BERLIN SUBDIVISION RAIL CORRIDOR
Demographic & Economic Analysis

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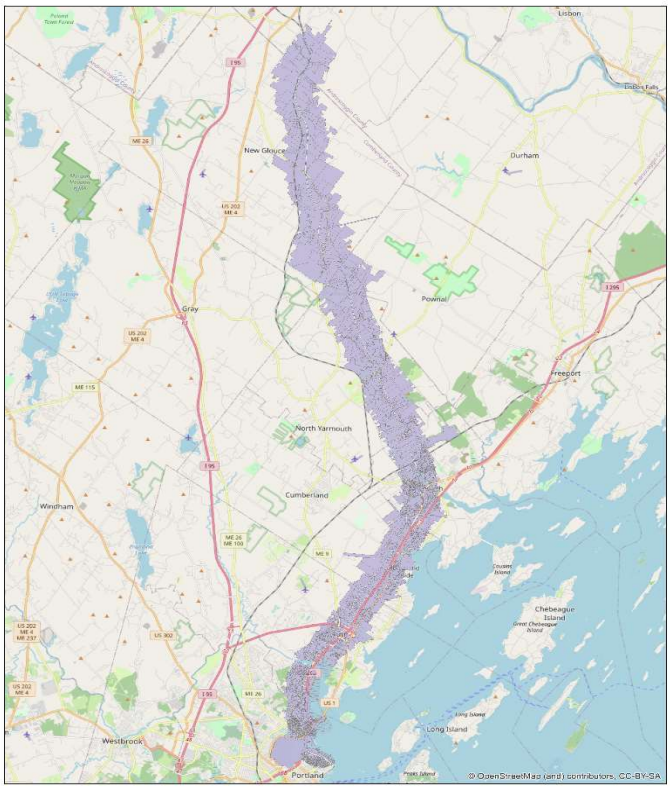
1 - Executive Summary

A. Overview and Purpose

RKG Associates, Inc. (RKG) was retained as a subconsultant by Vanasse Hangen Brustlin, Inc. (VHB), to prepare an assessment of the demographics of potential interim trail[1] users, as well as the economic benefits/impacts of interim trail and/or maintaining/preserving the existing rail corridor for possible restoration of rail uses, for an approximate 26.48-mile corridor of the Berlin Subdivision Rail Corridor in Maine. Figure 1 shows the extent of the Corridor along with an approximate half-mile radius from the centerline of the rail/interim trail, which serves as the study area for this analysis.[2]

Figure 1 – Berlin Subdivision Rail Corridor – Study Area



This analysis offers estimates of potential economic benefits of the interim trail options and for maintaining/preserving the existing rail corridor for possible restoration of rail uses. Both consider the construction-related aspect and ongoing annual maintenance costs[3], as inputs for the IMPLAN modeling, as well as benefits that could accrue from users post-construction.

RKG relied on information provided by VHB, socio-demographic data from Esri (a private sector provider of proprietary demographic data and modeling), IMPLAN econometric modeling software, and several prior studies and analyses on the impacts of rails and trails.

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

[1] **Note** – throughout this report the term trail per the Maine Department of Transportation, refers to an "interim trail" since, in theory, development of the Berlin Subdivision Rail Corridor could include (1) uses as an interim trail until rail, or (2) uses of rail with an interim trail.

[2] The Berlin Subdivision Rail Corridor includes portions of the following communities: Auburn, New Gloucester, Pownal, North Yarmouth, Yarmouth, Cumberland, Falmouth and Portland.

[3] **Note** - these refer specifically to costs, for maintaining the trail and/or rail infrastructure ***only*** and do not include any operation costs for potential rail service.

The approach to this analytical overview includes the following components:

- 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 the IMPLAN econometric model to develop estimates of the direct, indirect, and induced economic impacts associated with interim trail use and/or the maintaining/preserving of the existing rai corridor for possible restoration of rail use - with respect to construction costs (the initial capital investment) and the ongoing annual maintenance costs, of the rail and/or interim trail options (below) and any other resulting economic activity, including the following six (6) alternatives:

    - Interim Trail using existing rail bed (Trail until Rail or "TUR")
        - TUR – Gravel (path)
        - TUR – Paved (path)

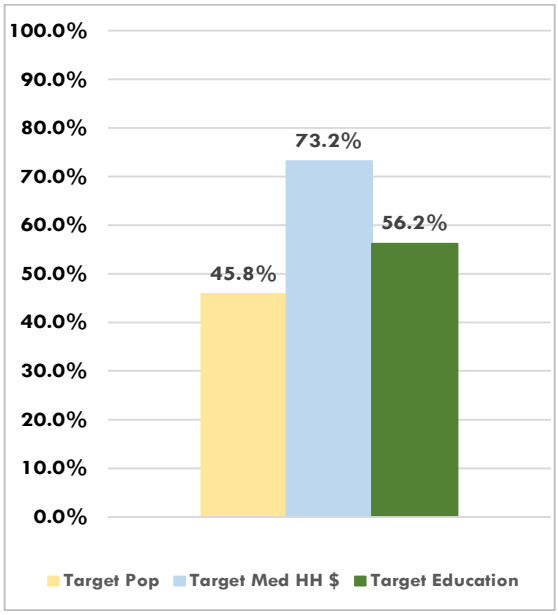
    - Interim Trail adjacent to existing rail bed (Rail with Trail or "RWT")
        - RWT – Gravel (path)
        - RWT – Paved (path)

    - Maintain/preserve existing rail corridor for possible restoration of rail services
        - Potential restoration of freight rail service
        - Potential restoration of passenger rail service

B. Key Findings – Interim Trail Use

This section provides a summary of the key findings of the analysis with respect to estimated impacts as a result of interim trail use for the Berlin Subdivision 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 the Appendix. Prior research and studies[4] have indicated that the potential for utilization of trail amenities is highest among selected sectors of the population exhibiting certain characteristics with respect to age, median household income and level of educational attainment. These are highlighted in Figure 2, for the Berlin Subdivision Rail Corridor and are further discussed in the following summary narratives.

Figure 2 – Berlin Subdivision Rail Corridor – Favored Metrics



Population

Prior research[5] has indicated that trail users, although prevalent across all age cohorts, are most dominant among the cohort aged 45 to 55 (21.0% of users); those aged 56 to 65 (37.0% of users); and in those in the cohort aged 65 and older (27.0% of users).

The population for the Berlin Subdivision Rail Corridor across these same cohorts account for more than 45.0% of the total population in the study area in the year 2022 (7,007 persons) and as projected for the year 2027 (7,031 persons). The total population in 2022 is 15,293 persons and is projected at 15,410 persons for 2027. This indicates a relatively strong, stable baseline of potential users of the Berlin Subdivision Rail Corridor among local residents.

Educational Attainment

Prior research[6] has also indicated that the educational attainment among trail users is high, with a strong correlation between college education and usage, noting that 40.0% of users have an undergraduate degree and 27.0% have a post-graduate degree. The educational attainment of the population (aged 25 and older) within this study area indicates that slightly more than 56.0% of the population has a college degree+, further indicating a strong baseline of potential users of the Berlin Subdivision Rail Corridor among local residents.

Household Income

Akin to population and educational attainment, prior research[7] has noted that trail usage is most prevalent among households with a median household income of $61,000 to $100,000

[4] As noted previously, the reader is directed to the **Appendix** of this report for a listing of other research and studies reviewed and incorporated (where applicable) in this current analysis.
[5] *Ibid.*
[6] *Ibid.*
[7] *Ibid.*

(35.0% of trail users) and those with incomes exceeding $100,000 (33.0% of trail users). For the Berlin Subdivision Rail Corridor, the number of households earning $100,000 or more is projected to increase by 855 households (an increase of 28.4%) – also suggesting a strong baseline of potential users of the Berlin Subdivision Rail Corridor among local residents.

In 2022, the numbers of households in these income brackets account for 4,793 units out of a total 6,798 units (or 73.2%). By 2027 the representation is projected to be 5,221 units out of a total 6,867 units (or 76.0%).

Economic Impacts of Interim Trail Use

Potential users (meaning number of trips) of the Berlin Subdivision Rail Corridor range from 129,750 to 195,000, annually and represent an "in-area" utilization, realizing that if one person utilizes the interim trail five (5) times then that is considered as five (5) trips.

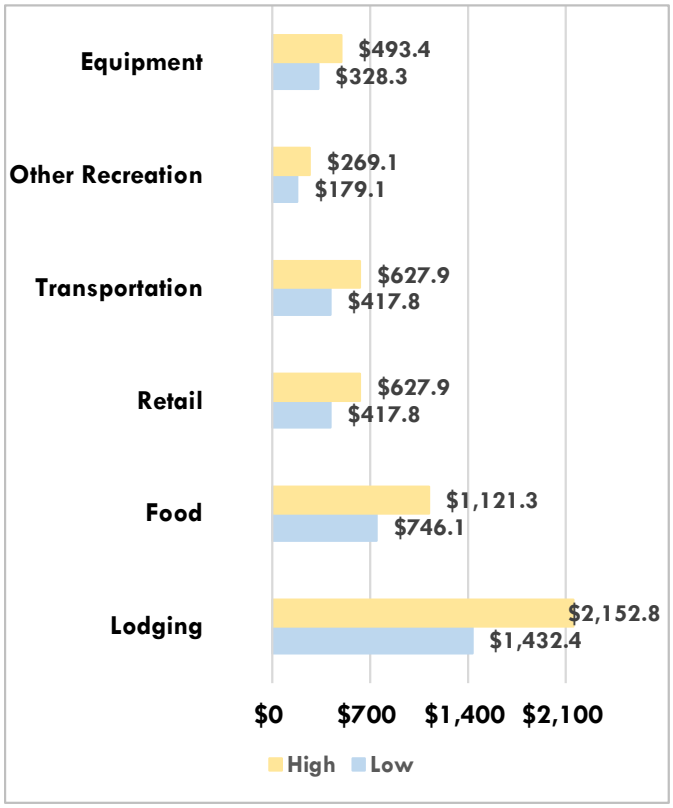
Adjusting these estimates for projected out-of-town users (estimated 23.0% of total users) results in additional annual trips of 29,843 to 44,850. It is against these out-of-town metrics that the estimates of annual user spending are calculated, ranging from $3.52 million to as much as $5.29 million.[8] The broad categories for spending include lodging, food, retail, transportation, other recreation, and equipment. The low and high annual consumer impacts are highlighted in Figure 3.

RKG next considered economic impacts (direct, induced and indirect) of the additional consumer spending impacts (Table 35 for details) via IMPLAN modeling (discussed in greater detail elsewhere in this report).

- **Low Estimate at $3,521,415 (annually and in constant dollars)** – the estimated spending of approximately $3.52 million from all consumer spending categories (as listed previously) results in total output (direct, indirect and induced) of $5.46 million, translating to $2.17 million in labor income and 57 jobs. The total value added estimate is $3.25 million throughout the State of Maine economy – or approximately $32,500 per 100 trips.

- **High Estimate at $5,292,300 (annually and in constant**

Figure 3 – Berlin Subdivision Rail Corridor Annual Consumer Spending ($1,000's)



[8] Analysis in constant 2022 dollars.

dollars) – the estimated spending of approximately $5.29 million from all consumer spending (as listed previously) categories)results in total output (direct, indirect and induced) of $8.20 million, translating to $3.26 million in labor income and 86 jobs. The total value added estimate is $4.88 million throughout the State of Maine economy – or approximately $48,850 per 100 trips.

RKG notes that both the low and high estimates of annual consumer spending reflect the use of the interim trail as a year-round activity and include estimated expenditure across a broad range of participation including hiking, biking, and snowshoeing, as examples. Snowmobiling may or may not be an allowed use, but either way the potential spending/economic impacts of snowmobilers has not been estimated in this analysis.

Potential Health Related (Costs) Benefits

The Centers for Disease Control and Prevention (CDC) estimates[9] 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 endeavors. 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.

If we conservatively assume that 5.0% of the target population within the Berlin Subdivision Rail Corridor study area were to increase their levels of physical activity based on proximity to the interim trail, this could translate to an annual savings of health-related expenditures totaling $221,561. These savings could in turn translate to additional annual household spending potential for other non-health related expenditures (Table 1).

Table 1 – Potential Health Benefits from Increased Activity (constant dollars)

Berlin Subdivision Rail Corridor - Health Impacts/ Benefits	Inactive (1)	Insufficiently Active (2)
2022 Target Population	**7,007**	**7,007**
At 24.8%	1,738	1,738
More Active - 5.0%	87	87
"Inactive" $/Capita	$1,704	
"Insufficiently Active" $/Capita		$846
Potential Health Benefit - Annually	**$148,055**	**$73,506**

Source: U.S. Census Bureau, Esri, ACS, CDC and RKG (2022)

(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

While it is generally accepted that proximity to green space may have 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 active rail lines (only) may actually detract from property values - such as proximity to active freight lines which may have more noise and safety issues as possible impacting factors.

[9] 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..

The potential impacts on residential property values with respect to proximity to a trail (only) similarly lack specificity, although some studies suggest a 5.0% to 10.0% positive impact. What has been noted in other similar studies[10] and academic research is that some realtors note residential proximity to trails often reduces the number of days on market (DOM) a listing remains on the market once listed for sale. In this analysis, RKG accepts the potential range of an approximate 5.0% to 10.0% increase in property values but cautions that in RKG's assessment this may only be realized as a property that is proximate to the interim trail comes up for sale and not as a general potential increase in value, otherwise.

