment will need to be installed on CVSR locomotives to operate excursion service on the Extension based the direction of CSX.

Table 4-1. CVRS Vehicles by Type

Vehicle Type	Units
Locomotives	7
Coaches	20
Baggage Cars	2
ADA Cars	2
Power Car	1
Caboose	1
Total	33

It is assumed that CVSR service on the Extension would use the same equipment currently in operation. CVSR excursion train consists typically are made up of:

- One locomotive at each end,
- One power unit adjacent to one of the locomotives, and
- Nine coaches, including a car fitted with a lift for disabled riders and one baggage car for bicycles and kayaks.

The deliverable for this task is *3-2_Plan Views & Summary Engineering Report*. The corridor drawings are included in the companion document *3-2A_Plan Views & Summary Engineering Report - Appendix A*.

4.1.3 Operating Plan

The *Operating Plan Technical Memorandum* defined a conceptual service for the Extension that integrates with service currently provided by CVSR. The Plan was based on the anticipated type of service to be provided for an opening day on the Extension and was used to determine vehicle requirements and operating units of service (e.g., train miles, train trips). The Plan addressed the following areas:

- Review of potential travel markets that could be served by the Extension,
- A summary of current CVSR train service,
- Service constraints and assumptions,
- Draft timetables, and
- Annual service measures.

4.1.3.1 Travel Market Review

Passenger rail service between the CVSR Rockside Station and Downtown Cleveland could serve several distinct travel markets, including:

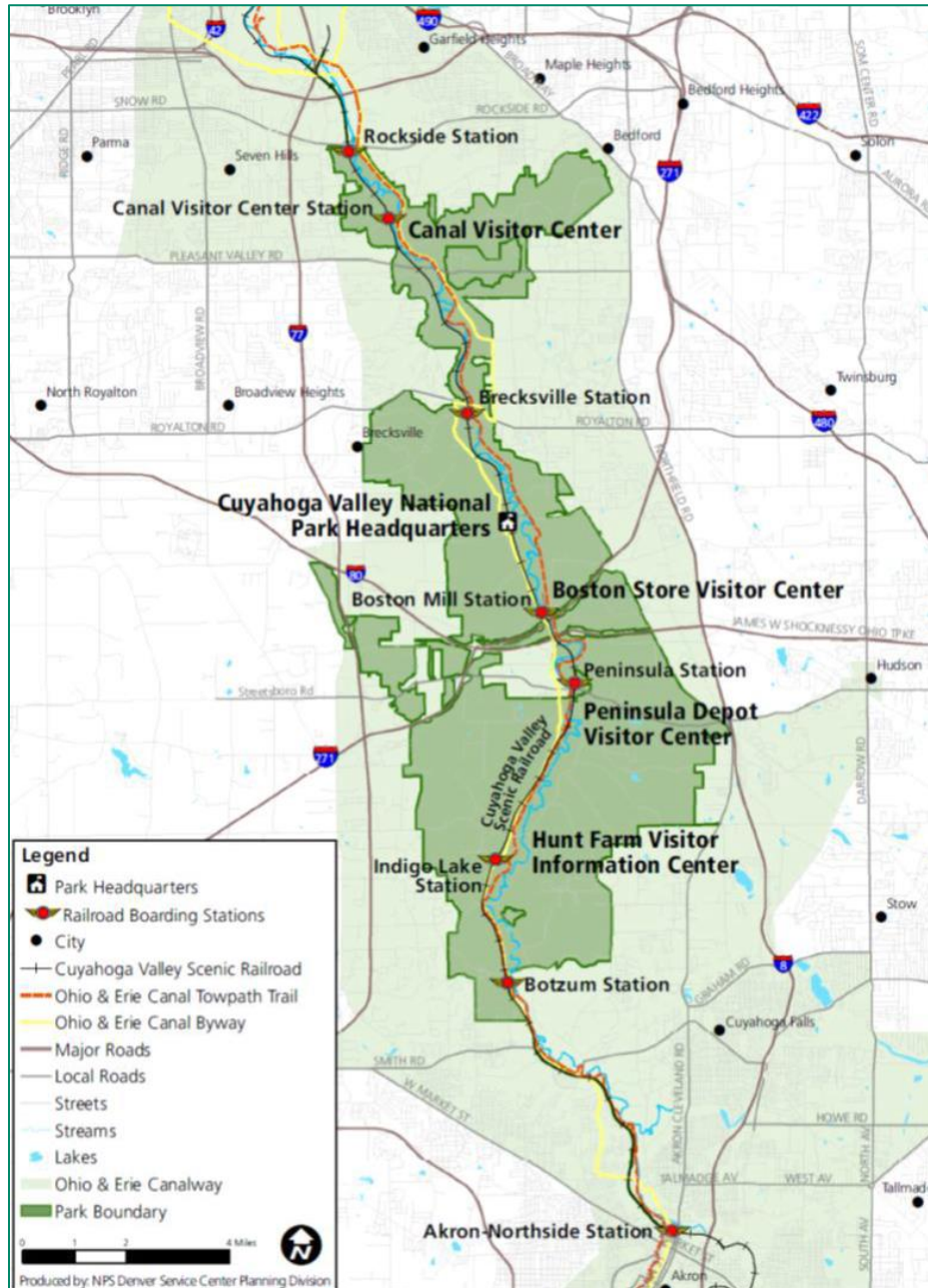
1. CVSR Excursion - this would involve extending the existing service that CVSR provides between the Akron Northside and Rockside stations.
2. Service to Cleveland Attractions and Events - passenger service could serve events and attractions that are proximate to the Extension. These include professional sports venues, cultural attractions, and major events in Downtown Cleveland. Attractions outside of Downtown could also be served such as the Metroparks Zoo and the CanalWay Center. It was decided that these destinations could be served, but only to the extent that excursion service schedules (time of day and season) matched the hours of operation of events and attractions.
3. Commuter Service - the NPS has indicated that a higher level service designed for commuting would be in conflict with the purpose and mission of the National Park. As such, potential commuter service would be limited to the Extension itself, that is, Rockside Station to Downtown Cleveland. A review of this market suggests that the demand for a rail-based service would be limited, at least for the near-term.

As such, the development of an opening-day service plan focused on the CVSR excursion market. The proposed excursion service is assumed to also serve attractions and events along the Extension route to the extent that schedules match the visitation parameters of these destinations. Commuter service involving a higher level of service during the AM and PM peak periods is not included in the Operating Plan.

4.1.3.2 CVSR Service Profile

CVSR’s service has evolved and grown since it began operating in partnership with CVNP under a cooperative agreement in 1989. The 24.5-mile CVSR route includes eight stations as shown on Figure 4-6.

Figure 4-6. Cuyahoga Valley Scenic Railroad Map



SOURCE: Cuyahoga Valley National Park Comprehensive Rail Study, NPS, 2013.

CVSR offers a variety of services, which target specific groups. Over the years, changes to the menu of service have been made based on ridership on provided services and CVSR customer research. In 2024, the following categories of service were provided:

- **National Park Scenic Excursions** – This is CVSR’s core service. Passengers book excursions on a round-trip basis to either stay on the train for the entire trip, returning to their original boarding station, or alight to enjoy the Park, and return on a later train. Many of the other event services are provided as a special rail car operated as a part of a Scenic Excursion train consist. Scenic trains generally provide three round trips daily

on Wednesdays through Sundays from June to October, and two round trips Friday-Sunday between the end of January and May.

- Dining & Drinks Excursions – A total of 31 excursions were scheduled between January 26 and November 3, 2024. Many of the Dinner & Drinks Excursions are offered on Friday evening, when its own train is operated. Of the 31 Dining & Drinks Excursions in 2024, 11 were unique trains while 20 were included on National Scenic Excursion train consists.
- Entertainment Excursions – At total of 22 round-trip excursions were scheduled between January 26 and November 3, 2024. Nineteen of the excursions operated as a car on National Scenic Excursion train consists, while three were unique trains.
- Family Fun Loop – There were eight types of Family Fun Loop trains offered; 26 excursions were scheduled between May 31 and November 3, 2024, all were sold as part of other event trains.
- North Pole Adventure - The North Pole Adventure is the most popular CVSR special event. Although trips are limited to November and December, the Adventure service accounts for approximately 40 percent of all riders annually. In 2024, trains operated every day between November 8 and December 21 except the day before and the day of Thanksgiving (i.e., 42 days). Two round trips were provided daily, departing Rockside Station at 5:00 PM and 7:55 PM. No North Pole Adventure trains served the Akron Northside Station in 2024.
- Explorer Program - Passengers can ride one-way on a National Park Scenic train with their bicycles or kayaks, which are loaded in a baggage car. No advance reservations are required, and trains can be flagged down at all stations between Akron Northside and Rockside. The Explorer Program runs from May through October.
- Other Services - CVSR offers other train trips, fare options, and booking arrangements, including Education programs, and Charters and Rentals (entire train or single coach).

4.1.3.3 Service Constraints and Assumptions

The following provides background on the CVSR current service that would be extended.

- For the purpose of defining preliminary service concepts, schedules were prepared for National Park Scenic Excursion and North Pole Adventure trains. Most special events are operated as unique coaches as part of regular Scenic Excursion trains. While it is known that some special events are scheduled as their own train, in many cases these trains are operated in lieu of National Park Scenic Excursion trains. After a basic pattern of service is decided, CVSR can advise on the additional event service that should be assumed.
- Most CVSR services are set up for excursion travel, that is, for leisure and sightseeing purposes not regular train travel. However, since CVSR fares are sold as an all-day pass, passengers can also use the service as a more conventional scheduled train service. For example, passengers can use the CVSR train as a way to access the National Park, disembarking at a station in the Park and returning to their origin station on a later train.
- CVSR's basic seasonal service structure was assumed, including:
 - Late January through the end of May – National Park Scenic Excursion service operating Friday-Sunday. Generally, two round trips operate per day, mostly from late morning until mid-afternoon.
 - June through October – service Wednesday-Sunday typically involving three National Park Scenic Excursion round trips per day. Most excursions operate during the midday period.
 - November-December – North Pole Adventure trains operating between the first week in November until the week preceding Christmas. Two round trip trains operate daily except the day before and the day of Thanksgiving. Service hours are generally between 5:00 PM and 10:30 PM.
- Running times were assumed comparable to typical speeds of the current CVSR service.
- Most tickets are purchased online through a third-party vendor.
- CVSR has handicap-accessible cars with a wheelchair lift and ADA-compliant restroom.

- A new CVSR station is in development in the Merriman Valley commercial district of Akron. The location is between the Akron Northside and Botzum Stations.
- It is assumed that CVSR would operate the same equipment on the Extension as is currently used. Train consists typically include:
 - Locomotive at each end,
 - One power unit adjacent to one of the locomotives, and
 - Nine coaches, including a car fitted with a lift for disabled riders plus one or two baggage cars for bicycles and kayaks.
- The CVSR route through the National Park is a single track. There are two sidings over the 24.5 miles, at Peninsula Depot and at Milepost 57.0 south of Brecksville Station and north of Jaite (Park Headquarters). The Jaite siding is currently out-of-service but can be restored if needed by the service plan.

The physical improvements to the Extension route are described in Section 4.1.2, and include:

- **Stations** - Three Extension stations were evaluated, Downtown Cleveland, Steelyard Commons, and Harvard Avenue. Platforms at new stations were assumed to be high-level, as required by ADA. Use of high-level platforms will speed passenger boarding and alighting, as well as significantly improve the process for loading/unloading bikes and kayaks to the baggage cars. The locations of the three stations are provided as follows (see Section 4.1.2.6 for additional detail on the stations):
 - **Downtown** – the proposed location is on property owned by the developer Bedrock, Parcel 19 generally between and under the Lorain-Carnegie and Innerbelt Bridges.
 - **Steelyard Commons** – this location would be in the northeast portion of the shopping center south of Quigley Road.
 - **Harvard Avenue** – near the Harvard Avenue CSX rail crossing. While it was recommended to not include this station as a part of opening day service, the proposed Operating Plan continues to include the station to facilitate future service planning; excluding Harvard Avenue for the Extension's opening day would reduce estimated running time by one to two minutes.
- **Right-of-Way** – This includes the NPS and CSX alignments, as well as the 0.8 miles proposed for abandonment by CSX.
- **Freight Rail Traffic** - Two known rail-served customers near Willow and two customers located east of the Clark Avenue Yard are served by CSX.
- **Rail-to-Rail Crossings** – This includes two existing diamond crossings of low-density industrial Norfolk Southern trackage
- Planned Infrastructure is to include:
 - **Track**: replacement track for the full Extension route north of Rockside Station
 - **Clark Avenue Yard Siding**: the alignment will use the existing single track with existing sidings being used as passing tracks in the vicinity of Clark Avenue
 - **Other Sidings**: existing sidings at Steelyard Commons and east of Clark Avenue Yard will be upgraded and new sidings will be installed for proposed stations.
 - **Railroad Signaling**: installation of signals with Positive Train Control (PTC) were assumed

4.1.3.4 CVSR Extension Service Parameters

Building a service plan for the Extension began with estimating travel times between stations. Times between current CVSR stations were largely drawn from published excursion timetables. It was assumed that the relatively slow speeds (averaging 16.2 mph) reflect CVSR experience, including time to board and alight passengers. Times for the Extension service were based on an average speed of 21.5 mph. Use of high-level platforms on the Extension could speed service over this part of the route. It is important to recognize that these times were intended for planning purposes to derive service metrics. Time to reverse the direction of trains, including recovery time, was generally assumed to be 30 minutes.

Key factors considered in extending CVSR current service to Downtown Cleveland included the following:

- **Travel Time Limit** - When CVSR began operating its truncated route Akron Northside-Peninsula in October 2022 due to a track outage, they discovered that excursion riders prefer a reduced travel time. The previous round trip travel time between Akron Northside and Rockside was two hours and forty minutes, whereas the shortened route between Peninsula and Akron Northside was an hour less at one hour and forty minutes. CVSR's opinion on this point was strong, and felt that as an excursion service, the round-trip travel for service using the Extension corridor should not exceed two hours.
- **Operation of More than One Train** - Meeting the two-hour round trip excursion time threshold for the combined 33.8-mile route will require two separate trains. The implications for operating two concurrent trains could be significant for CVSR. On the positive side, this would result in a doubling of the service capacity. It is known, for example, that the North Pole Adventure service routinely sells out, so the added passenger-carrying capacity could be beneficial to CVSR's financial bottom line. Another issue is the potential need to add passing sidings to minimize delays. A two-train service will also add to the vehicle requirements, including the number of spares associated with the unique vehicle types used. Finally, fueling and vehicle maintenance costs will rise proportionally.
- **Cleveland Destinations** - As noted, excursion schedules can potentially serve destinations within proximity of the Extension route. One potential market is serving attendees of professional sporting events. With Progressive Field (Cleveland Guardians baseball) and Rocket Mortgage FieldHouse (Cleveland Cavaliers basketball) within walking distance of the proposed Downtown station, this would seem an obvious market. However, since many of the games occur in the evening, CVSR excursion schedules would not match game times for much of the year. In addition, the lack of a finite game ending time could be problematic for CVSR.

