LOWER ROAD 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 Lower Road 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 construction and on-going operations and maintenance of the Lower Road Rail corridor alternatives—interim trail, rail with trail, and the restoration of passenger or freight rail service—RKG Associates 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.[1]

Selected Summary Trail Related Impacts – Table 1 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 1 – Selected Summary Trail Related Impacts – IMPLAN Modeling

Lower Road Rail Corridor - Selected Summary Impacts by Alternative	Input Dollars (1)	Total Value Added	Wages and Employment	
			Wages (2)	Employ (3)
Infrastructure/Construction Impacts (one-time)				
Interim Trail (stonedust/gravel)	$34,200,000	$29,609,167	$22,057,085	388
Interim Trail (paved)	$42,900,000	$37,141,323	$27,668,098	486
Ongoing and Annual Maintenance Impacts				
Interim Trail (stonedust/gravel)	$120,600	$93,468	$64,656	1.13
Interim Trail (paved)	$107,200	$83,083	$57,472	1.00
Infrastructure/Construction Impacts (one-time)				
Rail With Trail (stonedust/gravel)	$146,300,000	$126,661,435	$94,355,307	1,660
Rail With Trail (paved)	$151,800,000	$131,423,143	$97,902,499	1,722
Ongoing and Annual Maintenance Impacts				
Rail With Trail (stonedust/gravel)	$120,600	$93,468	$64,656	1.13
Rail With Trail (paved)	$107,200	$83,083	$57,472	1.00

Source: IMPLAN and RKG (2023)

(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

NOTE - per VHB, annual maintenance costs for an interim trail with or without rail are the same

[1] All are presented in greater detail in **Table 34** in **Appendix B.**

Upgrade for Potential Future Rail Use – Passenger Rail – The same selected summary impacts for a potential upgrade to Passenger Rail services are offered in Table 2.

Table 2 – Selected Summary Impacts for Passenger Rail Upgrade – IMPLAN Modeling

Lower Road Rail Corridor - Selected Summary Impacts by Alternative	Input Dollars (1)	Total Value Added	Wages and Employment	
			Wages (2)	Employ (3)
Passenger Rail Upgrade				
Infrastructure/Construction Impacts (one-time)	$363,000,000	$314,272,732	$234,114,671	4,118
Ongoing and Annual Maintenance Impacts	$3,015,000	$2,336,701	$1,616,400	29

Source: IMPLAN and RKG (2023)

(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

Upgrade for Potential Future Rail Use – Freight Rail – The same selected summary impacts for a potential upgrade to Freight Rail services are offered in Table 3.

Table 3 – Selected Summary Impacts for Freight Rail Upgrade – IMPLAN Modeling

Lower Road Rail Corridor - Selected Summary Impacts by Alternative	Input Dollars (1)	Total Value Added	Wages and Employment	
			Wages (2)	Employ (3)
Freight Rail Upgrade				
Infrastructure/Construction Impacts (one-time)	$55,000,000	$47,617,081	$35,471,920	624
Ongoing and Annual Maintenance Impacts	$2,747,000	$2,128,994	$1,472,720	26

Source: IMPLAN and RKG (2023)

(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

B. Other Financial/Social Impacts – Interim Trail

Trail Use and User Spending – The estimated annual trail use (trips) from the local population ranges from 63,750 to 96,000 annually.[2] Annual out-of-state users (at 23%) ranges from 14,663 persons to 22,080 persons (user trips). These out-of-state trail users form the basis for estimating trail use spending[3] impacts and are projected to spend between $1.7M and $2.6M 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 who live along the Lower Road Rail Corridor, it is anticipated that physical activity will increase with trail utilization. This added physical activity could translate to an annual savings of $287,331 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.

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

[3] 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.

Potential Benefits to Single-Family Residential Homes – Area realtors[4] (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 $7,153 to $14,307 (on average) for those homes within the Lower Road Rail Corridor.

C. Other Financial/Social Impacts – Rail Service

Potential Passenger Rail Benefits – Although unquantified in this analysis, studies[5] have indicated that commuter rail provides a number of fiscal/economic and quality-of-life benefits, particularly for communities in less urbanized areas.

With respect to the former, these include, but may not be limited to, opportunities for associated transit-oriented development (TOD) which could offer compact, mixed-use and walkable neighborhoods typically located within a half-mile radius of a transit station.

With respect to the latter, these include but may not be limited to, increased mobility and transportation choices; greater convenience and safety; and greater access to employment, education, and essential services.

Potential Health Benefits – Although unquantified in this analysis, if Passenger Rail service were available to the communities along the Corridor, it is possible that there may be some modest improvement in public health as some passengers may, on occasion, opt to walk or bicycle to a transit station (if developed and within a reasonable proximity) and presuming there is proper sidewalk and/or bike path connectivity.

Potential On-Board Spending for Passenger Rail – If a Passenger Rail option is pursued for this Corridor, there is the potential for riders to spend money on tickets, food, and beverages while riding the train. Based on VHB's annual rail ridership estimates for the line and typical on-board passenger spending metrics, RKG estimates spending could total $112,275 per year (constant FY 2022 dollars). This could render a total Value Added impact of $130,174 to the Maine economy and result in 2.23 jobs with total labor income of $91,904. While it is possible that passengers could purchase goods and services at businesses near a potential new station/platform, these are not quantified in this analysis and difficult to distinguish from what would otherwise be normal work-day purchases at other businesses along a commuter's route.

Potential Freight Rail Benefits – With the potential restoration of Freight Rail service, it is possible that further economic impacts could be realized if the Lower Road 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

[4] 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.
[5] **Source** - US Government Accountability Office - www.gao.gov/products/gao-21-355r

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 4 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 throughout the remainder of this report and the Appendices.

Table 4 – Comparative Summary of the Value Added Impacts – Lower Road Rail Corridor

Lower Road Rail Corridor - Selected Summary Impacts by Alternative - Valued Added (constant 2022 $)	Infrastructure Construction Impacts (1)	Annual Maintenance Impacts (2)	Other Financial Impacts			
			Trail User Expenditures (2)	On-Board Passenger Spending (2)	Potential Health Benefits (3)	Potential Impact on SFDU Sales Value (4)
Interim Trail (stonedust/gravel)	$29,609,167	$93,468	$1,960,338	*na*	$287,331	$10,730
Interim Trail (paved)	$37,141,323	$83,083	$1,960,338	*na*	$287,331	$10,730
Rail With Trail (stonedust/gravel)	$126,661,435	$93,468	$1,960,338	*na*	$287,331	$10,730
Rail With Trail (paved)	$131,423,143	$83,083	$1,960,338	*na*	$287,331	$10,730
Passenger Rail Upgrade	$314,272,732	$2,336,701	*na*	$249,698	*na*	*na*
Freight Rail Upgrade	$47,617,081	$2,128,994	*na*	*na*	*na*	*na*

Source: IMPLAN and RKG (2023)

(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

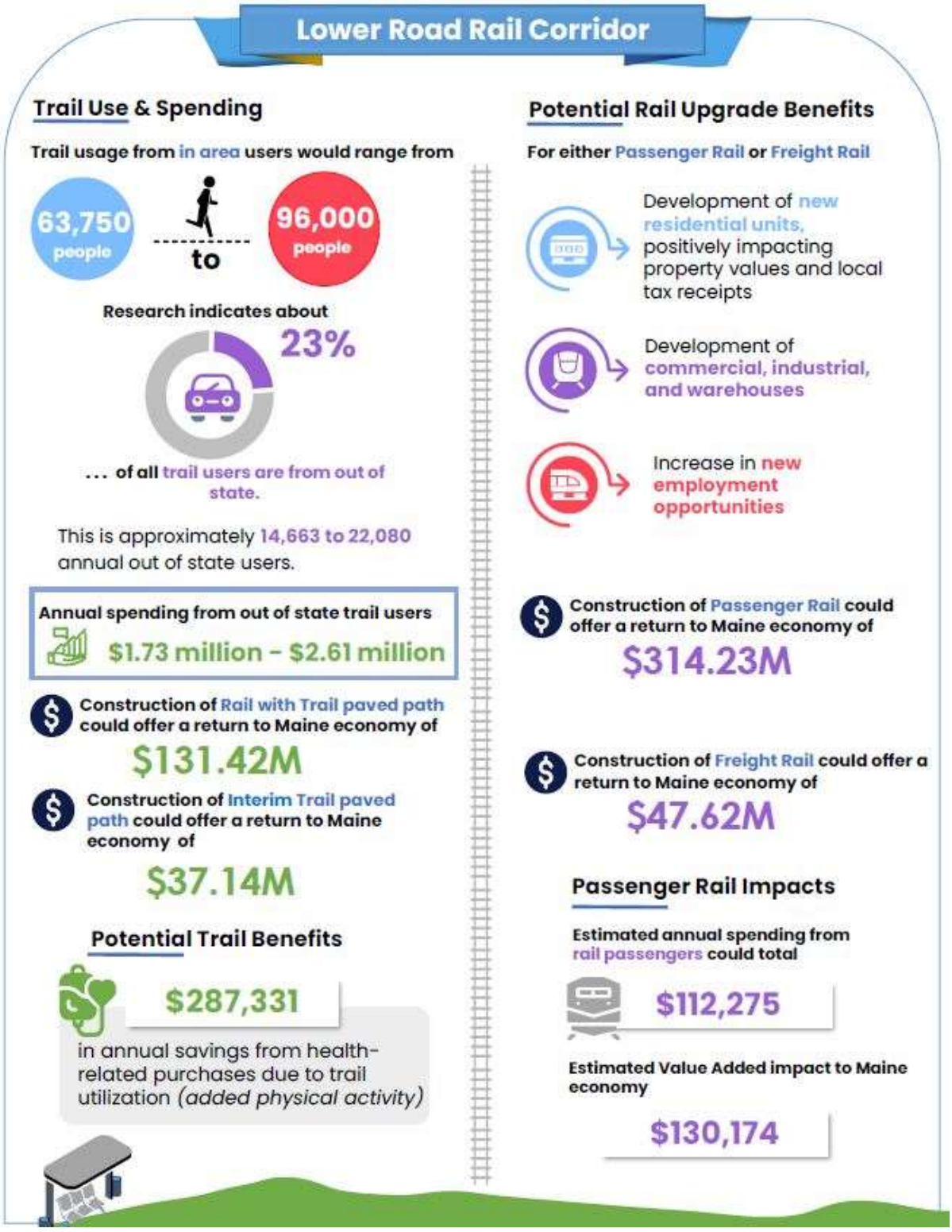
(3) - annual and ongoing absolute and ***not Value Added impacts***.