In order to offer an estimate of the potential 5.0% to 10.0% impact (Figure 4) in residential property values, RKG reviewed the existing property values of single-family residential units, by location where available, within the Berlin Subdivision Rail Corridor. RKG matched the parcels within the Corridor to assessment and valuation data provided through the State of Maine and Vision Government Solutions and notes the following:

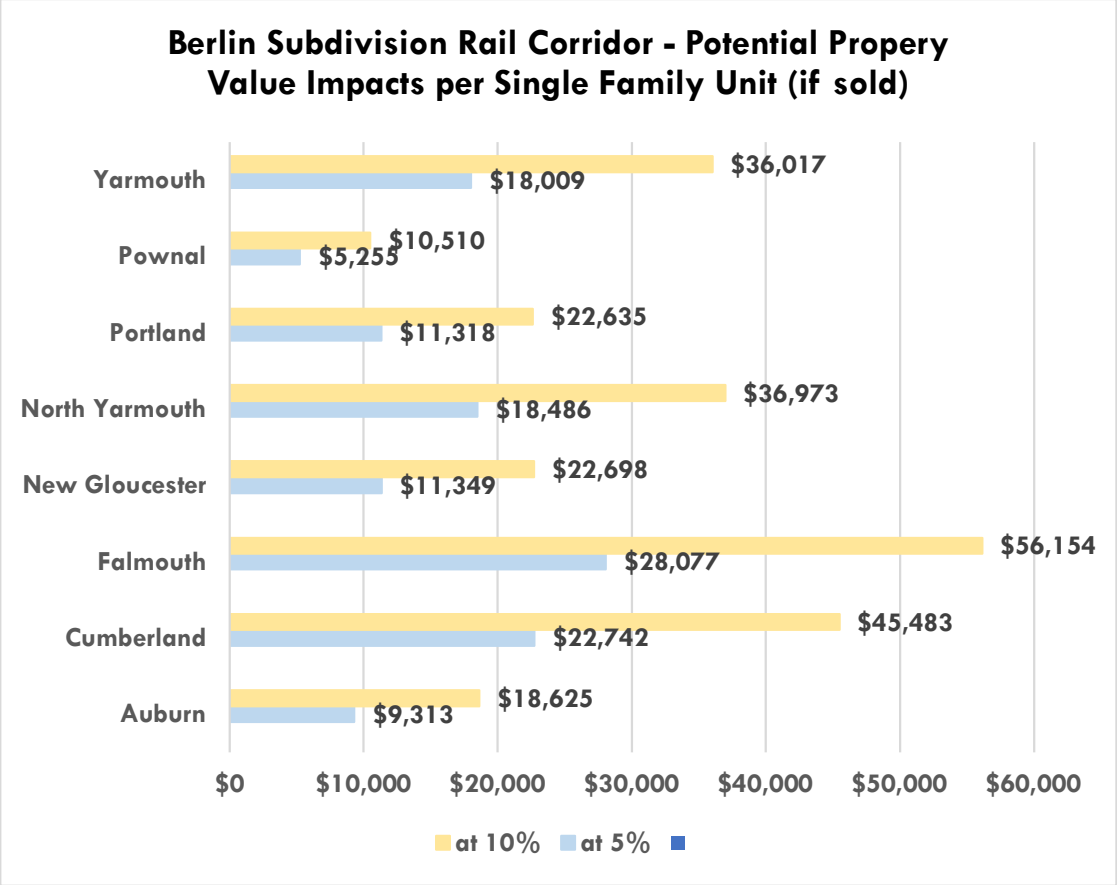
- There are approximately 3,382 single-family residential units in the Corridor and the number of units vary by municipality.

- The average assessed valuation of these units, by municipality, ranges from approximately $105,100 (Pownal) to as much as $561,640 (Falmouth). For all units within the Corridor, the overall average assessed valuation is nearly $347,480.

- A 5.0% increase in valuation against the overall average reflects an increase of $17,375. A 10.0% increase results in an increase of $34,750 in valuation. These are graphically presented in Figure 4 with additional details presented in Table 13. Again, noting that these estimates vary by location.

[10] As noted previously, the reader is directed to the **Appendix** of this report for a listing of other research and studies reviewed and incorporated (where applicable) in this current analysis.

Figure 4 – Berlin Subdivision Rail Corridor – Potential Impacts per Single-Family Residential Unit



Again, it is RKG's assessment these impacts would likely be realized as 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 2022 dollars and are not inflation adjusted as it is difficult to project with any level of specificity of when any of these properties would come up for sale, if at all.

As a baseline reference, single-family residential sales between 2018 to 2022 YTD, as reported by Redfin (Table 14), indicated that there were 648 units sold within the Berlin Subdivision Rail Corridor at an average selling price of $552,234/unit. The average square footage (SF) of these units was reported at 2,233 SF/unit (or $247/SF).

Lastly, considering the five-year sales trends relative to the total inventory of single-family residential units in the Corridor, the approximate average annual turnover in the Corridor is 3.8% of the units.

C. Key Findings - IMPLAN Modeling

In short, IMPLAN modeling 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 Chapter 4 of this report but are generally summarized next.

The metric of note is value added which provides an estimate of the total value added impacts to the State of Maine economy. Or put another way, the initial investment(s) in construction and the associated ongoing maintenance expenditures, results in a dollar rippling through the State economy or the value added.

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 statewide 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 2 presents the estimated initial investment or costs of infrastructure for each of the four (4) interim trail use options under consideration. The total[11] 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. These estimated costs are in total and are presented irrespective of the potential source of the funds.

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

Table 2 – Summary Comparisons of IMPLAN – Berlin Subdivision Rail Corridor – Construction ($millions)

SUMMARY COMPARISONS - IMPLAN Models (total) and in rounded $millions					Estimated
Infrastructure Costs					Initial Costs
Type of Use(s)	**Employment**	**Labor Income**	**Value Added**	**Output**	**Direct**
TUR - Gravel	602	$32.42	$40.70	$90.73	$47.50
TUR - Paved	697	$37.54	$47.12	$105.06	$55.00
RWT - Gravel	1,141	$61.43	$77.11	$171.92	$90.00
RWT - Paved	1,196	$64.36	$80.80	$180.13	$94.30

Source: IMPLAN, VHB and RKG (2022)

Note - constant 2022 dollars in $millions

Note - totals reflects combination of direct, indirect and induced

Table 3 presents the estimated annual and ongoing costs associated with maintenance for each of the four (4) interim trail use options under consideration. The total[12] impacts regarding employment, labor income, value added and output for each alternative are presented and

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

[12] *Ibid.*

then contrasted against the estimated annual and ongoing 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.

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

Table 3 – Summary Comparisons of IMPLAN Modeling – Berlin Subdivision Rail Corridor ($millions)

SUMMARY COMPARISONS - IMPLAN Models (total) and in rounded $millions Annual Maintenance Costs					Estimated Annual
Type of Use(s)	**Employment**	**Labor Income**	**Value Added**	**Output**	**Direct**
TUR - Gravel	1	$0.08	$0.09	$0.23	$0.12
TUR - Paved	1	$0.08	$0.08	$0.19	$0.10
RWT - Gravel	1	$0.08	$0.11	$0.23	$0.12
RWT - Paved	1	$0.08	$0.09	$0.19	$0.10

Source: IMPLAN, VHB and RKG (2022)

Note - constant 2022 dollars in $millions

Note - totals reflects combination of direct, indirect and induced

RKG notes that the IMPLAN inputs and analysis and as reported herein reflect the specific findings and results for each of the six (6) alternative options under consideration. The findings are "stand-alone" for each of the options and should not necessarily be considered as cumulative. However, if the initial investment is in an interim trail use, in such a manner that allows for the potential restoration of rail use at a later date, then these are two (2) separate developments (projects) that may be considered in conjunction – assuming some adjustments on costs (initial investment) of the latter of the two projects as may be applicable.

Table 4 presents the IMPLAN modeling results from the estimated annual spending of trail users, ranging from a low of $3.52 million to $5.29 million (annually for both). For both the low and high user spending estimates, approximately 41.0% of the estimated annual spending is for lodging, followed by 21.0% for food and then 12.0% for retail purchases.[13]

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

Table 4 – Annual Spending – Berlin Subdivision Rail Corridor – Interim Trail Users

Berlin Subdivision Rail Corridor - Annual User Spending	Factor	Low Estimate	High Estimate
Annual Users		129,750	195,000
Out-of-Town Users	23%	29,843	44,850
Annual Spending			
Lodging	$48	$1,432,440	$2,152,800
Food	$25	$746,063	$1,121,250
Retail	$14	$417,795	$627,900
Transportation	$14	$417,795	$627,900
Other Recreation	$6	$179,055	$269,100
Equipment	$11	$328,268	$493,350
TOTAL	**$118**	**$3,521,415**	**$5,292,300**

Source: RKG (2022)

[13] 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. While snowmobiling may or may not be allowed, the spending/economic impacts have not been estimated in this analysis.

RKG notes that while snowmobiling use may be a recreational activity associated with the interim trail use, such activity may not necessarily be appropriate and/or desired by local and adjacent communities. RKG notes that the expenditures associated with snowmobilers may often be higher when compared to non-snowmobile trail users.[14] 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. As a result, without specifics on estimated snowmobile activity, the potential spending/economic impacts have not been estimated in this analysis. If a permitted use, and given more specifics, the impacts presented in Table 4 may increase.

IMPLAN Modeling – Maintaining/Preserving Existing Rail Corridor for Possible Restoration of Rail Use

Table 5 presents the estimated initial investment or costs of infrastructure for each of the two (2) options for maintain/preserving the rail corridor for potential restoration of rail use options. The total[15] 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. These estimated costs are in total and are presented irrespective of the potential source of the funds.

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

Table 5 – Summary Comparisons of IMPLAN – Berlin Subdivision Rail Corridor – Construction ($millions)

SUMMARY COMPARISONS - IMPLAN Models (total) and in rounded $millions					Estimated
Infrastructure Costs					Initial Costs
Type of Use(s)	**Employment**	**Labor Income**	**Value Added**	**Output**	**Direct**
Freight Rail	281	$15.15	$19.02	$42.41	$22.20
Passenger Rail	3,474	$187.02	$234.77	$523.39	$274.00

Source: IMPLAN, VHB and RKG (2022)

Note - constant 2022 dollars in $millions

Note - totals reflects combination of direct, indirect and induced

Table 6 presents the estimated annual and ongoing costs associated with maintenance costs for each of the two (2) options for maintain/preserving the rail corridor for potential restoration of rail use options. The total[16] impacts regarding employment, labor income, value added and output for each alternative are presented and then contrasted against the estimated annual and ongoing 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.

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

[14] For example, the average snowmobile party spent nearly $90 more than the average non-snowmobile 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).

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

[16] *Ibid.*

Table 6 – Summary Comparisons of IMPLAN Modeling – Berlin Subdivision Rail Corridor ($millions)

SUMMARY COMPARISONS - IMPLAN Models (total) and in rounded $millions Annual Maintenance Costs					Estimated Annual
Type of Use(s)	**Employment**	**Labor Income**	**Value Added**	**Output**	**Direct**
Freight Rail	18	$1.41	$1.98	$4.10	$2.13
Passenger Rail	20	$1.55	$2.17	$4.51	$2.34

Source: IMPLAN, VHB and RKG (2022)

Note - constant 2022 dollars in $millions

Note - totals reflects combination of direct, indirect and induced

Table 7 presents the IMPLAN modeling results from the estimated annual spending of passengers if passenger rail use is restored to the Berlin Subdivision Rail Corridor.

Note these are annual and ongoing impacts as associated with rail passenger on-board spending.

Table 7 – Annual Spending – Berlin Subdivision Rail Corridor – Rail Passengers

Berlin Subdivision Rail Corridor - Annual Rail Passenger On-Board Spending	Downeaster Line - September 2021 - August 2022	Berlin Subdivision Rail Corridor (annual 2025)	
		Low Estimate	High Estimate
Total Ridership	432,857	76,650	87,600
% of Passengers Spending (18.2%)	78,780	13,950	15,943
Passenger Spending			
Total	$646,347	$114,455	$130,805
Spending/Total Passengers	$1.49	$1.49	$1.49
Spending/Passengers Spending	$8.20	$8.20	$8.20
TOTAL Passenger Spending - Annually	**$646,347**	**$114,455**	**$130,805**

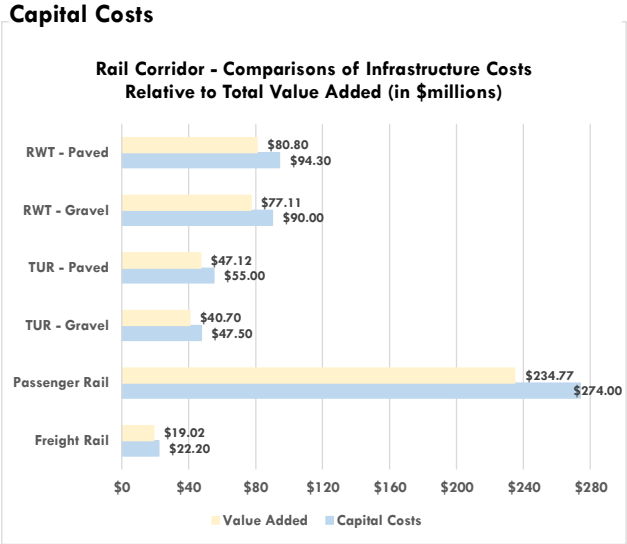
Source: VHB, NNEPRA and RKG (2022)

Overall Graphic Comparisons

Figure 5 presents a comparison of the capital costs, by type of proposed use, relative to the total value added impacts.

For example, data offered by VHB, indicates that the cost of the infrastructure (capital) investment for freight rail use averages[17] $22.20 million which then translates into a total (direct, indirect and induced) value added impact of $19.02 million – which is the total "ripple" effect throughout the State of Maine economy from the initial investment of $22.20 million (irrespective of the source of funds - State, federal, other).

Figure 5 – Comparison of Total Value Added relative to Capital Costs

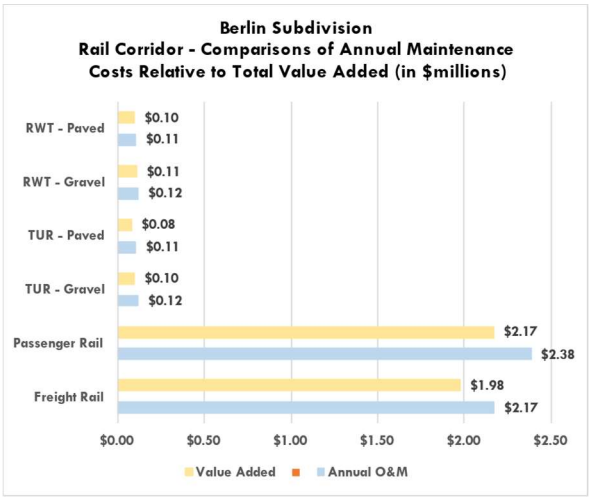


RKG notes that for each of the alternative use options the value added component represents approximately 86.0% of the initial dollar investment. This is a function of the IMPLAN modeling methodology which, in this analysis, "runs" all infrastructure costs against the mass transit construction industry sector(s). The results would vary, for example, if "run" against bridge and highway construction industry sector(s).

