LEWISTON-AUBURN PASSENGER RAIL STUDY

Economic Evaluation Study

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PREPARED BY

vhb RKG

IN ASSOCIATION WITH

NORTHERN NEW ENGLAND PASSENGER RAIL AUTHORITY MaineDOT

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EXECUTIVE SUMMARY

Study Overview

L.D. 991, passed by the Maine State Legislature, directed the Maine Department of Transportation (MaineDOT) to perform an economic evaluation for commuter and passenger train service between Portland and the Lewiston and Auburn Area. The LD also directed that the economic evaluation include two full build alignments from earlier reports. This report provides that economic evaluation as a follow on of earlier reports: *Operating Plans and Corridor Assessments* (May 2019) and the *Transit Propensity Analysis Report* (August 2018). The 2019 report recommended an economic study as the next step. This report continues the planning process for the Lewiston-Auburn Passenger Rail Study by evaluating potential development demand around general station areas, estimating economic impacts for two alignment alternatives, and comparing findings.

RKG Associates, Inc. (RKG) was retained as a subconsultant by VHB on behalf of the MaineDOT to prepare this assessment of the prevailing market conditions associated with

the potential development of commuter rail stations[1] along two selected potential rail alignments from Lewiston–Auburn to Portland, Maine:

- 1A (PAR) is the western route for the proposed rail services with three station areas[2]: Lewiston, Auburn (Park and Ride), and Pineland West.
- 1B (SLR) is the eastern route for the proposed rail services with four station areas: Lewiston, Auburn (Park and Ride), Pineland East, and Yarmouth Junction.

Key Findings from Economic Evaluation

There may be little distinction between the two Alignments.

The economic analysis finds that Alignment 1B requires a higher initial investment or capital costs; however, this is because it consists of four station sites, while Alignment 1A consists of three station sites.

Similarly, Alignment 1B sees greater value-added metrics (statewide economic ripple effects) than Alignment 1A, but this is directly related to the higher initial investment costs for Alignment 1B and does not inherently favor one alignment over the other.

The summary key findings of this research offered next refer specifically to the fiscal and economic benefits associated, as well as the results of the economic modeling[3] for the two proposed Alignments. It is important to note that a review of local zoning was not part of the economic evaluation. Therefore, current zoning or local ordinances may not allow for build out of the development identified and predicted as part of the evaluation.

Fiscal and Economic Impacts

The summary estimates of the fiscal and economic impacts associated with each proposed Alignment are shown in Table ES-1. The more detailed analysis and findings relating to specific station areas are discussed in subsequent chapters of this report.

[1] 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.

[2] The Royal Junction station was removed from consideration for Alignment 1A, its analysis is included throughout the report for reference.

[3] Providing an estimate of the direct, indirect, and induced economic impacts arising from an initial investment in the economy, such as the one-time construction (capital costs) and annual ongoing (O&M) costs associated with the two corridor Alignment options considered in this analysis.

The last two columns of Table ES-1 offer a comparative benchmarking or indexing estimate of the return of the initial capital cost investment for each Alignment[4], in percentage terms.

[4] For example, the infrastructure capital cost of $189.00 million, the low estimate for Alignment West reflects:

A 1.52% return in annual householding – with the actual dollar amount of household spending a function of the number of new households and the average annual expenditure per household. A 0.20% return in employing spending – with the actual dollar amount of employee spending a function of the estimated increase in employment and annual spending. An 0.34% in gross residential property tax receipts.

Table ES-1 Summary Comparison of Fiscal and Economic Impacts by Alignment

Summary Comparisons by Considered Alignment	Alignment 1A[1] (PAR)	Alignment 1B[2] (SLR)	Alignment 1A (PAR)	Alignment 1B (SLR)
	Low - High		Low - High	
New Housing Total	166 – 246	239 – 397	$189 - $230 million	$207- $254 million
Owner Units	54 – 89	106 - 211		
Renter Units	112 – 157	133 - 186		
Change in Household Spending in $1,000's	$2,869.6 - $4,380.9	$5,921.6 - $9,216.4	1.52% - 1.90%	2.86% - 3.63%
Development Potential Total	21,446	36,347		
Retail SF	6,634	18,062		
Non-Retail SF[3]	14,812	18,285		
Potential Employment[4]	238	298		
Potential Spending Demand	$380,602	$476,059	0.20% - 0.17%	0.23% - 0.19%
Potential Fiscal Impacts (FY22)				
Owner Value[5]	$12,951.31 - $21,380.56	$28,273.97 - $57,329.89		
Renter Value[6]	$14,647.71 - $20,524.19	$17,176.73 - $24,016.64		
Total Residential Value ($1,000's)	$27,599.01 - $41,904.75	$45,450.70 - $81,346.54		
Estimated Gross Property Tax	$646,453.00 - $966,308.00	$1,016,950.00 - $1,776,020.00	0.34% - 0.42%	0.49% - 0.70%
Retail Value/SF	$150	$150		
Non-Retail Value/SF	$225	$225		
Total Non- Residential Value $1,000's	$4,327.71	$6,823.40		
Estimated Gross Property Tax	$103,797.00	$154,304.00		

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

(1) Alignment West includes Lewiston, Auburn (Park and Ride) and Pineland West stations

(2) Alignment East includes Lewiston, Auburn (Park and Ride), Pineland East and Yarmouth stations

(3) Excludes manufacturing

(4) Excludes retail

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

(6) 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

(7) These metrics offer an estimated percent return for the selected metric relative to the initial investment, or capital costs, of each of the two (2) Alignments under consideration. For example, a $189.00 million investment in Alignment West (low) returns 0.34% in gross property tax receipts.

Other Potential Benefits of Rail Service

Rail service can result in other economic benefits, including but not limited to the following metric areas.

Travel Time Savings

Transportation infrastructure improvement projects may seek to reduce travel times for users of the transportation system, for example, by improving traffic flow, increasing transit vehicle operating speeds or decrease transit service headways, or to provide new, shorter connections between destinations. Value of Travel Time Savings is estimated in monetary form by considering the value of time, change in trip time, and number of affected trips.

Comparative Value of Energy and Emission Reductions

A study of transit energy consumption[5] 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 an approximate usage of 1,500 BTUs per passenger mile for commuter rail.

The relative costs for commuter rail travel are therefore significantly lower than costs for automobile travel, particularly with regard to near term costs which are quickly increasing. Chapter 3 will detail these benefits further.

Affordable Mobility

Public transportation can be a more affordable travel option particularly for low- to moderate-income individuals and households with consideration to costs for fuel, maintenance, and lease or purchase prices for personal automobiles. 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.

[5] 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.

As a reference, Tables ES-2 and ES-3 summarize costs and ridership analyses from the 2019 Operating Plans and Corridor Assessments report.

Table ES-2 Summary of Capital and O&M Costs by Alignment (2019 Dollars)

	Alignment 1A	**Alignment 1B**
Infrastructure Costs	$189 to $230	$207 to $254
Vehicle Costs	$75 to $95	$75 to $95
Total Capital Cost	**$264 to $325**	**$282 to $349**
Annual O&M Cost	$15 to $19	$16 to $20

Source: Operating Plans and Corridor Assessments (May 2019)

Note: If this service is contracted out to an operator, the operator may provide the vehicles, negating the need to procure vehicles. Since it is unknown who would operate the service at this time, vehicle acquisition costs were assumed.

Note: Costs have not been updated as a part of this study.

Table ES-3 Rail Ridership Propensity

	Near-Term Ridership Potential (Projected to 2025) Daily Rail Trips		**Long-Term Ridership Potential (Projected to 2040) Daily Rail Trips**	
	Low	**High**	**Low**	**High**
12-20 Transit-Style Service Trips	600	800	700	1900
Up to 4 Intercity-Style Service Trips	210	240	250	330

Source: Operating Plans and Corridor Assessments (May 2019)

1

INTRODUCTION

This chapter will introduce the overview and purpose, with a focus on baseline metrics and existing conditions surrounding the potential station areas that were studied:

- Lewiston Station
- Auburn Station (Park and Ride)
- Pineland West Station
- Pineland East Station
- Yarmouth Junction Station
- *Royal Junction Station*[6]

[6] The Royal Junction station was removed from consideration in this study, its analysis is included throughout the report for reference.

1.1 Overview of Study

This Economic Evaluation Study continues the planning process for the Lewiston-Auburn Passenger Rail Study by assessing potential development demand around general station areas, estimating high level economic impacts, and comparing findings for two alternative rail alignments linking Lewiston and Auburn to Portland, Maine.

A high level analysis was conducted for a total of six potential stations that make up the two alignments: Lewiston, Auburn (Park and Ride), Pineland West, Pineland East, Yarmouth Junction, and Royal Junction. After consultation with the study committee, it was determined that the Royal Junction station location was not advantageous from the perspective of matters such as land uses and zoning and was removed from consideration. The Royal Junction station analysis is included throughout the report for reference.

These two alignments, 1A and 1B are displayed in Figure 1 and outlined below. This chapter will focus on existing conditions and baseline metrics surrounding the station areas that were studied, with attention to population, housing, home values, income, and business diversity. Residential development potential and retail demand were also analyzed.

Potential station areas along Alignment 1A (West) include the following along the Pan Am Railroad (PAR) corridor[7]:

- Lewiston
- Auburn (Park and Ride)
- Pineland West

Potential stations areas along Alignment 1B (East) include the following along the St. Lawrence & Atlantic Railroad (SLR) corridor:

- Lewiston
- Auburn (Park and Ride)
- Pineland East
- Yarmouth Junction

[7] The Royal Junction station was removed from consideration for Alignment 1A in this study, its analysis is included throughout the report for reference.

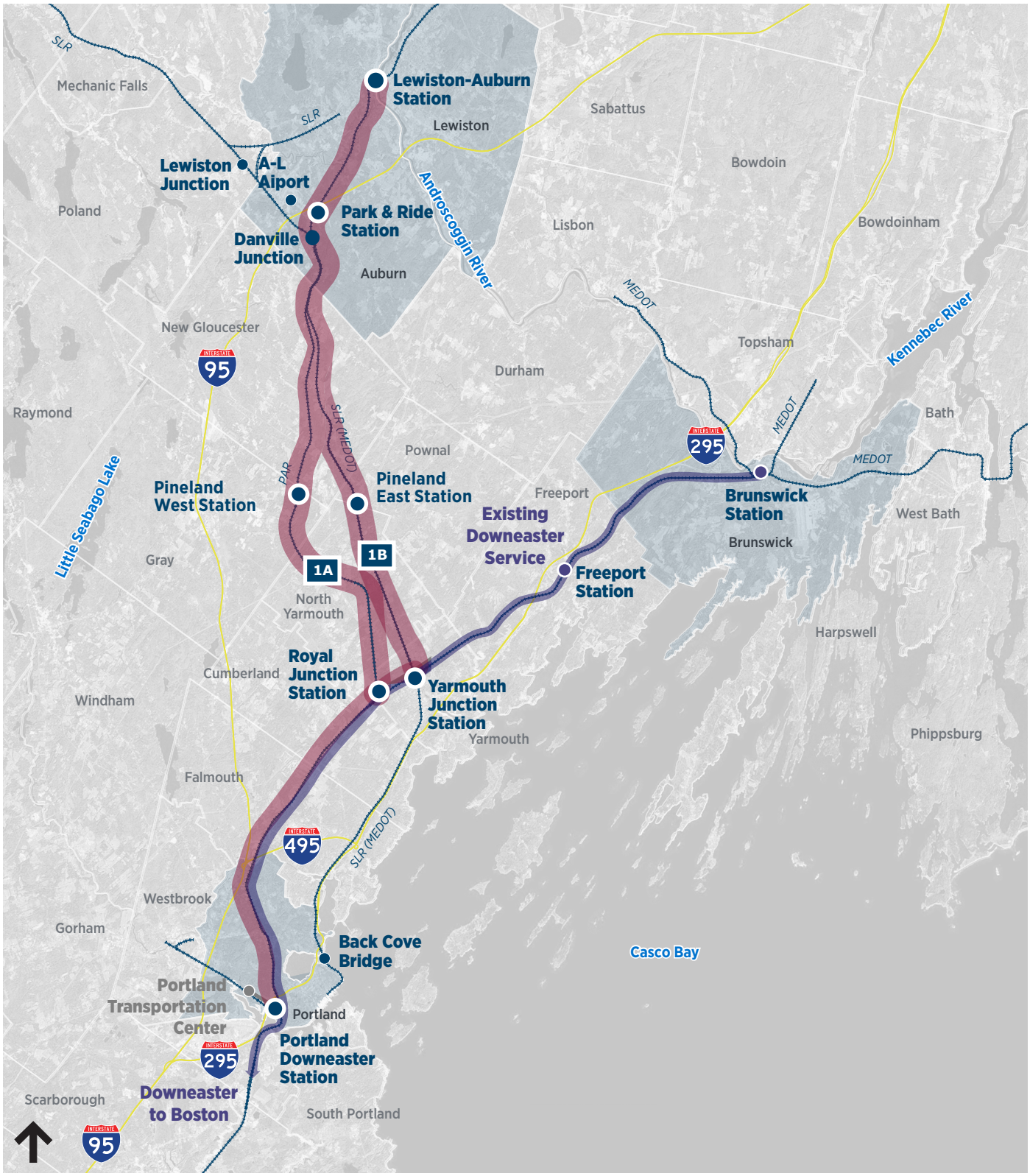
This study analyzed the economic and fiscal impacts of the construction of the rail line and stations as well as any potential development that may be projected at each station area. This analysis:

- Defines an appropriate study area around each potential station area location, excluding Portland, Maine.
- Compiles baseline metrics and projected metrics (where applicable) of selected socio-economic indicators for each potential station location.
- Contrasts the selected station metrics to comparable metrics for a broader geography, in this case the county.
- Develops estimates of additional development potential such as residential, commercial, or retail opportunities for each potential station location noting that the unknown factor is the availability and or possible assemblage of land to accommodate such development.
- Utilizes Impact Analysis for Planning (IMPLAN) econometric modeling to determine the potential direct, indirect, and induced economic impacts of the construction of the line and potential stations.[8]
- Estimates potential fiscal and economic impacts that could result from projected development around each station and various station combinations: new housing, jobs, spending, and taxes.

General station areas were selected from a previous report, *Operating Plans and Corridor Assessments (May 2019)*. Particular and specific station site selection is a later part of the planning and design process. While the station locations will still need to be identified, it is not expected that a slight shift in station location along the alignment - within a reasonable distance from those identified in this analysis - would substantially change the outcomes of the estimated economic benefits. As noted throughout this analysis, any potential "near to the station" development would also depend on a variety of other factors including available land (either vacant or that could be assembled), local regulatory and zoning guidelines and action taken by a willing and able developer.

A review of local zoning for each of the municipalities was not part of the economic evaluation. Current zoning or local ordinances may or may not allow for build out of the development identified and predicted as part of the evaluation.

[8] RKG modeled and summarized the impacts of several different alternatives based on information provided by VHB.



Existing Downeaster Service

Proposed Alignments

Existing Downeaster Station

Potential Stations

LEWISTON-AUBURN ECONOMIC EVALUATION STUDY

Alignments 1A/1B with Potential Stations

Source: VHB

1.2 Baseline Metrics and Assumptions for Potential Station Areas

1.2.1 Assumptions

Study areas were defined around each potential station area. At this stage of the project, general locations for stations were identified for purposes of conducting the economic study. Particular station site selection is a later part of the planning and design process.

For the potential Lewiston station site, which is more dense, walkable downtown locations, an approximate 15-minute walk time serves as the study area.

For all other potential station areas, which are currently less urban and less dense, a 1-, 2- and 3-mile radius around each station serves as the area to capture future development. While it is reasonable to assume that any future development would potentially occur closest to the 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.

1.2.2 Station Area Baseline Metrics

The primary selected metrics analyzed for each potential station area for estimates of additional non-rail/station development opportunities considering the following:

- Population
- Housing
- Owner Home Values
- Incomes
- Business Diversity

Availability and/or possible assemblage of land to accommodate such development were not considered at this time, as this study did not include analyses of local zoning and ordinances that may or may not allow for the density of development being contemplated. The metrics are available in accompanying tables and described below.

Additional areas of analysis include:

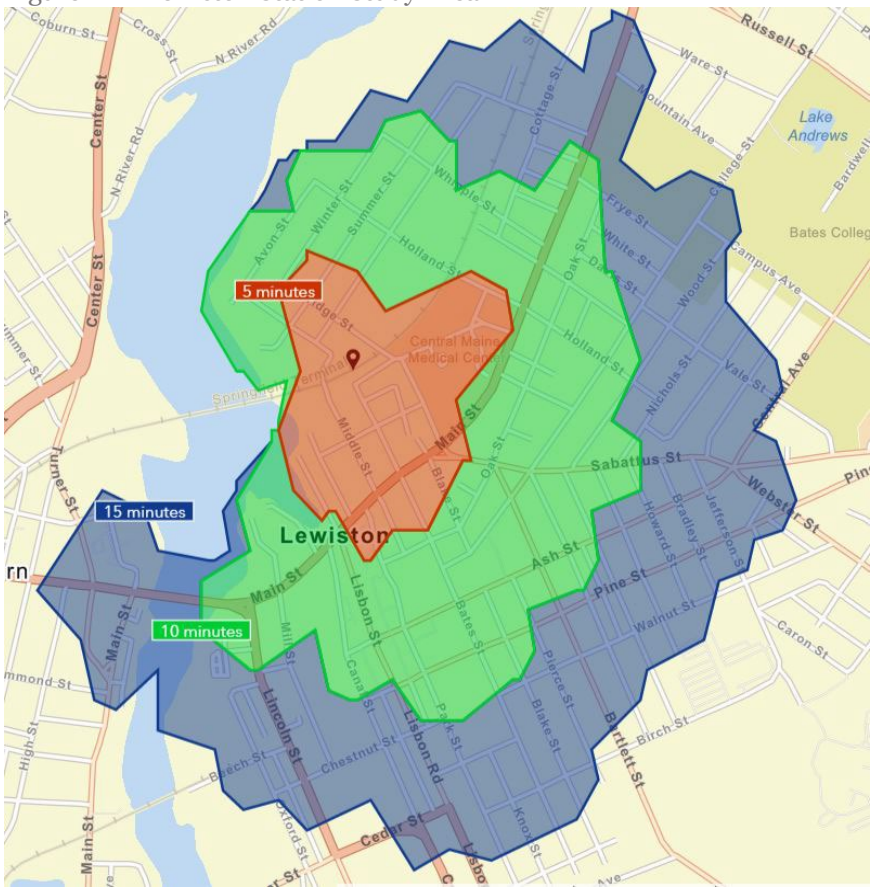
- Residential Development Potential
- Retail Demand and Sales Comparisons

1.2.2.1 Potential Lewiston Station Area

The potential Lewiston station area is aligned with the Pan Am Railroad corridor located in the western end of its downtown, a walkable urban setting adjacent to the Androscoggin River. Downtown Lewiston consists of a diverse array of retail, residential, medical, manufacturing, and recreational facilities, along with cultural, religious, and government institutions. Its density supports a growing number of residents living throughout the downtown, both as renters and owners.

As an urban setting for the potential Lewiston station area, it was determined that an approximate 15-minute walk time about the site as an appropriate definition of a study area, depicted in Figure 2. While it is reasonable to assume that a potential Lewiston station would attract ridership from throughout the city and a broader geography, the opportunities for other development are assumed to reflect proximity to the station.

Figure 2 Lewiston Station Study Area



Selected Comparative Socio-Economic Metrics

Comparative metrics for the potential Lewiston station area (15-minute walk time) and Androscoggin County are summarized in Table 1, noting the following:

- **Population** – Population growth is projected for both the potential Lewiston station study area and Androscoggin County over the 2021 to 2026 time-period. By 2026, the potential station study area total population is projected to account for 8.7% of the county population, a steady representation since 2010.
  - The 20 to 34 years cohort population is projected to decline by 1.8% for the station study area and decline by 3.9% countywide. **This cohort often represents those moving out of home or graduating from college and seeking initial independent housing, typically renter occupied versus owner occupied.**
  - The 35 to 54 years age cohort population is projected to increase by 1.9% for the station study area and decline by 0.9% at the county level. By 2026, this cohort is projected to make up 7.4% of the county population similarly aged – an increase in representation since 2010. **This is noteworthy as this cohort typically represents those in their family/household formation years as well peak earning and spending years. This is further reflected in the median age of the study area population, which is "younger" when compared to county.**
  - The 65 years and older cohort population is projected to increase by 8.5% for the station study area and by 13.4% at the county level. By 2026, this cohort is projected to make up 6.1% of the county population, a decrease in representation since 2010 when it was 6.7%. **This cohort often includes those seeking to downsize their residences and possibly seeking assisted living or other elderly care residential opportunities.**
- **Housing** – Growth is projected for overall housing units in both the potential Lewiston station study area by 0.8% and Androscoggin County by 1.7% (2021 – 2026), with the potential station study area accounting for 9.5% of all county housing in 2026, a marginal decline since 2010.
  - Owner households (occupied housing units) in the station study area are projected to increase 4.8%, more than the county which is projected to increase 3.4% by 2026. This is likely reflective of the growth in the 35 to 54 years age cohort.
  - Renter households (occupied housing units) are projected to decline for the study area and the county, by 0.1% (five units) and 1.6% respectively, by 2026. However, as reported by the Lewiston Office of Economic and Community

Development[9] there are 512 new units (inclusive of 140 student housing units) proposed and in the pipeline.

- **Owner Home Values** - Despite projected growth in both the median value and average value of owner housing within the station study area, both are comparatively low when contrasted to values countywide. **This may present challenges to encourage additional owner residential development in the station study area that is both affordable to residents while also being financially viable for developers, who could pursue development opportunities throughout the county instead.**
- **Incomes** –Median household income and per capita income measures are well below those countywide, despite projected growth within the station study area. **Residents within the station study area could therefore find it challenging to afford new homes, and if they did, it would likely impact their disposable income spending potential.**
- **Business Diversity (2021)** – Business and employment within the station study area is concentrated in the service sector at 50.3%. **Along with the retail sector, such jobs are generally lower paying when compared to other sectors and may further present affordability constraints to home ownership.**

[9] An e-mail memorandum dated May 3, 2022.