(4) - estimated average of potential dollar increase in sales price - all communities.

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 Lower Road Rail Corridor, for both Interim Trail use and potential restoration of Passenger Rail or Freight Rail use are highlighted in the following Infographic.


Lower Road Rail Corridor
Trail Use & Spending
Trail usage from in area users would range from
63,750 people
to
96,000 people
Research indicates about
23%
... of all trail users are from out of state.
This is approximately 14,663 to 22,080 annual out of state users.
Annual spending from out of state trail users
$1.73 million - $2.61 million
Construction of Rail with Trail paved path could offer a return to Maine economy of
$131.42M
Construction of Interim Trail paved path could offer a return to Maine economy of
$37.14M
Potential Trail Benefits
$287,331
in annual savings from health-related purchases due to trail utilization (added physical activity)
Potential Rail Upgrade Benefits
For either Passenger Rail or Freight Rail
Development of new residential units, positively impacting property values and local tax receipts
Development of commercial, industrial, and warehouses
Increase in new employment opportunities
Construction of Passenger Rail could offer a return to Maine economy of
$314.23M
Construction of Freight Rail could offer a return to Maine economy of
$47.62M
Passenger Rail Impacts
Estimated annual spending from rail passengers could total
$112,275
Estimated Value Added impact to Maine economy
$130,174

2 – Observations and Findings

RKG Associates (RKG) was retained as a subconsultant to Vanasse Hangen Brustlin, Inc. (VHB), to prepare an assessment of the demographics of potential interim trail[6] users, as well as the economic benefits/impacts of interim trail and/or preserving/upgrading the existing rail corridor for possible future rail uses, for the approximate 33.5-mile Lower Road Rail Corridor.[7] The Corridor stretches from Augusta to the north (Mile Point 63.0) down to Downtown Brunswick in the south (Mile Point 29.5).

Figure 1 – Lower Road Rail Corridor Study Area

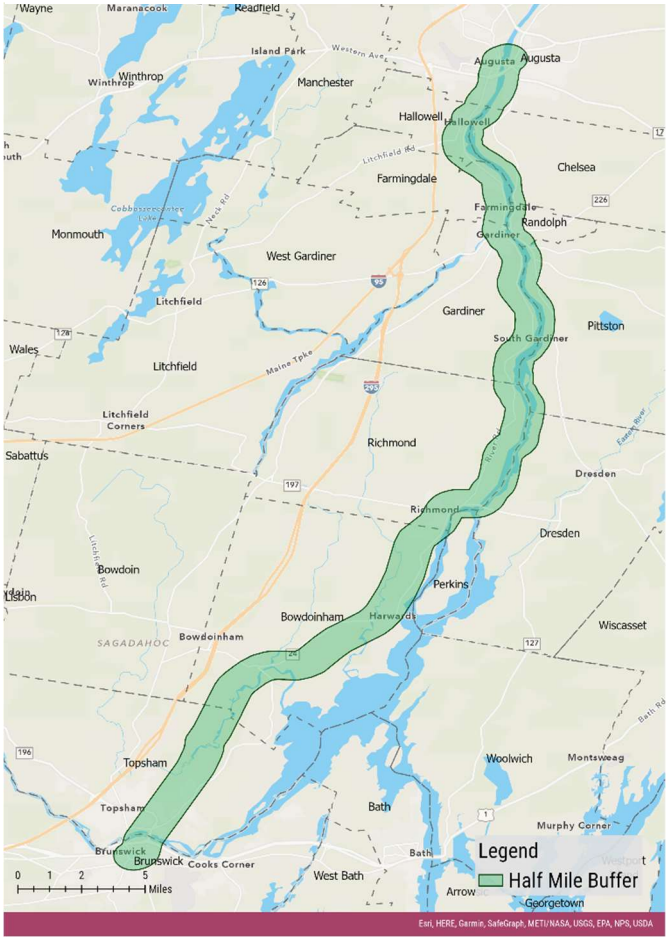


Figure 1 shows the extent of the Corridor along with an approximate half-mile radius (as highlighted) from the centerline of the rail corridor, which serves as the study area for this analysis.[8] As RKG understands, the existing rail line traversing the Corridor is inactive.[9]

This analysis considers both the construction aspect and the ongoing annual maintenance costs[10], as inputs for the IMPLAN modeling, as well as benefits that could accrue from users post-construction. RKG relied on information from VHB; socio-demographic data from Esri (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.

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[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 Lower Road Rail Corridor could include (1) uses as an interim trail or (2) uses of rail service with an adjacent, interim trail.

[7] Or from the State-owned rail corridor known as the Lower Road from Rockland Junction in Brunswick (immediately east of the Federal Street at-grade crossing) to the east side of the railroad bridge over the Kennebec River in Augusta.

[8] The Lower Road Rail Corridor includes (or passes through) portions of the following communities: Augusta, Hallowell, Farmingdale, Gardiner, Pittston (Kennebec County); Dresden (Lincoln County); Richmond, Woolrich, Bowdoinham, Topsham (Sagadahoc County); and Brunswick (Cumberland County).

[9] 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*".

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

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.

An approximate 6.0 mile portion of this Corridor, stretching from Augusta and into part of Gardiner, is already improved with a paved trail referred to as the Kennebec River Rail Trail (refer to Figure 2).[11] Reportedly, no motorized use is allowed on the Kennebec River Rail Trail, which is plowed of snow in the winter.[12] This analysis assumes that any future trail along the full length of the Corridor would also restrict motorized use, but it is unclear about whether all 33.5 future miles would be plowed.

Figure 2 – View of a portion of the Kennebec River Rail Trail

The approach to this analysis includes the following components with regards to the six (6) use or development options (as noted below) for the Lower Road 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 upgrade for potential future rail use(s) – including construction costs (the initial investment)[13] and the annual and ongoing maintenance costs, of the interim trail and/or rail use options:

    - **Option 1**: Interim Trail (includes the removal of the track and ties and building an interim trail on the rail bed)
        - 1A: Path Option – stonedust/gravel
            - Construction Costs - $34,200,00
            - Ongoing and Annual Maintenance Costs - $120,600

[11] **Source** - https://goo.gl/maps/bVwWeGJL6jLLfB2k6.
[12] **Source** - https://www.traillink.com/trail/kennebec-river-rail-trail/.
[13] A more detailed discussion of what this entails is offered, under separate cover, by VHB.

- 1B: Path Option – paved
  - Construction Costs - $42,900,000
  - Ongoing and Annual Maintenance Costs - $107,200

- **Option 2**: Rail with Trail (or RWT)
  - 2A: RWT Option – with a stonedust/gravel path
    - Construction Costs - $146,300,000
    - Ongoing and Annual Maintenance Costs - $120,000

  - 2B: RWT Option – with a paved path
    - Construction Costs - $151,800,000
    - Ongoing and Annual Maintenance Costs - $107,200

- **Option 3**: Restoration of Rail Service
  - 3A: Passenger Rail Option
    - Construction costs - $363,000,000
    - Ongoing and Annual Maintenance Costs - $3,015,000

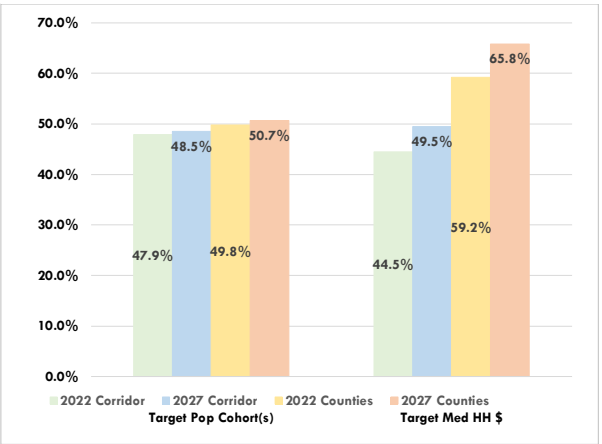
  - 3B: Freight Rail Option
    - Construction Costs - $55,000,000
    - Ongoing and Annual Maintenance Costs - $2,747,000

A. Interim Trail Use

This section provides a summary of the observations and findings of the analysis with respect to estimated impacts as a result of interim trail use for the Lower Road 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 studies[14] 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 and median household income. Figure 3 highlights these for the Lower Road Rail Corridor, as well as the aggregate of the counties the Corridor traverses.[15]

Figure 3 – Selected Metrics 2022 – 2027 for the Lower Road Rail Corridor and the Four Counties



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).

The population for the Lower Road Rail Corridor across these same three cohorts (i.e., over the age of 45) account for more than 47.9% of the total population in the study area in the year 2022 (8,940 persons) and as projected for the year 2027 (9,087 persons) or 48.5% of the total population. The total Corridor population in 2022 is 18,676 persons and is projected at 18,732 persons for 2027 (an increase of 0.3%). For the counties the Corridor traverses, this target population cohort in 2022 accounted for 49.8% of the total population or 251,646 persons out of a total of 504,646 persons. By 2027 this is projected at 259,499 persons out of o total of 512,379 persons, or 50.7% of the total.

In both instances, this indicates a relatively strong, stable baseline of potential users of an interim trail along the Lower Road Rail Corridor among both residents within the Corridor itself and the multi-county region.

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 between $61,000 and $100,000 (35%) and those with incomes exceeding $100,000 (33%).

[14] 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.

[15] Target population and target median household income data reflect projections for 2027. Target educational attainment reflects the 2016-2020 level of educational attainment for the population aged 25 and older as offered by American Community Service (ACS) information.

In 2022, the number of Corridor households with median household incomes exceeding $61,000 accounted for approximately 44.5% of all households, or 3,690 out of 8,288. This is projected to grow to a 49.5% representation by 2027, or 4,138 out of a total of 8,361 households. Between 2022 and 2027, the number of households earning more than $61,000 is projected to increase by 12.1% (or 448 households).

