



FEASIBILITY STUDY

Calais Branch Rail Corridor Study

Calais to Ayers Junction, Maine



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Introduction and Summary

The Maine Department of Transportation (MaineDOT) retained VHB to study potential uses of the state-owned Calais Branch rail corridor from Calais to Ayers Junction. The work effort included analysis of the environmental impacts and potential economic benefits of either the introduction of a trail along the state-owned, inactive rail corridor (to either temporarily replace the railroad tracks or to run alongside them) or preserving the existing rail corridor for possible restoration of rail service in the future. This report summarizes the findings of the 9-month-long study.

1.1 Purpose of the Study

The purpose of this report is to summarize the analysis of potential uses along the Calais Branch corridor rail line from the Route 1 grade crossing in Calais to the intersection of the Sunrise Trail in Ayers Junction. The approximately 12-mile-long, state-owned corridor runs through Calais, Baring Plantation, Charlotte, and leads to Ayers Junction in Pembroke. The intent is to inform the recommendation of the Rail Use Advisory Council (RUAC), as established by Maine's Legislative Document (LD) 1133. The RUAC's recommendation will be addressed to the MaineDOT Commissioner for final assessment and decision. Throughout the process, the consultant team—led by VHB, with assistance from economists RKG Associates—evaluated three potential uses for the corridor with sub-options for the first alternative. The potential alternatives include:

- › **Maintain and Preserve Existing Rail Corridor** – provides for possible restoration of rail service in the future with potential rehabilitation of the existing railroad infrastructure to support the reestablishment of rail operations. Operations may include:
 - Continuation of MaineDOT's current patrol and maintenance activities along the existing track corridor to ensure the existing rails remains intact and viable for possible reestablishment of rail service in the future.

- Reestablishment of freight rail service, including performance of State of Good Repair and Deferred Maintenance projects targeted to accommodate delivery of materials and goods to commercial and industrial customers.
- › **Interim Trail (IT)** – interim multi-use trail using the existing rail bed. This alternative includes removal of the existing tracks and ties and constructing a multi-use trail on the former track bed. The trail surface may be gravel/stone dust or paved. The corridor will require minor modifications to support trail user loads and provide a uniform surface appropriate for the trail as well as a railing system, where needed, to safely accommodate bicyclists and pedestrians.
- › **Rail with Trail (RWT)** – multi-use trail running adjacent to the existing rail bed. This alternative maintains the existing tracks and ties in current condition and establishes an adjacent and parallel multi-use trail with either a gravel/stone dust or paved surface. Grade differences in certain areas of the corridor will require retaining walls to support a new trail. Since this option assumes the rail will be in service, or someday return to service, the near edge of the trail (not including shoulder) shall be a minimum of 15 feet from the nearest rail, in accordance with MaineDOT standards for development of a RWT. However, this setback may be reduced to 10.5 feet, with MaineDOT approval if a fence meeting MaineDOT standards is installed at the edge of the trail shoulder between the trail and the closest rail. A RWT configuration adjacent to inter-city passenger trains—typically moving much faster than freight trains or scenic excursion trains—may be an uncomfortable experience for adjacent trail users. Most, if not all, the existing RWT facilities currently operated within Maine are located where tracks are out of service or where trains operate at relatively lower speeds.

Members of the Calais Branch Rail Use Advisory Council (RUAC)

- Joe Higgins, Supervisor, Off Road Recreational Vehicle Program, DACF
- Jeff McCabe, Maine Office of Outdoor Recreation
- Tony Cameron, CEO, Maine Tourism Association
- Mark Carr, Calais
- Colin Brown, Pembroke
- Peter Knowles, Charlotte
- Ray Faulkner, Baring Plantation
- Alvion Kimball, Sunrise Trail Coalition
- Nate Moulton, MaineDOT
- John Magera, Moosehorn National Wildlife Refuge
- Tanya Rucosky, Sunrise County Economic Council

MaineDOT Staff Support

- Nate Howard, Project Manager and Director, Rail Program
- Dakota Hewlett, Active Transportation Program Manager

For this high-level analysis, GIS-based maps were reviewed and analyzed, and online information was gathered (e.g., Google Earth). The study team was familiar with the corridor from previous studies performed for MaineDOT. Additionally, MaineDOT and VHB staff conducted a one-day review of the rail corridor via hi-rail vehicle. Detailed site inspection visits and topographic survey were not performed as part of this study.

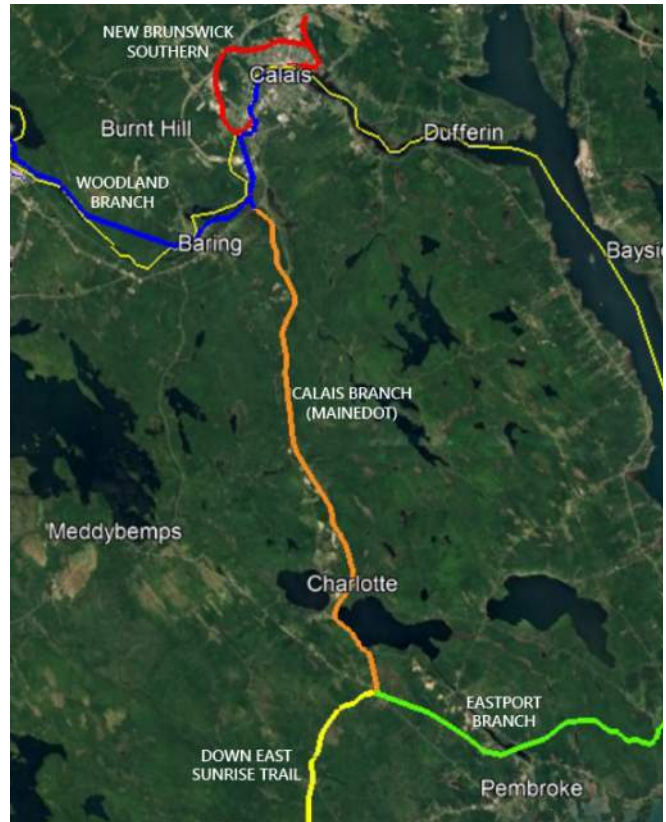
Monthly meetings were held with the RUAC. These meetings were critical to help the study team understand the key issues along the corridor. **Future planning and design work along the corridor will require additional research, topographical survey, environmental review, site investigations, and more extensive outreach to abutters and nearby residents and businesses.**

1.2 Study Area

The Calais Branch Rail Corridor runs along a 66 foot-wide state-owned corridor. The 12.2-mile-long corridor runs through four towns, including Calais, Baring Plantation, Charlotte and Pembroke. The combined population of the towns is roughly 4,400, while just 50 live within one-half mile of the corridor. The southern terminus of the state-owned portion of the corridor includes the rail "Y" at its intersection with the Down East Sunrise Trail in Ayers Junction. The Down East Sunrise Trail runs along a roughly 87.9-mile-long segment between Ellsworth and Ayers Junction, in a trail-until-rail configuration.

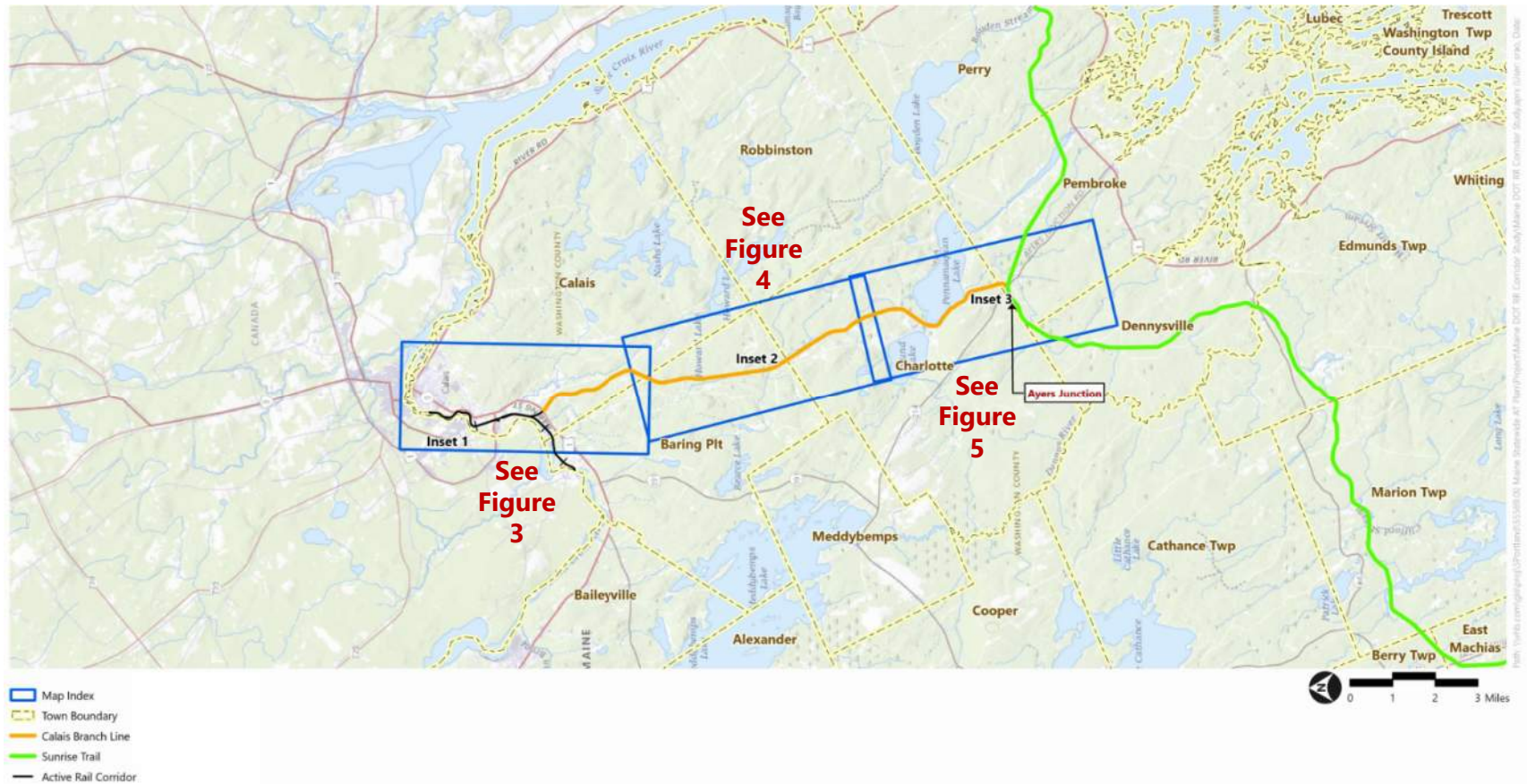
The northern terminus of the state-owned portion of the Calais Branch is at its intersection with Route 1 in Calais. Due to its relative isolation along Route 1, there are connection concerns about how Calais residents and other trail users can access the trail, as there are currently no parking facilities or other off-road connections to downtown Calais.

The corridor crosses 6 public roadways at-grade. None of the publicly accessible at-grade crossings on the Corridor were equipped with Automated Highway Crossing Warning (AHCW) devices. Additionally, there are two semi-private roadways or driveways and 21 additional at-grade crossings of private and/or farm roads where cross traffic volumes and speeds are much lower and less of a concern for interim trail use. Four bridges help the former rail line cross rivers and streams. The corridor crosses through Moosehorn National Wildlife Refuge which is an environmentally sensitive area.



Calais Branch Rail Corridor Study Context Map

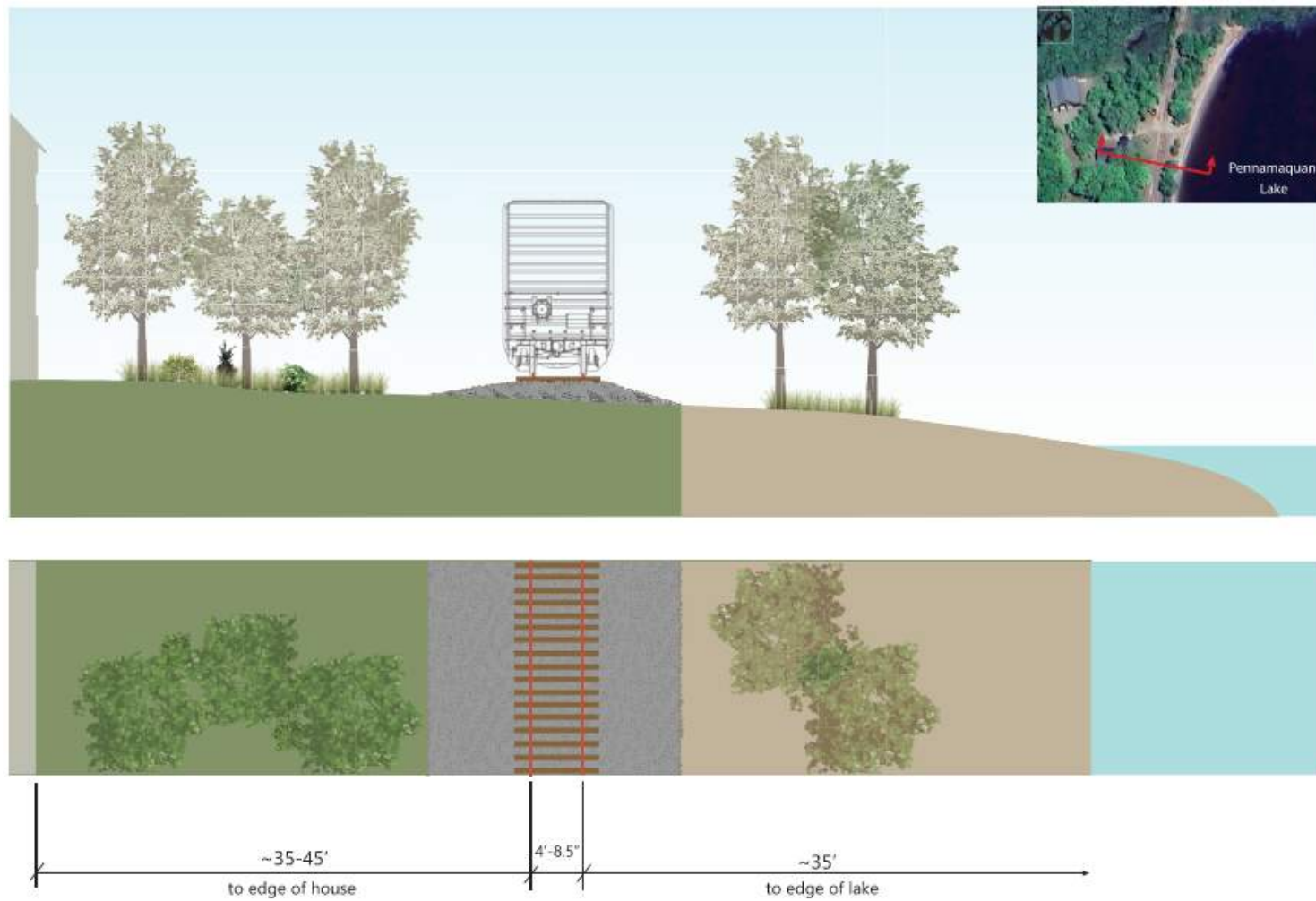
Figure 1: Study Area Overview Map



See subsequent pages for example cross section (Figure 2) and individual inset maps (Figures 3-5).

EXISTING CONDITION CROSS SECTION

Figure 2: Charlotte, adjacent to Pennamaquan Lake



* - Corridor ROW is 66' at this location. Per the Val Plans, the existing track is centered within the ROW.

Figure 3: Calais Branch Corridor Inset 1, Calais-Baring Plantation segment

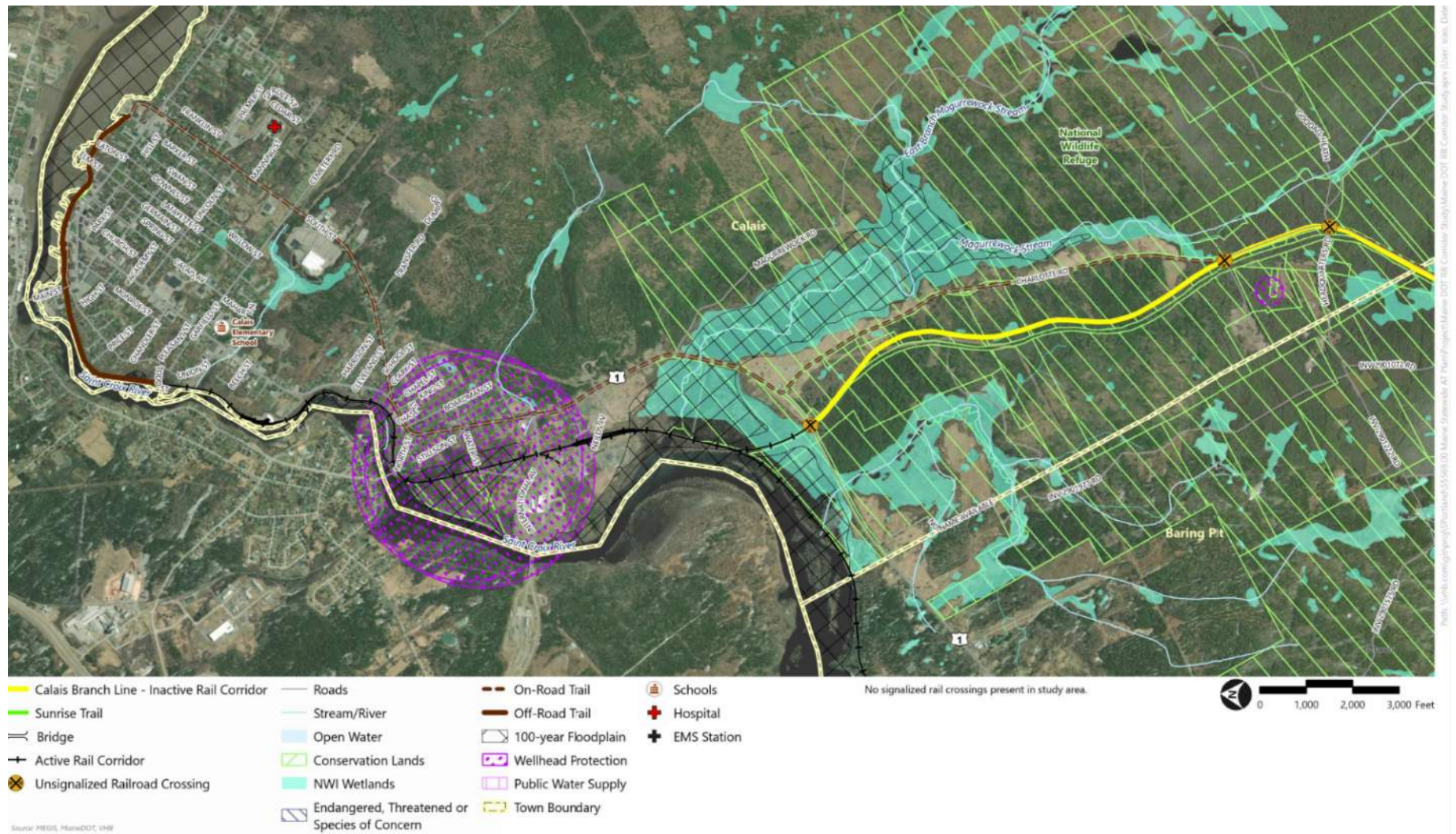
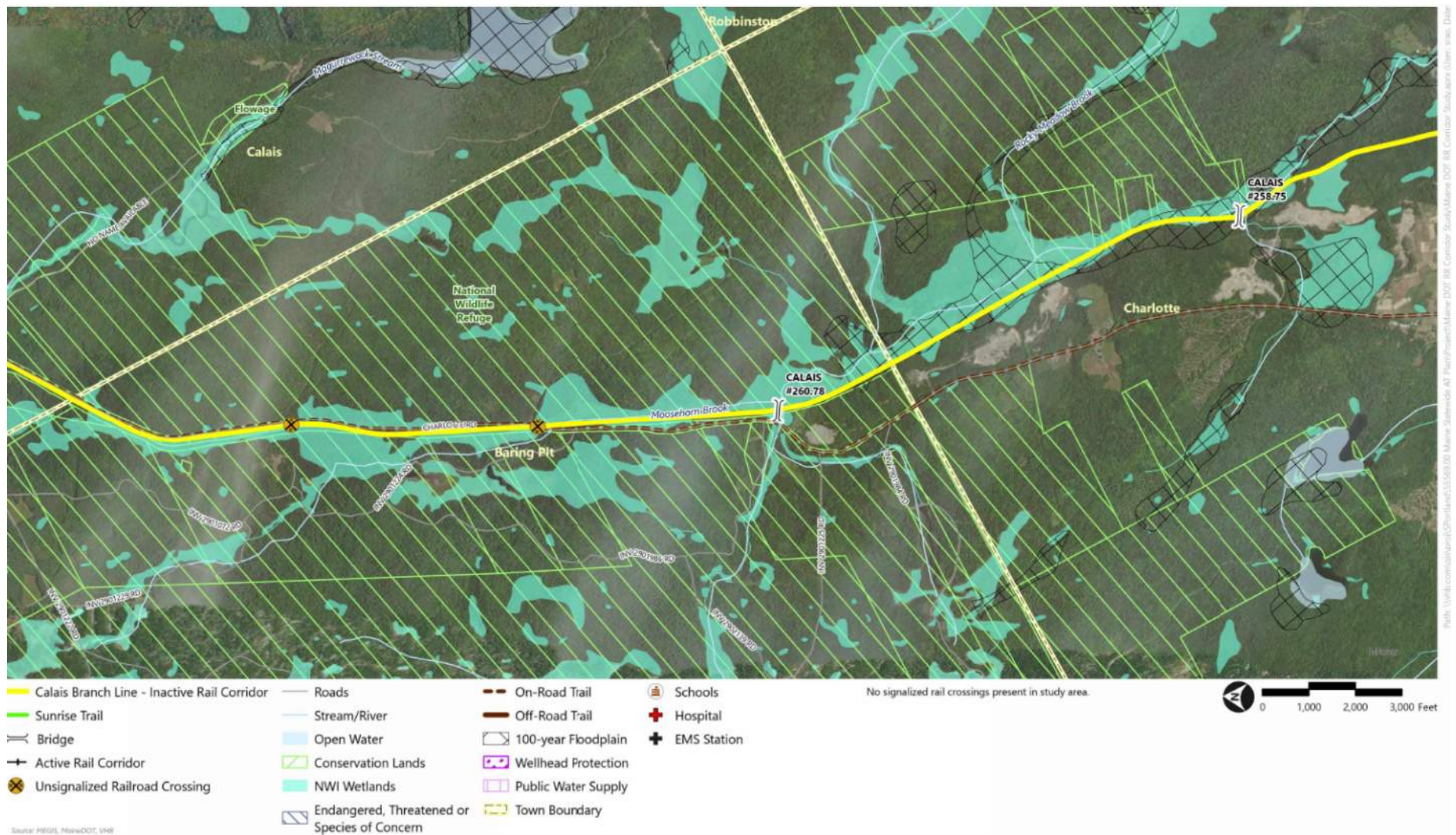
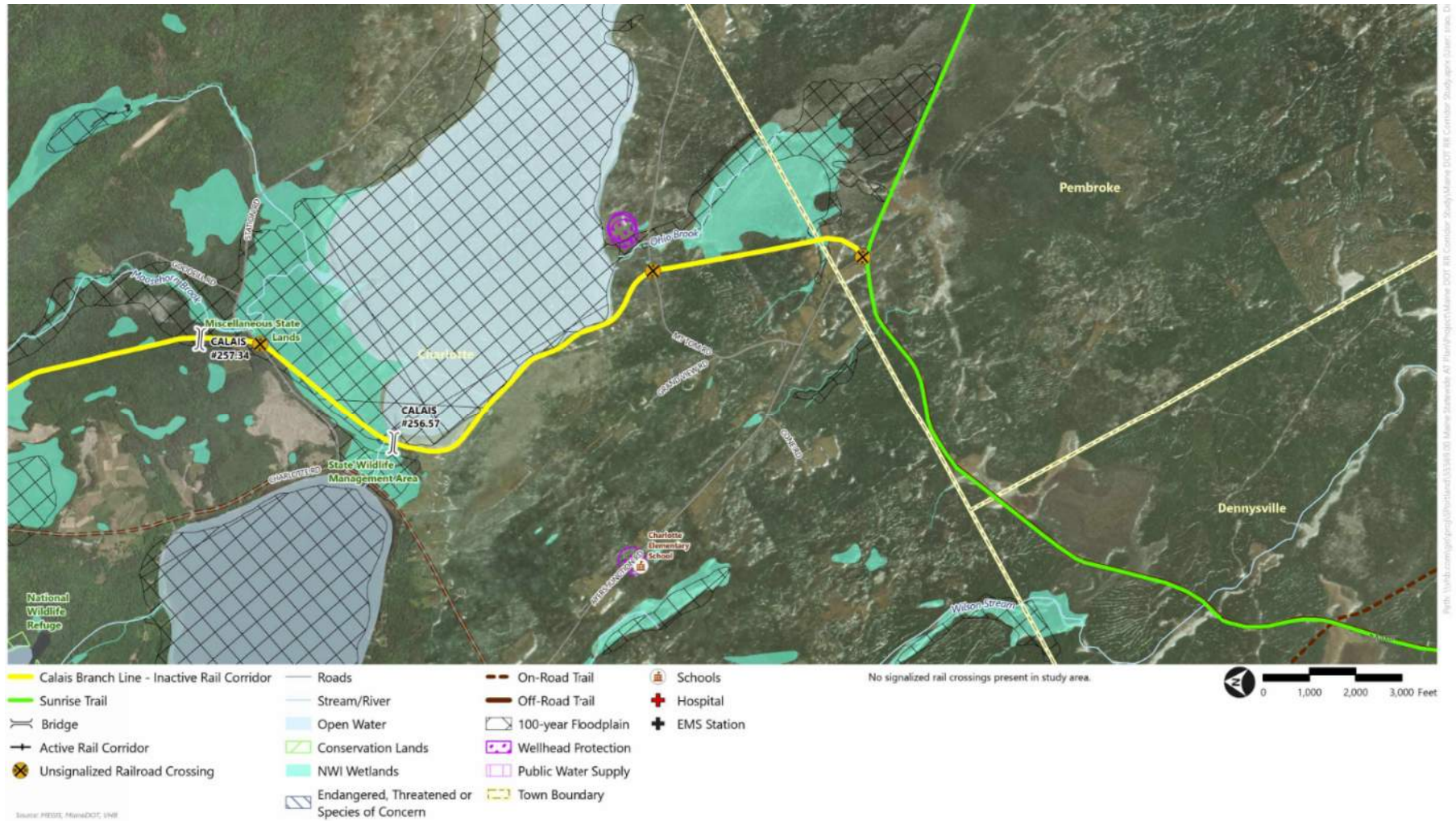
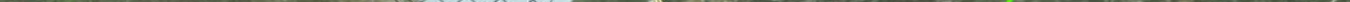