A key question in operating two separate trains, with one train departing Akron Northside and one Downtown Cleveland, is deciding what station trains would turn back from. Several factors were considered, including:

- Ideally the location would be near the travel time/distance midpoint of the full Akron Northside-Downtown Cleveland route,
- The turnback station should have amenities that would be of interest to riders disembarking to wait a layover or transfer to another train,
- Since the most important reason CVSR riders use the train is to explore the National Park, each train should maximize its travel through the Park, and
- Riders will likely prefer to access the Park's amenities without transferring to another train.

Three possible stations were identified to serve as train turnbacks: Boston Mill, Peninsula Depot, and Rockside Station. It was decided to use two overlapping turnback stations, Peninsula and Boston Mill. One train will operate from Akron Northside to Boston Mill and the other from Peninsula to Downtown Cleveland. It was further suggested that a siding be added at Boston Mill. Alternatively, extending the Peninsula siding north to Boston Mill would provide maximum fluidity for train operations under this operational scenario, although the space for such a siding appears to be limited. The decision to add a siding was not resolved. If it is determined that this would be an important improvement to make, the cost will need to be estimated and added to the capital costs of the Project.

4.1.3.5 Draft Timetables

Draft timetables of the operational scenario described above were prepared for National Park Scenic excursion service between June and October (i.e., 3 round trips) and North Pole Adventure excursions in November and December. The National Park Scenic excursion service before June would follow the same pattern as the June-October period but with fewer trips (i.e., 2 round trips instead of 3). Other event excursions that operate as standalone trains (i.e., not as an event car on a scheduled National Park Scenic excursion) can be added later with CVSR guidance. Table 4-2 and Table 4-3 provide the hypothetical timetables for each of the two services. These are intended for planning purposes only. Trains that would make connections for continued travel in the same direction are color coded. Connections generally assume 30 minutes.

Table 4-2. National Park Scenic Excursion Schedule, Peninsula & Boston Mill Turnbacks

Station	Mile Post	Train 2	Train 1	Train 2	Train 1	Train 2	Train 1	Train 2	Train 1	Train 2	Train 1	Train 2	Train 1
		NB	SB	SB	NB	NB	SB	SB	NB	NB	SB	SB	NB
Downtown Cleveland	74.1		9:00 AM		11:27 AM		12:00 PM		2:27 PM		3:00 PM		5:27 PM
Steelyard Commons	71.4		9:10 AM		11:17 AM		12:10 PM		2:17 PM		3:10 PM		5:17 PM
Harvard Avenue	70.2		9:14 AM		11:13 AM		12:14 PM		2:13 PM		3:14 PM		5:13 PM
Rockside	64.8		9:26 AM		10:58 AM		12:26 PM		1:58 PM		3:26 PM		4:58 PM
Canal Visitor Center	63.1		9:31 AM		10:53 AM		12:31 PM		1:53 PM		3:31 PM		4:53 PM
Fitzwater Yard	61.5												
Brecksville	58.8		9:46 AM		10:41 AM		12:46 PM		1:41 PM		3:46 PM		4:41 PM
Boston Mill	54.4	10:00 AM	9:57 AM	10:15 AM	10:30 AM	1:00 PM	12:57 PM	1:15 PM	1:30 PM	4:00 PM	3:57 PM	4:15 PM	4:30 PM
Peninsula Depot	52.9	9:50 AM	10:07 AM	10:25 AM	10:20 AM	12:50 PM	1:07 PM	1:25 PM	1:20 PM	3:50 PM	4:07 PM	4:25 PM	4:20 PM
Indigo Lake	49.1	9:40 AM		10:35 AM		12:40 PM		1:35 PM		3:40 PM		4:35 PM	
Botzum	46.6	9:30 AM		10:45 AM		12:30 PM		1:45 PM		3:30 PM		4:45 PM	
Akron Northside	40.3	9:00 AM		11:15 AM		12:00 PM		2:15 PM		3:00 PM		5:15 PM	

Table 4-3. North Pole Adventure Schedule, Peninsula & Boston Mill Turnbacks

Station	Mile Post	Train 2	Train 1	Train 2	Train 1	Train 2	Train 1	Train 2	Train 1
		NB	SB	SB	NB	NB	SB	SB	NB
Downtown Cleveland	74.1		5:00 PM		7:27 PM		8:00 PM		10:27 PM
Steelyard Commons	71.4		5:10 PM		7:17 PM		8:10 PM		10:17 PM
Harvard Avenue	70.2		5:14 PM		7:13 PM		8:14 PM		10:13 PM
Rockside	64.8		5:26 PM		7:01 PM		8:26 PM		10:01 PM
Canal Visitor Center	63.1		5:31 PM		6:56 PM		8:31 PM		9:56 PM
<i>Fitzwater Yard</i>	<i>61.5</i>								
Brecksville	58.8		5:46 PM		6:41 PM		8:46 PM		9:41 PM
Boston Mill	54.4	6:00 PM	5:57 PM	6:30 PM	6:30 PM	9:00 PM	8:57 PM	9:30 PM	9:30 PM
Peninsula Depot	52.9	5:50 PM	6:07 PM	6:40 PM	6:20 PM	8:50 PM	9:07 PM	9:40 PM	9:20 PM
Indigo Lake	49.1	5:40 PM		6:50 PM		8:40 PM		9:50 PM	
Botzum	46.6	5:30 PM		7:00 PM		8:30 PM		10:00 PM	
Akron Northside	40.3	5:00 PM		7:30 PM		8:00 PM		10:30 PM	

southbound	SB Connection
northbound	NB Connection

These are hypothetical timetables for planning purposes only.

4.1.3.6 Annual Service Measures

Based on the hypothetical timetables developed, measures of service quantities were estimated for the two trains. These quantities were used in estimating Operations and Maintenance (O&M) costs. Two primary drivers are proposed to estimate O&M costs: Round Trips and Revenue Train Miles. Based on CVSR annual quantities of service and costs for the years 2018-2023, ratios of costs per unit were developed and applied to the future service quantities using the proposed Extension.

Annual service quantities were based on the pattern of service offered in 2024 without the suspension of service in March and April. The distribution of service days by month was based on the 2025 calendar. National Park Scenic Excursions were estimated to include 930 round trips and 32,800 revenue miles for 2025. The North Pole Adventure annual service was estimated at 168 round trips and 5,930 train miles of service for 2025.

The deliverable for this task is *3-3_Operating Plan Technical Memorandum*.

4.2 Estimated Costs

Estimates of costs to build and operate the Extension service were addressed in two tasks, covering capital costs and operating and maintenance (O&M) costs.

4.2.1 Capital Costs

The Capital Cost task developed cost estimates for the infrastructure improvements proposed for the Extension. The Federal Railroad Administration (FRA) Standard Cost Categories (SCC) Budget Tool was the basis of estimates. Capital costs were presented in 2025 dollars. Escalation was applied using Engineering News Record's (ENR) Engineering Construction Cost Index to support 2032 dollars (inflation: 3.5% annually) for the possible in-service date of the Extension service. The cost categories used are listed and defined Table 4-4.

Table 4-4. Standard Cost Categories used in the Extension Costing

FRA Standard Cost Categories	Includes
10 Track Structures & Track	New track, new turnouts, track rehabilitation, bridge rehabilitation
20 Stations & Terminals	Passenger shelter stations including parking and platforms
50 Communications & Signaling	Signals, grade crossing warning devices, PTC
70 Vehicles	Rolling stock car and locomotive renovation
80 Professional Services	Engineering, Insurance, Permits, Survey, Start-Up

As per the FRA SCC procedures, two types of contingencies were built into the cost estimates: Allocated and Unallocated.

- Allocated Contingencies - applied to each line item of the capital cost estimate, given unknown factors, such as cost of property acquisition, site conditions, environmental considerations, and railroad negotiations. Higher allocated contingencies are used for line items that have greater risk and unforeseen circumstances.
- Unallocated Contingency - applied to total Project costs, which is also to cover unforeseen conditions, particularly during the procurement and construction phases. A 10% unallocated contingency was used.

The costs were based on various assumptions, including:

- Corridor improvements (new and upgraded) were assumed to be within the railroad-owned rights-of way.
- Estimates were based on similar work being performed by contractors.
- Costs related to specific property acquisitions were not included. Any property acquisition costs were assumed to be part of the allocated contingency.
- Estimates were prepared based on the conceptual alignment plans developed as part of the Study (Task 3-2).
- Bascule bridge costs are based on the similar Haymaker Bridge (Bates County, Missouri) renovation costs.

- The potential Harvard Avenue Station was not included in the capital costs as it was decided that it would not be part of the service startup; it may be considered in the future.
- Assumed no hazardous materials are found on the Project site.
- Assumed cooperation between stakeholders during the design, environmental review, construction, and implementation phases.
- Additional unknown costs may be determined in future phases of the study.

A summary of the capital cost estimates is provided on Table 4-5 for infrastructure and vehicles.

Table 4-5. Capital Cost Summary for Corridor Extension

	Capital Cost (in 2025 millions)	% of Capital Costs
Track Structures & Track	\$98.3	51%
Stations	\$14.8	8%
Signals & Communications	\$27.5	14%
Rolling Stock	\$6.8	4%
Professional Services	\$29.1	15%
Unallocated Contingency	\$17.6	9%
TOTAL	\$194.1	100%
Cost per Mile (2025 \$\$)		\$21.1M
Increase from 2025 to 2032 Service Start		16%
Allocated + Unallocated Contingency		25%

The deliverable for this task is *4-1_Capital Costs Estimate Technical Memorandum*.

4.2.2 Operating & Maintenance Costs

Estimated CVSR operating and maintenance (O&M) costs for the Extension were developed based on a set of assumptions and a methodology using historical operating costs provided by the railroad. For additional items that were not part of existing costs, estimates were either based on CVSR’s own budgets or corresponding costs for other similar operators across the country.

4.2.2.1 Assumptions

The O&M costs were estimated for two scenarios: 1) baseline and 2) increased service for the Extension. Baseline service was measured using the number of train trips on a roundtrip basis and service miles estimated from roundtrips and average trip length. Service including the Extension was derived from the *Operating Plan Technical Memorandum*.

4.2.2.1.1 Baseline Cost Assumptions

Baseline costs were from CVSR for the period 2018-2023, broken down by 12 line items, which were grouped into the following categories for the purpose of assigning a cost driver:

- Fixed-cost items included: Direct Costs of Sales, Personnel Costs (fixed), General Administrative Expenses, and Development Expenses,
- Service mile-based items included: Operations Department Expenses and Diesel Fuel,
- Roundtrip-based items included: Etix (Online Ticket Sales), Personnel Costs (variable), Marketing Expenses, Equipment + Facilities Leases, Insurance, and Volunteer Expenses.

Fixed-cost line items do not vary with the service operated. Service mile-based costs and Roundtrip-based costs vary depending on the quantity of service provided.

Additional background and handling of selected cost items was provided, as follows:

- **Personnel Costs** – This line item is one of the largest single costs for any transportation operator. For CVSR, this was divided into two parts, fixed- or roundtrip-based, to improve the accuracy of the estimates. Fixed-cost items included compensation for upper management, which is not expected to change with increased service. Personnel costs for staff involved with maintenance, ticket sales, and events are assumed to vary with round trips. Based on salary estimates provided by CVSR, the total salary share was assumed to be 39 percent fixed and 61 percent roundtrip-based (variable).
- **Paid Crews** – A key change starting in 2024 operations is the addition of paid train crews. Historically, the railroad has used volunteer crews to operate its trains. CVSR began hiring paid crews, which includes engineers, conductors, train service attendants, and staff conductors. Salary estimates are based on 2024 and 2025 budgets provided by CVSR. The overall cost to CVSR includes other personnel costs such as benefits, insurance, workers compensation, etc. Other costs are assumed to be 30 percent of salary based on historical salary-to-overall personnel cost ratios.
- **Existing Track Maintenance** – The maintenance costs for CVSR’s existing track through CVNP have thus far been borne by the National Park Service (NPS). In 2026, CVSR expects to begin paying directly for maintenance of the right-of-way. This is estimated to cost \$400,000 annually, in 2024 dollars.

4.2.2.1.2 Increased Service Cost Assumptions

As part of the Extension, CVSR would operate additional round trips. From an operational perspective, this would lead to increased costs. The non-fixed, existing costs would increase depending upon their cost driver (i.e., service miles or roundtrips). In addition to these costs discussed above, there are additional line items that would also be addressed, including:

- **Personnel Costs** - For the increased service scenario, CVSR will need to hire additional full-time crews for the new service. Based on the operations plan, there will be two shifts per day with two trains per shift. Based on estimates provided by CVSR, each shift will need two engineers, two conductors, two trainmen, and one passenger conductor. Salary estimates from CVSR were used to estimate paid operator expenses. This overall salary cost is inflated by 30 percent to account for other personnel-related expenses such as insurance and benefits.
- **Trackage Rights** - The extended service will use approximately 14 directional route miles (DRM) of track owned by CSX. This study assumes that CVSR will need to pay CSX under a to-be-negotiated trackage rights agreement for track maintenance, dispatching, and operating the lift bridge. This fee is estimated based on data from the National Transit Database (NTD) for commuter railroads for facility maintenance for purchased transportation. Annual costs vary significantly among agencies, ranging between \$16,702 to \$91,699 per DRM per year. These costs also include station maintenance. In CVSR’s case, this would be covered by the agency and not CSX. Both values are considered in the O&M costs, as low- and high-cost estimates. CSX will also likely charge a track usage fee for operating on CSX tracks, probably at a rate per car mile. The ultimate fees charged by CSX that result from negotiations may vary from these assumptions and may also include other costs items not captured by this analysis.

Table 4-6 presents costs for the baseline scenario two ways: the case where 2023 costs and service remain the same except for inflation, and the case where the costs include paid operators and track maintenance costs. The increased service scenario is also divided into two cases, with a low and high estimate for trackage rights costs to CSX. For ease of comparison, the costs are reported in 2025 dollars. This analysis reveals that the cost to operate CVSR service including operating on the Extension ranges between \$14.8 and \$15.9 million.