Table 1 Potential Lewiston Station - Selected Comparative Socio-Economic Metrics

Selected Comparative Metrics	Potential Lewiston Station Area[1]				Androscoggin County				Lewiston as % of County		
	2010	2021	2026	% Δ 2021-2026	2010	2021	2026	% Δ 2021-2026	2010	2021	2026
Total Population	**9,326**	**9,607**	**9,647**	**0.4**	**107,702**	**110,157**	**111,367**	**1.1**	**8.7**	**8.7**	**8.7**
Aged 20 to 34	2,426	2,417	2,374	-1.8	19,926	20,555	19,747	-3.9	12.2	11.8	12.0
Aged 35 to 54	2,196	1,989	2,026	1.9	31,470	27,462	27,221	-0.9	7.0	7.2	7.4
Aged 65 and older	1,016	1,325	1,438	8.5	15,184	20,660	23,419	13.4	6.7	6.4	6.1
Median age	31.3	32.5	33.4	2.9	39.8	41.7	42.5	1.9	78.7	77.9	78.7
Total Housing Units	**4,807**	**4,874**	**4,914**	**0.8**	**49,090**	**50,907**	**51,761**	**1.7**	**9.8**	**9.6**	**9.5**
Owner households	471	438	459	4.8	28,544	29,178	30,183	3.4	1.7	1.5	1.5
Renter households	3,707	3,720	3,715	-0.1	15,771	16,731	16,470	-1.6	23.5	22.2	22.6
Owner Median Value	N-A	$106,913	$133,453	24.8	N-A	$186,029	$256,839	38.1	N-A	57.5	52.0
Owner Average Value	N-A	$128,704	$158,408	23.1	N-A	$223,163	$295,945	32.6	N-A	57.7	53.5
Median Household $	N-A	$23,747	$26,229	10.5	N-A	$57,448	$64,252	11.8	N-A	41.3	40.8
Per Capita $	N-A	$15,000	$16,662	11.1	N-A	$31,310	$35,333	12.8	N-A	47.9	47.2
	Firms	**Employees**	**Emp/Firm**	**% Of Firms**	**Firms**	**Employees**	**Emp/Firm**	**% Of Firms**	**Firms**	**Emp**	**Emp/ Firm**
Totals (2021)	**495**	**7,803**	**15.8**	**100.0**	**3,773**	**53,446**	**14.2**	**100.0**	**13.1**	**14.6**	**111.3**
Retail sector	77	875	11.4	15.6	860	11,206	13.0	22.8	9.0	7.8	87.2
Office sector	51	924	18.1	10.3	348	3,552	10.2	9.2	14.7	26.0	177.5
Service sector	249	4,343	17.4	50.3	1,495	23,342	15.6	39.6	16.7	18.6	111.7
Manufacturing sector	22	864	39.3	4.4	151	5,965	39.5	4.0	14.6	14.5	99.4
Other	96	797	8.3	19.4	919	9,381	10.2	24.4	10.4	8.5	81.3

Source: Esri and RKG (2022)

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

N-A - Data suppressed or otherwise unreported

Residential Development Potential

By 2026, it is estimated residential development potential in the Lewiston station study area may increase as a share of the county development (see Table 2)[10].

The increase factors used in this analysis were set higher for renter housing (1.25% and 1.35%) than owner housing (1.15% and 1.25%). The slightly greater expectation for renter housing development potential takes into consideration the possibility for smaller units compared to owner housing, and the subsequent potential for increased development units per acre.

In both instances, the base assumption is that given new housing choices, proximity to commuter rail and potential for additional non-residential development and amenities could work together to enhance location desirability of the study area. Another assumption is that any new residential development in the study area would be positioned to effectively target the wider countywide population change, especially in targeted population age cohorts[11].

Table 2 Potential Lewiston Station - Estimated Residential Development Potential

Lewiston Station Study Area 2021 - 2026 Residential	Baseline # of Units	Low Estimate[1]	High Estimate[2]
Total Housing Units	**16**	**116**	**158**
Owner households	21	28	32
Renter households	(5)	88	125

Source: Esri and RKG (2022)

(1) Increase 2026 representation of county by 1.15% for owner and 1.25% for renter

(2) Increase 2026 representation of county by 1.25% for owner and 1.35% for renter

Retail Demand and Sales Comparisons

Estimated household spending demand for households within the study area, and sales for selected store types were reviewed for retail comparisons (see Table 3). These store types often require smaller footprints in terms of square feet and generally reflect neighborhood or other convenience retail as opposed to anchor or destination retail with larger footprints. By comparing demand against sales, an estimate of sales leakage is indicated, meaning where local store sales either exceed (import) or fall short (export) of local spending demand – or consumers are shopping outside of the study area. In either instance there may be opportunities for new development either to build on an existing strength, import, or recapture sales leakage, export.

[10] It should be noted that the summary reasoning and assumptions presented in this section are applicable for all station areas and has not been repeated for each throughout the remainder of this report.

[11] Ultimately, additional residential development opportunities would depend on available land or land assemblages for such development, investor/developer interest and determinations of market and financial feasibility, and existing zoning regulations.

While levels of commuter ridership would add some measure of retail spending demand, these are generally nominal and would typically be considered as incremental to any retailer, in their location criteria process, when contrasted to the more stabilized and ongoing demand represented by area households.

For the Lewiston station area, restaurant sales are particularly strong, as they exceed local demand by nearly 140% and suggest the potential for additional restaurants to further the diversity and strength of this sector. Conversely, the sales leakage among other sectors may offer development potential.

Within the study area, the overall annual spending demand per household for the selected sectors is approximately $327 as compared against $1,331 countywide.

Table 3 Potential Lewiston Station - Selected Retail Demand and Sales Comparisons

Selected Retail Sector Comparative Metrics (in $1,000's)	Lewiston Station[1]			Androscoggin County			Auburn as % of County	
	Demand	Sales	Import (Export)	Demand	Sales	Import (Export)	Demand	Sales
Total	**$8,205.0**	**$14,808.3**	**$6,603.3**	**$174,595.6**	**$233,168.7**	**$48,573.1**	**4.7%**	**6.6%**
Specialty food stores[2]	$737.5	$0.0	($737.5)	$15,084.3	$63,266.6	$48,182.4	4.9%	0.0%
Secondhand stores[3]	$420.9	$0.0	($420.9)	$9,245.0	$7,995.9	($1,249.1)	4.6%	0.0%
Other specialty retail[4]	$1,254.5	$975.5	($279.0)	$28,077.5	$14,553.9	($13,523.6)	4.5%	6.7%
Restaurants[5]	$5,792.1	$13,832.8	$8,040.7	$122,188.9	$137,352.3	$15,163.5	4.7%	10.1%

Source: Esri and RKG (2022)

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

(2) Includes meat and fish markets, produce, bakeries and confectioneries and nuts as example

(3) Includes used merchandise, consignment shops and charitable thrift stores as examples

(4) Includes pet supply stores, tobacco shops and generally unspecified other as examples

(5) Includes full-service, limited-service, cafeterias, and snack vendors as examples

Residential Pipeline

Information offered by the Lewiston Office of Economic and Community Development[12] noted that there several residential development projects either proposed or in the pipeline in proximity to the potential Lewiston station area. These are depicted in Figure 3 and include the following projects:

[12] An e-mail memorandum dated May 3, 2022.

- **245 renter units**, a mix of studio and one bedroom, targeted to hospital staff and young professionals. The proposed project is estimated to be within a 10-minute walk of the Lewiston station site. Due to impacts associated with COVID-19, the project is currently on hold, pending resolution of construction and financing capacities.
- **140 renter units**, targeted to serve as student housing for the Maine College of Health Professionals. Reportedly, the landowner is currently seeking interested developers although no construction is underway at this time.
- **Picker House Lofts**, a proposed 72 units of mixed income housing, situated at the corner of Cedar and Oxford Streets, approximately one mile from the Lewiston station site, just beyond the 15-minute walking distance. This project is part of the more expansive Continental Mill complex under separate ownership, where reportedly there are unspecified plans to develop several hundred workforce housing units.
- **92 units of mixed income housing**, just east of Kennedy Park and within the Lewiston station area. Reportedly, the first phase of development is to include 74-units, with half of the units as new housing and half of the units as replacement of older, existing, Section 8 housing.

In summary, the above reported pipeline development represents 512 new residential units withing the Lewiston station area. This includes 140 units of proposed student housing. An additional 37 units represent a replacement of existing inventory.

This reported pipeline inventory runs counter to the previously projected decline of renter residential within the Lewiston station area (2021 - 2026). The pipeline units are not reflected in the 2021 to 2026 projections as offered by Esri (refer to Table 1).

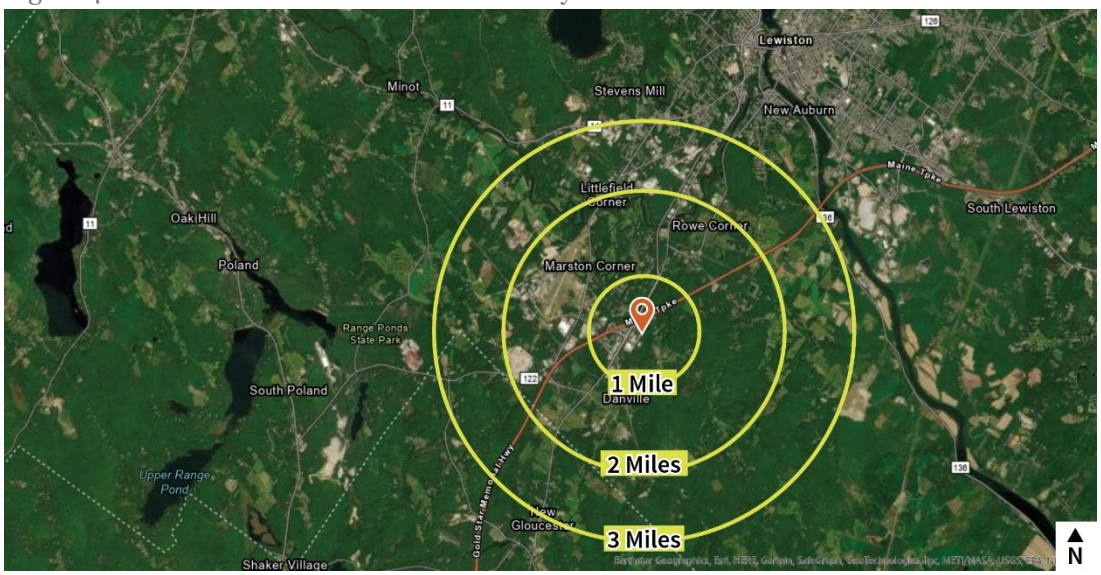
Figure 3 Lewiston Station Area Pipeline Residential Development (15-Minute Walk Time)

1.2.2.2 Potential Auburn Park and Ride Area[13]

In contrast to the potential Lewiston station area, the potential Auburn Park and Ride station would be located away from its downtown, in a suburban/rural location adjacent to an existing Park and Ride facility to the south. Industrial, retail, and rural land uses comprise the majority of the station's surroundings, with some low density residential development nearby. The Park and Ride facility, which also serves coach bus lines, is currently located at I-95's Exit 75, adjacent to the Pan Am Rail corridor.

It is reasonable to assume that potential ridership of commuter rail services would be drawn from a broad geography. However, in terms of development opportunities, a 3-mile radius about the Auburn station site[14] is an appropriate study area, depicted in Figure 4.

Figure 4 Auburn Park and Ride Station Study Area



[13] An additional and separate analysis of a potential Auburn Downtown Station site is summarized in the Addendum of this report.

[14] Aligned with the existing Pan Am Railroad corridor.

Selected Comparative Socio-Economic Metrics

Comparative metrics for the Auburn station area (3-mile radius) and Androscoggin County are summarized in Table 4, noting the following:

- **Population** – Population growth is projected over the 2021 to 2026 period, by 0.9% for the Auburn station study area and 1.1% for Androscoggin County. During this time frame, the population of the study area remains constant in terms of its representation of the county population.
  - The 20 to 34 years age cohort population is projected to decline both for the study area by 10.3% and by 3.9% countywide.
  - The 35 to 54 years age cohort population is projected to decline both for the study area by 3.4% and the county area by 0.9%, with the study area realizing a decline in its countywide representation.
  - The 65 years and older age cohort population is projected to increase to 23.0% for the study area and to 21.0% for the county. By 2026, the 65+ cohort population in the study area is projected to increase to 5.0% of the county population.
- **Housing** – Growth is projected for overall housing units in both the Auburn station study area by 1.5% and Androscoggin County by 1.7% (2021 – 2026), with the station study area holding steady at 4.4% of all county housing in 2026.
  - Owner households (occupied housing units) in the station study area are projected to increase 3.1% to a total of 80.0%, while the county is projected to increase 3.4% to a total of 64.0%, by 2026.
  - Renter households (occupied housing units) are projected to decline by 4.4% for the study area and 1.6% for the county by 2026. **This may indicate renter residential development opportunities, considering the increasing population in the 65+ cohort.**
- **Owner Home Values** – The median and average values of owner housing are projected to increase in the station study area and the county, and the median and average values of owner housing in the study area are greater than countywide.
- **Incomes** – Median household income and per capita income levels are both projected to increase for the study area and the county. Despite a smaller 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.**
- **Business Diversity (2021)** – Businesses and employment are generally well diversified for the Auburn station study area and Androscoggin County, although they are **dominated by the retail and service sectors.** Approximately 52.0% of study area businesses and 62.0% of county businesses are concentrated in the retail and services sectors. Additionally, 37.0% of the study area employment and 65.0% of the countywide employment is in these sectors, **which are generally lower paying when compared to other sectors.**

Table 4 Potential Auburn Park and Ride Station - Selected Comparative Socio-Economic Metrics

Selected Comparative Metrics	Potential Auburn Park and Ride Station[1]				Androscoggin County				Auburn as % of County		
	2010	2021	2026	% Δ 2021-2026	2010	2021	2026	% Δ 2021-2026	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
Aged 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**
Owner 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	N-A	$208,182	$298,295	43.3%	N-A	$186,029	$256,839	38.1%	N-A	111.9	116.1
Owner Average Value	N-A	$253,729	$352,606	39.0%	N-A	$223,163	$295,945	32.6%	N-A	113.7	119.1
Median Household $	N-A	$79,453	$86,117	8.4%	N-A	$57,448	$64,252	11.8%	N-A	138.3	134.0
Per Capita $	N-A	$40,890	$46,412	13.5%	N-A	$31,310	$35,333	12.8%	N-A	130.6	131.4
	Firms	**Employees**	**Emp/Firm**	**% Firms**	**Firms**	**Employees**	**Emp/Firm**	**% 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

N-A - data suppressed or otherwise unreported

Residential Development Potential

Estimated residential development potential for the Auburn station area is indicated in Table 5. **Note that renter residential opportunities could be enhanced if such development is targeted to the growth in the 65+ age cohort.**

Table 5 Potential Auburn Park and Ride - Estimated Residential Development Potential

Potential Auburn Park and Ride Station Study Area 2021 - 2026 Residential	Baseline # of Units	Low Estimate[1]	High Estimate[2]
Total Housing Units	**32**	**69**	**90**
Owner households	52	78	95
Renter households	(20)	(9)	(5)

Source: Esri and RKG (2022)

(1) Increase 2026 representation of county by 1.15% for owner and 1.25% for renter

(2) Increase 2026 representation of county by 1.25% for owner and 1.35% for renter

Retail Demand and Sales Comparisons

Retail demand and sales comparative metrics for the potential Auburn Park and Ride station area and the county are detailed in Table 6, noting:

- Secondhand stores – sales leakage in the study area countywide and indicating some **potential for additional store development to recapture sales leakage.**
- Specialty Food Stores – strong sales in the study area, exceeding demand by 173.0% percent and **indicating a strength which could be further developed.**
- Other Specialty Stores – sales exceed demand in the study area by 292.0% and represent a **strength and destination draw for this retail sector in the study area** which could be further exploited.

Overall annual per household spending demand among these sectors is approximately $1,504 in the study area, or 113.0% of the countywide demand of $1,331 in the same sectors.

Table 6 Potential Auburn Park and Ride - Selected Retail Demand and Sales Comparisons

Selected Retail Sector Comparative Metrics (in $1,000's)	Potential Auburn Park and Ride Station[1]			Androscoggin County			Auburn as % of County	
	Demand	Sales	Import (Export)	Demand	Sales	Import (Export)	Demand	Sales
Total	**$9,352.0**	**$15,864.1**	**$6,512.1**	**$174,595.6**	**$223,168.7**	**$48,573.1**	**5.4%**	**7.1%**
Specialty food stores[2]	$798.5	$2,181.9	$1,383.4	$15,084.3	$63,266.6	$48,182.4	5.3%	3.4%
Secondhand stores[3]	$503.9	$0.0	($503.9)	$9,245.0	$7,995.9	($1,249.1)	5.5%	0.0%
Other specialty retail[4]	$1,498.2	$5,870.5	$4,372.3	$28,077.5	$14,553.9	($13,523.6)	5.3%	40.3%
Restaurants[5]	$6,551.5	$7,811.7	$1,260.3	$122,188.9	$137,352.3	$15,163.5	5.4%	5.7%

Source: Esri and RKG (2022)

(1) 3-mile radius about the potential station area

(2) includes meat and fish markets, produce, bakeries and confectioneries and nuts as example

(3) includes used merchandise, consignment shops and charitable thrift stores as examples

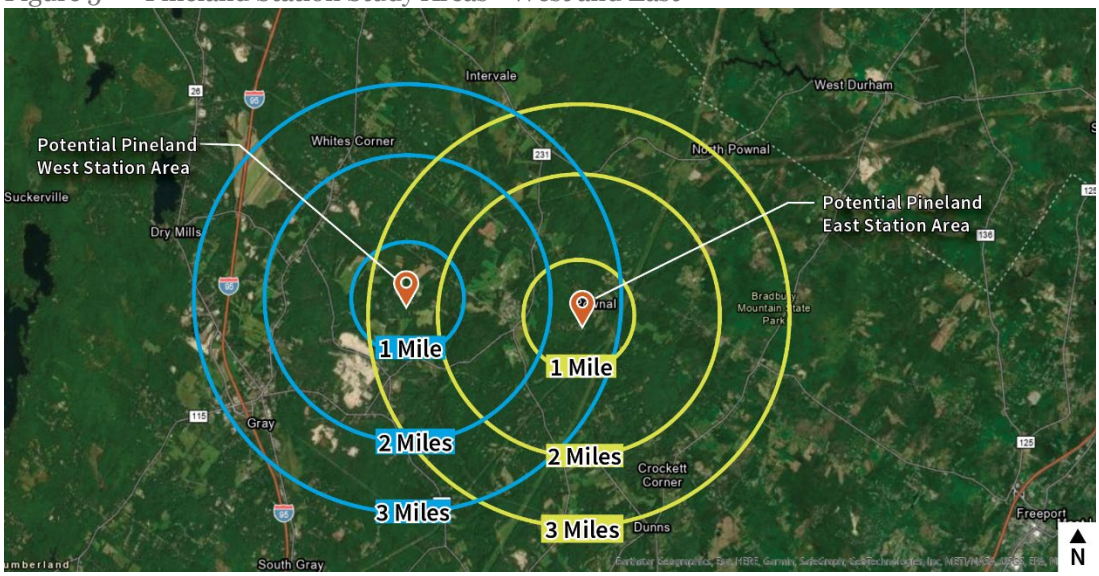
(4) includes pet supply stores, tobacco shops and generally unspecified other as examples

(5) includes full-service, limited-service, cafeterias, and snack vendors as examples

1.2.2.3 Potential Pineland Station Areas

To assess potential economic impact and development around the Pineland area, a potential station area was selected along each alignment alternative within proximity to Pineland. Both have similar characteristics and rural surroundings. The potential Pineland East station area location is situated along state-owned St. Lawrence and Atlantic Railroad (SLR) corridor and the potential Pineland West station area is situated along the Pan Am Railroad (PAR) corridor. The analysis for each is presented, independently, in this section – noting that there is significant geographic overlap of the appropriate 3-mile radius study area for each, visible in Figure 5.

Figure 5 Pineland Station Study Areas - West and East



1.2.2.3.1. Potential Pineland West Station Area

The potential Pineland West station area is in a rural setting, located along the PAR corridor.

Selected Comparative Socio-Economic Metrics

Comparative metrics for the potential Pineland West station area (3-mile radius) and Cumberland County are presented in Table 7, noting the following:

- **Population** – Population growth is projected over the 2021 to 2026 time-period, at relatively similar rates for the Pineland West station study area and Cumberland County. Over that time-period, the population of the study area remains constant at representing 1.4% of the county population.
  - The 20 to 34 years age cohort population is projected to decline for the study area by 2.8% while the countywide population is projected to grow by 3.4%. As result, the study area's representation of the county population of this cohort declines slightly from 1.3% to 1.2% by 2026.

- The 35 to 54 years age cohort population is projected to grow both for the study area by 2.9% and countywide by 2.0%, with the study area holding constant in its countywide representation.
- The 65 and older age cohort population is projected to grow for the study area by 25.5% and countywide by 18.6%. By 2026, the 65+ cohort is projected to account for 19.0% of the study area population and 22.0% for the county population. As a result, in 2026, the 65+ cohort population in the study area is projected to increase to 1.2% of the county population in this cohort.