Figure 4: Calais Branch Corridor Inset 2, Calais-Baring Plantation-Charlotte segment





Assessment of Study Area Environmental Challenges

As part of the feasibility study, VHB conducted a desktop-level GIS analysis to identify any potential impacts to adjacent natural resources. Desktop data sources included: US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapping; Inland Waterfowl and Wading Bird Habitat (IWWH), Tidal Waterfowl and Wading Bird Habitat (TWWH), Endangered, Threatened and Concerned Wildlife Habitat, and Significant Vernal Pools as mapped by the Maine Department of Inland Fisheries and Wildlife (MDIFW) Beginning with Habitat web-based map viewer; and FEMA Flood Zone Layers (MEGIS & FEMA). Desktop-level GIS analyses are limited in nature due to the availability and quality of publicly available natural resource data and should not be used for permitting purposes. However, these data are a great tool that can be used to approximate resource areas and abundance, estimate potential impacts, and inform the evaluation of the feasibility of alternatives.

The environmental analysis of the multiple alternatives for the Calais Branch Rail Corridor is summarized in Chapter 4, including the restoration of rail service, establishment of interim trail use, and permitting requirements related to wetlands and sensitive habitats.

1.3 Previous Planning Studies

The 2009 Eastport Freight Rail Restoration Study (MaineDOT, with HNTB as the consultant) was determined to be especially relevant for the analysis effort related to the Calais Branch Rail Corridor. A summary of the study is below.

Eastport Freight Rail Restoration Study (2009)

The Eastport Freight Rail Restoration Study evaluated the cost of restoring rail freight service to the port of Eastport and determined feasible locations, layout and cost for a rail to truck trans-load facility within a reasonable distance to the port of Eastport. In the 1970's, Maine Central Railroad ceased rail service on the entire branch between Ayers Junction in Pembroke through Perry to Eastport. In 1985, rail service along the Calais Branch stopped, which connected the Eastport Branch to Maine Central's 134-mile long "County Line" between Bangor and Calais, further isolating Eastport. The only remaining active railroad in Washington County was a short segment that served the pulp and paper mill in Woodland (Baileyville) and a single outlet connection to the Canadian Pacific Railroad through Calais and into New Brunswick, Canada at St.

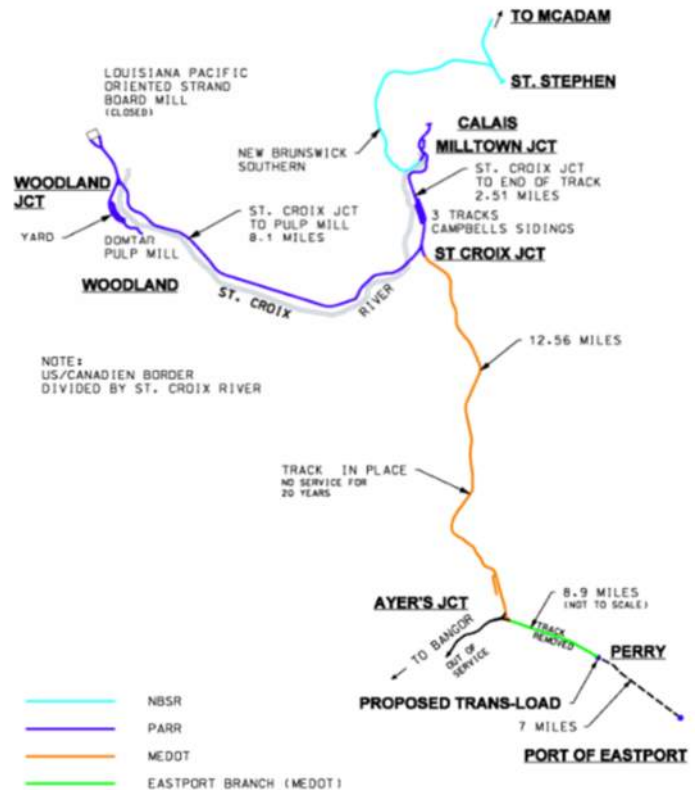


Figure 5: Railroad Layout Included in 2009 Study

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The Calais Branch segment that is being evaluated under this RUAC study was a critical piece of the 2009 Eastport Freight Rail Restoration study as it provides the only connection from the proposed trans-load facility in Perry to the remaining active rail lines in Washington County, including connection to Canada. The condition of the Calais Branch was evaluated in 2009 as part of this study and recommendations for improvements were made including replacement of 72 rails, new crossties, new stone ballast distributed at the rate of 1,100 net tons per track mile, ditch cleaning, removal of the Charlotte Siding, repair of seven washouts, brush clearing, and the replacement of several culverts. The bridges over Moosehorn Brook (MP 258.75) and Round Pond Stream (MP 256.57) were evaluated and it was determined that the Moosehorn Brook Bridge should be replaced at a cost of \$250,000 and the Round Pond Stream Bridge should be rehabilitated at a cost of \$150,000. The track construction cost of the Calais Branch was determined to be \$4,147,088 for Class I track. All of these costs were in 2009 dollars.

1.4 Summary of Findings

The consultant team developed conceptual cost estimates for the three corridor alternatives described earlier, running from Calais to Ayers Junction in Pembroke. The alternatives included:

- › **1: Restore Rail Service on Existing Corridor** – includes freight rail or excursion train operations along Class 1 track
- › **2: Interim Trail** – removes existing track and associated infrastructure and constructs trail on existing rail bed (either gravel/stone dust or paved)
- › **3: Rail with Trail (RWT)** – constructs trail adjacent to the existing tracks and within the current state-owned ROW (either gravel/stone dust or paved)

Table 1: Conceptual Cost Estimate Summary

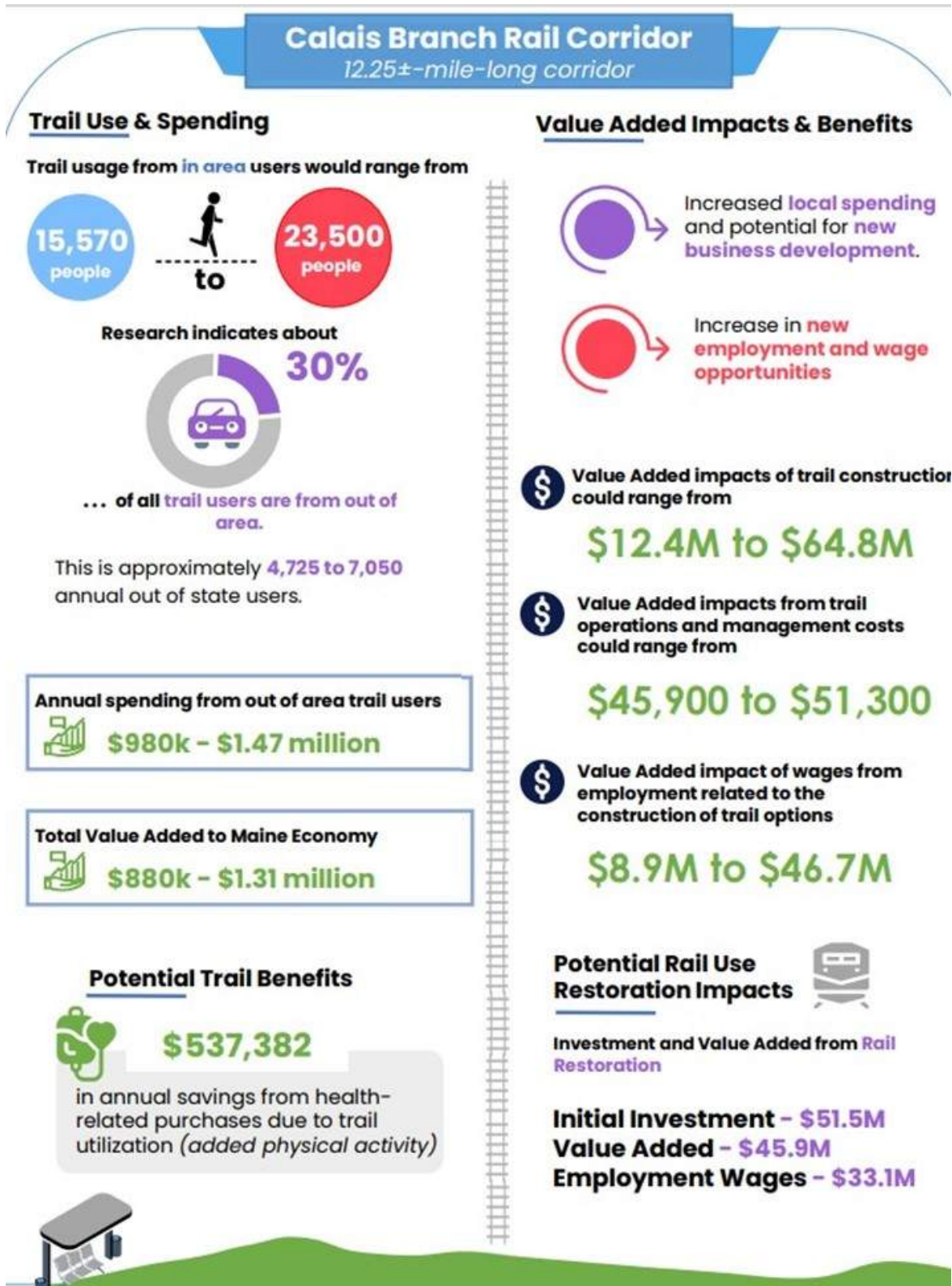
Alternative	Segment	Cost Estimate
0: Maintain/Preserve Existing Corridor		
MaineDOT Patrol & Repairs	MP 254.29 to 266.55	<i>No additional cost beyond current maintenance</i>
1: Restore Rail Service on Existing Corridor		
Freight Rail Service	MP 254.29 to 266.55	\$51,500,000
Annual Maintenance Costs: \$976,000		
2: Interim Trail		
2A: Gravel/Stone Dust Trail	MP 254.29 to 266.55	\$13,900,000
Annual Maintenance Costs: \$45,000 - \$70,000		
2B: Paved Trail	MP 254.29 to 266.55	\$18,100,000
Annual Maintenance Costs: \$39,000 - \$64,000		
3: Rail with Trail (RWT)		
3A: Gravel/Stone Dust Trail	MP 254.29 to 266.55	\$70,600,000
Annual Maintenance Costs: \$45,000 - \$70,000		
3B: Paved Trail	MP 254.29 to 266.55	\$72,700,000
Annual Maintenance Costs: \$39,000 - \$64,000		

(See the next chapter for the assumptions used when determining estimated costs.)

Once the Calais Branch Corridor RUAC selects the preferred option to recommend to the MaineDOT Commissioner, further study and analysis beyond the level of detail within this study will be required to determine, as applicable:

- › more detailed cost estimates for all options
- › level of interest in taking advantage of potential freight rail service from local businesses and/or regional industries
- › (Optional) More-detailed economic, environmental, and transportation impacts and benefits (see below for high level baseline of economic impacts)

This study included an economic impact analysis of the various options for the state-owned rail corridor. While more detail can be found in both Chapter 5 and the Appendix, a summary of selected economic, health and other related benefits of the Calais Branch Rail Corridor, for both Interim Trail use and potential restoration of Freight Rail use, are highlighted below:



2

Evaluation of Corridor for Rail Use

This Section documents evaluation of the State of Maine-owned portion of the Calais Branch corridor for potential future rail use, including an assessment of the existing conditions along the corridor as well as development of conceptual capital improvement programs that could be completed to support reestablishment of freight rail service.

2.1 Maintain Corridor (Current Baseline Conditions)

Historically, the railroads in Washington County, Maine, were a part of the Maine Central Railroad (MEC) and were used to support the sardines and paper industries. The “County Line” connected Calais to Bangor, Maine via a 134-mile-long track line, also known as the Calais Branch. An 8-mile-long branch diverted from the MEC County Line at St. Croix Junction (just north of the Study Area), serving the paper mills in Woodland and is still in operation to this day. The 15.5-mile-long Eastport Branch diverted from the County Line at Ayers Junction, and was located at the southern terminus of this study. The sardine industry collapsed during the 1960’s and 70’s which forced the Maine Central to abandon rail service along this spur. In 1981, the Maine Central was acquired by Guilford Transportation Industries and soon thereafter a number of marginal MEC branch lines were either abandoned or ceased operations. By May 1985, most of the former MEC County Line was abandoned (excepting the portion being evaluated for the purposes of this Study) and the corridor has not seen rail service since.

The State of Maine acquired the portion of the former MEC Calais Branch corridor between Calais and Ayers Junction in Pembroke in 1991. The northern extent of State ownership is located at the at-grade crossing with Route 1 in Calais near Mile Post 266.55 on the Calais Branch. Heading south, the Calais Branch runs through the towns of Baring and Charlotte, in which Moosehorn National Wildlife Refuge is located. The corridor passes through Pembroke before terminating at Ayers Junction Road at Mile Post 254.29.

For the purposes of this RUAC study, the default baseline condition for the Calais Branch corridor is assumed to be to maintain and preserve the state-owned corridor as MaineDOT currently does. It is acknowledged that there is a financial cost to MaineDOT associated with providing this service of maintaining this corridor such that the track infrastructure remains intact, but it can be presumed that

these activities would continue to occur should neither reestablishment of rail service, construction of an interim recreational trail, or a combination thereof be initiated.

2.2 Inventory of Existing Corridor

VHB joined MaineDOT during a hi-rail inspection of the Calais Branch corridor on May 15, 2024 to evaluate the general conditions of the existing railroad infrastructure along the line.

The subject Calais Branch corridor extends from the crossing at Ayers Junction Road near MP 254.29 through the towns of Pembroke, Charlotte, Baring, and Calais before terminating at State Route 1 near MP 266.55.

Existing Track and Rail Infrastructure

The majority of the Calais Branch corridor is a single-track main line with jointed rail (85-pound ASCE rail) secured to timber railroad ties and situated upon ballast stone. A detailed inspection of the existing bridges was not performed as part of this study.

There is one 1,243 ft passing siding near MP 257.25 Station Road that remains. The switch components to these tracks have been removed, and the siding has become overgrown and unusable.

Generally, the quality of the existing railroad infrastructure can be considered significantly degraded due to decades without maintenance to support rail service. Most of the railroad ties have visible defects, including decay, holes, cracks and splits and would not be suitable for reuse if rail service were reestablished along the corridor. The ballast is bank run gravel, with several locations along the corridor observed to have fouled ballast due to poor drainage conditions. Localized areas of ballast washouts were observed along the ROW to the extent that significant erosion has compromised the integrity of the tracks on the ROW.

Grade Crossings

During the hi-rail inspection, VHB noted the condition of railroad crossing infrastructure including the crossing tracks, crossbucks, and flangeway type, as well as roadway element considerations such as visibility and roadway condition.

At all six public roadway crossing locations along the corridor, the tracks have been paved over. Crossbuck signage and pavement markings were observed to be missing entirely or significantly deteriorated and would therefore need replacement if rail service were to be restored.

Signal System

The subject corridor was previously equipped with a wayside railroad signal system; however, the infrastructure has fallen severely out of service and is unusable. The majority of the signal system has been removed completely including signal cases, display towers, pole line, and other wayside elements.

In lieu of an operating signal system, railroad movements can be managed by timetable and permissions from the Local Train Dispatcher. For the purposes of this study, it has been assumed that railroad infrastructure improvements would not include a main line signal system or positive train control.

Undergrade Bridges & Culverts

There are four (4) undergrade bridge locations along this corridor, two of which are open timber deck types and two of which are ballasted deck types. There are no overhead bridges that cross the ROW along this corridor. Condition inspection and load rating capacity analysis of bridges were outside the scope of this study.

A comprehensive culvert location list for the entire corridor was included in the Eastport Freight Rail Restoration Study. During the hi-rail inspection, VHB looked for evidence of track and ROW embankment degradation but did not perform a detailed investigation of culvert conditions along the line.

2.3 Conceptual Improvement Programs for Rail Service

Track restoration options for the purposes of this study initially considered Class of Track conditions mandated by the Federal Railroad Administration (FRA) within the Code of Federal Regulations specific to track safety standards (Title 49, Part 213.9). Each FRA class has a corresponding maximum allowable operating speed, as shown in Table 2.1.

Table 2 **Classes of Track and Operating Speed Limits**

Class of Track	Maximum Allowable Operating Speed in MPH	
	Freight Service	Passenger Service
Excepted Track	10	N/A
Class 1 Track	10	10
Class 2 Track	25	30
Class 3 Track	40	60
Class 4 Track	60	80
Class 5 Track	80	90

Source: Code of Federal Regulations, Title 49 – Transportation, Part 213, Volume 4.

For the purposes of this study, VHB developed conceptual capital improvement programs to support the railroad infrastructure improvements for the envisioned service levels supporting freight rail service. VHB recognizes that the extent of capital improvements that may be performed to support any of the rail service options contemplated may ultimately be dictated by the amount of funding available to support the project or the type of service that is implemented.

The estimates included herein were developed for conceptual planning purposes only and are generally consistent with the parameters assumed during other RUAC studies being conducted in the State of Maine. Ultimately, the associated parameters for the capital infrastructure improvements would be further established, defined, and optimized should it be decided that any rail corridor improvement projects move forward.

Rail program cost estimates were developed using historical data obtained from comparable railroad improvement projects completed within the State of Maine over the past ten (10) years. Additional details regarding this process are discussed in Section 2.6 of this report.

As documented above, evaluation of the existing rail corridor revealed significantly deteriorated track conditions due to several decades of inactivity and differed maintenance on the line. Ultimately, should freight service be reestablished on the line, the recommended approach would be to remove and

replace the existing track infrastructure in its entirety rather than attempting to perform spot repairs to achieve Class 1 track conditions.

It is acknowledged that with a reduced targeted infrastructure replacement program, it may be possible to use the existing tracks to support smaller, lower weight vehicles such as excursion trains. Although the initial capital costs support the necessary improvements for such a service would likely be significantly less than the complete replacement envisioned for freight service, the costs associated with performing ongoing running maintenance (i.e. the need to replace ties and rail due to further deterioration through operating the service) would be higher than what would be required for new track. Evaluation of corridor improvements to support excursion trains or similar vehicles was outside the scope and consideration of this RUAC Study.

2.4 Reestablishment of Freight-Only Rail Service

VHB developed a conceptual estimate for infrastructure improvements initially envisioned for the support of reestablishment of Class 1 freight service on the Calais Branch corridor. It was assumed that freight tracks would remain as a single main line, with two quarter-mile long siding tracks at either terminus. The level of service envisioned for the corridor under this concept is for occasional freight traffic (less than one round trip per day). The costs associated with installation of new spur tracks to serve future customers were not included.

Based on the conditions observed in the field, it was assumed that the entirety of the existing track along the corridor would need to be demolished and rebuilt. In doing so, the newly built corridor would have a track infrastructure condition that would be capable of supporting freight service above Class 1 thresholds initially envisioned for this Study.

ROW expansion would not be required to support this concept.

All six grade crossings will need to be reconstructed. To support this, vegetation management, roadway striping, and warning signage installation would be required at all grade crossing locations. All six grade crossing locations would need a crossbucks sign at a minimum. The conceptual estimate accounts for replacement of track panels at up to six (6) public at-grade crossing locations to initialize freight service based on visual assessment of the existing conditions. The estimate excludes replacement of the existing wooden-planked decks at farm crossings.

Historically, trains have operated through the six grade crossings with no AHCW devices. However, it is acknowledged that roadway traffic volumes have increased since train service last ran along this corridor. For the purposes of this study, the installation of ACHW devices was excluded and it was assumed that freight trains would be required to "stop and protect" at all grade crossing locations.

The proposed program also includes replacement of all existing wooden bridge ties on existing open deck bridges, as they have been exposed to a variety of weather conditions for decades since last supporting a train. Lastly, since detailed structural bridge inspection and load rating services were not performed in conjunction with this study, a \$600,000 allowance to accommodate structural repair work on the four undergrade bridges (approximately \$150K per bridge) was included.

Table 3: Summary of Proposed Freight Rehabilitation

Component	Class 1 Freight
Main Line Track Reconstruction	12.25 track miles
Double Track – Siding Track	0.50 miles (quarter mile long sidings at each terminus)
XING Rehabilitation	Six Crossings
Farm XING Decks	14 locations
Culvert Rehab	Poor or Failed Culverts (estimated at 49)

Environmental and Permitting Considerations: Freight Rail Service

As part of this study, VHB evaluated the potential environmental impacts and permitting requirements needed to reestablish freight rail service along the existing Calais Branch Corridor from Ayers Junction (MP 254.29) to State Highway Route 1 (MP 265.55). Because this existing corridor is established as 66 feet wide, it is assumed that no expansion of the corridor is required and therefore no new wetland impacts would be necessary with this alternative. The ROW does pass through Moosehorn National Wildlife Refuge. A field delineation of wetland areas and more specific project information would be required to confirm this alternative meets this assumption and does not impact sensitive receptors or wetland areas.

The existing rail corridor comes within close proximity to Lake Pennamaquan and crosses Moosehorn Stream at several locations along the ROW. The current condition of the existing infrastructure associated with these crossings has been evaluated at a conceptual level as part of this feasibility study. Repair or replacement of the existing bridges and culverts may lead to wetland or waterways impacts; however, these impacts cannot be quantified at this time. Any proposed work associated with improving existing culverts or bridges may require permit approvals or agency consultations to determine if these activities may be considered exempt from regulation.