Table 4-6. O&M Cost Comparison (in 2025\$)

Cost Category	Baseline Conditions	Baseline w/ Paid Labor & ROW Maintenance	2025 Increased Service (low)	2025 Increased Service (high)
Existing Cost items in 2023				
Baseline fixed costs	\$2,513,000	\$3,217,000	\$3,217,000	\$3,217,000
Baseline service mile-based costs	\$1,097,000	\$1,788,000	\$3,603,000	\$3,603,000
Baseline roundtrip-based costs	\$2,389,000	\$2,477,000	\$5,799,000	\$5,799,000
Additional cost items				
Paid operators for existing service		\$572,000	\$572,000	\$572,000
NPS R-o-W maintenance		\$424,000	\$424,000	\$424,000
Additional staff for Extension			\$897,000	\$897,000
CSX trackage rights			\$294,000	\$1,395,000
Total	\$5,998,000	\$8,478,000	\$14,806,000	\$15,907,000

This estimate, along with any similar application of operating cost models, is meant to be used as a planning-level cost estimate. While this study used industry best practices for cost modeling, the assumptions made about cost drivers, levels of service, and applicability of historical data into future years are potential causes of error in the cost estimate in either direction.

The deliverable for this task is *4-2_Operating & Maintenance Costs Technical Memorandum*.

4.3 Environmental Screening

The Environmental Screening consisted of desktop analysis of publicly available information regarding existing environmental conditions within the study area. The study area was defined as spanning the existing NPS and CSX Willow Industrial Track between the CVSR Rockside Station and a proposed terminus in Downtown Cleveland. Three proposed station locations were evaluated: Harvard Avenue, Steelyard Commons, and Downtown Cleveland. There were no field surveys or investigations completed as part of the Environmental Screening. The primary purpose of the Environmental Screening was to identify potential significant impacts and the likely class of action for the CVSR Extension Project under the NEPA.

4.3.1 Purpose and Need

The purpose of extending the CVSR to Downtown Cleveland is to enhance accessibility to and from Cuyahoga Valley National Park (CVNP), to promote tourism and related economic benefits, and to increase connections between parks and people.

The Project need includes the following:

- Serve residents of Cleveland and other nearby communities who do not currently have a way to access the CVNP without driving; of the City's households in 2022, 21 percent did not have a vehicle.
- Users of the parallel Ohio & Erie Canal Towpath Trail and the Cuyahoga River Water Trail along the Extension corridor do not currently have an option of another travel mode for one direction of their trail travel. CVSR's Explorer service would offer expanded trip options for hikers, bikers, and kayakers with extended service.
- The proposed Extension would provide a complementary attraction and improved access to tourist attractions in Cleveland and Akron.
- The CVNP was created as a part of the National Park Service's Parks to the People program, which was intended to provide park and recreation lands near large urban centers. In addition to the proximity of these park facilities, the National Park Service recommended "mass transportation facilities, such as shuttle buses,

tramways, etc.” that can transport more people than private automobiles and limit the adverse impacts of cars on the parks.

4.3.2 Environmental Category Review

The Environmental Screening evaluated the 13 categories of environmental concern within the study area; the results are summarized below.

1. Air Quality - The CVSR Extension Project is expected to have a negligible impact to areawide air quality. It is recommended that the Project be added to the currently conforming statewide transportation improvement program (STIP) and/or the regional transportation improvement program (TIP).
2. Endangered Species - The following was determined regarding the CVSR Extension Project:
 - Various protected species are likely within the study area. Impacts would be avoided or minimized by limiting tree cutting to October-March, not performing in-water work in perennial streams from March 15 through June 30, avoiding Project construction near species' usual habitat areas May 1 through July 31, and avoiding species habitats, including marshes, ponds, lakes, streams, wet meadows, and swampy forests areas.
 - Should the Project advance to a formal NEPA study, habitat surveys would be required for several listed species.
3. Environmental Justice - Areas with the most disadvantaged populations (e.g., minorities, low-income) are generally located near the northern half of the CVSR Extension Project and southeast/southwest of Downtown Cleveland in neighborhoods such as Central, Brooklyn Centre, and Clark-Fulton. No adverse impacts are expected to these areas, which are typically located 0.5 to 1.0 miles from the proposed rail alignment.

The proposed Extension is anticipated to provide environmental justice benefits to disadvantaged areas by making the CVNP more accessible to these populations via multiple modes of transportation, including transit, bicycling, walking, and driving. Such access will ensure that the CVSR Extension does not simply run through and bypass the people in these communities but that residents can access, benefit from, and enjoy the proposed CVSR service.

4. Flood Plains - Portions of the proposed Harvard Avenue station site are within the 100-year and 500-year flood plains, and the Downtown Cleveland station is within an area of “undetermined flood hazard.” If the Extension Project proceeds, flood mitigation measures should be considered as part of the design of the proposed Harvard Avenue and Downtown Cleveland station sites.
5. Historic, Archaeological, and Cultural Resources - The Extension Project would not be expected to impact the cultural and historical resources in the study area; however, an examination of the proximity of Project improvements to resources would be required if the Project advances.
6. Navigable Waterways and Coastal Zones - The Extension Project would cross the designated navigable section of the Cuyahoga River on an existing CSX bascule bridge. The bridge currently carries a single track, but previously carried two tracks. Coordination would be required with CSX in the preliminary engineering phase to determine whether a second track would be needed to accommodate CVSR trains and if that would trigger structural modifications or other construction work to the bridge. If bridge work is determined to be required, regulatory permits and stakeholder outreach would be needed.
7. Noise and Vibration - The study area was screened for noise and vibration sensitive areas within various distances from the track centerline, at-grade road crossings, and proposed station sites. The preliminary analysis found that there are sensitive land uses, such as residential areas, in the study area that could be impacted. As the Project advances, either general noise and vibration assessments or detailed noise and vibration analyses will be required. If estimated noise and vibration levels would result in moderate or severe impacts, then it could be necessary to apply Federal Transit Administration (FTA) mitigation strategies.
8. Parklands - Protecting publicly-owned parklands from conversion to transportation uses is referred to as Section 4(f). The most significant parkland within the study area is the CVNP. As the current CVSR service uses

the NPS-owned and maintained rail corridor through the CVNP, extending that use a short distance north is not expected to represent a conversion to transportation.

Based on the evaluation of the Extension Project, there are no potential Section 4(f) properties within the study area except for the Towpath Trail at the proposed Steelyard Commons and Harvard Avenue station locations. Station designs should ensure that the trail is not adversely impacted. Additional documentation on the NPS's unique arrangement as owner and maintainer of the rail corridor used by CVSR could be required.

9. Regulated Materials - AECOM conducted a screening of hazardous waste and regulated materials sites that could either pose public health concerns or be disturbed by the CVSR Extension Project. A regulatory database search report was used to identify sites immediately adjacent to the rail alignment.

None of the 34 sites identified would be disturbed by the Project and do not appear to pose public health concerns to the Project.

The proposed Steelyard Commons station location already includes many of the elements of a station and as such is not anticipated to require additional property takes or remediation. The proposed Downtown Cleveland station site is located in an area that was previously assessed and remediated by the Ohio Department of Transportation (ODOT) as part of the realignment of Interstate 90 in 2012.

It is recommended that future environmental analyses for the proposed station locations and any associated property takes, or permanent easements include conducting American Society of Testing and Materials (ASTM) E1527-21-compliant Phase I Environmental Site Assessments.

10. Social and Economic Impacts - The Project would have a positive impact on the regional economy, including on property values. The investment and ongoing operations would result in increases in area employment. Significant growth in labor income, Gross Regional Product (GRP), and tax revenues were estimated. The application of the US DOT's Benefit-Cost Analysis determined a shortfall between benefits and costs. Several factors were identified related to the Project worthiness, and it is recommended that further refinement of Project benefits be undertaken.
11. Transportation Impacts - Traffic impacts of the Extension Project are expected to be minimal at the intersections near the proposed stations, although a more detailed traffic impact study may be required by the City of Cleveland as part of the site plan review process for new stations. New CVSR service is anticipated to have minimal impact on delays at highway-rail grade crossings in the corridor. A benefit of the proposed new CVSR stations would be improving access to CVNP for disadvantaged populations, including residents of the City of Cleveland and inner ring suburbs.
12. Water Quality - While the study area falls in defined watershed areas, the proposed Extension Project would be constructed within existing rail rights-of-way and the proposed stations are located in previously developed areas, so improvements may not adversely impact water quality. If the Project moves forward, a field delineation of wetland and waterway boundaries within the study area should be completed, and either a Qualitative Habitat Evaluation Index (QHEI) or Headwaters Habitat Evaluation Index (HHEI) form should be completed for each delineated stream, as applicable. The form to be used will depend on the size of the watershed; the completed form determines the potential impacts and permitting requirements.
13. Wetlands - The available mapping of wetlands in the corridor does not appear to cover existing rail rights-of-way, where railroad infrastructure improvements would be made. In addition, the preliminarily defined wetlands do not appear to extend to proposed station areas. As a result, the Project may not adversely impact wetlands. Detailed steps to assess wetland impacts are identified, should the Project advance.

4.3.3 Class of Action

Based on this Environmental Screening, the potential for adverse impacts related to the Project would appear to be limited. Assuming these conclusions are valid using the information presented, the expected environmental Class of Action would be a Categorical Exclusion (CE).

The deliverable for this task is *5_Environmental Screening Report*.

4.4 Market Assessment

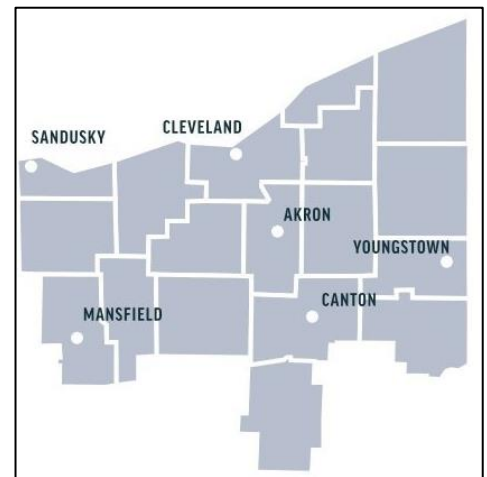
The Market Assessment task provided information on the strength of the Northeast Ohio market to support the Extension of CVSR service. The Report includes sections that address the following:

1. Socioeconomic Analysis - includes analysis of past, present, and future demographic and economic data of the 18-county study area in Northeast Ohio.
2. Marketplace Factors - presents research on other tourist railroads, rail-themed attractions, and other major non-rail attractions in the Greater Cleveland metro area.
3. Corridor Trip Flows - documents current travel patterns in the existing CVSR and the Extension corridors to assess the strength of the travel market to support the proposed Extension.
4. Cuyahoga Valley National Park - summarizes the development of CVNP, principal attractions, and information on visitation.

4.4.1 Socioeconomic Analysis

The study area for the socioeconomic analysis was defined using customer information provided by CVSR. The customer data indicated that over 70 percent of riders using the CVSR service between 2020 and 2023 resided within 18 counties in Northeast Ohio that comprise two economic development regions: Team NEO ([Northeast Ohio Region](#)) and Lake to River ([Lake to River](#)). The study area is defined as this 18-county region (see Figure 4-7).

Figure 4-7. 18-County NE Ohio Study Area



4.4.1.1 Population

Key population statistics for the analysis included:

- Study area population in 2020 was 4.3 million
- Projected to decrease by 14 percent from 2020 to 2050
- Cuyahoga and Summit Counties were the largest in terms of population in 2020 with 1.3 million and 540,000 people
- Cleveland is the second largest city in Ohio and is located in Cuyahoga County; Akron is the fifth-largest city in Ohio and is in Summit County.
- The population of Cuyahoga and Summit Counties is projected to decrease by more than 15 percent from 2020 to 2050; most counties in the study area are projected to see similar trends,
- Lorain County and Geauga County are projected to see growth from 2020 to 2050 by 1 percent and 8 percent, respectively.

Study area population by age group,

- In 2020, age groups 50 – 59 and 60 – 69 years were the two largest groups with 27.2 percent of the study area population.
- In 2050, the two largest age groups are projected to be 50 – 59 and 40 – 49 years with a 27.1 percent share of the population
- Age groups under 30 years are projected to shrink as a share of the overall study area population, while age groups between 30 – 59 years are projected to grow in a share of the overall study area population.