Figure 6 presents a comparison annual and ongoing total value added impacts relative to the annual maintenance costs.

For example, per data offered by VHB, the estimated annual maintenance costs for freight rail at $2.13 million which then translates into a total (direct, indirect and induced) value added impact of $1.98 million – which is the total "ripple" effect throughout the State of Maine economy from the annual costs of $2.13 million (irrespective of the source of funds - State, federal, other).

Figure 6 – Comparison of Total Value Added relative to Annual Maintenance Costs



RKG notes that for each of the alternative use options the value added component represents approximately 93.0% of the annual maintenance costs. This is a function of the IMPLAN modeling methodology which, in this analysis, "runs" all maintenance costs against rail transportation related expenditures. The results would vary, for example, if "run" against retail shopping mall or apartment complex ownership and management expenditures.

[17] Low cost option of $13.4 million and a high cost option of $31.0 million = $22.2 million as an average.

D. Key Findings – Maintaining/Preserving the Existing Rail Corridor for Possible Restoration of Rail Service

Maintaining/preserving the existing rail corridor for possible restoration of rail use provides MaineDOT the opportunity to consider the restoration of rai service in the future. Such rail service could be for either freight or passenger rail. With respect to fiscal and economic impacts, specifically related to the restoration of passenger rail services, RKG drew upon our work for the *Lewiston – Auburn Rail Study*, prepared in co-operation with VHB and in association with the Northern New England Passenger Rail Authority (NNEPRA) and Maine DOT.[18] In that report, RKG addressed the likely fiscal and economic impacts that may be associated with development of physical stations at various locations. For this current study, the sites (locations) of interest include the following:

- Auburn, Maine
- Pineland (East), Maine
- Yarmouth Junction, Maine

RKG notes that in addition to the Station study areas presented next, another development consideration, specific to this analysis, is offered for a platform station in Portland, Maine. As RKG understands this is not to be a "full" station but rather a platform to provide access for passengers. In this study, the level of analysis for the Portland platform is not as extensive with respect to a detailed assessment of fiscal and economic impacts as may be realized from additional and proximate residential and non-residential development. Rather, a Portland platform would serve more as an additional amenity further supporting the development occurring and as may be planned throughout the City of Portland.

Fiscal and Economic Impacts

This analysis specifically assumes that physical rail stations will be built, at the locations identified, as part of any restoration of passenger rail service for the Berlin Subdivision Rail Corridor. Table 8 offers a comparative summary of the fiscal and economic impacts associated with station development of each of three (3) station sites, discussed as follows:

Note that the potential Station Study area locations are for analytical purposes only, as defined by latitudes and longitudes of the approximate location of a Station. These are not intended to represent any final or actual Station location. As RKG understands these remain to be determined.

Auburn ME

Potential new housing ranging from 37 units to 58 units with estimated household retail spending demand of $898,700 to $1.43 million. These units could result in additional residential property tax receipts of $161,405 to as much as $256,934.

Estimated additional consumer spending demand which could result in 666 SF of retail development and 3,894 SF of non-retail development resulting in an estimated additional property tax receipts of $22,245.

Potential new (non-retail) employment of 62 positions with annual spending demand of $99,674.

[18] 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 – noting that the three (3) potential station locations of interest for the Berlin Subdivision Rail Corridor are summarized herein.

Pineland (East), ME
Potential new housing ranging from 17 units to 26 units with estimated household retail spending demand of $538,400 to $871,900. These units could result in additional residential property tax receipts of $59,511 to as much as $96,109.

Estimated additional consumer spending demand which could result in 4,580 SF of retail development and 493 SF of non-retail development resulting in an estimated additional property tax receipts of $11,012.

Potential new (non-retail) employment of eight (8) positions with annual spending demand of $12,886.

Yarmouth Junction, ME
Potential new housing ranging from 85 units to 172 units with estimated household retail spending demand of $3.42 million to $5.42 million. These units could result in additional residential property tax receipts of $409,677 to as much as $875,871.

Estimated additional consumer spending demand which could result in 11,342 SF of retail development and 4,340 SF of non-retail development resulting in an estimated additional property tax receipts of $53,019.

Potential new (non-retail) employment of 74 positions with annual spending demand of $118,794.

RKG notes that all estimates of development potential, either residential or 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.

Note that general station areas were used for the economic evaluation based on previous studies. Particular station site selection is a later part of the planning and design process and would be completed after an alignment is selected. Developments are not part of the project and station design but evaluated as a consideration of potential economic benefits of the project. With the additional benefit of transit access, the potential for development is higher, and would be specifically done in coordination with local cities.

Table 8 – Comparative Summary of Fiscal and Economic Impacts by Station Area

Summary Comparison of Potential Benefits - by Station Study Area	Auburn		Pineland East		Yarmouth Junction	
	Low	High	Low	High	Low	High
New Housing (1)	**37**	**58**	**17**	**26**	**85**	**172**
Owner Units	26	43	13	22	60	135
Renter Units	11	15	4	4	25	37
Change in HH Spending in $1,000's	**$898.7**	**$1,427.0**	**$538.4**	**$871.9**	**$3,425.9**	**$5,416.1**
Development Potential	**4,559**		**5,073**		**15,682**	
Retail SF	666		4,580		11,342	
Non-Retail SF **(2)**	3,894		493		4,340	
Potential Employment (3)	**62**		**8**		**74**	
Potential Spending	$99,674		$12,886		$118,794	
Potential Fiscal Impacts (FY22)	**Low**	**High**	**Low**	**High**	**Low**	**High**
Owner Value **(4)**	$5,328.67	$8,812.80	$3,830.67	$6,482.67	$17,680.00	$39,779.99
Renter Value **(5)**	$1,447.37	$1,973.69	$481.72	$481.72	$3,010.74	$4,455.90
Total Residential Value $1,000's	**$6,776.04**	**$10,786.49**	**$4,312.38**	**$6,964.38**	**$20,690.74**	**$44,235.89**
Estimated Gross Property Tax	**$161,405**	**$256,934**	**$59,511**	**$96,109**	**$409,677**	**$875,871**
Retail Value/SF	$150		$150		$150	
Non-Retail Value/SF	$225		$225		$225	
Total Non- Residential Value $1,000's	**$975.87**		**$797.95**		**$2,677.75**	
Estimated Gross Property Tax	**$23,245**		**$11,012**		**$53,019**	

Source: Maine Revenue Services, US Census Bureau and RKG (2022)

(1) - Excludes pipeline housing and reflects change over Baseline

(2) - Excludes manufacturing

(3) - Excludes retail

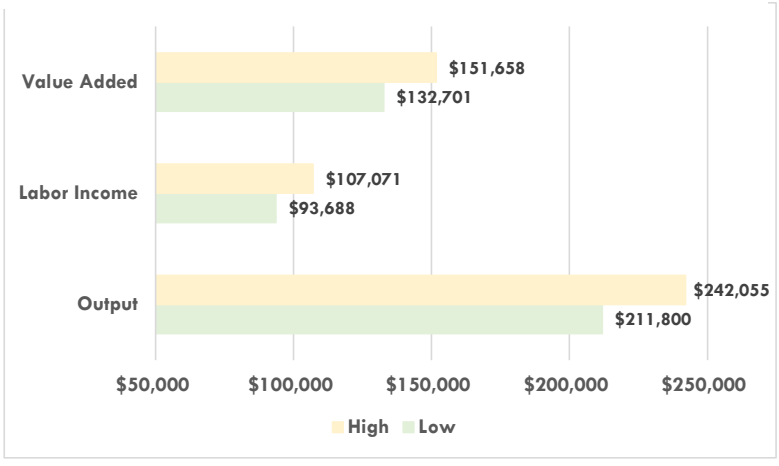
(4) - Reflects an estimated average (2017-2021) building permit value/unit in $1,000's - Androscoggin ($204,950) and Cumberland ($294,670) - single family homes

(5) - Reflects an estimated average (2017-2021) building permit value/unit in $1,000's - Androscoggin ($131,580) and Cumberland ($120,430) - 5+multi-family homes

IMPLAN – Impacts of Passenger Rail Spending

Similar to the analysis regarding the consumer spending activity, as a result of interim trail use, the estimated on-board spending of the passengers of a restored rail service would also result in direct, indirect and induced impacts throughout the statewide economy.

Figure 7 – IMPLAN Totals for Passenger Spending Impacts



RKG relied on information provided by the Northern New England Passenger Rail Authority (NNEPRA) regarding ridership and on-board spending for passengers of the Downeaster 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 restored passenger rail service, as is a considered option for the Berlin Subdivision Rail Corridor would spend in a like manner. These finding are presented graphically and in total (direct, indirect and induced) in Figure 7 and in detail in Table 21 and Table 22.

As noted, the metric of interest is the value added metric which presents the total economic impacts (the ripple) throughout the statewide economy.

- **Low Ridership Estimate** – annual (2025) ridership of 76,650 passengers with on-board spending of $114,455 annually.

- **High Ridership Estimate** – annual (2025) ridership of 87,600 passengers with on-board spending of $130,805 annually.

Other Potential Benefits of Restoration of Rail Activity
Specifically, with respect to rail use only, either freight or passenger, there are additional but unquantified benefits to be realized, including the following:

- Potential new job creation as related to the physical rail lines and activity such as engineers and conductors.

- Potential additional construction and investment in related rail infrastructure such as switching yards and maintenance facilities, as well as potential development that may arise from station construction (if required) and subsequent other development that may arise from proximity to a physical station. Such station construction and any potential additional development, such as residential and non-residential, would likely further result in local and statewide fiscal and economic benefits.

- Service along the Corridor would potentially provide enhanced safety on public roads through reduced heavy truck traffic, and a potential reduction of the financial burden on public maintenance of the roadways.

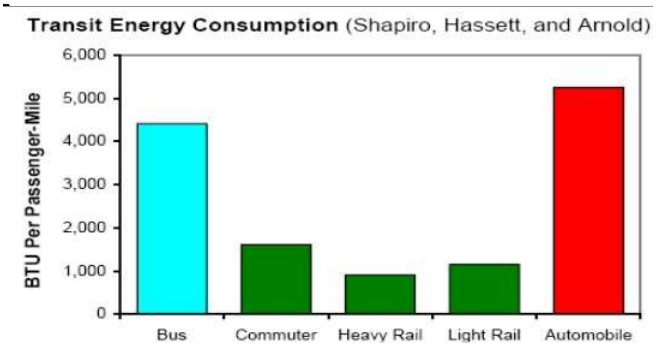
- With the rising costs of fuel, maintenance, and lease/purchase prices for personal automobiles, public transportation can be a more affordable travel option particularly for low- to moderate-income individuals and households. While this savings varies by city, location and type of rail service, it is generally acknowledged that transit use can help reduce the portion of household income utilized for transportation. A potential reduction in household expenditures for transportation could translate to greater income availability for housing, consumer spending, education, childcare, healthcare, and other annual household expenditures that are non-transportation related.

- Resulting energy and emission reductions as rail transit achieves energy use reductions and lowers emissions in two ways. First, rail transit consumes less energy (in British Thermal Units or BTU)[19] per passenger-mile than bus or automobile traffic. Second, since rail transit reduces congestion, it leverages even further reductions in fuel use and

[19] BTU is generally defined as the amount of heat (or energy) required to raise the temperature of one pound of water by one degree Fahrenheit.

emissions associated with non-rail travel. A study[20] of transit energy consumption found that automobile travel results in the most inefficient energy use with an average consumption of more than 5,000 BTUs per passenger mile. This compares to the approximate 1,500 BTUs per passenger mile for commuter rail (Figure 8).

Figure 8 – Comparative BTUs per Passenger Mile – Selected Modes of Transit



While the same study did not provide specific BTU metrics for truck transportation, RKG offers that it is likely that they are similarly inefficient when compared to (as reported) approximately 1,000 BTUs per passenger mile for heavy rail or approximately 1,200 BTUs per passenger mile for light rail.

As RKG understands, the estimated current monetary value of 100 BTUs is equivalent to approximately $16.68 which compares to $14.96/100 BTUs a year ago. This represents an increase of $1.72/100 BTUs or nearly an 11.5% increase in one year. As a result, it reasonable to assume that in the near term the $costs/100 BTUs will likely continue to increase with rising fuel costs.

Under these inputs, and the comparative BTU metrics presented in Figure 8, the cost savings, on a per passenger mile, between commuter rail transit and automobile transit equates to nearly $584, as follows:

- Automobile - 5,000 BTUs per passenger mile X $16.68/100 BTUs = $834
- Commuter Rail - 1,500 BTUs per passenger mile X $16.68/100 BTUs = $250

RKG notes that the above reflects the comparative BTU metrics for differing modes of transportation and/or transit and does not include any comparisons for the potential of any energy reductions and/or lower emissions that may result specifically from the interim trail use options.

Potential Benefits of a Foreign-Trade Zone (FTZ)

It is possible that further economic impacts could be realized (specifically as freight rail use) if the Berlin Subdivision Rail Corridor were an FTZ (also referred to as free-trade zone). As RKG understands, from the HTNB Corporation report cited in the Appendix, the City of Portland serves as the port of entry for an already designated FTZ 263.[21] Potential benefits to businesses utilizing an FTZ may include many cost savings and reductions as reflected by the following[22]:

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

[20] As reported in a research paper entitled *Transportation, Social And Economic Impacts of Light and Commuter Rail*, as prepared by the Texas Transportation Institute of Texas A&M University. Authors – Shapiro, Hassett, and Arnold.

[21] The FTZ 263 service area reportedly includes Lincoln, Cumberland, Sagadahoc, Androscoggin, Kennebec, Waldo, Knox and Somerset (partial) Counties.

[22] As referenced and cited from the report prepared by HNTB Corporation (dated March 2022).

- **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.

RKG notes that while quantifying any cost savings to companies, or other economic benefits, resulting from the FTZ are beyond the scope of this analysis, it is reasonable to assume such impacts could be significant 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 – furthering local fiscal and economic impacts.

2 - Interim Trail Use

A. Existing Conditions

This chapter presents RKG's review of the selected metrics associated with the Berlin Subdivision Rail Corridor, traversing from Auburn (ME) to Portland (ME), approximately 26.48-miles and reflecting an approximate one-half mile radius (from the centerline) about the Corridor.