For the multi-county region, approximately 59.2% of the households had median household incomes exceeding $61,000 in 2022 or 128,146 out of a total of 216,509. By 2027, this is projected to increase to a 65.8% representation or 145,406 households out of a total of 220,854 households. Overall, this represents an increase of 17,260 households (13.5%).

In both instances, for the Corridor and multi-county area, this also suggests a strong base of potential users of the Lower Road Rail Corridor.

Economic Impacts of Interim Trail Use

Potential users (meaning number of trips) of the Lower Road Rail Corridor range from a low estimate of 63,750 to a high of 96,000 annually[16] 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-state users of an interim trail along the Lower Road Rail Corridor, RKG's research indicates about 23% of all trail users are from out-of-state, equating to between 14,663 and 22,080 annual out-of-state users. Utilizing an average estimated annual spending of $118 per user[17] equates to an estimated $1.73M to $2.61M in local spending. This also translates to between $1,730 and $2,605 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 2 provides a breakdown of these spending metrics.

Table 5 – Estimated Annual User Spending for the Lower Road Rail Corridor

Lower Road Rail Corridor - Annual User Spending	Factor	Low Estimate	High Estimate	% by Category
Annual Users		63,750	96,000	na
Out-of-Town Users	23%	14,663	22,080	na
Annual Spending	**Average $/per**	**Low**	**High**	**Low/High**
Equipment	$11	$161,288	$242,880	9.3%
Other Recreation	$6	$87,975	$132,480	5.1%
Transportation	$14	$205,275	$309,120	11.9%
Retail	$14	$205,275	$309,120	11.9%
Food	$25	$366,563	$552,000	21.2%
Lodging	$48	$703,800	$1,059,840	40.7%
TOTAL	**$118**	**$1,730,175**	**$2,605,440**	**na**
Estimated Spending/1,000 Users	**na**	**$1,730**	**$2,605**	**na**

Source: RKG (2023)

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

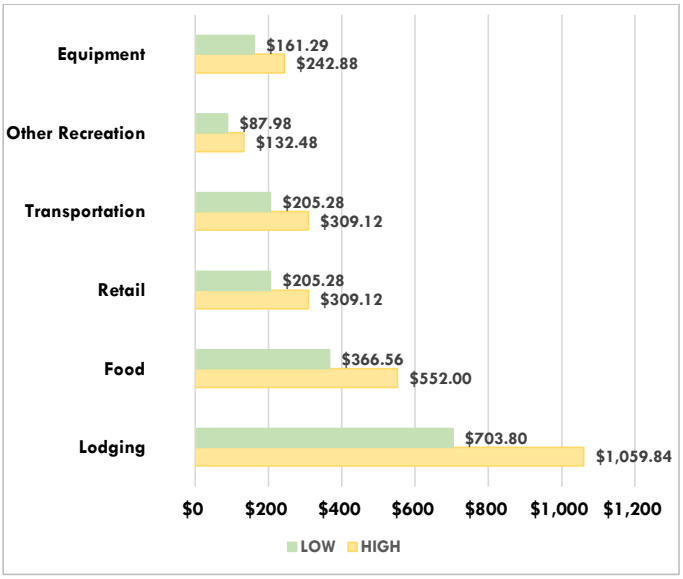
[17] **Average annual spending estimates** as noted in the *Economic Impact of Eastern Trail – Current Impact and Hypothetical Expansion Scenario* as prepared for the Southern Maine Planning and Development Commission as prepared by Camoin Associates (dated November 2021) – with input (per Camoin Associates) from the Maine Office of Tourism's *Visitor Tracking Research, 2019 Annual Report*.

RKG 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 32 and in **Appendix B** of this report.

Low Estimate $1,730,175 – the estimated annual spending of $1.7M from all consumer spending categories results in total output (direct, indirect, and induced) of $2.7M, translating to $932,282 in labor income and 23 jobs. The total Value Added estimate is $1.6M throughout the Maine economy, or $15,646 per 100 trips.

High Estimate $2,605,440 – the estimated annual spending of $2.6M from all consumer spending categories results in total output (direct, indirect, and induced) of $4.0M, translating to $1.4M in labor income and 35 jobs. The total Value Added estimate is $2.4M throughout the Maine economy, or $23,561 per 100 trips.

Figure 4 – Lower Road Rail Corridor – Annual Spending of Interim Trail Users ($1,000's)



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, and snowshoeing, as examples. As RKG understands, the current Kennebec River Rail Trail portion does not allow for motorized use and the assumption is that the remainder of the Lower Road Rail Corridor will be the same.

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.[18] 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 (2027) in the Corridor (9,087 persons) yields 2,254 persons considered as inactive or insufficiently active.

If we conservatively assume that 5% of the population that is identified as inactive or insufficiently active (113 out of a total of 2,254 persons in 2027) within the Lower Road Rail Corridor were to increase their level of physical activity, based on proximity to a trail, this could translate to an annual savings of health-related expenditures of $287,331. This could translate to additional annual household spending (from the 113 persons) for non-health related expenditures.

[18] 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.

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. In some instances, residential proximity to an active freight line may actually detract from property values - due to noise impacts and possible safety issues.

The potential impacts on residential property values with respect to proximity to a trail (only) similarly lack specificity, although some studies suggest a positive impact on property values of between 5% and 10%. What has been noted in other studies and academic research is that some realtors report that residential proximity to trails often reduces the number of days-on-market (DOM) for an active listing.

As a part of this analysis, RKG reached out to a sample of realtors in Augusta who are active in the residential market and aware of the Kennebec River Rail Trail. Their consensus was that proximity to the Kennebec River Rail Trail was generally neutral with respect to any increases in sale price. In lieu of any localized data on the impact of a trail on home values, RKG has opted to utilize a more conservative factor (meaning not to overstate) of a possible 2.5% to 5% increase in property values. RKG ***cautions*** however that in our assessment, this increase in value may only be realized when a residential property comes up for sale.

As a baseline, RKG reviewed the existing property values of single-family residential units, for the four (4) communities within the Lower Road Rail Corridor where data was available from the source cited (refer to Table 6). RKG matched these parcels within the Corridor to assessed values provided through the State of Maine and Vision Government Solutions[19] for FY 2022/FY 2023. RKG was able to identify 2,313 single-family residential units in the Lower Road Rail Corridor ranging in average value from $106,836 in Augusta to as much as $319,195 in Brunswick. The overall average single-family residential in these communities is $183,426.

Again, RKG notes that data was not available through the source cited for all communities within the Lower Road Rail Corridor. As a result, the findings should be considered as a ***general estimate only*** and may not be applicable for those communities where data was unavailable.

Table 6 – Potential Value Impacts on Single-Family Residential

Summary Residential Values by Location - Lower Road Rail Corridor Single Family Residential			
Location	**# of Units**	**Valuation (1)**	**Avg Valuation**
Augusta	834	$89.10	*$106,836*
Brunswick	444	$93.72	*$211,087*
Richmond	478	$63.65	*$133,167*
Topsham	557	$177.79	*$319,185*
Totals or Averages	**2,313**	**$424.26**	***$183,426***

Source: VHB, State of Maine GIS Database, Vision Government Solutions and RKG (2023

(1) - rounded to million $

Note - no data reported for other communities

As a baseline reference, single-family residential sales between January 2018 and January 2023, as reported by Redfin (refer to Table 19 in **Appendix A**), indicated that there were

[19] Data was not available through the source cited for all communities within the Lower Road Rail Corridor. As a result, the findings should be considered as a ***general estimate only*** and may not be applicable for those communities where data was unavailable.

3,784 single-family residential units sold within the eleven communities (no data was available for Woolwich) of the Lower Road Rail Corridor, at an average selling price of $286,132/unit.

- Applying an estimated 2.5% increase in selling price to the units in this sample results in an average increase in selling price of $7,153 per unit.

- Applying an estimated 5% increase in selling price to the units in this sample results in an average increase in selling price of $14,307 per unit.

It is RKG's assessment that these impacts would likely be realized when a property is listed for sale and not as an overall increase in property values across the board. Further, all analyses are reported in constant dollars and are not inflation adjusted as it is difficult to project with any level of specificity when any of these properties would come up for sale, if at all.

B. Potential Restoration of Rail Service

Restoring and/or upgrading the existing rail corridor for possible future rail service provides MaineDOT the opportunity to further consider its overall viability. Restoration of rail service could be for either Passenger Rail or Freight Rail.

Passenger Rail Service
With respect to fiscal and economic impacts, specifically related to an upgrade for possible future Passenger Rail services, RKG drew upon our work for the *Lewiston – Auburn Rail Study*, prepared in co-operation with VHB and in association with Northern New England Passenger Rail Authority (NNEPRA) and Maine DOT.[20] In that report, RKG addressed the likely fiscal and economic impacts that may be associated with development of physical stations.

RKG notes, that as indicated in the *Lewiston – Auburn Rail Study,* the potential Station Study area locations were for analytical purposes only, as defined by latitudes and longitudes of the approximate location of a future station. These were not intended to represent any final or actual station locations. Particular and specific station site selection is to be embedded in the planning and design process and would be completed after an alignment is selected.

As RKG understands, there are currently no sites (locations) identified for a new rail station as a part of the Lower Road Rail Corridor. Further, per VHB, the current working assumption regarding potential Passenger Rail service is for inter-city heavy rail service only between Augusta and Brunswick with minimal intermediate stations. Frequency would coordinate with the current Amtrak Downeaster schedule (i.e., just a few trips/day).

Local Real Estate and Economic Impacts - In the *Lewiston – Auburn Rail Study,* RKG considered the possible fiscal and economic impacts that may be associated specifically with the development of a rail station, noting potential spinoff impacts, for the host community. These included the following:

- Potential development of new residential units resulting in an increased supply of housing opportunities, particularly for those wishing to reside near a station. If so, this could

[20] This report, in its entirety, is available under separate issue. RKG refers the reader to that report for a detailed presentation of the inputs, assumptions and findings.

positively impact the property valuations and tax base of the community. Further, new housing units could lead to an increase in household spending demand for a wide variety of retail and service purchases.

- Potential development of additional retail and service establishments, further enhancing the property valuations and tax base of the community.

- Potential increases in new employment opportunities and the average daily spending of such employees.