- **Housing** – Growth is projected for overall housing units by 4.5% in both the Pineland West station study area and Cumberland County 4.5% (2021 – 2026).
  - Owner households (occupied housing units) in the study area are projected to increase by 6.5% to a total of 81.0%, the county is projected to increase by 6.3% to a total of 70.0%.
  - Renter households (occupied housing units) are projected to decline for the study area by 1.2%, but increase countywide, by 1.9%. **Noting the growth in the 65+ cohort in the study area, there may be possibilities for additional rental housing or owner condominiums targeted to this demographic.**
- **Owner Home Values** – The projected median value of owner housing within the station study area at 12.5% is somewhat less than the county, at 16.5%. However, the rate of growth in the average value of owner housing in the study area is projected at 24.2% as compared to 14.3% countywide. Despite the growth in these values for the study area, both median and average remain lower for the county.
- **Incomes** – Median household income and per capita income levels are projected to increase for the study area and the county, at similar rates. The median household income for the study area is marginally greater when compared to the county.
- **Business Diversity (2021)** – Business and employment within the Pineland West station study area are generally well diversified and are **concentrated in the retail and service sectors** – 56.0% of study area businesses and 64.0% of Cumberland County businesses. 58.0% of the study area and 67% of the countywide employment are in these sectors, which are **generally lower paying when compared to other sectors.**

Table 7 Potential Pineland West Station Area - Selected Comparative Socio-Economic Metrics

Selected Comparative Metrics	Potential Pineland West Station Area[1]				Cumberland County				Pineland West as % of County		
	2010	2021	2026	% Δ 2021-2026	2010	2021	2026	% Δ 2021-2026	2010	2021	2026
Total Population	**3,882**	**4,151**	**4,344**	**4.6%**	**281,674**	**302,496**	**316,170**	**4.5%**	**1.4%**	**1.4%**	**1.4%**
Aged 20 to 34	688	717	697	-2.8%	51,766	56,538	58,444	3.4%	1.3%	1.3%	1.2%
Aged 35 to 54	1,299	1,154	1,187	2.9%	85,001	77,187	78,702	2.0%	1.5%	1.5%	1.5%
Aged 65 and older	367	664	831	25.2%	40,157	59,459	70,494	18.6%	0.9%	1.1%	1.2%
Median age	39.4	41.3	41.9	1.5%	41.0	43.4	43.9	1.2%	96.1%	95.2%	95.4%
Total Housing Units	**1,631**	**1,778**	**1,858**	**4.5%**	**138,657**	**152,039**	**158,941**	**4.5%**	**1.2%**	**1.2%**	**1.2%**
Owner households	1,195	1,332	1,419	6.5%	78,545	87,505	93,010	6.3%	1.5%	1.5%	1.5%
Renter households	344	335	331	-1.2%	38,794	39,760	40,509	1.9%	0.9%	0.8%	0.8%
Owner Median Value	N-A	$265,782	$298,875	12.5%	N-A	$322,496	$375,747	16.5%	N-A	82.4%	79.5%
Owner Average Value	N-A	$295,796	$367,254	24.2%	N-A	$381,894	$436,549	14.3%	N-A	77.5%	84.1%
Median Household $	N-A	$78,672	$86,809	10.3%	N-A	$76,604	$85,662	11.8%	N-A	102.7	101.3
Per Capita $	N-A	$38,740	$43,199	11.5%	N-A	$43,854	$49,337	12.5%	N-A	88.3%	87.6%
	Firms	**Employees**	**Emp/Firm**	**% of Firms**	**Firms**	**Employees**	**Emp/Firm**	**% of Firms**	**Firms**	**Emp**	**Emp/ Firm**
Totals (2021)	**214**	**1,594**	**7.4**	**100.0%**	**14,042**	**197,591**	**14.1**	**100.0%**	**1.5%**	**0.8%**	**52.9%**
Retail sector	35	240	6.9	16.4%	3,004	40,345	13.4	21.4%	1.2%	0.6%	51.1%
Office sector	18	124	6.9	8.4%	1,340	16,922	12.6	9.5%	1.3%	0.7%	54.6%
Service sector	84	681	8.1	39.3%	5,916	91,545	15.5	42.1%	1.4%	0.7%	52.4%
Manufacturing sector	10	80	8.0	4.7%	420	9,703	23.1	3.0%	2.4%	0.8%	34.6%
Other	67	469	7.0	31.3%	3,362	39,076	11.6	23.9%	2.0%	1.2%	60.2%

Source: Esri and RKG (2022)

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

N-A - data suppressed or otherwise unreported

Residential Development Potential

Residential development potential for the potential Pineland West station area is indicated in Table 8. While the renter housing opportunities remain negligible, **the growth in the 65+ cohort throughout the study area and the county could translate into demand for new renter housing as opposed to owner housing, assuming development of owner condominiums to otherwise attract this demographic.**

Table 8 Potential Pineland West Station Area - Estimated Residential Development Potential

Potential Pineland West Station Study Area 2021 - 2026 Residential	Baseline # of Units	Low Estimate[1]	High Estimate[2]
Total Housing Units	**83**	**113**	**130**
Owner households	87	108	122
Renter households	(4)	4	8

Source: Esri and RKG (2022)

(1) Increase 2026 representation of county by 1.15% for owner and 1.25% for renter

(2) Increase 2026 representation of county by 1.25% for owner and 1.35% for renter

Retail Demand and Sales Comparisons

Retail demand and sales comparative metrics for the potential Pineland West station area and the county are detailed in Table 9, noting:

- Secondhand stores – there is sales leakage in the study area, which may suggest some opportunity for additional retail in this sector however, the county is a net importer of more than $13.0 million suggesting that the study area may not be a competitive location.
- Similar observations are present for Other Specialty Retail and Restaurants, whereby there is sales leakage in the study area, but the county is an overall net importer.
- Specialty Food Stores – **sales exceed demand in the study area by 455% and represent a strength and destination draw for this retail sector in the study area which could be further exploited.**

Overall annual per household spending demand among these sectors is heavily influenced by restaurant demand - approximately $5,622 in the study area as compared with $13,928, about 40% of the county overall.

Table 9 Potential Pineland West Station Area - Selected Retail Demand and Sales Comparisons

Selected Retail Sector Comparative Metrics (in $1,000's)	Potential Pineland West Station Area[1]			Cumberland County			Pineland West as % of County	
	Demand	Sales	Import (Export)	Demand	Sales	Import (Export)	Demand	Sales
Total	**$9,371.6**	**$7,018.8**	**($2,352.8)**	**$639,411.5**	**$909,172.0**	**$269,760.5**	**1.5%**	**0.8%**
Specialty food stores[2]	$779.1	$3,545.7	$2,766.6	$53,895.6	$177,360.0	$123,464.4	1.4%	2.0%
Secondhand stores[3]	$504.6	$186.6	($318.0)	$34,159.5	$47,160.9	$13,001.4	1.5%	0.4%
Other specialty retail[4]	$1,366.7	$84.0	($1,282.7)	$97,505.1	$146,558.0	$49,052.9	1.4%	0.1%
Restaurants[5]	$6,721.2	$3,202.5	($3,518.7)	$453,851.3	$538,093.1	$84,241.8	1.5%	0.6%

Source: Esri and RKG (2022)

(1) 3-mile radius about the potential station location - Note that overlaps exist with Pineland East station location - reported in full with the overlap

(2) includes meat and fish markets, produce, bakeries and confectioneries and nuts as example

(3) includes used merchandise, consignment shops and charitable thrift stores as examples

(4) includes pet supply stores, tobacco shops and generally unspecified other as examples

(5) includes full-service, limited-service, cafeterias, and snack vendors as examples

1.2.2.3.2. Potential Pineland East Station Area

The potential Pineland East station area is located within a rural setting along the SLR corridor.

Selected Comparative Socio-Economic Metrics

Comparative metrics for the potential Pineland East station area (3-mile radius) and Cumberland County are presented in Table 10, noting the following:

- **Population** – Both the potential Pineland East station study area and the Cumberland County populations are projected to grow over the 2021 to 2026 time period at similar rates, with the study area accounting for 0.8% of the county population.
  - The 20 to 34 years age cohort population is projected to increase by 6.8%, a rate of growth greater than the 3.4% countywide.
  - In the 35 to 54 years age cohort population, the study area is projected to decline by 4.2% decline while the county increases by 2.0%.
  - The 65 and older age cohort population is projected to increase for the study area by 27.3% and for the county by 18.6%. **By 2026, the 65+ cohort is projected to account for 22.0% of the study area population as well as the county population.**
- **Housing** – Growth is projected for overall housing units by 4.5% in both the Pineland East station study area and Cumberland County (2021 – 2026).
  - Owner households (occupied housing units) in the study area are projected to increase by 5.8% to a total of 89.0%, while the county will see an increase by 6.2% to a total 70.0%.
  - Renter households (occupied housing units) are projected to decline for the study area by 0.9% and increase 1.9% countywide – possibly indicating renter residential or owner condominium) development opportunities in the study area considering the increasing population in the 65+ cohort within the study area.

- **Owner Home Values** – The median value and average value of owner housing are projected to increase in both the Pineland East station study area and Cumberland County, with the median values in the study area somewhat greater than the county.
- **Incomes** – Median household income and per capita income levels are projected to increase for the station study area and the county at similar rates. These values in the study area are greater than the same income metrics countywide. Median household incomes are particularly greater in the study area than countywide **– possibly indicative of a greater level of discretionary spending income in the station study area.**
- **Business Diversity (2021)** – Like the potential Pineland West station area, businesses and employment are both generally well diversified for the study area and the county. Also similar to the potential Pineland West station area 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 10 Potential Pineland East Station Area- Selected Comparative Socio-Economic Metrics

Selected Comparative Metrics	Potential Pineland East Station Area[1]				Cumberland County				Pineland East as % of County		
	2010	2021	2026	% Δ 2021-2026	2010	2021	2026	% Δ 2021-2026	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%
Aged 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%**
Owner 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	N-A	$328,125	$374,061	14.0%	N-A	$322,496	$375,747	16.5%	N-A	101.7%	99.6%
Owner Average Value	N-A	$359,522	$410,584	14.2%	N-A	$381,894	$436,549	14.3%	N-A	94.1%	94.1%
Median Household $	N-A	$95,407	$106,568	11.7%	N-A	$76,604	$85,662	11.8%	N-A	124.5%	124.4%
Per Capita $	N-A	$47,146	$53,006	12.4%	N-A	$43,854	$49,337	12.5%	N-A	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

N-A - data suppressed or otherwise unreported

Residential Development Potential

Estimated residential development potential for the Pineland East station study area is indicated in Table 11. **As with the potential Pineland West station area, while the renter housing opportunities remain negligible, the growth in the 65+ cohort (local and countywide) could translate into demand for new renter housing as opposed to owner housing, assuming development of owner condominiums to otherwise attract this demographic.**

Table 11 Potential Pineland East Station Area - Estimated Residential Development Potential

Potential Pineland East Station Study Area 2021 - 2026 Residential	Baseline # of Units	Low Estimate[1]	High Estimate[2]
Total Housing Units	**47**	**63**	**73**
Owner households	48	61	70
Renter households	(1)	2	3

Source: Esri and RKG (2022)

(1) Increase 2026 representation of county by 1.15% for owner and 1.25% for renter

(2) Increase 2026 representation of county by 1.25% for owner and 1.35% for renter

Retail Demand and Sales Comparisons

Retail demand and sales comparative metrics for the potential Pineland East station area and the county are detailed in Table 12, noting:

- Secondhand stores and Specialty Food Stores – while both sectors are net importers of sales in the study area and county, the study area sales account for approximately 1.9% of the county sales, suggesting possible competitive location disadvantages.
- Restaurants – sales in the study area account for 8.0% of the study area demand, **indicating a locally underserved retail sector with some opportunities for additional development.**

Overall annual per household spending demand among these sectors is approximately $6,147 in the study area as compared with $13,928 (about 44% of the county overall).

Table 12 Potential Pineland East Station Area - Selected Retail Demand and Sales Comparisons

Selected Retail Sector Comparative Metrics (in $1,000's)	Pineland East Station[1]			Cumberland County			Pineland East as % of Co.	
	Demand	Sales	Import (Export)	Demand	Sales	Import (Export)	Demand	Sales
Total	**$5,784.1**	**$2,376.1**	**($3,408.1)**	**$639,411.5**	**$909,172.0**	**$269,760.5**	**0.9%**	**0.3%**
Specialty food stores[2]	$478.2	$1,626.0	$1,147.8	$53,895.6	$177,360.0	$123,464.4	0.9%	0.9%
Secondhand stores[3]	$312.9	$426.5	$113.6	$34,159.5	$47,160.9	$13,001.4	0.9%	0.9%
Other specialty retail[4]	$847.7	$0.0	($847.7)	$97,505.1	$146,558.0	$49,052.9	0.9%	0.0%
Restaurants[5]	$4,145.3	$323.5	($3,821.8)	$453,851.3	$538,093.1	$84,241.8	0.9%	0.1%

Source: Esri and RKG (2022)

(1) 3-mile radius about the potential station location - Note that overlaps exist with Pineland West station location - reported in full with the overlap

(2) includes meat and fish markets, produce, bakeries and confectioneries and nuts as example

(3) includes used merchandise, consignment shops and charitable thrift stores as examples

(4) includes pet supply stores, tobacco shops and generally unspecified other as examples

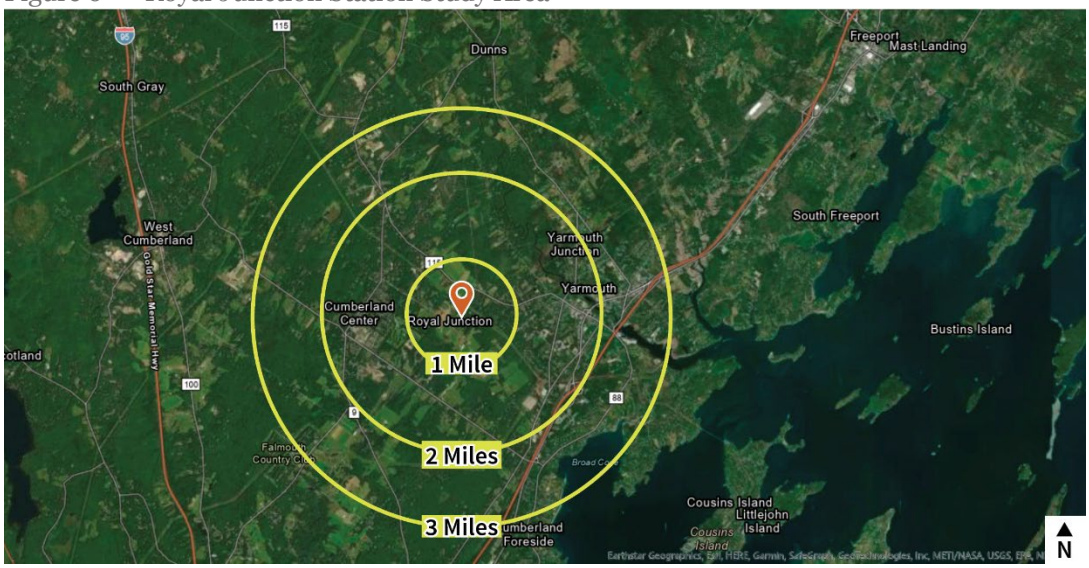
(5) includes full-service, limited-service, cafeterias, and snack vendors as examples

1.2.2.4 Potential Royal Junction Station Area

The Royal Junction station was removed from consideration in this study; however, its analysis is included throughout the report for reference.

This potential station area has rural surroundings and is aligned with the PAR corridor. The Royal Junction station[15] study area is a 3-mile radius, depicted in Figure 6. This location has significant geographic overlap with the Yarmouth Junction station study area to the east[16].

Figure 6 Royal Junction Station Study Area



Selected Comparative Socio-Economic Metrics

Comparative metrics for the potential Royal Junction station area (3-mile radius) and Cumberland County are presented in Table 13, noting the following:

- **Population** – Population growth is projected over the 2021 to 2026 time-period, by 4.1% for the potential Royal Junction station study area and 4.5% for Cumberland County, with the station study area accounting for 4.3% of the county population (2026).
  - The 20 to 34 years age cohort population is projected to increase by 16.0%, ahead of the county's projected 3.4% growth.

[15] Aligned with the existing Pan Am Railroad corridor.

[16] The selected socio-economic and retail metrics for each site are presented in their entirety, inclusive of the overlap.

- In the 35 to 54 years age cohort population, the study area is projected to decline by 4.7%, contrasted to a countywide increase of 2.0% - **indicating a loss in the family and home buying population cohort in the study area, as well as those in their peak earning and spending years.**
- The 65 years and older age cohort population is projected to increase for the study area by 21.3% and the county by 18.6%. By 2026, the 65+ cohort is projected to account for 25.0% of the study area population and **may reflect opportunities for new housing targeting this demographic.**

- **Housing** – Growth is projected for overall housing units in the Royal Junction station study area by 4.0% and Cumberland County by 4.5% (2021 – 2026).
  - Owner households (occupied housing units) in the study area are projected to increase by 5.5% to a total of 82.0%, and in the county by 6.3% to a total of 70.0%.
  - Renter households (occupied housing units) are projected to decline for the study area by 0.5% and increase 1.9% countywide.
- **Owner Home Values** –The median value and average value of owner housing are projected to increase in the potential station study area and the county, with both the median and average values in the study area above those of the county.
- **Incomes** – Median household income and per capita income levels are projected to increase for the study area and the county at similar rates. These values in the study area are greater than the same income metrics countywide.
- **Business Diversity (2021)** – Businesses and employment are generally well diversified for the study area and the county, and are somewhat similar among the industry sectors, **noting a high concentration of firms and employment in the retail and service sectors – both exceeding 65% of the total employment for each.**

Table 13 Potential Royal Junction Station Area - Selected Comparative Socio-Economic Metrics

Selected Comparative Metrics	Royal Junction Station[1]				Cumberland County				Royal Junction as % of County		
	2010	2021	2026	% Δ 2021-2026	2010	2021	2026	% Δ 2021-2026	2010	2021	2026
Total Population	**12,381**	**13,088**	**13,620**	**4.1%**	**281,674**	**302,496**	**316,170**	**4.5%**	**4.4**	**4.3**	**4.3**
Aged 20 to 34	1,193	1,727	2,004	16.0%	51,766	56,538	58,444	3.4%	2.3	3.1	3.4
Aged 35 to 54	4,058	3,221	3,069	-4.7%	85,001	77,187	78,702	2.0%	4.8	4.2	3.9
Aged 65 and older	1,894	2,860	3,470	21.3%	40,157	59,459	70,494	18.6%	4.7	4.8	4.9
Median age	45.1	48.5	49.3	1.6%	41.0	43.4	43.9	1.2%	110.0	111.8	112.3
Total Housing Units	**5,238**	**5,686**	**5,914**	**4.0%**	**138,657**	**152,039**	**158,941**	**4.5%**	**3.8**	**3.7**	**3.7**
Owner households	3,918	4,287	4,523	5.5%	78,545	87,505	93,010	6.3%	5.0	4.9	4.9
Renter households	1,054	1,024	1,019	-0.5%	38,794	39,760	40,509	1.9%	2.7	2.6	2.5
Owner Median Value	N-A	$407,076	$453,787	11.5%	N-A	$322,496	$375,747	16.5%	N-A	126.2	120.8
Owner Average Value	N-A	$468,664	$507,902	8.4%	N-A	$381,894	$436,549	14.3%	N-A	122.7	116.3
Median Household $	N-A	$104,968	$116,093	10.6%	N-A	$76,604	$85,662	11.8%	N-A	137.0	135.5
Per Capita $	N-A	$56,699	$62,857	10.9%	N-A	$43,854	$49,337	12.5%	N-A	129.3	127.4
	Firms	**Employees**	**Emp/Firm**	**% of Firms**	**Firms**	**Employees**	**Emp/Firm**	**% of Firms**	**Employees**	**Emp/ Firm**	**% of Firms**
Totals (2021)	**557**	**5,438**	**9.8**	**100.0%**	**14,042**	**197,591**	**14.1**	**100.0%**	**4.0**	**2.8**	**69.4**
Retail sector	102	1,165	11.4	18.3%	3,004	40,345	13.4	21.4%	3.4	2.9	85.0
Office sector	45	298	6.6	8.1%	1,340	16,922	12.6	9.5%	3.4	1.8	52.4
Service sector	240	2,388	10.0	43.1%	5,916	91,545	15.5	42.1%	4.1	2.6	64.3
Manufacturing sector	17	230	13.5	3.1%	420	9,703	23.1	3.0%	4.0	2.4	58.6
Other	153	1,357	8.9	27.5%	3,362	39,076	11.6	23.9%	4.6	3.5	76.3

Source: Esri and RKG (2022)

(1) 3-mile radius about the potential station location - Note that overlaps exist with Yarmouth Junction station location - reported in full with the overlap

N-A - Data suppressed or otherwise unreported

Residential Development Potential

Estimated residential development potential for the Royal Junction station area is indicated in Table 14. The potential for owner housing could exceed the capacity of available land to support such development. **Considering the lack of available land, more densely developed owner condominiums may be more appropriate, targeted to specific age cohorts. However, input from the study committee indicated this is not the type of preferred development within this potential station area.**

Table 14 Potential Royal Junction Station Area - Estimated Residential Development Potential

Potential Royal Junction Station Study Area 2021 - 2026 Residential	Baseline # of Units	Low Estimate[1]	High Estimate[2]
Total Housing Units	**231**	**324**	**380**
Owner households	236	304	349
Renter households	(5)	20	31

Source: Esri and RKG (2022)

(1) Increase 2026 representation of county by 1.15% for owner and 1.25% for renter

(2) Increase 2026 representation of county by 1.25% for owner and 1.35% for renter

Retail Demand and Sales Comparisons

Retail demand and sales comparative metrics for the potential Royal Junction station area and the county are detailed in Table 15, noting:

- Significant sales leakage is projected across all industry sectors in the study area, with total sales accounting for 53.0% of the study area demand. **As a result, there may be opportunities for additional retail development in the study area, cautioning that for all sectors, the county is a net importer of such sales[17].**

Overall annual per household spending demand among these sectors is approximately $7,171 in the study area as compared with $13,928 (about 51.0% of the county overall).

[17] Opportunities in the study area will be influenced by store and site-specific parameters.

Table 15 Potential Royal Junction Station Area - Selected Retail Demand and Sales Comparisons

Selected Retail Sector Comparative Metrics (in $1,000's)	Potential Royal Junction Station Area[1]			Cumberland County			Royal Junction as % of Co.	
	Demand	Sales	Import (Export)	Demand	Sales	Import (Export)	Demand	Sales
Total	**$38,083.7**	**$20,153.1**	**($17,930.6)**	**$639,411.5**	**$909,172.0**	**$269,760.5**	**6.0%**	**2.2%**
Specialty food stores[2]	$3,133.0	$875.5	($2,257.5)	$53,895.6	$177,360.0	$123,464.4	5.8%	0.5%
Secondhand stores[3]	$2,079.8	$1,606.3	($473.5)	$34,159.5	$47,160.9	$13,001.4	6.1%	3.4%
Other specialty retail[4]	$5,539.5	$3,726.7	($1,812.8)	$97,505.1	$146,558.0	$49,052.9	5.7%	2.5%
Restaurants[5]	$27,331.4	$13,944.6	($13,386.7)	$453,851.3	$538,093.1	$84,241.8	6.0%	2.6%

Source: Esri and RKG (2022)

(1) 3-mile radius about the potential station area - Note that overlaps exist with Yarmouth Junction station area - reported in full with the overlap

(2) includes meat and fish markets, produce, bakeries and confectioneries and nuts as example

(3) includes used merchandise, consignment shops and charitable thrift stores as examples

(4) includes pet supply stores, tobacco shops and generally unspecified other as examples

(5) includes full-service, limited-service, cafeterias, and snack vendors as examples

1.2.2.5 Potential Yarmouth Junction Station Area

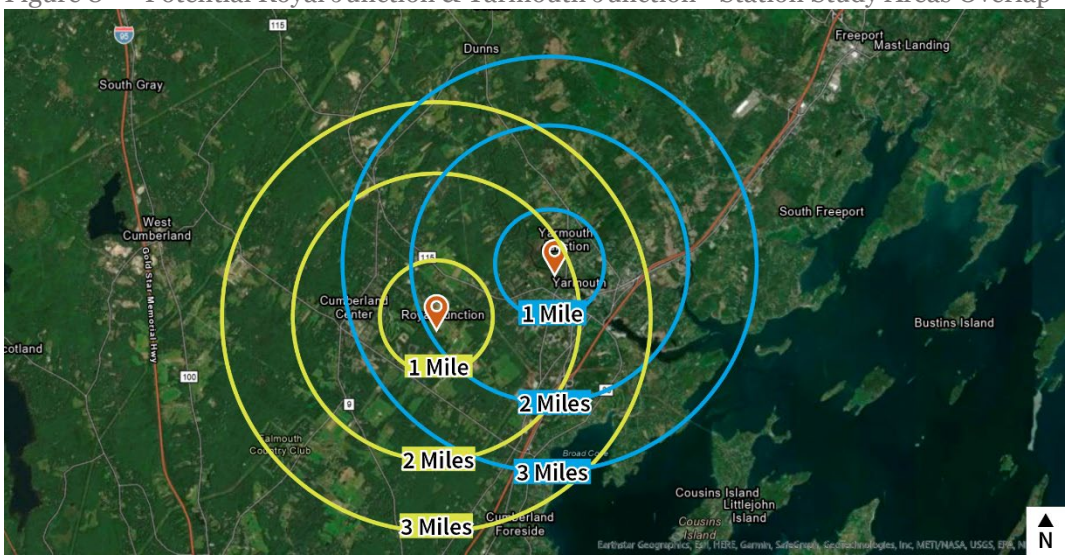
The potential Yarmouth Junction station area has rural surroundings and is aligned with the SLR corridor. The study area for the Yarmouth Junction station site[18] is a 3-mile radius, depicted in Figure 7 and includes downtown Yarmouth. While there is significant geographic overlap with the potential Royal Junction station area to the west (see Figure 8[19]), selected socio-economic and retail metrics for the potential Yarmouth Junction station area are offered in their entirety, inclusive of any overlap.