Population

The estimated 2022 population of the Berlin Subdivision Rail Corridor is 15,293 persons and is projected to increase by 0.8% by 2027 to 15,410 persons (Table 9). Prior research has indicated that trail users, although prevalent across all age cohorts, are most dominant among the cohort aged 45 to 55 (21.0% of users); those aged 56 to 65 (37.0% of users); and in those in the cohort aged 65 and older (27.0% of users). For the Berlin Subdivision Rail Corridor, the population in these cohorts is estimated at 7,007 persons in 2022 and projected to increase by 0.3% by 2027 to 7,031 persons. While this overall projected growth factor may be considered nominal, nonetheless the population in these cohorts account for more than 45.0% of the total population for both time periods.

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

Table 9 – Population within the Berlin Subdivision Rail Corridor

Berlin Subdivision Rail Corridor - Population by Age Cohort	2022	2027	Percent Change
Total Population	**15,293**	**15,410**	**0.8%**
19 and under	3,163	2,979	-5.8%
20 to 44 years	5,123	5,400	5.4%
45 to 54 years	1,901	1,761	-7.4%
55 to 64 years	2,026	1,854	-8.5%
65 and older	3,080	3,416	10.9%
Target Cohorts	**7,007**	**7,031**	**0.3%**
as a percent of Total	45.8%	45.6%	

Source: U.S. Census Bureau, Esri and RKG (2022)

Educational Attainment

Prior research has also indicated that trail users tend to have a higher level of educational attainment, with 40.0% having an undergraduate degree and 27.0% with a post-graduate degree. The educational attainment of the population (aged 25 and older) within the Berlin Subdivision Rail Corridor is generally high at slightly more than 56.0% (Table 10) of the population with college+ degrees, further indicating a strong base of potential users of the Berlin Subdivision Rail Corridor.

RKG notes that this is not to imply that the users of the Berlin Subdivision Rail Corridor will be pre-dominantly among the population with a high level of educational attainment, but rather that experiences from elsewhere

imply 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 10 – Educational Level of Berlin Subdivision Rail Corridor Population

Berlin Subdivision Rail Corridor - Educational Attainment	2016-2020 (1)	% of 25+ Population
Total Population (25 and older)	**11,371**	**56.2%**
Undergraduate degre	3,714	32.7%
Masters degree	1,940	17.1%
Professional and Doctorate degree	736	6.5%

Source: U.S. Census Bureau, Esri, ACS and RKG (2022)

(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 35.0% of the households have median incomes of $61,000 to $100,000, and another 33.0% 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 Berlin Subdivision Rail Corridor, the percent of households[23] with incomes exceeding $50,000 accounted for 73.0% of all households in 2022 and is projected to grow to 76.0% by 2027. This represents growth of 5.0% percent among these households, well above the projected growth of all households at 1.0% over the same time (Table 11). All of the projected growth is among households earning $100,000 or more. Overall, median household income is projected to increase by nearly 26.0% or more than $22,000 for all households in the Berlin Subdivision Rail Corridor.[24]

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

[23] As the clustering of median household income data, by Esri, does not exactly match those indicated in prior research, RKG has opted to report those exceeding $50,000 in this analysis.

[24] RKG notes that while this dollar increase in median household income may appear to be an aggressive projection, that data offered by Esri indicates a total decline of 546 households with incomes of less than $75,000 and a total increase of 616 households with incomes exceeding $75,000 over the 2022 to 2027 time period. As a result, the overall median household income (all households) is heavily impacted by the decrease in the former and the increase in the latter.

Table 11 – Median Household Income for the Berlin Subdivision Rail Corridor

Berlin Subdivision Rail Corridor - Median Household Income	2022	2027	Percent Change
Total Households	**6,798**	**6,867**	**1.0%**
under $50,000	1,824	1,646	-9.8%
$50,000 to $75,000	1,059	691	-34.7%
$75,000 to $100,000	903	664	-26.5%
$100,000 and over	3,011	3,866	28.4%
Median Household Income	**$87,566**	**$110,046**	**25.7%**
Target Incomes	**4,973**	**5,221**	**5.0%**
as a percent of Total	73.2%	76.0%	

Source: U.S. Census Bureau, Esri and RKG (2022)

B. Fiscal and Economic Impacts

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

Economic Impacts of Interim Trail Usage

Preliminary estimates of annual usage (trips) of the Berlin Trail Corridor provided by VHB range from a low of 129,750 persons to a high of 195,000 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[25] suggests is typically about 23.0% of all trail usage. Applying this factor results in an annual estimate of 29,843 users to as many as 44,850 users. RKG calculated estimated annual spending for these out-of-town users, for specific activities (Table 12). Under these inputs and assumptions, the estimated average annual spending among out-of-state Berlin Subdivision Rail Corridor users ranges from $3.52 million to $5.29 million. For both the low and high user estimate, approximately 41.0% of the estimated annual spending is for lodging, followed by 21.0% for food and then 12.0% for retail purchases.[26]

[25] 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*.

[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. Snowmobiling may or may not be an allowed use, but in either event the potential spending/economic impacts have not been estimated in this analysis.

Table 12 – Estimated Annual Spending – Berlin Subdivision Rail Corridor

Berlin Subdivision Rail Corridor - Annual User Spending	Factor	Low Estimate	High Estimate
Annual Users		129,750	195,000
Out-of-Town Users	23%	29,843	44,850
Annual Spending			
Lodging	$48	$1,432,440	$2,152,800
Food	$25	$746,063	$1,121,250
Retail	$14	$417,795	$627,900
Transportation	$14	$417,795	$627,900
Other Recreation	$6	$179,055	$269,100
Equipment	$11	$328,268	$493,350
TOTAL	**$118**	**$3,521,415**	**$5,292,300**

Source: RKG (2022)

Interim Trail Activity and Health Related Benefits

The development of the Berlin Subdivision 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, to 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 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 care spending which could become available for other spending. As noted previously (Table 9) the target cohort population (2022) of the Berlin Subdivision Rail Corridor is 7,007 persons with approximately 1,738 persons considered inactive or insufficiently active.[27]

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 1,738 persons considered as inactive or insufficiently active could result in the following (as also previously highlighted in Table 1) for a total savings of $221,561:

- Assuming the total population was considered inactive, a conservative 5.0% transition of this population could result in annual health care savings of approximately $148,055 (1,738 persons X 5.0% X $1,704/capita).

- Assuming the total population was considered insufficiently active, a conservative 5.0% transition of this population could result in annual health care savings of approximately $73,506 (1,738 persons X 5.0% X $846/capita).

[27] 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.

Potential Property Value Impacts from Interim Trail Proximity

RKG utilized the Berlin Subdivision Rail Corridor (as previously displayed in **Error! Reference source not found.**) 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[28] to develop estimates of the existing single-family residential property values.

Table 13 presents the summary findings from this valuation for each community where data was reported. The number of parcels along with the aggregate valuation ($ millions) was then translated to an average value per parcel. This value was then increased by 5.0% and 10.0% to reflect a range of the potential increases in property value on an average per parcel basis.

From the reference materials reviewed[29] the potential impacts on single-family residential property values with respect to proximity to a trail may range from a positive 5.0% to 10.0%.

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.

Table 13 – Comparisons of Single-Family Residential Values by Location – Berlin Subdivision Rail Corridor

Summary Residential Values by Town - Berlin Subdivision Rail Corridor					
		Single Family Units			
Location	**# of Units**	**Valuation (1)**	**Average**	**5%**	**10%**
Auburn	6	$1.12	$186,250	$9,313	$18,625
Cumberland	338	$153.73	$454,833	$22,742	$45,483
Falmouth	530	$297.62	$561,541	$28,077	$56,154
New Gloucester	189	$42.90	$226,977	$11,349	$22,698
North Yarmouth	284	$105.00	$369,726	$18,486	$36,973
Portland	1,096	$248.08	$226,353	$11,318	$22,635
Pownal	45	$4.73	$105,098	$5,255	$10,510
Yarmouth	894	$321.99	$360,172	$18,009	$36,017
Totals or *Averages*	**3,382**	**$1,175.17**	***$347,479***	***$17,374***	***$34,748***

Source: VHB, Vision Government Solutions and RKG (2022)

(1) - in $ millions

To provide a sense of the single-family residential sales activity among the locations in the Berlin Subdivision Rail Corridor, RKG culled reported sales data (as offered by Redfin) for each community over the 2018 to 2022 (year-to-date) time period (Table 14) noting:

[28] 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 Berlin Subdivision Rail Corridor.

[29] As noted previously, the reader is directed to the **Appendix** of this report for a listing of other research and studies reviewed and incorporated (where applicable) in this current analysis.

- There was a total of 648 sales reported for single-family residential units, ranging from three (3) units in Pownal to as many as 192 reported for Portland.

- Total sales (dollar values) were reported as nearly $357.85 million ranging from $954,000 for Pownal to as much as $105.60 million reported for Yarmouth.

- On average, where data was reported, the selling price of the 648 units was reported as $552,234. This ranged from an average of $318,000/unit (Pownal) to as much as $694,655/unit (Cumberland).

- These single-family residential units represented nearly 1.45 million SF in total and averaged 2,233 SF/unit for the entire reported inventory.

- For the entire inventory, where reported, the average selling price equates to approximately $247/SF ranging from $170/SF (New Gloucester) to as much as $296/SF (Portland).

Table 14 – Single-Family Residential Sales – Berlin Subdivision Rail Corridor

Summary Residential Sales by Town (2018 to 2022 ytd) - Berlin Subdivision Rail Corridor					
Single Family Residential					
Location	**# of Units**	**Sales Price**	**Average**	**SF**	**$/SF**
Auburn **(1)**	*na*	*na*	*na*	*na*	*na*
Cumberland	77	$53,488,460	$694,655	221,833	$241
Falmouth	141	$79,969,926	$567,163	353,855	$226
New Gloucester	24	$8,379,000	$349,125	49,245	$170
North Yarmouth	35	$17,438,750	$498,250	94,875	$184
Portland	192	$92,015,510	$479,247	310,670	$296
Pownal	3	$954,000	$318,000	5,040	$189
Yarmouth	176	$105,602,004	$600,011	411,411	$257
Total or *Average*	**648**	**$357,847,650**	***$552,234***	**1,446,929**	***$247***

Source: VHB, Redfin and RKG (2022)

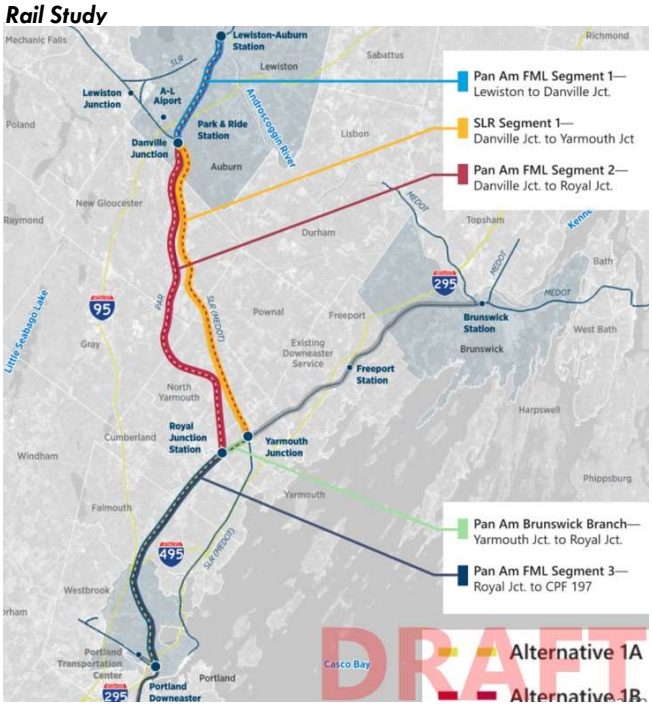
(1) - no single family residential sales reported inside the Berlin Rail Corridor

3 - Maintaining/Preserving of the Existing Rail Corridor for Possible Restoration of Rail Service

One of the development options under consideration, for the Berlin Subdivision Rail Corridor, is maintain/preserving the existing rail corridor for the possible restoration of rail use. This includes a possible the restoration of passenger rail services. Elsewhere in this report, RKG has addressed the likely economic impacts (via IMPLAN modeling) that may result from the initial infrastructure (capital) costs associated with maintain/preserving the existing rail corridor for the possible restoration of rail use[30] and the annual and ongoing economic impacts (via IMPLAN modeling) arising from estimated maintenance costs.

However, the likely additional fiscal and economic benefits realized from the development of physical Stations along the Berlin Subdivision Rail Corridor is the specific focus of this section.

Figure 9 - Alignment Considerations in the *Lewiston-Auburn Rail Study*



A. Overview and Purpose

To summarize RKG's findings, from prior work, with regard to the likely fiscal and economic impacts associated with the potential development of commuter rail stations[31] along a proposed rail alignment(s) (refer to Figure 9) from Lewiston – Auburn, Maine to Portland, Maine – specifically for locations at the Auburn (park & ride), at a location in Pineland (East) and another in Yarmouth Junction.[32] The approach to this analysis included the following:

- Define an appropriate study area around each location which are considered less urban and less dense, a 1-,2- and 3-mile radius around each station serves as the study area. While it is reasonable to assume that any future development would, if possible, occur

[30] These capital costs for infrastructure investment are for the physical rail line only and do not reflect any costs as may be associated with construction of actual physical Stations.

[31] This analysis is predicated on the specific assumption, although conceptual at this time, that an actual physical station structure would be developed for each location under consideration.

[32] **Auburn** – latitude 44.03751859, longitude -70.2634984. **Pineland (East)** – latitude 43.90086944, longitude -70.23661111. **Yarmouth Junction** – latitude 43.81339536, longitude -70.19400699.

closest to the actual station, a broader 3-mile radius allows for possible assemblages of land to accommodate development activity. For the purposes of this analysis all metrics for these stations are reported at the 3-mile radius taken together.

- Compile baseline and projected (where applicable) metrics of selected socio-economic indicators for each proposed station location.

- Contrast the selected station metrics to comparable metrics for a broader geography, in this case the county.

- Develop estimates of additional development potential (such as residential, commercial, or retail opportunities) for each proposed station location noting that the unknown factor is the availability and or possible assemblage of land to accommodate such development.