RKG notes, as also indicated in the *Lewiston – Auburn Rail Study*, the development potential, either for residential or for non-residential, would also depend on a variety of outside factors including the availability (or assemblage) of land parcels to accommodate such development, local zoning ordinances and developer interest in pursuing such development. In general terms, a memorandum, dated 1 April 2021, from the US Government Accountability Office[21] indicated the following:

- Commuter rail provides a number of economic and quality-of-life benefits, particularly for communities in less urbanized areas. However, commuter rail in less urbanized communities may also pose additional funding challenges, noting that less populated areas may have difficulty raising the local match required (if required) to secure federal funding for a transit project.

- Potential positive economic impacts of transit-oriented development could offer compact, mixed-use and walkable neighborhoods typically located within a half-mile radius of a transit station.

- A positive impact on a range of quality-of-life benefits including increased mobility and transportation choices; greater convenience and safety; and greater access to employment, education, and essential services.

In summary, without such baseline inputs as featured in the *Lewiston – Auburn Rail Study*, it is premature to consider any specific fiscal or economic impacts associated with new development along the Lower Road Rail Corridor. A more thorough and detailed analysis of the potential fiscal and economic benefits associated with Passenger Rail use along the Lower Road Rail Corridor is beyond the scope of this analysis and would require more definitive input including the identification of rail station site(s) and the type and level of development for each station.

On-Board Passenger Rail Spending - RKG relied on information, as previously provided by the NNEPRA, regarding ridership and on-board spending for passengers of the Amtrak Downeaster Line - which runs from Brunswick, ME to Boston (North Station), MA. The data covers the ridership from September 2021 through August 2022, with the assumption that riders on a possible Passenger Rail service, for the Lower Road Rail Corridor, would spend in a like manner. RKG further relied on estimates of annual ridership for a potential Passenger Rail service for the Lower Road Rail Corridor, estimated by VHB at 75,190 for an estimated average annual on-board passenger expenditure of $112,275 (refer to Table 7).

[21] **Source** - www.gao.gov/products/gao-21-355r

Table 7 – Estimated Annual On-Board Spending for Passenger Rail

Lower Road Rail Corridor- Annual Rail Passenger On-Board Spending	Downeaster Line - September 2021 - August 2022	Lower Road Rail Corridor Annual Daily Riders (1) (2)	
		Low	High
Total Ridership	432,857	62,415	87,600
% of Passengers Spending (18.2%)	78,780	11,360	15,943
Passenger Spending			
Total	$646,347	$93,199	$130,805
Spending per Total Passengers	$1.49	$1.49	$1.49
Spending per Spending Passengers	$8.20	$8.20	$8.20
Total Passenger Annual Spending	**$646,347**	**$93,199**	**$130,805**

Source: VHB, NNEPRA and RKG (2023)

(1) - developed by VHB from baseline Downeaster ridership metrics (2019 - pre-COVID19)

(2) - takes annual low daily estimate of 171 riders and annual high daily estimate of 240 = overall annual daily average of 206 riders = for 206 riders X 365 days = annual 75,190 riders

Note - reflects estimated 2040 ridership, spending in FY 2022 dollars, ***not inflation adjusted***

- Average annual ridership (2040) = 75,190 passengers X 18.2% with purchases = 13,685 passengers with on-board purchases = **$112,275 (rounded)**[22]

Commuting Patterns - Commuting patterns, as reported for 2019 and from the U.S. Census Bureau (On-the-Map tool), indicates the following commuting patterns for residents of Augusta, ME and Brunswick, ME (refer to Table 8). While this is not intended to serve as a study or definitive metric for potential Passenger Rail ridership, it does indicate that there is some possibility for ridership among those workers commuting to/from Augusta and/or Brunswick.

- **Augusta, ME** – Of the 8,841 workers residing in Augusta, approximately 48.4% also work in Augusta. The remaining 51.6% work elsewhere, including communities which may serve as potential station locations for the Lower Road Rail Corridor.

- **Brunswick, ME** – Of the 6,728 workers residing in Brunswick, approximately 24.8% also work in Brunswick. The remaining 75.2% work elsewhere, including communities which may serve as potential station locations for the Lower Road Rail Corridor.

Table 8 – Commuting Patterns by Place of Residence – Augusta, ME and Brunswick, ME

Place of Residence - Augusta, ME (n=8,481)	Place of Work	Count of Worker	Share of Total
Other Points		2,493	29.4%
Augusta, ME		4,106	48.4%
Waterville, ME		376	4.4%
Gardiner, ME		245	2.9%
Portland, ME		230	2.7%
Lewiston, ME		204	2.4%
Bangor, ME		190	2.2%
Auburn, ME		186	2.2%
South Portland, ME		175	2.1%
Hallowell, ME		145	1.7%
Bath, ME		131	1.5%

Place of Residence - Brunswick, ME (n=6,728)	Place of Work	Count of Workers	Share of Total
Other Points		2,405	35.7%
Brunswick, ME		1,670	24.8%
Portland, ME		708	10.5%
Bath, ME		547	8.1%
Topsham, ME		272	4.0%
Augusta, ME		246	3.7%
Lewiston, ME		228	3.4%
South Portland, ME		189	2.8%
Brunswick Station, ME		184	2.7%
Freeport, ME		145	2.2%
Westbrook, ME		134	2.0%

Source: US Census On-the-Map and RKG (2023)

[22] Estimated on-board spending is presented in constant FY 2022 dollars and is ***not inflation adjusted*** for estimated 2040 ridership – actual 2040 on-board spending likely to be higher.

Freight Rail Service

With the potential restoration of Freight Rail service, it is possible that further economic impacts could be realized if the Lower Road Rail Corridor were a designated Free Trade Zone (FTZ). While an estimate of these potential impacts is beyond the scope of this analysis, RKG notes from prior studies[23] the following generalizations:

- **Deferral, reduction, or elimination of certain duties** - companies can bring goods into the FTZ without duties or most fees, including exemption from inventory tax.

- **Relief from inverted tariffs** - in some cases, tariffs on U.S. component items or raw materials have a higher duty rate than the finished product. However, by participating in an FTZ, the U.S. manufacturer pays whichever duty is lower.

- **Duty exemption on re-exports** - since an FTZ is considered outside the commerce of the United States and U.S. Customs, a company importing components or raw material into the FTZ does not pay Customs duty until it enters U.S. commerce. If the good is exported from the FTZ, no Customs duty is due.

- **Duty elimination on waste, scrap, and yield loss** - since a manufacturer operating in an FTZ does not pay duties on imports until its goods leave the FTZ and enter the United States, it essentially is paying for the duties on the raw materials after they have been processed. Thus, duties owed do not include manufacturing by-products, such as waste, reducing the amount of goods taxed.

- **Weekly entry savings** – rather than filing an entry every time a shipment enters the country, an importer operating in an FTZ only needs to file one Customs entry a week, reducing bureaucratic overlaps and costs associated with entry filings. Weekly entries also save on administration expenses and/or customs brokerage fees.

- **Improved compliance, inventory tracking, and quality control** - by bringing goods into an FTZ warehouse, controlled by the company user, they may better identify and classify goods at the warehouse as opposed to at the port at a Customs control location.

- **Indefinite storage** – a company can hold its goods indefinitely in an FTZ until a port opens, or if there are quotas on a good, until they can be entered into U.S. Commerce without falling under quota restrictions.

- **Waived customs duties on zone-to-zone transfers** – an FTZ can be used to manage transshipping operations, saving money on manufacturing processing fees. While most companies are focused on using FTZ's for exports, FTZ's can also be used to take advantage of crossdocking and transferring goods from one FTZ to another without paying Customs duties.

In summary, 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

[23] As referenced and cited from the report prepared by HNTB Corporation *The Mountain Division Feasibility Study: Potential Uses and Economic Benefits-Summary Report* (dated March 2022).

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.

C. 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 Maine economy. Or put another way, a measure of how the initial investment(s) in infrastructure/construction and the associated ongoing maintenance 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 and rail use(s).

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 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 9 presents the estimated initial investment or costs of infrastructure/construction for each of the four (4) interim trail use options under consideration. The total[24] impacts regarding

[24] Total equates to the sum of the direct, indirect and induced impacts – rounded to $millions.

employment, labor income, Value Added and output for each alternative 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 Maine economy as a result of the initial investment.

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

Table 9 – Summary Comparisons of IMPLAN – Infrastructure/Construction Impacts - Lower Road Rail Corridor

Summary Comparisons - IMPLAN (total and rounded to $millions) Infrastructure / Construction Costs					Initial Costs
Type of Use(s)	**Employment**	**Labor Income**	**Value Added**	**Output**	
Interim Trail (stonedust/gravel)	388	$22.06	$29.61	$64.43	$34.20
Interim Trail (paved)	487	$27.67	$37.14	$80.82	$42.90
Rail w/ Trail (stonedust/gravel)	1,660	$94.36	$126.66	$275.62	$146.30
Rail w/ Trail (paved)	1,722	$97.90	$131.42	$285.98	$151.80

Source: IMPLAN, VHB and RKG (2023)

Note - Rail at 33.50-miles and Trail at 28.75-miles

Note - totals reflect sum of direct, indirect and induced

Table 10 presents the estimated ongoing and annual costs associated with maintenance for each of the four (4) interim trail use options under consideration. The total[25] 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. 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 Maine economy as a result of the initial investment (costs).

