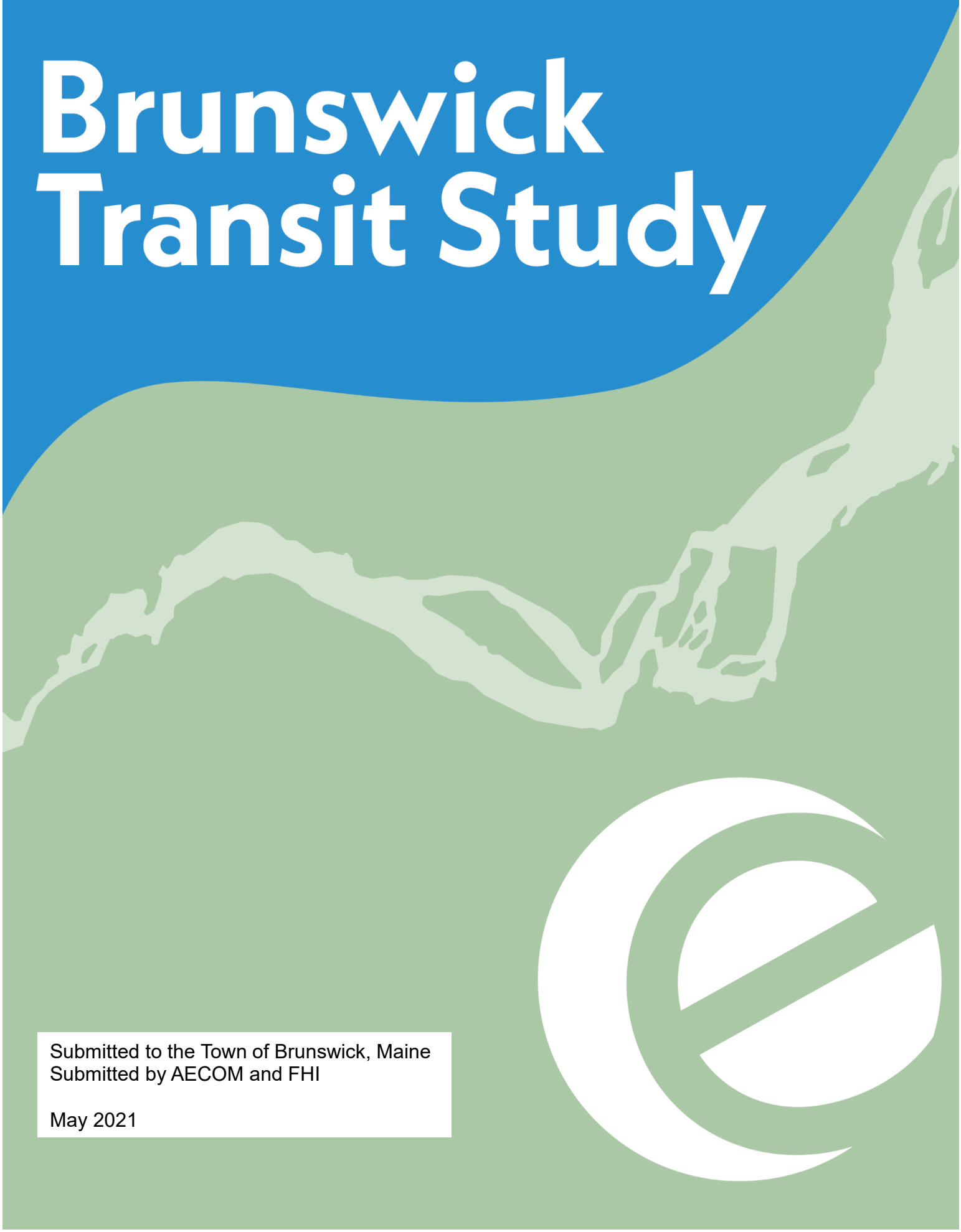
Brunswick Transit Study



Submitted to the Town of Brunswick, Maine
Submitted by AECOM and FHI

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Table of Contents

Introduction 1
Service Overview 1
Context 1
Planning Process 5
Guiding Principles 6
Existing Operations 7
Current Service 7
Funding 8
Ridership 9
Performance Evaluation 12
Peer Analysis 13
Key Findings 14
Fare Collection 14
Asset Management 14
Transit Needs 16
Market Analysis 16
Summary Demographics 16
Employment 19
Key Takeaways 19
Current and Future Development 20
Outreach Summary of Needs Identification Process 21
Summary of Findings 22
Routing and Service Options 24
Routing Workshops 24
Routing Options 25
Travel Time Scenarios 29
Public Feedback on Routing and Service Options 29
Survey Results 29
Public Meeting 31
Recommendations 32
Proposed Service Changes 32
Expand Service in Brunswick Landing 33
Streamlined Fixed Route Service 34
Complementary ADA Paratransit 34
Costs 34
Operations 35
Capital 35
Longer-Term Options 38
Implementation Plan 39
Marketing Plan 40
Rebranding Service 40
Public Outreach 41

Best Practices 41
Appendix A Existing Operations (Expanded) 43
Brunswick Explorer 43
Description of Existing Service 44
Funding 46
Ridership 47
Performance Evaluation 53
Asset Management 53
Fare Policy 55
Peer Analysis 55
Connecting Transit 63
Review of Previous Studies 66
Maine DOT Strategic Transit Plan 2025 66
Western Maine Transit Feasibility Study 66
Feasibility of Bus Service in Topsham 66
Regional Transit Network Study for Topsham, Brunswick, Freeport, West Bath and Bath 67
Brunswick Comprehensive Plan 67
Downeaster Corridor Service Development Plan 67
Appendix B Market Analysis (Expanded) 68
Summary Demographics 68
Demographic Maps 69
Zero Vehicle Households 69
Population Below Poverty 70
Minority Population 71
Limited English Proficiency (LEP) 72
Children (Under 18) 73
Older Adults (Aged 65 and older) 74
Employment 75
Key Takeaways 75
Appendix C Survey One Summary 76
Survey One Results 76
Survey One Instrument 88
Transit Questions 88
Demographic Questions 90
Appendix D Public Meeting One and Stakeholder Input 92
Appendix E Public Meeting Two and Stakeholder Input 94
Appendix F Survey Two Summary 96
Survey Two Results 96
Survey Two Instrument 105
Transit Questions 105
Demographic Questions 108
Appendix G Engagement Materials 111
Appendix H Bus Stop Guidelines 115
Introduction 115

Bus Stop Hierarchy....116
ADA Compliance....117
Bus Stop Area....117
Shelters....121
Benches....122
Signage....123
Other Amenities....124
Permits and Permissions....126
Municipal....126
Private....126
Installation....130
Maintenance....131
Adopt-a-Stop....132
Appendix I Service Thresholds/Guidelines....133
Performance Metrics....133
Service Benchmarks....134
Passengers per Hour....134
Farebox Recovery....134
Late Trips....134
Accidents per 100,000 Miles....134
Service Guidelines....135
New Service Warrants....135
Actions for Low Performing Routes....135