- Lastly, to calculate potential fiscal and economic impacts that could result from projected development around each station. This information includes new housing, jobs, spending, and taxes for each station and different station combinations.

B. Baseline Metrics of Station Sites

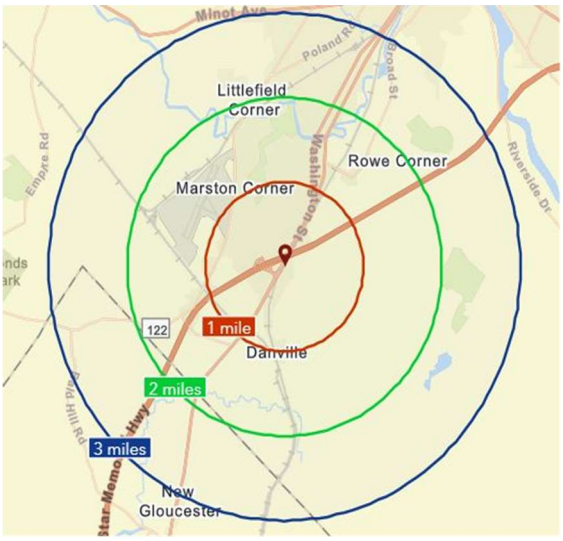
Selected baseline metrics for each of the three (3) station sites (study areas) considered in this analysis are presented next. These metrics include population, housing, owner home values, median household and per capita income, and business diversity.

Please note that as of the date of the data extraction for the above referenced metrics, the period available from Esri covered the 2021 through 2026 time period.

Auburn, ME

The potential location of the Auburn Station site and surrounding study area is highlighted in Figure 10 and summary metrics are presented in Table 15.

Figure 10 – Study Area for Potential Auburn Station Site



Population – the total study area is projected to realize total population growth over the 2021 to 2026 time-period, at 0.9% or about 45 persons. This growth is led by the population aged 65 and older, offsetting the projected population declines in younger cohorts. This is of note as this elderly cohort often represents those in retirement, seeking to downsize their residential requirement and/or opt for assisted living or other health services related to housing.

Housing – the study area housing is projected to experience growth (2021 – 2026) in overall housing units, at 1.5% or approximately 35 units, representing an increase in owner housing and a decline in renter housing.

Owner Home Values – both median owner values and average owner values are projected to increase by 2026, each by more than $90,000 over the 2021 metrics. The 2026 owner values for the study area housing exceed that for the same countywide measures, by nearly $41,460 for median value and $56,660 for average owner value.

Comparative Incomes – both median household income and per capita income levels are projected to increase for the study area and the county. Despite a lesser percentage increase in median household income in the study area, at 8.4% compared to 11.8% for the county, the study area median household income is more than 30.0% greater than that countywide. Per capita income in the study area also exceeds the county by 30.0% with both suggesting a likely greater disposable income spending potential in the study area relative to the county.

Business Diversity - among the selected industry sectors, businesses and employment are generally well diversified for the study area and the county. Although approximately 52.0% of study area businesses and 62.0% of county businesses are concentrated in the retail and services sectors. Also, 37.0% of the study area employment is in these sectors (65.0% countywide) which are generally lower paying when compared to other sectors.

Table 15 presents comparative metrics for the Auburn Station area (3-mile radius) and Androscoggin County.

Table 15 – Selected Metrics – Auburn Station Study Area and Androscoggin County, ME

	Auburn Station (1)			% Δ 2021-	Androscoggin Co.			% Δ 2021-	Auburn as % of Co.		
Selected Comparative Metrics	**2010**	**2021**	**2026**	**2026**	**2010**	**2021**	**2026**	**2026**	**2010**	**2021**	**2026**
Total Population	**5,074**	**5,060**	**5,105**	**0.9%**	**107,702**	**110,157**	**111,367**	**1.1%**	**4.7%**	**4.6%**	**4.6%**
aged 20 to 34	795	721	647	-10.3%	19,926	20,555	19,747	-3.9%	4.0%	3.5%	3.3%
aged 35 to 54	1,635	1,418	1,370	-3.4%	31,470	27,462	27,221	-0.9%	5.2%	5.2%	5.0%
65 and older	698	994	1,160	16.7%	15,184	20,660	23,419	13.4%	4.6%	4.8%	5.0%
median age	42.2	45.3	46.8	3.3%	39.8	41.7	42.5	1.9%	106.0%	108.6%	110.1%
Total Housing Units	**2,194**	**2,263**	**2,298**	**1.5%**	**49,090**	**50,907**	**51,761**	**1.7%**	**4.5%**	**4.4%**	**4.4%**
owners households	1,651	1,675	1,727	3.1%	28,544	29,178	30,183	3.4%	5.8%	5.7%	5.7%
renter households	429	455	435	-4.4%	15,771	16,731	16,470	-1.6%	2.7%	2.7%	2.6%
Owner Median Value	na	$208,182	$298,295	43.3%	na	$186,029	$256,839	38.1%	na	111.9%	116.1%
Owner Average Value	na	$253,729	$352,606	39.0%	na	$223,163	$295,945	32.6%	na	113.7%	119.1%
Median Household $	na	$79,453	$86,117	8.4%	na	$57,448	$64,252	11.8%	na	138.3%	134.0%
Per Capita $	na	$40,890	$46,412	13.5%	na	$31,310	$35,333	12.8%	na	130.6%	131.4%
	Firms	**Employees**	**Emp/Firm**	**% of Firms**	**Firms**	**Employees**	**Emp/Firm**	**% of Firms**	**Firms**	**Emp**	**Emp/Firm**
Totals (2021)	**303**	**6,299**	**20.8**	**100.0%**	**3,773**	**53,446**	**14.2**	**100.0%**	**8.0%**	**11.8%**	**146.8%**
retail sector	61	560	9.2	20.1%	860	11,206	13.0	22.8%	7.1%	5.0%	70.5%
office sector	15	93	6.2	5.0%	348	3,552	10.2	9.2%	4.3%	2.6%	60.7%
service sector	95	1,769	18.6	31.4%	1,495	23,342	15.6	39.6%	6.4%	7.6%	119.3%
manufacturing sector	31	2,228	71.9	10.2%	151	5,965	39.5	4.0%	20.5%	37.4%	181.9%
other	101	1,649	16.3	33.3%	919	9,381	10.2	24.4%	11.0%	17.6%	159.9%

Source: Esri and RKG (2022)

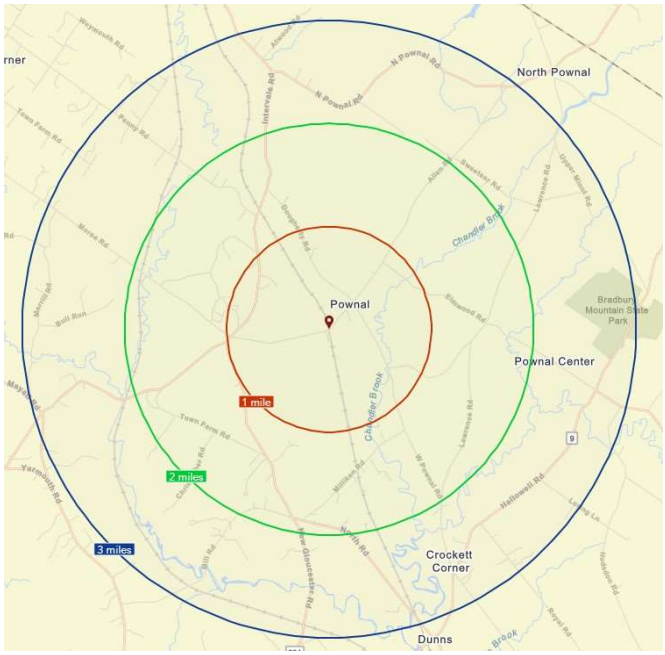
(1) 3-mile radius about the potential Station location

na - data suppressed or otherwise unreported

Pineland (East), ME

While two separate locations were presented for the *Lewiston-Auburn Rail Study*, for a potential Pineland Station(s), it is the Pineland East Station location that is addressed in this current analysis (refer to Figure 11 and to Table 16).

Figure 11 - Study Area for Potential Pineland (East) Station Site



Population – both the study area and the county are projected to realize total population growth over the 2021 to 2026 time-period, at similar rates with the study area accounting for 0.8% of the county population. Overall total projected population growth in the study area is 113 persons as compared with nearly 13,675 countywide.

Leading the projected population growth in the study area is the cohort of persons 65 and older, at 118 persons and representing a 27.3% increase over 2021. The projected countywide growth in this cohort is 18.6%. As noted previously, those in this cohort are often seeking to downsize their residential requirements and may often desire assisted living or other health services related to housing. Also, of note for the Pineland (East) study area is the projected 6.8% growth (nearly 30 persons) among those aged 20 to 34 years. Persons in this cohort often represent first-time home buyers and/or renters.

Housing – both the study area and the county are projected to realize growth (2021 – 2026) in overall housing units, at 4.5% each. This equates to 44 units in the study area and about 6,900 units countywide. Both are projected to experience growth in the number of owner households however, the study area is projected to lose renter households. The aforementioned growth in the population cohort aged 20 to 34 years could represent an audience for additional rental development in the study area.

Owner Home Values – in the study area and the county the median value and average value of owner housing are projected to increase with both the median values and average values in the study lagging those countywide by marginal amounts.

Comparative Incomes – both median household income and per capita income levels are projected to increase for the study area and the county at similar rates. These values for both, in the study area, are greater than the same income metrics countywide and more so with respect to median household incomes – possibly indicative of a greater level of discretionary spending income.

Business Diversity - among the selected industry sectors, businesses and employment are generally well diversified for the study area and the county. Approximately 51.6% of study

area businesses and 63.5% of county businesses are concentrated in the retail and services sectors which typically represent lower paying positions when compared to other sectors. Table 16 presents comparative metrics for the Pineland (East) Station area (3-mile radius) and Cumberland County.

Table 16 – Selected Metrics – Pineland (East) Station Study Area and Cumberland County, ME

	Pineland East Station (1)			% Δ 2021-	Cumberland Co.			% Δ 2021-	Pineland East as % of Co.		
Selected Comparative Metrics	**2010**	**2021**	**2026**	**2026**	**2010**	**2021**	**2026**	**2026**	**2010**	**2021**	**2026**
Total Population	**2,235**	**2,404**	**2,517**	**4.7%**	**281,674**	**302,496**	**316,170**	**4.5%**	**0.8%**	**0.8%**	**0.8%**
aged 20 to 34	290	397	424	6.8%	51,766	56,538	58,444	3.4%	0.6%	0.7%	0.7%
aged 35 to 54	782	625	599	-4.2%	85,001	77,187	78,702	2.0%	0.9%	0.8%	0.8%
65 and older	224	433	551	27.3%	40,157	59,459	70,494	18.6%	0.6%	0.7%	0.8%
median age	41.5	44.2	44.2	0.0%	41.0	43.4	43.9	1.2%	101.2%	101.8%	100.7%
Total Housing Units	**910**	**998**	**1,042**	**4.4%**	**138,657**	**152,039**	**158,941**	**4.5%**	**0.7%**	**0.7%**	**0.7%**
owners households	745	827	875	5.8%	78,545	87,505	93,010	6.3%	0.9%	0.9%	0.9%
renter households	119	114	113	-0.9%	38,794	39,760	40,509	1.9%	0.3%	0.3%	0.3%
Owner Median Value	na	$328,125	$374,061	14.0%	na	$322,496	$375,747	16.5%	na	101.7%	99.6%
Owner Average Value	na	$359,522	$410,584	14.2%	na	$381,894	$436,549	14.3%	na	94.1%	94.1%
Median Household $	na	$95,407	$106,568	11.7%	na	$76,604	$85,662	11.8%	na	124.5%	124.4%
Per Capita $	na	$47,146	$53,006	12.4%	na	$43,854	$49,337	12.5%	na	107.5%	107.4%
	Firms	**Employees**	**Emp/Firm**	**% of Firms**	**Firms**	**Employees**	**Emp/Firm**	**% of Firms**	**Firms**	**Emp**	**Emp/Firm**
Totals (2021)	**91**	**591**	**6.5**	**100.0%**	**14,042**	**197,591**	**14.1**	**100.0%**	**0.6%**	**0.3%**	**46.2%**
retail sector	13	69	5.3	14.3%	3,004	40,345	13.4	21.4%	0.4%	0.2%	39.5%
office sector	5	44	8.8	5.5%	1,340	16,922	12.6	9.5%	0.4%	0.3%	69.7%
service sector	34	248	7.3	37.4%	5,916	91,545	15.5	42.1%	0.6%	0.3%	47.1%
manufacturing sector	2	15	7.5	2.2%	420	9,703	23.1	3.0%	0.5%	0.2%	32.5%
other	37	215	5.8	40.7%	3,362	39,076	11.6	23.9%	1.1%	0.6%	50.0%

Source: Esri and RKG (2022)

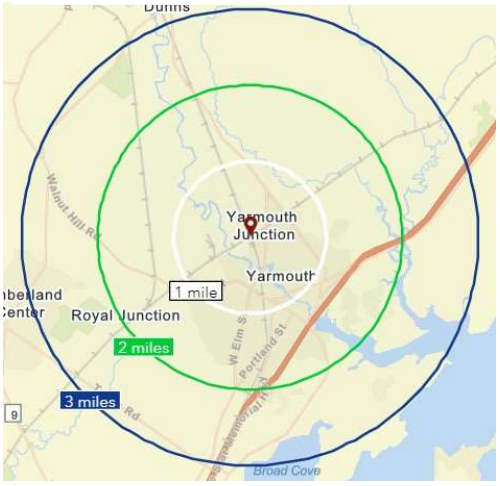
(1) 3-mile radius about the potential Station location

na - data suppressed or otherwise unreported

Yarmouth Junction, ME

Please refer to Figure 12 and Table 17 for the location and summary metrics, respectively, of a potential Yarmouth Junction Station site and study area metrics.

Figure 12 – Study Area for Potential Yarmouth Junction Station Site



Population – both the study area and the county are projected to realize total population growth over the 2021 to 2026 time-period, at 3.1% for the study area (an increase of 375 persons) and 4.5% for the county (a growth of nearly 13,675 persons) , with the study area accounting for 3.9% of the county population in 2026, a slight decline.