Study area data on education attainment for residents aged 25 years or older,

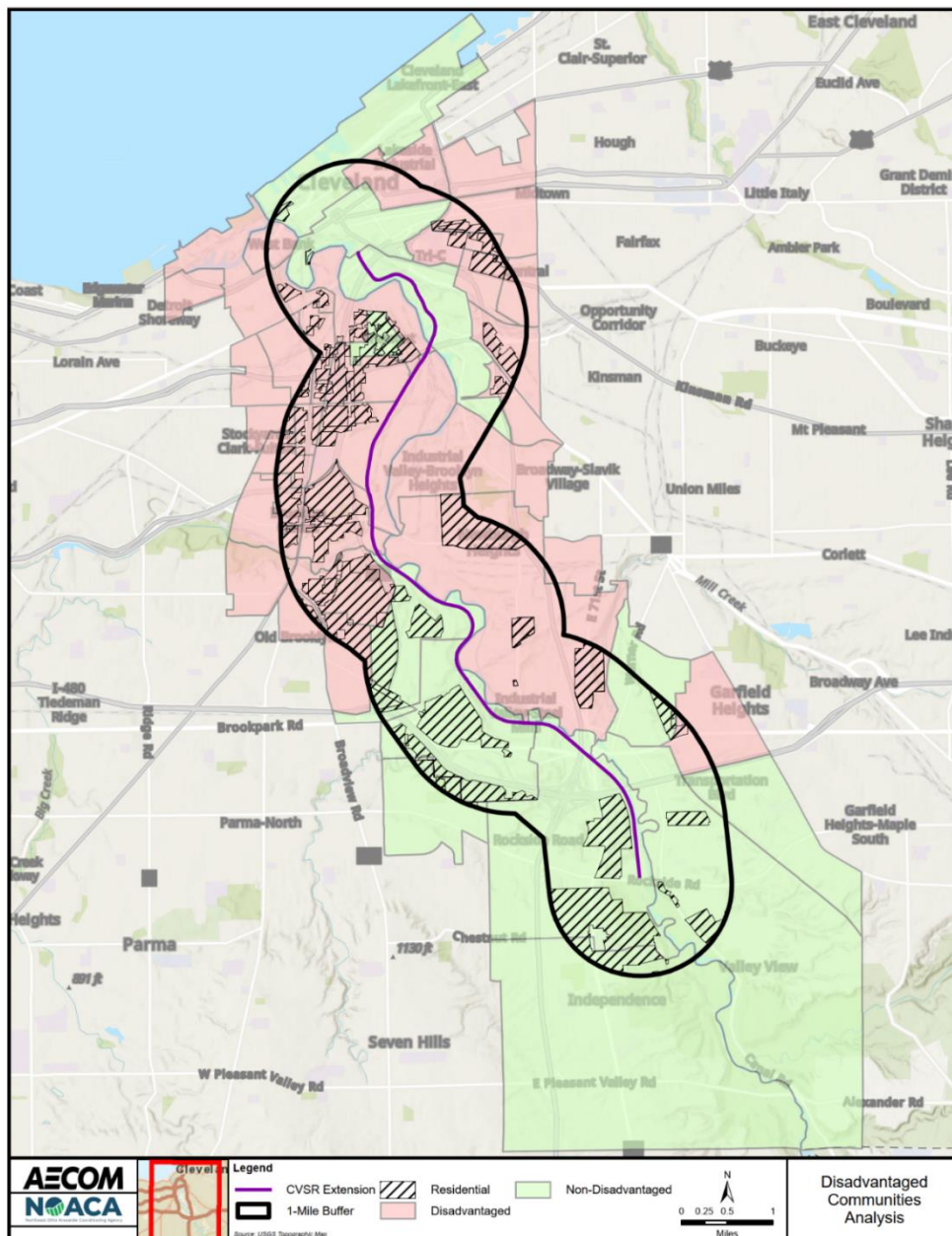
- Of study area residents, approximately 43 percent have at most a high school education, 29 percent have some college education, and the remaining 28 percent have at most a bachelor's or graduate/advanced degree. The levels of education attainment in the study area are similar to those for Ohio.

Study area population distribution based on household income for residents,

- 45 percent of study area households had incomes of less than \$50,000 in 2020.
- About one-third of study area residents had household incomes between \$50,000 and \$100,000,
- Approximately one-fourth had household incomes that exceeded \$100,000.
- Study area household income distribution is very similar to the distribution of households in Ohio.

Figure 4-8 maps Census tracts that intersect a one-mile buffer around the proposed Extension and classifies tracts as either disadvantaged or non-disadvantaged based on criteria set by the U.S. Council on Environmental Quality (CEQ) and data from the U.S. Climate and Economic Justice Screening Tool (CEJST). The map also identifies residential areas within the buffer around the proposed Extension. Disadvantaged areas within the buffer are generally along the northern half of the Extension in the City of Cleveland neighborhoods of Brooklyn Centre and Clark-Fulton and communities such as Newburgh Heights. Non-disadvantaged areas are generally along the southern half of the proposed Extension and where the Extension would end in Downtown Cleveland.

Figure 4-8. Disadvantaged Communities along Potential CVSR Extension



4.4.2 Economic Trends

In 2022 the study area had a gross domestic product (GDP) of approximately \$239 billion and supported 2.65 million jobs. Much of the study area's economic activity is concentrated in Cuyahoga and Summit Counties, where CVSR service operates today. Cuyahoga County accounts for approximately 44 percent of GDP and 37 percent of jobs in the study area, while Summit County accounts for approximately 13 percent of GDP and 14 percent of jobs in the study area.

GDP in the study area increased by \$21.4 billion (in 2012 dollars) from 2010 to 2021, an 11 percent increase. Cuyahoga County (\$12.5 billion) and Summit County (\$2.8 billion) had the largest increases.

As part of its *2024 Competitive & Prosperous Report* for Northeast Ohio, the economic development organization Team NEO noted that GDP in the study area is projected to grow by nearly 15 percent from 2018 to 2030, lagging behind GDP growth in the U.S.

4.4.3 Marketplace Factors

An aspect associated with the demand for an extended CVSR service is the competition with railroads that provide similar service. In addition, there are a number of rail-themed attractions that could compete for CVSR customers, although they can also complement CVSR's customer base. Finally, many non-rail attractions in the greater Cleveland area can both compete and complement CVSR's market.

Key determinants in how CVSR service is positioned relative to these other attractions are the characteristics of the people or groups using CVSR service, which can include:

- Railroad enthusiasts,
- Tourists and travel enthusiasts (e.g., those looking for unique experiences),
- History buffs with interest in the heritage and culture of Northeast Ohio, including its rail transportation legacy,
- Nature lovers and photographers,
- Families and children, and
- Seniors and retirees.

This section identifies organizations that may compete or complement an extended CVSR service, including scenic and tourist railroads, rail-themed attractions, and non-rail area attractions.

4.4.3.1 Scenic and Tourist Railroads

Information was gathered on 13 scenic and tourist railroads operating in Ohio and western Pennsylvania, including CVSR. Factors included:

- Estimated driving distance and time from each railroad's base community to Peninsula, the headquarters location of CVSR,
- The purpose of each operation; some involve a museum as well as train rides,
- Rolling stock,
- Length of train ride,
- When the railroad was created, and
- Organization's website.

CVSR stands out among its tourist railroad peers in several ways:

- CVSR is the only peer railroad that operates within a National Park,
- Among the 13 operations, only three were founded before CVSR's start in 1972,
- Only three of 13 of the railroads operate longer routes; five have routes five miles or less,
- CVSR is among four railroads that use steam power, and

- Seven of the railroads are more than two hours from Peninsula, which would make for a long day trip to ride a CVSR train.

4.4.3.2 Rail-Themed Attractions

Individuals interested in scenic or tourist railroads also may be interested in attractions that have railroad themes. Since attending a museum is a different experience compared to riding a scenic train, it is less likely that CVSR riders would choose to substitute a train ride for a museum visit. Scenic railroads and railroad museums often find ways to collaborate, which enables rail-themed attractions to complement scenic railroads.

Fifteen rail-themed attractions in Ohio and western Pennsylvania were identified. Many of the sites are museums housed in former railroad depots. Sites often display railroad rolling stock. Driving distances and times from these sites to Peninsula were estimated. CVSR has a working relationship with the Midwest Railway Preservation Society, which has refurbished vehicles for CVSR. The potential to develop joint marketing campaigns with some of the attractions may be worth pursuing.

4.4.3.3 Non-Rail Area Attractions

Study Partners indicated that many people choose to ride CVSR when attending another attraction in the Akron/Cleveland area. This could include visitors to the Cleveland area who are tourists or visiting family or friends. Cleveland tourists visiting a major attraction may choose to pair that visit with a ride on a CVSR excursion, and the ability to access the train in Downtown Cleveland would make this logistically more feasible and attractive. The other reason for interest in destinations along the extended CVSR route is that the train could potentially be used to access some of the attractions located near a CVSR station.

An inventory of attractions in the Akron/Cleveland area was compiled, including descriptions, proximity to the rail line, annual attendance, and admission fees. Information on 32 attractions and events was assembled. In addition, an online survey of CVSR customers conducted in July 2024 asked about interest in using Extension service to reach Cleveland destinations. The results to access destinations are presented on Table 4-7.

Table 4-7. Cleveland Destinations Respondents would Consider using CVSR to Access

Cleveland Destination	Response	Percent
Downtown Cleveland generally	2,304	40%
Sporting events (Guardians, Cavaliers, etc.)	1,637	28%
Metroparks Zoo	1,467	25%
A work location	158	3%
Other	231	4%
Total (includes multiple responses)	5,797	100%
Not interested in using CVSR to travel to Cleveland destinations	221	
Skipped	255	

4.4.4 Corridor Trip Flows

Origin-destination trip data from the data platform Replica was analyzed to understand travel patterns along the existing and proposed CVSR corridor, focusing on total travel demand, commuter travel patterns, and recreational trips. Buffers around current and proposed CVSR station locations were used as the basis identifying travel sheds for each station. For the two terminal stations – Akron Northside and Downtown Cleveland – a two-mile radius was assumed as the station catchment areas; one-mile radius buffers were assumed for all other stations.

The analysis found that approximately 6,400 trips were made on a typical weekday in fall 2023 between the three possible Extension stations and the stations on the existing CVSR route, of which approximately 160 trips were made for recreational purposes. Travel volumes from CVSR stations to Extension stations were comparable. Total travel on a typical Saturday in fall 2023 was approximately one-third less than weekday travel, but recreational travel was approximately 10 percent more.

The commuter travel market in the corridor was also assessed, between Rockside Station and Downtown Cleveland. The number of work trips on a typical weekday in fall 2023 during the morning peak period (6 – 10 AM) in two directions:

- From Rockside/Harvard Avenue/Steelyard Commons Station catchments to the Downtown Cleveland Station catchment (i.e., peak inbound), and
- From Downtown Cleveland/Steelyard Commons/Harvard Avenue Station catchments to the Rockside Station catchment (i.e., reverse peak outbound).

There were about 850 trips in the inbound direction and about 250 trips in the outbound direction during the morning peak. About 10 percent of the inbound trips used transit, while about three percent of the outbound trips used transit. The existing commute market within the catchments around Rockside and the Extension stations is not particularly large and would likely be better served by bus service. Data was for a typical weekday in fall 2023.

4.4.5 Cuyahoga Valley National Park

Since CVNP will be the primary destination of passengers using CVSR extended service, information on CVNP and its attendance was assembled.

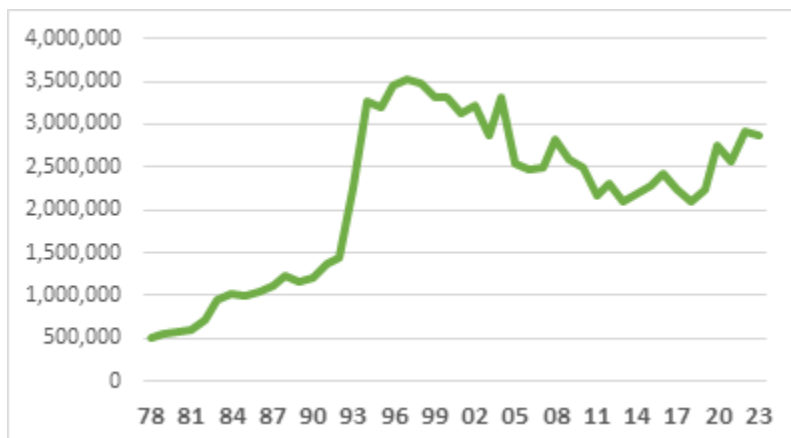
CVNP is located between Akron and Cleveland covering over 33,000 acres. Major features of CVNP include:

- Cuyahoga River – CVNP is centered on the Cuyahoga River, which offers scenic views and opportunities for kayaking, canoeing, and fishing.
- Hiking Trails – There are over 125 miles of trails, ranging from easy walks to challenging routes with panoramic views.
- Historic Sites – In addition to the Towpath Trail, there are historic homes, bridges, and structures.
- Scenic Railroad – The presence of CVSR through the CVNP makes it unique among parks in the National Park System
- Accessibility – CVNP is located between two population centers (Cleveland and Akron) and is the 12th-most visited national park in the country.
- Waterfalls – There are several waterfalls; notable among these are Brandywine Falls and Blue Hen Falls.
- Wildlife and Nature – CVNP is a refuge for native plants and wildlife, with deep forests, rolling hills, and open farmlands.

There is no admission fee to enter CVNP.

A graph of annual visits to CVNP is provided in Figure 4-9. The number of annual visits peaked in 1998 at 3.5 million. Visits in 2023 totaled 2.9 million. Visitation was relatively flat from 2010 – 2019 but increased during and following the COVID-19 pandemic.

Figure 4-9. Cuyahoga Valley National Park Annual Recreation Visitors, 1978 – 2023



The deliverable for this task is *6_Market Assessment Report*.

4.5 Ridership

The *Ridership Report* provides information on the passenger demand for service on the Extension, a key metric on the feasibility of the improvement. The report builds on the work of the *Market Assessment Report*, including the identification of travel patterns and potential markets in the Extension corridor. Four areas of research are provided in the *Ridership Report*, including,

1. Review of potential travel markets that could be served by the Extension,
2. A summary of trends and characteristics of the current CVSR ridership,
3. Results of a survey of CVSR customers conducted for the Feasibility Study, and
4. Development of a methodology and application to forecast Extension ridership.

4.5.1 Travel Market Review

As covered in the *Operating Plan Technical Memorandum*, passenger rail service between the CVSR Rockside Station and Downtown Cleveland could serve several distinct travel markets, including:

- CVSR Excursion - this would involve extending the basic service that CVSR provides between Akron Northside and Rockside Station.
- Service to Cleveland Attractions and Events – passenger service could also serve events and attractions that are proximate to the Extension. These include professional sporting venues, cultural attractions, and major events in Downtown Cleveland. It is expected that these potential markets would be promoted by CVSR to the extent that Excursion services meet the operating hours of individual attractions and events.
- Commuter Service – the National Park Service has indicated that a higher-level service designed for commuting would be in conflict with the purpose and mission of the National Park. As such, potential commuter service would be limited to the Extension itself, that is, Rockside Station to Downtown Cleveland. A review of this market suggests that the demand for a rail-based service would be limited.

As such, the development of ridership forecasts for the Extension focused on the CVSR excursion market. Corridor attractions and events matching the excursion schedules (e.g., days and hours of operation) were included; the commuter market was not.

4.5.2 CVSR Rider Profile

CVSR's service has evolved and grown since it began operating in partnership with CVNP under a cooperative agreement in 1989. The 24.5-mile CVSR route includes eight stations as shown on Figure 4-6 in Section 4.1.5, Operation Plan.