Figure 7 Potential Yarmouth Junction Station Study Area

[18] Aligned with the existing state-owned St. Lawrence and Atlantic Railroad corridor.

[19] The Royal Junction station was removed from consideration in this study, its analysis is included throughout the report for reference.

Figure 8 Potential Royal Junction & Yarmouth Junction - Station Study Areas Overlap



Selected Comparative Socio-Economic Metrics

Comparative metrics for the potential Yarmouth Junction station area (3-mile radius) and Cumberland County are detailed in Table 16, noting the following:

- **Population** – Population growth is projected over the 2021 to 2026 time-period, by 3.1% for the potential Yarmouth station study area and 4.5% for Cumberland County, with the study area accounting for 3.9% of the county population in 2026, a slight decline.
  - The 20 to 34 years age cohort population is projected to increase by 16.2%, more than the projected 3.4% growth countywide. As a result, the study area representation of this population to the county increases to 3.4% by 2026.
  - In the 35 to 54 years age cohort population, the study area is projected to decline by 5.9%, with the county increasing by 2.0%– **indicating a study area decline in the family formation and home buying cohort.**
  - The 65 years and older age cohort population is projected to increase for the study area and the county at similar percentages by 27.3% for the study area and 18.6% countywide. By 2026, the 65+ cohort is projected to account for 25.0% of the study area population and 22.0% countywide.
- **Housing** – Growth is projected for overall housing units in both the Yarmouth Junction station study area by 3.1% and Cumberland County by 4.5% (2021 – 2026).
  - Owner households (occupied housing units) in the study area are projected to increase by4.6% and for the county by 6.3%. By 2026, the owner housing rate in the study area is projected to be 78.0% as compared with 70.0% countywide.
  - Renter households (occupied housing units) are projected to decline for the study area by 0.4% and increase countywide 1.9%.

- **Owner Home Values** – The median value and average value of owner housing are projected to increase in the study area and the county, with the median values in the study area somewhat greater than the county.
- **Incomes** – Median household income and per capita income levels are both projected to increase for the potential Yarmouth Junction station study area and Cumberland County at similar rates. These values in the study area, 20.0% for median household income and 15.0% for per capita income, are greater than the same income metrics countywide.
- **Business Diversity (2021)** – 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 16 Potential Yarmouth Junction Station Area - Selected Comparative Socio-Economic Metrics

Selected Comparative Metrics	Potential Yarmouth Junction Station Area[1]				Cumberland County				Yarmouth Junction as % of County		
	2010	2021	2026	% Δ 2021-2026	2010	2021	2026	% Δ 2021-2026	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%
Aged 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%**
Owner 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	N-A	$406,961	$450,854	10.8%	N-A	$322,496	$375,747	16.5%	N-A	126.2%	120.0%
Owner Average Value	N-A	$463,190	$502,613	8.5%	N-A	$381,894	$436,549	14.3%	N-A	121.3%	115.1%
Median Household $	N-A	$98,748	$109,741	11.1%	N-A	$76,604	$85,662	11.8%	N-A	128.9%	128.1%
Per Capita $	N-A	$56,250	$62,608	11.3%	N-A	$43,854	$49,337	12.5%	N-A	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

N-A - data suppressed or otherwise unreported

Residential Development Potential

Estimated residential development potential for the potential Yarmouth Junction station area is indicated in Table 17. **The potential for owner housing, as calculated in this analysis, could exceed the capacity of available land to support such development and may better reflect more densely developed owner condominiums targeted to specific age cohorts. Any increased density would be planned in coordination with Yarmouth. However, this analysis assesses the potential in the study area.**

Table 17 Potential Yarmouth Junction Station Area - Estimated Residential Development Potential

Potential Yarmouth Junction Station Study Area 2021 - 2026 Residential	Baseline # of Units	Low Estimate[1]	High Estimate[2]
Total Housing Units	**172**	**260**	**312**
Owner households	177	237	277
Renter households	(5)	23	35

Source: Esri and RKG (2022)

(1) Increase 2026 representation of county by 1.15% for owner and 1.25% for renter

(2) Increase 2026 representation of county by 1.25% for owner and 1.35% for renter

Retail Demand and Sales Comparisons

Retail demand and sales comparative metrics for the Yarmouth Junction station site (3-mile radius) and the county are detailed in Table 18, noting:

- Significant sales leakage is projected across all industry sectors in the study area, with total sales accounting for 65.0% of the study area demand. **As a result, there may be opportunities for additional retail development in the study, cautioning that for all sectors, the county is a net importer of such sales, at 142.0% of demand in these sectors.**

Overall annual per household spending demand among these sectors is approximately $7,050 in the study area as compared with $13,928, about 51.0% of the county overall.

Table 18 Potential Yarmouth Junction Station Area- Selected Retail Demand and Sales Comparisons

Selected Retail Sector Comparative Metrics (in $1,000's)	Potential Yarmouth Junction Station Area[1]			Cumberland County			Yarmouth Junction as % of Co.	
	Demand	Sales	Import (Export)	Demand	Sales	Import (Export)	Demand	Sales
Total	**$34,995.0**	**$22,627.0**	**($12,368.0)**	**$639,411.5**	**$909,172.0**	**$269,760.5**	**5.5%**	**2.5%**
Specialty food stores[2]	$2,885.7	$858.7	($2,027.0)	$53,895.6	$177,360.0	$123,464.4	5.4%	0.5%
Secondhand stores[3]	$1,905.8	$1,715.5	($190.3)	$34,159.5	$47,160.9	$13,001.4	5.6%	3.6%
Other specialty retail[4]	$5,116.4	$3,738.4	($1,378.0)	$97,505.1	$146,558.0	$49,052.9	5.2%	2.6%
Restaurants[5]	$25,087.0	$16,314.4	($8,772.7)	$453,851.3	$538,093.1	$84,241.8	5.5%	3.0%

Source: Esri and RKG (2022)

(1) 3-mile radius about the potential station location - Note that overlaps exist with Royal Junction station location - reported in full with the overlap

(2) includes meat and fish markets, produce, bakeries and confectioneries and nuts as example

(3) includes used merchandise, consignment shops and charitable thrift stores as examples

(4) includes pet supply stores, tobacco shops and generally unspecified other as examples

(5) includes full-service, limited-service, cafeterias, and snack vendors as examples

2

METHODOLOGY & ALIGNMENT COMPARISON

This chapter will elaborate on the methodology for economic modeling process, and preliminary findings on each of the two Alignments with attention to infrastructure (Capital) costs and ongoing annual operating & maintenance (O&M) costs.

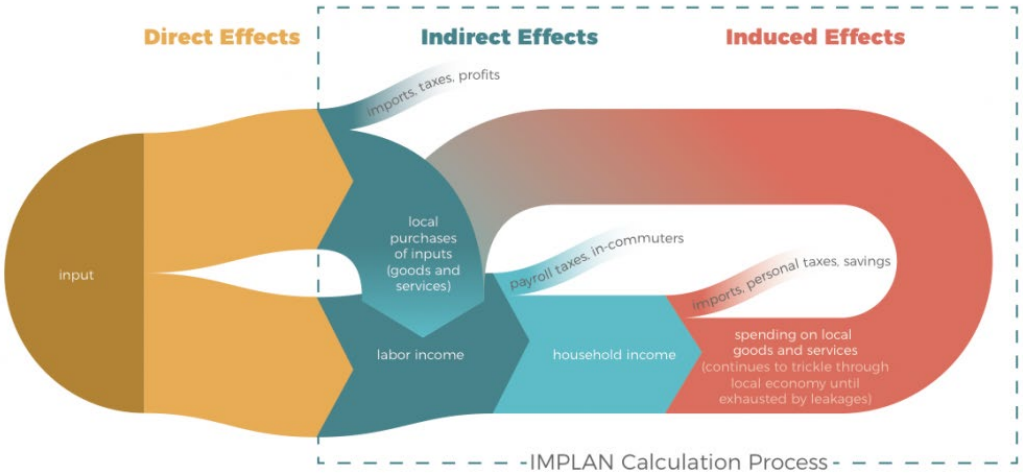
IMPLAN Modeling Methodology

A process called Impact Analysis for Planning (IMPLAN) Modeling was utilized to estimate the broader impacts of the potential rail stations with the two corridor alignment alternatives considered in this report, throughout the State of Maine's economy, for the potential development of rail services (excluding costs associated with the actual construction) and operating and maintenance (O&M) costs.

This dollar flow modeling was conducted between different sectors of the economy, showing how a dollar in one sector is spent and impacts others through direct investment in economic activity, business-to-business spending, and household expenditures. It estimated a range of potential value added to the Statewide economy, including employment, labor income, and the dollar value added to statewide Maine economy.

IMPLAN Modeling is a widely accepted and utilized econometric modeling software that uses an input-output dollar flow matrix, illustrated in Figure 9. For a specified region, the input-output table accounts for all dollar flows between different sectors of the economy. This information is used to model 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 "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 9 Flow Chart of IMPLAN Modeling Concepts



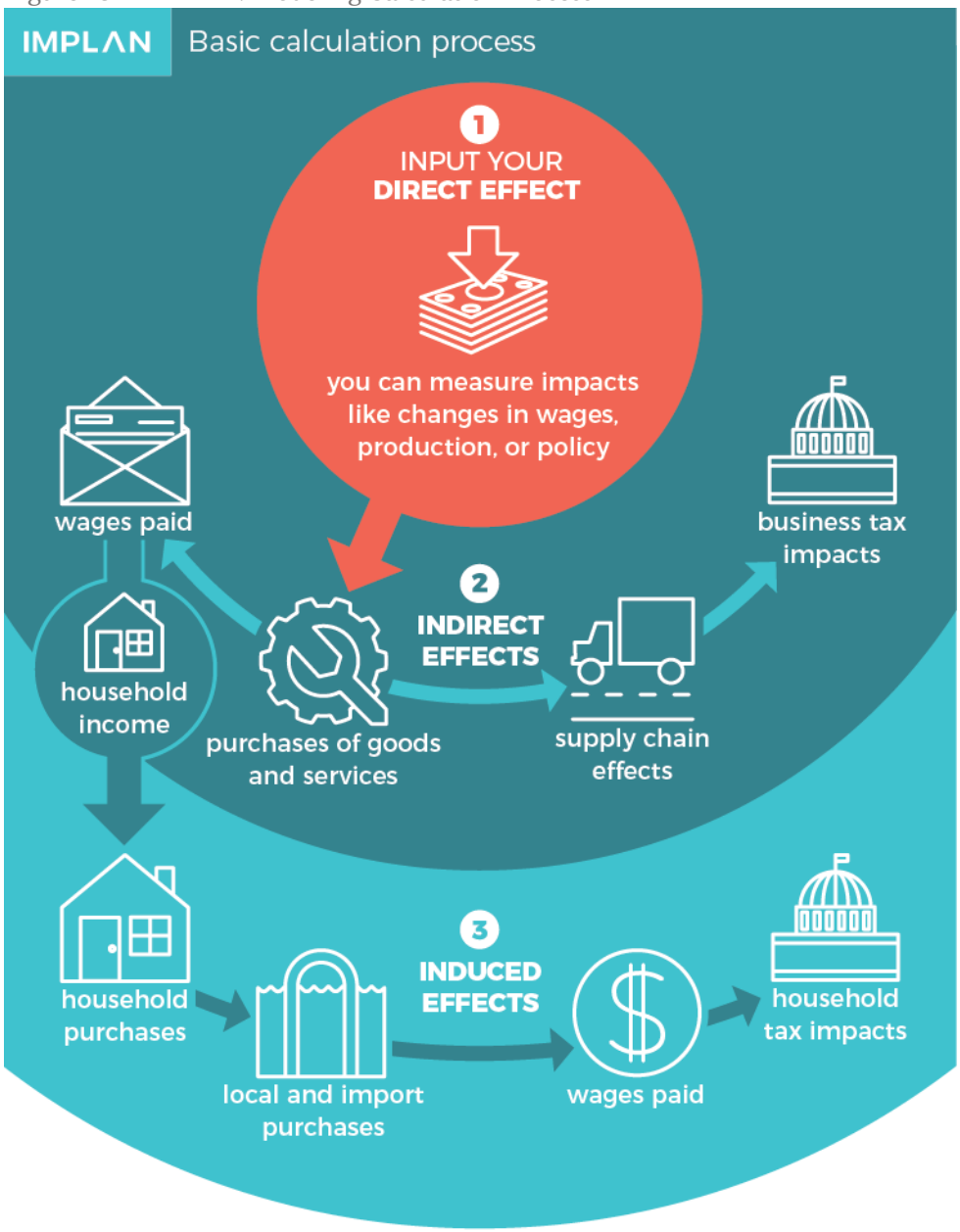
The model combines this data to generate a series of multipliers for the local economy. The multiplier measures the amount of total economic activity that results from an industry (or household) spending an additional dollar in the local economy. Based on these multipliers, IMPLAN generates a series of tables to show the economic event's direct, indirect, and induced impacts to gross receipts or outputs (see Figure 10).

IMPLAN modeling reflects how a dollar spent recirculates or ripples throughout the economy by considering the following:

- **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 10 IMPLAN Modeling Calculation Process



The following sections present the summary findings from the various IMPLAN model "runs" completed for this analysis[20]. For each of the separate rail alignment alternatives (1A and 1B), the analyses include:

- Infrastructure Costs: one-time impacts as derived from the investment costs in infrastructure, also referred to as capital construction costs.
- Operating & Maintenance (O&M) Costs: the annual and ongoing costs associated with operating and maintenance.

It is important to note the following assumptions:

- Infrastructure, or capital construction 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.
- O&M costs are estimated to be annual and would represent recurring impacts.
- All impacts are reflections of statewide impacts and are specifically not particular to any potential station area.

In general, the metric of particular interest through the analyses is the **value-added metric** which measures the total of the economic impacts for direct, indirect, and induced impacts. 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 the following:

- **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/excise taxes, customs duties, property taxes, motor vehicle licenses, severance taxes, other taxes, and special assessments.
- **Other Proprietary Income (OPI)** – represents income generated by industries throughout economies from non-operating activities. Basically, OPI represents gross operating surplus minus proprietor income.

[20] All costs were based on the 2019 report and in 2019 dollars, however, the IMPLAN results are in 2022 dollars.

2.1 Alignment 1A Potential Stations

The Alignment 1A analysis reflects the western route for the proposed rail services with the following potential station areas - Lewiston, Auburn (Park and Ride), and Pineland West.[21] IMPLAN modeling results as related to the infrastructure costs are detailed in Table 19, and Table 20 displays the ongoing O&M costs.

Alignment 1A Infrastructure Investment – Capital Costs

- **Low Costs** – In total (direct, indirect, and induced), with low capital costs, the estimated value added to the Maine economy with Alignment 1A is $161.94 million.
  - The infrastructure investment of $189.00 million (direct output) results in the estimated employment of 1,359 positions (direct) with labor income of $71.97 million (direct). The estimated dollar value added to the statewide Maine economy from these direct inputs is $67.03 million. The direct impacts also result in both indirect and induced impacts, totaling $172.02 million (output) and then translate to 1,032 in employment with labor income of $57.03 million. The indirect and induced value added to the statewide economy is $94.91 million.
- **High Costs** – In total (direct, indirect, and induced), with high capital costs, the estimated value added to the Maine economy with Alignment 1A is $197.07 million.
  - The infrastructure investment of $230.00 million (direct output) results in the estimated employment of 1,654 positions (direct) with labor income of $87.58 million (direct). The estimated dollar value added to the statewide Maine economy from these direct inputs is $81.57 million. The direct impacts also result in both indirect and induced impacts, totaling $209.34 million (output) and then translate to 1,262 in employment with labor income of $69.40 million. The indirect and induced value added to the statewide economy is $115.50 million.

Table 19 IMPLAN Model Results Alignment 1A – Infrastructure Costs

ALIGNMENT 1A (PAR) – Low Costs – High Costs

Input Costs	**Construction Costs for Infrastructure = $189.00 to $230.00 (millions)**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	1,359 - 1,654	$71.97 - $87.58	$67.03 - $81.57	$189.00 - $230.00
2 - Indirect	484 - 589	$28.70 - $34.93	$45.10 - $54.89	$87.26 - $106.19
3 - Induced	554 - 674	$28.33 - $34.47	$49.81 - $60.61	$84.77 - $103.15
Total	2,522 - 3,075	$129.00 - $156.99	$161.94 - $197.07	$361.02 - $439.34

Source: IMPLAN, VHB and RKG (2022)

Note - input costs in 2019 dollars, output impacts in 2022 dollars - all in $millions

[21] The context of this analysis is ongoing and as of the IMPLAN modeling, the potential Royal Junction Station area is no longer included.

Alignment 1A Operating and Maintenance (O&M) Costs

- **Low Costs** – In total (direct, indirect, and induced), with low O&M costs, the estimated value added to the Maine economy with Alignment 1A is $13.90 million.
  - The ongoing and annual O&M costs of $15.00 million (direct output) results in the estimated employment of 41 positions (direct) with labor income of $5.26 million (direct). The estimated dollar value added to the statewide Maine economy from these direct inputs is $5.97 million. The direct impacts also result in both indirect and induced impacts, totaling $13.89 million (output) and then translate to 85 in employment with labor income of $4.66 million. The indirect and induced value added to the statewide economy is $7.93 million.
- **High Costs** – In total (direct, indirect, and induced), with high O&M costs, the estimated value added to the Maine economy with Alignment 1A is $17.61 million.
  - The ongoing and annual O&M costs of $19.00 million (direct output) results in the estimated employment of 52 positions (direct) with labor income of $6.66 million (direct). The estimated dollar value added to the statewide Maine economy from these direct inputs is $7.56 million. The direct impacts also result in both indirect and induced impacts, totaling $17.58 million (output) and then translate to 107 in employment with labor income of $5.90 million. The indirect and induced value added to the statewide economy is $10.05 million.

Table 20 IMPLAN Model Results Alignment 1A – Ongoing Annual O&M Costs

ALIGNMENT 1A (PAR) - Low Costs – High Costs

Input Costs	**Annual Ongoing O&M Costs = $15.00 to $19.00 million**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	41 – 52	$5.26 - $6.66	$5.97 - $7.56	$15.00 - $19.00
2 - Indirect	43 – 55	$2.53 - $3.20	$4.18 - $5.30	$7.49 - $7.49
3 - Induced	42 – 53	$2.13 - $2.70	$3.75 - $4.75	$6.38 - $8.09
Total	125 - 159	$9.92 - $12.57	$13.90 - $17.61	$28.88 - $35.58

Source: IMPLAN, VHB and RKG (2022)

Note - input costs in 2019 dollars, output impacts in 2022 dollars - all in $millions

2.2 Alignment 1B Potential Stations

The Alignment 1B analysis reflects the eastern route for the proposed rail services with the following potential station areas - Lewiston, Auburn (Park and Ride), Pineland East and Yarmouth Junction. IMPLAN modeling results as related to the infrastructure costs are detailed in Table 21, and Table 22 displays the ongoing O&M costs.

Alignment 1B Infrastructure Investment – Capital Costs

- **Low Costs** – In total (direct, indirect, and induced), with low capital costs, the estimated value added to the Maine economy with Alignment 1B is $177.36 million.
  - The infrastructure investment of $207.00 million (direct output) results in the estimated employment of 1,488 positions (direct) with labor income of $78.827 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $73.41 million. The direct impacts also result in both indirect and induced impacts, totaling $188.40 million (output) and then translate to 1,136 in employment with labor income of $67.46 million. The indirect and induced value added to the statewide economy is $103.95 million.
- **High Costs** – In total (direct, indirect, and induced), with high capital costs, the estimated value added to the Maine economy with Alignment 1B is $21.63 million.
  - The infrastructure investment of $254.00 million (direct output) results in the estimated employment of 1,862 positions (direct) with labor income of $96.72 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $90.08 million. The direct impacts also result in both indirect and induced impacts, totaling $231.19 million (output) and then translate to 1,394 in employment with labor income of $76.65 million. The indirect and induced value added to the statewide economy is $127.55 million.

Table 21 IMPLAN Model Results Alignment 1B – Infrastructure Costs

ALIGNMENT 1B (SLR) - Low Costs – High Costs

Input Costs	**Construction Costs for Infrastructure = $207.0 to $254.0 million**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	1,488 – 1,825	$78.82 - $96.72	$73.41 - $90.08	$207.00 - $254.00
2 - Indirect	530 – 650	$31.44 - $38.58	$49.40 - $60.61	$95.57 - $117.27
3 - Induced	606 – 744	$31.03 - $38.07	$54.55 - $66.94	$92.84 - $113.92
Total	2,624 – 3,220	$141.29 - $173.37	$177.36 - $217.63	$395.41 - $485.19

Source: IMPLAN, VHB and RKG (2022)

Note - input costs in 2019 dollars, output impacts in 2022 dollars - all in $millions

Alignment 1B Operating and Maintenance (O&M) Costs

- **Low Costs** – In total (direct, indirect, and induced), with low O&M costs, the estimated value added to the Maine economy with Alignment 1B is $14.83 million.
  - The ongoing and annual O&M costs of $16.00 million (direct output) results in the estimated employment of 43 positions (direct) with labor income of $5.61 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $6.36 million. The direct impacts also result in both indirect and induced impacts, totaling $14.80 million (output) and then translate to 90 in employment with labor income of $4.97 million. The indirect and induced value added to the statewide economy is $8.46 million.
- **High Costs** – In total (direct, indirect, and induced), with high O&M costs, the estimated value added to the Maine economy with Alignment 1B is $18.53 million.
  - The ongoing and annual O&M costs of $20.00 million (direct output) results in the estimated employment of 54 positions (direct) with labor income of $7.01 million (direct). The estimated dollar value added to the Maine economy (statewide) from these direct inputs is $7.95 million. The direct impacts also result in both indirect and induced impacts, totaling $18.50 million (output) and then translate to 113 in employment with labor income of $6.21 million. The indirect and induced value added to the statewide economy is $10.58 million.