For the study area and countywide, the projected population growth is greatest among those aged 65 and older, at nearly 480 persons and 11,035 persons, respectively. Again, those in this cohort may be seeking to downsize their residential requirements and may often desire assisted living or other health services related to housing. Also, of note for the Yarmouth Junction study area is the projected 16.2% growth (nearly 275

persons) among those aged 20 to 34 years. Persons in this cohort often represent first-time home buyers and/or renters.

Housing – both the study area and the county are projected to experience growth (2021 – 2026) in overall housing units, at 3.1% and 4.5% respectively. The study area is projected to realize an increase in owner households and a decrease in renter households. However, noting the projected growth in the 20 to 34 age cohort in the study area, the availability of right-priced and right-sized rental housing could positively impact this projected trend.

Owner Home Values – in the study area and the county the median value and average value of owner housing are projected to increase. Despite a greater projected percent increase countywide, for median value and average value, the absolute dollar differences are far greater in the study area at nearly $75,100 and $66,100, respectively.

Comparative Incomes – both median household income and per capita income levels are projected to increase for the study area and the county at similar rates. These values for both, in the study area, are greater than the same income metrics countywide, 20.0% for median household income and 15.0% for per capita income.

Business Diversity - both businesses and employment are generally well diversified for the study area and the county and are represented in similar proportions. As has been indicated for many of the other station locations, there is a high concentration of firms and employment in the retail and service sectors which are generally lower paying when compared to other sectors.

Table 17 presents comparative metrics for the Pineland (West) Station area (3-mile radius) and Cumberland County.

Table 17 – Selected Metrics – Yarmouth Junction Station Study Area and Cumberland County, ME

	Yarmouth Junction Station (1)			% Δ 2021-	Cumberland Co.			% Δ 2021-	Yarmouth Junction as % of Co.		
Selected Comparative Metrics	2010	2021	2026	2026	2010	2021	2026	2026	2010	2021	2026
Total Population	**11,590**	**11,999**	**12,374**	**3.1%**	**281,674**	**302,496**	**316,170**	**4.5%**	**4.1%**	**4.0%**	**3.9%**
aged 20 to 34	1,242	1,696	1,970	16.2%	51,766	56,538	58,444	3.4%	2.4%	3.0%	3.4%
aged 35 to 54	3,722	2,961	2,786	-5.9%	85,001	77,187	78,702	2.0%	4.4%	3.8%	3.5%
65 and older	1,804	2,649	3,128	18.1%	40,157	59,459	70,494	18.6%	4.5%	4.5%	4.4%
median age	45.2	48.3	49.0	1.4%	41.0	43.4	43.9	1.2%	110.2%	111.3%	111.6%
Total Housing Units	**5,014**	**5,334**	**5,502**	**3.1%**	**138,657**	**152,039**	**158,941**	**4.5%**	**3.6%**	**3.5%**	**3.5%**
owners households	3,566	3,822	3,999	4.6%	78,545	87,505	93,010	6.3%	4.5%	4.4%	4.3%
renter households	1,171	1,142	1,137	-0.4%	38,794	39,760	40,509	1.9%	3.0%	2.9%	2.8%
Owner Median Value	na	$406,961	$450,854	10.8%	na	$322,496	$375,747	16.5%	na	126.2%	120.0%
Owner Average Value	na	$463,190	$502,613	8.5%	na	$381,894	$436,549	14.3%	na	121.3%	115.1%
Median Household $	na	$98,748	$109,741	11.1%	na	$76,604	$85,662	11.8%	na	128.9%	128.1%
Per Capita $	na	$56,250	$62,608	11.3%	na	$43,854	$49,337	12.5%	na	128.3%	126.9%
	Firms	Employees	Emp/Firm	% of Firms	Firms	Employees	Emp/Firm	% of Firms	Firms	Emp	Emp/Firm
Totals (2021)	**543**	**5,268**	**9.7**	**100.0%**	**14,042**	**197,591**	**14.1**	**100.0%**	**3.9%**	**2.7%**	**68.9%**
retail sector	107	1,230	11.5	19.7%	3,004	40,345	13.4	21.4%	3.6%	3.0%	85.6%
office sector	45	304	6.8	8.3%	1,340	16,922	12.6	9.5%	3.4%	1.8%	53.5%
service sector	239	2,274	9.5	44.0%	5,916	91,545	15.5	42.1%	4.0%	2.5%	61.5%
manufacturing sector	19	432	22.7	3.5%	420	9,703	23.1	3.0%	4.5%	4.5%	98.4%
other	133	1,028	7.7	24.5%	3,362	39,076	11.6	23.9%	4.0%	2.6%	66.5%

Source: Esri and RKG (2022)

(1) 3-mile radius about the potential Station location

na - data suppressed or otherwise unreported

Portland, ME

As RKG understands, it is likely that a platform station[33] may be developed in the City of Portland to accommodate passenger rail service, if restored, along the Berlin Subdivision Rail Corridor. As a more densely developed location, the study area for this location reflects an approximate 15-minute walk time about the location (as opposed to a three-mile radius). This distance is often considered as a comfortable walking distance for pedestrians (passengers) accessing the platform (refer to Figure 13 and Figure 14). The following baseline metrics are presented in Table 18 and include:

Figure 13 – Study Area of Potential Portland Platform Site

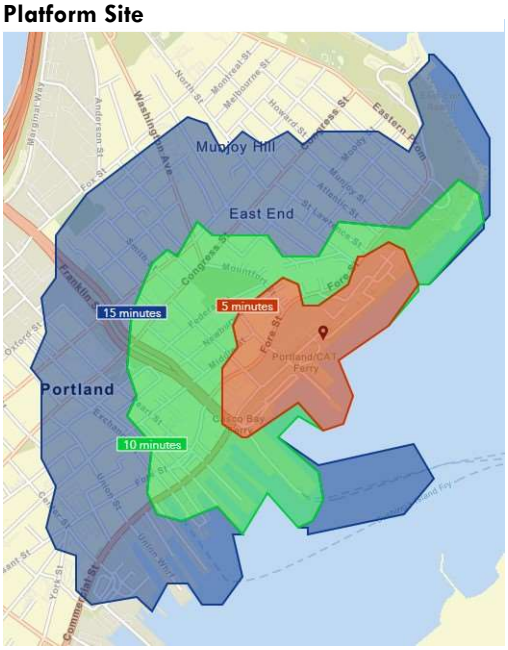


Figure 14 – Aerial View of Potential Portland Platform Site and Surrounding Area

Population – both the study area and the county are projected to realize a population increase, at 4.9% and 4.5%, respectively (2021 - 2026). While the county is projected to experience some population growth among all age cohorts presented, the study area is projected to realize some decline in those aged 20 to 34 years (typically in their family/household formation years). Also of note, for the study area the growth rate for the population in the cohort aged 35 to 54 is well above that for the county. This cohort is typically considered to be in their peak earning spending years. Over all three (3) time periods covered, the study area population is approximately 2.0% of the countywide population.

Housing – housing units within the study area housing are projected to increase 5.8% (nearly 215 units) while the projected countywide growth of 6,900 units represents a 4.5% increase. Both the study area and the county are projected to experience growth in owner and renter households, with the growth rates for the study area exceeding those of the county. As projected for 2026, the study area will be 69.0% renter households as contrasted to 30.0% for the county. It also worth noting that for the study area, across three (3) times periods approximately 70.0% of the households are located within the 10- to 15-minute walk radius – further indicating the density of non-residential development (uses) in the closer in walk times of under 10-minutes.

In RKG's assessment the existing non-residential development and uses in the closer in walk times may prove to be a barrier to opportunities for additional residential development more proximate to the Portland platform site.

[33] Per representatives of VHB, the potential site is designated as latitude 43.66079 and latitude -70.24568.

Owner Home Values – despite similar projected (2021 -2026) growth rates in housing values (median and average) for the study area and the county, in absolute dollars the county values fall well below the study area values. The study area median housing values exceed the county by $160,929 and for the average home value the gap is $175,192.

Comparative Incomes – between 2021 and 2026 the median household income and the per capita income for both the study area and the county are projected to increase. In terms of median household income, the projected increase in the study area is $11,321 (an 18.8% increase) and for the county $9,058 (an increase of 11.8%). For 2021 and for 2026, the per capita income in the study area exceeds that for the county, by $2,513 and $5,029, respectively. This may reflect, in part, the percent of the population aged 65 and older (relatively with lower incomes) in the county as compared to the study area. In 2021, this cohort accounted for 12.0% of the study area population and 20.0% of the county population. Projected for 2026, these representations are 13.0% and 22.0%, respectively.

Business Diversity – another indication of income disparity is exhibited by the distribution of employment by industry sector. For example, 57.0% of the study area employment is in the retail and services sectors, while for the county this represents 67.0% of the employment – both sectors typically exhibit lower wages when contrasted to other industry sectors. Conversely, in the office sector, typically with higher wages relative to other sectors. The employment in this sector in the study area accounts for 14.0% of total employment relative to 9.0% countywide.

Table 18 – Selected Metrics – Portland Platform Study Area and Cumberland County, ME

	City of Portland Platform (1)			% Δ 2021-	Cumberland Co.			% Δ 2021-	Portland Platform as % of Co.		
Selected Comparative Metrics	**2010**	**2021**	**2026**	**2026**	**2010**	**2021**	**2026**	**2026**	**2010**	**2021**	**2026**
Total Population	**5,714**	**6,205**	**6,512**	**4.9%**	**281,674**	**302,496**	**316,170**	**4.5%**	**2.0%**	**2.1%**	**2.1%**
aged 20 to 34	2,127	2,202	2,132	-3.2%	51,766	56,538	58,444	3.4%	4.1%	3.9%	3.6%
aged 35 to 54	1,519	1,579	1,801	14.1%	85,001	77,187	78,702	2.0%	1.8%	2.0%	2.3%
65 and older	437	720	816	13.3%	40,157	59,459	70,494	18.6%	1.1%	1.2%	1.2%
median age	32.1	33.9	35.1	3.5%	41.0	43.4	43.9	1.2%	78.4%	78.1%	79.9%
Total Housing Units	**3,017**	**3,674**	**3,887**	**5.8%**	**138,657**	**152,039**	**158,941**	**4.5%**	**2.2%**	**2.4%**	**2.4%**
owners households	598	920	1,006	9.3%	78,545	87,505	93,010	6.3%	0.8%	1.1%	1.1%
renter households	2,034	2,169	2,251	3.8%	38,794	39,760	40,509	1.9%	5.2%	5.5%	5.6%
Owner Median Value	na	$457,689	$536,676	17.3%	na	$322,496	$375,747	16.5%	na	141.9%	142.8%
Owner Average Value	na	$532,514	$611,741	14.9%	na	$381,894	$436,549	14.3%	na	139.4%	140.1%
Median Household $	na	$60,104	$71,424	18.8%	na	$76,604	$85,662	11.8%	na	78.5%	83.4%
Per Capita $	na	$46,367	$54,366	17.3%	na	$43,854	$49,337	12.5%	na	105.7%	110.2%
	Firms	**Employees**	**Emp/Firm**	**% of Firms**	**Firms**	**Employees**	**Emp/Firm**	**% of Firms**	**Firms**	**Emp**	**Emp/Firm**
Totals (2021)	**1,470**	**19,385**	**13.2**	**100.0%**	**14,042**	**197,591**	**14.1**	**100.0%**	**10.5%**	**9.8%**	**93.7%**
retail sector	296	3,072	10.4	20.1%	3,004	40,345	13.4	21.4%	9.9%	7.6%	77.3%
office sector	233	2,809	12.1	15.9%	1,340	16,922	12.6	9.5%	17.4%	16.6%	95.5%
service sector	594	7,918	13.3	40.4%	5,916	91,545	15.5	42.1%	10.0%	8.6%	86.1%
manufacturing sector	29	599	20.7	2.0%	420	9,703	23.1	3.0%	6.9%	6.2%	89.4%
other	318	4,987	15.7	21.6%	3,362	39,076	11.6	23.9%	9.5%	12.8%	134.9%

Source: Esri and RKG (2022)

(1) 15-minute walk time about the potential Platform location

na - data suppressed or otherwise unreported

C. Fiscal and Economic Impacts

This section presents the summary findings from RKG's analysis (as detailed in the *Lewiston-Auburn Rail Study*) regarding the potential development, residential and non-residential for the Station study areas. To summarize the approach and methodology:

- **Residential Units** – this reflects RKG's estimate of the potential for development of additional housing stock, by tenure, about each of the varying Station Study Area(s). This analysis offers both a low estimate of residential development and a high estimate of residential development. Please note that much of the development may result from a re-positioning of countywide residential development and thereby indicate a transfer of such housing (new units) as opposed to total net new housing.

- **Household Retail Spending Demand** – annual estimates of per household spending demand for a variety of retail goods and services was then applied to the estimated change in households to develop estimates of the annual spending demand represent by the additional housing. Some of this demand could equate to interest in additional (net new) retail development (SF) about the Station Study Area or, at a minimum, represent new consumer spending available to proximate and existing businesses.

- **Development Potential Retail** – this considers the average sales/SF for selected retailing businesses[34] and converts these into estimates of potentially supportable SF of development.

- **Development Potential Other** – this assumes an average of 250 SF/employee and is then benchmarked against the estimated non-retail employment increase among selected sectors[35] resulting in estimates of potentially supportable SF of development.

- **Potential Employment** – refers to the estimated employment growth, by selected industry, excluding retail positions.

- **Employing Spending** – considers the estimated employment (non-retail) growth and applies an average annual expenditure on selected goods and services as may be purchased by a worker during a typical year.

- **Residential Property Valuations** – a reflection of average building permit values, by tenure, for Androscoggin and Cumberland counties (where appropriate) which then form the basis for estimating resulting **Gross Residential Property Tax** receipts.

- **Non-Residential Property Valuations** – considers average construction cost/SF for retail and non-retail development to serve as a cost-based approach to valuation which in turn forms the basis for resulting **Gross Non-Residential Property Tax** receipts.

RKG notes that both the estimated residential and non-residential valuations are subject to revision, once built and stabilized, as local assessors would typically move to a comparable-sales approach to valuation or an income-based approach to valuation, where applicable and appropriate.

[34] Specialty food stores, consignment/second-hand stores, other specialty (niche) retailing and restaurants.
[35] Office = finance, real estate, and insurance. Service = health care and other personal/professional.