4.5.2.1 Service Offerings

CVSR offers a variety of services, which target specific groups. Over the years, changes to the menu of service have been made, based on ridership on provided services and CVSR customer research. In 2024, the following categories of service were provided:

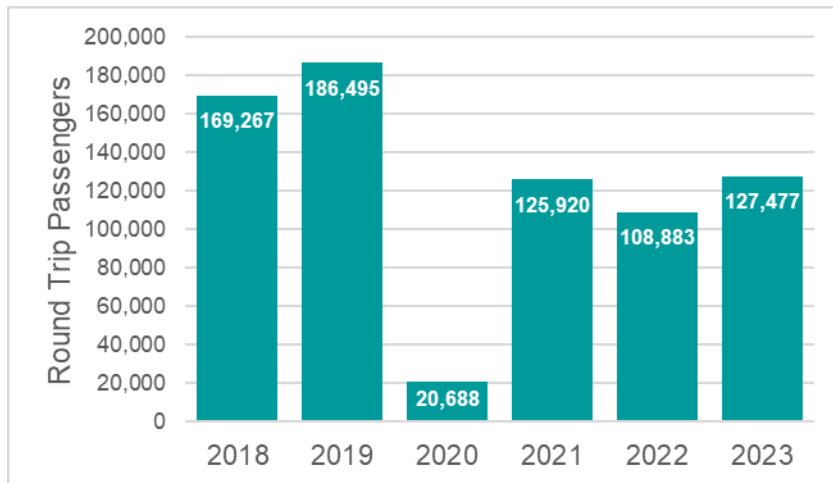
- National Park Scenic Excursions
- Dining & Drinks Excursions
- Entertainment Excursions
- Family Fun Loop
- North Pole Adventure
- Explorer Program
- Other Services

Of the menu of services, the core services provided by CVSR are the National Park Scenic and the North Pole Adventure trains. Other services are often operated as a special coach on a National Park Scenic Excursion.

4.5.2.2 CVSR Ridership

CVSR ridership is derived from ticket sales, which are generally sold and reported on a round-trip basis. Annual use of CVSR services for the last six years is presented Figure 4-10, which indicates that ridership was significantly affected by COVID-19 and has not recovered to levels reported in 2019.

Figure 4-10. CVSR Annual Ridership



Source: CVSR

Annual ridership for 2019 (pre-COVID-19) and 2023 by service type is presented on Table 4-8. This reveals that Scenic Excursion service has exceeded pre-pandemic ridership levels, and use of North Pole Adventure service was virtually the same for the two years.

Table 4-8. Annual CVSR Ridership by Service Type, 2019 vs. 2023

Service Type	2019	2023	Change	% Cng.	Percent Share	
					2019	2023
National Park Scenic Excursion	58,955	60,363	1,408	2%	32%	47%
North Pole Adventure	49,888	49,236	-652	-1%	27%	39%
Explorer	30,298	14,184	-16,114	-53%	16%	11%
Other Special Programs	12,830	1,731	-11,099	-87%	7%	1%
Dining & Beverage	13,628	1,229	-12,399	-91%	7%	1%
Fall Flyer	5,973	0	-5,973	-100%	3%	0%
Entertainment Excursion	4,130	402	-3,728	-90%	2%	0%
Family Fun Loop	4,732	25	-4,707	-99%	3%	0%
Education	4,481	307	-4,174	-93%	2%	0%
Groups/Rentals	1,580	0	-1,580	-100%	1%	0%
Totals	186,495	127,477	-59,019	-32%	100%	100%

CVSR provided records from their ticketing app which included the home location of individuals purchasing tickets. Data was summarized by geography and expanded for the number of tickets purchased for each transaction. Origin data was combined for the four years 2020-2023. It is known that riders using the Explorer program can pay with cash, which would not be captured in the data of user origins. Overall, the sum of ridership by origin represented 90 percent of the ridership reported above, suggesting that the data would be representation of CVSR users.

Table 4-9 shows that while CVSR draws from a wide area, nearly 85 percent are from Ohio and 38 percent from the two counties of Cuyahoga and Summit.

Table 4-9. Origins of CVSR Customers, 2020-2023

Residence Location	Customers	% of Total
All Customers	340,314	100%
Country		
US	339,842	99.9%
Foreign	472	0.1%
State		
Ohio	284,130	83.5%
Pennsylvania	15,881	4.7%
Michigan	6,613	1.9%
Indiana	3,417	1.0%
Illinois	3,173	0.9%
All Others	26,628	7.8%
Ohio Counties		
NE Ohio	239,519	70.4%
All Other Ohio Counties	44,611	13.1%
NE Ohio		
Cuyahoga	71,554	21.0%
Summit	56,561	16.6%
Stark	18,501	5.4%
Medina	15,526	4.6%
Lorain	13,856	4.1%
Lake	13,136	3.9%
Portage	11,854	3.5%
All other NE Ohio Counties	38,530	11.1%

Source: CVSR

4.5.3 Customer Survey

In collaboration with CVSR staff, a questionnaire was developed for an online survey of CVSR customers. The survey's objectives were to:

- Profile CVSR riders,
- Provide input to forecasting Extension ridership, and
- Assess how the Extension would affect use of CVSR.

CVSR posted a link to the survey on July 1, 2024, in the CVSR Newsletter, which has 80,000 subscribers. The survey closed on August 1, 2024; 3,197 responses were received. Selected responses to the survey follow,

- 83% of respondents are Very Likely or Likely to use a train on the Extension,
- 78% of respondents will ride CVSR trains more frequently with the Extension,
- 74% would use the Downtown Station, 8% Steelyard Commons, and 4% Harvard Avenue, and
- 40% would consider using a CVSR train to travel to Downtown Cleveland, including 28% to a professional sporting event and 25% to the Metroparks Zoo.

4.5.4 CVSR Ridership Forecast

The CVSR ridership forecast is broadly based on an incremental modeling approach using 2023 CVSR ridership, with growth assumptions derived from socioeconomic changes and service improvements from the customer survey and elasticity assumptions from published materials. The incremental modeling methodology is a growth-based approach that applies to observed ridership considering changes in land-use and service levels. This approach is an appropriate fit for the CVSR ridership analysis, given that majority of customers take the train to visit the National Park and/or enjoy scenic views rather than take the train simply as a mode to reach a destination. The units of ridership forecasts are riders who make round trips on the CVSR.

4.5.4.1 No-Build Scenario

The base year ridership, or ridership levels on which no-build growth is applied, is assumed to be year 2025, given that 2023 ridership levels were still at 68 percent of pre-pandemic levels. CVSR ridership growth between 2022 and 2023 was significantly higher (17 percent), which can be mainly attributed to recovery from the pandemic. It is assumed that CVSR will see similar higher growth until 2025 as a sign of continued steady recovery from the pandemic. Ridership for the year 2025 was estimated based on recovery growth rates of 15 percent between 2023 and 2024 and 13 percent between 2024 and 2025. These growth rates result in an estimated year 2025 ridership that is approximately 90 percent of pre-pandemic levels (i.e., 2019).

Beyond 2025 levels, it is expected that post-pandemic impacts are fully realized, and continued ridership growth will be based on economic, land-use, and other service-related changes.

A growth model was developed from other AECOM project work based on a non-linear power function using socioeconomic projections. The demographic variables included population, employment, and per capita income projections. Gross Domestic Product (GDP) per capita projections were used as a proxy for the per capita income.

Once the growth model was applied, the model-estimated growth rates were benchmarked against CVSR historic ridership growth rates with a low and high range. These include compound annual growth rates (CAGR) for National Park Scenic Excursion and North Pole Adventure ridership of a) low range: +0.9 percent from between 2010 and 2019, and b) high range: +2.8% from between 2015 and 2019. While CVSR offers other event services, these two have generally accounted for over 60 percent or more of CVSR annual ridership and represent the most consistent service provided.

Following the above steps, two sets of no-build scenario estimates were developed using variations in the growth model assumptions to reflect low and high growth impacts of socioeconomic projections. Table 4-10 shows the CVSR annual ridership for observed 2019 and 2023, base year 2025 (trendline projected), and 2040 no-build scenarios.

Table 4-10. CVSR Annual Ridership for Observed and 2040 No-Build Scenarios

	2019 Observed	2023 Observed	2025 (Trendline Projected)	2040 – No Build (Low)	2040 – No Build (High)
Total Ridership	186,495	127,476	165,876	192,476	238,305
% Change vs. 2025				16%	44%
CAGR vs 2025				1.0%	2.4%

4.5.4.2 Build Scenario

The build scenario includes the northward extension of CVSR service with three possible new stations: Harvard Avenue, Steelyard Commons, and Downtown Cleveland. The service plan generally assumes that the Extension stations will be provided similar excursion service as is currently provided by CVSR between Akron Northside and Rockside. As explained in Section 4.1.3 and the *Operating Plan Technical Memorandum*, the menu of event service, level of service, and days operated by season were assumed to remain largely the same. One difference is that service will be provided using two concurrently operated trains, which will each have an end point near the center of the National Park. Service operated on the Extension also can be used to reach Cleveland destinations along the route, to the extent that excursion schedules match the visitor hours of destinations.

The ridership changes in the build scenario, as compared to the no-build scenario, are based on three factors, which are primarily based on the customer survey responses. The three build demand factors included:

1. Existing riders shifting to Extension stations,
2. Increased CVSR frequency of use by current riders, and
3. Induced demand from new riders.

Two sets of build scenario ridership estimates were developed based on the no-build low and high range forecasts, along with the low and high range impacts of the Extension on frequency and induced demand. These estimates account for variations in socioeconomic impacts, as well as impact of the service Extension on both existing and new riders.

Table 4-11 shows the CVSR annual ridership for base year 2025, 2040 no-build low and high scenarios, and 2040 build low and high scenarios. The 2040 total build ridership for the low scenario indicates a 20 percent increase compared to the no-build low scenario, while the high scenario shows a 33 percent increase compared to the no-build high scenario. The 20 to 33 percent range represents the expected uplift in total ridership due to the Extension, which seems reasonable given the improved accessibility and additional Downtown attractions the Extension would serve.

Table 4-11. CVSR Annual Ridership Forecast for 2025 Base Year, 2040 No-Build and Build Scenarios

	2025 – Trendline Projected	2040 – No Build (Low)	2040 – No Build (High)	2040 – Build (Low)	2040 – Build (High)
Total Ridership	165,876	192,476	238,305	230,726	316,624
% Change vs. 2025		16%	44%	39%	91%
CAGR vs. 2025		1.0%	2.4%	2.2%	4.4%
% Change vs. No-Build				20%	33%

Use of the growth model enables visualizing the trend in ridership to 2050. Intermediate year ridership was derived by interpolating data points. Figure 4-11 shows the ridership trends from 2018 to 2050 based on observed ridership (2018 to 2023), trendline projections (2023 to 2025), interpolation between trendline projections and the growth model (2025 to 2030), and the growth model between 2030 and 2050.

Figure 4-11. Annual CVSR Ridership Trendline from 2018-2050 for Observed, No-Build and Build Scenarios

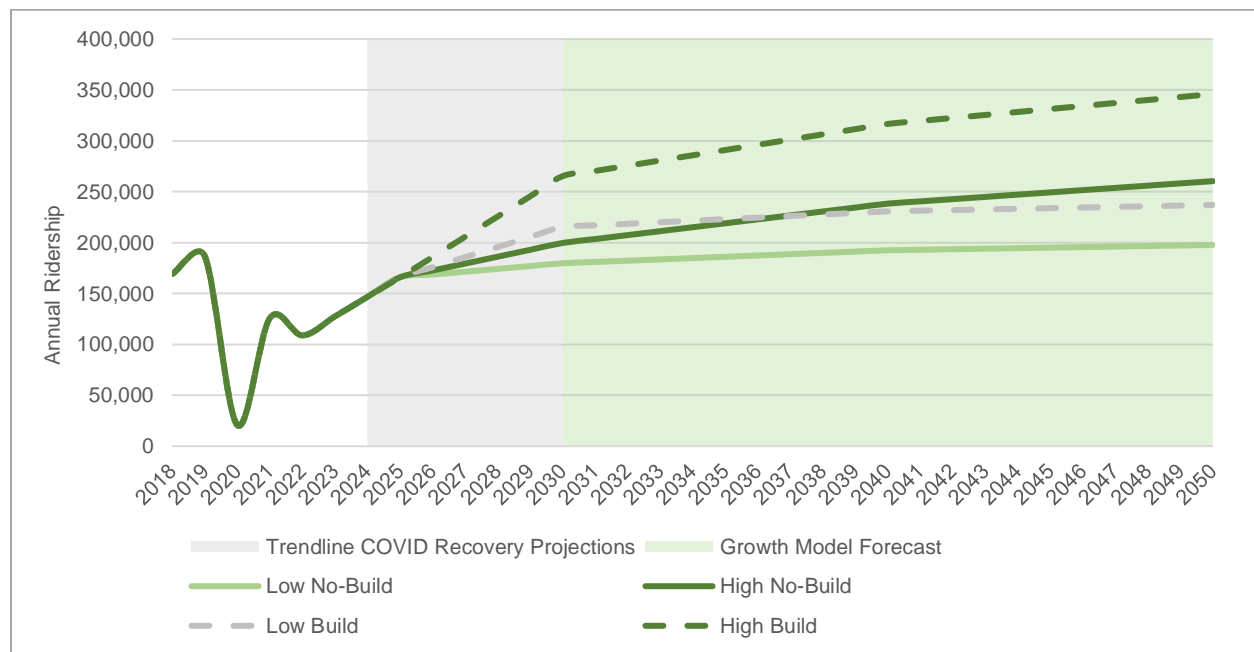


Table 4-12 summarizes the annual ridership forecasts for three future time points, including 2032, which represents a realistic opening year for the Extension. Based on projected socioeconomic and GDP growth for the 18-county Northeast Ohio region, the CVSR no-build annual ridership for 2050 is projected between 198,000 and 260,000 with CAGR between 0.7% and 1.8%, compared to a post-pandemic year of 2025.

With the proposed Extension to include the three stations, the extended total ridership for 2050 is projected between 237,000 and 346,000, representing a 20% to 33% increase in total annual ridership compared to the current service provided.

A variation of the proposed Extension involves deferring implementation of the Harvard Avenue Station to after opening day. Table 4-12 provides build forecasts with and without the Harvard Avenue Station.

Table 4-12. Summary of Extension Ridership Forecasts

Scenario	Year	Annual Ridership		% Change from No-Build	
		Low	High	Low	High
No-Build	2032	182,266	207,379		
	2040	192,476	238,305		
	2050	197,723	260,414		
Build with Harvard	2032	218,486	275,534	20%	33%
	2040	230,726	316,624	20%	33%
	2050	237,015	345,998	20%	33%
Build without Harvard	2032	216,620	273,410	19%	32%
	2040	228,755	314,184	19%	32%
	2050	234,990	343,332	19%	32%

The deliverable for this task is *7_Ridership Report*.

4.6 Regional Economic Impact

The regional economic impact task provided an analysis of the economic impacts that the Extension Project could have on the two counties directly served by CVSR and the Extension (Cuyahoga and Summit) and the State of Ohio.