Table 22 IMPLAN Model Results Alignment 1B – Ongoing Annual O&M Costs

ALIGNMENT 1B (SLR) - Low Costs – High Costs

Input Costs	**Annual Ongoing O&M Costs = $16.0 to $20.0 million**			
Impact	**Employment**	**Labor Income**	**Value Added**	**Output**
1 - Direct	43 – 54	$5.61 - $7.01	$6.36 - $7.95	$16.00 - $20.00
2 - Indirect	46 – 57	$2.70 - $3.37	$4.46 - $5.58	$7.99 - $9.99
3 - Induced	44 – 56	$2.27 - $2.84	$4.00 - $5.00	$6.81 - $8.51
Total	134 - 167	$10.58 - $13.23	$14.83 - $18.53	$30.80 - $38.50

Source: IMPLAN, VHB and RKG (2022)

Note - input costs in 2019 dollars, output impacts in 2022 dollars - all in $millions

2.3 Comparisons of Alignment Alternatives

A comparison of the total economic impacts associated with each proposed Alignment are detailed in the following tables, for both the infrastructure investment (capital costs) and the ongoing operations and maintenance (O&M) expenditures. These are offered in total here, meaning the sum of direct, induced, and indirect impacts.

Comparison of Infrastructure Investment – Capital Costs

Table 23 compares the outputs for the infrastructure (capital) costs of Alignment 1A and Alignment 1B, noting the following:

- **Low Costs** - in terms of the initial investment (**direct output only**) the cost for Alignment 1B is estimated at $207.00 million as contrasted to $189.00 million for Alignment 1A for a variance, or percent difference, of approximately 9.52%.
  - While this variance is the same for all of the dollar estimates, a function of the modeling, the difference occurs in the total estimated employment with Alignment 1B exceeding Alignment 1A by 103 positions or by approximately 4.08%.
- **High Costs** - in terms of the initial investment (**direct output only**) the cost for Alignment 1B is estimated at $254.00 million as contrasted to $230.00 million for Alignment 1A for a variance of approximately 10.43%.
  - While this variance is the same for all of the dollar estimates, the difference occurs in the total estimated employment with Alignment 1B exceeding Alignment 1A by 145 positions or by approximately 4.73%.

Table 23 Infrastructure Costs Comparison

Infrastructure Costs Comparison

	Low Costs – High Costs				
	Employment (Total)	**Labor Income**	**Value Added**	**Output**	**Initial Investment[1]**
		(Rounded $ Millions)			
Alignment 1A	2,522 - 3,075	$129.00 - $156.99	$161.94 - $197.07	$361.02 - $439.34	$189.00 - $230.00
Alignment 1B	2,624 - 3,220	$141.29 - $173.37	$177.36 - $217.63	$395.41 - $485.19	$207.00 - $254.00
Difference	**103 - 145**	**$12.29 - $16.38**	**$15.42 - $20.56**	**$34.38 - $45.84**	**$18.00 – $24.00**

Source: IMPLAN, VHB and RKG (2022)

(1) – Initial Investment = Capital Costs

Comparison of Operating & Maintenance (O&M) Costs

The data in Table 24 shows that the dollar variance between both the low costs estimates and the high costs estimate is $1.0 million, with respect to the comparison of the outputs for the annual and ongoing O&M costs of Alignment 1A and Alignment 1B, indicating:

- **Low Costs** – the variances for all IMPLAN model outputs are that Alignment 1B exceeds Alignment 1A by 6.67% similar to the percent difference between $15.0 million (Alignment 1A) and $16.0 million (Alignment 1B).
- **High Costs** – the variances for all IMPLAN model outputs are that Alignment 1B exceeds Alignment 1A by 5.26% similar to the percent difference between $19.0 million (Alignment 1A) and $20.0 million (Alignment 1B).

Table 24 Annual O&M Costs Comparison

Annual O&M Costs Comparison

	Low Costs – High Costs				
	Employment (Total)	**Labor Income**	**Value Added**	**Output**	**Annual O&M Costs**
		(Rounded $ Millions)			
Alignment 1A	125 - 159	$9.92 - $12.57	$13.90 - $17.61	$28.88 - $36.58	$15.00 - $19.00
Alignment 1B	134 - 167	$10.58 - $13.23	$14.83 - $18.53	$30.80 - $38.50	$16.00 - $20.00
Difference	**8**	**$0.66**	**$0.93**	**$1.93**	**$1.00**

Source: IMPLAN, VHB and RKG (2022)

3

KEY FINDINGS

This chapter will detail key findings surrounding each potential station area FOR:

- Population
- Households
- Residential Development Potential
- Projected Population Change as a Result of Household Change
- Owner Home Values
- Income Comparisons
- Selected Employment Comparisons
- Comparisons of Potential Service and Office Sector Development
- Estimates of Selected Retail Spending Demand from Households and Employees

This chapter will also highlight fiscal and economic benefits in terms of ridership and revenues, and other transit benefits and considerations such as safety benefits, travel time savings, energy and emission reductions, and affordable mobility.

3.1 Key Findings

This section discusses the key findings from this analysis. All baseline inputs, assumptions and analysis used to derive these key findings are discussed throughout the remainder of this report. These findings reflect a comparison of socio-economic and retail/commercial metrics as they may translate to residential and non-residential development opportunities for each potential station area.

Based on the analysis there is an estimated minimal distinction between the two Alignments.

The economic analysis finds that Alignment 1B requires a higher initial investment or capital costs; however, this is because it consists of four potential station sites, while Alignment 1A consists of three potential station sites.

Similarly, Alignment 1B sees greater value-added metrics (statewide economic ripple effects) than Alignment 1A, but this is directly related to the higher initial investment costs for Alignment 1B and does not inherently favor one alignment over the other.

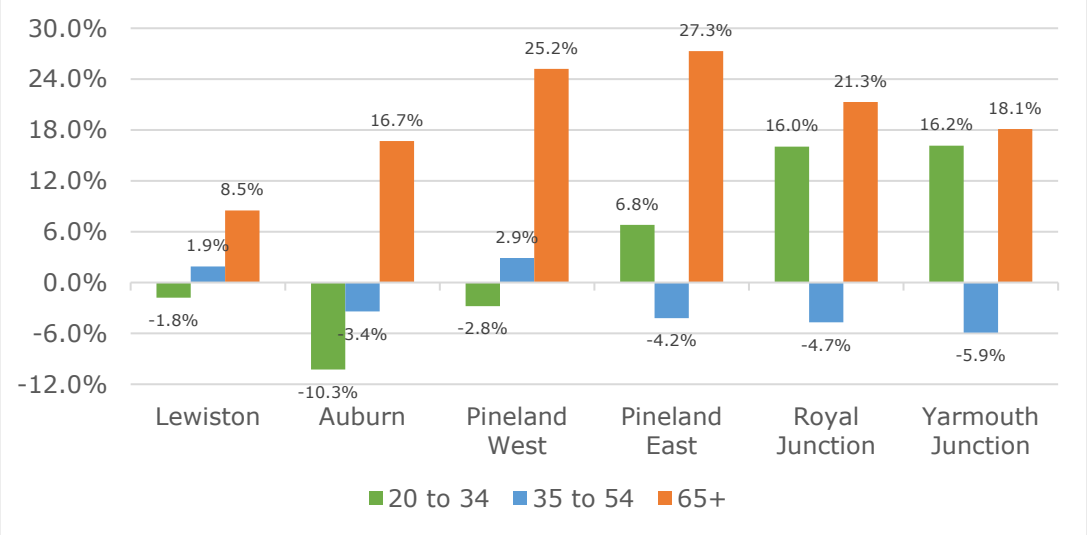
As detailed earlier, the potential Royal Junction station was removed from consideration in this study, however, its analysis is included throughout this chapter for reference.

3.1.1 Population Change by Age Cohort

Comparisons of the projected total population change and population change by age for each potential station area over the 2021 – 2026 period are indicated in Figure 11:

- The cohort aged 20 to 34 sees reasonably strong projected population growth for the Pineland East, Royal Junction, and Yarmouth Junction station areas. In fact, for all three of these station areas, the projected growth in this population cohort exceeds that for the county. **This suggests potential opportunities for development of rental housing in these locations at price points and amenities attractive to these often-first-time renters.**
- With exceptions of the Lewiston station and the Pineland West station, the population in the 35 to 54 age cohort is projected to decline. This cohort typically represents those in their family formation and home buying years, as well as those in peak earning and spending years. **Declines in this population could signify diminished first-time home ownership and reduced retail spending demand within the study area.**
- The population cohort aged 65+ is projected to increase within each station area and **suggests opportunities for increased residential demand, either renter demand or owner demand** (possibly owner condominiums) both of which would also facilitate **greater development densities for housing options targeted to this demographic.** Such options generally include housing types with smaller footprints and perhaps assisted living or other older adult care facilities.

Figure 11 Population Change by Potential Station Area and Selected Age Cohorts, 2021 – 2026



Source: Esri and RKG (2022)

Alignment Comparisons

When comparing the potential station groupings for Alignment 1A and 1B, the differences between the Pineland West and East station populations under 65 are somewhat marginal, where Alignment 1A (PAR) sees a projected growth in the 35 to 54 age cohort at the Pineland West station area, who are frequently homeowners. Conversely in Alignment 1B (SLR), the potential Pineland East station area projects a decline in this cohort, with a larger growth in the 20 to 34 age cohort, often first-time renters. Since the potential Royal Junction station was removed from consideration, the greatest difference between alignments is due to population increase in the 20 to 34 and 65 and older age cohorts associated with the potential Yarmouth Junction station, Alignment 1B (SLR).

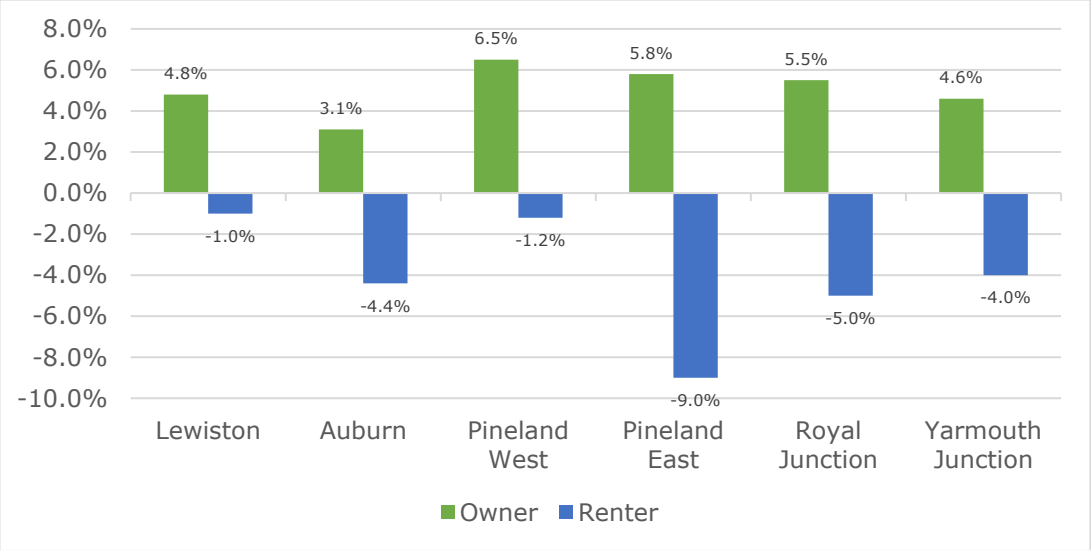
3.1.2 Household Change by Tenure – Owner and Renter

Comparisons of the projected household change for each potential station area by tenure (owner and renter) over the 2021 – 2026 period are indicated in Figure 12:

- Although all potential station areas are projected realize some growth in owner-occupied housing units over the 2021 – 2026 period, this may not necessarily be indicative of newly built housing. Some of this new demand could reflect a portion of current renters becoming homeowners by purchasing existing ownership units. While some of the projected change in owner housing could be captured in newly built units, it may be minimal, as affordability issues for both buyers and builders could impact such development. This is also compounded by the projected loss of residents ages 35 to 54 years, as previously noted.
- Despite projected declines in renter housing for each potential station area, the previously noted growth in the population aged 65+ may offer opportunities for additional housing with increased development densities. This would require the availability of land (or land assemblages) to enable larger-scale development in these

station areas. Further, to the extent that existing study area owner households over 65 years in age transition to renter housing, then the existing owner housing inventory and availability could be enhanced.

Figure 12 Household Change by Potential Station Area and Tenure, 2021 – 2026



Source: Esri and RKG (2022)

Alignment Comparisons

When comparing the station groupings for Alignment 1A and 1B, the greatest difference between alignments is due to household change associated with the potential Yarmouth Junction station, Alignment 1B (SLR), since the potential Royal Junction station was removed from consideration. Other differences between the station groupings are noted between the potential Pineland West and East stations, which may affect development potential. While all potential station areas see projected growth in owner households, Pineland East (Alignment 1B) projections show a significant 9% decrease in renter households, compared to Pineland West at just 1.2% decrease (Alignment 1A).

3.1.3 Residential Development Potential 2021 - 2026

Ownership housing demand estimates (2021 – 2026) are illustrated in Figure 13 for each potential station area. For this analysis, three different growth scenarios were utilized. First, the baseline potential reflects current population and household projections as a share of the county's overall growth. The second and third scenarios (1.15% and 1.25% increases) represent a projected increase for each station area's capture of county

growth, on the assumption that the addition of new housing and public transportation options may make these areas more desirable to build and live in[22].

The base assumption is that given "new" housing choices, proximity to commuter rail and any potential for additional non-residential development and amenities could work together to enhance the location desirability of the study area. Further, that any new residential development in the study area would be positioned to effectively target countywide population change, especially in targeted population age cohorts[23].

Rental housing demand estimates (2021 – 2026) are illustrated in Figure 14 for each station area. Like the ownership demand projections, the baseline potential reflects current population and household projections as a share of the county's overall growth, while the additional metrics represent a projected increase for each station area's capture of county growth on the assumption that the addition of new housing and public transportation options may make these areas more desirable to build and live in[24].

Despite negligible rental demand for several station areas, there may be opportunities to change these demand factors by targeting rental housing to older adults who may be looking for opportunities to downsize or move to a different type of housing than single-family or other forms of owner-occupied housing. Like owner-occupied housing development, additional rental opportunities would require available land, or land assemblages, investor/developer interest, as well existing zoning regulations.

Alignment Comparisons

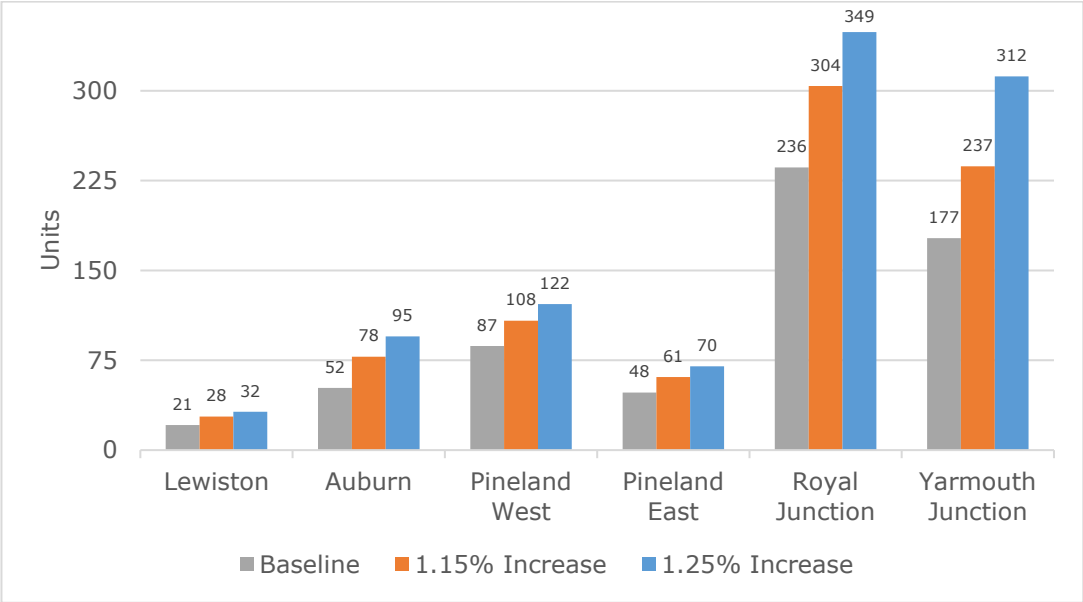
When comparing the station groupings for Alignment 1A and 1B, the greatest difference between alignments is due to estimated development potential for both owner and renter units associated with the potential Yarmouth Junction station, Alignment 1B (SLR), since the potential Royal Junction station was removed from consideration.
Other significant differences between the station groupings are noted between the Pineland West and East stations, indicating that Alignment 1A (PAR) has greater estimated potential for owner residential development than Alignment 1B (SLR).

[22] For example, the baseline projected increase in owner housing units for the Lewiston Station area is 21 but could increase to 28 using a 1.15% increase in countywide market share or 32 units using a 1.25% increase in countywide market share.

[23] Ultimately, additional residential development opportunities would be a factor (in part) of available land, or land assemblages, for such development, investor/developer interest and determinations of market and financial feasibility, as well existing zoning regulations.

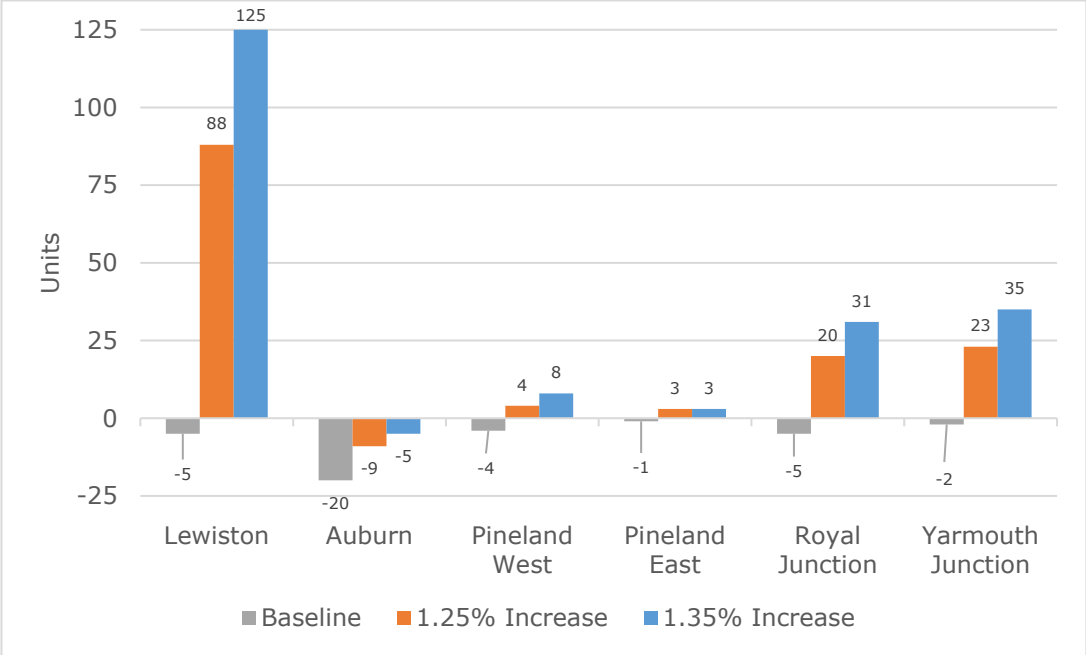
[24] Note that the projected opportunity for additional rental units around the Lewiston Station site does not include the proposed pipeline development of 512 new units. Rather, the projections reflect an increased "capture or market share" of countywide renter housing. The pipeline units are discussed and utilized later in this report.

Figure 13 Owner Residential Units - Estimated Potential for Development



Source: Esri and RKG (2022)

Figure 14 Renter Residential Units - Estimated Potential for Development



Source: Esri and RKG (2022)

3.1.4 Projected Population Change as a Result of Household Change

The preceding estimates of household change for both owner and renter units in each station area would also represent a change in total population within each station area.

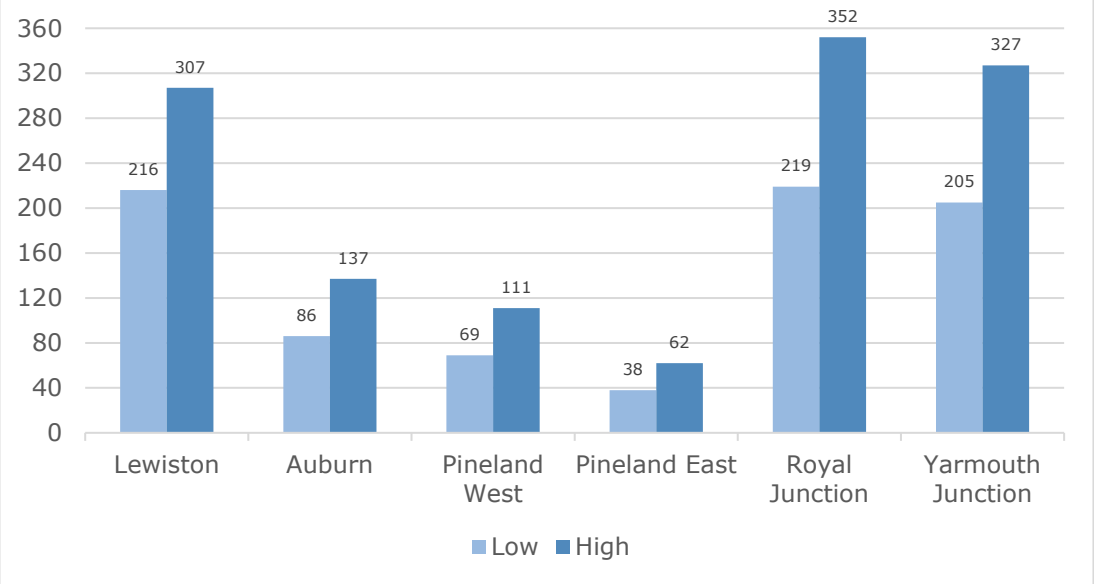
This analysis used the countywide average household size for owner and renter households as reported by the US Census.[25]

The population projections from new housing may reflect a redistribution of county households that would have otherwise occurred elsewhere in the county had it not been for the introduction of transit and new housing units. Although some percentage of the growth may come from net new households to the county. The estimates shown in Figure 15 are for population change over the 2021-2026 five-year period[26].