Station Sites

Apply the above referenced inputs and assumptions, and as relative to the baseline metrics, Table 19 offers a summary of the estimated fiscal and economic impacts for the three (3) Station sites included in this analysis.

RKG notes that all estimates of development potential, either residential or 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.

Auburn, ME

- Estimated new housing development ranging from a total of 37 units to 58 units, mostly owner units.
- The annual household spending demand for these units ranges from a low of $898,700 to a high of $1.43 million.[36]
- Some local (meaning within the Station study area) capture of this spending demand (as much as 35.0%) could amount to nearly 4,560 SF of development inclusive of retail[37] and non-retail.[38]
- Non-retail employment may increase by 62 positions and represent annual employee spending potential of nearly $99,675.[39]
- The estimated gross real estate property taxes from the estimated new housing could result in receipts totaling $161,405 to as much as $256,934. While gross property taxes from new non-residential development could contribute another $23,245.

Pineland (East), ME

- Estimated new housing development ranging from a total of 17 units to 26 units, mostly owner units.
- The annual household spending demand for these units ranges from a low of $538,400 to a high of $871,900.
- Some local capture of the above demand could amount to nearly 5,075 SF of development inclusive of retail and non-retail.
- Non-retail employment may increase by eight (8) positions and represent annual employee spending potential of nearly $12,890.

[36] The estimated annual per household consumer demand metrics vary by location.
[37] Retail includes specialty food services/vendors, consignment and second-hand merchandise, other specialty (niche) retail and restaurants.
[38] Office sector includes finance, real estate, and insurance. Service sector includes health care and other personal and professional uses. Manufacturing sector is manufacturing uses.
[39] Employee spending metrics are constant at approximately $1,600/employee annually.

- The estimated gross real estate property taxes from the estimated new housing could result in receipts totaling $39,511 to as much as $96,109. While gross property taxes from new non-residential development could contribute another $11,012.

Yarmouth Junction, ME

- Estimated new housing development ranging from a total of 85 units to 172 units, mostly owner units.

- The annual household spending demand for these units ranges from a low of $3.42 million to a high of $5.42 million.

- Some local capture of this spending demand could amount to nearly 15,680 SF of development inclusive of retail and non-retail.

- Non-retail employment may increase by 74 positions and represent annual employee spending potential of nearly $118,795.

- The estimated gross real estate property taxes from the estimated new housing could result in receipts totaling $409,677 to as much as $875,871. While gross property taxes from new non-residential development could contribute another $53,019.

Table 19 – Summary Comparison of Fiscal and Economic Impacts by Station Location

Summary Comparison of Potential Benefits - by Station Study Area	Auburn		Pineland East		Yarmouth Junction	
	Low	High	Low	High	Low	High
New Housing (1)	**37**	**58**	**17**	**26**	**85**	**172**
Owner Units	26	43	13	22	60	135
Renter Units	11	15	4	4	25	37
Change in HH Spending in $1,000's	**$898.7**	**$1,427.0**	**$538.4**	**$871.9**	**$3,425.9**	**$5,416.1**
Development Potential	**4,559**		**5,073**		**15,682**	
Retail SF	666		4,580		11,342	
Non-Retail SF **(2)**	3,894		493		4,340	
Potential Employment (3)	**62**		**8**		**74**	
Potential Spending	$99,674		$12,886		$118,794	
Potential Fiscal Impacts (FY22)	**Low**	**High**	**Low**	**High**	**Low**	**High**
Owner Value **(4)**	$5,328.67	$8,812.80	$3,830.67	$6,482.67	$17,680.00	$39,779.99
Renter Value **(5)**	$1,447.37	$1,973.69	$481.72	$481.72	$3,010.74	$4,455.90
Total Residential Value $1,000's	**$6,776.04**	**$10,786.49**	**$4,312.38**	**$6,964.38**	**$20,690.74**	**$44,235.89**
Estimated Gross Property Tax	**$161,405**	**$256,934**	**$59,511**	**$96,109**	**$409,677**	**$875,871**
Retail Value/SF	$150		$150		$150	
Non-Retail Value/SF	$225		$225		$225	
Total Non- Residential Value $1,000's	**$975.87**		**$797.95**		**$2,677.75**	
Estimated Gross Property Tax	**$23,245**		**$11,012**		**$53,019**	

Source: Maine Revenue Services, US Census Bureau and RKG (2022)

(1) - Excludes pipeline housing and reflects change over Baseline

(2) - Excludes manufacturing

(3) - Excludes retail

(4) - Reflects an estimated average (2017-2021) building permit value/unit in $1,000's - Androscoggin ($204,950) and Cumberland ($294,670) - single family homes

(5) - Reflects an estimated average (2017-2021) building permit value/unit in $1,000's - Androscoggin ($131,580) and Cumberland ($120,430) - 5+multi-family homes

Portland Platform Site

As indicated previously, the Portland site will likely accommodate a platform for ease, convenience and safety for rail passengers as opposed to a physical station. Also, the proposed site is centered in an already densely developed location, particularly with non-residential uses (close-in). While it is possible that some opportunities may exist for residential development, in RKG's assessment they are marginal, at least in the near-term, given the existing build-out of the area. This is not to suggest that a Portland Platform would not have some contributory value to the City, but it is more qualitative as opposed to quantitative. For example:

- An increase in passengers at this location could introduce some level of consumer spending demand, particularly before work or after work, which could translate to additional sales to area businesses, notably dining and drinking establishments.

- Improved health conditions as a potential reduction in automobile travel could translate to a reduction in pollutants and emissions.

- In general, a restoration of passenger rail service from Lewiston-Auburn to Portland could serve to provide a linkage for employees from where the employment opportunities (and presumably demand) are greatest in Portland, to where other areas upstate where housing is generally more affordable. Note for example, in the previous section, where median owner housing values (projected for 2026 and in the study areas) range from $298,300 in Auburn; $374,100 in Pineland (East); and, $450,900 in Yarmouth Junction as contrasted to $536,676 for the Portland Platform location.

Commuting Patterns

Commuting patterns as reported for 2019 and from the U.S. Census Bureau, indicates that approximately 55,730 workers commute from outside of Portland for employment in Portland. Of these, nearly 17,200 commute from distances greater than 24 miles or approximately 31.0% of the inbound commuters.

- The same data indicated that 1,050 Portland residents commute to Lewiston and an additional 815 residents commute to Yarmouth for their place of employment.

- Further, 469 residents commute from Lewiston to Portland; 336 residents commute from Yarmouth to Portland; and 393 residents commute from Falmouth to Portland for their place of employment.

D. Passenger Rail Spending

Estimated ridership for a Lewiston-Auburn-to-Portland Corridor[40] for Intercity-Style Service, range from a daily low of 210 passengers to a daily high of 240 passengers, as estimated for 2025 ridership levels, reflecting four (4) daily round trips. Based on these inputs the estimated 2025 annual ridership of resorted passenger rail service, as an option for the Berlin Subdivision Rail Corridor, ranges from a low of 76,650 to a high of 87,600.

[40] As noted in the *Lewiston-Auburn Passenger Rail Service Plan – Transit Propensity Report* (dated August 2018).

RKG relied on information provided by the Northern New England Passenger Rail Authority (NNEPRA) regarding ridership and on-board spending for passengers of the Downeaster which runs from Brunswick, ME to Boston (North Station), MA as presented in Table 20 and noting:

- Downeaster ridership for the period covering September2021 through August 2022 totaled 432,857 passengers. No distinction is made for the type of traveler or for their location for boarding the train or disembarking the train.

- Per NNEPRA, of the total passengers approximately 18.2% actually made on-board café purchase, or 78,780 passengers.

- On-board café sales totaled $646,347 over the time period, indicating an average per total passenger purchase of $1.49, but more realistically of $8.20 for those actually making purchases.

- In this analysis, RKG assumes that the likely passenger spending of those on a restored passenger rail line, as is an option for the Berlin Subdivision Rail Corridor, will exhibit the same characteristic.

- Under these inputs and assumptions, estimated annual passenger spending (for 2025 ridership) could range from $114,455 to as much as $130,805 – which then form the basis for IMPLAN modeling.

Table 20 – Estimate of On-Board Passenger Spending

Berlin Subdivision Rail Corridor - Annual Rail Passenger On-Board Spending	Downeaster Line - September 2021 - August 2022	Berlin Subdivision Rail Corridor (annual 2025)	
		Low Estimate	High Estimate
Total Ridership	432,857	76,650	87,600
% of Passengers Spending (18.2%)	78,780	13,950	15,943
Passenger Spending			
Total	$646,347	$114,455	$130,805
Spending/Total Passengers	$1.49	$1.49	$1.49
Spending/Passengers Spending	$8.20	$8.20	$8.20
TOTAL Passenger Spending	**$646,347**	**$114,455**	**$130,805**

Source: VHB, NNEPRA and RKG (2022)

IMPLAN Modeling – Economic Impacts of Passenger Rail Service

Similar to the analysis regarding the consumer spending activity, as a result of Interim Trail use, the estimated spending of the passengers of a restored rail service would also result in direct, indirect and induced impacts throughout the statewide economy (Table 21 and Table 22). For both the low and high ridership scenarios the IMPLAN input is all other food and drinking places which includes airline and transit food services contractors, cafeterias, coffee carts, etc.

- **Low Estimate of Ridership** – the estimated direct annual passenger spending of $114,455 results in labor income of $60,128 and represents 1.77 employment

positions and a value added impact of $77,523. The direct impacts also result in indirect impacts and induced impacts for the statewide economy. These latter two result in an output value of $97,345 which then translates to $33,549 in labor income and 0.63 employment positions with a combined value added factor of $55,178. The total value added to the statewide economy is $132,701 under the low ridership scenario.

Table 21 – IMPLAN modeling Passenger Spending – Low Estimate

ESTIMATES of PASSENGER RAIL SPENDING - LOW				
Input Costs	**Annual Riders = 76,650**	**Spending = $114,455**		
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	1.77	$60,138	$77,523	$114,455
2 - Indirect	0.21	$13,421	$19,773	$37,089
3 - Induced	0.39	$20,129	$35,405	$60,255
Total	**2.38**	**$93,688**	**$132,701**	**$211,800**

Source: IMPLAN, VHB , NNEPRA and RKG (2022) - analysis in constant 2022 dollars

- **High Estimate of Ridership** – the estimated direct annual passenger spending of $130,805 results in labor income of $68,729 and represents 2.03 employment positions and a value added impact of $88,598. The direct impacts also result in indirect impacts and induced impacts for the statewide economy. These latter two result in an output value of $111,250 which then translates to $38,342 in labor income and 0.69 employment positions with a combined value added factor of $63,060. The total value added to the statewide economy is $151,658 under the high ridership scenario.

Table 22 – IMPLAN modeling Passenger Spending – High Estimate

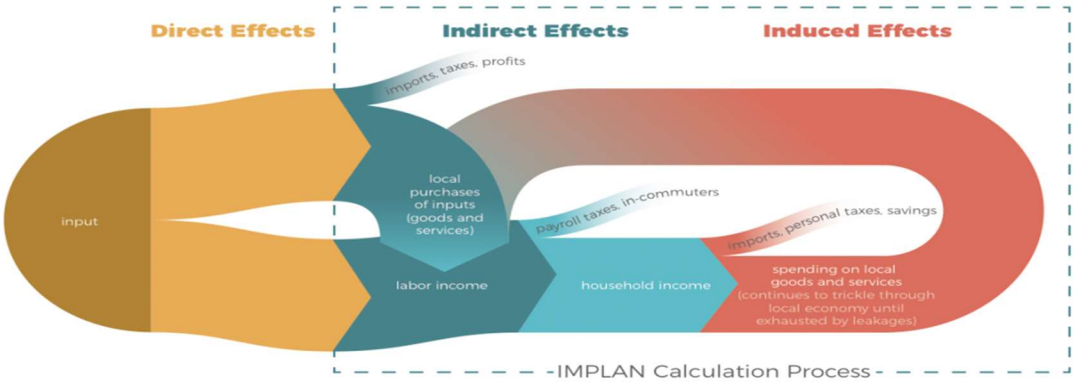
ESTIMATES of PASSENGER RAIL SPENDING - HIGH				
Input Costs	**Annual Riders = 87,600**	**Spending = $130,805**		
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	2.03	$68,729	$88,598	$130,805
2 - Indirect	0.24	$15,338	$22,598	$42,388
3 - Induced	0.45	$23,004	$40,462	$68,863
Total	**2.72**	**$107,071**	**$151,658**	**$242,055**

Source: IMPLAN, VHB , NNEPRA and RKG (2022) - analysis in constant 2022 dollars

4 - 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 15).

Figure 15 – Flow Chart of the IMPLAN Modeling Concepts



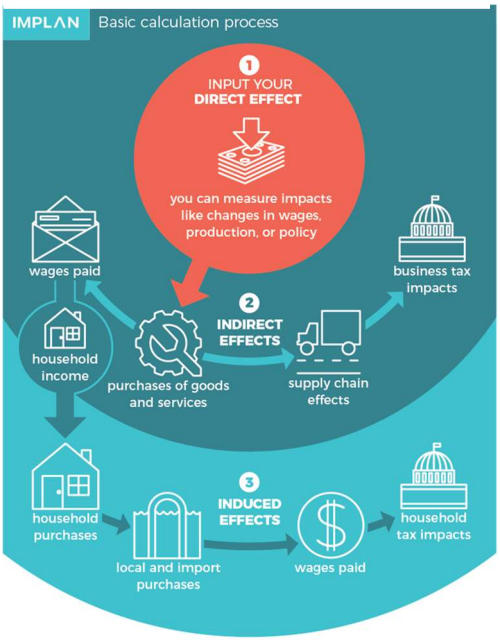
IMPLAN combines this data to generate a series of multipliers for the local economy. The multiplier measures the amount of total economic activity that results from an industry (or household) spending an additional dollar in the local economy. Based on these multipliers, IMPLAN generates a series of tables to show the economic event's direct, indirect, and induced impacts to gross receipts or outputs (Figure 16).