List of Tables

Table 1. Brunswick Partnerships and Contracts....9
Table 2. Route Productivity (2019)....12
Table 3. Financial Productivity (2019)....13
Table 4. Aggregate Demographic Data by Municipality and State....17
Table 5. The Pros and Cons of Workshopped Service Changes....24
Table 6. Deviated Fixed Route Options – Segment Trip Times (minutes)....29
Table 7. Fixed Route Options – Segment Trip Times (minutes)....29
Table 8. Recommendation Summary....32
Table 9. Breakdown of Cost Elements....34
Table 10. Proposed Bus Stops....35
Table 11. Brunswick Partnerships and Contracts....47
Table 12. Route Productivity (2019)....53
Table 13. Financial Productivity (2019)....53
Table 14. Brunswick Explorer Technology....54
Table 15. Peer System Characteristics....56
Table 16. Peer Service Characteristics....56
Table 17. Peer Community Characteristics....57
Table 18. Peer Census Characteristics....58
Table 19. Peer Operating Statistics....58
Table 20. Peer Fares....60
Table 21. Peer Performance Statistics....61

Table 22. Peer Technology 62
Table 23. Brunswick Transit Operators 65
Table 24. Aggregate Demographic Data by Municipality and State 68
Table 25. Comparison of Bus Stop Locations 118
Table 26. Recommended Performance Benchmark Values and Source 134
Table 27. Route Performance Actions 136

List of Figures

Figure 1. Current Brunswick Explorer Service 1
Figure 2. Residential Units Under Construction at Brunswick Landing 2
Figure 3. Active and Recently Completed Projects at the Landing (2018 – 2020) 3
Figure 4. Brunswick Regional Transit 5
Figure 5. Brunswick Explorer Bus Stop Locations 8
Figure 6. Brunswick Explorer Funding (FY 2019) 9
Figure 7. Monthly Ridership (2017–2020) 10
Figure 8. Annual Ridership by Stop 11
Figure 9. On-Request and Deviation Stop Ridership by Time of Day 12
Figure 10. SmartCommute Pass 14
Figure 11. Population Living Below the Poverty Level 18
Figure 12. Employment Destinations 19
Figure 13. Public Poll on Brunswick Comprehensive Plan Update website 20
Figure 14. Screenshot from One of the Virtual Public Meetings 21
Figure 15. Top Concerns by Transit Service Used 22
Figure 16. Alternative 1: Expanded Service to Brunswick Landing 26
Figure 17. Alternative 2: Same Service to Brunswick Landing – Expanded Service Hours 27
Figure 18. Alternative 3: Service to Brunswick Landing and Maplewood 28
Figure 19. Preferred Routing Option in Public Survey 30
Figure 20. Trade-off for Increased Frequency vs. Expanded Service Hours 31
Figure 21. Preferred Alternative: Expanding Brunswick Landing Service 33
Figure 22. Frequency and Expanded Service Hours 33
Figure 23. Recommended Routing and Proposed Stops 37
Figure 24. Long Term Options Summary 38
Figure 25. Rebranding Options 40
Figure 26. Basic Elements in a Public Engagement Plan 41
Figure 27. WMTS Organization Chart 44
Figure 28. Brunswick Explorer Map 45
Figure 29. Brunswick Explorer Stop Type 46
Figure 30.Brunswick Explorer Funding (FY 2019) 47
Figure 31. Monthly Ridership (2017–2020) 48
Figure 32. Ridership 2016-2020 48
Figure 33. Ridership by Time of Day 49
Figure 34. Annual Ridership by Stop 50
Figure 35. Average Daily Ridership for Scheduled Stops 51
Figure 36. Average Weekly Ridership for Scheduled Stops 52
Figure 37. SmartCommute Pass 55
Figure 38. Peer Operating Funding Break Down 60
Figure 39. Peer Capital Funding 61
Figure 40. METRO BREEZ Ridership (July 2016 – December 2019) 63
Figure 41. Downeaster Brunswick Ridership (2015–2019) 64
Figure 42. Brunswick Regional Transit Map 65
Figure 43. Zero Vehicle Households 69
Figure 44. Population Below Poverty 70
Figure 45. Minority Population 71
Figure 46. Limited English Proficiency Households 72
Figure 47. Children (Under 18) 73
Figure 48. Older Adults 74
Figure 49. Employment Destinations 75
Figure 50. How often do you ride public transit? (n=444) 76
Figure 51. What services do you take most frequently (n=192) 77

Figure 52. Non-Rider Respondents Barriers to Using Transit (n=135) 78
Figure 53. Top Concerns for Transit Riders (n=189) 78
Figure 54. Top Concerns by Transit Service 79
Figure 55. Priorities of Transit Riders (n=185) 79
Figure 56. Distance to Transit Stop from Home (n=154) 80
Figure 57. Distance to Destination from Transit Stop (n=146) 80
Figure 58. Distance to Transit Stop from Home by Service 81
Figure 59. Length of Typical Bus or Train Ride 81
Figure 60. Alternatives to Public Transit (n=189) 82
Figure 61. Reasons Respondents Choose Transit (n=186) 82
Figure 62. Age of Respondents (n=304) 84
Figure 63. Gender of Respondents (n=303) 85
Figure 64. Race/Ethnicity of Respondents (n=304) 85
Figure 65. Vehicle Access among Respondents (n=304) 86
Figure 66. Education Level of Respondents (n=305) 86
Figure 67. Respondent Place of Residents (n=304) 87
Figure 68. How often do you use the Brunswick Explorer (n=132) 96
Figure 69. If you use the Brunswick Explorer, what is your primary trip purpose? (n=50) 97
Figure 70. Have you ever requested a pick-up or drop-off ahead of time? (n=51) 97
Figure 71. Respondent Priorities 98
Figure 72. Which of the options do you prefer? (n=100) 99
Figure 73. How old are you? (n=96) 100
Figure 74. How would you describe your gender? (n=95) 100
Figure 75. How would you describe your race and ethnicity? (n=98) 101
Figure 76. Do you have access to a vehicle for your own personal use? (n=98) 101
Figure 77. Do you use a mobility device (e.g., wheelchair, walker)? (n=98) 102
Figure 78. What is your employment status? (n=98) 102
Figure 79. What is the highest level of education you have completed? (n=98) 103
Figure 80. Where do you live? (n=98) 103
Figure 81. Screenshot of the project website's resource library 112
Figure 82. Flyer distributed to advertise survey 113
Figure 83. Flyer advertising public meeting 114
Figure 84. Bus Stop Sign Installation 115
Figure 85. Shelter or Bench Installation 116
Figure 86. Typical Dimensions for On-Street Bus Stops 117
Figure 87. ADA Landing Pad 120
Figure 88. Shelter Design Example to Meet ADA Standards 121
Figure 89. Conceptual Bench and Waiting Pad Design 122
Figure 90. Sign and Post Dimensions 123
Figure 91. Trash Bin Placement 124
Figure 92. One Rack Bicycle Rack Examples 125
Figure 93. Bike Rack Clearances 125
Figure 94. Example of Simple Shelter/Concrete Drawing 128
Figure 95. Example of Engineering Drawing 129
Figure 96. Steps to Installing or Improving a Bus Stop 130
Figure 97. Dig Safe Steps 131