4.6.1 Economic Model

This analysis used the Regional Input-Output Modeling System (RIMS II) developed by the U.S. Bureau of Economic Analysis to estimate the total economic impacts of the activities associated with the Extension Project. The RIMS II model produces multipliers that are used in economic impact studies to estimate the total impact of a project on a region. The impacts are described as follows:

- Direct impacts measure changes within the affected industry (e.g., spending by the construction industry to build a new rail station or upgrade trackage). Direct impacts are entered as change in construction output.
- 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 adjusts due to a direct industry impact (e.g., the wages of construction employees lead to spending on mortgages and groceries).

The RIMS II multipliers (the change in total economic impacts relative to the direct impacts) provide total impacts for four metrics:

- Employment measures the number of full-time and part-time annual average jobs.
- Labor Income measures the employee compensation.
- Value Added is the combination of labor income, other property type income and indirect business taxes. It can also be defined as gross regional product (GRP), the regional expression of gross domestic product.
- Output is the value of production and is equal to Value Added plus intermediate expenditures (i.e., the monies spent purchasing goods and services to create an industry's production).

On the basis of these outputs, tax impacts associated with the direct economic sectors that are disturbed are estimated using national averages. The geographic regions represented in these analyses are Cuyahoga and Summit Counties (region) and the State of Ohio in total (state). This regional definition was relevant to this analysis since these counties are the location of current and extended CVSR service. The inputs and the output of the modelling is in 2024 dollars.

The Extension is expected to generate the following economic impacts:

- Direct and total short-term economic impacts from capital expenditures to implement and build the rail improvements and new rail stations in Cleveland (2025–2031).
- Direct and total long-term economic impacts from the expansion-related increase in ongoing operating and maintenance expenditures to maintain the improvements in a state of good repair over the 2032–2051 operating period.
- Direct and total long-term economic impacts from reduced automotive trip costs associated with passenger shifts from existing stations to the new Cleveland-based stations over the 2032–2051 operating period.

4.6.2 Economic Impacts

4.6.2.1 Extension Capital Costs

Economic impacts from CVSR’s expansion of service into Downtown Cleveland initially occur as a result of the actual capital expenditures of the Project. Capital expenditures are of economic value to Cuyahoga and Summit Counties (region) and the State of Ohio (state) in total because infrastructure development expenditure increases the GRP and supports the creation and retention of engineering, architectural, and related professional services, construction-related jobs, and purchase of materials for the Project.

The Extension’s capital costs include design, engineering, and construction costs, plus contingency of 10 percent (see Section 4-2 Capital Costs). Total capital costs are \$194.1 million in 2025 dollars, or \$188.3 million in 2024 dollars.

The total economic impacts from Extension capital expenditures over the 2025–2031 period are presented in Table 4-13. Capital expenditures are expected to create 1,353 job-years in the region and 2,343 job-years in the state over seven years (2025–2032). These jobs will:

- Add \$79.5 million and \$135.2 million in labor income in 2024 dollars in the region and state, respectively,
- Generate \$186.5 million and \$230.7 million in value added in 2024 dollars in the region and state, respectively,
- Lead to \$335.0 million and \$421.7 million in 2024 dollars in economic output in the region and state, respectively, and
- Yield \$41.4 million and \$52.1 million in Federal, state, and local tax revenue in 2024 dollars in the region and state, respectively, over the Project implementation and construction period.

Table 4-13. Extension Total Economic Impacts Generated by Capital Expenditures, 2025–2031

	Employment (Job-Years)	Labor Income (2024\$, Million)	Value Added (2024\$, Million)	Output (2024\$, Million)	Taxes (2024\$, Million)
Cuyahoga & Summit Counties (region)	1,353	\$79.50	\$186.50	\$335.00	\$41.40
State of Ohio (state)	2,343	\$135.20	\$230.70	\$421.70	\$52.10

4.6.2.2 Extension Operations and Maintenance Costs

O&M costs of the Extension are based on the proposed service as documented in the *Operating Plan Technical Memorandum (and Section 4.1.3)*. These expenses occur between 2032 and 2051 in the 20-year modelling of the Project. In 2024 dollars, the additional O&M expenses above baseline costs average \$6.8 million per year over the 20 years, or \$136.7 million total in 2024 dollars.

Table 4-14 shows the economic impacts associated with the CVSR expansion in 2024 dollars from 2032 to 2051.

Table 4-14. Extension Total Economic Impacts Generated by O&M Expenditures, 2032–2051

	Employment (Job-Years)	Labor Income (2024\$, Million)	Value Added (2024\$, Million)	Output (2024\$, Million)	Taxes (2024\$, Million)
Cuyahoga & Summit Counties (region)	949	\$58.80	\$137.60	\$260.80	\$30.50
State of Ohio (state)	1,543	\$94.70	\$160.80	\$306.00	\$35.80

O&M expenditures are expected to create 949 job-years in the region and 1,543 in the state over the 20-year period. These jobs will:

- Add \$58.8 million and \$94.7 million in labor income in 2024 dollars in the region and state, respectively,
- Generate \$137.6 million and \$160.8 million in value added in 2024 dollars in the region and state, respectively,
- Lead to \$260.8 million and \$306.0 million in 2024 dollars in economic output in the region and state, respectively, and
- Yield \$30.5 million and \$35.8 million in federal, state and local tax revenue in 2024 dollars in the region and state, respectively over the Project operational period.

4.6.2.3 Extension Travel Cost Savings of Riders Shifting to New Stations

The *Ridership Report* forecasted the changes in ridership between and 2025 and 2040; this analysis used a straight-line extrapolation to extend the forecast to 2051. The forecast projects that between 20,665 current CVSR annual riders (low-growth estimate) to 45,312 riders (high-growth estimate) will shift to the new Cleveland stations rather than the current Rockside Station in 2040, a round-trip savings of approximately 13.0 miles. By extrapolation, the annual shift to the new stations and the reduced access travel miles (assumed to be automobile miles) are calculated. For this analysis, the midpoint between low- and high-ridership forecasts are used and results in an estimated reduction of 9.4 million vehicle miles over the 2032 to 2051 period. These miles are estimated to save households approximately \$5.5 million over the 20 years of operation. The total economic impacts of these cost savings are presented Table 4-15.

Table 4-15. Extension Economic Impacts Generated by Rider Shift to Cleveland Stations, 2032–2051

	Employment (Job-Years)	Labor Income (2024\$, Million)	Value Added (2024\$, Million)	Output (2024\$, Million)	Taxes (2024\$, Million)
Cuyahoga & Summit Counties (region)	31	\$1.30	\$3.50	\$5.80	\$0.80
State of Ohio (state)	47	\$2.10	\$4.10	\$7.20	\$1.00

The reduction in household costs increases household income and purchasing power used to buy other needed goods and services. This in turn is expected to create 31 jobs in Cuyahoga and Summit Counties and 47 in the State of Ohio over 20 years. These jobs will:

- Add \$1.3 million and \$2.1 million in labor income in 2024 dollars in the region and state, respectively,
- Generate \$3.5 million and \$4.1 million in value added (or GRP) in 2024 dollars in the region and state, respectively,
- Lead to \$5.8 million and \$7.2 million in 2024 dollars in economic output in the region and state, respectively, and
- Yield \$0.8 million and \$1.0 million in federal, state and local tax revenue in 2024 dollars in the region and state, respectively, over the 2032–2051 period.

4.6.3 Summary and Conclusions

Summaries of the economic impacts of the various elements of the CVSR Extension service for the region and state are presented Table 4-16 (region) and Table 4-17 (state).

The construction and operation of the CVSR Extension has the potential to be a strong economic stimulator to Cuyahoga and Summit Counties and more so to the State of Ohio. Respectively for the region and the state, the capital and operating expenditures for expansion alone are expected to generate 2,333 and 3,933 job-years, worth \$140 million and \$232 million in labor income in 2024 dollars; and increase GRP by \$328 million and \$396 million in 2024 dollars.

At the state level, every million dollars spent on the construction and operation of the Extension would create 12 job-years of labor, earning an average of \$59,140 per year and increase GRP by \$1.20 million and output for the state by \$2.24 million. The travel savings of the expanded service is also expected to stimulate the economies of the region and the state.

Table 4-16. Extension Total Economic Impacts for Cuyahoga and Summit Counties, 2027–2051

Activity	Direct Impact (2024\$, Million)	Employment (Job-Years)	Labor Income (2024\$, Million)	Value Added (2024\$, Million)	Output (2024\$, Million)	Taxes (2024\$, Million)
Capital Expenditures (2025–2031)	\$188.30	1,353	\$79.50	\$186.50	\$335.00	\$41.40
O&M Expenditures (2032–2051)	\$136.70	949	\$58.80	\$137.60	\$260.80	\$30.50
Travel Savings of New Stations (2032–2051)	\$5.50	31	\$1.30	\$3.50	\$5.80	\$0.80
Total Impacts	\$330.50	2,333	\$139.70	\$327.60	\$601.60	\$72.60

Table 4-17. Extension Total Economic Impacts for the State of Ohio, 2027–2051

Activity	Direct Impact (2024\$, Million)	Employment (Job-Years)	Labor Income (2024\$, Million)	Value Added (2024\$, Million)	Output (2024\$, Million)	Taxes (2024\$, Million)
Capital Expenditures (2025–2031)	\$188.30	2,343	\$135.20	\$230.70	\$421.70	\$52.10
O&M Expenditures (2032–2051)	\$136.70	1,543	\$94.70	\$160.80	\$306.00	\$35.80
Travel Savings of New Stations (2032–2051)	\$5.50	47	\$2.10	\$4.10	\$7.20	\$1.00
Total Impacts	\$330.50	3,933	\$232.00	\$395.70	\$735.00	\$88.80

In conclusion, the construction and operation of CVSR’s Extension service to Downtown Cleveland is estimated to generate significant new economic activity along the CVSR route as well as for the state as a whole. Because this Project also provides the potential for stimulating tourism visits and sales beyond CVSR itself, as well as regional improvements in the health, social, and equity welfare, the impacts from the Extension should be greater than calculated in this Study.

The deliverable for this task is *8_Regional Economic Impact Analysis Technical Memorandum*.

4.7 Benefit/Cost Analysis

The main objective of this Benefit/Cost Analysis (BCA) was to compare the expected contributions (benefits) and costs of the Extension to determine whether its contributions to the region’s economy, as well as to the impacted communities, justify the costs. The BCA followed the USDOT’s Benefit-Cost Analysis Guidance for Discretionary Grant Programs, November 2024, as a basis for the analysis. The analysis used 2024 as the base year by inflating

2023 USDOT cost factors to 2024 dollars. As per USDOT's guidance, a BCA should define the baseline, or No-Build scenario, where current service is maintained with ridership growing organically, and the alternative, or Build scenario, where the Extension is built, and ridership increases above baseline growth due to the expanded service.

The benefits, disbenefits, and additional costs are calculated by comparing the "Build" scenario against the "No-Build" scenario. Since the BCA calculates the anticipated benefits expected to accrue from the Build scenario over a specified period and compares them to the anticipated costs of the Project during that period, both calculations are discounted into the present to identify their present value.

Following USDOT guidance, the key methodological elements of this analysis included:

- Defining existing and future conditions under both the No-Build scenario as well as under the Build scenario.
- Assessing the Project benefits, quantitatively and qualitatively, with respect to selected criteria defined by USDOT over 20 years of operations beyond Project completion in 2031, when benefits (starting in 2032) accrue and using modified USDOT recommended values to monetize benefits or disbenefits.
- Estimating Project capital costs, during construction (2025–2031), and the Project's operation and maintenance costs over 20 years of operations beyond Project completion.
- Establishing 2024 as the base year and presenting all benefits and cost values in 2024 dollars.
- Assuming a service life of 50 years. Therefore, the Phase III assets will have a 60 percent residual value of the Project costs in the year 2052.
- Discounting Project benefits and costs using a real discount rate of 3.1 percent per year, except in the case of carbon dioxide (CO₂) emissions, where a 2.0 percent per year discount rate is applied.

4.7.1 Project Benefits

This BCA calculates benefits quantitatively, which are used to calculate the benefit/cost ratio and net present value of the Extension and describes non-quantified benefits qualitatively. The quantified BCA benefits include the following:

- Safety - crash cost reduction.
- Vehicle Operating Costs - reductions due to reduced driving miles.
- Environmental Sustainability - reduced vehicular emissions, noise, and congestion.
- Amenity Benefit - related to the value riders and the community place on the Project.
- Property Value - increases adjacent to proposed new stations.
- Residual Value of Assets - based a 50-year life of assets.

Additional detail on the derivation of quantifiable benefits follows.

4.7.1.1 Rider Shift to Extension Stations

As explained in Section 4.6.2.3, an estimated 20,665 to 45,312 current CVSR riders were projected to shift to the new Cleveland stations from the current Rockside Station in 2040. Based on a round-trip travel savings of approximately 13.0 miles, estimated vehicle miles traveled (VMT) saved was calculated for the period of operation 2032-2051. This reduction in vehicle miles can be monetized to include:

- Vehicle Operating Cost (VOC) Savings (2024\$) - The reduced VMT associated with riders shifting to the Extension stations is multiplied by \$0.58 per VMT to estimate the VOC savings,
- Crash Cost Reduction (2024\$) - Reduced VMT also reduces exposure to roadway crashes. The current cost per VMT of crashes in Ohio was developed using five years of crash data from the National Highway Traffic Safety Administration (NHTSA) and the corresponding VMT data from Federal Highway Administration (FHWA) Highway Statistics. The fatal and injury crashes are divided by the VMT to determine occurrence of each per VMT. These are multiplied by USDOT crash costs and combined to obtain an average crash-cost per VMT (\$0.17 per VMT). This average is then multiplied by the VMT reduction to estimate the benefit.
- Emissions Cost Reduction (2024\$) - Similar to the VOC and the safety benefit, the reduction in VMT is multiplied by USDOT cost factors for carbon and non-carbon emissions, inflated to 2024. These were \$0.114 and \$0.013 per VMT for carbon and non-carbon emissions, respectively.

- **Avoided Externality Costs (2024\$)** - The externalities associated with auto travel in the absence of Extension stations is calculated by multiplying the VMT reduction by USDOT cost factors for noise and congestion, inflated to 2024. These are \$0.0011 and \$0.124 per VMT for noise and congestion external costs, respectively.

The calculated benefits are summarized on Table 4-18 for the period 2032-2051.