2.5 Summary of Conceptual Cost Estimate

A conceptual cost estimate was developed to support railroad infrastructure improvements that would be necessary for reestablishment of freight service on the Calais Branch corridor. The infrastructure improvements are limited to the area between Ayers Junction at Mile Post 254.29 in Charlotte to the northern end of the rail corridor at Mile Post 265.55 where it crosses State Highway Route 1 in Calais.

Conceptual program cost estimates for the Calais Branch Corridor infrastructure improvements described above were developed using historical data obtained from comparable railroad improvement projects completed within the State of Maine over the past ten (10) years. These projects were the same ones initially used to support cost estimates provided for support of the Lewiston-Auburn Passenger Rail Service Plan project by VHB and WSP in 2018. Unit costs of infrastructure

improvements developed during the 2018 Lewiston-Auburn study were adjusted from 2018 dollars to second quarter 2024 dollars using available heavy construction industry inflation factors derived by R. S. Means. Costs include a 30% construction contingency, 10% design engineering, and 15% construction administration and engineering to advance and support the project.

The “freight rail service” option provides an estimate to bring the corridor up to a minimum Class 1 freight rail service. But as noted above, because complete reconstruction is recommended for the reestablishment of freight service, the track could be constructed to Class 3 or 4 for a similar cost. This includes the corridor from Mile Post 254.29 to Mile Post 265.55. This estimate also includes two quarter mile long siding tracks at each terminus. The costs are summarized in Table 4 below:

The estimated costs reported here are consistent with other studies conducted previously in the State of Maine and provide a high-level cost estimate associated with the restoration of rail service between Charlotte and Calais.

Table 4: Cost Estimate for Potential Restoration of Rail Service

Alternative	Segment	Cost Estimate
1A: Freight Rail Service (Class 1)	MP 254.29 to 265.55	\$51,500,000
Annual Maintenance Costs: \$80,000		

3

Evaluation of Corridor for Trail Use

Recognizing public support for sometimes using inactive rail corridors for human-powered transportation and recreation, the study team considered opportunities to incorporate interim and permanent trail alternatives along the Calais Branch corridor. To develop cost estimates for interim trail use, the team studied both the replacement of the current rail infrastructure for a trail, and the engineering requirements to develop a trail adjacent to the existing rail line.

3.1 Introduction

To understand the costs associated with the future development of a trail (aka shared-use path) along the rail corridor, the team evaluated two options:

- **Interim Trail** – remove existing track and associated infrastructure, and construct multi-use trail on the existing rail bed (either gravel/stone dust or paved)
- **Rail with Trail (RWT)** – construct permanent multi-use trail adjacent to the existing tracks and within the current state-owned ROW (either gravel/stone dust or paved)

The Interim Trail and/or RWT options, depending on context and community/political support, could be restricted to either non-motorized use only (with most e-bikes permitted), or allow motorized uses such as snowmobiles and ATVs. In any of the scenarios, the potential for future rail service must be maintained by State Statute. Therefore, any interim trail could potentially be removed in the future to make way for rail service. State law via the State Railroad Preservation Act¹ (RPA) provides MaineDOT the right of first refusal to purchase a rail corridor if rail service has ceased or is proposed for abandonment. While any purchase by MaineDOT under the RPA is intended for rail transportation, through the RUAC process, interim trail use is permissible.

¹ For more information, see: <https://legislature.maine.gov/legis/statutes/23/title23ch615sec0.html>

3.2 Methodology and Assumptions

The conceptual project cost estimates for the Interim Trail and RWT alternatives were developed using construction costs from recent, similar trail projects. For each alternative, costs were determined for the trail construction, grade crossing upgrades and bridge improvements. Costs were estimated for both stone dust/gravel and paved wearing surfaces for both the Interim Trail and RWT configurations. Each alternative includes 30% construction contingency, 10% design engineering and 15% construction administration and engineering. Potential additional costs for right of way impacts or environmental permitting were not included.

Because trail crossing improvements are required at all public grade crossings, for the purposes of this high-level study, the typical treatment at each crossing is based primarily on the speed of the roadway crossing the trail. In future phases of this project, the assignment of which approach has the right-of-way priority and other crossing improvement recommendations should be designed for site-specific traffic volumes, anticipated path volumes and roadway geometrics at each crossing. The assumed safety improvements at each crossing include:

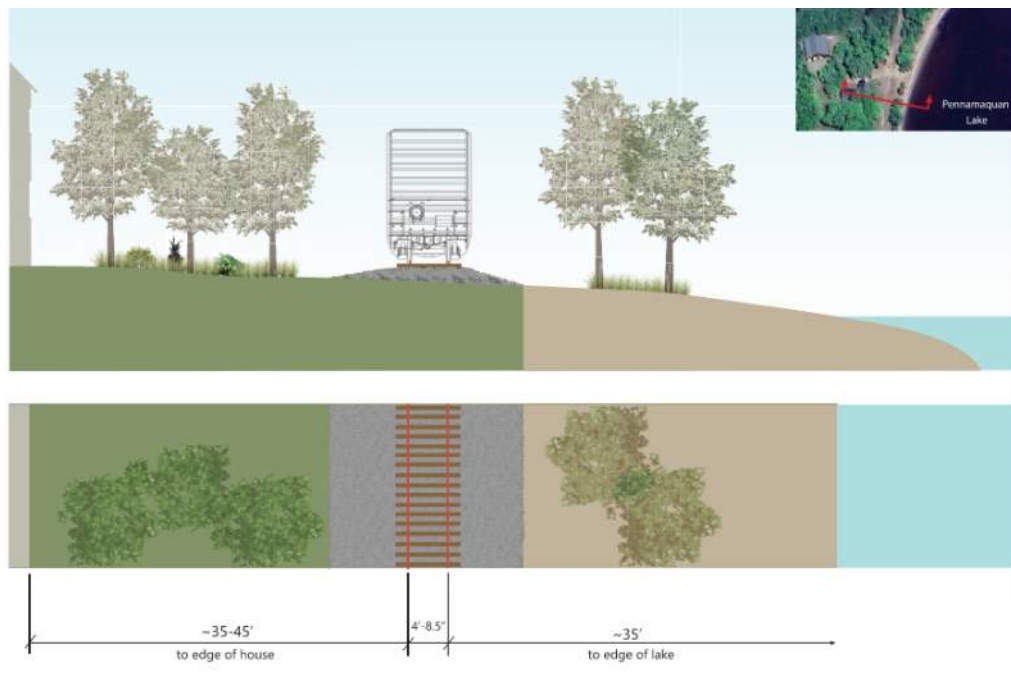
- › At roadways with speed limits of 30 MPH or lower, the typical treatment includes a marked crosswalk and trail crossing warning sign assemblies on the roadway and roadway crossing warning signs on the trail.
- › At roadways with speed limits of 35 MPH or 40 MPH, the typical treatment includes a marked crosswalk, and trail crossing warning sign assemblies on the roadway, roadway crossing warning signs on the trail and rectangular rapid flashing beacons (RRFB) on the roadway approaches.
- › In accordance with MaineDOT policy, a marked crosswalk is not permitted on roadways with a speed limit of 45 MPH or greater unless the crossing is signalized. At roadways with speed limits of 45 MPH or greater, the typical treatment includes trail crossing warning sign assemblies at the crossing, advanced trail crossing warning sign assemblies and pavement markings (i.e. TRAIL XING) on the roadway approaches, advance roadway crossing warning signs and markings on the trail approaches and a STOP condition on the trail approaches.

Interim Trail Design Assumptions

- › Replacement of existing rail line with interim trail use (see photo at right and graphic below).
- › Estimated costs for the trail construction include:
 - removal of the existing track, railroad ties, and associated infrastructure;
 - surfacing and regrading of the existing ballast; and,
 - placement of either stone dust/gravel or pavement.
- › Estimated costs for the undergrade bridge improvements generally include construction of a new timber wearing surface and timber bridge rails.
- › Estimated costs do not include any potential parking facilities, information kiosks, or other elements associated with formal trailheads.



Example Interim Trail configuration - Down East Sunrise Trail (Photo Credit – Sarah Cushman)



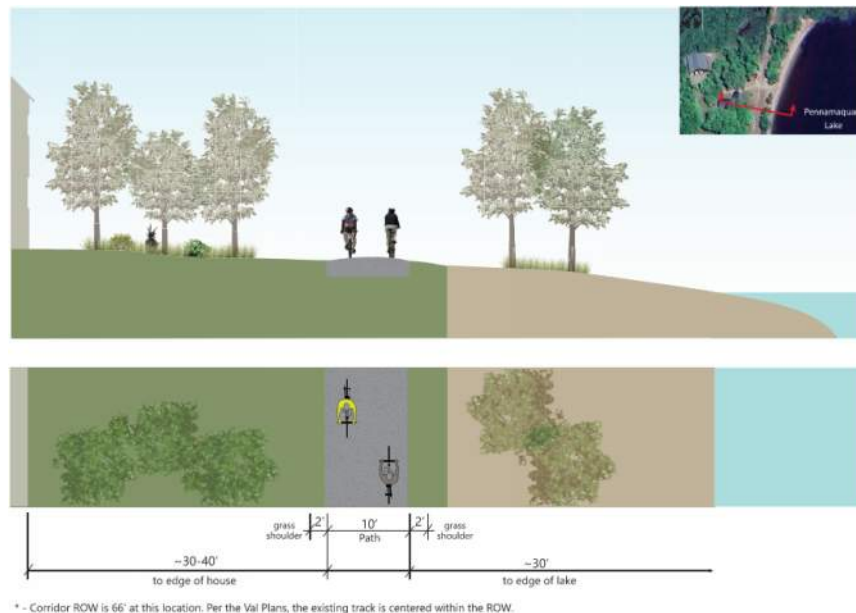
Example of a potential Interim Trail configuration along the Calais Branch Corridor (trail segment adjacent to Pennamaquan Lake in Charlotte)

Rail-with-Trail (RWT) Design Assumptions

- › Construction of a permanent trail adjacent to the existing rail line incorporating a minimum 15' offset² from edge of trail to centerline of the tracks, consistent with MaineDOT guidelines (see photo at right and graphic below).
- › Estimated costs for the trail construction include assumptions for 1) areas with no significant cut or fill, 2) areas with a modest amount of cut or fill, and 3) areas of significant cut or fill sections that may require retaining walls. For each section, costs include preparation of the subbase and placement of either stone dust/gravel or asphalt pavement.
- › Retaining walls and other engineered elements will allow future rail-with-trail design to stay within the state-owned railroad ROW.³
- › Estimated costs for undergrade bridge (i.e., bridge that carries the rail tracks) improvements generally include construction of new adjacent superstructures that carry the new trail. Based on the configuration of the existing bridges, the new superstructures can be supported by existing structure or supported on new substructure.⁴



Example Rail-with-Trail configuration (with MaineDOT-approved 10'-6" offset and fence) in Ellsworth.



Example Rail-with-Trail configuration along the Calais Branch Corridor (trail segment adjacent to Pennamaquan Lake in Charlotte)

² Represents MaineDOT's standard recommended offset from existing rail lines. In constrained conditions, a reduced 10'-6" offset is permitted with the provision of a security fence. Any subsequent feasibility study and/or design project would need to determine if the reduced offset would be appropriate. This may have an impact on the anticipated cost estimate.

³ Any survey or verification of railroad ROW is not included within the Scope of Work. This assumption should be confirmed in subsequent design phases of a future project.

⁴ In this context, "superstructure" refers to structural members of the bridge that sit above the supports, e.g., girders and trusses, and "substructure" refers to the piers and abutments that hold up the superstructure.

- › Although not included in the cost estimate, a more-detailed feasibility study could assess opportunities for the trail to run off-corridor and use nearby, parallel roadways or existing trails to accommodate pedestrians and bicyclists. This could be a significant cost savings in discrete locations. *(Note: evaluation of off-corridor alternatives was beyond the scope of this study.)*
- › Estimated costs also do not include any potential parking facilities, information kiosks, or other elements associated with formal trailheads.

3.3 Calais Branch Corridor Cost Estimates

The cost estimates below include a stone dust/gravel surface option and an asphalt paved surface option for both the interim trail and permanent RWT alternatives. In all cases, the various options run from MP 266.55 at the intersection with Route 1 in Calais to MP 254.29 at the Y-Interchange in Ayers Junction which connects to the Sunrise Trail. Similar to the estimates for restoration of freight and/or excursion passenger rail service, no cost estimates are included on the rail segment between Route 1 and the active rail corridor along the St. Croix River.

Table 5: Cost Estimate for Potential Trail Options

Alternative	Segment	Cost Estimate
2A: Interim Trail (Gravel/Stone Dust) – MP 254.29 to 266.55		\$13,900,000
Annual Maintenance Costs: \$45,000 - \$70,000		
2B: Interim Trail (Paved) – MP 254.29 to 266.55		\$18,100,000
Annual Maintenance Costs: \$45,000 - \$70,000		
3A: Rail with Trail (Gravel/Stone Dust) – MP 254.29 to 266.55		\$70,600,000
Annual Maintenance Costs: \$45,000 - \$70,000		
3B: Rail with Trail (Paved) – MP 254.29 to 266.55		\$72,700,000
Annual Maintenance Costs: \$45,000 - \$70,000		

3.4 Potential Trail Use Estimates

The Potential Trail Use Estimates task included the extraction and review of data from shared use paths and rail trails in similar contexts to the Calais Branch corridor. The resulting data has been refined to calculate both high and low usage estimates for interim trail usage in the corridor during “peak month” of pedestrian and bicycle use (i.e., 30-day period in summer or early fall). The methodology and trail use estimates in this report are consistent with the Maine State Active Transportation Plan, published by MaineDOT in March 2023⁵.

Methodology

VHB used existing data to establish the respective context, identifying the precedent trails’ location, population, development patterns, mileage, and nearby destinations. Existing trail usage data includes non-motorized trail-user counts recorded before and during the first two years of the COVID-19 pandemic, during which time there were spikes in trail usage nationwide. Existing trails selected for this task include shared-use paths, rail-to-trail, and rail-with-trail examples.

Case study pedestrian and bicycle usage counts from three existing trails in Northern New England included:

- › Missisquoi Valley Rail Trail, VT
- › Westside Trail, ME
- › Maine’s Mountain Division Line - Fryeburg, ME

Because available count data was collected during different months and for different durations (10-day counts, two-week counts, etc.), a thirty-day period called the “Peak Month” was extrapolated for each trail. The goal was to have Peak Month trail use for each trail that could be used as an “apples to apples” comparison between the case studies.

Trail Use Estimates

The three trails described above were selected as case study corridors based on three key trail characteristics that correlate with use by pedestrians and bicyclists:

- › corridor length, in miles (12.25)
- › population of towns along the trail corridor (4,400)
- › number of destinations—state parks/forests/beaches and commercial districts—within ½ mile of the corridor center line (Moosehorn National Wildlife Refuge)

Averages for each of the three key characteristics were calculated and compared with current conditions along the Calais Branch corridor. A multiplier was calculated after comparing data from the average of the three case study trails with the available data for the Calais Branch. Finally, a 10% add-on was included with each corridor to account for mid-term growth in

⁵ The complete Maine State Active Transportation Plan can be found at <https://uploads.mainedotpima.com/61ce252e-3dec-4b84-974b-d43a957c812e.pdf>.

trail use based on modest population increase and increased demand for trail use that arose during the COVID-19 pandemic that is expected to continue.

Per the estimated Peak Month trail trips above, the planning team calculated Annual Trips, based on a multiplier for all 12 months relative to the Peak Month. The multiplier was estimated based on typical monthly temperature and precipitation levels, length of daylight hours, and seasonal recreational patterns. Therefore, relative to the Peak Months of June through September, the proportion of estimated trips for the other 8 months of the year include:

- › 100% of peak in June through September
- › 75% of peak in October and May
- › 40% of peak in March, April, and November
- › 25% of peak December through February (walking, bicycling, cross-country skiing, and snowshoeing).

By adding the proportions of above, the Peak Month, therefore, represents 13.3% of the annual total (i.e., the Peak Month is multiplied by 7.5 to arrive at the annual estimate). The low-use and high-use ranges in the tables below reflect a 20% margin of error on the resulting estimate.

Table 6: Estimated Trips for the Calais Branch Corridor

Rail and/or trail corridor	Peak Month Count (existing trails only)	Low use estimate	High use estimate
Missisquoi Valley Trail (26.3 mi)	1,936		
Westside Trail (8.2 mi)	3,257		
Mountain Division Trail (4.0 mi)	6,324		
<i>Three trail average</i> (12.8 mi)	3,839		
Calais Branch Peak Month Use	N/A	2,100	3,100
Calais Branch Annual Use	N/A	15,750	23,250

4

Environmental Requirements

As part of the initial feasibility study for the Calais Branch Rail Corridor Project between Calais and Ayers Junction, VHB conducted a desktop-level GIS analysis to identify potential impacts to adjacent natural resources. Desktop data sources included: US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapping; Inland Waterfowl and Wading Bird Habitat (IWWH), Tidal Waterfowl and Wading Bird Habitat (TWWH), Endangered, Threatened, and Concerned Wildlife Habitat, and Significant Vernal Pools as mapped by the Maine Department of Inland Fisheries and Wildlife (MDIFW) Beginning with Habitat web-based map viewer; and FEMA Flood Zone Layers (MEGIS & FEMA). Desktop-level GIS analyses are limited in nature due to the availability and quality of publicly available natural resource data and should not be used for permitting purposes. However, these data are a great tool that can be used to approximate resource areas and abundance, estimate potential impacts, and guide the decision-making process while considering feasibility and the overall scope of the project.

The sections below include an environmental analysis of multiple alternatives for the Calais Branch Rail Corridor, including:

- Reestablishment of rail service;
- Establishment of interim trail use;
- Wetlands and sensitive habitats; and
- Permitting requirements.

4.1 Reestablishment of Rail Service

Reestablish Freight Rail Service and/or Excursion Passenger Train Service

VHB evaluated the potential environmental impacts and permitting requirements needed to reestablish freight rail service and/or excursion passenger train service along the existing Calais Branch Rail Corridor. The corridor is currently maintained by the Maine Department of Transportation (MaineDOT) and was originally used for freight rail service, as such it can be assumed that no expansion of the corridor would be required and therefore no new wetland impacts would be necessary with this alternative. A field delineation and more specific project information would be required to confirm that the freight rail service and/or excursion passenger train service alternative meets this assumption of no new wetland impacts.

The existing rail corridor crosses two different streams and runs adjacent to two bodies of water. In the northernmost region of the Study Area, the corridor runs adjacent to the St. Croix River, before crossing Magurrewock Stream further south. Near Charlotte Road, the corridor crosses Moosehorn Brook, which eventually empties into Pennamaquan Lake further south. Before running adjacent to Pennamaquan Lake, the corridor crosses Moosehorn Brook twice. The current condition and quality of existing infrastructure associated with water crossings has not been evaluated as part of this feasibility study. Repair or replacement of these crossings may lead to wetland or waterway impacts; however, these impacts cannot be quantified at this time through a desktop-level analysis. Additionally, any proposed work associated with improving existing culverts or crossings may require permit approvals or agency consultations to determine if these activities may be considered exempt from regulation.

4.2 Establishment of Interim Trail Alternatives

Convert to Trail Use Only

The Trail Only option is designed to be built over the existing rail embankment. As a result, construction of the multi-use trail is assumed to occur only within the existing railbed, and road crossings and no expansion of the rail corridor would be necessary. If for some reason an expansion of the rail embankment were required for this alternative, then additional wetland impacts could be associated with a trail conversion. More detailed project information and field delineation of wetlands would be required to confirm this assumption. Sizing, condition, and quality of the existing infrastructure associated with water crossings has not been considered in this feasibility study. Repair or replacement of these crossings may lead to wetland impacts which cannot be quantified at this time through a desktop analysis. Additionally, any proposed work associated with improving existing culverts or crossings may require permit approvals or agency consultations to determine if these activities may be considered exempt from regulation.

Reestablish Freight Rail with Trail (RWT) Use

The Reestablish Freight RWT alternative would require expansion of the corridor and therefore a significant number of wetlands and waterways impact would be anticipated. For this alternative, the proposed permanent corridor expansion is assumed to be approximately 30 feet from the edge of the existing rail corridor. This proposed width accounts for the construction of the multi-use path, a minimum 15-foot offset between the multi-use path and the rail edge, as well as the necessary fill and grade changes that would be required for the extension of the embankment. It should be noted that under MaineDOT standards, the offset between the rail edge and the multi-use path could be 10.5 feet under conditions in which a fence line separates the two. However, the rail corridor bisects a large portion of the Moosehorn National Wildlife Refuge. Therefore, to maintain habitat connectivity, the preferred design would not employ a lengthy fence line that would obstruct wildlife passage.

The assumed corridor expansion discussed above, if constructed on the west side of the existing rail corridor, would result in an estimated 5.5 acres of permanent wetland impact. If the trail were constructed on the east side of the existing corridor, with the same assumed impact width, the development would result in an estimated 11 acres of permanent wetland impact. Therefore, to minimize wetland impacts, this alternative would preferably be constructed on the west side of the existing rail corridor.

4.3 Wetlands of Special Significance and Sensitive Habitats

All alternatives which involve expansion of the rail corridor or in-water work could involve impacts to State of Maine Natural Resource Protection Act (NRPA) designated Wetlands of Special Significance (WOSS). Confirmation of the presence of WOSS and impacts would be based on field data collected as part of a future study or permitting effort.

The expansion of the corridor necessitated by the RWT use alternative is not likely to impact any state-mapped Significant Vernal Pools (SVP) located along the project's extent. A field survey by a qualified biologist would be necessary to confirm the presence/absence of vernal pools.

The existing corridor passes through other mapped Sensitive Wildlife Habitats, including two (2) Inland Waterfowl and Wading Bird Habitat (IWWH) areas, according to Beginning with Habitat. Specifically, the corridor passes through one IWWH in the southern portion of the Study Area for over four consecutive miles (approximately 4.19 miles) and passes through another IWWH in the northern portion of the Study Area for almost one consecutive mile (approximately 0.79 mile). According to the Maine Department of Inland Fish and Wildlife, the Study Area does not intersect any habitats with state listed rare, threatened, or endangered species. As mentioned in Table 1, the significant overlap with IWWH (in addition to wetland impacts) will contribute to the need to apply for a Permit by Rule under Section 20 of the Natural Resource Protection Act (NRPA).

To determine the specific listed Species of Special Concern, consultation with IFW and MNAP would be required. Section 9 of the Endangered Species (ESA) prohibits the taking (e.g., harm or harassment) of an ESA-listed species. Further, Part 1.1.5 and Appendix D of the 2022 CGP requires determination of eligibility regarding protection of threatened and endangered species, as well as designated critical habitat. Additionally, since this railroad is situated within the Moosehorn National Wildlife Refuge, the project will most likely need to undergo a “compatibility determination,” which will require contacting the Refuge to discuss any concerns with rail use within the Refuge. See Table 1 for further information.

Potential impacts to state- and federally-listed endangered species would be assessed through consultation with MDIFW and USFWS, and field surveys if needed, to determine potential permitting implications, such as construction timing or disturbance limitations. Although similar protections are not generally required for Species of Special Concern and associated habitat, their presence should be noted during future evaluations for all alternatives.

4.4 Permitting Requirements

The need for federal, state, and/or local permits and approvals would depend on numerous factors, such as final location of facilities and project layout, land ownership, equipment used, construction methodology, and presence and proximity of protected natural resources to proposed activities. For all alternatives, consultation with regulatory agencies during the planning and development process, along with disclosures of anticipated impacts will assist with identifying required permits, approvals, and authorizations that may be necessary as project details are advanced.

The Reestablish Freight Rail Service Only and/or Excursion Passenger Train Service and Trail Use Only alternatives, which are assumed to not require any expansion of the existing rail corridor, are anticipated to result in minimal environmental impacts and correspondingly less permitting effort than the Redevelopment with Reestablish Freight Rail with Trail Use alternative. The latter alternative requires significant expansion of the existing rail corridor. However, due to (1) the prevalence of wetlands and streams along the existing corridor, (2) the potential need for improvements to existing wetland and waterway crossings associated with all alternatives and (3) the intersection with the Moosehorn National Wildlife Refuge, some degree of wetland and waterway impacts that require permit applications and/or agency consultations may be expected for all alternatives.