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

Table 10 – Summary Comparisons of IMPLAN – Ongoing/Annual Maintenance - Lower Road Rail Corridor

Summary Comparisons - IMPLAN (total and rounded to $millions) Ongoing and Annual Maintenance Costs					Initial Costs
Type of Use(s)	**Employment**	**Labor Income**	**Value Added**	**Output**	
Interim Trail (stonedust/gravel)	1.13	$0.06	$0.09	$0.23	$0.12
Interim Trail (paved)	1.01	$0.06	$0.08	$0.20	$0.11
Rail w/ Trail (stonedust/gravel)	1.13	$0.06	$0.09	$0.23	$0.12
Rail w/ Trail (paved)	1.01	$0.06	$0.08	$0.20	$0.11

Source: IMPLAN, VHB and RKG (2023)

Note - Rail at 33.50-miles and Trail at 28.75-miles

Note - totals reflect sum of direct, indirect and induced

Note - employment impacts not rounded to whole number

[25] *Ibid.*

Table 11 presents the IMPLAN modeling results from the estimated annual spending of trail users, ranging from a low of $1.7M to a high of $2.6M (annually for both estimates).[26] Again, the metric of note is the Value Added row which represents the estimated return to the 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 11 – IMPLAN Modeling – Lower Road Rail Corridor – Trail User Spending

Lower Road Rail Corridor - Annual User Spending	Factor	IMPLAN Modeling	
		Low Estimate	High Estimate
Annual Users		63,750	96,000
Out-of-Town Users	23%	14,663	22,080
IMPLAN Modeling Results		**Low Estimate**	**High Estimate**
Direct Labor Income		$546,934	$823,615
Indirect Labor Income		$179,860	$270,848
Induced Labor Income		$205,489	$309,441
Direct Value Added		$890,490	$1,340,974
Indirect Value Added		$292,050	$439,792
Induced Value Added		$382,049	$575,320
Direct Output		$1,473,842	$2,219,433
Indirect Output		$553,234	$833,104
Induced Output		$642,614	$967,699
Direct Employment		16	25
Indirect Employment		3	5
Induced Employment		4	6

Source: IMPLAN and RKG (2023)

Snowmobile Impact – RKG notes that the Kennebec River Rail Trail does not permit motorized uses, and it is assumed that this will also apply to any trail options along the remainder of the Lower Road Rail Corridor. Nonetheless, RKG expects that the expenditures associated with snowmobilers is often higher when compared to non-snowmobile trail users.[27] Part of this discrepancy may be due to snowmobiler party expenditures for equipment, clothing and gear, insurance, club memberships and state license fees, where applicable. If any of the Lower Road Rail Corridor were open to motorized use (such as snowmobiling) the estimated financial impacts would likely increase.

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

[27] For example, the average snowmobile party spent nearly $90 more than the average non-snowmobiler party, as noted in *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).

IMPLAN Modeling – Lower Road Rail Corridor Upgrade for Possible Future Rail Use

Table 12 presents the estimated initial investment or costs of infrastructure for each of the two (2) options for upgrading the state-owned inactive rail corridor for possible restoration of rail service. The total[28] impacts regarding employment, labor income, Value Added and output for each alternative are presented and then contrasted against the initial investment (or costs) as depicted in the last column. For example, the initial investment (infrastructure/capital costs) of passenger rail, at $363M[29], ripples through the Maine economy with a total Value Added impact of $314.3M, labor income of $234.1M, and translating into 4,118 jobs.

Note these are one-time impacts as associated with the capital costs for infrastructure investment.

Table 12 – Summary Comparisons of IMPLAN – Lower Road Rail Corridor – Construction ($millions)

Summary Comparisons - IMPLAN (total and rounded to $millions) Infrastructure / Construction Costs - Rail Upgrade					Initial Costs
Type of Use(s)	**Employment**	**Labor Income**	**Value Added**	**Output**	
Passenger Rail	4,118	$234.11	$314.27	$683.87	$363.00
Freight Rail	624	$35.47	$47.62	$103.62	$55.00

Source: IMPLAN, VHB and RKG (2023)

Note - Rail at 33.50-miles

Note - totals reflect sum of direct, indirect and induced

Table 13 presents the estimated ongoing and annual costs associated with maintenance costs for each of the two (2) options of upgrading the Lower Road Rail Corridor for a potential future use as either a Passenger Rail line or a Freight Rail line. The total[30] 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.

For example, the annual and ongoing maintenance costs of $3.0M[31] for Passenger Rail, ripples through the Maine economy with a total Value Added impact of $2.3M, labor income of $1.6M and translating into 28 jobs.

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

Table 13 – Summary Comparisons of IMPLAN Modeling – Lower Road Rail Corridor ($millions)

Summary Comparisons - IMPLAN (total and rounded to $millions) Annual and Ongoing Maintenance Costs - Rail Upgrade					Initial Costs
Type of Use(s)	**Employment**	**Labor Income**	**Value Added**	**Output**	
Passenger Rail	28	$1.62	$2.34	$5.67	$3.02
Freight Rail	26	$1.47	$2.13	$5.16	$2.75

Source: IMPLAN, VHB and RKG (2023)

Note - Rail at 33.50-miles

Note - totals reflect sum of direct, indirect and induced

[28] Total equates to the sum of the direct, indirect and induced impacts.

[29] These estimated costs are in total and are presented irrespective of the potential source of the funds.

[30] Total equates to the sum of the direct, indirect and induced impacts.

[31] These estimated costs are in total and are presented irrespective of the potential source of the funds.

Appendix A – Interim Trail Use

A. Existing Conditions

This chapter presents RKG's review of the selected metrics associated with the Lower Road Rail Corridor, traversing from Augusta to Brunswick, approximately 33.5-miles[32] and reflecting a one-half mile radius from the centerline of the Corridor (refer to Figure 1).

Population

The estimated 2022 population of the Lower Road Rail Corridor is 18,676 persons and is projected to increase 0.3% by 2027 to 18,732 persons (Table 14). 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 Lower Road Rail Corridor, the population in these age cohorts is estimated at 8,940 persons in 2022 (47.9% of the total Corridor population). This is projected to increase 1.6% by 2027 and total 9,087 (or 48.5% of the Corridor population). While this overall projected growth factor for the target age cohorts may be considered nominal, it nonetheless exceeds the projected growth in the total Corridor population (at 0.3%) and is just under 50% of the total Corridor population in both 2022 and 2027.[33]

RKG notes that this is not to imply that the users of the Lower Road 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.

Table 14 – Population within the Lower Road Rail Corridor

Lower Road Rail Corridor - Population by Age Cohort	2022	2027	Percent Change
Total Population	**18,676**	**18,732**	**0.3%**
19 and under	3,796	3,723	-1.9%
20 to 44 years	5,940	5,922	-0.3%
45 to 54 years	2,206	2,189	-0.8%
55 to 64 years	2,641	2,417	-8.5%
65 and older	4,093	4,481	9.5%
Target Cohorts	**8,940**	**9,087**	**1.6%**
as a percent of Total	**47.9%**	**48.5%**	

Source: U.S. Census Bureau, Esri and RKG (2023)

[32] Or from the State-owned rail corridor known as the Lower Road from Rockland Junction in Brunswick (immediately east of the Federal Street at-grade crossing) to the east side of the railroad bridge over the Kennebec River in Augusta.

[33] As a matter of note, in 2022, the median age of the Corridor population is 43.2 years and is projected to increase by 1.4% by 2027 to 43.8 years. For the multi-county region, the 2022 median age is 44.9 years and is projected to be 45.5 years in 2027 (an 0.6% increase).

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. The educational attainment of the population (25 and older) within the Lower Road Rail Corridor is generally high with 44.1% (Table 15) of the population with college+ degrees, further indicating a strong base of potential users of the Lower Road Rail Corridor.

RKG notes that this is not to imply that the users of the Lower Road 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 15 – Education Attainment – Lower Road Rail Corridor

Lower Road Rail Corridor - Educational Attainment	2016-2020 (1)	% of 25+ Population
Total Population (25 and older)	**12,474**	**44.1%**
Undergraduate degree	3,704	29.7%
Masters degree	1,220	9.8%
Professional and Doctorate degree	574	4.6%

Source: U.S. Census Bureau, Esri, ACS and RKG (2023)

(1) American Community Survey (ACS) data

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 Lower Road Rail Corridor, the percent of households with incomes exceeding $61,000 accounted for approximately 44.5% of all households in 2022, or 3,690 out of 8,288. This is projected to grow to a 49.5% representation by 2027, or 4,138 out of a total of 8,361 households. The overall projected growth in these target median household income sectors is 12.1% (or 448 households) which exceeds the total projected household growth of 0.9% (or 73 households).

All of the projected growth in the Corridor is among households with median household incomes exceeding $75,000 (refer to Table 16). Overall, the median household income in the Corridor is projected to increase from $53,695 in 2022 to $59,425 in 2027, accounting for a 10.7% increase or $5,730.[34]

RKG notes that this is not to imply that the users of the Lower Road 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.

[34] As a matter of note, for the multi-county region, the median household income is projected to increase by 16.0% or $12,105 – from $75,720 in 2022 to $87,825 in 2027.

Table 16 – Median Household Income for the Lower Road Rail Corridor

Lower Road Rail Corridor - Median Household Income	2022	2027	Percent Change
Total Households	**8,288**	**8,361**	**0.9%**
under $50,000	3,820	3,460	-9.4%
$50,000 to $75,000	1,556	1,527	-1.9%
$75,000 to $100,000	1,017	1,143	12.4%
$100,000 and over	1,895	2,231	17.7%
Median Household Income	**$53,695**	**$59,425**	**10.7%**
Target Incomes ($61,000+)	**3,690**	**4,138**	**12.1%**
as a percent of Total	**44.5%**	**49.5%**	

Source: U.S. Census Bureau, Esri and RKG (2023)

B. Fiscal and Economic Impacts

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

Economic Impacts of Interim Trail Usage

Estimates of annual usage (trips) of the Lower Road Rail Corridor provided by VHB[35] range from a low of 63,750 persons to a high of 96,000 persons. The economic impact, or the spending of these annual users, is best reflected by those users that are out-of-state, which prior research suggests is typically about 23% of all trail usage.

Applying this factor results in an annual estimate of 14,663 users (low) to as many as 22,080 users (high). RKG calculated estimated annual spending for these out-of-state users, for specific activities.[36] Under these inputs and assumptions, the estimated average annual spending among out-of-state Lower Road Rail Corridor users ranges from $1.7M to $2.6M. For both the low and high user estimate, approximately one-third of the purchases are for what may be consumer goods such as retail and food related (refer to Table 17).[37]

[35] Estimates as offered by VHB and referencing the MaineDOT Statewide Active Transportation Plan (dated 15 November 2021).

[36] **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*.