Table 4-18. 20-Year VMT-Based Benefits in 2024 Dollars (Non-Discounted)

Benefit	Estimated Value
Vehicle Miles Traveled Saved (VMT)	9,434,711
Vehicle Operating Cost Savings (2024\$)	\$5,472,133
Crash Cost Reduction (2024\$)	\$1,587,498
Emissions Cost Reduction (2024\$)	\$1,205,000
Avoided Externality Costs (2024\$)	\$1,212,125

4.7.1.2 Amenity Benefit

CVSR can be considered an amenity, as it provides a leisure activity and attractive feature for the region, allowing visitors to enjoy scenic views while traveling by train, essentially acting as a recreational option similar to other amenities like parks or hiking trails. The value of such an amenity may not be easily measured, but the willingness for the region to provide support to the railroad through purchases of rides, donations, etc. is in essence a revealed preference for the service. In other words, the financial support of the scenic railroad can be used as a proxy for the benefit the amenity provides the region.

To estimate the value of this benefit, the forecast of CVSR revenues for the baseline (No-Build) and the Extension (Build) scenarios were drawn from Section 4.8 and the *Financial Analysis and Funding Options Report* of this Study. The revenues that support CVSR include service-dependent and non-service-dependent sources are listed below.

Service dependent revenues	Non-Service dependent revenues
Income Special Programming	General Fundraiser Education
General Passenger Sales	Education
Concessions	Sponsorship Revenue
Beverage Trains	Membership
Food Trains	Annual Fund
Charters	Grants
Bike Aboard/Hike Aboard	Gifts in Kind
	Individual General Donations
	Preservation Fund Revenue

Taken together, these sources are forecasted to average \$8,221,874 per year under the No-Build scenario and \$14,054,550 per year in the Build scenario, in 2024 dollars. The difference of \$5.8 million per year is the amenity benefit for the Extension of service (Build scenario).

4.7.1.3 Property Value Increase Benefit

The extension of the service to Cleveland has the potential of increasing property values in proximity to Project stations. Determining the potential increase in the value of surrounding properties can be complex given that the Extension may be part of a larger, more encompassing effort to develop or redevelop sections of real estate; the mix of residential, commercial, or retail properties in the area; and a host of other factors that may create positive or negative synergies. This BCA estimates the potential property value of two stations in Cleveland built as part of the Extension (i.e., Steelyard Commons and Downtown Cleveland). The property value increase is a one-time benefit occurring the first year after Project completion in 2032.

The simplified approach used was to:

1. Obtain the 2024 assessed value for all properties in the City of Cleveland from the Cuyahoga County Fiscal GIS Hub.
2. Divide the assessed value by 35 percent (assessed value is 35 percent of real value) to obtain the full value of real estate in Cleveland.
3. Divide the estimated full value by 77.7 square miles (the land area of Cleveland) to obtain a property value per square mile (i.e., \$201.5 million).

A literature review found that real estate values within one-quarter mile of a rail station are 6.2 percent and 15.2 percent higher than comparable properties farther away for residential and commercial properties, respectively. This analysis assumes a weighted average of residential and commercial property value increases, or 10.4 percent within one-quarter mile of a station.

The calculation for the one-time property value increase multiplied the average value of Cleveland property (\$201.5 Million) to area within one quarter mile (0.196 square miles), times the percent of value increase (10.4%), times the number of new stations (2). This yielded \$8.2 million in 2024 dollars.

4.7.1.4 Residual Value of Assets

As detailed in the *Capital Costs Technical Memorandum*, the capital cost of the Extension is estimated at \$188.3 million in 2024 dollars. Although the estimate has multiple components of different useful lives, the weighted average life of the investment is approximately 50 years. Using straight-line depreciation, after the 20-year operational period, there should be 60 percent of the Extension’s capital value remaining. The remaining value of the capital investment is estimated \$114.6 million in 2024 dollars.

4.7.1.5 Benefit Summary

Table 4-19 summarizes the Project benefits for the 20-year operating period. Total benefits are \$249.0 million in 2024 dollars, and \$132.2 million discounted to 2024.

Table 4-19. Annual Benefits in 2024 Dollars

Benefit	20-Year Benefit Value
Vehicle Operating Cost Savings	\$5,472,133
Crash Cost Reduction	\$1,587,498
Emissions Cost Reduction	\$1,205,000
Avoided Externality Costs	\$1,212,125
Amenity Benefits	\$116,653,521
Property Value Increase	\$8,205,839
Residual Value	\$114,642,125
Total Undiscounted (2024\$)	\$248,978,241
Total Discounted (2024\$)	\$132,187,648

4.7.2 Project Costs

There are two cost types analyzed in this BCA: 1) Capital costs to build the Extension, and 2) Operations and Maintenance (O&M) costs to run the extended service. The data supporting the analyses of costs were developed in previous tasks of this overall Study, as well as provided in Sections 4.2.1 and 4.2.2 of this report.

The estimated capital cost for the Project in 2025 dollars is \$194.1 million, or \$188.3 million deflated to 2024 dollars. Discounted to 2024, the capital cost is \$162.2 million.

O&M costs are summarized in Table 4-20. Over the 20-year operational period, the difference between Build and No-Build O&M costs is \$136.7 million in 2024 dollars, and \$81.5 million discounted to 2024.

Table 4-20. 20-Year Operations & Maintenance Costs in 2024 Dollars

O&M Cost	Value
No Build O&M Costs	\$164,660,194
Build O&M Costs	\$301,382,867
O&M Cost Difference	\$136,722,673
Discounted O&M Costs	\$81,515,282

4.7.3 Quantitative Benefit-Cost Analysis

This BCA converts potential benefits and costs from the Extension into monetary units and compares them. The following common benefit-cost evaluation measures are included:

- **Net Present Value (NPV):** 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):** The present value of incremental benefits is divided by the present value of incremental costs to yield the BCR. The 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.

Table 4-21 presents the evaluation results for the Project. Benefits and costs are presented in undiscounted and discounted values at 3.1 percent per year, except in the case of reductions in CO₂ emission costs, where a 2.0 percent per year discount rate is applied.

Table 4-21. Quantitative Benefit/Cost Measures

Evaluation Measures	Value 2024\$, Millions
<i>Project benefits = PB</i>	\$132.20
<i>Total project costs = PC</i>	\$243.50
<i>Benefit/cost ratio = BCR = PB / PC</i>	0.54
<i>Net present value = PB - PC = NPV</i>	(\$111.30)

The measurable discounted benefits are just over half of the discounted Project costs, resulting in a **benefit/cost ratio of 0.54** and a **net present value of minus \$111.3 million** in discounted dollars. Much of this is due to the relatively long period of large capital expenditures before benefits can begin to accrue. Ongoing O&M cost increases are also considerable.

4.7.4 Qualitative Benefits

The quantitative BCA demonstrates a shortfall of discounted benefits relative to discounted costs. This notwithstanding, dividing the minus \$111.3 million NPV by the 20 years of operations equates to a shortfall in discounted benefits of \$5.6 million per year. While this may seem a large deficit, the ability of the expanded CVSR to attract additional tourism visitors to Northeast Ohio, particularly Cleveland, cannot be overlooked.

By bringing in tourists, scenic railroads can boost local economies through spending on accommodations, dining, and other activities. For perspective, the region only needs an average of 13,300 additional visitors per year, or a 0.06% increase, to make up the shortfall (albeit, not directly for CVSR), given average tourist expenditures in Cleveland.

In addition to the potential tourism impacts, expanded CVSR service could provide or enhance these benefits:

- Increases multimodal access to the Cuyahoga Valley National Park (CVNP) for residents of the City of Cleveland and surrounding suburbs. This is especially important for people with limited or no other transportation options, particularly low-income communities, persons with disabilities, or the elderly.

- Increases physical activity as riding on a heritage train can be a low-impact form of exercise, particularly for people with mobility challenges, encouraging more active lifestyles. Additionally, the expanded service can provide improved access to bicycling, hiking, and other outdoor recreational opportunities in CVNP.
- Provides improved mental well-being and reduced stress levels through access to the natural settings offered by CVNP.
- Increases community engagement by fostering a sense of community pride by connecting people to their local history and natural environment. Participating in heritage railroad activities, whether as a passenger or volunteer, can foster a sense of community and provide opportunities for social interaction. It can provide a sense of accomplishment and contribute to a shared goal for volunteers, which can be particularly beneficial for older adults.
- Creates educational opportunities regarding the region's railroad and natural history.

Overall, the expansion of the CVSR would increase the opportunities for improving the health, social, and equity welfare for currently underserved communities within the region.

There are 4.2 million people living in the 18 counties which the CVSR serves or is adjacent to. Using the average household size in Ohio of 2.39 persons, that market region holds approximately 1.76 million households. If the minus \$111.3 million NPV is divided by 20 years and divided by the number of households in the region, that average annual shortfall equates to \$3.16 per household per year.

This amount compared to the potential increase in welfare for the region, points towards the Downtown Cleveland Extension as a viable Project from a quantitative plus qualitative benefits point of view.

The deliverable for this task is *9_Benefit/Cost Analysis Technical Memorandum*.

4.8 Financial Analysis and Funding Options

This report provides a financial analysis for implementing and operating the Extension and identifies potential capital and operating cost funding sources.

4.8.1 Capital Costs

The service extension of CVSR to Downtown Cleveland requires capital investments for improvements to rail infrastructure, including track, stations, signals, and other infrastructure. Detailed capital costs were estimated using FRA's Standard Cost Categories template, which is provided in the *Capital Cost Technical Memorandum*. Additional detail on capital costs is found in Section 4.2.1 of this report. Costs in 2025 dollars total \$194 million. Since not all costs are realized immediately, costs in 2031 are estimated at \$231 million, assuming 3.5 percent annual inflation for capital works.

The timeline for capital works development can be broadly broken into two phases: planning and design through Invitation for Bidding (IFB) and construction. In the planning and design phase, the typical timeline for an FRA project involving right-of-way (ROW) upgrades for passenger rail service is 18 to 24 months for Project Development (preliminary engineering and NEPA) and 24 months for Final Design. The construction timeline is expected to span three years.

4.8.2 Operating Costs

Operating costs used in the Financial Analysis were estimated in the *Operating and Maintenance Costs Technical Memorandum*; details on O&M costs are also found in Section 4.2.2 of this report. Costs were estimated for two scenarios: baseline scenario (average of 2018–2023, excluding 2020) and the increased service scenario (as proposed in the *Operating Plan Technical Memorandum* and also detailed in Section 4.1.3).

Baseline costs were provided by CVSR for the years 2018 to 2023, which were broken down into 12 line items grouped into the following three categories:

1. Fixed-cost items, which are forecast to remain the same for all scenarios and to increase with inflation alone.

2. Service mile-based items, which are forecast to change in line with change in total service miles, from a unit cost per mile basis.
3. Round trip-based items, which are forecast to change in line with change in total number of round trips operated and similarly extrapolated from a unit cost per round trip basis.

One change from 2023 operations, even at the baseline level, is the addition of paid locomotive engineers. In the past, CVSR has used volunteer crews to operate trains. CVSR plans to add paid operating staff for 2025 and beyond. This is factored into the baseline scenario as well as the increased service scenario.

Currently, the NPS is responsible for the track maintenance on the existing CVSR right of way through the CVNP. However, it is assumed that in 2025, CVSR will take over this responsibility. Maintenance operating costs from 2026 onwards are included for both scenarios. An annual estimate of \$400,000 (in 2023 dollars) was used for this expense.

The assumption has been made that CVSR will operate over CSX tracks under a Trackage Agreement. Low and high levels of fee to CSX were developed and included in the costs for the increase service scenario. The ultimate costs to be paid by CVSR to CSX will be the result of negotiation.

The forecast compares operational costs for four cases as shown in Table 4-22. The first is a simple inflation of 2023 costs while maintaining the same service. It is important to note that CVSR operated its excursions with reduced service miles in 2023 due to a track outage north of Peninsula Station. This cost totaled \$6.0 million.

The next baseline case assumes that full-length service between Akron Northside and Rockside Stations is restored, and the number of round trips operated is an average of the past six years excluding 2020. This also factors in the additional CVSR maintenance cost taking on this responsibility from the NPS. Bringing on paid operators was also included in this case, which resulted in a total annual operating expenditure of \$8.5 million.

The two increased-service cases are based on extended service assumed in the *Operating Plan Technical Memorandum* (also documented in Section 4.1.3 of this report), which more than doubled service miles. Depending on the trackage rights agreement with CSX, the annual operating costs are estimated at between \$14.8 million (low) to \$15.9 million (high) in 2025 dollars.

Table 4-22. Summary of Annual Operational Cost Estimate Comparison

Scenario	Cost Elements	Cost (2025\$, Million)
Baseline	Historic CVSR + Inflation	\$6.00
Baseline	NPS Maintenance + Paid Engineers	\$8.48
Increased Service	Paid Crews, Low CSX Payments	\$14.81
Increased Service	Paid Crews, High CSX Payments	\$15.91

4.8.3 Revenue

Revenue sources from 16 line items are grouped into three categories, including: 1) Sales-Service Dependent Revenue, 2) Sales-Non-service Dependent Revenue, and 3) Operations Funding-Non-service Dependent Revenue. Ridership-based revenue is primarily from ticket and concession sales on CVSR’s various services. The other revenue is derived from different funds, grants, and memberships, along with agency-raised revenues such as fundraisers and sponsorships.

Annual ridership assumptions for forecast years are based on the data presented in the *Ridership Report* and Section 4-5, which was used to estimate service-dependent revenue. Trip-based revenue sources were assumed to scale relative to the ridership forecasts. Revenue based on ridership was adjusted for inflation.

Fixed-revenue sources were assumed to increase in line with inflation. Memberships, Annual Funds, and Preservation Funds have grown relatively steady over the six-year period 2018-2023. Thus, the assumed forecasts would increase from their 2023 values. Donations, sponsorships, and fundraiser revenues have fluctuated in the past, so these are forecasted from an average value of the items from the past six years (excluding 2020). Grant funding

was also volatile during the COVID-19 pandemic. It is assumed to grow more steadily to keep up with average annual 3-percent inflation from 2023 levels.

Table 4-23 compares revenue forecasts to the estimated operating costs as described earlier in this report. The large difference in two baseline cases (Cost Plus Inflation and Baseline 2025) is due to CVSR temporarily operating shorter trips in 2023 due a track outage. The resulting reduced ridership is expected to be restored in the Baseline 2025 scenario. For scenarios with increased service, ridership forecasts increase by approximately 25 percent. Given that percentage and given that more than 80 percent of the revenue is ridership-dependent, revenues do not increase in line with the increased service and its associated costs.