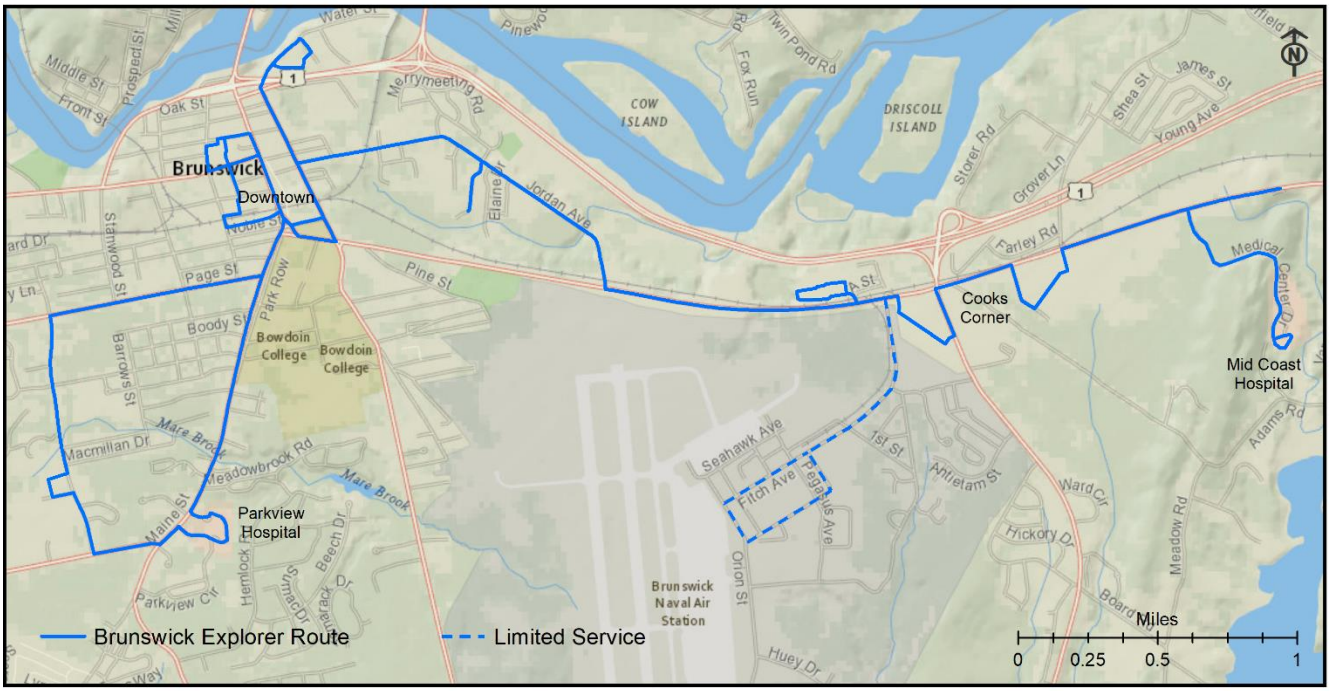
Introduction

The Brunswick Explorer was launched in 2010 with the purpose of providing transit service in Brunswick, Maine, a need that had been identified by a broad range of stakeholders in the Midcoast region of Maine. Since 2010, the region has seen considerable change, including over 2,000 new jobs and the introduction of regional and intercity transportation connections. This study is an opportunity to adjust Brunswick Explorer service to better meet the needs of Brunswick and the growing Midcoast region.

Service Overview

The Brunswick Explorer is a deviated fixed route service that operates solely in Brunswick. The route operates on weekdays only, between the hours of 7:00 AM and 4:42 PM with 60-minute frequency of service. The Explorer connects key destinations within the community such as the Central Business District, Mid Coast Hospital, Bowdoin College, grocery stores and other essential shopping, and local attractions (Figure 1).

Figure 1. Current Brunswick Explorer Service



Source: Western Maine Transportation Services

Context

The Brunswick Explorer is funded by a public-private partnership between the Federal Transit Administration (FTA), the Maine Department of Transportation (MaineDOT), the Town of Brunswick, and several local partners. The route was originally operated by Coastal Trans but was taken over by Western Maine Transportation Services (WMTS) in May 2016.

Building on groundwork laid by stakeholders in previous years, the Midcoast Collaborative for Access to Transportation (MCAT) designed the service and advocated for its implementation. When the service was launched, the Brunswick Naval Air Station was in the process of closing with the Midcoast Regional Redevelopment Authority planning to redevelop the property as Brunswick Landing, a mixed-use development.

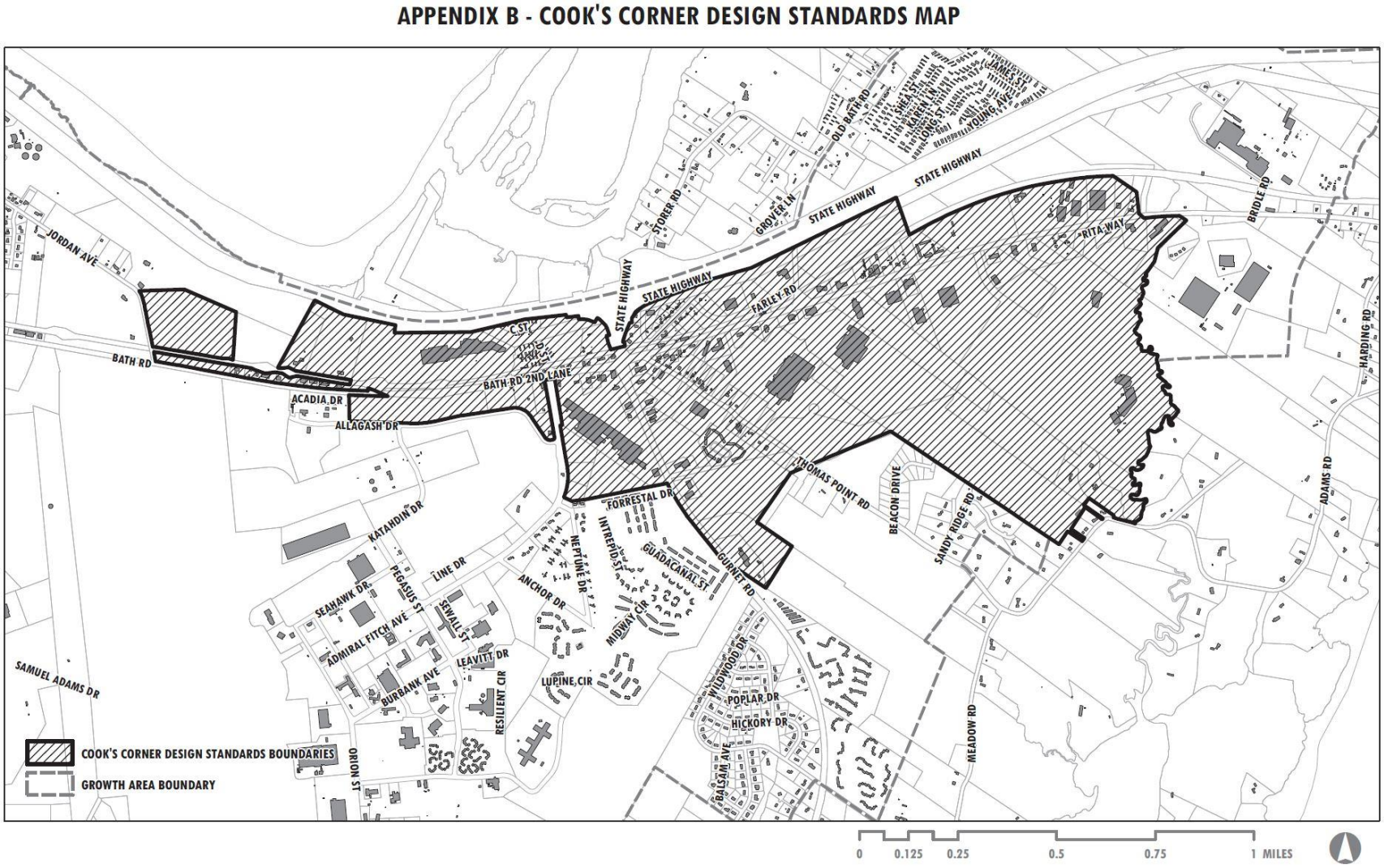
Figure 2. Residential Units Under Construction at Brunswick Landing

Source: MidCoast Regional Redevelopment Authority

Brunswick and the rest of the region have changed dramatically in the past five years. Brunswick has three new regional and intercity transportation connections. Brunswick Landing is home to nearly 140 businesses with 2,300 new jobs[1], students, and recreational facilities/open space, with potential to grow more (Figure 3). Looking forward, the Midcoast Regional Redevelopment Authority continues to add office, commercial, manufacturing, aviation, and residential spaces at Brunswick Landing, which means that its significance as a trip generator for public transit will only increase in the future.