All alternatives that directly impact (i.e. fill) wetlands or waterbodies would require NRPA and U.S. Army Corps of Engineers (Corps) authorizations. The amount and type of resources impacts would determine the level of NRPA (i.e. Tier level permit or Permit-By Rule) and Corps permitting (i.e., Self-Verification Notification Form, Pre-Construction Notification, or Individual Permit) that would be required. Notification to and consultation with the Maine Historic Preservation Commission (MHPC) would be required for NRPA and Corps permits. In addition, Corps approval would require compliance with the ESA and Section 106 of the National

Historic Preservation Act (NHPA). Alternatives that require tree-clearing would require a USFWS Northern Long-Eared Bat 4 (d) consultation as part of Corps review. Any option that disturbs over an acre of soil would require Maine Construction General Permit (MCGP) approval and options that create over an acre of new impervious area would be subject to the requirements of Chapter 500, the Maine Stormwater Law. It should be noted that the significant amount of anticipated wetland impacts for alternatives that expand the rail corridor would require a substantial degree of agency coordination and extensive impact mitigation and compensation.

A State of Maine Site Location of Development (Site Law) Permit would be triggered by any alternative that occupies more than 20 acres; includes 3 or more acres to be graded, stripped and not revegetated; or if the project site has an existing Site Law permit requiring amendment.

Finally, some level of municipal coordination and local permitting may be required for all alternatives that impact natural resources and public amenities and to ensure compliance with applicable local land use ordinances, Shoreland Zoning, and other local zoning regulations. Note the likely requirements in Table 1. Also note that many city planning boards require a pre-application meeting before submitting building, shoreland, or other local permits.

Table 1. Permitting Summary Table

Permit Level	Permitting Agency and Statute	Applicability	Application Process	Timeframe (approx.)
Federal	USACE Clean Water Act Section 404 - Discharge of dredged or fill material into waters of the U.S.	Level of review cannot be determined until potential wetland impacts are quantified. Will likely be required due to anticipated wetland impacts for alternatives that expand the rail corridor.	Proposed wetland impacts (i.e. fill) will potentially require Category 1 or Category 2 authorization from the USACE. Application includes, but is not limited to, project description, site plans, Section 7 consultation per the Endangered Species Act; and Section 106 consultation per the National Historic Preservation Act.	4-6 months
	USFWS Compatibility Determination	Applies to all proposed and existing uses of national wildlife refuges where USFWS has jurisdiction. Likely required because the rail runs through the Baring division of the Refuge.	Consult with the Refuge Manager to determine next steps for the application process. The application typically includes, without limitation, the proposed or existing use of the Project, its anticipated impacts, and an explanation describing how the use would or would not materially interfere with the Refuge.	2-3 months
State	MEDEP ⁶ - Natural Resource Protection Act (NRPA)	Applies to projects that involve work in, on, or over a protected natural resource, such as freshwater wetlands, significant wildlife habitats, rivers, streams, or brooks. Level of resource impact and corresponding review under NRPA not known until wetland delineation is overlaid with concept plan.	Proposed activities and/or wetland impacts (i.e. wetland fill and/or alteration) will require either Permit by Rule or Tier 1, 2, or 3 NRPA permit from MEDEP. Projects that alter more than 15,000 square feet of freshwater wetlands will need a higher level of permitting (Tier 2 or Tier 3) which will take more time and requires more submissions. NRPA Tier application includes, but is not limited to, provision of title, right, interest information; public notice requirements (if Tier 2 or above); statement of avoidance & minimization of impacts and alternatives analysis; provision of Maine Historic Preservation Commission correspondence; and may involve consultation with Maine Department of Inland Fisheries and Wildlife regarding potential impacts to state-listed threatened or endangered species.	6-12 months
	MEDEP - Site Location of Development (Site Law)	Applies to developments with the potential to have a substantial effect on the environment, i.e. if the project occupies more than 20 acres or includes 3 or more acres to be graded, stripped, and not revegetated.	A permit is issued if the project meets applicable standards addressing areas such as stormwater management, groundwater protection, infrastructure, wildlife and fisheries, noise, etc.	4-6 months
	MEDEP– Chapter 500: Stormwater Management Law	Projects involving one acre or more of disturbed area.	Project must demonstrate the ways in which it meets the stormwater standards for projects in organized areas. The level of permit will depend on the amount of proposed developed and impervious area.	1-3 months
Local	Calais and/or Baring Pitt and/or Charlotte Site Plan Review	At the discretion of the Town Code Enforcement Officer. May be necessary because it can apply to additions to projects or an increase in the area used for an existing use.	Consult with Town Code Enforcement Officer (CEO) to determine applicability. The CEO will determine if the project requires either no site plan review, a minor site plan review, or major site plan review. These applications typically include, but are not limited to, plans/drawings, locus maps, names of abutters, and an erosion and sedimentation control plan.	1-3 months
	Calais and/or Baring Pitt and/or Charlotte Building Permit	At the discretion of the Town Code Enforcement Officer. May be necessary depending on the Project Alternative chosen, as building permits can be required for any construction or alteration of a structure or change in use of a structure.	Consult with Town Code Enforcement Officer to determine applicability and requirements. Specific requirements for the permit application will depend on each town’s Code of Ordinances. However, these applications typically consist of, without limitation, building/structure dimensions, information about the lot to be built upon, setback distances from existing structures, and other information requested by the CEO.	1-3 months
	Calais and/or Baring Pitt and/or Charlotte Shoreland Zoning Permit	Applies to projects within 250 feet, horizontal distance, of the normal high-water line of any great pond or river, upland edge of a coastal wetland, upland edge of defined freshwater wetlands, and all land areas within 75 feet, horizontal distance, of the normal high-water line of certain streams.	Consult with Town Code Enforcement Officer to determine applicability and requirements. Shoreland Permit likely required because of proximity to freshwater wetlands, streams, rivers, and lakes in all three towns. Shoreland permit applications typically consist of, but are not limited to, project description, site plans, USGS location map, erosion and sedimentation control measures, and a demonstration of title/right/interest to the property.	2-3 months
	Calais and/or Baring Pitt and/or Charlotte Flood Hazard Development Permit	Applies to construction projects within areas of special flood hazard. This will likely be required – where the railroad runs closely adjacent to Pennamaquan Lake, for example, it sits in a special flood hazard area, according to FEMA NFHL ⁷ flood zone mapping.	Consult with Town Code Enforcement Officer to determine applicability and requirements. Applications may consist of name of the flooding source, basic project information, site plan, and project narrative.	2-3 months

⁶ Maine Department of Environmental Protection

⁷ Federal Emergency Management Agency National Flood Hazard Layer

4.5 References

FEMA, 2021. National Flood Hazard Layer, last updated December 2021. <https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd>

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MEGIS, 2022. Significant Vernal Pools, last updated May 6, 2022. <https://services1.arcgis.com/RbMX0mRVOFNTdLzd/arcgis/rest/services/SVP/FeatureServer>

US Fish and Wildlife Service, 2022. National Wetlands Inventory, last updated May 1, 2022. <https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-map>

5

Economic Benefits

This chapter presents a summary assessment of the economic benefits and impacts of an interim trail and/or maintaining and preserving the existing rail corridor for possible restoration of rail services along the 12.25-mile Calais Branch Rail Corridor from the intersection of Route 1 in Calais to the interchange with the Sunrise Trail in Ayers Junction. Both interim trail and potential rail use consider the construction-related economic impacts, ongoing maintenance costs, as well as post-construction benefits that could accrue from users. More detail can be found in RKG’s Demographic & Economic Analysis report in Appendix B.

5.1 Economic Impacts from IMPLAN Modeling

To measure the economic impact of construction and on-going operations and maintenance of the Calais Branch Rail corridor alternatives—interim trail, rail with trail, and the restoration of freight rail service—the planning team utilized the IMPLAN econometric model which, in brief, measures how an initial dollar injected into one sector of the economy is spent and recirculated throughout the Maine economy. These effects are categorized as direct, indirect and induced effects which encompass direct investment in economic activity, business-to-business spending, and household expenditures. Of note is the Value Added impact, which includes:

- › The annual spending among trail users,
- › Potential on-board passenger rail spending,

- › The one-time costs for infrastructure/construction for each of the use alternatives considered in this analysis, and;
- › Ongoing and annual maintenance costs associated with each alternative.

Estimates include construction costs (i.e., the initial capital investment), ongoing annual maintenance costs (e.g., replace/repair rail ties for rail, vegetation removal, etc.), and any other resulting economic activity, for these three alternatives:

- › 1: Maintain and preserve existing rail corridor for potential restoration of:
 - Freight rail operations
- › 2: Interim Trail using existing rail bed
 - Interim Trail with gravel/stone dust surface
 - Interim Trail with paved surface
- › 3: Permanent Trail adjacent to existing rail bed (Rail with Trail or “RWT”)
 - RWT with gravel/stone dust surface
 - RWT with paved surface

Selected Summary of Trail Related Impacts

The Table below presents a summary of selected trail related impacts of the alternatives. These include the dollar amount of the initial (or ongoing) investment, the total Value Added to the State of Maine economy, wages and employment.

Table E1: Selected Summary Trail Related Impacts – IMPLAN Modeling

Calais Branch Rail Corridor - Selected Summary Impacts by Option	Input Dollars (1)	Total Value Added	Wages and Employment	
			Wages (2)	Employ (3)
Infrastructure/Construction Impacts (one-time)				
Option 1A-Rail with Trail (gravel surface)	\$70,600,000	\$62,941,862	\$45,320,630	790.67
Option 1B-Rail with Trail (paved surface)	\$72,700,000	\$64,814,070	\$46,668,694	814.19
Option 2A-Trail until Rail (gravel surface)	\$13,900,000	\$12,392,236	\$8,922,900	155.67
Option 2B-Trail until Rail (paved surface)	\$18,100,000	\$16,136,653	\$11,619,028	202.71
Option 3-Potential Rail Use Restoration	\$51,500,000	\$45,913,681	\$33,059,666	576.76
Ongoing and Annual Maintenance Impacts				
Option 1A-Rail with Trail (gravel surface)	\$57,575	\$51,323	\$31,737	0.37
Option 1B-Rail with Trail (paved surface)	\$51,450	\$45,864	\$28,361	0.33
Option 2A-Trail until Rail (gravel surface)	\$57,575	\$51,323	\$31,737	0.37
Option 2B-Trail until Rail (paved surface)	\$51,450	\$45,864	\$28,361	0.33
Option 3-Potential Rail Use Restoration	\$976,000	\$870,025	\$538,000	6.22

Source: IMPLAN, VHB and RKG (2024)

(1) - capital infrastructure/construction (one-time) - annual O&M costs (ongoing)

(2) - reflects sum of estimated Statewide labor income - direct, indirect and induced

(3) - reflects sum of estimated Statewide employment - direct, indirect and induced

Upgrade for Potential Future Rail Use: Freight Rail

The same selected summary impacts for a potential upgrade to Freight Rail services are offered in the table below:

Table E3: Selected Summary Impacts for Freight Rail Upgrade – IMPLAN Modeling

Potential Rail Use Restoration - Calais Branch Rail Corridor				
Infrastructure / Construction Costs - \$51,500,000				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	373.08	\$20,640,435	\$22,776,246	\$51,500,000
2 - Indirect	75.35	\$5,230,168	\$9,293,108	\$19,236,159
3 - Induced	128.33	\$7,189,063	\$13,844,327	\$23,059,535
Total	576.76	\$33,059,666	\$45,913,681	\$93,795,695

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

Note - a greater discussion of costs is presented in the VHB report dated 26 June, 2024

Potential Rail Use Restoration - Calais Branch Rail Corridor				
Ongoing and Annual Maintenance Costs - \$976,000				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	1.92	\$273,699	\$379,427	\$976,000
2 - Indirect	2.27	\$150,798	\$272,130	\$494,473
3 - Induced	2.02	\$113,503	\$218,469	\$364,045
Total	6.22	\$538,000	\$870,025	\$1,834,518

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

Note - a greater discussion of costs is presented in the VHB report dated 26 June, 2024

5.2 Other Financial/Social Impacts – Interim Trail

Trail Use and User Spending

The estimated annual trail use (trips) from the local population ranges from 15,750 to 23,500 annually.⁸ Annual out-of-state users (at 30%) ranges from 4,725 persons to 7,050 persons (user trips). These out-of-state trail users form the basis for estimating trail use spending⁹ impacts and are projected to spend between \$982.8k and \$1.47M per year. While it is possible that these levels of spending may support new commercial development activity, at a minimum they represent additional consumer spending available to existing businesses in the vicinity of the trail.

Potential Health Benefits

If a trail is available to residents along the Calais Branch Rail Corridor, it is anticipated that physical activity will increase with trail utilization. This added physical activity could translate to an annual

⁸ Estimates per the Maine State Active Transportation Plan (March 2023), Table 13, p. 60.

⁹ The underlying assumption is that in-state trail user spending is already occurring in the local economy and may not necessarily represent new spending activity.

savings of \$537,382 from reduced spending on health-related expenditures from those identified as inactive or insufficiently active with respect to their levels of physical activity. This spending (savings) could become available for other household purchases (expenditures) which are not health related.

Potential Benefits to Single-Family Residential Homes

Area realtors¹⁰ (interviewed by RKG) typically indicated that proximity to a trail, as a locational amenity, could shorten the average number of days-on-market (DOM) if, and when, a house is placed on the market. While there is generally less consensus on a measured dollar impact on sales values, assuming a conservative 2.5% to 5% increase could result in a sales price increase from \$3,125 to \$6,250 (on average) for those homes within the Calais Branch Rail Corridor.

5.3 Other Financial/Social Impacts – Rail Service

Potential Freight Rail Benefits

With the potential restoration of Freight Rail service, it is possible that further economic impacts could be realized if the Calais Branch Rail Corridor were a designated Free Trade Zone (FTZ). RKG notes that while quantifying any cost savings or other economic benefits to companies resulting from a potential FTZ are beyond the scope of this analysis, it is reasonable to assume such impacts could represent cost-savings to area businesses and companies. Additionally, it may also be possible that increased FTZ utilization by area businesses could foster increased demand for development of proximate warehousing and distribution facilities and thereby further potential local fiscal and economic impacts.

Summary of Value-Added Impacts

The following Table presents a comparative summary of the Value-added Impacts across the State of Maine economy, for each of the alternatives under consideration in this analysis. These are discussed in greater detail in RKG's full report found in Appendix B.

¹⁰ These include Sprague & Curtis Real Estate, McAllister Real Estate and Sandy River Realty, all active in the Augusta region and knowledgeable of the existing Kennebec River Rail Trail.

Table E4: Comparative Summary of the Value Added Impacts – Calais Branch Rail Corridor

Calais Branch Rail Corridor - Selected Summary Impacts by Option - Valued Added (2024\$)	Infrastructure Construction Impacts (1)	Annual Maintenance Impacts (2)	Other Financial Impacts		
			Trail User Expenditures (3)	Potential Health Benefits (4)	Potential Impact on SFDU Value (5)
Option 1 A - Rail with Trail (gravel surface)	\$62,941,862	\$51,323	\$1,091,632	\$537,382	\$4,688
Option 1 B - Rail with Trail (paved surface)	\$64,814,070	\$45,864	\$1,091,632	\$537,382	\$4,688
Option 2 A - Trail until Rail (gravel surface)	\$12,392,236	\$51,323	\$1,091,632	\$537,382	\$4,688
Option 2 B - Trail until Rail (paved surface)	\$16,136,653	\$45,864	\$1,091,632	\$537,382	\$4,688
Option 3 - Potential Rail Use Restoration	\$45,913,681	\$870,025	na	na	na

Source: IMPLAN, VHB and RKG (2024)

(1) - one-time and reflects sum of direct, indirect and induced Value Added impacts.

(2) - annual and ongoing and reflects sum of direct, indirect and induced Value Added impacts.

(3) - reflects average of low (\$982,800) and high (\$1,466,400) or \$1,224,600

(4) - annual and ongoing absolute for Washington County, ME and not Value Added impacts.

(5) - reflects the average of the potential change in 2028 median value of owner-occupied residential within the CBR Corridor.

na - not applicable or otherwise unquantified in this analysis.

6

Community Input

Public engagement is an important ongoing part of the Calais Branch Rail Corridor Study process. Comments were solicited in a variety of channels between March 2024 and October 2024, including 7 virtual RUAC meetings, one virtual public meeting, one in-person public meeting, and through email comments, via direct email to MaineDOT and submissions through the MaineDOT website contact form. The public comments were reviewed, and specific opinions regarding the project were tabulated and categorized.

6.1 Key Findings to Date

23 public comments were received by MaineDOT via e-mail in a seven-month period from April 2024 through early October 2024. Additionally, five individuals spoke at the September 17 public meeting held online, 13 spoke at the September 25 public meeting held in-person, and 11 comments were made at the 7 RUAC meetings. VHB reviewed all comments and determined whether the comment appeared to be 1) supportive of trail use—either interim trail or rail-with-trail—along the corridor, 2) supportive of the restoration of rail service along the corridor, or 3) presented either a neutral stance, or simply asked a question(s) as part of their comments to MaineDOT. To more thoroughly understand what motivated the responders' interests in their position, VHB categorized and tabulated the more nuanced reasons why people felt as they did to track any trends that could inform the RUAC recommendations and subsequently the MaineDOT Commissioner's decision related to the Calais Branch corridor. A summary of community input is below.

Table 7: Summary Table of Community Input

	Supports Trail (interim or otherwise)	Supports Rail with Trail	Supports Restoration of Rail Service or No Action	Neutral/ Other	Total
Public comments made at RUAC meetings	7	0	0	4	11
Public comments at 9/17 virtual public meeting	2	2	0	1	5
Public comments at 9/25 in-person public meeting	13	0	0	0	13
Public comments made via e-mail	19	1	4	1	25
Total (including repeat comments)	41	3	4	6	54
Repeat comments	9	1	1	3	14
Net Total (excludes repeat comments)	32 (80%)	2 (5%)	3 (7.5%)	3 (7.5%)	40

6.2 Responses Supporting Trail

Of the 34 total comments in support of a rail alternative, 2 people specifically indicated support for a Rail-with-Trail alternative. Of the remaining 32 people, most specifically noted support for interim trail. And while a few people did not specifically note which trail configuration they were supporting, the nature of their comments appeared to be in support of interim trail. Of the comments reviewed, reasons and concerns cited for the strong support of the interim trail included:

- › Recreational and economic benefits
- › Traffic safety concerns
- › Health benefits and outdoor recreation benefits
- › Alternative transportation benefits
- › Impacts to the Moosehorn National Wildlife Refuge

Recreational and economic benefits was a significant category of benefits referenced, with 45% of respondents mentioning the potential economic benefits due to the trail, both from an increase in tourism and the potential for economic development.

Respondents from several potential user groups, including bicyclists, ATV users, and general nature enthusiasts, mentioned the economic benefits that a trail could bring to the region due to an increase in tourism in the region which would benefit local businesses, including restaurants and hotels. One respondent noted the positive impact the Downeast Sunrise Trail has had on the economy around Machias and believes a trail along the Calais Branch corridor could have a similar impact on the economy in Calais.

A few commenters also felt the interim trail would be the best use of funds in the short term and more cost effective and viable than the rail with trail alternative.

Traffic safety was another category of concern with 15% of commenters noting the benefits of having a safer alternative for walkers, runners and cyclists in the region.

Health was a significant category of benefits referenced throughout the comments, with 13% of respondents indicating the trail could provide health benefits to the community including mental health, physical health, and/or general wellness. One respondent believes that a trail could encourage more health care professionals to move to the area.

33% of comments cited **alternative transportation benefits**, with an interest in using the trail for ATV trips to Calais and other surrounding towns. Several respondents are members of ATV clubs and current users of the Downeast Sunrise Trail and would strongly prefer to see that trail extended to Calais.

Approximately 25% of comments expressed opinions regarding the project's potential **impact on the Moosehorn National Wildlife Refuge**. 8% of people felt that a trail would expand access to the refuge for birding, fishing, and other recreational activities. However, 18% of people expressed concerns about the potential for negative impacts to the refuge and many of these concerns were centered around noise and dust from potential ATV use. Additionally, two respondents noted the benefits a trail could have in providing emergency access to hard to access locations within the Moosehorn National Wildlife Refuge and other remote areas.

Other notes on preferences: Motorized vs. Non-Motorized Trail Use

While 30% of commenters specifically indicated a preference for motorized multi-use trail usage, 15% of respondents also voiced their preference for a non-motorized trail.

Specifically mentioned was a desire for vehicles such as snowmobiles and ATVs, referencing examples of other trails throughout Maine where this is currently practiced. Comments also noted potential economic benefits tied to the tourism generated for this use, and for the purchasing of permits for these motorized uses, potential for additional funding toward such a trail. In general, this group of respondents feel that expanding the modes allowed on the trail would increase activity and use of the facility.

Other notes on preferences: Trail Surface

A small number respondents had strong preferences as to whether the trail should be gravel or paved, and preferences as to the aggregate size used for gravel surfaces to allow for safe access for all users including bicyclists. Some commenters noted what they felt are unsatisfactory surface conditions on the Downeast Sunrise Trail for bicyclists. Much of the discussion over the preferred trail surface for bicycles overlapped with the discussion above regarding whether or not to allow motorized uses.

Concerns: Route 1 Terminus

Approximately 15% of respondents expressed concern about the northern terminus of the trail at the Route 1 grade crossing. Many of these comments emphasized that any future phases of a trail project, if that is the selected alternative, should include considerations for a connection to the Moosehorn trails for non-motorized users and a connection to downtown Calais and other motorized trails for motorized users.

Groups Providing Comments in Support of a Trail

Various groups had representatives speak in support of an interim trail, including:

- › East Coast Greenway Alliance (Northern New England Manager)
- › Dennysville Snowmobile & ATV Club (multiple members)
- › City of Calais (Mayor)
- › Calais Trail Riders (President)
- › Gorham SnoGoers Snowmobile Club (Vice President)
- › Sunrise Trail Coalition (multiple members)

Notes on abutters

Of the respondents supporting the trail, 23 respondents stated they lived close to the rail line, and one specifically noted that they directly abutted the rail right of way. Input from the public that is local to the trail corridor (within Washington County), included the following municipalities:

- › Ayers Junction
- › Baileyville
- › Baring
- › Calais
- › Charlotte
- › Columbia
- › Cooper
- › Dennysville
- › East Machias
- › Princeton
- › Pembroke
- › Robbinston

6.3 Responses Supporting Restoration of Rail Service

Three public commenters indicated support for restoring rail service or taking no action and leaving the existing tracks in place as-is. Additionally, two commentors noted their preference for rail-with-trail to more directly preserve the corridor for future rail use. This group of respondents represented 12% of the total comments and generally felt that the restoration of freight or passenger rail service would bring economic benefit to the region and serve a greater cross section of the area's population than active transportation alone. They were concerned that removal of the rail infrastructure would be a disservice to the region.

Of the comments, reasons and concerns cited for their support of the restoration of rail service included the following areas:

- › Economic benefits
- › Environmental concerns

Economic benefits were the primary reason noted in support of rail restoration, with respondents citing that rail would add to the regional economy and spur economic development. One respondent believes that rail restoration and reconnection to Eastport would usher in an economic revival of the region by providing year-round employment at manufacturing plants, distribution centers, and transloading facilities.

Environmental concerns were another reason this group of respondents preferred the rail restoration or no action option. With a large section of the rail corridor running through the Moosehorn National Wildlife Refuge, respondents were concerned that the construction of a trail could negatively impact the extensive area of wetlands adjacent to the existing rail corridor. There were also concerns about an increase in noise from ATV and snowmobile traffic in addition to the increase in human disturbance to the ecosystem.

Groups Providing Comments in Support of a Rail Service

There were no groups that spoke in support of the restoration of freight or passenger rail service.