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

Table 17 – Estimated Annual Spending with Distribution - Lower Road Rail Corridor

Lower Road Rail Corridor - Annual User Spending	Factor	Low Estimate	High Estimate	% by Category
Annual Users		63,750	96,000	na
Out-of-Town Users	23%	14,663	22,080	na
Annual Spending	**Average $/per**	**Low**	**High**	**Low/High**
Lodging	$48	$703,800	$1,059,840	40.7%
Food	$25	$366,563	$552,000	21.2%
Retail	$14	$205,275	$309,120	11.9%
Transportation	$14	$205,275	$309,120	11.9%
Other Recreation	$6	$87,975	$132,480	5.1%
Equipment	$11	$161,288	$242,880	9.3%
TOTAL	**$118**	**$1,730,175**	**$2,605,440**	**na**
Estimated Spending/1,000 Users	**na**	**$1,730**	**$2,605**	**na**

Source: RKG (2023)

Interim Trail Activity and Health Related Benefits

The development of the Lower Road 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 or insufficiently active, results in a reduction in health-related expenditures which could become available for other spending. As noted previously the target cohort population (2027) of the Lower Road Rail Corridor is 9,087 persons with approximately 2,254 persons considered inactive or insufficiently active.[38]

This analysis conservatively assumes that access to the Lower Road Rail Corridor trail may result in a 5% increase in activity among the 2,254 persons considered as inactive or insufficiently active or a total of 113 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 113 persons considered as inactive or insufficiently active could render an annual total health care savings of $287,331 (refer to Table 18).

[38] 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.

Table 18 – Estimated Annual Health Care Savings/Benefits

Lower Road Rail Corridor - Health Impacts/ Benefits	Inactive (1)	Insufficiently Active (2)
2027 Target Population	**9,087**	**9,087**
At 24.8%	2,254	2,254
More Active - 5.0%	113	113
"Inactive" $/Capita	$1,704	
"Insufficiently Active" $/Capita		$846
Potential Health Benefit	**$192,005**	**$95,326**

Source: U.S. Census Bureau, Esri, ACS, CDC and RKG (2023)

(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

RKG utilized the Lower Road Rail Corridor (refer to Figure 1) to extract parcel data for the single-family residential properties within the Corridor. These were then linked to parcel assessment and valuation data, as offered by the State of Maine and Vision Government Solutions[39] to develop estimates of the existing single-family residential property values. Other studies, and outreach to Augusta residential real estate professionals active in the market and aware of the Kennebec River Rail Trail, suggest that proximity to a trail may be a neutral impact on values and selling prices.

As such, RKG applied a conservative 2.5% to 5% estimated increase in the average selling price (per unit) to abutting single-family residential. This translates to an average potential value increase of $7,153 to $14,307 per unit (refer to Table 19).

It is RKG's assessment that any potential increase in property values, as a result of proximity to an interim trail use, would most likely be realized as a residential property were to come on the market as a for sale property, with such proximity cited as "locational amenity" of the property. RKG does not necessarily consider that local assessing departments would unilaterally increase the property's estimated valuation without some market basis such as comparable sales activity. RKG further notes, as indicated in other research, that it is possible that the estimated impact on residential property values could vary with distance from the trail proper. Other influencing factors to consider, although unmeasured in this analysis, include age of the structure (year built), overall SF of the residence, number of bedrooms/bathrooms and other unit characteristics.

To provide a sense of the single-family residential sales activity among the communities in the Lower Road Rail Corridor, RKG culled reported sales data (as offered by Redfin) for each community (excepting Woolwich where data was unavailable from the source cited) over the 2018 to 2023 (January) time period (Table 19) noting:

[39] This is an independent service that provides tax parcel and assessment records to the general public – not all communities use this service and as a result some data is incomplete for the communities of the Lower Road Rail Corridor.

- There was a total of 3,784 sales reported for single-family residential units, ranging from 91 units in Dresden to as many as 1,049 reported for Augusta.

- Total sales (dollar values) were reported at nearly $1.08B ranging from $25.6M for Dresden to as much as $396M in Brunswick.

- On average, where data was reported, the selling price of the 3,784 units was reported as $286,132. This ranged from an average of $219,760/unit in Gardiner to as much as $406,122/unit in Brunswick.

- These single-family residential units represented nearly 7M SF in total and averaged 1,845 SF/unit for the entire reported inventory.

Table 19 – Single-Family Residential Sales – Lower Road Rail Corridor

Summary Residential Sales by Location - Lower Road Rail Corridor Single Family Residential (2018 through January 2023)							
Location	**# of Units**	**Sales Price**	**Average / Unit**	**SF**	**$ / SF**	**at 2.5%**	**at 5%**
Augusta	1,049	$210,693,326	$200,852	1,771,821	$118.91	$5,021	$10,043
Hallowell	158	$42,871,752	$271,340	323,691	$158.71	$6,784	$13,567
Farmingdale	156	$35,238,655	$225,889	270,123	$130.45	$5,647	$11,294
Gardiner	389	$85,486,520	$219,760	706,456	$121.01	$5,494	$10,988
Pittston	161	$40,375,776	$250,781	293,266	$137.68	$6,270	$12,539
Richmond	217	$50,960,256	$234,840	370,602	$137.51	$5,871	$11,742
Dresden	91	$25,647,772	$281,844	151,176	$169.66	$7,046	$14,092
Woolwich **(1)**							
Bowdoinham	134	$42,259,502	$315,369	247,996	$170.40	$7,884	$15,768
Topsham	454	$153,220,002	$337,489	866,622	$176.80	$8,437	$16,874
Brunswick	975	$395,969,291	$406,122	1,978,931	$200.09	$10,153	$20,306
Totals or Averages	**3,784**	**$1,082,722,852**	***$286,132***	**6,980,684**	***$155.10***	**$7,153**	**$14,307**

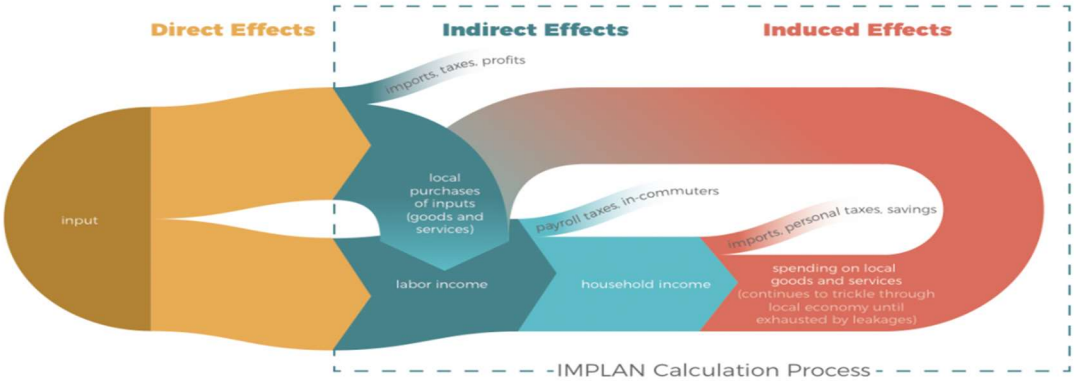
Source: VHB, Redfin and RKG (2023)

(1) - no data reported

Appendix B – IMPLAN Modeling

IMPLAN is a widely accepted and 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. Using this information, IMPLAN models the way a dollar injected into one sector of the economy (such as construction) 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



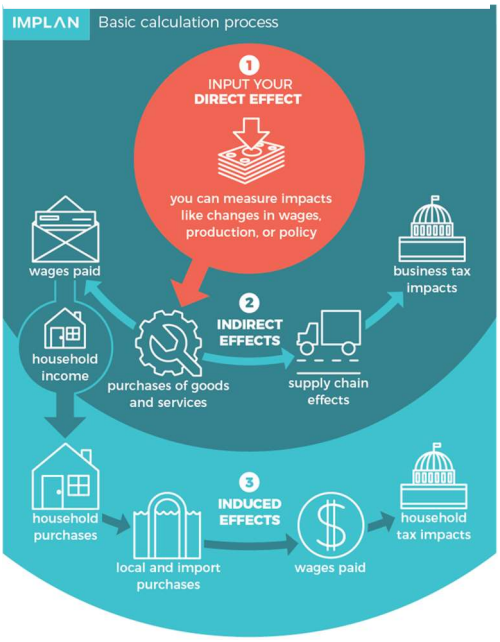
IMPLAN combines this data to generate a series of multipliers for the local economy. The multiplier measures the amount of total economic activity that results from an industry (or household) spending an additional dollar in the local economy. Based on these multipliers, IMPLAN generates a series of 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.

Figure 6 – IMPLAN Calculation Process



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, and 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. If, for example, the initial freight rail service costs totaling $22.2M were comprised in part of State of Maine funding then those dollars are already in the Maine economy and may not result in the value added estimates. Put another way, if the $22.2Mn included $10M in State funding then the IMPLAN model should reflect an initial investment of $12.2M – however, in this analysis, since a distinction was not provided for source of funds, the entire investment was the input for the IMPLAN modeling.

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 Lower Road Rail Corridor, noting the following:

- Upgrade for possible rail use (Passenger and Freight) at a later date – The analysis applies to the entire length of the Lower Road Rail Corridor of 33.5-miles. Total costs as provided by VHB indicate the following breakdown:
    - Hard costs at 61% of the total costs
    - Contingency costs at 18% of the total costs
    - Design costs at 8% of the total costs
    - Construction administration costs at 13% of the total costs

- Interim Trail – This analysis applies to approximately 28.75-miles of the Lower Road Rail Corridor, effectively excluding the established Kennebec River Rail Trail section.

Costs as offered by VHB include the removal of the track bed and ties and building an interim trial on the rail bed.

For the ongoing and annual maintenance costs, VHB offered the following:

- Passenger Service – at $90,000 per track mile = $3,015,000
- Freight Service – at $82,000 per track mile = $2,747,000
- Interim Trail (stonedust/gravel) – at $3,500 (low) to $5,500 (high) per mile, or $93,900 to $147,400 – in this analysis the midpoint of $120,600 was used for IMPLAN modeling.[40] This is the same metric used for Rail with Trail (stonedust/gravel path).
- Interim Trail (paved) – at $3,000 (low) to $5,00 (high) per mile, or $80,400 to $134,000 – in this analysis the midpoint of $107,200 was used for IMPLAN modeling.[41] This is the same metric used for Rail with Trail (paved path).