[1] https://www.mainebiz.biz/sponsored/article/redevelopment-20-brunswick-landing

Figure 3. Active and Recently Completed Projects at the Landing (2018 – 2020)



Source: Town of Brunswick (Economic and Community Development Department)

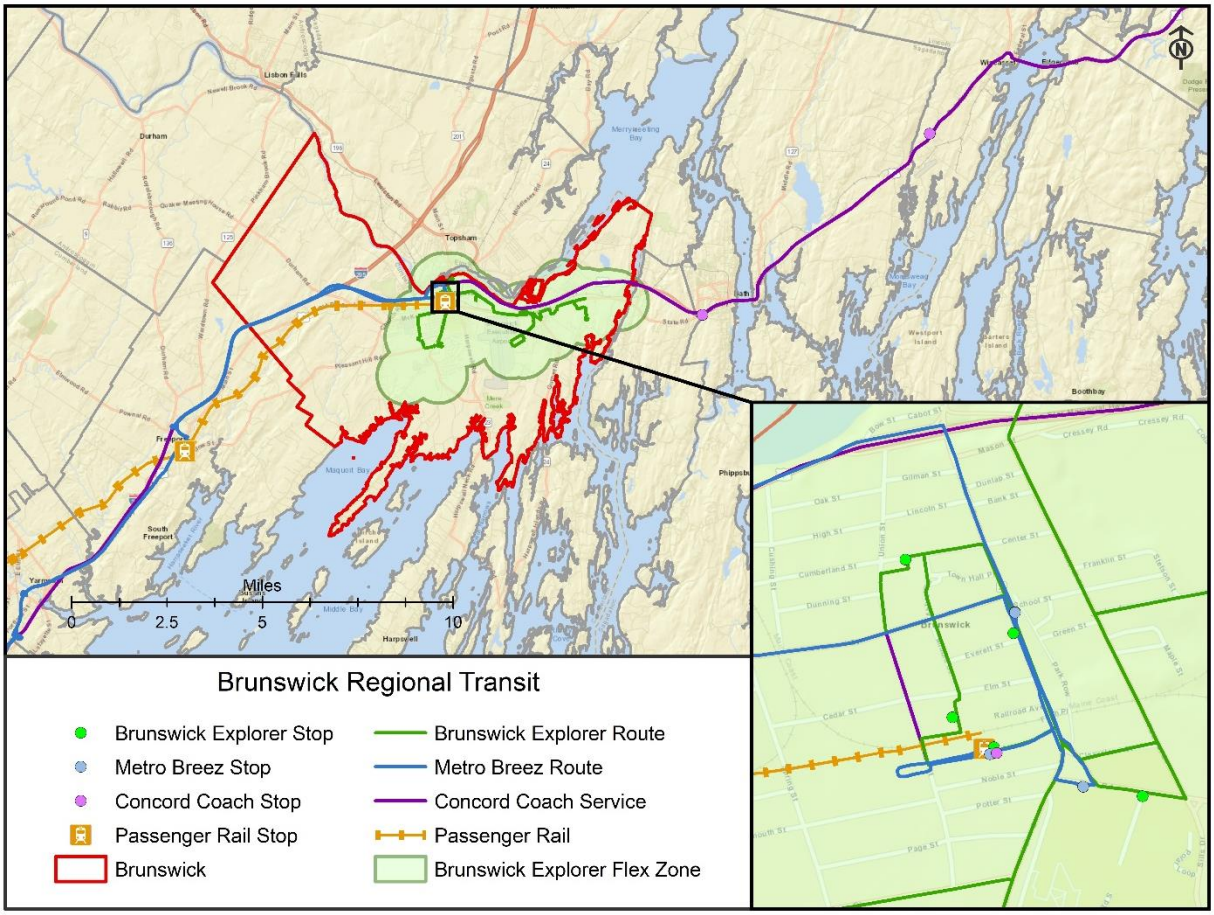
The Brunswick Explorer serves as a local connection to areas outside of Brunswick for both Brunswick residents and those who travel to Brunswick for employment, healthcare, and other needs. While the Explorer is the focus of the routing and local circulation needs elements of this study, its connection to other transit services in the region were also considered. Transit ridership has been on the rise in the region, with some connecting services seeing ridership at all-time highs in fiscal year (FY) 2019, exceeding projected levels, indicating that there is great need for local and regional transit service.

In addition to the Brunswick Explorer, there are five other public transportation services available in or near Brunswick, three of which did not exist when the Brunswick Explorer was originally launched in 2010 (Figure 4):

- **METRO BREEZ:** Greater Portland METRO operates the BREEZ, an express route with weekday and Saturday service that connects Portland to Brunswick with stops in Yarmouth and Freeport. The BREEZ connects to the local bus routes in downtown Portland. Ridership on the route grew substantially (exceeding projections) in the summer of 2017 when service was expanded to Brunswick. In 2019 the route had 73,461 boardings, of which 29 percent were in Brunswick.
- **Bath CityBus:** The City of Bath provides service to Mid Coast Hospital in Brunswick and to Bath Iron Works (BIW) in addition to two routes which only operate in Bath. Service to the hospital is provided daily upon request only.
- **MidCoast Public Transportation**: Non-emergency transportation through the Office of MaineCare is brokered and operated by MidCoast Public Transportation, a division of Waldo Community Action Partners (CAP) in the Town of Brunswick. Riders must be eligible for Medicaid transportation, be MaineCare members and be pre-registered to request demand response service.
- **Amtrak Downeaster:** Amtrak operates the Downeaster, a service overseen by the Northern New England Passenger Rail Authority (NNEPRA). The Downeaster operates five trips a day between Boston and points in Maine. Service to Brunswick began in late 2012 with the extension of two trips daily to Brunswick from Portland. More trips have been added gradually, as of 2018 there were five trips daily (service has been reduced as of the drafting of this report due to the COVID-19 pandemic). The travel time between Brunswick and Portland is 50 minutes, slightly shorter than the BREEZ service. Passengers access the Amtrak service at the Portland Transportation Center (PTC) on Thompson's Point. Connection to downtown Portland must then be made via the local METRO bus routes that serve the PTC. Utilization of the route in Brunswick has grown as service expanded. Ridership is greatest in the summer months, peaking at over 3,000 boardings for the month of August. In the winter months ridership drops to just under 2,000 boardings monthly.
- **Concord Coach:** This intercity bus service stops at the train station in Brunswick and is operated by Concord Coach. The stop is part of a service that makes one round trip daily between Bangor, Maine and Logan Airport in Boston, Massachusetts.

As of April 2021, Greyhound intercity bus service has been suspended in Brunswick.