APPENDICES

Appendix A:

Cost Estimate Back-up Sheets

- A1: Rail Cost Estimates (Freight)**
- A2: Trail Cost Estimates**



Project: Calais RUAC Study
Description: Track Infrastructure Assessment
Calculated By: Mike McDonough, Gavin Graham
Checked By: Gordon Edington

Project #: 55067.99
Sheet:
Date: 6/17/24
Date: 6/18/24

Calais Branch

ITEM	DESCRIPTION	ESTIMATED CONSTRUCTION COST
1	Track & Right-of-Way	\$ 27,470,000
2	Turnouts	\$ 300,000
3	Grade Crossing Improvements	\$ 800,000
4	Farm Crossing Improvements	\$ 50,000
5	Undergrade Bridge Improvements	\$ 600,000
6	Culvert Improvements	\$ 2,450,000
7	Overhead Bridge Improvements	\$ -
8	Communications & Signal System Improvements	\$ -
9	Station Platforms & Station Buildings	\$ -
TOTAL =		\$ 31,670,000

MISC. ITEMS AND CONTINGENCY (30%) = \$ 9,501,000

SUBTOTAL = \$ 41,171,000

DESIGN ENGINEERING (10%) = \$ 4,117,100

CONSTRUCTION ADMINISTRATION & ENGINEERING (15%) = \$ 6,175,650

TOTAL = \$ 51,463,750

SAY = \$ 51,500,000



Conceptual Project Cost Estimate for Trail-Until-Rail with Stone Dust/Gravel Wearing Surface

Rail Corridor Segment Between Roadway At-Grade Crossings		Total Segment Length	Remove Rail & Construct Trail Cost	Improvements at Roadway At-Grade Xings			Improvements at Bridges							
Crossing Name	MP	LF		Type	Speed	Cost	Bridge MP	Overhead or Undergrade	Total Length (ft)	Number of Spans	Bridge Type	Open or Ballasted Deck	Wide Enough for Two Tracks?	Cost
Project Start-Route 1	266.54	N/A	N/A	3	55	\$ 75,000								
Lane Construction Access Road	264.59	10,319	\$ 1,289,850	1	UP	\$ 40,000								
Headquarters Road	263.96	3,326	\$ 415,800	1	UP	\$ 40,000								
Charlotte Road	261.80	11,405	\$ 1,425,600	3	45	\$ 75,000	261.80	UG	12	2	Concrete Rigid Frame	Ballasted	No	\$ 6,000
							260.78	UG	12	2	Concrete Rigid Frame	Ballasted	No	\$ 6,000
							258.75	UG	14	1	Timber Stringer	Open	No	\$ 7,000
Station Road	257.25	24,024	\$ 3,003,000	1	UP	\$ 40,000								
							256.57	UG	27	1	Deck Plate Girder	Open	No	\$ 13,500
Mount Tom Road	255.19	10,876	\$ 1,359,500	2	35	\$ 75,000								
Project End-Ayers Junction Road	254.29	4,750	\$ 593,750	3	50	\$ 75,000								
Subtotals:		64,700	\$ 8,087,500			\$ 420,000								\$ 32,500

Estimated Average Unit Cost for Removing Rail & Ties and Constructing Stone Dust Trail:
\$ 125 /LF

Estimated Unit Costs for At-grade Xing Improvements:

Type 1 = Small Local Road \$ 35,000 /Each
Type 2 = Standard State Route \$ 50,000 /Each
Type 3 = Large Crossing \$ 70,000 /Each
These costs assume full removal and replacement of pavement within 5' of the rails

Estimated Average Unit Cost for Adding Timber Decking & Railing on Open Timber Deck Bridges:
\$ 500 /LF

Construction Subtotal	\$ 8,540,000
Contingency (30%)	\$ 2,562,000
Construction Total	\$ 11,102,000
Design Engineering (10%)	\$ 1,110,200
Construction Administration & Engineering (15%)	\$ 1,665,300
Project Total	\$ 13,877,500
Project Total, Say	\$ 13,900,000



Conceptual Project Cost Estimate for Trail-Until-Rail with HMA Pavement Wearing Surface

Rail Corridor Segment Between Roadway At-grade Crossings		Total Segment Length	Remove Rail & Construct Trail Cost	Improvements at Roadway At-Grade			Improvements at Bridges								
				Xings			Bridge MP	Overhead or Undergrade	Total Length (ft)	Number of Spans	Bridge Type	Open or Ballasted Deck	Wide Enough for Two Tracks?	Cost	
Crossing Name	MP	LF	Type	Speed	Cost										
Project Start-Route 1	266.54	N/A	N/A	3	55	\$ 75,000									
Lane Construction Access Road	264.59	10,319	\$ 1,702,602	1	UP	\$ 40,000									
Headquarters Road	263.96	3,326	\$ 548,856	1	UP	\$ 40,000									
Charlotte Road	261.80	11,405	\$ 1,881,792	3	45	\$ 75,000	261.80	UG	12	2	Concrete Rigid Frame	Ballasted	No	\$ 6,000	
							260.78	UG	12	2	Concrete Rigid Frame	Ballasted	No	\$ 6,000	
							258.75	UG	14	1	Timber Stringer	Open	No	\$ 7,000	
Station Road	257.25	24,024	\$ 3,963,960	1	UP	\$ 40,000									
							256.57	UG	27	1	Deck Plate Girder	Open	No	\$ 13,500	
Mount Tom Road	255.19	10,876	\$ 1,794,540	2	35	\$ 75,000									
Project End-Ayers Junction Road	254.29	4,750	\$ 783,750	3	50	\$ 75,000									
Subtotals:		51,055	\$ 10,675,500			\$ 420,000									\$ 32,500

Estimated Average Unit Cost for Removing Rail & Ties and Constructing Paved Trail:
\$ 165 /LF

Estimated Unit Costs for At-grade Xing Improvements:

Type 1 = Small Local Road \$ 35,000 /Each
Type 2 = Standard State Route \$ 50,000 /Each
Type 3 = Large Crossing \$ 70,000 /Each
These costs assume full removal and replacement of pavement within 5' of the rails

Estimated Average Unit Cost for Adding Timber Decking & Railing on Open Timber Deck Bridges:
\$ 500 /LF

Construction Subtotal	\$ 11,128,000
Contingency (30%)	\$ 3,338,400
Construction Total	\$ 14,466,400
Design Engineering (10%)	\$ 1,446,640
Construction Administration & Engineering (15%)	\$ 2,169,960
Project Total	\$ 18,083,000
Project Total, Say	\$ 18,100,000



Conceptual Project Cost Estimate for Rail-With-Trail with Stone Dust/Gravel Wearing Surface

Rail Corridor Segment Between Roadway At-grade Crossings		Total Segment Length	Construct Trail Adjacent to Rail Cost	Improvements at Roadway At-Grade Xings			Improvements at Bridges							
Crossing Name	MP	LF		Type	Speed	Cost	Bridge MP	Overhead or Undergrade	Total Length (ft)	Number of Spans	Bridge Type	Open or Ballasted Deck	Wide Enough for Two Tracks?	Cost
Project Start-Route 1	266.54	N/A	N/A	3	55	\$ 5,000								
Lane Construction Access Road	264.59	10,296	\$ 6,815,952	1	UP	\$ 5,000								
Headquarters Road	263.96	3,326	\$ 2,202,077	1	UP	\$ 5,000								
Charlotte Road	261.80	11,405	\$ 7,549,978	3	45	\$ 5,000	261.80	UG	12	2	Concrete Rigid Frame	Ballasted	No	\$ 100,000
							260.78	UG	12	2	Concrete Rigid Frame	Ballasted	No	\$ 100,000
							258.75	UG	14	1	Timber Stringer	Open	No	\$ 120,000
Station Road	257.25	24,024	\$ 15,903,888	1	UP	\$ 5,000								
							256.57	UG	27	1	Deck Plate Girder	Open	No	\$ 230,000
Mount Tom Road	255.19	10,876	\$ 7,199,912	2	35	\$ 25,000								
Project End-Ayers Junction Road	254.29	4,750	\$ 3,144,500	3	50	\$ 5,000								
Subtotals:		64,677	\$ 42,816,306			\$ 55,000								\$ 550,000

Estimated Average Unit Cost for Constructing Stone Dust/Gravel Trail Adjacent to Existing Rail:

In Sections with no significant Cut or Fill (approx. 40% of each segment)	\$ 55 /LF
In Modest Cut or Fill Sections (approx. 20% of each segment)	\$ 290 /LF
In Fill Sections with Retaining Wall (approx. 40% of each segment)	\$ 1,455 /LF

Estimated Unit Costs for At-grade Xing Improvements:

Speed <= 30 MPH	\$ 5,000 /Each
Speed = 35 MPH or 40 MPH	\$ 25,000 /Each
Speed >= 45 MPH	\$ 5,000 /Each
UP = Unposted assumed to be 30 MPH or lower	

Estimated Average Unit Cost for Adding Timber Decking & Railing on Open Timber Deck Bridges:

\$ 500 /LF

Estimated Average Unit Cost for Adding RWT on Open Deck

\$ 550 /SF

Construction Subtotal	\$ 43,421,306
Contingency (30%)	\$ 13,026,392
Construction Total	\$ 56,447,698
Design Engineering (10%)	\$ 5,644,770
Construction Administration & Engineering (15%)	\$ 8,467,155
Project Total	\$ 70,559,623
Project Total, Say	\$ 70,600,000



Conceptual Project Cost Estimate for Rail-With-Trail with HMA Pavement Wearing Surface

Rail Corridor Segment Between Roadway At-grade Crossings		Total Segment Length	Construct Trail Adjacent to Rail Cost	Improvements at Roadway At-Grade Xings			Improvements at Bridges							
Crossing Name	MP	LF		Type	Speed	Cost	Bridge MP	Overhead or Undergrade	Total Length (ft)	Number of Spans	Bridge Type	Open or Ballasted Deck	Wide Enough for Two Tracks?	Cost
Project Start-Route 1	266.54	N/A	N/A	3	55	\$ 5,000								
Lane Construction Access Road	264.59	10,296	\$ 7,021,872	1	UP	\$ 5,000								
Headquarters Road	263.96	3,349	\$ 2,284,154	1	UP	\$ 5,000								
Charlotte Road	261.80	11,405	\$ 7,778,074	3	45	\$ 5,000	261.80	UG	12	2	Concrete Rigid Frame	Ballasted	No	\$ 100,000
							260.78	UG	12	2	Concrete Rigid Frame	Ballasted	No	\$ 100,000
							258.75	UG	14	1	Timber Stringer	Open	No	\$ 120,000
Station Road	257.25	24,024	\$ 16,384,368	1	UP	\$ 5,000								
							256.57	UG	27	1	Deck Plate Girder	Open	No	\$ 230,000
Mount Tom Road	255.19	10,876	\$ 7,417,432	2	35	\$ 25,000								
Project End-Ayers Junction Road	254.29	4,750	\$ 3,239,500	3	50	\$ 5,000								
Subtotals:		64,700	\$ 44,125,400			\$ 55,000								\$ 550,000

Estimated Average Unit Cost for Constructing Paved Trail Adjacent to Existing Rail:

In Sections with no significant Cut or Fill (approx. 40% of each segment)	\$ 75 /LF
In Modest Cut or Fill Sections (approx. 20% of each segment)	\$ 310 /LF
In Fill Sections with Retaining Wall (approx. 40% of each segment)	\$ 1,475 /LF

Estimated Unit Costs for At-grade Xing Improvements:

Speed <= 30 MPH	\$ 5,000 /Each
Speed = 35 MPH or 40 MPH	\$ 25,000 /Each
Speed >= 45 MPH	\$ 5,000 /Each
UP = Unposted assumed to be 30 MPH or lower	

Estimated Average Unit Cost for Adding Timber Decking & Railing on Open Timber Deck Bridges:

\$ 500 /LF

Construction Subtotal	\$ 44,730,400
Contingency (30%)	\$ 13,419,120
Construction Total	\$ 58,149,520
Design Engineering (10%)	\$ 5,814,952
Construction Administration & Engineering (15%)	\$ 8,722,428
Project Total	\$ 72,686,900
Project Total, Say	\$ 72,700,000

Appendix B:

Draft Calais Branch Rail Corridor Demographic & Economic Analysis (RKG report, July 2024)



CALAIS BRANCH RAIL CORRIDOR

Demographic & Economic Analysis



Prepared by
RKG Associates
76 Canal Street
Suite 401
Boston, MA 02143
617.847.8912

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1 - Executive Summary

A summary of the Calais Branch Rail Corridor economic impact analysis is presented first. The more detailed analysis, inputs and assumptions that form the basis of this Executive Summary are presented throughout the remainder of this report and the Appendices.

A. Economic Impacts from IMPLAN Modeling

To measure the economic impact of the infrastructure/construction costs and the ongoing operations and maintenance (O&M) costs (all in 2024 dollars) of the Calais Branch Rail Corridor options, the following baseline inputs were utilized, as offered by VHB (Table 1).

Table 1 – Estimated Construction Costs and Operations/Maintenance (O&M) Costs

Calais Branch Rail Corridor - Options	Construction	O&M (1)
Option 1A - Rail with Trail (gavel surface)	\$70.6M	\$57,575
Option 1B - Rail with Trail (paved surface)	\$72.7M	\$51,450
Option 2A - Trail until Rail (gavel surface)	\$13.9M	\$57,575
Option 2B - Trail until Rail (paved surface)	\$18.1M	\$51,450
Option 3 - Potential Rail Use Restoration	\$51.5M	\$976,000

Source: VHB and RKG (2024)

(1) - Trail O&M costs reflect mid-point of range

RKG Associates (RKG) utilized the **IMPLAN econometric model** which, in brief, measures how an initial dollar injected into one sector of the economy is spent and recirculated throughout the State of Maine economy. These effects are categorized as direct, indirect and induced effects which encompass direct investment in economic activity, business-to-business spending, and household expenditures. Of note from the IMPLAN modeling outputs is the **Value Added** impact, which includes:

- The one-time costs for infrastructure/construction for each of the use options.
- The ongoing and annual O&M costs associated with each of the use options.
- The ongoing and annual spending (where applicable) among trail users.¹

¹ All are presented in greater detail in Table 25 in Appendix B.

Selected Summary Trail Related Impacts – Table 2 presents a summary of selected trail related impacts of the options. These include the dollar amount of the initial (or ongoing) investment, the total Value Added to the State of Maine economy, wages and employment.

Table 2 – Selected Summary of Calais Branch Rail Corridor Related Impacts – IMPLAN Modeling

Calais Branch Rail Corridor - Selected Summary Impacts by Option	Input Dollars (1)	Total Value Added	Wages and Employment	
			Wages (2)	Employ (3)
Infrastructure/Construction Impacts (one-time)				
Option 1A-Rail with Trail (gravel surface)	\$70,600,000	\$62,941,862	\$45,320,630	790.67
Option 1B-Rail with Trail (paved surface)	\$72,700,000	\$64,814,070	\$46,668,694	814.19
Option 2A-Trail until Rail (gravel surface)	\$13,900,000	\$12,392,236	\$8,922,900	155.67
Option 2B-Trail until Rail (paved surface)	\$18,100,000	\$16,136,653	\$11,619,028	202.71
Option 3-Potential Rail Use Restoration	\$51,500,000	\$45,913,681	\$33,059,666	576.76
Ongoing and Annual Maintenance Impacts				
Option 1A-Rail with Trail (gravel surface)	\$57,575	\$51,323	\$31,737	0.37
Option 1B-Rail with Trail (paved surface)	\$51,450	\$45,864	\$28,361	0.33
Option 2A-Trail until Rail (gravel surface)	\$57,575	\$51,323	\$31,737	0.37
Option 2B-Trail until Rail (paved surface)	\$51,450	\$45,864	\$28,361	0.33
Option 3-Potential Rail Use Restoration	\$976,000	\$870,025	\$538,000	6.22

Source: IMPLAN, VHB and RKG (2024)

(1) - capital infrastructure/construction (**one-time**) - annual O&M costs (**ongoing**)

(2) - reflects sum of estimated Statewide **labor income** - direct, indirect and induced

(3) - reflects sum of estimated Statewide **employment** - direct, indirect and induced

Potential Rail Use Restoration – As RKG understands, there is also consideration for restoration of the Calais Branch Rail Corridor for potential use to accommodate an FRA Class 1 track (15 mph passenger and 10 mph freight speed). Per VHB (report dated June 26, 2024), “because of the remote location of this corridor, we did not do a separate estimate for higher speed passenger rail service”. The same summary impacts for a potential rail use restoration are also offered in Table 2.

B. Other Financial/Social Impacts – Interim Trail

Trail Use and User Spending – The estimated annual trail use (trips) from the local population ranges from 15,750 to 23,500 annually.² The estimated annual out-of-area users (at 30%)³ ranges from 4,725 persons to 7,050 persons (user trips). These out-of-area trail users form the basis for estimating trail use spending⁴ impacts and are projected to result in spending of \$982,800 to \$1.47M per year. While it is possible that these levels of spending may support some new commercial development activity, at a minimum, they would represent additional consumer spending available to existing businesses in the vicinity of the trail.

Potential Health Benefits – If a trail is available to residents who live along the Calais Branch Rail Corridor, and throughout Washington County, it is anticipated that physical activity will increase with trail utilization. This added physical activity could translate to an annual savings of \$537,382 from reduced spending on health-related expenditures from those identified as

² Estimates per the Maine State Active Transportation Plan (March 2023), Table 13, p. 60.

³ This estimate is higher than the 23% utilized in prior studies by RKG to allow for the utilization of this trail for snowmobiling and ATV users.

⁴ The underlying assumption is that in-state trail user spending is already occurring in the local economy and may not necessarily represent new spending activity.

inactive/insufficiently active with respect to their levels of physical activity.⁵ This spending (savings) could then become available for other household purchases (expenditures) which are not health-related.

Potential Benefits to Single-Family Residential Home Values – In prior studies conducted by RKG, an estimate was offered regarding the potential impact on residential home values for those homes proximate to a trail. The general consensus among prior interviews with local area realtors suggested that proximity to a trail, as a locational amenity, could shorten the average number of days-on-market (DOM) as a home becomes available for sale. Also noted was that the dollar impact on the sales values may range from a 2.5% to a 5% increase, if, and when, a house is placed on the market. This analysis reflects an estimated 22 occupied housing units within the ½-mile radius about the Calais Branch Rail Corridor. These housing units are predominantly owner-occupied units at 85%. The projected (2028) median value for these units is \$125,000. Applying the 2.5% to 5% factor could result in an increased median value of \$3,125 to \$6,250 per unit, if, and when these units come to market, representing a generalized estimate only.

C. Summary of Value Added Impacts

The following Table 3 presents a comparative summary of the Value Added impacts across the State of Maine economy, for each of the options under consideration in this analysis. These are discussed in greater detail throughout the remainder of this report and the Appendices.

Table 3 – Comparative Summary of the Value Added Impacts – Calais Branch Rail Corridor

Calais Branch Rail Corridor - Selected Summary Impacts by Option - Valued Added (2024\$)	Infrastructure Construction Impacts (1)	Annual Maintenance Impacts (2)	Other Financial Impacts		
			Trail User Expenditures (3)	Potential Health Benefits (4)	Potential Impact on SFDU Value (5)
Option 1A - Rail with Trail (gravel surface)	\$62,941,862	\$51,323	\$1,091,632	\$537,382	\$4,688
Option 1B - Rail with Trail (paved surface)	\$64,814,070	\$45,864	\$1,091,632	\$537,382	\$4,688
Option 2A - Trail until Rail (gravel surface)	\$12,392,236	\$51,323	\$1,091,632	\$537,382	\$4,688
Option 2B - Trail until Rail (paved surface)	\$16,136,653	\$45,864	\$1,091,632	\$537,382	\$4,688
Option 3 - Potential Rail Use Restoration	\$45,913,681	\$870,025	na	na	na

Source: IMPLAN, VHB and RKG (2024)

(1) - one-time and reflects sum of direct, indirect and induced Value Added impacts.

(2) - annual and ongoing and reflects sum of direct, indirect and induced Value Added impacts.

(3) - reflects average of low (\$982,800) and high (\$1,466,400) or **\$1,224,600**

(4) - annual and ongoing absolute for Washington County, ME and **not Value Added impacts**.

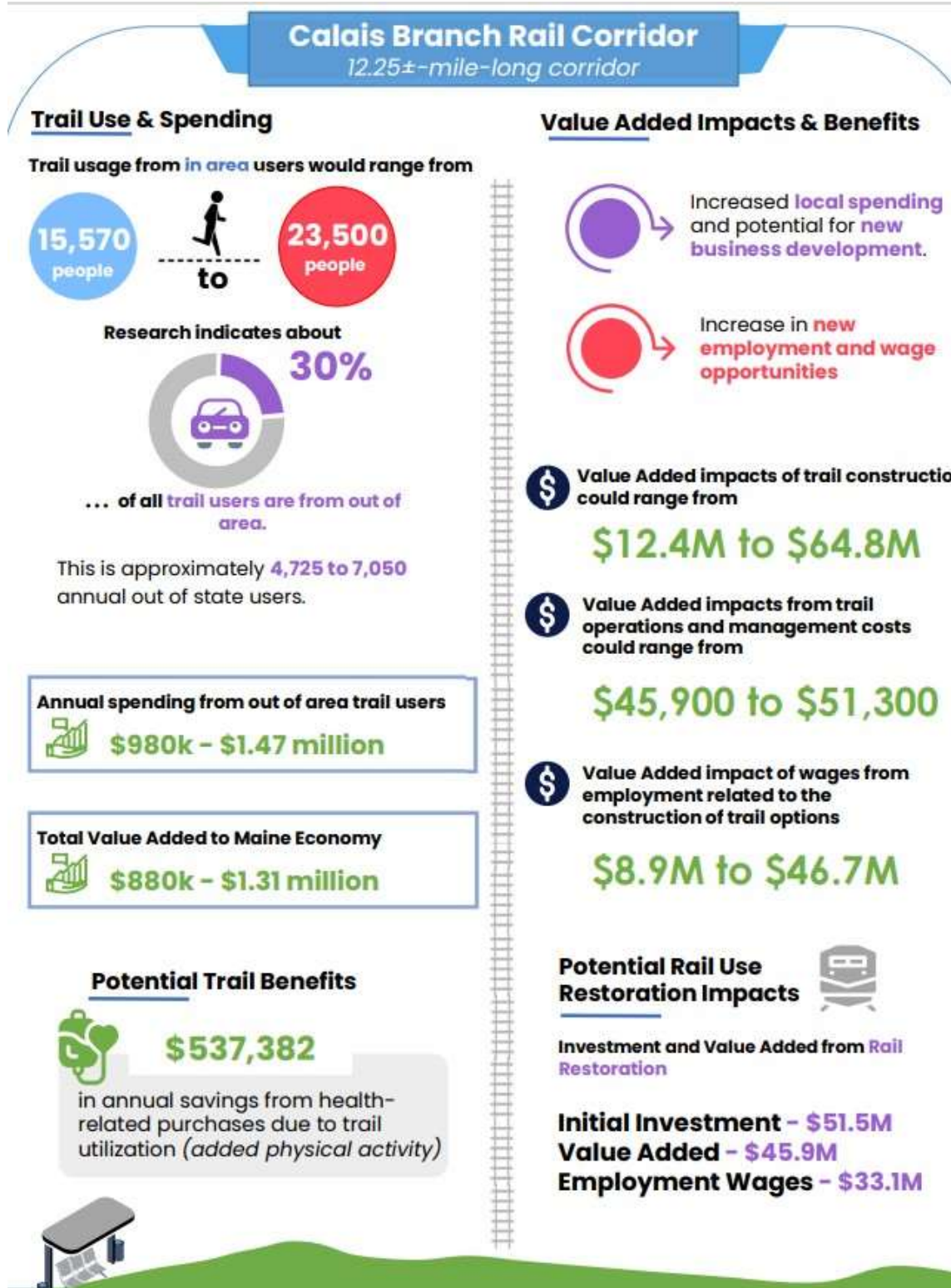
(5) - reflects the average of the potential change in 2028 mediana value of owner-occupied residential within the CBR Corridor

na - not applicable or otherwise unquantified in this analysis.

D. Selected Summary Infographics

A summary of selected economic, health and other related benefits of the Calais Branch Rail Corridor, for both Interim Trail use(s) and potential restoration of rail use are highlighted in the following Infographic.