The following tables summarize the IMPLAN "runs" for each of the potential type of use(s). All output is reported in constant 2022 dollars. For reference purposes, the IMPLAN modeling for 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

[40] Per VHB, these costs would be the same with or without rail.
[41] *Ibid.*

Upgrade for Potential Passenger Rail Services – As presented in Table 20, the infrastructure investment of $363M (direct) results in employment of 2,389 jobs (direct) with labor income of $133M (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $135.5M. The direct impacts also result in both indirect and induced impacts, totaling $320.9M (output) and then translates to 1,729 in employment with labor income of $101.1M. The indirect and induced Value Added to the Maine economy is $178.8M.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $314.7M.

Table 20 – IMPLAN Modeling – Upgrade for Potential Passenger Rail Service – Lower Road Rail Corridor

Passenger Rail Upgrade - Lower Road Rail Corridor Infrastructure / Construction Costs - $363,000,000				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	2,389	$132,991,760	$135,500,351	$363,000,000
2 - Indirect	774	$49,296,013	$82,383,951	$158,770,419
3 - Induced	955	$51,826,898	$96,388,431	$162,099,050
Total	**4,118**	**$234,114,671**	**$314,272,732**	**$683,869,470**

Source: IMPLAN, VHB and RKG (2023)

Note - applies to entire 33.50-mile Corridor

Costs - 61.0% for hard costs; 18.0% for contingency, 8.0% for design and 13.0% construction administration

The ongoing and annual maintenance costs (Table 21) of $3M (direct output) results in employment of 14 jobs (direct) with labor income of $806,262 (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $853,143. The direct impacts also result in both indirect and induced impacts, totaling $2.6M (output) and then translates to 15 in employment with labor income of $810,139. The indirect and induced Value Added to the Maine economy is $1.5M.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $2.3M.

Table 21 – IMPLAN – Upgrade for Passenger Rail Service – Lower Road Rail Corridor – O&M

Passenger Rail Upgrade - Lower Road Rail Corridor Ongoing and Annual Maintenance Costs - $3,015,000				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	14	$806,262	$853,143	$3,015,000
2 - Indirect	8	$452,453	$818,344	$1,534,648
3 - Induced	7	$357,686	$665,214	$1,118,722
Total	**29**	**$1,616,400**	**$2,336,701**	**$5,668,370**

Source: IMPLAN, VHB and RKG (2023)

Note - applies to entire 33.50-mile Corridor

Upgrade for Potential Freight Rail Services – As presented in Table 22, the infrastructure investment of $55M (direct) results in employment of 362 jobs (direct) with labor income of $20.2M (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $20.5M. The direct impacts also result in both indirect and induced impacts, totaling $48.6M (output) and then translates to 262 in employment with labor income of $15.3M. The indirect and induced Value Added to the Maine economy is $27.1M.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $47.6M.

Table 22 – IMPLAN Modeling – Upgrade for Potential Freight Rail Service – Lower Road Rail Corridor

Freight Rail Upgrade - Lower Road Rail Corridor Infrastructure / Construction Costs - $55,000,000				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	362	$20,150,267	$20,530,356	$55,000,000
2 - Indirect	117	$7,469,093	$12,482,417	$24,056,124
3 - Induced	145	$7,852,560	$14,604,308	$24,560,462
Total	**624**	**$35,471,920**	**$47,617,081**	**$103,616,586**

Source: IMPLAN, VHB and RKG (2023)

Note - applies to entire 33.50-mile Corridor

Costs - 61.0% for hard costs; 18.0% for contingency, 8.0% for design and 13.0% construction administration

The ongoing and annual maintenance costs (Table 23) of $2.8M (direct) results in employment of 13 jobs (direct) with labor income of $734,594 (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $777,308. The direct impacts also result in both indirect and induced impacts, totaling $2.4M (output) and then translates to 13 in employment with labor income of $738,126. The indirect and induced Value Added to the Maine economy is $1.4M.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $2.1M.

Table 23 – IMPLAN – Upgrade for Freight Rail Service – Lower Road Rail Corridor – O&M

Freight Rail Upgrade - Lower Road Rail Corridor Ongoing and Annual Maintenance Costs - $2,747,000				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	13	$734,594	$777,308	$2,747,000
2 - Indirect	7	$412,235	$745,603	$1,398,235
3 - Induced	6	$325,891	$606,084	$1,019,280
Total	**26**	**$1,472,720**	**$2,128,994**	**$5,164,515**

Source: IMPLAN, VHB and RKG (2023)

Note - applies to entire 33.50-mile Corridor

While it was not in RKG's scope of services for this analysis, Freight Rail utilization coupled with the potential cost and other benefits of a Foreign-Trade Zone (FTZ) could result in additional fiscal and economic benefits assuming that this fosters an increased demand for the development of proximate warehousing and/or distribution facilities.

Interim Trail with a stonedust/gravel path – As presented in Table 24, the initial infrastructure investment of $34.2M (direct) results in employment of 225 jobs (direct) with labor income of $12.5M (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $12.8M. The direct impacts also result in both indirect and induced impacts, totaling $30.2M (output) and then translates to 163 in employment with labor income of $9.5M. The indirect and induced Value Added to the Maine economy is $16.8M.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $29.6M.

Table 24 – IMPLAN – Interim Trail (stonedust/gravel) – Lower Road Rail Corridor - Construction

Interim Trail (stonedust/gravel path) - Lower Road Rail Corridor Infrastructure / Construction Costs - $34,200,000				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	225	$12,529,802	$12,766,149	$34,200,000
2 - Indirect	73	$4,644,418	$7,761,794	$14,958,535
3 - Induced	90	$4,882,865	$9,081,224	$15,272,142
Total	**388**	**$22,057,085**	**$29,609,167**	**$64,430,677**

Source: IMPLAN, VHB and RKG (2023)

Note - applies to 28.75-miles of the Corridor

Costs - include the removal of the track and ties and building an Interim Trail on the rail bed

The ongoing and annual maintenance costs (Table 25) averages $120,600 (direct) and results in employment of 0.56 jobs (direct) with labor income of $32,250 (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $34,126. The direct impacts also result in both indirect and induced impacts, totaling $106,135 (output) and then translates to 0.57 in employment with labor income of $32,406. The indirect and induced Value Added to the Maine economy is $59,342.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $93,468.

Table 25 – IMPLAN – Interim Trail (stonedust/gravel) – Lower Road Rail Corridor – O&M

Interim Trail (stonedust/gravel path) - Lower Road Rail Corridor Ongoing and Annual Maintenance Costs - $120,600 (1)				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	0.56	$32,250	$34,126	$120,600
2 - Indirect	0.31	$18,098	$32,734	$61,386
3 - Induced	0.26	$14,307	$26,609	$44,749
Total	**1.13**	**$64,656**	**$93,468**	**$226,735**

Source: IMPLAN, VHB and RKG (2023)

Note - applies to 28.75-miles of the Corridor

(1) - assumes midpoint of the range $93,800 to $147,400

Interim Trail with a paved path – As presented in Table 26, the infrastructure investment of $42.9M (direct) results in employment of 282 jobs (direct) with labor income of $15.7M (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $16.M. The direct impacts also result in both indirect and induced impacts, totaling $37.9M (output) and then translate to 204 in employment with labor income of $12M. The indirect and induced Value Added to the Maine economy is $21.1M.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $37.4M.

Table 26 – IMPLAN – Interim Trail (paved) – Lower Road Rail Corridor - Construction

Interim Trail (paved path) - Lower Road Rail Corridor Infrastructure / Construction Costs - $42,900,000				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	282	$15,717,208	$16,013,678	$42,900,000
2 - Indirect	91	$5,825,892	$9,736,285	$18,763,777
3 - Induced	113	$6,124,997	$11,391,360	$19,157,161
Total	**486**	**$27,668,098**	**$37,141,323**	**$80,820,937**

Source: IMPLAN, VHB and RKG (2023)

Note - applies to 28.75-miles of the Corridor

Costs - include the removal of the track and ties and building an Interim Trail on the rail bed

The ongoing and annual maintenance costs (Table 27) averages $107,200 (direct) and results in employment of 0.50 jobs (direct) with labor income of $28,667 (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $30,334. The direct impacts also result in both indirect and induced impacts, totaling $94,342 (output) and then translates to 0.50 in employment with labor income of $28,805. The indirect and induced Value Added to the Maine economy is $52,749.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $83,083.

Table 27 – IMPLAN – Interim Trail (paved) – Lower Road Rail Corridor – O&M

Interim Trail (paved path) - Lower Road Rail Corridor Omgoing and Annual Maintenance Costs - $107,200 (1)				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	0.50	$28,667	$30,334	$107,200
2 - Indirect	0.27	$16,087	$29,097	$54,565
3 - Induced	0.23	$12,718	$23,652	$39,777
Total	**1.00**	**$57,472**	**$83,083**	**$201,542**

Source: IMPLAN, VHB and RKG (2023)

Note - applies to 28.75-miles of the Corridor

(1) - assumes midpoint of the range $80,400 to $134,000

Rail with Trail with a stonedust/gravel path – As presented in Table 28, the infrastructure investment of $146.3M (direct) results in employment of 963 jobs (direct) with labor income of $53.6M (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $54.6M. The direct impacts also result in both indirect and induced impacts, totaling $129.3M (output) and then translates to 697 in employment with labor income of $40.8M. The indirect and induced Value Added to the Maine economy is $72M.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $126.7M.

Table 28 – IMPLAN – Rail with Trail (stonedust/gravel) – Lower Road Rail Corridor - Construction

Rail with Trail (stonedust/gravel path) - Lower Road Rail Corridor Infrastructure / Construction Costs - $146,300,000				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	963	$53,599,709	$54,610,747	$146,300,000
2 - Indirect	312	$19,867,787	$33,203,229	$63,989,290
3 - Induced	385	$20,887,811	$38,847,459	$65,330,829
Total	**1,660**	**$94,355,307**	**$126,661,435**	**$275,620,120**

Source: IMPLAN, VHB and RKG (2023)

Note - Rail at 33.50-miles and Trail at 28.75-miles

The ongoing and annual maintenance costs (Table 29) averages $120,600 (direct) and results in employment of 0.56 jobs (direct) with labor income of $32,250 (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $34,126. The direct impacts also result in both indirect and induced impacts, totaling $106,135 (output) and then translates to 0.57 in employment with labor income of $32,406. The indirect and induced Value Added to the Maine economy is $59,342.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $93,468.