Figure 4. Brunswick Regional Transit



Source: WMTS

Given the inevitable changes in land use, development, demographics, and innovations in the transit industry, it is important to periodically examine whether routes as originally implemented continue to be the best method of providing transit for the community, particularly in the context of new on-demand technology developments. Some of the key topics that this planning study examines are:

- All aspects of the existing service, including fare structure, schedule, route design, vehicle and stop amenities, marketing and communications, and operational technology;
- Historical changes in Town demographics and land use;
- Future residential and commercial developments (e.g. Brunswick Landing, Cooks Corner, etc.);
- Mobility-on-Demand, ride hailing, and other “New Mobility” technologies;
- Ways that the Explorer can better complement existing service in or near Brunswick;
- Public engagement, stakeholder involvement, and the inclusion of key transit-dependent and/or mobility-disadvantaged populations.

Planning Process

This study took place between May 2020 and January 2021.The project team included the staff from the Town of Brunswick, the MaineDOT, WMTS, the consultant team (AECOM and FHI), and a diverse group of regional stakeholders including the Brunswick Landing New Mainers Group, business leaders, and

representatives from educational institutions, health care facilities, and connecting transit services. The project team worked together to identify goals, challenges, and the guiding principles that served as the foundation for the development of future options.

The team relied on recent data and previous regional planning efforts to understand the context in which the current service is operating and identify needs and opportunities. Operations data from the Brunswick Explorer, other regional transit services, and peer agencies were analyzed along with data from the U.S. Census Bureau. Past regional plans aided in the identification of other transit needs in the Midcoast area. The Brunswick Comprehensive Plan was undergoing an update during this plan's drafting and that project team shared valuable public feedback that also informed this study.

Public outreach was conducted throughout the planning process, informing the identification of needs, the development of routing options, and evaluating draft recommendations. There were two public surveys, one launched early in the project (July 2020 to September 2020) and one later in the process to inform the development of recommendations (November 2020 to December 2020). In addition to the surveys, the project team hosted two public meetings (September 2020 and December 2020), one routing workshop in October 2020, and one workshop focuses on proposed recommendations in December 2020. The outreach process is discussed in more detail in subsequent sections and Appendix C through Appendix F.

Guiding Principles

The project team developed the following objectives to guide the planning process; they were referenced at the start of each meeting to remind the project team and stakeholders of the study's goals:

- **Optimize/streamline the Brunswick Explorer route where possible**
- **Maintain or improve frequency of service**
- **Meet other services when possible (METRO BREEZ, Blue Line, Downeaster, Concord Coach)**
- **Improve route/frequency before expanding to new locations**
- **Assume a 2-bus weekday system with any expansions that require additional funding separate (a la carte)**
- **Serve the Landing on every trip**

Along with these guiding principles, the study was also driven by the acknowledgment that due to funding constraints, trade-offs would need to be made in the implementation of service improvements. The recommendations for this plan are intended to be cost-neutral. This goal was communicated to the stakeholders and members of the public who participated in the development of this plan who were asked to consider the following options when identifying needs:

- The streamlining of routing and prioritization of stops/destinations to maintain regular headways;
- The needs of current riders vs. the needs of new riders;
- Serving the commuter market vs. mid-day market.

Existing Operations

Current Service

The Brunswick Explorer will deviate up to ¾ mile from its fixed route to pick up and drop off passengers when advance notice is provided. The route operates on weekdays[2] only between 7:00 AM and 4:42 PM, with nine round trips daily connecting many major destinations throughout Brunswick. Service begins at Mallard Pond and heads eastbound serving downtown, Woodlawn Towers, Pejepscot Terrace, Cook's Corner, Walmart, Mid Coast Hospital and terminates at Sweetser. Heading westbound, the route serves Walmart, Cook's Corner, Merrymeeting Plaza, Pejepscot Terrace, Woodlawn Towers, downtown Brunswick, Parkview Hospital, and Baribeau Drive before arriving at Mallard Pond. Limited service is provided to Brunswick Landing on select trips throughout the day in both directions (Figure 1). There is also one trip in the afternoon, during the school year, to Brunswick High School to transport students to an after-school program at People Plus, downtown, and to Cook's Corner.

The Explorer currently stops at each location on the schedule with a timepoint. However, there are several other types of stops available to riders. Riders can board the Explorer using any of the options below:

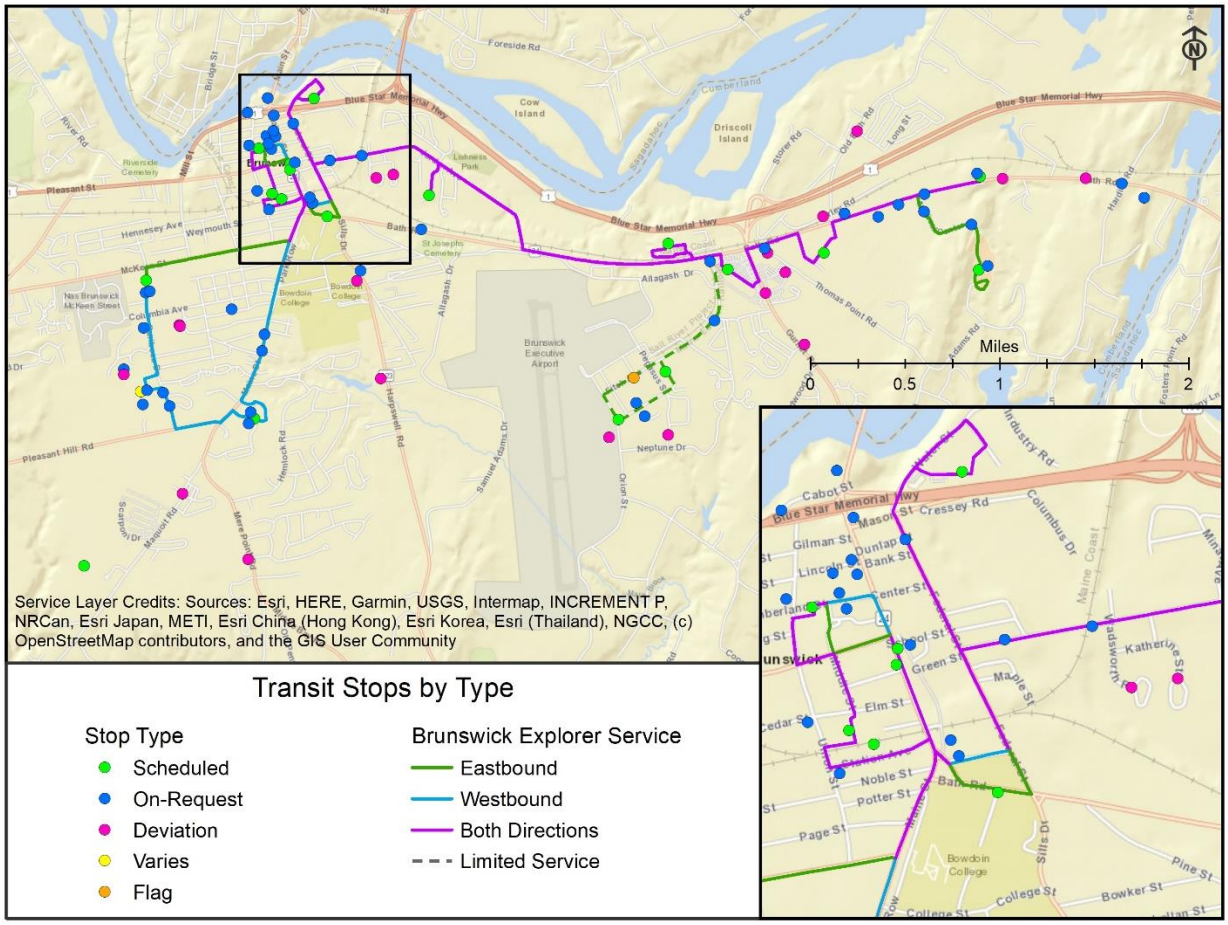
- **Scheduled Stop:** No advance notice is needed. The bus will automatically stop at this location. The stops are typically signed.
- **On-request Stop:** The stop is not listed on the schedule, typically does not have a bus stop sign, and is located along the route's alignment. Individuals must call at least an hour beforehand to be picked up. If on-board, the passenger can indicate to the driver where they would like to get off.
- **Flag stop:** The bus will only stop if an individual is waiting at a designated flag stop and flags the driver to get on or notifies the driver they would like to get off at a flag stop. The schedule indicates which stops are flag stops.
- **Deviation Stop:** Stop is not listed on the schedule, typically does not have a bus stop sign, and is not located along the Explorer's alignment, but within the ¾ mile of the route. Individuals must call at least 24 hours beforehand to request a pickup or drop off.