⁵ As a **matter of note** – for the Lower Road Rail Corridor these savings were estimated as \$287,331 against the estimated 113 persons (inactive/insufficiently active) in the Corridor. For the Calais Branch Rail Corridor, the savings are greater as estimated against 211 persons (inactive/insufficiently active) **throughout** Washington County.



2 – Observations and Findings

RKG was retained as a subconsultant to Vanasse Hangen Brustlin, Inc. (VHB), in co-operation with the State of Maine Department of Transportation (MDOT) to prepare an assessment of the demographics of potential interim trail⁶ users, as well as the economic benefits/impacts which may be associated with the Calais Branch Rail (CBR) Corridor.

Per VHB, the CBR Corridor runs from Calais, Maine to the Down East Sunrise Trail in Ayers Junction, Maine. The CBR Corridor is an approximate 12.25±-mile segment which is inactive⁷, and is separate from the still-active Calais Branch along U.S. Route 1. The CBR Corridor traverses portions of the towns of Pembroke, Charlotte, Baring Plantation and Calais.⁸

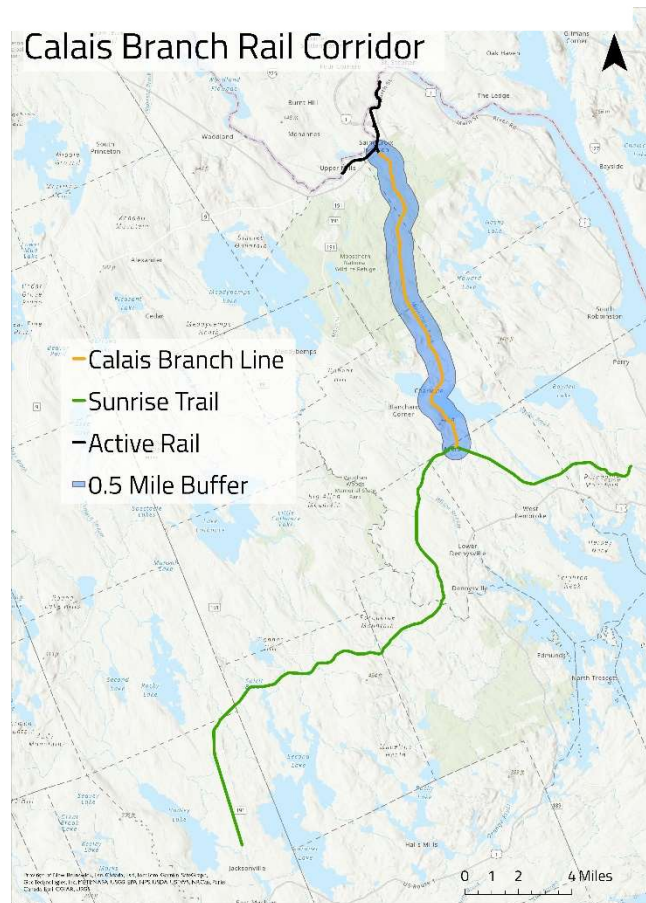
Figure 1 shows the extent of the CBR Corridor along with an approximate half-mile radius (as highlighted) from the centerline of the rail corridor, which serves as the study area for this analysis.

This analysis considers both the construction aspect and the ongoing annual O&M costs⁹, as inputs for the IMPLAN modeling, as well as benefits that could accrue from trail users post-construction.

RKG relied on information from VHB; socio-demographic data from ESRI/STDB (a leading private sector vendor of socio-economic metrics and proprietary modeling); and IMPLAN econometric modeling software, as well as several prior studies and analyses on the impacts of trails and rails.

RKG notes that rather than individually cite each reference throughout this report, a listing of the prior research and studies appears in **Appendix C**. Other reference sources are noted and cited where appropriate in and throughout the body of this report.

Figure 1 Calais Branch Rail Corridor Study Area



⁶ **Note** – throughout this report the term trail per the Maine Department of Transportation, refers to an “interim trail” since, in theory, development of the Calais Branch Rail Corridor could either (1) be designated to either temporarily replace the inactive trail (Trail-until-Rail); or (2) run alongside the rail bed (Rail-with-Trail).

⁷ According to an article posted in the *Railfan/Railroad Passenger Train Journal* (dated 12 December 2022) the “line has not seen regular freight service since about 2000 [...] the last trains to operate on the line were passenger excursions by Maine Eastern”.

⁸ *Maine State Active Transportation Plan*, prepared by VHB and Maine DOT, dated March 2023.

⁹ **Note** – IMPLAN modeling is discussed in greater detail in **Appendix B**, but in brief, it offers of measures how an initial dollar injected into one sector of the economy is spent and recirculated throughout the Maine economy.

As RKG understands, the proposed CBR Corridor would offer connectivity to the existing Down East Sunrise Trail (an inactive rail corridor).

The Down East Sunrise Trail (refer to Figure 2) is an approximate 87±-mile trail (unpaved) extending from Ellsworth, Maine, to Ayer Junction, Maine, and is open to bicycles, walking, horses, cross country skiing, ATVs, snowmobiles and the occasional dog sled utilization.

General Approach and Trail Options

The approach to this analysis includes the following components with regards to the use or development options (as previously noted) for the Calais Branch Rail Corridor:

- Provide an overview of selected socio-demographic characteristics of the study area.
- Develop estimates of likely annual interim trail usage (trips) along with the associated spending for selected metrics.
- Utilize IMPLAN modeling to develop estimates of the direct, indirect, and induced economic impacts associated with interim trail use and/or a possible restoration for potential future rail use(s) – including construction costs (the initial investment)¹⁰ and the annual and ongoing maintenance costs, of the interim trail and/or rail use options, as previously noted.

Figure 2 – Calais Branch Rail Corridor Connectivity with the Down East Sunrise Trail (far northern section)



¹⁰ Estimated costs provided by VHB, analysis in 2024 dollars.

A. Interim Trail Use

This section provides a summary of the observations and findings of the analysis with respect to the estimated impacts as a result of interim trail use for the Calais Branch Rail Corridor. All baseline inputs, assumptions, and the analysis used in their derivation are discussed throughout the remainder of this report and source references are listed in **Appendix C** (and are otherwise footnoted where applicable).

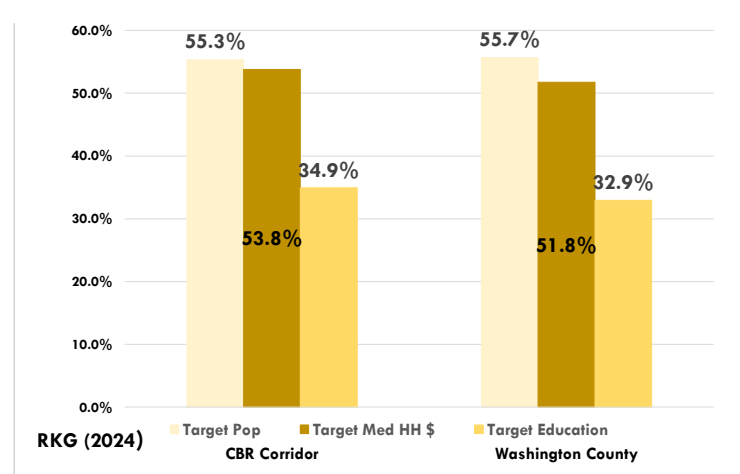
Prior research and studies¹¹ have indicated that the potential for utilization of trails is highest among selected sectors of the population, or those with respect to specific age cohorts (45+ years of age), median household income (>\$61,000) and educational attainment (college degree). This is not to imply that the population sectors with these characteristics will only be those utilizing the trail, just that these sectors are most likely to use the trail.

Figure 3 highlights these metrics for the Calais Branch Rail Corridor, as well as for Washington County, Maine.¹²

Population

Prior research has indicated that trail users, although prevalent across all age cohorts, are most dominant among the cohorts aged 45 to 55 (21% of users); those aged 56 to 65 (37% of users); and those in the cohort aged 65 and older (27% of users). Combined, the age cohorts account for approximately 85% of trail users.

Figure 3 – Percent of Target Cohort Sector Metrics



The population for the Calais Branch Rail Corridor across these same three cohorts (i.e., over the age of 45) accounts for 56.9% of the total population in the study area in the year 2023 and is projected at 55.3% for 2028. Comparable metrics for Washington County are 54.5% and 55.7%. In both instances, this indicates a relatively strong, stable baseline of potential users of an interim trail along the Calais Branch Rail Corridor among both residents within the Calais Branch Rail Corridor itself and the parent Washington County, Maine.

Household Income

Akin to population and educational attainment, prior research has noted that trail usage is most prevalent among households with a median household income exceeding \$61,000 (accounting for approximately 68% of trail users).

For the households within the Calais Branch Rail Corridor, i.e., greater than \$61,000, these represented 50% of the households in 2023 and are projected to represent 53.8% in 2028. For Washington County the same metrics are 46.6% and 51.8%. In both instances, these metrics suggest a strong base of potential users of the Calais Branch Rail Corridor.

¹¹ The reader is directed to **Appendix C** of this report for a listing of other research and studies reviewed and incorporated (where applicable) in this current analysis.

¹² Target population and target median household income data reflect projections for 2028. Target educational attainment reflects the 2017-2021 level of educational attainment for the population aged 25 and older as offered by American Community Service (ACS) information.

Educational Attainment

While persons of all levels of educational attainment are likely users of trails, utilization is highest among those with a college level education. For the population aged 25 and older within the Calais Branch Rail Corridor 34.9% have a college degree, while for Washington County those with a college degree is estimated to represent 32.9% of the same 25+ population. In both instances, these metrics suggest a good base of potential users of the Calais Branch Rail Corridor, at about one-third of the 25+ population for each geography.

Economic Impacts of Interim Trail Use

Potential users (meaning number of trips) of the Calais Branch Rail Corridor range from a low estimate of 15,750 to a high estimate of 23,500 annually¹³ and represent an “in-area” utilization (meaning among the localized population base), realizing that if one person utilizes the interim trail five (5) times then that is measured as five (5) trips.

To understand the potential spending impact of out-of-area users of an interim trail along the Calais Branch Rail Corridor, RKG’s prior research indicated that about 23% of all trail users are from out-of-area. However, for the purposes of the Calais Branch Rail Corridor, where the working assumption is that the trail will attract snowmobiling and other motorized (ATV) recreational use, RKG estimates this out-of-area use may be 30% or ranging from 4,725 to 7,050 annual out-of-area users.

Utilizing an average estimated annual spending of \$208 per user¹⁴ equates to an estimated \$982,800 to \$1.47M in local spending. This also translates to between \$983 and \$1,466 per 1,000 users, respectively. These average spending metrics are likely to occur across several different categories such as lodging, food, retail, transportation, other recreation, and equipment. Table 4 provides a breakdown of these spending metrics.

¹³ Estimates per the Maine State Active Transportation Plan (March 2023), Table 13, p. 60.

¹⁴ **Average annual spending estimate** of \$118 as noted in the *Economic Impact of Eastern Trail – Current Impact and Hypothetical Expansion Scenario* as prepared for the Southern Maine Planning and Development Commission as prepared by Camoin Associates (dated November 2021) – with input (per Camoin Associates) from the Maine Office of Tourism’s *Visitor Tracking Research, 2019 Annual Report*. Further, *The Economic Impact of Spending by Snowmobilers on New Hampshire’s Economy as prepared for the New Hampshire Snowmobile Association* as prepared by the Institute for New Hampshire Studies - Plymouth State University (dated 2010-2011), found that snowmobilers and motorized recreational vehicle users may spend as much as \$90 more. This has been accounted for in the spending analysis for the Calais Branch Rail Corridor at **\$208**.

Table 4 – Estimated Annual User Spending for the Calais Branch Rail Corridor

Calais Branch Rail Corridor - Annual User Spending	Factor	Low Estimate	High Estimate	% by Category
Annual Users		15,750	23,500	na
Out-of-Area Users (1)	30%	4,725	7,050	na
Annual Spending	Average \$/per	Low	High	Low/High
Equipment	\$19	\$91,617	\$136,698	9.3%
Other Recreation	\$11	\$49,973	\$74,563	5.1%
Transportation	\$25	\$116,603	\$173,980	11.9%
Retail	\$25	\$116,603	\$173,980	11.9%
Food	\$44	\$208,220	\$310,678	21.2%
Lodging	\$85	\$399,783	\$596,502	40.7%
TOTAL (2)	\$208	\$982,800	\$1,466,400	na
Estimated Spending/1,000 Users	na	\$983	\$1,466	na

Source: VHB and RKG (2024)

(1) - higher than prior analyses given potential snowmobile and motorized trail use(s)

(2) - higher (by \$90) than prior analyses given potential snowmobile and motorized trail use(s)

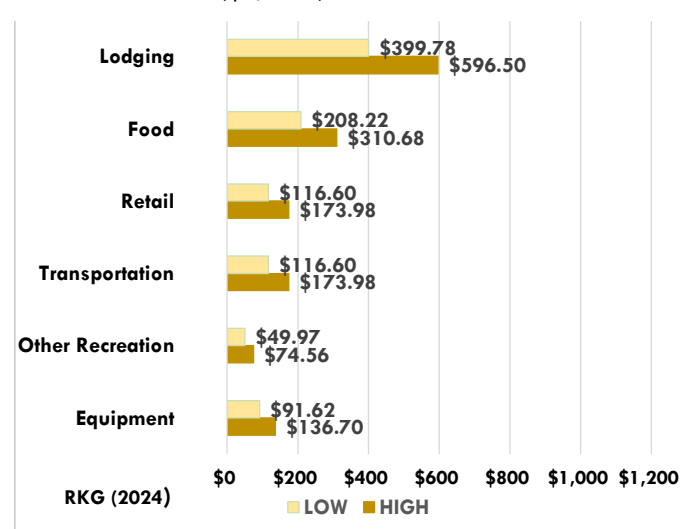
RKG next considered the direct, indirect, and induced economic impacts of the additional consumer spending impacts using the IMPLAN econometric model. More detailed information can be found in Table 24 and in **Appendix B** of this report.

Low Estimate \$982,800 – The estimated annual spending of \$982,800 from all consumer spending categories results in total output (direct, indirect, and induced) of \$1.85M, translating to \$541,749 in labor income and 7 jobs. The total Value Added estimate is \$876,087 throughout the Maine economy, or \$8,761 per 100 trips.

High Estimate \$1,466,400 – The estimated annual spending of nearly \$1.47M from all consumer spending categories results in total output (direct, indirect, and induced) of \$2.76M, translating to \$808,324 in labor income and 10 jobs. The total Value Added estimate is \$1.31M throughout the Maine economy, or \$13,072 per 100 trips.

RKG notes that both the low and high estimates of annual consumer spending reflect the use of the interim trail as a year-round activity and include estimated expenditures across a broad range of participation including hiking, biking, Nordic skiing, snowshoeing, snowmobile and ATV uses, as examples.

Figure 4 – Calais Branch Rail Corridor – Annual Spending of Interim Trail Users (\$1,000s)



Potential Health Cost Savings

The Centers for Disease Control and Prevention (CDC) estimates that approximately 24.8% of the adult population in the State of Maine is either inactive or insufficiently active when it comes to health-related activity or endeavors.¹⁵ Further, this leads to direct annual health related costs of \$1,704/capita for those considered inactive and \$846/capita for those considered insufficiently active.

Applying this 24.8% metric to the target age cohort population (2028) in the Calais Branch Rail Corridor results in a nominal inactive/insufficiently active population (at six persons) which is a factor of the overall absolute population base within the study area. However, applying the same metric of 24.8% to the target population base (2028) for Washington County, at 16,995 persons, yields an inactive/insufficiently active base of 4,215 persons.

If we conservatively assume that 5% of the population that is identified as inactive or insufficiently active were to increase their level of physical activity, based on proximity to or general access to a trail, this could translate to an annual savings of health-related expenditures of \$537,382 across the Washington County base, which could translate to additional annual household spending for non-health related expenditures.

Potential Property Value Impacts from Proximity to the Interim Trail

While it is generally accepted that proximity to green space/parks has a positive impact on residential property values, the research specifically for proximity to a trail and/or rail corridor is less refined. Nonetheless, in prior studies conducted by RKG, an estimate was offered regarding the potential impact on residential home values for those proximate to the trail.

The general consensus among prior interviews with local area realtors suggested that proximity to a trail, as a locational amenity, could shorten the average number of days-on-market (DOM). Also noted was that the dollar impact on the sales values may range from a 2.5% to a 5% increase, if, and when, a house is placed on the market.

The count of single-family owner-occupied units within a ½-mile buffer of the Calais Branch Rail Corridor is minimal, at 22 units, and home values are presented in Table 5. The projected (2028) median value for these units is \$125,000. Applying the 2.5% to 5% factor could result in an increased median value of \$3,125 to \$6,250 per unit (or an average of \$4,690) if, and when these units come to market, as opposed to an increase in property values across the board.

Table 5 – Distribution of Owner Values – Calais Branch Rail Corridor

Comparative Single-Family Home Values	CBR Corridor		
	2023	2028	% Δ
Total Households	22	22	0.0%
under \$50,000	5	3	-40.0%
\$50,000 - \$100,000	6	8	33.3%
\$100,000 - \$200,000	7	7	0.0%
\$200,000 or more	4	4	0.0%
Median Value	\$106,250	\$125,000	17.6%
Average Value	\$126,190	\$145,000	14.9%

Source: Esri/STDB and RKG (2024)

¹⁵ Carlson, S. A., Fulton, J. E., Pratt, M., Yang, Z., & Adams, E. K. (2015). Inadequate Physical Activity and Health Care Expenditures in the United States. *Progress in Cardiovascular Diseases*, 57(4), 315–323.

B. IMPLAN Modeling

The IMPLAN econometric model provides estimates of the direct, indirect, and induced economic impacts arising from an initial investment in the economy, such as the construction of infrastructure and annual ongoing maintenance costs. The IMPLAN model results are discussed in greater detail in the **Appendix B** section of this report but are summarized in this section as well.

When reviewing the economic impact of an investment on Maine's economy, the primary IMPLAN metric of note is the Value Added metric. This provides an estimate of the total value added impacts to the State of Maine economy. Or put another way, a measure of how the initial investment(s) in infrastructure/construction and the associated ongoing O&M expenditures ripples through the Maine economy. The following descriptions and tables highlight the potential economic impacts of construction, on-going maintenance, and user spending from interim trail uses.

RKG notes that, as defined by IMPLAN, the Value Added component reflects the difference between output (the initial dollar investment) and the costs associated with the intermediate inputs. These latter costs include the purchases of non-durable goods and services such as energy and purchased services that may be used for the production of other goods and services – as opposed to those that are purchased for final consumption. As a result, the Value Added metric (the State of Maine economy ripple) is the sum of employee compensation, proprietor income, taxes on production and imports, and other property income.

Employee Compensation - Includes wages and salaries, all benefits (e.g., health, retirement) and payroll taxes (both sides of social security, unemployment insurance taxes, etc.) and is often referred to as fully loaded payroll.

Proprietor Income - Consists of payments received by self-employed individuals and unincorporated business owners.

Taxes on Production and Imports (TOPI) – Includes sales and excise taxes, customs duties, property taxes, motor vehicle licenses, severance taxes, other taxes, and special assessments.

Other Proprietary Income (OPI) – This represents income generated by industries throughout economies from non-operating activities. Basically, OPI represents gross operating surplus minus proprietor income.

IMPLAN Modeling – Interim Trail Use

Table 6 presents the estimated initial investment or costs of infrastructure/construction for each of the interim trail use options under consideration. The total¹⁶ impacts regarding employment, labor income, Value Added and output for each option are presented and then contrasted against the initial investment (or infrastructure/construction costs) as depicted in the last column. These estimated costs are in total and are presented irrespective of the potential source of the funds.

The column of note is the Value Added column which presents the estimated dollar return to the State of Maine economy as a result of the initial investment, varying from \$12.39M to \$64.81M depending on the type of trail and surface. Also note that the Potential Rail Use Restoration metrics are also included within this analysis.

¹⁶ Total equates to the sum of the direct, indirect and induced impacts – rounded to \$millions.

Note these capital costs for infrastructure/construction are considered to be one-time investments.

Table 6 – Summary IMPLAN Comparisons – Infrastructure/Construction Impacts – Calais Branch Rail Corridor

Summary Comparisons - IMPLAN (total and rounded to \$millions)					Initial Costs
Infrastructure / Construction Costs					
Type of Use(s)	Employment	Labor Income	Value Added	Output	
Trail-until-Rail (gravel)	155.67	\$8.92	\$12.39	\$25.32	\$13.90
Trail-until-Rail (paved)	202.71	\$11.62	\$16.14	\$32.97	\$18.10
Rail-with-Trail (gravel)	790.67	\$45.32	\$62.94	\$128.58	\$70.60
Rail-with-Trail (paved)	814.19	\$46.67	\$64.81	\$132.41	\$72.70
Potential Rail Use Restoration	576.76	\$33.06	\$45.91	\$93.80	\$51.50

Source: IMPLAN, VHB and RKG (2024)

Note - totals reflect sum of direct, indirect and induced

Note - employment impacts not rounded to whole number

Table 7 presents the estimated ongoing and annual costs associated with maintenance for each of the four (4) interim trail use options under consideration. The total¹⁷ impacts regarding employment, labor income, Value Added and output for each alternative are presented and then contrasted against the estimated ongoing and annual maintenance costs as depicted in the last column. Also note that the Potential Rail Use Restoration metrics are also included within this analysis.

These estimated costs are in total and are presented irrespective of the potential source of the funds. Again, the column of note is the Value Added column which presents the estimated dollar return to the State of Maine economy as a result of the initial investment (costs).¹⁸

Note these are annual and ongoing impacts as associated with the annual and ongoing maintenance costs.

Table 7 – Summary IMPLAN Comparisons – Ongoing/Annual Maintenance – Calais Branch Rail Corridor

Summary Comparisons - IMPLAN (total)					Initial Costs
Ongoing and Annual Maintenance Costs					
Type of Use(s)	Employment	Labor Income	Value Added	Output	
Trail-until-Rail (gravel)	0.37	\$31,737	\$51,323	\$108,220	\$57,575
Trail-until-Rail (asphalt)	0.33	\$28,361	\$45,864	\$96,707	\$51,450
Rail-with-Trail (gravel)	0.37	\$31,737	\$51,323	\$108,220	\$57,575
Rail-with-Trail (asphalt)	0.33	\$28,361	\$45,864	\$96,707	\$51,450
Potential Rail Use Restoration	6.22	\$538,000	\$870,025	\$1,834,518	\$976,000

Source: IMPLAN, VHB and RKG (2024)

Note - totals reflect sum of direct, indirect and induced

Note - employment impacts not rounded to whole number

¹⁷ Ibid.

¹⁸ Note – the employment metrics for the Calais Branch Rail Corridor are less than those reported for the Lower Road Rail Corridor. This is a function of the variance in the O&M annual costs, as provided by VHB, and that the former is an approximate 12.25± mile trail and the latter an approximate 28.75± mile trail.

Table 8 presents the IMPLAN modeling results from the estimated annual spending of trail users, ranging from a low of \$0.98M to a high of \$1.47M (annually for both estimates).¹⁹ Again, the metric of note is the Value Added row which represents the estimated return to the State of Maine economy as a result of the aforementioned annual spending estimates.

Note these are annual and ongoing impacts as associated with interim trail use consumer (user) spending.

Table 8 – IMPLAN Modeling – Calais Branch Rail Corridor – Trail User Spending

Calais Branch Rail Corridor - Annual User Spending	Factor	IMPLAN Modeling	
		Low Estimate	High Estimate
Annual Users		15,750	23,500
Out-of-Area Users (1)	30%	4,725	7,050
IMPLAN Modeling Results		Low Estimate	High Estimate
Direct Labor Income		\$275,606	\$411,222
Indirect Labor Income		\$151,849	\$226,568
Induced Labor Income		\$114,294	\$170,534
Direct Value Added		\$382,071	\$570,074
Indirect Value Added		\$274,026	\$408,864
Induced Value Added		\$219,991	\$328,240
Direct Output		\$982,800	\$1,466,400
Indirect Output		\$497,918	\$742,926
Induced Output		\$366,581	\$546,963
Direct Employment		1.93	2.89
Indirect Employment		2.29	3.42
Induced Employment		2.04	3.04

Source: IMPLAN, VHB and RKG (2024)

(1) - higher than prior analyses given potential snowmobile and ATV trail use(s)

¹⁹ This analysis assumes that the interim trail activity would be year-round and include, as examples, a mix of hiking, biking, snowshoeing, snowmobiling, ATV and other recreation related outdoor activities as would be possible and supported by an interim trail.