Alignment Comparisons

Similar to comparisons in earlier sections, Alignment 1B (SLR) sees greater projected population change as a result of household change than Alignment 1A (PAR), with potentially greater development opportunities associated with this. Although Pineland West (1A) station estimates double the population change as Pineland East (1B), the population increase associated with the potential Yarmouth Junction station (1B) is the most significant, as the potential Royal Junction station was removed from consideration.

Figure 15 Projected Population Change as a Result of Household Change by Potential Station Area



Source: Esri, US Census and RKG (2022)

[25] Androscoggin Co. owner (2.42/HH) renter (2.15/HH) - Cumberland Co. owner (2.49/HH) renter (1.97/HH).

[26] It should be noted that the projected population change around the Lewiston Station site does not include the proposed pipeline development of 512 new units. Excluding the 140 units for student housing and the replacement housing 37 units, new pipeline housing in the Lewiston Station area is 372 units. Assuming the countywide average of 2.15 persons/renter household, these units could add 800 residents to the Lewiston Study area. Note that this does not necessarily equate to a net new population of 800 residents but would as likely reflect some redistribution of the overall countywide population.

3.1.5 Owner Home Values

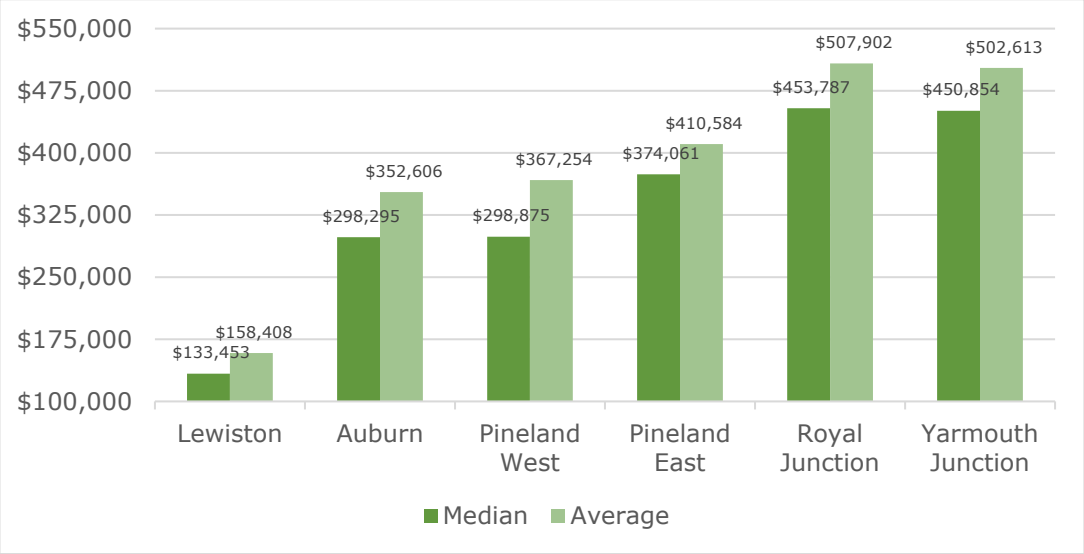
Owner home value projections for each potential station area in 2026, both median and average, are indicated in Figure 16, noting:

- The potential Lewiston station area's comparatively lower home values (both median and average) may suppress developer interest in new construction as influenced by the capacity to have selling prices recover construction costs. An exception may be some limited development of higher valued owner housing where location to commuter rail access is among the decision factors for the homebuyer.
- For all other station areas, the median and average home values are comparatively high and may be at breakpoints attractive to some home buyers and developers. As noted previously, the increase in the population cohort aged 65+ could translate to additional housing desirability, assumed to be predominantly rental in this analysis, but potentially owner condominiums too. Again, available land to facilitate developer interest and development density are keys factors.

Alignment Comparisons

When comparing the potential station groupings for Alignment 1A and 1B, the greatest difference between alignments is due to projected owner home values associated with the potential Yarmouth Junction station, Alignment 1B (SLR), since the potential Royal Junction station was removed from consideration. Other differences are noted between the Pineland West and East stations, where Alignment 1B (SLR) also sees greater projected median and average owner home values.

Figure 16 Owner Home Values by Potential Station Area - Projected 2026



Source: Esri and RKG (2022)

3.1.6 Income Comparisons

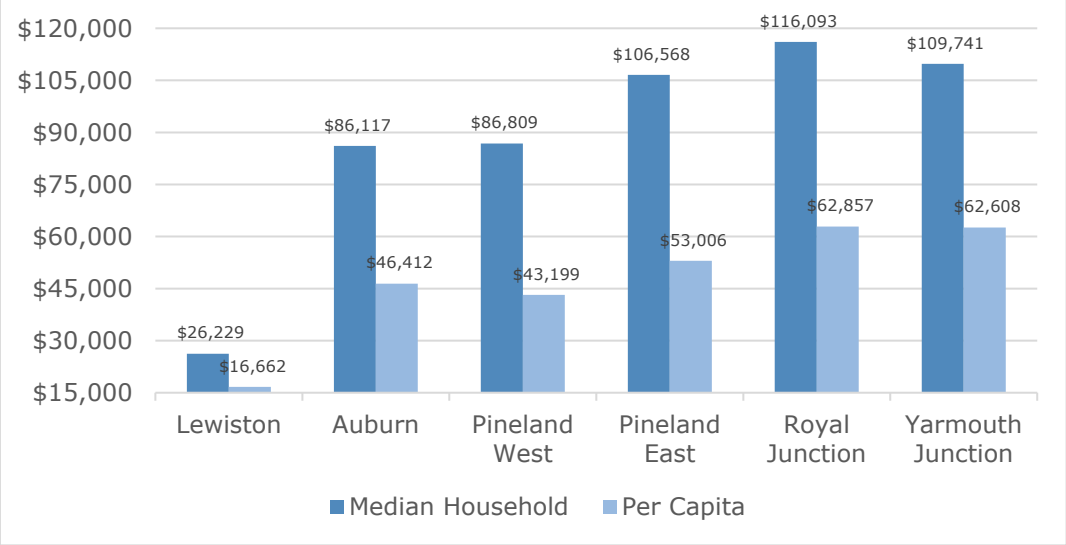
Projected median household income and per capita income for each potential station area are shown in Figure 17, noting:

- Both income measures serve to reflect some level of either household or per capita wealth and disposable income and spending potential. Both are comparatively lower in the Lewiston station area and suggest a lower household and per capita spending capacity to support additional retail development opportunities. This outlook could change if new retail in this station area drew customers from a broader geographic area.
- The combined and average median household income in 2026 for the Pineland West station to Royal Junction station is approximately $101,450. The similar measure for the Pineland East station to Yarmouth Junction station is approximately $108,155 or 7% higher. This may indicate that disposable income and spending potential for the Pineland East/Yarmouth Junction alternative could offer marginally greater opportunities for supporting non-residential development in the study areas. For each of the two station area links, there is significant geographic overlap in the three-mile station areas.

Alignment Comparisons

When comparing the station groupings for Alignment 1A and 1B, the greatest difference between alignments is due to projected incomes associated with the potential Yarmouth Junction station, Alignment 1B (SLR), since the potential Royal Junction station was removed from consideration. Other differences between the station groupings are somewhat marginal, with differences noted between the Pineland West and East station incomes. Alignment 1B (SLR) Pineland East station sees greater projected income than Pineland West (1A – PAR).

Figure 17 Median Household and Per Capita Incomes by Potential Station Area - Projected 2026



Source: Esri and RKG (2022)

3.1.7 Selected Employment Comparisons

Potential station area comparisons of 2021 job counts by industry sector[27] are shown in Figure 18:

- All potential station areas have a relatively high concentration of their employment in retail and service industry sectors which are typically lower wage positions compared to office and manufacturing.
  - Retail and service sectors, when combined, account for between 37% of the employment base in the Auburn station area to nearly 67% in the Lewiston station area.
  - Office and manufacturing sectors, when combined, see employment ranges from 5.9% in the Auburn station area to 23% in the Lewiston station area.

Countywide employment projections were reviewed for 2022 – 2032 to place the employment distribution within each station area in perspective[28]. As indicated in Figure 19, total employment in Androscoggin County is projected to decline by 1.3% - 676 jobs, and Cumberland County is projected to decline by 1.1% - 2,239 jobs.

Both counties are projected to realize employment losses across several selected industry sectors, most notably the retail sector at 6.7% for Androscoggin County and 15% for Cumberland County. Conversely, both are projected to experience some gains in the service sector industries, with Cumberland County also gaining in the office and manufacturing sectors.

Alignment Comparisons

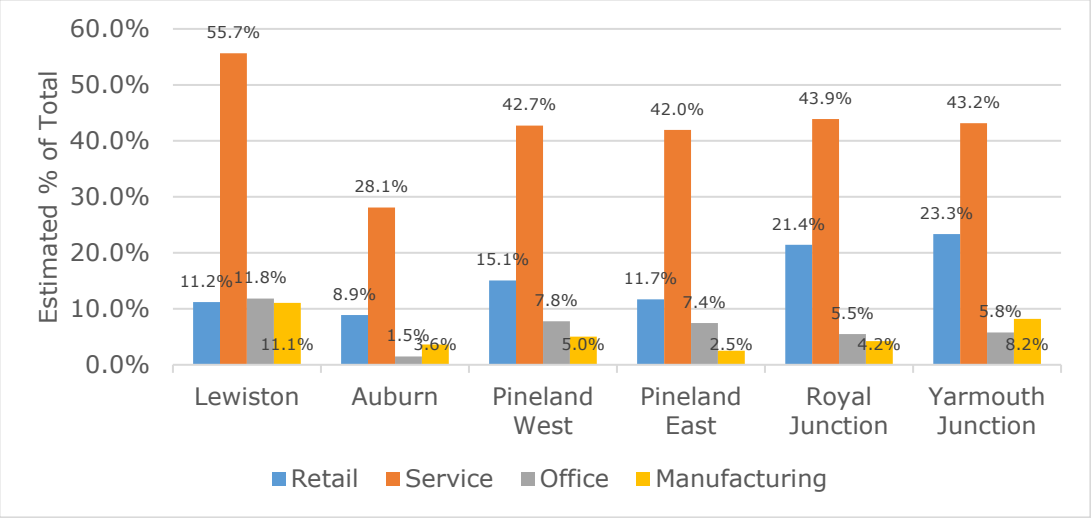
When comparing the station groupings for Alignment 1A and 1B, the greatest difference between alignments is due to estimated employment concentrations associated with the potential Yarmouth Junction station, Alignment 1B (SLR), since the potential Royal Junction station was removed from consideration. Fewer differences are apparent between Pineland West (1A) and Pineland East (1B).

As both Alignments travel through Cumberland and Androscoggin Counties, the county employment change illustrated in Figure 19 also does not necessarily indicate a clear benefit for one alignment over another.

[27] Retail sector includes typical shopper's goods stores and restaurants. Office sector includes finance, real estate, and insurance. Service sector includes health care and other personal and professional uses. Manufacturing sector is manufacturing uses.

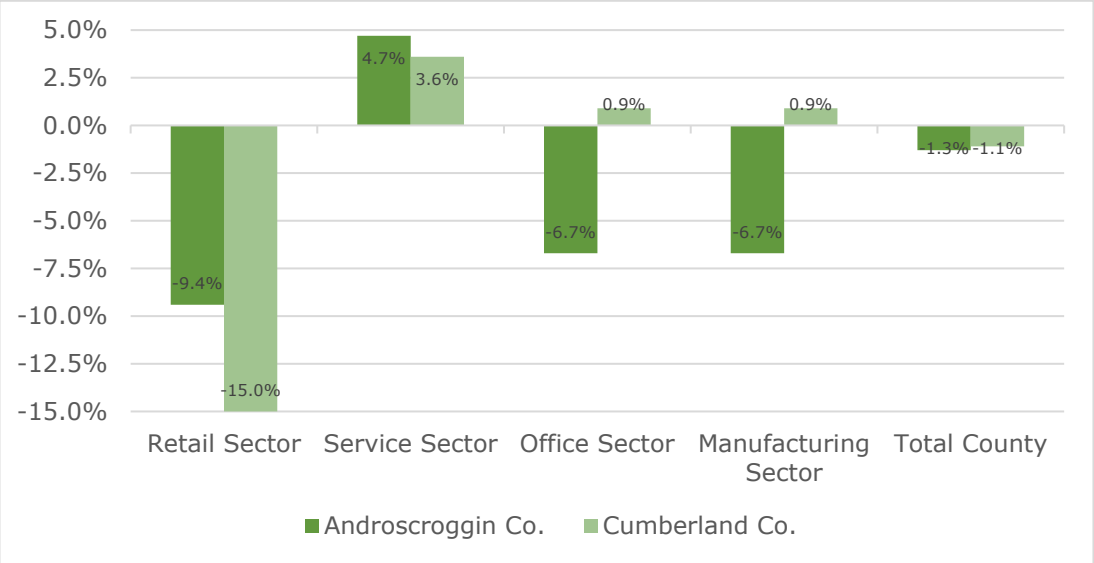
[28] Countywide employment projections provided by Emsi, a leading private sector vendor of employment and economic proprietary modeling.

Figure 18 Employment Comparisons by Potential Station Area - 2021



Source: Esri and RKG (2022)

Figure 19 County Employment Change for Selected Industry Sectors, Projected 2022 – 2031



Source: Emsi and RKG (2022)

3.1.8 Comparisons of Potential Service and Office Sector Development

Estimated service sector and office sector development potential are detailed by station area in Figure 20. The projected growth in service sector employment for Androscoggin County from 2022-2032 is 822 employees. The projected growth in the same sector for Cumberland County is 2,441 employees, with Cumberland County also projected to increase office sector employment by 490 employees.

For service and office sectors, the analysis held the 2021 share of jobs in each station area as a percent of the county total constant and estimated potential employment

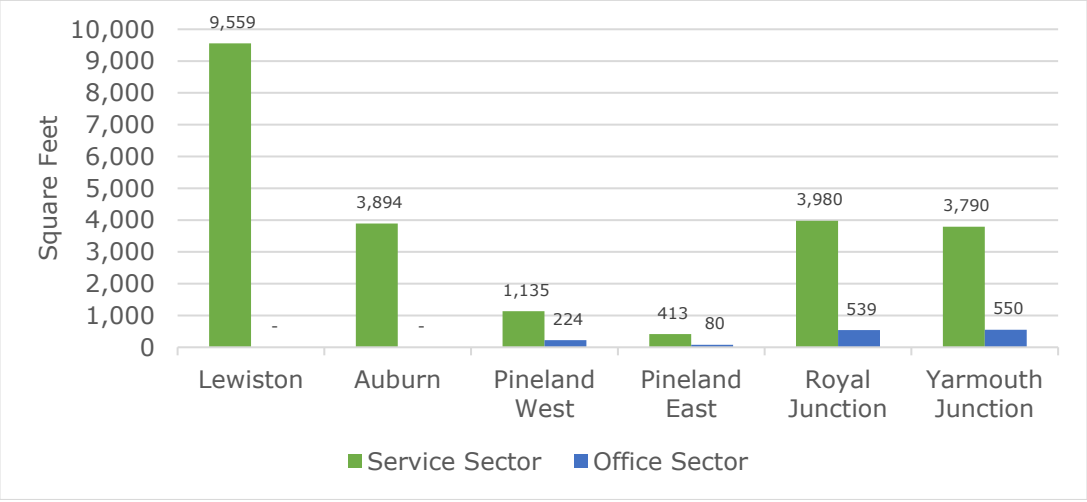
growth by sector for each station area. For example, in 2021 the service sector employment in the Lewiston station area represented 18.6% of the countywide employment in the same sector. This percentage was then applied to the county growth for employment in that sector to derive future employment by sector in the Lewiston station area. The same was done for each potential station area.

Estimated employment growth for the service sector and office sector was then translated into estimated demand for additional square feet using industry standards for space per employee.[29] All demand from employee growth does not necessarily equate to demand for new built space. Some demand could be captured in existing vacancies or from an expansion of existing facilities or operations. A conservative estimate found that perhaps 25% of the estimated employment growth could result in demand for new built space[30].

Alignment Comparisons

When comparing the station groupings for Alignment 1A and 1B, the differences between alignments are most pronounced for both sectors with Alignment 1B (SLR) Yarmouth Junction and Pineland East, compared to Alignment 1A (PAR) Pineland West station. Alignment 1A (PAR) at Pineland West sees more than double the development potential than Alignment 1B (SLR) at Pineland East. The greatest difference between alignments is due to development potential associated with the potential Yarmouth Junction station since the potential Royal Junction station was removed from consideration.

Figure 20 Estimated Service and Office Sectors Development Potential by Station Area



Source: Emsi, ULI and RKG (2022)

[29] For both sectors, the metric used in this analysis was an average of 250 SF per employee, reflecting RKG's experience and as offered by the Urban land Institute (ULI).

[30] Any additional service or office sector development opportunities would be influenced by the availability of land or space, investor/developer interest, business interest, financial feasibility, and existing zoning. Lastly, this potential change in employment represents a 10-year period.

3.1.9 Comparisons of Potential Retail Sector Development

Estimates of retail development in square feet for each potential station area are shown in Table 19 and presented by selected sectors. This analysis approach uses estimates of sales leakage for each sector – a comparison of estimated sales for that sector relative to the estimated household spending demand for the same sector. Where there is unmet demand, or sales leakage, an opportunity may exist to re-capture a portion of it.

The analysis considered that perhaps as much as 35% of the estimated sales leakage could be re-captured by additional retail offerings. This does not necessarily indicate demand for newly built stores, as existing merchants could alter their merchandising and operations and increase their sales penetration (market share) of local spending demand. Further, such potential development would be dependent on store types and their decision criteria, and available land and applicable zoning to support such development.

For each sector presented in Figure 21, the estimated 35% capture of sales leakage was divided by typical industry average sales per square foot values and indicates:

- Potential Lewiston station – total potential is estimated to amount to approximately 1,475 square feet across limited store types[31].
- Potential Auburn station – total potential is less than 1,000 square feet and includes secondhand and used merchandise stores.
- Potential Pineland West station – approximately 4,495 square feet of potential and across multiple store types with 49.0% of the potential for restaurants.
- Potential Pineland East station – approximately 4,580 square feet and with 73.0% in the restaurant sector.
- Potential Royal Junction station[32] – slightly more than 16,530 square feet of potential with the restaurant sector accounting for 71.0% of the total potential.
- Potential Yarmouth Junction station – nearly 11,345 square feet with the restaurant sector accounting for 68.0% of the total potential.

[31] Note that the projected opportunity for additional retail development around the Lewiston Station site (as presented in Figure 21) does not include the household spending potential of the proposed pipeline development (discussed elsewhere in this report) of 512 new units (inclusive of 140 student housing units). Excluding the 140 units of student housing and the replacement housing of 37 units, the net new pipeline residential development equates to 372 units.

This analysis considered the average annual household spending demand for these 372 units and estimates that perhaps as much as 60% of this demand (for each of the selected retail sectors) could be captured by development within the Lewiston Station area. The reasoning for the higher capture rate (60% as opposed to 35%) reflects the small 15-minute walk radius around the station and the proximity of the new households to any new or supportable additional retail development. Typically, consumers shop close to home when possible. Under these assumptions, the pipeline housing could support an approximate 1,250 SF of additional development across all of the identified retail sectors with 65% as restaurant space.

With the inclusion of the demand represented by the pipeline households, the development opportunity around the Lewiston Station area is approximately 2,715 SF across all identified retail sectors.

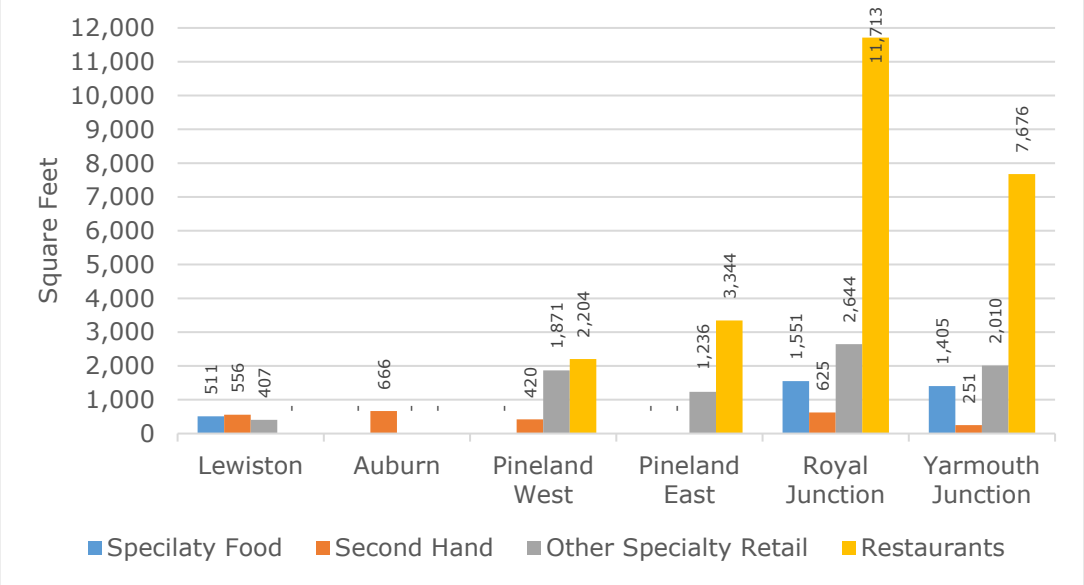
[32] The Royal Junction station was removed from consideration in this study, its analysis is included throughout the report for reference.

These estimates reflect an estimated re-capture of study area household spending demand, only. While it is likely that an active commuter rail station would add daily passengers and represent some level of spending potential, this would typically be considered incremental in most retailer's location decision criteria.

Alignment Comparisons

When comparing the station groupings for Alignment 1A and 1B, some differences are noted between Pineland West and Pineland East station areas for restaurant sector development potential - Alignment 1B (SLR) at the Pineland East station area estimates greater restaurant sector development potential than Alignment 1A (PAR) at Pineland West. Conversely, Alignment 1A (PAR) at the Pineland West station area estimates greater other specialty retail than Alignment 1B (SLR). However, the greatest difference between alignments is due to development potential associated with Yarmouth Junction, since the potential Royal Junction station was removed from consideration.