The Explorer has 18 scheduled stops, 19 deviation stops, 1 flag stop, 49 on-request stops, and 3 stops that vary depending on the time of day or direction of travel. Scheduled stops and on-request stops along the route comprise 78 percent of stops (Figure 5). Deviation stops comprise the remaining 22 percent of locations.

Other than considering transit demand, Brunswick's unique roadway restrictions must also be considered when service planning. The downtown area has numerous one-way streets that are narrow and difficult to navigate. In the summer months, Brunswick sees an influx of tourists and associated traffic congestion, exacerbating the issue. While not currently used by the Brunswick Explorer, three bridges have restrictions that could impact routing. The Frank J Wood Bridge over the Androscoggin River has a weight restriction, and the Mill Street bridge between Cushing Street and Cumberland Street and the Jordan Avenue bridge between Stetson Street and Wadsworth Road have height restrictions.

[2] Except the following major holidays: New Year's Day, Memorial Day, 4th of July, Labor Day, Christmas Day, Thanksgiving.

Figure 5. Brunswick Explorer Bus Stop Locations

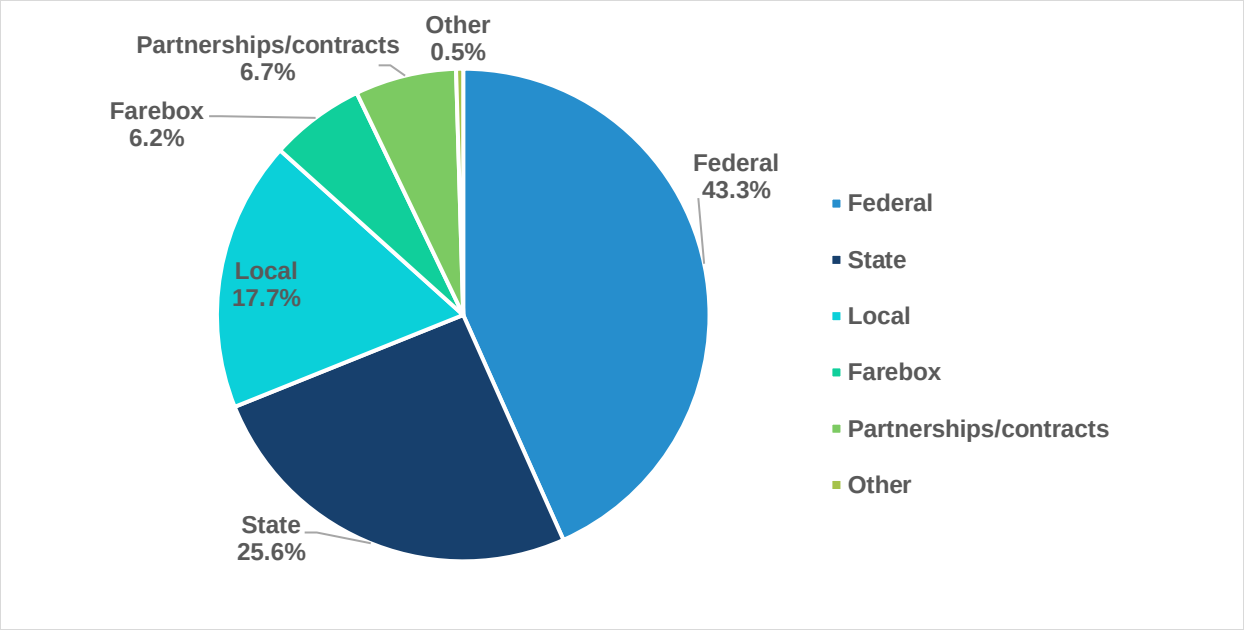


Source: WMTS

Funding

The FY 2019 operating cost for the Brunswick Explorer was $314,146, an increase of 11.9 percent from FY 2017. The service is funded through fare revenue, contracts/partnerships, federal funding, state subsidies, and other sources (e.g. advertising revenue). The largest share of funding (43.3 percent) is federal, followed by the state (25.6 percent) (Figure 6).

Figure 6. Brunswick Explorer Funding (FY 2019)



Source: WMTS

Overall 13 percent of the cost of service is covered from within (fares, partnerships, and advertising revenue). The Explorer has five contracts with local institutions and social services, including sponsors, fares, and advertising (Table 1). However, some of these sponsors have indicated that they anticipate contributing smaller amounts in the short-term due to the financial impacts of the COVID-19 pandemic.

Table 1. Brunswick Partnerships and Contracts

Contract	Revenue	Description
Brunswick Housing Authority	$10,000	Sponsors service
Sweetser	$10,000	Sponsors service
Creekside	$2,500	Sponsors service
Southern Maine Community College	$305	SMCC pays the fares for all students showing an ID
Mid Coast Parkview	$1,577	Advertising revenue

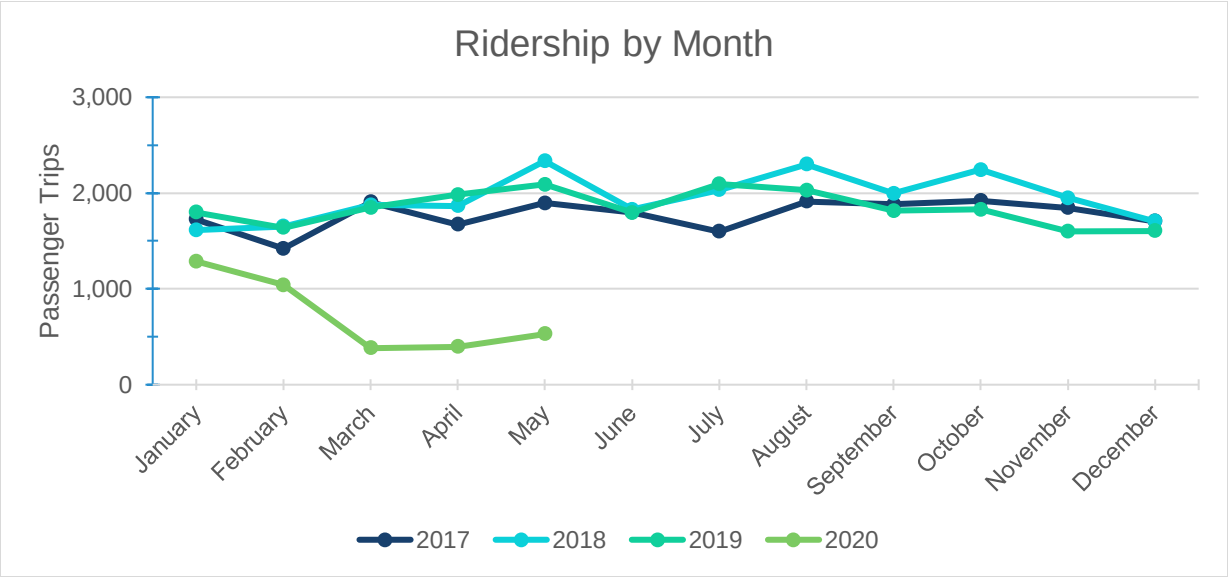
Source: WMTS

Ridership

Prior to the start of the COVID-19 pandemic in March of 2020, transit ridership had been on the rise in the region, with several area service providers seeing ridership in FY 2019 exceeding levels seen in previous years or projections. Ridership on the Brunswick Explorer remained steady between 2017 and 2019, with roughly 22,000 trips annually. In 2020, ridership decreased significantly due to the global pandemic (Figure 7). Prior to the pandemic, ridership averaged 1,844 per month, or 425 per week.