Appendix A – Interim Trail Use

A. Existing Conditions

This chapter presents RKG’s review of the selected metrics associated with the Calais Branch Rail Corridor, traversing from Calais, Maine to the Down East Sunrise Trail in Ayers Junction, Maine, an approximate 12.25±-mile segment and reflecting a one-half mile radius (each side) from the centerline of the Calais Branch Rail Corridor (refer to Figure 1).

Population

The estimated 2023 population of the Calais Branch Rail Corridor is 50 persons and is projected to decrease nominally by 2028 to 47 persons (a 6% decline). In comparison, the 2023 population of Washington County, Maine is estimated at 30,823 persons and is projected to decrease to 30,527 persons by 2028 (a decline of 1%) as presented in Table 9.

Prior research has indicated that trail users, although prevalent across all age cohorts, are most dominant among the cohorts aged 45 to 55 (21% of users); those aged 56 to 65 (37% of users); and in the cohort aged 65 and older (27% of users).

For the Calais Branch Rail Corridor, the population in these age cohorts is estimated at 28 persons in 2023 (56% of the total Calais Branch Rail Corridor population). This is projected to decrease 7.1% by 2028 and total 26 persons (although still representing 55.3% of the Calais Branch Rail Corridor population).

For Washington County, the population in these age cohorts is estimated at 16,795 persons in 2023 (54.5% of the total county population). This is projected to increase 1.2% by 2028 and total 16,995 persons (accounting for 55.7% of the total county population).

While this overall projected change in these metrics may be nominal, for the Calais Branch Rail Corridor and for Washington County, they continue to represent more than one-half of the total population for each.²⁰

RKG notes that this is not to imply that the users of the Calais Branch Rail Corridor will necessarily be only among those in these age cohorts, but rather that experiences from elsewhere suggest that the population in these cohorts are the most likely to take advantage of the amenities offered by an interim trail.

²⁰ As a side note, in 2023, the median age of the CBR Corridor population is 52.5 years and is projected to decrease to 51.7 years (2028). For Washington County the change is from 49.1 years to 49.7 years.

Table 9 – Population Distribution within the Calais Branch Rail Corridor and Washington County

Comparative Age Distributions	CBR Corridor			Washington County		
	2023	2028	% Δ	2023	2028	% Δ
19 and under	11	10	-9.1%	6,100	6,016	-1.4%
20 to 44 years	11	11	0.0%	7,928	7,516	-5.2%
45 to 54 years	6	5	-16.7%	3,783	3,698	-2.2%
55 to 64 years	9	8	-11.1%	5,051	4,563	-9.7%
65 and over	13	13	0.0%	7,961	8,734	9.7%
TOTAL	50	47	-6.0%	30,823	30,527	-1.0%
Target Cohorts	28	26	-7.1%	16,795	16,995	1.2%
as % of Total	56.0%	55.3%		54.5%	55.7%	

Source: Esri/STDB and RKG (2024)

Household Income

Similar to the overall population, the median household income for those using trails spans all income brackets. However, prior research reports note that approximately 35% of the households have median incomes of \$61,000 to \$100,000, and another 33% have median household incomes exceeding \$100,000. Combined, these account for more than two-thirds of likely users as indicated by median household incomes.

For the Calais Branch Rail Corridor, the percentage of households with incomes exceeding \$61,000 accounted for approximately 50% of all households in 2023, and this is projected to grow to a 53.8% representation by 2028. For Washington County, the percentage of households with incomes exceeding \$61,000 accounted for approximately 46.6% of all households in 2023, and this is projected to grow to a 51.8% representation by 2028. The overall projected growth in these target median household income sectors is 7.7% for the Calais Branch Rail Corridor and 11.2%, both exceeding the absolute growth, respectively.

While the absolute numeric growth may be nominal, by 2028 the target household income sectors represent more than one-half of the total projected all households for each geography (refer to Table 10).

RKG notes that this is not to imply that the users of the Calais Branch Rail Corridor will be pre-dominantly among those households with high median household income levels, but rather that experiences from elsewhere suggests that such households are the most likely to take advantage of the amenities offered by the interim trail.

Table 10 – Median Household Income for the Calais Branch Rail Corridor and Washington County

Comparative Median Household Income	CBR Corridor			Washington County		
	2023	2028	%Δ	2023	2028	%Δ
Total HH	26	26	0.0%	13,725	13,732	0.1%
under \$50,000	12	11	-8.3%	6,801	6,134	-9.8%
\$50,000 to \$75,000	3	3	0.0%	1,899	1,745	-8.1%
\$75,000 to \$100,000	4	3	-25.0%	1,903	2,071	8.8%
\$100,000 and over	7	9	28.6%	3,122	3,782	21.1%
Target Income (\$61,000+)	13	14	7.7%	6,392	7,109	11.2%
as % of Total	50.0%	53.8%		46.6%	51.8%	
Median HH Income	\$60,495	\$64,848	7.2%	\$50,567	\$58,524	15.7%

Source: Esri/STDB and RKG (2024)

Educational Attainment

Prior research has also indicated that trail users tend to have a higher level of educational attainment, with 40% having an undergraduate degree and 27% with a post-graduate degree. With respect to educational attainment, slightly more than one-third of the population (25 and older) within the Calais Branch Rail Corridor has completed a collegiate level of schooling. This compares favorably to Washington County where slightly less than one-third of the 25+ population has attained a college level education (refer to Table 11).

RKG notes that this is not to imply that the users of the Calais Branch Rail Corridor will be pre-dominantly among the population with a high level of educational attainment, but rather that experiences from elsewhere suggests that those with a high level of educational attainment are the most likely to take advantage of the amenities offered by an interim trail.

Table 11 – Educational Attainment – Calais Branch Rail Corridor and Washington County

Comparative Educational Attainment	CBR Corridor		Washington County	
	ACS Pop	% of 25+	ACS Pop	% of 25+
Total Population	59		31,003	
Total Pop 25+	43		22,798	
Undergraduate Degree	11	25.6%	5,583	24.5%
Masters Degree	3	7.0%	1,332	5.8%
Professional Degree	0	0.0%	294	1.3%
Doctorate Degree	1	2.3%	302	1.3%
TOTAL	15	34.9%	7,511	32.9%

Source: Esri/STDB and RKG (2024)

Note - reflects average over 2017-2021 data from ACS

B. Fiscal and Economic Impacts

The following section summarizes the estimated fiscal and economic impacts associated with an interim trail use of the Calais Branch Rail Corridor.

Economic Impacts of Interim Trail Usage

Estimates of annual usage (trips) of the Calais Branch Rail Corridor provided by VHB²¹ range from a low of 15,750 persons to a high of 23,500 persons. The economic impact, or the spending of these annual users, is best reflected by those users that are out-of-area, which RKG estimates to be 30% allowing for the inclusion of snowmobile and ATV uses (this is higher than the 23% utilized in prior studies).

Applying this 30% factor results in an annual estimate of 4,725 out-of-area users (low) to as many as 7,050 out-of-area users (high). RKG calculated estimated annual spending for these out-of-area users, for specific activities.²² Under these inputs and assumptions, the estimated average annual spending among out-of-area Calais Branch Rail Corridor users ranges from \$982,800 to nearly \$1.47M. For both the low and high user estimate, approximately one-third

²¹ Estimates as offered by VHB and referencing the Maine DOT Statewide Active Transportation Plan (dated 15 November 2021).

²² **Average annual spending estimates** as noted in the *Economic Impact of Eastern Trail – Current Impact and Hypothetical Expansion Scenario* as prepared for the Southern Maine Planning and Development Commission as prepared by Camoin Associates (dated November 2021) – with input (per Camoin Associates) from the Maine Office of Tourism's *Visitor Tracking Research, 2019 Annual Report*. **RKG increased** these estimates by \$90 to allow for the added and higher spending level of snowmobile and ATV utilization.

of the purchases are for what may be considered as consumer goods such as retail and food related purchases (refer to Table 12).²³

Table 12 – Estimated Annual Spending with Distribution – Calais Branch Rail Corridor

Calais Branch Rail Corridor - Annual User Spending	Factor	Low Estimate	High Estimate	% by Category
Annual Users		15,750	23,500	na
Out-of-Area Users (1)	30%	4,725	7,050	na
Annual Spending	Average \$/per	Low	High	Low/High
Equipment	\$19	\$91,617	\$136,698	9.3%
Other Recreation	\$11	\$49,973	\$74,563	5.1%
Transportation	\$25	\$116,603	\$173,980	11.9%
Retail	\$25	\$116,603	\$173,980	11.9%
Food	\$44	\$208,220	\$310,678	21.2%
Lodging	\$85	\$399,783	\$596,502	40.7%
TOTAL (2)	\$208	\$982,800	\$1,466,400	na
Estimated Spending/1,000 Users	na	\$983	\$1,466	na

Source: VHB and RKG (2024)

(1) - higher than prior analyses given potential snowmobile and ATV trail use(s)

(2) - higher (by \$90) than prior analyses given potential snowmobile and ATV trail use(s)

Interim Trail Activity and Health Related Benefits

The development of the Calais Branch Rail Corridor, for trail uses, offers an additional outlet for area residents to increase their level(s) of physical activity. An upsurge in such activity can result in an increase in overall health benefits which may then translate into a cost savings, for health-related expenditures, for the participants. This potential reduction in health-related expenditures may, in turn, translate to an increase in other economic benefits to the State of Maine as households could realize an increase in disposable income (spending potential) otherwise dedicated to health-related expenditures.

The underlying assumption is that an increase in regular physical activity among an adult population base, which is otherwise considered to be inactive/insufficiently active (24.8% of the target population)²⁴, results in a reduction in health-related expenditures which could become available for other spending. As noted previously the target cohort population (2028) of the Calais Branch Rail Corridor, for those who are considered to be inactive/insufficiently active is relatively small at six persons. While there could be a health-related savings resulting from increased physical activity, RKG estimates this to be negligible at less than \$1,000 annually.

However, applying the same metric (24.8%) to Washington County, with a target population metric of 16,995 persons, indicates approximately 4,215 persons considered to be inactive or insufficiently active. This analysis conservatively assumes that access to the Calais Branch Rail Corridor trail may result in a 5% increase in activity among the 4,215 persons considered as

²³ This analysis assumes that the interim trail activity would be year-round and include, as examples, a mix of hiking, biking, snowshoeing, ATV and other recreation related outdoor activities as would be possible and supported by an interim trail.

²⁴ This applies a factor of 24.8% against of the target cohort population. This factor is as noted for the State of Maine according to data from the Centers for Disease Control and Prevention.

inactive or insufficiently active, resulting in a total of 211 persons increasing their level of physical activity.

The Centers for Disease Control and Prevention (CDC) estimates that inactive adults incur annual health care costs of \$1,704/capita and those considered insufficiently active incur annual health care costs of \$846/capita. Applying these per capita cost metrics to the aforementioned 211 persons (Washington County) considered as inactive/insufficiently active could render an annual total health care savings of \$537,382 (refer to Table 13).

Table 13 – Estimated Annual Health Care Savings/Benefits

Calais Branch Rail Corridor - Health Impacts/ Benefits	CBR Corridor		Washington County, ME	
	Inactive (1)	Insufficiently (2)	Inactive (1)	Insufficiently (2)
2028 Target Population	26	26	16,995	16,995
At 24.8%	6	6	4,215	4,215
More Active - 5.0%	0.32	0.32	211	211
"Inactive" \$/Capita	\$1,704		\$1,704	
"Insufficiently Active" \$/Capita		\$846		\$846
Potential Health Benefit	\$549	\$273	\$359,098	\$178,284

Source: U.S. Census Bureau, Esri, ACS, CDC and RKG (2024)

(1) **Inactive** – respondents to a CDC survey indicating that they engaged in no leisure-time physical activity within the last month.

(2) **Insufficiently Active** - respondents to a CDC survey indicating that they engaged in minimal leisure-time physical activity within the last month.

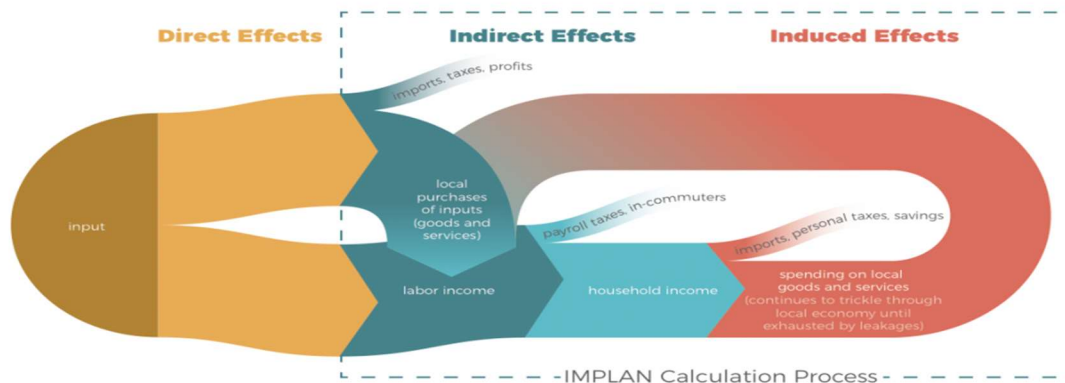
Potential Property Value Impacts from Interim Trail Proximity

As previously discussed, the number of owner-occupied residential properties within the ½-mile buffer of the Calais Branch Rail Corridor is nominal at 22 units. As a result, RKG offers a generalized perspective of the impacts, if any, on these values. In this analysis RKG considered the projected (2028) median owner value of these units, at \$125,000. Applying a 2.5% to 5% factor could result in an increased median value of \$3,125 to \$6,250 per unit (or an average of approximately \$4,690), if, and when these units come to market, as opposed to an increase in property values across the board (refer back to Table 5).

Appendix B – IMPLAN Modeling

IMPLAN is a widely utilized econometric modeling software that uses an input-output dollar flow matrix. For a specified region, the input-output table accounts for all dollar flows between different sectors of the economy. IMPLAN then models the way a dollar injected into one sector of the economy is spent and re-spent in other sectors of the economy, generating waves of economic activity, or so-called “economic multiplier” effects. These effects are categorized as direct, indirect and induced effects which encompass direct investment in economic activity, business-to-business spending and household expenditures (Figure 5).

Figure 5 – Flow Chart of the IMPLAN Modeling Concepts



IMPLAN combines this data to generate a series of multipliers for the local economy. The multiplier measures the amount of total economic activity that results from an industry (or household) spending an additional dollar in the local economy. Based on these multipliers, IMPLAN generates a series of tables to show the economic event’s direct, indirect, and induced impacts to gross receipts or outputs (Figure 6).

Direct Impacts – Refers to the dollar value of economic activity available to circulate through the economy. In the case of this analysis, the direct impacts are equal to the estimated construction costs for the project, employment compensation associated with employees working at the project site, labor income from new job opportunities following construction and the household spending associated with new households (if applicable).

Indirect Impacts - Refers to the “inter-industry impacts of the input-output analysis.” Indirect impacts result from spending by employees working at the project site as well as business spending on goods and services to retail establishments, restaurants, personal service providers, and other firms. These businesses then use the payments they receive to buy equipment and supplies, rent space, pay their employees, etc. These expenditures also have an impact on the economy.

Induced Impacts - Refers to the impacts of household spending by the employees generated by the direct and indirect impacts. In other words, induced impacts result from the household spending of employees of business establishments that the new employees patronize (the direct) and their suppliers (the indirect). The model excludes payments to federal and state taxes and savings based on the geography’s average local tax and savings rates. Thus, only the disposable incomes from local workers are included in the model.

The following section presents the summary findings from the various IMPLAN “runs” completed for this analysis. These include the two distinct variations, first for the infrastructure/construction costs related impacts (one-time impacts) as developed from the cost estimates provided by VHB for each “type” of rail/trail option under consideration.

Second, for the annual and ongoing costs associated with maintenance. The infrastructure/construction cost impacts will likely be realized over the construction period (of unknown length at this time) but are presented in this analysis as if a lump-sum single metric. RKG specifically notes, for each of the following IMPLAN “runs” and results, the initial investment in construction cost and ongoing maintenance costs does not make a distinction between the source of funding.

IMPLAN Modeling – Construction and Maintenance

RKG utilized the estimated infrastructure/construction costs for each of the various interim trail and/or rail concepts and combinations for the Calais Branch Rail Corridor, noting the following:

Potential Rail Use Restoration – The analysis applies to the entire length of the Calais Branch Rail Corridor of 12.25±-miles. Total costs of \$51.50M (2024 dollars) as provided by VHB²⁵ indicates the following breakdown:

- Hard costs at 45.0% of the total costs = \$23.18M
- Contingency costs at 30.0% of the total costs = \$15.45M
- Design costs at 10.0% of the total costs = \$5.15M
- Construction administration costs at 15.0% of the total costs = \$7.72M

For the ongoing and annual operations and maintenance costs (O&M), VHB provided a total cost estimate of \$976,000 (or approximately \$80,000/track mile).

Option 1 A – Rail with Trail (RWT) and gravel surface = \$70.6M construction costs and \$57,575 annual O&M costs.

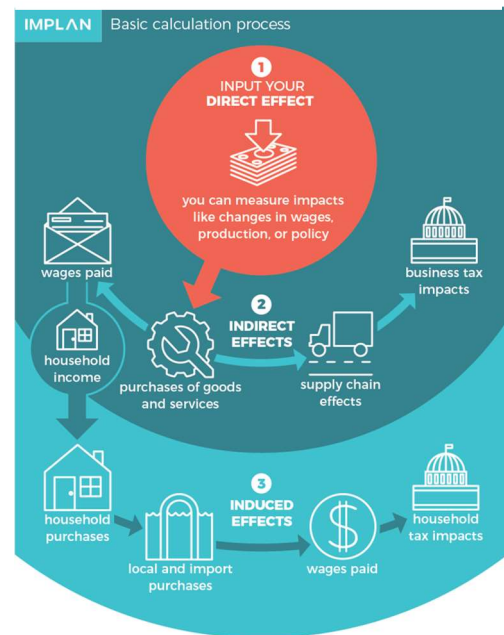
Option 1 B – Rail with Trail (RWT) and paved surface = \$72.7M construction costs and \$51,450 annual O&M costs.

Option 2 A – Trail until Rail (TUR) and gravel surface = \$13.9M construction costs and \$57,575 annual O&M costs.

Option 2 B – Trail until Rail (TUR) and paved surface = \$18.1M construction costs and \$51,450 annual O&M costs.

The following tables summarize the IMPLAN “runs” for each of the potential type of use(s). All output is reported in constant 2024 dollars. For reference purposes, the IMPLAN modeling for

Figure 6 – IMPLAN Calculation Process



²⁵ Calais Branch Rail Corridor – Rail Use Advisory Council Meeting – Rail Restoration Cost Estimate Summary (June 26, 2024).

this section on infrastructure/construction costs and ongoing and annual maintenance costs utilized the following industry sectors as general inputs for initial costs or spending:

- Construction = mass transit construction industry sector(s)
- Maintenance = rail transportation related expenditures

Potential Rail Use Restoration – As presented in Table 14, the infrastructure investment of \$51.5M (direct) results in employment of 373 jobs (direct) with labor income of \$20.6M (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is \$22.8M. The direct impacts also result in both indirect and induced impacts, totaling \$42.3M (output) and then translates to 204 in employment with labor income of \$12.4M. The indirect and induced Value Added to the Maine economy is \$23.1M.

In total (direct, indirect and induced) the estimated Value Added to the State of Maine economy is \$45.9M.

Table 14 – IMPLAN – Potential Rail Use Restoration – Calais Branch Rail Corridor Construction

Potential Rail Use Restoration - Calais Branch Rail Corridor Infrastructure / Construction Costs - \$51,500,000				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	373.08	\$20,640,435	\$22,776,246	\$51,500,000
2 - Indirect	75.35	\$5,230,168	\$9,293,108	\$19,236,159
3 - Induced	128.33	\$7,189,063	\$13,844,327	\$23,059,535
Total	576.76	\$33,059,666	\$45,913,681	\$93,795,695

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

Note - a greater discussion of costs is presented in the VHB report dated 26 June, 2024

The ongoing and annual maintenance costs (Table 15) of \$976,000 (direct output) results in employment of 2 jobs (direct) with labor income of \$273,699 (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is \$379,427. The direct impacts also result in both indirect and induced impacts, totaling \$858,518 (output) and then translates to 4 in employment with labor income of \$264,301. The indirect and induced Value Added to the Maine economy is \$490,598.

In total (direct, indirect and induced) the estimated Value Added to the State of Maine economy is \$870,025.

Table 15 – IMPLAN – Potential Rail Use Restoration – Calais Branch Rail Corridor – O&M

Potential Rail Use Restoration - Calais Branch Rail Corridor Ongoing and Annual Maintenance Costs - \$976,000				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	1.92	\$273,699	\$379,427	\$976,000
2 - Indirect	2.27	\$150,798	\$272,130	\$494,473
3 - Induced	2.02	\$113,503	\$218,469	\$364,045
Total	6.22	\$538,000	\$870,025	\$1,834,518

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

Note - a greater discussion of costs is presented in the VHB report dated 26 June, 2024

Option 1 A (RWT with gravel surface) – As presented in Table 16, the initial infrastructure investment of \$70.6M (direct) results in employment of 511 jobs (direct) with labor income of \$28.3M (direct). The estimated dollar Value Added to the State of Maine economy from these direct inputs is \$31.2M. The direct impacts also result in both indirect and induced impacts, totaling nearly \$58.0M (output) and then translates to 279 in employment with labor income of \$17.0M. The indirect and induced Value Added to the State of Maine economy is \$31.7M.

In total (direct, indirect and induced) the estimated Value Added to the State of Maine economy is \$62.9M.

Table 16 – IMPLAN –Rail with Trail (gravel surface) – Calais Branch Rail Corridor – Construction

Rail-with-Trail (gravel surface) - Calais Branch Rail Corridor				
Infrastructure / Construction Costs - \$70,600,000				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	511.45	\$28,295,432	\$31,223,359	\$70,600,000
2 - Indirect	103.30	\$7,169,900	\$12,739,678	\$26,370,347
3 - Induced	175.92	\$9,855,298	\$18,978,825	\$31,611,712
Total	790.67	\$45,320,630	\$62,941,862	\$128,582,059

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

The ongoing and annual maintenance costs (Table 17) averages \$57,575 (direct) and results in employment of 0.11 jobs (direct) with labor income of \$16,146 (direct). The estimated dollar Value Added to the State of Maine economy from these direct inputs is \$22,383. The direct impacts also result in both indirect and induced impacts, totaling \$50,645 (output) and then translates to 0.25 in employment with labor income of \$15,591. The indirect and induced Value Added to the State of Maine economy is \$28,941.

In total (direct, indirect and induced) the estimated Value Added to the State of Maine economy is \$51,323.

Table 17 – IMPLAN – Rail with Trail (gravel surface) – Calais Branch Rail Corridor – O&M

Rail-with-Trail (gravel surface) - Calais Branch Rail Corridor				
Ongoing and Annual Maintenance Costs - \$57,575 (1)				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	0.11	\$16,145.72	\$22,382.70	\$57,575.00
2 - Indirect	0.13	\$8,895.70	\$16,053.14	\$29,169.36
3 - Induced	0.12	\$6,695.64	\$12,887.64	\$21,475.30
Total	0.37	\$31,737.06	\$51,323.47	\$108,219.65

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

(1) - assumes midpoint of the range \$3,700 to \$5,700 per mile

Option 1 B (RWT with paved surface) – As presented in Table 18, the infrastructure investment of \$72.7M (direct) results in employment of 527 jobs (direct) with labor income of \$29.1M (direct). The estimated dollar Value Added to the State of Maine economy from these direct inputs is \$32.2M. The direct impacts also result in both indirect and induced impacts, totaling \$59.7M (output) and then translate to 288 in employment with labor income of \$17.5M. The indirect and induced Value Added to the State of Maine economy is \$32.7M.