Figure 21 Estimated Retail Sector Development Potential by Station Area for Selected Sectors



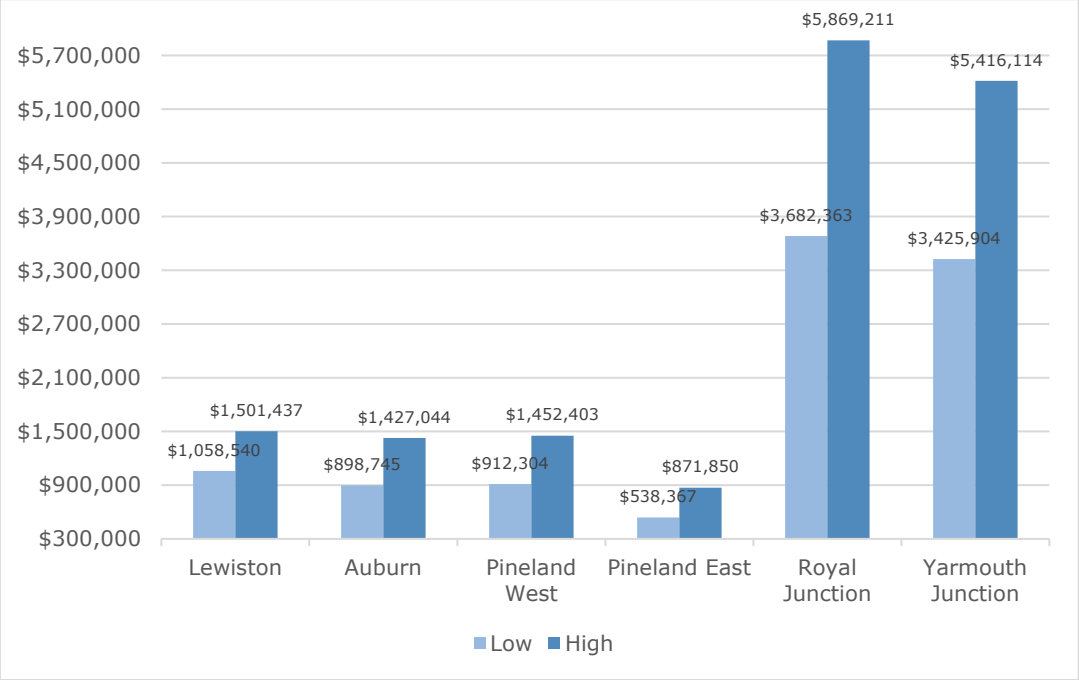
Source: Esri, Urban Land Institute (ULI) and RKG (2022)

3.1.10 Estimates of Selected Retail Spending Demand from Households and Employees

The previously identified potential for additional housing (owner and renter) around each potential station area is also likely to result in an increase in household spending demand. This analysis considered the average annual retail spending demand per household for each station area, excluding automotive and gas. This average demand per household was then applied against the estimated potential "new" housing, above the baseline, for each station area in order to develop an estimate of additional retail spending demand[33].

The estimated change in household retail spending demand, by station area, is presented in Figure 22. These range greatly from a low of $538,400 at Pineland East, to a high of $5.87 million at Royal Junction.

Figure 22 Estimated Change in Household Retail Spending Demand by Potential Station Area



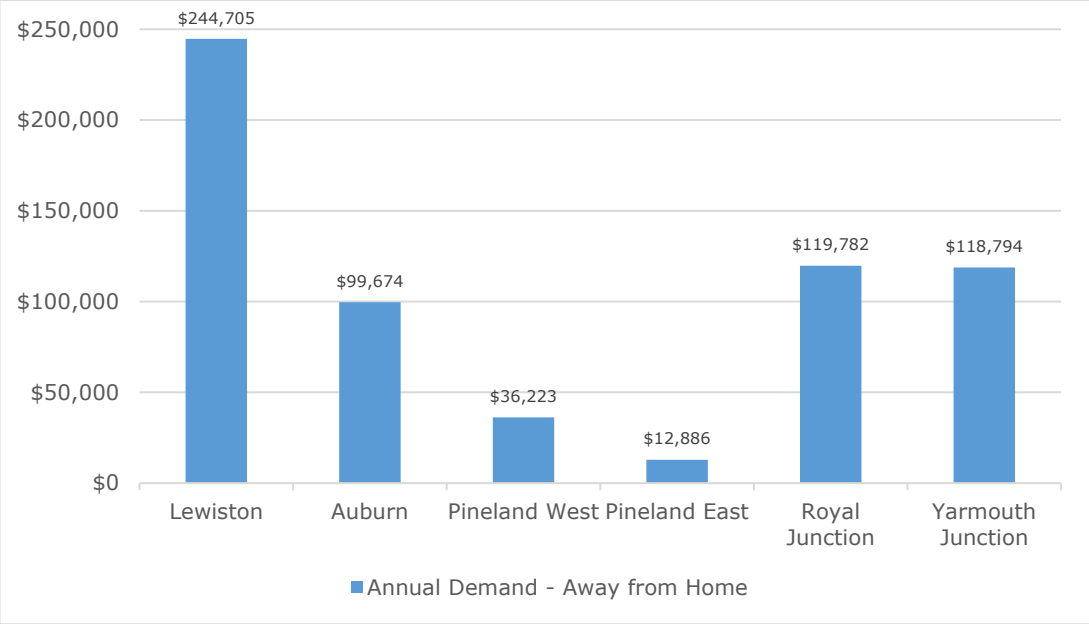
Source: Esri, Urban Land Institute (ULI) and RKG (2022)

Similarly, the previously identified potential employment increase for each potential station area would result in some increase in average annual daily employee spending demand. For this analysis, the analysis considered the average annual spending demand

[33] For example, for the Lewiston station area the estimated average annual retail demand is $10,611/household. Under the previously identified and discussed assumptions the potential for additional housing within the Lewiston Station area is between 100 and 142 units. This results in an approximate $1.06 to $1.50 million (annually) in local area retail household spending demand over a five-year period.

of approximately $1,600[34] for dining and drinking establishments and applied this to the estimated employment increases as reflected in Figure 23 – ranging from a low of $12,900 (Pineland East) to a high of nearly $245,000 (Lewiston). As with potential employment change, this spending demand is incremental over a ten-year period.

Figure 23 Estimated Change in Employee Spending Demand for Dining & Drinking



Source: Esri, Urban Land Institute (ULI), International Council of Shopping Centers (ICSC) and RKG (2022)

Alignment Comparisons

When comparing the station groupings for Alignment 1A and 1B, the differences between station groupings are significant. Alignment 1A (PAR) at Pineland West sees nearly double the estimated change in employee spending as Alignment 1B (SLR) at Pineland East. Alignment 1A (PAR) at Pineland West also has a higher estimated change in employee spending demand for drinking and dining than Alignment 1B (SLR) at Pineland East. However, the greatest difference between alignments is due to estimated employee spending change associated with Yarmouth Junction, since the potential Royal Junction station was removed from consideration.

[34] As identified by the ICSC (International Council of Shopping Centers) and ULI (Urban Land Institute).

3.2 Fiscal and Economic Benefits

Estimates of future fiscal and economic benefits were calculated for each of the potential station areas, based on the addition of new residents, housing units, commercial space, and jobs. For each potential station area, there is a low and high estimate which uses the different growth rates for population and housing as discussed earlier in this report.

Table 25 compares the estimated fiscal and economic benefits associated with each station area which result from potential development opportunities as identified in this analysis. These include estimates of new owner and renter housing units, the resulting change in estimated household spending demand, the potential for new non-residential development, as well as potential employee spending

From a fiscal benefit perspective, the analysis considered the potential for new development and developed an estimate of property values for such development. FY 2022 local property tax rate for each community was then applied to arrive at an estimate of property tax receipts should all development be realized.

As observed in Table 25, the estimated economic and fiscal impacts vary by station study area. These variations are primarily a reflection of (1) the difference in Baseline housing (unit count) and the potential for additional housing (excluding pipeline housing) for each station study area, and (2) the resulting potential growth in housing as estimated from differing "capture rates" of countywide growth by tenure. The change in household spending also differs as the estimated annual per household retail spending for each station study area differs.

While potential non-retail employment differs for each area, a constant factor of approximately $1,600/employee/year forms the basis for estimating additional consumer spending demand.

County average building permit values by type of use provide the estimated potential changes in property valuations, which then form the basis for estimating tax receipts as based on each jurisdiction's FY 2022 tax rate to arrive at the varying estimates of gross property taxes for residential. This also accounts for the differences in estimated non-

residential property tax receipts along with the absolute estimate of new SF of development for each station area[35].

The following Table 26 provides a cumulative comparison of the estimated economic and fiscal impacts resulting from selected "groupings" of specific station areas.

[35] In Table 25, the following inputs and assumptions should be noted:

1. The estimated additional owner units and residential units reflect a five-year change in units above the Baseline estimate of the same number of units for each station area.
2. The estimated change in household spending demand (for retail goods/services) reflects the average demand per household as applied to the change in total households.
3. Retail development (SF) potential accounts for an estimate of the total supportable retail, specifically for restaurants, specialty stores, second-hand stores, and specialty food stores, through a recapture of existing sales leakage (consumers shopping outside of the study area).
4. Non-residential development (SF) potential is an estimate of total supportable development in the service and office industry sectors as based on estimates of employment growth within each of those sectors.
5. Employment growth (office and service sectors) reflects a local (station area) capture of countywide employment growth over a ten-year period.
6. Employee spending estimates account for the average annual expenditures by employees, for selected retail/restaurant spending, during their time at work (annually) at approximately $1,600/employee.
7. Fiscal impacts (property tax receipts) are a measure of the likely taxes associated with the estimated new development by type of use, residential and non-residential.
8. All estimates of property tax receipts are gross estimates and do not account for any additional municipal services costs or additional education costs that may result from the development.
9. Gross property tax estimates are reported in absolute dollars (not in per $1,000's)

Note that both the estimated economic and fiscal benefits, where applicable, are expressed in constant dollars, and further, that such benefits would likely occur over time. As noted previously, much of the growth in housing units reflects a re-distribution of projected countywide growth. As a result, while the residential property tax estimates may be new to the station area, they may not necessarily be new to the county.

These valuations reflect a cost-based approach to valuation (i.e., construction costs). For non-residential development, local assessors typically apply an income-based approach to valuation as tenants become known along with their lease rates and other associated operating costs.

Table 25 Comparative Estimates of Economic and Fiscal Benefits per Potential Station Area

Summary Comparison of Potential Benefits by Potential Station Study Area	Lewiston	Auburn	Pineland West 1A	Pineland East 1B	Royal Junction 1A	Yarmouth Junction 1B
	Low - High	Low - High	Low - High	Low - High	Low - High	Low - High
New Housing[1]	**100 – 141**	**37 – 58**	**29 – 47**	**17 – 26**	**93 – 149**	**85 – 172**
Owner Units	7 – 11	26 - 43	21 - 35	13 - 22	68 – 113	60 – 135
Renter Units	93 – 130	11 - 15	8 - 12	4 – 4	25 – 36	25 - 37
Change in HH Spending in $1,000's	**$1,058.5 - $1,501.4**	**$898.7 - $1,427.0**	**$912.3 - $1,452.4**	**$538.4 - $871.9**	**$3,682.4 - $5,869.2**	**$3,425.9 - $5,416.1**
Development Potential	**11,033**	**4,559**	**5,854**	**5,073**	**21,052**	**15,682**
Retail SF	1,474	666	4,494	4,580	16,533	11,342
Non-Retail SF[2]	9,559	3,894	1,359	493	4,519	4,340
Potential Employment[3]	153	62	23	8	75	74
Potential Spending Demand	$244,705	$99,674	$36,223	$12,886	$119,782	$118,794
Potential Fiscal Impacts (FY22)	**Low - High**	**Low - High**	**Low - High**	**Low - High**	**Low - High**	**Low - High**
Owner Value[4]	$1,434.64 - $2,254.44	$5,328.67 - $8,812.80	$6,188.00 - $10,313.33	$3,830.67 - $6,482.67	$20,037.33 - $33,297.33	$17,680.00 - $39,779.99
Renter Value[5]	$12,236.90 - $17,105.34	$1,447.37 - $1,973.69	$963.44 - $1,445.16	$481.72 - $481.72	$3,010.74 - $4,335.47	$3,010.74 - $4,455.90
Total Residential Value $1,000's	**$13,671.54 - $19,359.77**	**$6,776.04 - $10,786.49**	**$7,151.44 - $11,758.49**	**$4,312.38 - $6,964.38**	**$23,048.07 - $37,632.79**	**$20,690.74 - $44,235.89**
Estimated Gross Property Tax	**$386,358 - $547,107**	**$161,405 - $256,934**	**$98,690 - $162,267**	**$59,511 - $96,109**	**$473,638 - $773,354**	**$409,677 - $875,871**
Retail Value/SF	$150	$150	$150	$150	$150	$150
Non-Retail	$225	$225	$225	$225	$225	$225
Total Non- Residential Value $1,000's	**$2,371.82**	**$975.87**	**$980.02**	**$797.95**	**$3,496.78**	**$2,677.75**
Estimated Gross Property Tax	$67,028	$23,245	$13,524	$11,012	$71,859	$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

Table 26 Selected Groupings of Potential Station Areas and Estimated Economic and Fiscal Benefits

Summary Comparison of Potential Benefits – by Station Study Area	Option 1 - Lewiston & Auburn	Option 2 - Lewiston & Auburn & Pineland West	Option 3 - Lewiston & Auburn & Yarmouth Junction	Option 4 - Lewiston & Auburn & Pineland East & Yarmouth Junction
	Low – High	**Low – High**	**Low – High**	**Low – High**
New Housing[1]	**137 – 199**	**166 – 246**	**222 – 371**	**239 – 397**
Owner Units	33 – 54	54 – 89	93 – 189	106 – 211
Renter Units	104 - 145	112 - 157	129 – 182	133 – 186
Change in HH Spending in $1,000's	**$1,957.3 - $2,928.5**	**$2,869.6 - $4,380.9**	**$5,383.2 - $8,344.6**	**$5,921.6 - $9,216.4**
Development Potential	**15,592**	**21,446**	**31,274**	**36,347**
Retail SF	2,139	6,634	13,481	18,062
Non-Retail SF[2]	13,452	14,812	17,792	18,285
Potential Employment[3]	**215**	**238**	**289**	**298**
Potential Spending Demand	$344,379	$380,602	$463,173	$476,059
Potential Fiscal Impacts (FY22)	**Low – High**	**Low – High**	**Low – High**	**Low – High**
Owner Value[4]	$6,763.31 - $11,067.23	$12,951.31 - $21,380.56	$24,443.31 - $50,847.23	$28,273.97 - $57,329.89
Renter Value[5]	$13,684.27 - $19,079.03	$14,647.71 - $20,524.19	$16,695.01 - $23,534.93	$17,176.73 - $24,016.64
Total Residential Value $1,000's	**$20,447.58 - $30,146.26**	**$27,599.01 - $41,904.75**	**$41,138.32 - $74,382.15**	**$45,450.70 - $81,346.54**
Estimated Gross Property Tax	**$547,763 - $804,041**	**$646,453 - $966,308**	**$957,440 - $1,679,912**	**$1,016,950 - $1,776,020**
Retail Value/SF	$150	$150	$150	$150
Non-Retail Value/SF	$225	$225	$225	$225
Total Non- Residential Value $1,000's	**$3,347.69**	**$4,327.71**	**$6,025.44**	**$6,823.40**
Estimated Gross Property Tax	**$90,273**	**$103,797**	**$143,292**	**$154,304**

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

3.2.1 Ridership and Revenues

Ridership estimates, based on the 2019 study, indicate that there may be a minimum of four daily round trips of intercity-style passenger rail, and a range of twelve to twenty daily round trips of transit-style rail, between Lewiston and Portland, Maine. Table 27 outlines the ridership and revenues based on the range of potential round trips. For example, in 2025, these could result in daily intercity-style round trip ridership of 210 (low) to as much as 240 (high). Projections for 2040 indicate a daily ridership of 250 (low) to as much as 330 (high). Round trip ticket prices may range from $12.00 (low) to as much as $20.00 (high).[36] Under these assumptions and inputs, the potential daily ticket revenue for 2025 could range from $2,520 to $4,800 and for 2040 from $3,000 to $6,600 (all in constant 2019 dollars).[37]

Table 27 Ridership and Revenue Estimates (2025 and 2040)

	2025 Ridership Range		2040 Ridership Range	
	Daily Rail Trips	**Potential Daily Ticket Revenue**	**Daily Rail Trips**	**Potential Daily Ticket Revenue**
	Low - High	**Low - High**	**Low - High**	**Low - High**
12-20 Transit-Style Service Trips	600 – 800	$7,200 - $16,000	700 - 1900	$8,400 - $38,000
Up to 4 Intercity-Style Service Trips	210 - 240	$2,520 - $4,800	250 - 330	$3,000 - $6,600

Source: Operating Plans and Corridor Assessments (May 2019)

3.3 Other Considerations and Transit Benefits

Prior research has indicated that increased commuter rail service can result in the following positive economic impacts and subsequent consequences and considerations.[38] These benefits are often considered when applying for federal funding on rail capital projects.

3.3.1 Safety Benefits

A primary consideration of many transportation infrastructure improvement projects is to reduce both the number and severity of crashes on the facility thereby reducing the likelihood of fatalities, injuries, and property damage that may result. It can be assumed

[36] RKG's experience and knowledge of ticket prices (as derived from the Downeaster Amtrak service) suggest that these variations could be a result of the combination of any of the following: (1) the length of travel from station of departure to station of arrival; (2) class of ridership (coach or business); and (3) the potential for ticket discounts reflecting age or other status of the rider.

[37] Note to the reader – estimated ticket price range as provided by VHB and are not inflation adjusted and actual "real" ticket prices for 2025 and 2040 are subject to revision. They are presents herein as constant 2019 dollars to offer a baseline and comparative estimate.

[38] RKG referred to the report Benefit-Cost Analysis Guidance for Discretionary Grant Programs, as prepared by the U.S. Department of Transportation (as revised March 2022).

that a reduction in vehicular traffic may subsequently lead to improved safety outcomes. In order to estimate potential safety benefits, it is important to demonstrate how a proposed project - in this case the return of rail services - is expected to improve safety outcomes specific to the study corridor. This would typically require a more detailed discussion about various crash causation factors addressed by a proposed project and then to establish a clear link to how the proposed project mitigates these risk factors that are location-specific.

Although an analysis of the number of crashes by type and cause is beyond the scope of this study, Figure 24 highlights monetized values (in 2020 dollars) each crash incident costs the economy. For example, the KABCO injury scale[39] notes that each fatal crash has an economic impact equivalent to $11.6 million while a crash resulting in no injuries has an impact of $3,900. By investing in transportation improvement projects that both reduce the overall number of crashes in a corridor and the severity of those crashes, negative economic impacts may also be reduced.

[39] The KABCO injury scale was developed by the Federal Highway Administration to assess the severity of a vehicle accident and decide any settlement as determined level of severity of the accident and/or injury. Reportedly, local law enforcement data is frequently using the KABCO scale. Source: Benefit-Cost Analysis Guidance for Discretionary Grant Programs, Table A-1, p.35 (2022).

Figure 24 Estimated Value of Reduced Fatalities and Injuries

Recommended Monetized Value(s)

KABCO Level	Monetized Value (2020 $)
O – No Injury	$3,900
C – Possible Injury	$77,200
B – Non-incapacitating	$151,100
A – Incapacitating	$554,800
K – Killed	$11,600,000
U – Injured (Severity Unknown)	$210,300
# Accidents Reported (Unknown if Injured)	$159,800

Crash Type	Monetized Value (2020 $)
Injury Crash[1]	$302,600
Fatal Crash[1]	$12,837,400

1) Monetization values for injury crashes and fatal crashes are based on an estimate of approximately 1.44 injuries per injury crash and 1.09 fatalities per fatal crash, based on an average of the most recent five years of data in NHTSA's National Crash Statistics. The fatal crash value is further adjusted for the average number of injuries per fatal crash.

References and Notes

Treatment of the Economic Value of Preventing Fatalities and Injuries in Preparing Economic Analyses (2021)
https://www.transportation.gov/office-policy/transportation-policy/revised-departmental-guidance-on-valuation-of-a-statistical-life-in-economic-analysis

Note: The KABCO level values shown result from multiplying the KABCO-level accident's associated MAIS-level probabilities by the recommended unit Value of Injuries for each MAIS level, and then summing the products. Accident data may not be presented on an annual basis when it is provided to applicants (i.e. an available report requested in Fall 2011 may record total accidents from 2005-2010). For the purposes of the BCA, is important to annualize data when possible. For MAIS-based unit values, please see the VSL guidance linked above.

Source: Benefit-Cost Analysis Guidance for Discretionary Grant Programs (US DOT, 2022)

Many transportation infrastructure improvement projects are often designed and built with the goal of reducing travel time for users of the system. These travel time savings improvements may include improved traffic flow, increased transit vehicle operating speeds[40], decreased transit service headways, or providing faster connections between destinations.

The estimation of travel time savings was beyond the scope of work of this economic impact analysis. However, the analysis did find studies that provided estimates of value of time which is described in Table 28. A 2009 study[41] completed by the Florida Department of Transportation offered an analysis of the relative dollar value of time for

[40] Traffic volume and congestion are non-linear. On highways, traffic can maintain high speeds over a broad range of traffic densities. However, when densities reach and exceed design levels, speeds drop suddenly. Therefore, it is possible for relatively small reductions in traffic volumes, as may be realized through an increase or availability of transit rail services, could generate large improvements in speed.

[41] Synthesis of Research on Value of Time and Value of Reliability, as prepared by the Florida Department of Transportation, Center for Urban Transportation Research (dated January 2009).

personal travel, including commuter travel, as 50% of the area's average weekly prevailing wage.

An estimate of average savings or value of time (VOT) was developed with a review of the average weekly wages for Androscoggin and Cumberland Counties. For the two-county region the average VOT was $16.18/hour (see Table 27).