- **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 (direct) and their suppliers (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 16 – 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 construction related impacts (one-time impacts) as developed from the cost estimates provided by VHB for each "type" of rail/trail, and second for the annual and ongoing costs associated with maintenance. The 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 $22.20 million were comprised in part of State of Maine funding then those dollars are already in the statewide economy and may not result in the value added estimates. Put another way, if the $22.20 million included $10.00 million in State funding then the IMPLAN model should reflect an initial investment of $12.20 million – 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 construction costs (as provided by VHB) for each of the various interim trail and/or rail concepts and combinations (as noted in the Executive Summary) for the Berlin Subdivision Rail Corridor. Infrastructure costs include a contingency allowance (30.0%); design costs (10.0%); administration costs (15.0%); and actual construction costs. RKG also utilized the estimated annual ongoing operating and maintenance costs (as provided by VHB as a cost per track mile) for each of the various interim trail and/or rail concepts and combinations (as noted in the Executive Summary) for the Berlin Subdivision Rail Corridor.

The following tables summarize the IMPLAN "runs" for each of the potential type of use(s). All output is reported in constant 2022 dollars and ***rounded to $millions***.

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

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

- **Restoration of Freight Rail Services** – as presented in Table 23, the infrastructure investment of $22.20 million (direct output) results in employment of 160 jobs (direct) with labor income of $8.45 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $7.87 million. The direct impacts also result in both indirect and induced impacts, totaling $20.21 million (output) and then translate to 132 in employment with labor income of $6.70 million. The indirect and induced value added to the statewide economy is $11.15 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $19.02 million.

Table 23 – IMPLAN Modeling – Restoration of Freight Rail Service (rounded $ millions)

FREIGHT RAIL SERVICE				
Input Costs	**Construction Costs for Infrastructure = $22.20 mill**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	160	$8.45	$7.87	$22.20
2 - Indirect	57	$3.37	$5.30	$10.25
3 - Induced	65	$3.33	$5.85	$9.96
Total	**281**	**$15.15**	**$19.02**	**$42.41**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

The ongoing and annual maintenance costs (Table 24) of $2.13 million (direct output) results in employment of 6 jobs (direct) with labor income of $0.75 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $0.85 million. The direct impacts also result in both indirect and induced impacts, totaling $1.98 million (output) and then translate to 12 in employment with labor income of $0.66 million. The indirect and induced value added to the statewide economy is $1.12 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $1.98 million.

Table 24 – IMPLAN Modeling – Restoration of Freight Rail Service (rounded $ millions)

FREIGHT RAIL SERVICE				
Input Costs	**Annual Maintenance Costs = $2,132,000**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	6	$0.75	$0.85	$2.13
2 - Indirect	6	$0.36	$0.59	$1.07
3 - Induced	6	$0.30	$0.53	$0.91
Total	**18**	**$1.41**	**$1.98**	**$4.10**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

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.

- **Restoration of Passenger Rail Services** – as presented in Table 25, the infrastructure investment of $274.00 million (direct output) results in employment of 1,970 jobs (direct) with labor income of $104.34 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $97.17 million. The direct impacts also result in both indirect and induced impacts, totaling $249.39 million (output) and then translate to 1,504 in employment with labor income of $82.68 million. The indirect and induced value added to the statewide economy is $137.60 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $234.77 million.

Table 25 – IMPLAN Modeling – Restoration of Passenger Rail Service (rounded $ millions)

PASSENGER RAIL SERVICE				
Input Costs	**Construction Costs for Infrastructure = $274.00 mill**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	1,970	$104.34	$97.17	$274.00
2 - Indirect	701	$41.61	$65.39	$126.50
3 - Induced	803	$41.07	$72.21	$122.89
Total	**3,474**	**$187.02**	**$234.77**	**$523.39**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

The ongoing and annual maintenance costs (Table 26) of $2.34 million (direct output) results in employment of 6 jobs (direct) with labor income of $0.82 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $0.93 million. The direct impacts also result in both indirect and induced impacts, totaling $2.17 million (output) and then translate to 13 in employment with labor income of $0.72 million. The indirect and induced value added to the statewide economy is $1.24 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $2.17 million.

Table 26 – IMPLAN Modeling – Restoration of Passenger Rail Service (rounded $ millions)

PASSENGER RAIL SERVICE				
Input Costs	**Annual Maintenance Costs = $2,340,000**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	6	$0.84	$0.95	$2.38
2 - Indirect	7	$0.40	$0.66	$1.19
3 - Induced	7	$0.34	$0.60	$1.01
Total	**20**	**$1.55**	**$2.17**	**$4.51**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

- **Trail until Rail – Gravel (TUR - Gravel)** – as presented in Table 27, the infrastructure investment of $47.50 million (direct output) results in employment of 342 jobs (direct) with labor income of $18.09 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $16.84 million. The direct impacts also result in both indirect and induced impacts, totaling $43.23 million (output) and then translate to 261 in employment with labor income of $14.33 million. The indirect and induced value added to the statewide economy is $23.85 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $40.70 million.

Table 27 – IMPLAN Modeling – Trail until Rail – Gravel (rounded $ millions)

TRAIL until RAIL - GRAVEL				
Input Costs	**Construction Costs for Infrastructure = $47.50 mill**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	342	$18.09	$16.84	$47.50
2 - Indirect	122	$7.21	$11.34	$21.93
3 - Induced	139	$7.12	$12.52	$21.30
Total	**602**	**$32.42**	**$40.70**	**$90.73**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

The ongoing and annual maintenance costs (Table 28) averages $117,000 (direct output) and results in employment of 0.32 jobs (direct) with labor income of $0.04 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $0.05 million. The direct impacts also result in both indirect and induced impacts, totaling $0.11 million (output) and then translate to 0.67 in employment with labor income of $0.04 million. The indirect and induced value added to the statewide economy is $0.06 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $0.11 million.

Table 28 – IMPLAN Modeling – Trail until Rail – Gravel (rounded $ millions)

TRAIL until RAIL - GRAVEL				
Input Costs	**Annual Maintenance Costs = $117,000**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	0.32	$0.04	$0.05	$0.12
2 - Indirect	0.34	$0.02	$0.03	$0.06
3 - Induced	0.33	$0.02	$0.03	$0.05
Total	**1.00**	**$0.08**	**$0.11**	**$0.23**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

- **Trail until Rail – Paved (TUR - Paved)** – as presented in Table 29, the infrastructure investment of $55.00 million (direct output) results in employment of 395 jobs (direct) with labor income of $20.94 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $19.50 million. The direct impacts also result in both indirect and induced impacts, totaling $50.06 million (output) and then translate to 302 in employment with labor income of $16.60 million. The indirect and induced value added to the statewide economy is $27.62 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $47.12 million.

Table 29 – IMPLAN Modeling – Trail until Rail – Paved (rounded $ millions)

TRAIL until RAIL - PAVED				
Input Costs	**Construction Costs for Infrastructure = $55.0 mill**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	395	$20.94	$19.50	$55.00
2 - Indirect	141	$8.35	$13.12	$25.39
3 - Induced	161	$8.24	$14.49	$24.67
Total	**697**	**$37.54**	**$47.12**	**$105.06**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

The ongoing and annual maintenance costs (Table 30) averages $104,000 (direct output) and results in employment of 0.27 jobs (direct) with labor income of $0.04 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $0.04 million. The direct impacts also result in both indirect and induced impacts, totaling $0.09 million, as rounded, (output) and then translate to 0.56 in employment with labor income of $0.03 million. The indirect and induced value added to the statewide economy is $0.06 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $0.09 million.

Table 30 – IMPLAN Modeling – Trail until Rail – Paved (rounded $ millions)

TRAIL until RAIL - PAVED				
Input Costs	**Annual Maintenace Costs = $104,000**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	0.27	$0.04	$0.04	$0.10
2 - Indirect	0.29	$0.02	$0.03	$0.05
3 - Induced	0.28	$0.01	$0.03	$0.04
Total	**0.84**	**$0.08**	**$0.09**	**$0.19**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

- **Rail with Trail – Gravel (RWT – Gravel)** – as presented in Table 31, the infrastructure investment of $90.00 million (direct output) results in employment of 647 jobs (direct) with labor income of $34.27 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $31.92 million. The direct impacts also result in both indirect and induced impacts, totaling $81.91 million (output) and then translate to 494 in employment with labor income of $27.16 million. The indirect and induced value added to the statewide economy is $45.20 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $77.11 million.

Table 31 – IMPLAN Modeling – Rail with Trail – Gravel (rounded $ millions)

RAIL with TRAIL - GRAVEL				
Input Costs	**Construction Costs for Infrastructure = $90.0 mill**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	647	$34.27	$31.92	$90.00
2 - Indirect	230	$13.67	$21.48	$41.55
3 - Induced	264	$13.49	$23.72	$40.36
Total	**1,141**	**$61.43**	**$77.11**	**$171.92**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

The ongoing and annual maintenance costs (Table 32) averages $117,000 (direct output) and results in employment of 0.32 jobs (direct) with labor income of $0.04 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $0.05 million. The direct impacts also result in both indirect and induced impacts, totaling $0.11 million, as rounded, (output) and then translate to 0.67 in employment with labor income of $0.04 million. The indirect and induced value added to the statewide economy is $0.06 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $0.11 million.

Table 32 – IMPLAN Modeling – Rail with Trail – Gravel (rounded $ millions)

RAIL with TRAIL - GRAVEL				
Input Costs	**Annual Maintenance Costs = $117,000**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	0.32	$0.04	$0.05	$0.12
2 - Indirect	0.34	$0.02	$0.03	$0.06
3 - Induced	0.33	$0.02	$0.03	$0.05
Total	**1.00**	**$0.08**	**$0.11**	**$0.23**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

- **Rail with Trail – Paved (RWT – Paved)** – as presented in Table 33, the infrastructure investment of $94.30 million (direct output) results in employment of 678 jobs (direct) with labor income of $35.91 million (direct). The estimated dollar value added to the Maine economy from these direct inputs is $33.44 million. The direct impacts also result in both indirect and induced impacts, totaling $85.83 million (output) and then translate to 517 in employment with labor income of $28.45 million. The indirect and induced value added to the statewide economy is $47.35 million. In total (direct, indirect and induced) the value added to the Maine economy is $80.80 million.

Table 33 – IMPLAN Modeling – Rail with Trail – Paved (rounded $ millions)

RAIL with TRAIL - PAVED				
Input Costs	**Construction Costs for Infrastructure = $94.3 mill**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	678	$35.91	$33.44	$94.30
2 - Indirect	241	$14.32	$22.50	$43.54
3 - Induced	276	$14.13	$24.85	$42.29
Total	**1,196**	**$64.36**	**$80.80**	**$180.13**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

The ongoing and annual maintenance costs (Table 34) averages $104,000 (direct output) and results in employment of 0.29 jobs (direct) with labor income of $0.04 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $0.04 million. The direct impacts also result in both indirect and induced impacts, totaling $0.10 million, as rounded, (output) and then translate to 0.59 in employment with labor income of $0.04 million. The indirect and induced value added to the statewide economy is $0.06 million. In total (direct, indirect and induced) the estimated value added to the Maine economy is $0.10 million.

Table 34– IMPLAN Modeling – Rail with Trail – Paved (rounded $ millions)

RAIL with TRAIL - PAVED				
Input Costs	**Annual Maintenance Costs = $104,000**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	0.29	$0.04	$0.04	$0.11
2 - Indirect	0.30	$0.02	$0.03	$0.05
3 - Induced	0.29	$0.02	$0.03	$0.05
Total	**0.89**	**$0.08**	**$0.10**	**$0.20**

Source: IMPLAN, VHB and RKG (2022) - analysis in constant 2022 dollars and in rounded $millions

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 presented in Table 12) ranging from an annual estimate of $3.52 million to as much as $5.29 million.[41] The same interpretation of this data, as has been described previously, remains. As before, the focus of the information shown in Table 35 is the value added metrics which indicates the total value added impacts to the State economy from this increase in consumer spending[42] activity arising from interim trail usage.

Table 35 - Summary Comparisons of IMPLAN Modeling for Additional Consumer Spending ($ millions)

SUMMARY COMPARISONS - IMPLAN Models (total) ($millions)				
Low Estimate of Total Consumer Spending = $3,521,415				
Expenditure Category	**Employment**	**Labor Income**	**Value Added**	**Output**
Lodging	23	$1.10	$1.60	$2.59
Food	14	$0.50	$0.79	$1.32
Retail	2	$0.10	$0.14	$0.25
Transportation	13	$0.27	$0.44	$0.79
Other Recreation	4	$0.14	$0.20	$0.34
Equipment	1	$0.05	$0.09	$0.16
Totals of Low Estimate	**57**	**$2.17**	**$3.25**	**$5.46**
High Estimate of Total Consumer Spending = $5,292,300				
Expenditure Category	**Employment**	**Labor Income**	**Value Added**	**Output**
Lodging	35	$1.65	$2.40	$3.89
Food	20	$0.75	$1.18	$1.99
Retail	4	$0.14	$0.22	$0.38
Transportation	19	$0.41	$0.66	$1.18
Other Recreation	6	$0.22	$0.30	$0.52
Equipment	1	$0.08	$0.13	$0.25
Totals of High Estimate	**86**	**$3.26**	**$4.88**	**$8.20**

Source: IMPLAN, VHB and RKG (2022)

Note - constant 2022 dollars in $millions

- **Low Estimate of Annual Consumer Spending - $3,521,415** – the estimated spending of approximately $3.52 million results in total output (direct, indirect and induced) of $5.46 million, translating to $2.17 million in labor income and 57 jobs. The total value added estimate is $3.25 million throughout the State of Maine economy. The greatest impact(s) are estimated to be derived from expenditures in lodging and then followed by food 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.

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

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

- **High Estimate of Annual Consumer Spending - $5,292,300** – the estimated spending of approximately $5.29 million results in total output (direct, indirect and induced) of $8.20 million, translating to $3.26 million in labor income and 86 jobs. The total value added estimate is $4.88 million throughout the State of Maine economy. As before, the greatest impact(s) are in lodging and then food purchases. Also, whether or not the estimated impacts would result in new development (SF) is uncertain.

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

Appendix

The following previous studies and reports were reviewed for this current analysis:

- 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)

- 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)

- 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

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

- The Northern Forest Canoe Trail:[43] An Economic Impact Study as prepared for the Vermont Tourism Data Center as prepared by the University of Vermont (dated 2006-2007)

- 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.

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

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

- Impacts of Trails and Sidewalks on Home Values, prepared by the heartbeat of Hampton Roads (VA) Transportation Planning Organization (dated November 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)

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