In total (direct, indirect and induced) the estimated Value Added to the State of Maine economy is \$64.8M.

Table 18 – IMPLAN – Interim Rail with Trail (paved surface) – Calais Branch Rail Corridor – Construction

Rail-with-Trail (paved surface) - Calais Branch Rail Corridor Infrastructure / Construction Costs - \$72,700,000				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	526.66	\$29,137,080	\$32,152,099	\$72,700,000
2 - Indirect	106.37	\$7,383,169	\$13,118,621	\$27,154,734
3 - Induced	181.16	\$10,148,444	\$19,543,351	\$32,552,004
Total	814.19	\$46,668,694	\$64,814,070	\$132,406,738

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

The ongoing and annual maintenance costs (Table 19) averages \$51,450 (direct) and results in employment of 0.10 jobs (direct) with labor income of \$14,428 (direct). The estimated dollar Value Added to the State of Maine economy from these direct inputs is \$20,002. The direct impacts also result in both indirect and induced impacts, totaling \$45,257 (output) and then translates to 0.23 in employment with labor income of \$13,933. The indirect and induced Value Added to the State of Maine economy is \$25,862.

In total (direct, indirect and induced) the estimated Value Added to the State of Maine economy is \$45,864.

Table 19 – IMPLAN –Rail with Trail (paved surface) – Calais Branch Rail Corridor – O&M

Rail-with-Trail (paved surface) - Calais Branch Rail Corridor Ongoing and Annual Maintenance Costs - \$51,450 (1)				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	0.10	\$14,428	\$20,002	\$51,450
2 - Indirect	0.12	\$7,949	\$14,345	\$26,066
3 - Induced	0.11	\$5,983	\$11,517	\$19,191
Total	0.33	\$28,361	\$45,864	\$96,707

Source: IMPLAN, VHB and RKG (2023)

Note - Calais Branch Rail Corridor length = 12.25± miles

(1) - assumes midpoint of the range \$3,200 to \$5,200 per mile

Option 2 A (TUR with gravel surface) – As presented in Table 20, the infrastructure investment of \$13.9M (direct) results in employment of 101 jobs (direct) with labor income of \$5.6M (direct). The estimated dollar Value Added to the State of Maine economy from these direct inputs is \$6.1M. The direct impacts also result in both indirect and induced impacts, totaling \$11.4M (output) and then translates to 55 in employment with labor income of \$3.4M. The indirect and induced Value Added to the State of Maine economy is \$6.2M.

In total (direct, indirect and induced) the estimated Value Added to the State of Maine economy is \$12.4M.

Table 20 – IMPLAN – Trail until Rail (gravel surface) – Calais Branch Rail Corridor – Construction

Trail-until-Rail (gravel surface) - Calais Branch Rail Corridor Infrastructure / Construction Costs - \$13,900,000				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	100.70	\$5,570,914	\$6,147,375	\$13,900,000
2 - Indirect	20.34	\$1,411,638	\$2,508,237	\$5,191,895
3 - Induced	34.64	\$1,940,349	\$3,736,624	\$6,223,836
Total	155.67	\$8,922,900	\$12,392,236	\$25,315,731

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

The ongoing and annual maintenance costs (Table 21) averages \$57,575 (direct) and results in employment of 0.11 jobs (direct) with labor income of \$16,146 (direct). The estimated dollar Value Added to the State of Maine economy from these direct inputs is \$22,383. The direct impacts also result in both indirect and induced impacts, totaling \$50,645 (output) and then translates to 0.25 in employment with labor income of \$15,591. The indirect and induced Value Added to the State of Maine economy is \$28,941.

In total (direct, indirect and induced) the estimated Value Added to the State of Maine economy is \$51,323.

Table 21 – IMPLAN – Trail until Rail (gravel surface) – Calais Branch Rail Corridor – O&M

Trail-until-Rail (gravel surface) - Calais Branch Rail Corridor Ongoing and Annual Maintenance Costs - \$57,575 (1)				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	0.11	\$16,146	\$22,383	\$57,575
2 - Indirect	0.13	\$8,896	\$16,053	\$29,169
3 - Induced	0.12	\$6,696	\$12,888	\$21,475
Total	0.37	\$31,737	\$51,323	\$108,220

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

(1) - assumes midpoint of the range \$3,700 to \$5,700 per mile

Option 2 B (TUR with paved surface) – As presented in Table 22, the infrastructure investment of \$18.1M (direct) results in employment of 131 jobs (direct) with labor income of \$7.3M (direct). The estimated dollar Value Added to the State of Maine economy from these direct inputs is \$8.0M. The direct impacts also result in both indirect and induced impacts, totaling \$14.9M (output) and then translates to 72 in employment with labor income of \$4.4M. The indirect and induced Value Added to the State of Maine economy is \$8.1M.

In total (direct, indirect and induced) the Value Added to the State of Maine economy is \$16.1M.

Table 22 – IMPLAN – Trail until Rail (paved surface) – Calais Branch Rail Corridor – Construction

Trail-until-Rail (paved surface) - Calais Branch Rail Corridor Infrastructure / Construction Costs - \$18,100,000				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	131.12	\$7,254,211	\$8,004,855	\$18,100,000
2 - Indirect	26.48	\$1,838,176	\$3,266,121	\$6,760,670
3 - Induced	45.10	\$2,526,642	\$4,865,676	\$8,104,419
Total	202.71	\$11,619,028	\$16,136,653	\$32,965,089

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

The ongoing and annual maintenance costs (Table 23) averages \$51,450 (direct) and results in employment of 0.10 jobs (direct) with labor income of \$14,428 (direct). The estimated dollar Value Added to the State of Maine economy from these direct inputs is \$20,002. The direct impacts also result in both indirect and induced impacts, totaling \$45,257 (output) and then translates to 0.23 in employment with labor income of \$13,933. The indirect and induced Value Added to the State of Maine economy is \$25,862.

In total (direct, indirect and induced) the estimated Value Added to the State of Maine economy is \$45,864.

Table 23 – IMPLAN – Trail until Rail (paved surface) – Calais Branch Rail Corridor – O&M

Trail-until-Rail (paved surface) - Calais Branch Rail Corridor Ongoing and Annual Maintenance Costs - \$51,450 (1)				
Impact	Employment	Labor Income	Value Added	Output
1 - Direct	0.10	\$14,428	\$20,002	\$51,450
2 - Indirect	0.12	\$7,949	\$14,345	\$26,066
3 - Induced	0.11	\$5,983	\$11,517	\$19,191
Total	0.33	\$28,361	\$45,864	\$96,707

Source: IMPLAN, VHB and RKG (2024)

Note - Calais Branch Rail Corridor length = 12.25± miles

(1) - assumes midpoint of the range \$3,200 to \$5,200 per mile

IMPLAN Modeling – Economic Impacts of Interim Trail Usage

RKG also utilized IMPLAN modeling to develop estimates of the direct, indirect, and induced impacts from the estimated additional consumer spending activity (as summarized in Table 4) ranging from an annual estimate of \$0.98M to as much as \$1.47M.²⁶ The same interpretation of this data, as has been described previously, remains. As before, the focus of the information shown in Table 24 is the Value Added metrics.

The total Value Added impacts to the State of Maine economy from this increase in consumer spending ranges from \$876,087 (low) to nearly \$1.31M (high).²⁷

Table 24 – IMPLAN for Annual Trail User Spending – Calais Branch Rail Corridor

Summary Comparison - IMPLAN Modeling - Calais Branch Rail Corridor				
Low Estimate (n=4,725) of Annual Consumer Spending of Trail Users = \$982,800				
Category	Employment	Labor Income	Value Added	Output
Equipment	0.58	\$50,502	\$81,669	\$172,206
Other Recreation	0.32	\$27,547	\$44,547	\$93,930
Transportation	0.74	\$64,275	\$103,943	\$219,171
Retail	0.74	\$64,275	\$103,943	\$219,171
Food	1.33	\$114,777	\$185,612	\$391,377
Lodging	2.55	\$220,372	\$356,374	\$751,444
Totals - Low	6.26	\$541,749	\$876,087	\$1,847,300
High Estimate (n=7,050) of Annual Consumer Spending of Trail Users = \$1,466,400				
Category	Employment	Labor Income	Value Added	Output
Equipment	0.87	\$75,352	\$121,856	\$256,942
Other Recreation	0.48	\$41,101	\$66,467	\$140,150
Transportation	1.11	\$95,903	\$155,089	\$327,017
Retail	1.11	\$95,903	\$155,089	\$327,017
Food	1.98	\$171,255	\$276,944	\$583,959
Lodging	3.80	\$328,810	\$531,733	\$1,121,202
Totals - High	9.34	\$808,324	\$1,307,177	\$2,756,288

Source: IMPLAN, VHB and RKG (2024)

Note - sum of direct, indirect and induced impacts

Low Estimate of Annual Consumer Spending - \$982,800 – The estimated spending of approximately \$982,800 results in total output (direct, indirect and induced) of nearly \$1.85M, translating to \$542,749 in labor income and 7 jobs (rounded up). Whether or not the estimated impacts would result in additional and new development (SF), such as for hotels or restaurants, is uncertain, but they could positively impact existing establishments. The total value added estimate is \$876,087 to the State of Maine economy.

High Estimate of Annual Consumer Spending - \$1,466,400 – The estimated spending of approximately \$1,466,400 results in total output (direct, indirect and induced) of nearly \$2.8M, translating to \$808,324 in labor income and 10 jobs (rounded up). Whether or not the

²⁶ As indicated previously, this analysis assumes that the interim trail activity would be year-round and include, as examples, a mix of hiking, biking, snowshoeing, snowmobiling, ATV user(s) and other recreation related outdoor activities as would be possible and supported by an interim trail.

²⁷ These metrics reflect consumer spending and **do not include** any estimates of potential interim trail employee or rail employee spending.

estimated impacts would result in new development (SF) is uncertain. The total value added estimate is nearly \$1.31M to the State of Maine economy.

For reference purposes, the IMPLAN modeling for this section on consumer spending utilized the following industry sectors as general inputs for initial spending:

- Lodging = hotels and motels
- Food = restaurant establishments
- Retail = retailing and general merchandise stores
- Transportation = transit and ground passenger transportation services
- Other Recreation = other amusement and recreation industries
- Equipment = wholesale and other durable goods merchandising, especially sport equipment and recreational supplies

The following Table 25 offers a more detailed presentation of the summary impacts associated with each alternative under consideration in this analysis. This includes a comparison of the initial (or ongoing) input costs and the estimated Value Added return they render to the State of Maine economy, as well as estimated associated wages and employment.

Table 25 – IMPLAN - Summary of the Comparative Economic Impacts for the Calais Branch Rail Corridor

Calais Branch Rail Corridor - Summary Impacts (2024\$)	Input Dollars (1)	IMPLAN Modeling - Value Added			Total Value Added	Wages and Employment	
		Direct \$	Indirect \$	Induced \$		Wages (2)	Employment (3)
Trail User Expenditures (4)	\$1,224,600	\$476,072	\$341,445	\$274,115	\$1,091,632	\$675,036	7.80
Infrastructure/Construction Impacts (one-time)							
Option 1A-Rail with Trail (gravel surface)	\$70,600,000	\$31,223,359	\$12,739,678	\$18,978,825	\$62,941,862	\$45,320,630	790.67
Option 1B-Rail with Trail (paved surface)	\$72,700,000	\$32,152,099	\$13,118,621	\$19,543,351	\$64,814,070	\$46,668,694	814.19
Option 2A-Trail until Rail (gravel surface)	\$13,900,000	\$6,147,375	\$2,508,237	\$3,736,624	\$12,392,236	\$8,922,900	155.67
Option 2B-Trail until Rail (paved surface)	\$18,100,000	\$8,004,855	\$3,266,121	\$4,865,676	\$16,136,653	\$11,619,028	202.71
Option 3-Potential Rail Use Restoration	\$51,500,000	\$22,776,246	\$9,293,108	\$13,844,327	\$45,913,681	\$33,059,666	576.76
Ongoing and Annual Maintenance Impacts							
Option 1A-Rail with Trail (gravel surface)	\$57,575	\$22,383	\$16,053	\$12,888	\$51,323	\$31,737	0.37
Option 1B-Rail with Trail (paved surface)	\$51,450	\$20,002	\$14,345	\$11,517	\$45,864	\$28,361	0.33
Option 2A-Trail until Rail (gravel surface)	\$57,575	\$22,383	\$16,053	\$12,888	\$51,323	\$31,737	0.37
Option 2B-Trail until Rail (paved surface)	\$51,450	\$20,002	\$14,345	\$11,517	\$45,864	\$28,361	0.33
Option 3-Potential Rail Use Restoration	\$976,000	\$379,427	\$272,130	\$218,469	\$870,025	\$538,000	6.22

Source: IMPLAN, VHB and RKG (2024)

(1) - direct user spending (**ongoing**) - capital construction (**one-time**) - annual maintenance (**ongoing**)

(2) - reflects sum of estimated Statewide **labor income** - direct, indirect and induced

(3) - reflects sum of estimated Statewide **employment** - direct, indirect and induced

(4) - reflects **average** of low (\$982,800) and high (\$1,466,400)

Appendix C - References

- Economic Impact of Eastern Trail – Current Impact and Hypothetical Expansion Scenario as prepared for the Southern Maine Planning and Development Commission as prepared by Camoin Associates (dated November 2021).

[Camoin Associates Report - Economic Impact of ET - SMPDC.pdf \(maine.gov\)](#)

- The Mountain Division Feasibility Study: Potential Uses and Economic Benefits-Summary Report as prepared for the Maine Department of Transportation as prepared by HNTB Corporation (dated March 2022).

www.maine.gov/mdot/ofps/docs/mdrcc/HNTBMtnDivFeasibilityStudyDRAFT202

- The Economic Benefits of the Eastern Trail in Southern Maine (a 2014 survey) as prepared for the Eastern Trail Alliance as prepared by representatives of the Eastern Trail Alliance with assistance from the Rails-to-Trails Conservancy.

<https://www.easterntail.org/et-s-new-economic-impact-study>

- An article (appearing in the Vermont Business Magazine (dated December 2021) summarizing selected impacts of the Kingdom Trails in Vermont.

<https://vermontbiz.com/news/2021/december/26/...>

- The Northern Forest Canoe Trail:²⁸ An Economic Impact Study as prepared for the Vermont Tourism Data Center as prepared by the University of Vermont (dated 2006-2007).

<https://www.uvm.edu/sites/default/files/Rubenstein...>

- The Economic Impact of Spending by Snowmobilers on New Hampshire's Economy as prepared for the New Hampshire Snowmobile Association as prepared by the Institute for New Hampshire Studies - Plymouth State University (dated 2010-2011).

- The Business of Trails: A Compilation of Economic Benefits as prepared by Mississippi River Trail, Inc. – summarizing numerous reports and findings, from a variety of sources, compiled over a multi-year period.

<https://www.americantrails.org/resources/the...>

- A summary report on the Greater Portland (ME) Active Transportation Arterials (dated June 2022).

<https://mainetrailscoalition.squarespace.com/s/...>

- A summary report of the Maine Rail-Trail Plan 2020 – 2030 as prepared by the Maine Trails Coalition (dated January 2021).

<https://mainetrailscoalition.org/railtrail>

²⁸ The Northern Forest Canoe Trail (NFCT) is an approximate 740-mile canoe route spanning portions of upstate New York, Vermont, New Hampshire and Maine.

- Impacts of Trails and Sidewalks on Home Values, prepared by the heartbeat of Hampton Roads (VA) Transportation Planning Organization (dated November 2020).
<https://www.hrtpo.org/library/view/813/hrtpo-presentations-november-19-2020>
- Bicycling Means Business – The Economic Benefits of Bicycle Infrastructure, prepared by Darren Flusche, Policy Director of the League of American Bicyclists (updated July 2012).
<https://bikeleague.org/sites/default/files/...>
- Maine Trail Visitor Count 2019 to 2021, prepared for the Maine Office of Outdoor Recreation, by The University of Maine – Margaret Chase Smith Policy Center (dated 28 April 2022).
- Maine Office of Tourism, Quarterly Stakeholder Update (July 21, 2022) – Winter Visitor Tracking Report December 2021 – April 2022.
- Merrymeeting Trail – Feasibility Study, prepared for the Maine Midcoast Council of Governments and the Merrymeeting Trail Committee, by VHB (dated 14 June 2011).
<https://www.americantrails.org/resources/merrymeeting-trail-feasibility-stud>
- Maine State Active Transportation Plan (March 2023), VHB and Maine DOT.
- RKG Associates prior analyses for The Lewiston-Auburn Rail Study (September 2022); The Berlin Subdivision Rail Corridor (February 2023); and The Lower Road Rail Corridor (May 2023).

Appendix C:

Summary of Trail User Estimates

Trail Count Use Estimation Matrix



	Missisquoi Valley Rail Trail, VT	Westside Trail, ME	Kennebec River Rail Trail, ME	West River Trail, VT	Eastern Trail, ME	Mountain Division Trail, Fryeburg, ME	Mountain Division Trail, Windham, ME		Berlin Subdivision w/ 10% growth factor	Lower Road Corridor w/ 10% growth factor	Calais Branch w/ 10% growth factor
	ME/VT EXISTING TRAILS							EXISTING TRAIL AVG	SATP Corridors		
Peak Month Trail Count	1,936	3,257	10,266	1,035	23,166	6,324	4,792	7254	21,633	10,628	2,609
Corridor Length (miles)	26.3	8.2	7	16.1	28.9	4	5.6	14	24.7	28	15
Peak Month Trail Trips/mile	74	397	1467	64	802	1581	856	749	876	407	201
Trail Corridor Population	9,223	8,990	29,897	16,973	120,897	3,369	18,434	29683	89,973	40,418	3,348
Peak Month Trail Trips/1000 people	210	362	343	61	192	1877	260	472	240	263	779
Trail Corridor Key Destinations	4	3	5	3	4	1	3	3	5	3	1
Peak Month Trail Trips/destination	484	1,086	2,053	345	5,792	6,324	1,597	2526	4,327	3,543	2,609

Peak Month Non-motorized Trip Estimates

SATP Corridor	Low Use Estimate	High Use Estimate	Existing Trails Comparison
Berlin Subdivision Line	17,300	26,000	Kennebec River Rail Trail, Eastern Trail, Mountain Division Trail (Windham)
Lower Road Corridor	8,500	12,800	Kennebec River Rail Trail, West River Trail, Mountain Division Trail (Windham)
Calais Branch Line	2,100	3,100	Missisquoi Valley Rail Trail, Westside Trail, Mountain Division Trail (Fryeburg)

Annual Trip Non-motorized Estimates*

SATP Corridor	Low Use Estimate	High Use Estimate
Berlin Subdivision Line	129,750	195,000
Lower Road Corridor	63,750	96,000
Calais Branch	15,750	23,250

* - Annual trip estimates = Peak Month x 7.5 (per monthly trip estimates in relation to the Peak Month estimate below)

Jan	0.25	
Feb	0.25	
Mar	0.40	
Apr	0.40	
May	0.75	
Jun	1.00	
Jul	1.00	Peak
Aug	1.00	Months
Sep	1.00	
Oct	0.75	
Nov	0.40	
Dec	0.25	
	7.45	

Berlin Subdivision Use Estimates



	Kennebec River Rail Trail, ME			Eastern Trail, ME		Mountain Division Trail, Windham, ME		Berlin Subdivision		Average Multiplier	Berlin Subdivision w/ 10% future growth
	Existing Trails in ME and VT			TOTAL	AVERAGE			MULT. FACTOR			
Peak Month Trail Count	10,266	23,166	4,792	38,224	12,741	19,666		1.5		21,633	
Corridor Length (miles)	7.0	28.9	5.6	41.5	13.8	24.7	1.8			24.7	
Peak Month Trail Trips/mile	1,467	802	856	3,124	1,041	796				876	
Trail Corridor Population	29,897	120,897	18,434	169,228	56,409	89,973	1.6			89,973	
Peak Month Trail Trips/1000 people	343	192	260	795	265	219				240	
Trail Corridor Key Destinations	5	4	3	12	4	5	1.3			5	
Peak Month Trail Trips/destination	2,053	5,792	1,597	9,442	3,147	3,933				4,327	

Peak Month Trip Estimates

SATP Corridor	Low Use Estimate	High Use Estimate	Existing Trails Comparison (see images below)
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Berlin Subdivision Line

17,300

26,000

Kennebec River Rail Trail, Eastern Trail, Mountain Div Trail (Windham)



*Kennebec River Rail Trail, ME
(Rails-to-Trails Conservancy, 2011)*



*Eastern Trail, ME
(Rails-to-Trails Conservancy, 2017)*



*Mountain Division Trail, Windham, ME
(Rails-to-Trails Conservancy, 2022)*

Lower Road Use Estimates



	Existing Trails in ME and VT			TOTAL	AVERAGE	MULT. FACTOR		
	Kennebec River Rail Trail, ME					Lower Road Corridor		
	West River Trail, VT					Average Multiplier		
	Mountain Division Trail, Windham, ME					Lower Road w/ 10% future growth		
Peak Month Trail Count	10,266	1,035	4,792	16,093	5,364	9,661	1.8	10,628
Corridor Length (miles)	7.0	16.1	5.6	28.7	9.6	26.1	2.7	26.1
Peak Month Trail Trips/mile	1,467	64	856	2,387	796	370		407
Trail Corridor Population	29,897	16,973	18,434	65,304	21,768	40,418	1.9	40,418
Peak Month Trail Trips/1000 people	343	61	260	664	221	239		263
Trail Corridor Key Destinations	5	3	3	11	4	3	0.8	3
Peak Month Trail Trips/destination	2,053	345	1,597	3,996	1,332	3,220		3,543

Peak Month Trip Estimates

SATP Corridor	Low Use Estimate	High Use Estimate	Existing Trails Comparison (see images below)
Lower Road Corridor	8,500	12,800	Kennebec River Rail Trail, West River Trail, Mountain Div Trail (Windham)



Kennebec River Rail Trail, ME
(Rails-to-Trails Conservancy, 2011)



West River Trail, VT
(Rails-to-Trails Conservancy, 2009)



Mountain Division Trail, Windham, ME
(Rails-to-Trails Conservancy, 2022)

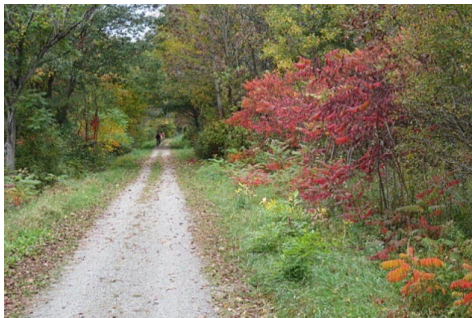
Calais Branch Use Estimates



	Missisquoi Valley Rail Trail, VT			Westside Trail, ME		Mountain Division Trail, Fryeburg, ME		Calais Branch		Average Multiplier	Calais Branch w/ 10% future growth
	Existing Trails in ME and VT			TOTAL	AVERAGE				MULT. FACTOR		
Peak Month Trail Count	1,936	3,257	6,324	11,517	3,839	2,372			0.6	2,609	
Corridor Length (miles)	26.3	8.2	4.0	38.5	12.8	13.0		1.0			13.0
Peak Month Trail Trips/mile	74	397	1,581	2,052	684	182					201
Trail Corridor Population	9,223	8,990	3,369	21,582	7,194	3,348		0.5			3,348
Peak Month Trail Trips/1000 people	210	362	1,877	2,449	816	708					779
Trail Corridor Key Destinations	4	3	1	8	3	1		0.4			1
Peak Month Trail Trips/destination	484	1,086	6,324	7,894	2,631	2,372					2,609

Peak Month Trip Estimates

SATP Corridor	Low Use Estimate	High Use Estimate	Existing Trails Comparison (see images below)
Calais Branch Line	2,100	3,100	Missisquoi Valley Rail Trail, Westside Trail, Mountain Div Trail (Fryeburg)



Missisquoi Valley Rail Trail, VT
(Rails-to-Trails Conservancy, 2014)



Westside Trail, ME
(Maine by Foot, 2014)



Mountain Division Trail, Fryeburg, ME
(AllTrails, 2020)