Table 28 Calculated Estimation of Value of Time

Average Wages – 4Q 2021	Weekly Wages[1]	Hourly Wage[2]	Value of Time[3]
United States	$1,418	$35	$17.73
Maine	$1,163	$29	$14.54
Androscoggin Co.	$1,058	$26	$13.23
Cumberland Co.	$1,355	$34	$16.94
Two-County Average	**$1,294**	**$32**	**$16.18**

Source: U.S. Bureau of Labor Statistics and RKG (2022)

(1) Excludes the self-employed

(2) Assumes a 40 hour work week

(3) Typically considered at one-half of the prevailing hourly wage

This estimate of $16.18/hour is generally comparable to the national standard of $16.20/hour (although in 2020 dollars) as cited in the U.S. Department of Transportation's report, *Benefit-Cost Analysis Guidance for Discretionary Grant Programs*.[42]

The same report offered a formula[43] for quantifying the value of trip time savings (VTTS) for new riders[44] as follows (assumed annual):

VTTS (new) = Value of Time X 0.50 X change in trip time X affected trips

For illustrative purposes only, in a hypothetical scenario in this analysis, the following assumptions were made:

1. Value of Time = $16.18/hour
2. Change in trip time equals 30 minutes (or one-half hour)
3. Number of affected trips = 10,000 annually
4. $404,500 = $16.18/hour X 0.50 X 0.50 X 10,000

[42] Appendix Table A-3: Value of Travel Time Savings, Benefit-Cost Analysis Guidance for Discretionary Grant Programs, as prepared by the U.S. Department of Transportation, revised March 2022, Page 36.

[43] Appendix B: Sample Calculations, Benefit-Cost Analysis Guidance for Discretionary Grant Programs, as prepared by the U.S. Department of Transportation, revised March 2022, Page 48.

[44] In this analysis it is specifically assume that all riders would be considered as new since passenger rail service is not currently available for either of the two Alignment options under consideration.

These are illustrative and hypothetical only, as estimates of change(s) in trip times and number of trips – both of which are yet to determined.

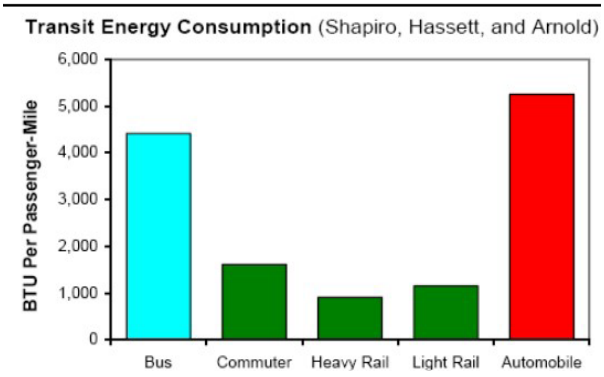
3.3.2 Energy and Emission Reductions

Transportation infrastructure projects may also reduce the transportation system's impact on the environment by lowering emissions of air pollutants that result from production and combustion of transportation fuels. The economic damages caused by exposure to air pollution represent externalities, as their impacts are borne by society as a whole, rather than by the travelers and operators whose activities generate those emissions. Transportation projects that reduce overall fuel consumption, either due to improved fuel economy or reduction in vehicle miles traveled, will typically also lower emissions, and may thus produce climate benefits and other environmental benefits.

Rail transit achieves energy use reductions and lowers emissions in two ways, depicted in Figure 25:

- First, rail transit consumes less energy (in British Thermal Units of BTUs)[45] per passenger-mile than bus or automobile traffic.
- Second, since rail transit reduces congestion, it leverages even further reductions in fuel use and emissions associated with non-rail travel. A study of transit energy consumption[46] 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 usage of 1,500 BTUs per passenger mile for commuter rail.

Figure 25 Comparative Transit BTUs – Energy Efficiency by Mode of Transit



[45] BTU is typically considered as the amount of heat (energy) required to raise the temperature of one pound of water by one degree Fahrenheit.

[46] 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.

Currently in 2022, the monetary value of 100 BTUs is understood to be equivalent to approximately $16.68, compared to $14.96/100 BTUs in 2021. This represents an increase of $1.72/100 BTUs or nearly an 11.5% increase in just one year. As a result, it reasonable to assume that in the near term the $/100 BTUs will likely continue to increase.

Under these inputs, and the comparative BTU metrics presented in Figure 25, **the cost savings, on a per passenger mile, between commuter rail transit and automobile transit equate 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

3.3.3 Affordable Mobility

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.

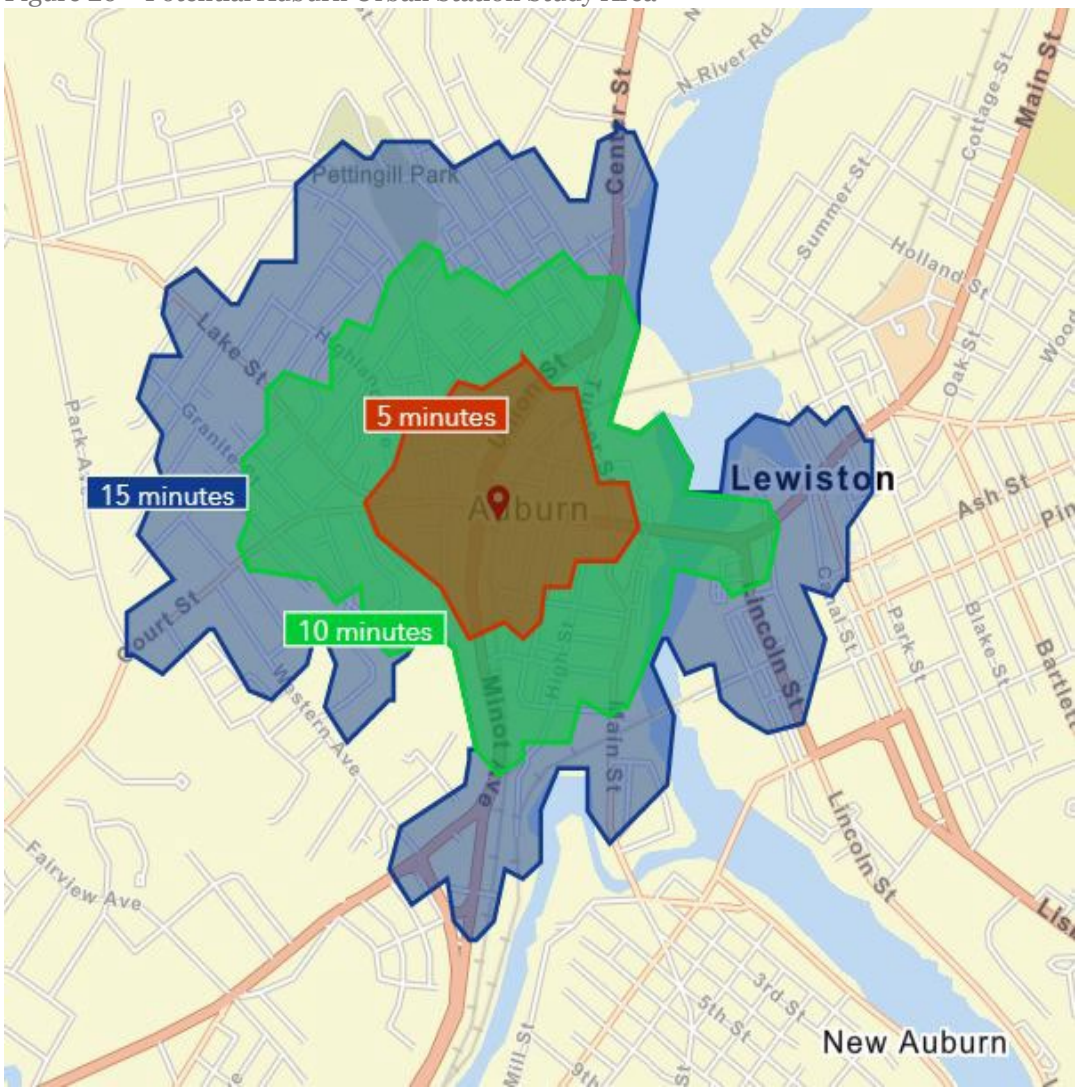
As discussed, a detailed monetization of these Transit Benefits may require additional data input, research, and modeling specific to either of the two Alignment options. They nonetheless represent overall benefit(s) that may be realized from the introduction of rail services.

A

APPENDIX A: POTENTIAL AUBURN URBAN STATION AREA

At the request of representatives of the City of Auburn, Maine, a separate potential station location has been offered in the downtown area, which is in addition to the Auburn Park and Ride location identified in the main body of this report. This urban station site reflects metrics for an approximate 15-minute walk time about the site, depicted in Figure 26. The methodology and approach to the analyses for this Auburn Urban station area is the same as that what was used for all other sites in this report, with one exception. This station area analysis used a 15-minute walk area, akin to the Lewiston site, rather than a 3-mile radius.

Figure 26 Potential Auburn Urban Station Study Area



Selected Comparative Socio-Economic Metrics

Comparative metrics for the potential Auburn Urban station area and Androscoggin County are summarized in Table 29, noting the following:

- **Population** – Population growth is projected over the 2021 - 2026 time-period in both the Auburn Downtown station area and Androscoggin County, although somewhat higher for the study area. Unlike the county projections, population growth is estimated for all of the selected age cohorts within the study area[47].
- **Housing** – Growth is projected for overall housing units in both the station study area and the county (2021 – 2026). The rate of overall increase in the county is projected at a rate double the study area however, the projected the study area sees a greater rate of change in owner and renter households. Owner households in the study area are projected to represent nearly 29.0% of the households in 2026, with renter households accounting for 71.0% of the households.

  The City of Auburn has identified approximately 334 housing units that are planned or otherwise in the pipeline, with approximately 184 units within the Auburn Downtown station area – these have not been factored into the above but are addressed elsewhere in this analysis. The remaining 150 units are considered to be part of the 3-mile radius (Park and Ride) station location.

- **Owner Home Values** –Owner *median* home values are projected to be relatively similar for the study area and the county by 2026, although approximately $15,500 less in the study area. Conversely, by 2026, owner *average* home values in the study area exceed those for the county by approximately $15,875.
- **Incomes** – **Median household income and per capita income are lower within the study area, potentially reflective an overall younger population base as compared to the county. The lower income projections may also be reflective of a greater concentration of renter households – 71.0% for the study are as contrasted to 35.0% for the county, by 2026.**
- **Business Diversity (2021)** –Businesses and employment diversification is concentrated in the service sector in the study area, at 42.6% and 46.3%, respectively. This is followed by the retail sector at 19.8% and 17.1%, respectively. **Typically, these sectors represent lower paying wages when compared to other sectors and may present affordability constraints to home ownership.** The analysis estimates that the projected countywide employment growth from2022 to 2031 could result in demand for an approximate 4,630 SF of development in the study area.

[47] Note that the projected population growth for the study area cohort aged 65+ is less than the county and median age(s) within the study area, covering all years, are also less.

Table 29 Potential Auburn Urban Station Area - Selected Comparative Socio-Economic Metrics

Selected Comparative Metrics	Potential Auburn Station Area (1)				Androscoggin County				Auburn as % of County		
	2010	2021	2026	% Δ 2021-2026	2010	2021	2026	% Δ 2021-2026	2010	2021	2026
Total Population	**5,426**	**5,931**	**6,032**	**1.7%**	**107,702**	**110,157**	**111,367**	**1.1%**	**5.0%**	**5.4%**	**5.4%**
Aged 20 to 34	1,355	1,456	1,462	0.4%	19,926	20,555	19,747	-3.9%	6.8%	7.1%	7.4%
Aged 35 to 54	1,388	1,360	1,371	0.8%	31,470	27,462	27,221	-0.9%	4.4%	5.0%	5.0%
Aged 65 and older	652	1,084	1,187	9.5%	15,184	20,660	23,419	13.4%	4.3%	5.2%	5.1%
Median age	33.9	36.5	37.3	2.2%	39.8	41.7	42.5	1.9%	85.2%	87.5%	87.8%
Total Housing Units	**2,893**	**2,954**	**2,981**	**0.9%**	**49,090**	**50,907**	**51,761**	**1.7%**	**5.9%**	**5.8%**	**5.8%**
Owner households	716	724	760	5.0%	28,544	29,178	30,183	3.4%	2.5%	2.5%	2.5%
Renter households	1,733	1,876	1,904	1.5%	15,771	16,731	16,470	-1.6%	11.0%	11.2%	11.6%
Owner Median Value	N-A	$189,311	$241,337	27.5%	N-A	$186,029	$256,839	38.1%	N-A	101.8%	94.0%
Owner Average Value	N-A	$232,337	$311,819	34.2%	N-A	$223,163	$295,945	32.6%	N-A	104.1%	105.4%
Median Household $	N-A	$39,944	$44,375	11.1%	N-A	$57,448	$64,252	11.8%	N-A	69.5%	69.1%
Per Capita $	N-A	$27,644	$31,658	14.5%	N-A	$31,310	$35,333	12.8%	N-A	88.3%	89.6%
	Firms	Employees	Emp/Firm	% Of Firms	Firms	Employees	Emp/Firm	% Of Firms			
Totals (2021)	**363**	**4,940**	**13.6**	**100.0%**	**3,773**	**53,446**	**14.2**	**100.0%**	**9.6%**	**9.2%**	**96.1%**
Retail sector	62	977	15.8	17.1%	860	11,206	13.0	22.8%	7.2%	8.7%	120.9%
Office sector	47	863	18.4	12.9%	348	3,552	10.2	9.2%	13.5%	24.3%	179.9%
Service sector	168	2,104	12.5	46.3%	1,495	23,342	15.6	39.6%	11.2%	9.0%	80.2%
Manufacturing sector	12	257	21.4	3.3%	151	5,965	39.5	4.0%	7.9%	4.3%	54.2%
Other	74	739	10.0	20.4%	919	9,381	10.2	24.4%	8.1%	7.9%	97.8%

Source: Esri and RKG (2022)

(1) 15-Minute Walk Time about the potential station location

N-A - Data suppressed or otherwise unreported

Residential Development Potential

Utilizing the previously discussed methodology, Table 30 presents estimates of additional housing, relative to the baseline, that may result from the desirability and amenities of a location that is proximate to an Auburn Downtown station site. Ultimately, additional residential development opportunities would depend on available land, or land assemblages, for such development, investor/developer interest and determinations of market and financial feasibility, as well existing zoning regulations.

The previously identified 184 pipeline units within the Auburn Downtown station area has not been factored into the following estimates.

Table 30 Potential Auburn Urban Station - Estimated Residential Development Potential

Potential Auburn Station Study Area 2021 - 2026 Residential	Baseline # of Units	As % of County (1)	As % of County (2)
Total Housing Units	**64**	**123**	**150**
Owner households	36	47	55
Renter households	28	76	95

Source: Esri and RKG (2022)

(1) Increase 2026 representation of county by 1.15% for owner and 1.25% for renter

(2) Increase 2026 representation of county by 1.25% for owner and 1.35% for renter

Retail Comparisons and Development Potential

Retail sales within the selected sectors are strong within the study area, noting that sales leakage is present among other specialty retail stores, only (see Table 31). That is not to indicate that opportunities may not exist for additional development in the other sectors capitalizing on an existing strength. It is estimated that a potential recapture of sales leakage in the other specialty retail sector could result in 897 SF of development in the study area.

Table 31 Potential Auburn Urban Station - Selected Retail Demand and Sales Comparisons

Selected Retail Sector Comparative Metrics (in $1,000's)	Auburn Station (1)			Androscoggin County			Auburn as % of Co.	
	Demand	Sales	Import (Export)	Demand	Sales	Import (Export)	Demand	Sales
Total	**$6,859.6**	**$17,966.7**	**$11,107.1**	**$174,595.6**	**$233,168.7**	**$48,573.1**	**3.9%**	**8.1%**
Specialty food stores (2)	$604.3	$1,504.6	$900.3	$15,084.3	$63,266.6	$48,182.4	4.0%	2.4%
Secondhand stores (3)	$357.3	$410.8	$53.5	$9,245.0	$7,995.9	($1,249.1)	3.9%	5.1%
Other specialty retail (4)	$1,030.9	$351.8	($679.1)	$28,077.5	$14,553.9	($13,523.6)	3.7%	2.4%
Restaurants (5)	$4,867.1	$15,699.5	$10,832.3	$122,188.9	$137,352.3	$15,163.5	4.0%	11.4%

Source: Esri and RKG (2022)

(1) 15-Minute Walk Time about the potential station location

(2) includes meat and fish markets, produce, bakeries and confectioneries and nuts as example

(3) includes used merchandise, consignment shops and charitable thrift stores as examples

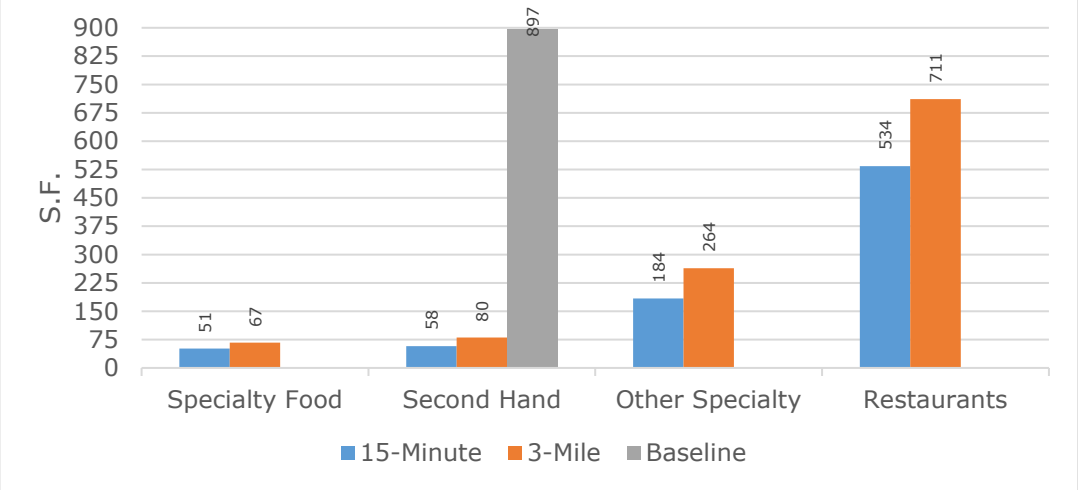
(4) includes pet supply stores, tobacco shops and generally unspecified other as examples

(5) includes full-service, limited-service, cafeterias, and snack vendors as examples

Retail Development Implications of Pipeline

Retail development implications of the pipeline housing units were considered, 334 units total, with150 in the 3-mile radius and 184 in the 15-minute walk. These, along with the baseline estimate of 897 SF for other specialty retailers, are depicted in Figure 27. The total estimated retail development potential from all measures is 2,846 SF[48].

Figure 27 Auburn Total Estimated Potential for Retail Development - Pipeline and Baseline



Summary and Estimated Potential Economic and Fiscal Impacts

Estimated economic and fiscal impacts of a potential downtown Auburn station Site (only) are summarized in Table 32, utilizing the previously established approach and methodology.

[48] Note that actual development will depend on several factors such as the availability of suitable sites, or assemblages of parcels, as well as general developer interest and financial capacities as well as possible independent market studies.

Table 32 Potential Auburn Urban Station Area - Summary of Estimated Economic / Fiscal Impacts

Summary Comparison of Potential Benefits - by Station Study Area	Auburn (Downtown)	
	Low	**High**
New Housing[1]	**59**	**86**
Owner Units	11	19
Renter Units	48	67
Change in HH Spending in $1,000's	**$850.5**	**$1,234.5**
Development Potential	**5,527**	
Retail SF	897	
Non-Retail SF[2]	4,630	
Potential Employment[3]	**62**	
Potential Spending Demand	$99,200	
Potential Fiscal Impacts (FY22)	**Low**	**High**
Owner Value[4]	$2,254.44	$3,894.03
Renter Value[5]	$6,315.82	$8,815.83
Total Residential Value $1,000's	**$8,570.25**	**$12,709.85**
Estimated Gross Property Tax	**$204,143**	**$302,749**
Retail Value/SF	$150	
Non-Retail Value/SF	$225	
Total Non- Residential Value $1,000's	**$1,176.30**	
Estimated Gross Property Tax	**$28,019**	

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

B

APPENDIX B: MAINE LEGISLATIVE RESOLVE (LD 991), CHAPTER 56

APPROVED
JUNE 14, 2021
BY GOVERNOR

CHAPTER
56
RESOLVES

STATE OF MAINE

IN THE YEAR OF OUR LORD

TWO THOUSAND TWENTY-ONE

S.P. 317 - L.D. 991

Resolve, Directing the Department of Transportation To Conduct an Economic Evaluation Study for Commuter and Passenger Train Service between Portland and the Lewiston and Auburn Area

Sec. 1. Economic evaluation study. Resolved: That the Department of Transportation shall conduct an economic evaluation study for commuter and passenger train service between Portland and the Lewiston and Auburn area. The study must include an economic evaluation of commuter and passenger rail service that builds upon data and potential next steps included in the Lewiston-Auburn Passenger Rail Service Plan published in May 2019. The economic evaluation must incorporate 2 of the "Full Build Preferred Alignments" contained in that report as follows: "Alignment 1A" for the Pan Am Railroad corridor; and "Alignment 1B" for the state-owned St. Lawrence and Atlantic Railroad corridor from Auburn to Yarmouth Junction and connecting to the Pan Am Railroad corridor from Yarmouth Junction to Portland.

The department shall also conduct a high-level alternatives analysis for both rail corridors identified in this section to support selection of a preferred alignment and for comparison to other transportation connections between Portland and the Lewiston and Auburn area. The department shall submit a report of its findings and recommendations to the joint standing committee of the Legislature having jurisdiction over transportation matters by March 1, 2022. The joint standing committee of the Legislature having jurisdiction over transportation matters may submit a bill to the Second Regular Session of the 130th Legislature based on the findings and recommendations provided in the department's report.

Sec. 2. Funding. Resolved: That the Department of Transportation may accept funding contributions to fully fund the costs of the study under section 1. The total cost of the study may not exceed $200,000. No funds may be collected by or transferred to the department for the purpose of conducting the study unless the department receives commitments for no less than 10% of the overall cost of the study from municipalities that would be affected by the expansion of passenger rail service between Portland and the Lewiston and Auburn area. The department may enter into agreements with the relevant municipalities for the municipalities to pay their relevant portions to fund the study in installments. If the municipalities have not fulfilled their commitment to provide 10% of

the overall costs of the study by the dates agreed upon with the department, the department may discontinue the study. If the department discontinues the study, any remaining municipal funds must be returned to the relevant municipalities and any remaining department funds appropriated for the study must be returned to the accounts from which they were appropriated.

Sec. 3. Appropriations and allocations. Resolved: That the following appropriations and allocations are made.

TRANSPORTATION, DEPARTMENT OF

Multimodal - Passenger Rail Z139

Initiative: Provides a one-time allocation for an economic evaluation study for commuter and passenger train service between Portland and the Lewiston and Auburn area. Ten percent of the cost of the study must be provided by municipalities that would be directly impacted by the train service with the remaining cost provided by existing funding within this account.

OTHER SPECIAL REVENUE FUNDS	**2021-22**	**2022-23**
All Other	$180,000	$0
OTHER SPECIAL REVENUE FUNDS TOTAL	$180,000	$0