Table 29 – Rail with Trail (stonedust/gravel) – Lower Road Rail Corridor – O&M

Rail with Trail (stonedust/gravel path) - Lower Road Rail Corridor Ongoing and Annual Maintenance Costs - $120,600 (1)				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	0.56	$32,250	$34,126	$120,600
2 - Indirect	0.31	$18,098	$32,734	$61,386
3 - Induced	0.26	$14,307	$26,609	$44,749
Total	**1.13**	**$64,656**	**$93,468**	**$226,735**

Source: IMPLAN, VHB and RKG (2023)

Note - Rail at 33.50-miles and Trail at 28.75-miles

(1) - assumes midpoint of the range $93,800 to $147,400

Rail with Trail with a paved path – As presented in Table 30, the infrastructure investment of $151.8M (direct) results in employment of 999 jobs (direct) with labor income of $55.6M (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $56.7M. The direct impacts also result in both indirect and induced impacts, totaling $134.2M (output) and then translates to 723 in employment with labor income of $42.3M. The indirect and induced Value Added to the Maine economy is $74.8M.

In total (direct, indirect and induced) the Value Added to the Maine economy is $131.4M.

Table 30 – IMPLAN – Rail with Trail (paved) – Lower Road Rail Corridor - Construction

Rail with Trail (paved path) - Lower Road Rail Corridor Infrastructure / Construction Costs - $151,800,000				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	999	$55,614,736	$56,663,783	$151,800,000
2 - Indirect	324	$20,614,696	$34,451,470	$66,394,903
3 - Induced	399	$21,673,067	$40,307,889	$67,786,876
Total	**1,722**	**$97,902,499**	**$131,423,143**	**$285,981,778**

Source: IMPLAN, VHB and RKG (2023)

Note - Rail at 33.50-miles and Trail at 28.75-miles

The ongoing and annual maintenance costs (Table 31) averages $107,200 (direct) and results in employment of 0.50 jobs (direct) with labor income of $28,667 (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $30,334. The direct impacts also result in both indirect and induced impacts, totaling $94,342 (output) and then translates to 0.50 in employment with labor income of $28,805. The indirect and induced Value Added to the Maine economy is $52,749.

In total (direct, indirect and induced) the estimated Value Added to the Maine economy is $83,083.

Table 31 – Rail with Trail (paved) – Lower Road Rail Corridor – O&M

Rail with Trail (paved path) - Lower Road Rail Corridor Ongoing and Annual Maintenance Costs - $107,200 (1)				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	0.50	$28,667	$30,334	$107,200
2 - Indirect	0.27	$16,087	$29,097	$54,565
3 - Induced	0.23	$12,718	$23,652	$39,777
Total	**1.00**	**$57,472**	**$83,083**	**$201,542**

Source: IMPLAN, VHB and RKG (2023)

Note - Rail at 33.50-miles and Trail at 28.75-miles

(1) - assumes midpoint of the range $80,400 to $134,000

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 5) ranging from an annual estimate of $1.7M to as much as $2.6M.[42] The same interpretation of this data, as has been described previously, remains. As before, the focus of the information shown in Table 32 is the Value Added metrics.

The total Value Added impacts to the Maine economy from this increase in consumer spending.[43]

Table 32 – IMPLAN for Annual Trail User Spending – Lower Road Rail Corridor

Summary Comparison - IMPLAN Modeling - Lower Road Rail Corridor				
Low Estimate of Annual Consumer Spending of Trail Users = $1,730,175				
Category	**Employment**	**Labor Income**	**Value Added**	**Output**
Lodging	8.91	$435,397	$743,110	$1,258,019
Food	5.65	$239,449	$390,306	$663,849
Retail	1.11	$46,589	$73,443	$125,759
Transportation	5.35	$122,580	$218,837	$373,366
Other Recreation	1.73	$63,379	$96,047	$165,879
Equipment	0.38	$24,889	$42,847	$82,819
Totals - Low	**23.13**	**$932,282**	**$1,564,590**	**$2,669,690**
High Estimate of Annual Consumer Spending of Trail Users = $2,605,440				
Category	**Employment**	**Labor Income**	**Value Added**	**Output**
Lodging	13.41	$655,679	$1,119,073	$1,894,491
Food	8.51	$360,581	$587,755	$999,678
Retail	1.67	$70,157	$110,595	$189,377
Transportation	8.05	$184,590	$329,540	$562,241
Other Recreation	2.61	$95,417	$144,600	$249,733
Equipment	0.57	$37,480	$64,523	$124,717
Totals - High	**34.82**	**$1,403,904**	**$2,356,087**	**$4,020,237**

Source: IMPLAN, VHB and RKG (2023)

Low Estimate of Annual Consumer Spending - $1,730,175 – The estimated spending of approximately $1.73M results in total output (direct, indirect and induced) of $2.7M, translating to $932,282 in labor income and 24 jobs (rounded up). The greatest impact(s) are estimated to be derived from expenditures in lodging and then followed by food and retail purchases. 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 $1.6M to the Maine economy.

High Estimate of Annual Consumer Spending - $2,605,440 – The estimated spending of approximately $2.61M results in total output (direct, indirect and induced) of $4M, translating to $1.4M in labor income and 35 jobs (rounded up). As before, the greatest impact(s) are in lodging and then food and retail purchases. Also, whether or not the estimated impacts would

[42] 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, and other recreation related outdoor activities as would be possible and supported by an interim trail.

[43] These metrics reflect consumer spending and do not include any estimates of potential interim trail employee or rail employee spending.

result in new development (SF) is uncertain. The total value added estimate is $2.4M to the 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

IMPLAN Modeling – On-Board Passenger Rail Spending

Similar to the analysis regarding the consumer spending activity, as a result of interim trail user spending, the estimated spending of the passengers of a possible use for passenger rail service would also result in direct, indirect and induced impacts throughout the Maine economy (Table 33).

The estimated annual on-board Passenger Rail spending of $112,275 (direct output) results in employment of 1.74 jobs (direct) with labor income of $58,993 (direct). The estimated dollar Value Added to the Maine economy from these direct inputs is $76,047. The direct impacts also result in both indirect and induced impacts, totaling $95,490 (output) and then translates to 0.59 in employment with labor income of $32,911. The indirect and induced Value Added to the Maine economy is $54,127. Whether or not the estimated impacts would result in additional and new development (SF), such as for retailers or restaurants, is uncertain, but they could positively impact existing establishments.

In total (direct, indirect and induced) the Value Added to the Maine economy is $130,174.

Table 33 – IMPLAN for On-Board Passenger Rail Spending – Lower Road Rail Corridor

IMPLAN Modeling - On-Board Passenger Rail Spending Annual Ridership = 75,190 / Annual Spending = $112,275				
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	1.74	$58,993	$76,047	$112,275
2 - Indirect	0.21	$13,166	$19,396	$36,383
3 - Induced	0.38	$19,746	$34,731	$59,107
Total	**2.33**	**$91,904**	**$130,174**	**$207,765**

Source: IMPLAN, VHB, NNEPRA and RKG (2023)

Note - IMPLAN modeling inputs includes all other food and drinking places which includes airline and transit food services contractors, cafeterias, coffee carts, etc.

Note - reflects estimated 2040 ridership, impacts expressed in FY 2022 dollars, ***not inflation adjusted***

The following Table 34 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 34 - Summary of the Comparative Economic Impacts for the Lower Road Rail Corridor

Lower Road Rail Corridor - Summary Impacts	Input Dollars (1)	IMPLAN Modeling - Value Added			Total Value Added	Wages and Employment	
		Direct $	Indirect $	Induced $		Wages (2)	Employ (3)
Trail User Expenditures (4)	**$2,167,808**	$1,115,732	$365,921	$478,685	**$1,960,338**	$1,168,093	29
On-Board Passenger Spending (n = 75,190) (5)	**$112,275**	$76,047	$19,396	$34,731	**$130,174**	$91,904	2.33
Infrastructure/Construction Impacts (one-time)							
Interim Trail (stonedust/gravel)	**$34,200,000**	$12,766,149	$7,761,794	$9,081,224	**$29,609,167**	$22,057,085	388
Interim Trail (paved)	**$42,900,000**	$16,013,678	$9,736,285	$11,391,360	**$37,141,323**	$27,668,098	486
Rail With Trail (stonedust/gravel)	**$146,300,000**	$54,610,747	$33,203,229	$38,847,459	**$126,661,435**	$94,355,307	1,660
Rail With Trail (paved)	**$151,800,000**	$56,663,783	$34,451,470	$40,307,889	**$131,423,143**	$97,902,499	1,722
Passenger Rail Upgrade	**$363,000,000**	$135,500,351	$82,383,951	$96,388,431	**$314,272,732**	$234,114,671	4,118
Freight Rail Upgrade	**$55,000,000**	$20,530,356	$12,482,417	$14,604,308	**$47,617,081**	$35,471,920	624
Ongoing and Annual Maintenance Impacts							
Interim Trail (stonedust/gravel)	**$120,600**	$34,126	$32,734	$26,609	**$93,468**	$64,656	1.13
Interim Trail (paved)	**$107,200**	$30,334	$29,097	$23,652	**$83,083**	$57,472	1.00
Rail With Trail (stonedust/gravel)	**$120,600**	$34,126	$32,734	$26,609	**$93,468**	$64,656	1.13
Rail With Trail (paved)	**$107,200**	$30,334	$29,097	$23,652	**$83,083**	$57,472	1.00
Passenger Rail Upgrade	**$3,015,000**	$853,143	$818,344	$665,214	**$2,336,701**	$1,616,400	29
Freight Rail Upgrade	**$2,747,000**	$777,308	$745,603	$606,084	**$2,128,994**	$1,472,720	26

Source: IMPLAN and RKG (2023)

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

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

NOTE - per VHB, annual maintenance costs for an interim trail with or without rail are the same

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

(4) - reflects average of low ($1,730,175) and high ($2,605,440)

(5) - reflects average estimated 2040 ridership, impacts expressed in constant FY 2022 dollars

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/HNTBMtnDivFeasibiltyStudyDRAFT202…

- 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.easterntrail.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:[44] 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...

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

- 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

- 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).

- 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