Ridership on the Explorer is counted using a tablet; the driver taps the screen each time someone boards and their location is geolocated. The tablet also allows the dispatcher to communicate any deviations or requested stops.

Figure 7. Monthly Ridership (2017–2020)



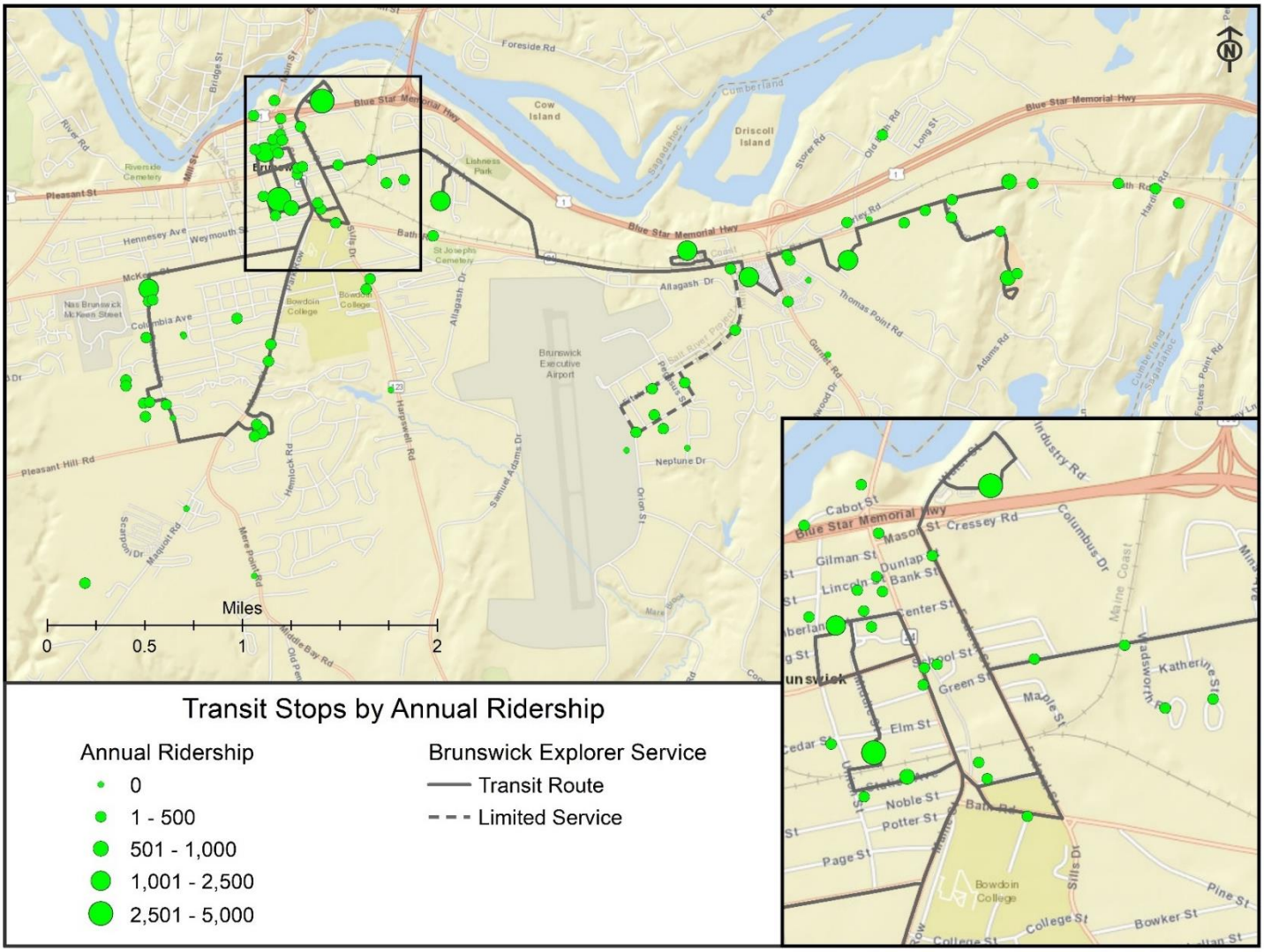
Source: WMTS

The five stops with the highest annual ridership are Hannaford, Woodlawn Towers, Walmart, Cook's Corner Mall, and Mallard Pond (Figure 8).

Among the scheduled stops,15 stops have at least one passenger per day. Hannaford and Woodlawn Towers have the highest average daily ridership with 19 and 12 passengers, respectively. Three stops (The Landing, Walgreens, Brunswick Mall (west)) average less than one person per week, with one of those stops, The Landing, receiving very limited service.

For the unscheduled stops, the most popular deviation is Jordan Court, which is the only deviation stop with an average of more than one passenger per week (two passengers). The most popular on-request stop is Creekside, one of four request stops that averages more than one passenger per week: Creekside Village – six passengers per week, Family Practice – three passengers per week, Dionne Commons – two passengers per week, and Pheasant Run – three passengers per week.