Table 4-23. Revenue Forecasts Across Cases/Scenarios

Case	Service Miles	Round Trips	Additions	Cost (2025\$)	Total Revenue (2025\$)
2023 Cost Plus Inflation	11,801	465	Annual inflation	\$6.00M	\$6.26M
Baseline 2025 Cost	19,237	469	NPS maintenance costs, paid operators	\$8.48M	\$8.23M
Increased Service (low CSX cost)	38,759	1,098	Additional service, CSX low	\$14.81M	\$9.33M
Increased Service (high CSX cost)	38,759	1,098	Additional service, CSX high	\$15.91M	\$9.33M

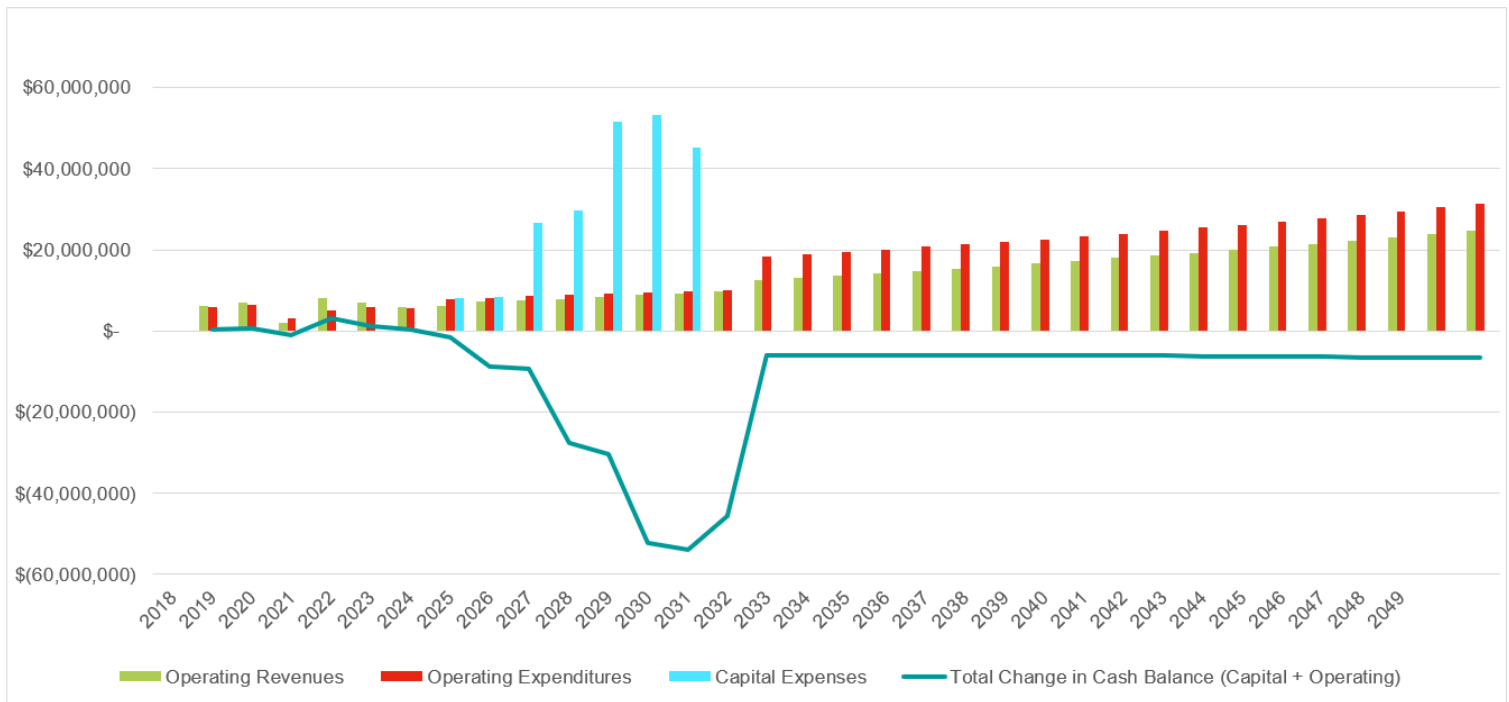
4.8.4 Cash Flow

Using the past and future estimates of costs and revenues, a net cash flow analysis was prepared, which illustrates the cash balance from the total revenue, after deducting operations and capital costs each year.

Figure 4-12 presents the cash flow forecast, which provides an overview of the financial status of CVSR into the future. The timelines assumes that capital work on the Extension begins in 2025 and is completed by 2031. Thus, baseline service is expected to continue until 2031. Increased service tied to extending service to Cleveland is expected to begin in 2032.

Across future years, operating costs exceed the revenues each year, which is exacerbated when service increases after the opening of the Extension service. This raises operational costs by 75 percent. Of that increase, approximately 60 percent is service-based costs while 15 percent is the new trackage fees paid to CSX. However, overall revenue increases by 23 percent, driven by the forecast ridership growth.

Figure 4-12. Forecast of Cash Flows



The financial analysis demonstrates that additional revenues, beyond that of the baseline revenue forecast, would be needed to build and operate the Extension. In total, there is a gap of approximately \$222.5 million in year-of-expenditure dollars needed for capital costs, and over \$7 million annually in annual operating revenue needed to operate the service once the Extension is opened. Without identifying and securing these funds, the Extension Project will not be able to proceed.

4.8.5 Funding Options

Given the need to identify and secure funding for building and operating the Extension, potential funding sources that could be sought were identified and reviewed. Typically, passenger rail projects are funded through a mix of Federal, state, and local sources. While capital costs are often substantially funded by Federal sources, ongoing operating costs are typically borne by state budgets. Following are possible funding sources:

Federal Discretionary

- Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program administered by FRA
- Federal-State Partnership for Intercity Passenger Rail (FSP) Grant Program administered by FRA
- National Infrastructure Project Assistance (“Mega”) Program administered by USDOT
- Nationally Significant Multimodal Freight & Highway Projects (INFRA) Program administered by USDOT
- Rural Surface Transportation Grant (“Rural”) Program administered by US DOT
- Railroad Crossing Elimination Grant (RCE) Program, administered by FRA
- Better Utilizing Investments to Leverage Development (BUILD) Program administered by USDOT (formerly RAISE)
- Restoration and Enhancement Grant Program (“R&E”) administered by FRA
- Federal Lands Access Program (FLAP) administered by FHWA
- Federal Lands Transportation Program (FLTP) administered by FHWA
- Capital Investment Grants (CIG) Program, administered by FTA

Federal Non-Discretionary

- Railway-Highway Crossings (Section 130) Program, apportioned by FHWA and allocated by allocated by the Public Utilities Commission (PUCO), in partnership with the Ohio Rail Development Commission
- Congestion Mitigation and Air Quality (CMAQ) grants, administered NOACA and other MPOs
- Surface Transportation Block Grants (STBG), administered NOACA and other MPOs

State and other Sources

- Legislative authorization for use of State of Ohio General Revenue Funds
- Rail Development Fund administered by the Ohio Rail Development Commission (ORDC)
- Local Allocation Agreement between communities served by CVSR from municipalities, private entities, or other local sources
- Parking revenues from surface lots and structured parking facilities
- Joint development, or private real estate development on agency properties
- Naming rights, a payment for the right to put a company name on a piece of infrastructure
- A public improvement district (PID) applies an additional property tax or assessment to a specific improvement area to pay for new public infrastructure.
- Tax increment financing (TIF), a local government financing tool that diverts the incremental property taxes created by new development to pay for project-related infrastructure costs
- Private Foundations, direct contributions from philanthropic foundations

Summary

Given the size and complexity of the Extension Project, it would be advisable to pursue multiple avenues for funding. Though the Project may not be competitive for some traditional Federal passenger rail discretionary funding programs due to expected lower BCA results, many other funding sources remain open to the Project, as listed above.

The Extension likely would be a competitive applicant for some Federal, state, local, and private sources. In particular, discretionary funding programs like FLAP, FLTP, RCE, R&E, and the State Rail Development Fund; formula funding from Section 130, CMAQ, and STBG; municipal contributions, whether through a Local Allocation Agreement, TIF, or other instrument; and Northeast Ohio's philanthropic organizations are candidates for assembling project funding.

The deliverable for this task is *10_Finacial Analysis and Funding Options Report*.

5. Next Steps

This technical study has made several conclusions, including,

- The Extension is feasible,
- Capital investment improvements identified to allow shared freight and passenger operations require input from CSX,
- The BCA could be improved if costs were reduced or monetized benefits increased, and
- The extended service would add social benefits not captured in the BCA.

Following are suggested next steps to answer open issues left from the Feasibility Study, build community and stakeholder support for the investment, and set up for the Project Development (preliminary engineering and NEPA) phase.

Identify Project champions – along with CVSR and CVNP, form a small leadership group to advance the Project. Determine the primary roles for champions, which could include a focus on:

- Advocacy – federal, state, and local governments, railroads, businesses, other private interests
- Funding – identifying, pursuing, and/or providing

Establish a Working Group - establish a working group of key Partners focused on such activities as:

- Collaborate with key private stakeholders whose participation is necessary to advance the Project,
- Develop and execute an approach to building Project support,
- Coordinate the next phase of Project work, including securing necessary funding for early activities, and
- Coordinate the identification and application of Project funding.

Engage Railroads - a key aspect of the next study phase will be to obtain input from the CSX. Coordination with NS will also be needed related to the two rail-to-rail crossings. Considerations of this engagement should include:

- Understand their concerns - It is presumed that concerns would include impact on their operations, scheduling, capacity, customers, and safety. Added liability will likely be an issue since passenger trains do not presently operate on this track.
- Highlight benefits - Outline the potential benefits that capital investments to their physical plant made for the Project can have to their operation. (Note reimbursement/rental fees paid by CVSR, upgraded track infrastructure benefit freight operations, and community benefits.)
- Engage early and often - Regular communication can help build trust and address concerns proactively.
- Involve key stakeholders - Include local government officials, transportation authorities, and community leaders in the discussions. Their support can add weight to the Project proposal, help address broader community benefits, and support grant funding requests.
- Leverage legal and regulatory frameworks - Be familiar with relevant laws and regulations that govern operating passenger rail services on a Class I rail line.
- Seek mediation if necessary - If negotiations stall, consider involving a neutral third party to mediate the discussions and help reach a mutually beneficial agreement.

Develop scope, budget, timeline for next phase – elements of the next steps leading to construction will begin with building support for the Project then seeking funding, as shown in Table 5-1. The cost for grant pursuits assumes that there may be more than one application made. The timeline indicates that service start is possible in 2032 assuming funding is secured no later than 2026.

Table 5-1. Anticipated Schedule and Estimated Costs

Phase	2025	2026	2027	2028	2029	2030	2031	2032
Partner Engagement and Advocacy								
Grant Pursuit and Funding Commitments	\$200-400K*							
Project Development (Prelim. Engineering/NEPA)		\$4.6M						
Final Design and Permitting				\$10.8M				
Construction					\$177.1M			
Operations Planning and Service Initiation								\$1.6M

*Funding for grant pursuit not included in Project cost estimate.

Build Project Support – develop and implement a program to gain support for the Extension, including the following possible strategies,

- Develop promotional materials and resources, including:
 - Prepare an executive summary of the Extension Project in brochure format that includes and/or complements a one-page fact sheet with maps.
 - Commission a video to illustrate the proposed route and its benefits. Virtual tours or simulations can help people visualize the rail line.
 - Establish a speakers bureau, including a PowerPoint presentation to promote the Project.
 - Identify success stories of similar projects from other regions and highlight the benefits achieved.
- Media, Communication, Public Relations, including such activities as:
 - Create a separate strong brand identity focused on the Extension Project.
 - Create web page on the NOACA, CVSR, NPS websites to post Project materials and news.
 - Conduct media campaigns using local newspapers, radio, and TV; issue press releases to spread awareness.
 - Use targeted social media, online advertising, and email campaigns to CVSR members and other collaborative organizations to promote the Project.
 - Seek travel Influencers and Bloggers for support.
- Meet with other governmental entities (request resolutions of support if appropriate), including:
 - Corridor communities, including along CVSR's current alignment (focus on communities in which a station is proposed or exists)
 - Summit County, Akron Metropolitan Area Transportation Study, Akron METRO
 - Ohio Department of Transportation (ODOT)
 - Ohio Rail Development Commission (ORDC)
 - Federal, state, and local elected officials
 - Federal funding agencies
- Meet with private foundations, especially those that serve Cleveland.
- Engage communities, targeting community development corporations for building customer engagement, particularly Cleveland neighborhoods, including:
 - Cleveland Neighborhood Progress
 - Tremont-West
 - Ohio City Inc.
 - Burten Bell Carr Development
 - Metro West
 - Old Brooklyn

- Leverage strategic stakeholders, including:
 - Cleveland Guardians
 - Cleveland Cavaliers/Monsters
 - Blossom Music Center
 - Bedrock (Downtown Cleveland Station)
 - First Interstate Properties (Steelyard Commons Station)
 - Western Reserve Fire Museum
 - Rock and Roll Hall of Fame
 - Great Lakes Science Center
 - Greater Cleveland Aquarium
 - GCRTA
 - Cleveland Metroparks (Cuyahoga River water taxi, CanalWay Center)
- Collaborate with non-profit tourism, business, rail organizations, and other target market groups, including:
 - Downtown Cleveland Inc.
 - Flats Forward
 - Destination Cleveland
 - Greater Cleveland Partnership
 - Ohio Rail Tourism Association
 - All Aboard Ohio
 - Heritage Rail Alliance
 - Biking advocacy groups (Canalway Partners, Bike Cleveland)
 - Kayaking/rowing advocacy groups (Share the River, Cleveland Rowing Foundation)
- Partner with Local Businesses, such as:
 - Hotels and restaurants
- Events and event organizers, e.g., Blazing Paddles Paddlefest Seek resolutions of support from Project Partners, collaborators, and stakeholders.
- Add the Project to NOACA's Long Range Transportation Plan, *AIM Forward 2040*.
- Contact other scenic or tourist railroads to discuss lessons learned and potential for collaboration, building on Project work under the Market Assessment task of the Study.

Pursue Grant Opportunities – using the research prepared in this Study of possible funding programs for both capital and operating, follow-up by:

- Developing a strategy for pursuing federal, state and local public funding, including identifying matching funds.
- Conducting outreach to private foundations that serve Cleveland and have supported CVSR previously.
- Preparing and submitting grant applications for federal, state, and/or local public funding.
- Determining if there is an opportunity for a legislative earmark in the next federal transportation bill.