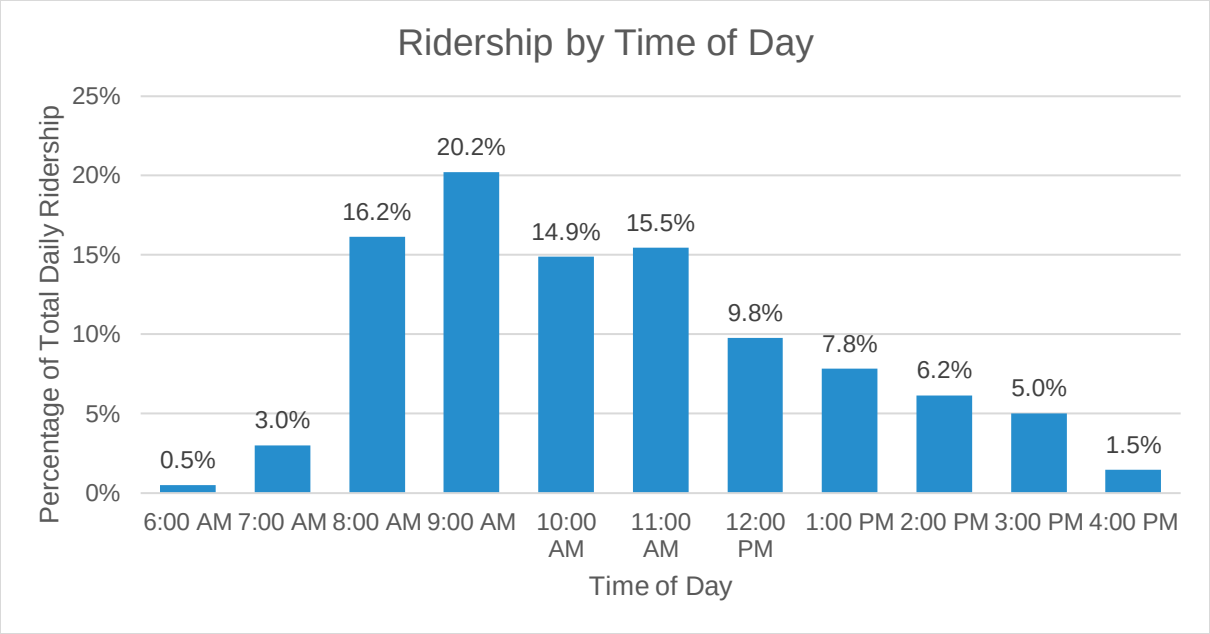
Figure 8. Annual Ridership by Stop



Source: WMTS

WMTS collects ridership by time of day for on-request and deviation stops (both pick-ups and drop offs) only. While this data has the potential to approximate travel patterns by time of day, on-request and deviation stops only represent about 6.5 percent of ridership so the data is not representative of overall ridership patterns. Figure 9 breaks down the proportion of daily ridership at on-request and deviation stops that occurs during each hour of service. The ridership is highest mid to late morning. There is very little ridership before 8:00 AM, when it begins to increase dramatically, peaking at 9:00 AM. Between 10:00 AM and 4:00 PM ridership slowly declines.

Figure 9. On-Request and Deviation Stop Ridership by Time of Day



Source: WMTS

Performance Evaluation

In FY 2019 the Brunswick Explorer operated 4,394 revenue hours of service over 52,160 revenue miles. Of the 52,160 revenue miles, 97 percent were scheduled and 3 percent were for deviations. Overall, the route carried 5.03 passengers per revenue hour, which is less than state and national averages (Table 2).

While Brunswick is technically in an urbanized area (designated due to population size by the U.S. Census Bureau), the Explorer operates more like a rural transit service than an urban one. The hourly cost to operate the service is less than the state, national, and rural averages while the cost per mile is less than the national average, on par with the state, but more than the average rural system (Table 3). While the Brunswick Explorer's operations are cost efficient, the cost per passenger is higher than the state and national averages, as is the subsidy per passenger. The service's farebox recovery is relatively low, half that of the national rural average, a third of the state average, and almost a quarter of the national average. The financial data indicates that the system is being operated efficiently, but it is lower ridership that is creating higher costs per passenger. A more in-depth analysis on how the Brunswick Explorer is performing compared to state and national averages is available in Appendix A.

Table 2. Route Productivity (2019)

Measure	Passengers/Mile	Passengers/Hour
Brunswick Explorer	0.42	5.03
Maine Average	1.19	16.00
National Average	2.26	27.21
National Rural Average	0.15	2.60

Source: WMTS, NTD

Table 3. Financial Productivity (2019)

Measure	Cost/ Mile	Cost/ Hour	Cost/ Passenger	Subsidy/ Passenger	Farebox Recovery
Brunswick Explorer	$6.02	$71.50	$14.20	$13.35	6.68%
Maine Average	$6.06	$80.91	$5.06	$4.14	18.20%
National Average	$11.15	$133.99	$4.92	$4.92	22.08%
National Rural Average	$3.51	$102.72	$9.11	$8.02	12%

Source: WMTS, NTD

Peer Analysis

As part of this study, a peer review was prepared to gain an understanding of how the Brunswick Explorer's operations compare with six similar systems. Although each transit system is unique, it is useful to identify the similarities and differences between these peers and the Brunswick Explorer to gain insight into how service is provided and operated. The project team selected peers that operate three routes or less, have populations or population densities similar to Brunswick, are rural or small urban reporters, and are geographically dispersed.

The following systems were included in the peer review: Altavista Community Transit System (Altavista, VA), CitiBus (Watertown, NY), Coos County Area Transit (Coos County, OR), Lyon County Area Transportation (Lyon County, KS), Oldham's Public Bus (La Grange City, KY), and Sweetwater Transit Authority Resources (Sweetwater County, WY). When comparing peer systems, it is important to consider demographic, geographic, and operating characteristics to put performance in context.

- Brunswick has a higher population compared to most of its peers; however, it has a relatively low population density.
- Overall, a lower percentage of Brunswick residents live below the poverty line than peer service areas, but all have a similar median household income.
- Brunswick is less diverse than peer service areas, with 5 percent fewer of its residents being classified as "minority" than the closest peer. There are also proportionally fewer individuals with Limited English Proficiency (LEP).
- Brunswick has an older population than 83 percent of its peers.
- Like Brunswick, four of the six peers have colleges or universities in their service areas.
- In each of the peer communities, the peer is the only public transit provider, and a few operate other services such as commuter bus or intercity transit.
- All peers but CitiBus operate routes with an hourly headway, like the Brunswick Explorer.
- Three of the six peers operate Saturday service, and none provide Sunday service. While service hours vary slightly, Brunswick Explorer total hours of service are in line with the peers.
- Among peers, Brunswick Explorer ranks fourth in ridership, but has lower ridership than the peer average.
- Operating costs in the peer group vary widely, but the Brunswick Explorer is in line with the average.
- Brunswick Explorer fare revenue is greater than all but two peers.

Key Findings

The following are key findings from the peer analysis:

- The Brunswick Explorer receives less local funding than almost all peers and has the second highest proportion of state funding.
- While the Brunswick Explorer has a lower farebox recovery than most peers, when accounting for other revenue generated from contracts and partnerships, its farebox recovery rate is among the highest in the group.
- In terms of service consumed, the Brunswick Explorer has one of the lower rates for trips per capita, but this is as expected when population density is considered.
- Two-thirds of the peers incurred capital expenses in FY 2019, but Brunswick Explorer did not because the vehicles utilized for the service have never been replaced.
- Overall, peers, like the Brunswick Explorer, lack most, if not all, recent technology that aids in trip planning or fare payment.

More details on the peer analysis can be found in Appendix A.

Fare Collection

In October 2019 WMTS expanded its fare collection[3] system to an open payment system and launched the SmartCommute Pass on all WMTS vehicles, including those used on the Brunswick Explorer route. The SmartCommute Pass is a stored value fare payment card. To incentive its use, for every $50 loaded onto the card, an additional 10 percent in value is added.

The open payment system also enables Brunswick Explorer customers to use a variety of methods for on-board fare payment including mobile payment apps (Apple, Samsung, and Android mobile pay) or traditional credit/debit cards.

The launch of the new fare collection system coincided with a fare increase of $0.50 and elimination of multi-ride passes. The single trip fare for the Brunswick Explorer is $2; day passes are also available for $5, which allow for unlimited trip use. There are no discount fares and there is no additional charge for deviations.

Figure 10. SmartCommute Pass

Source: WMTS

Asset Management

The Brunswick Explorer began service in 2010 with three identical Arboc low-floor cutaway gas/electric hybrid 16-seat 2 wheelchair buses. One of these has been taken off-the-road due to a broken frame, one is in low rotation due to ongoing mechanical issues that reduces its reliability, and one is still in high rotation. To make up the deficit, WMTS is substituting standard high-floor cutaway gasoline or diesel buses from its fleet. The use of high-floor buses is a significant disincentive to senior riders. When WMTS

[3] For cash fare payments there is a traditional vault style farebox.

replaces the Brunswick Explorer's fleet, the new vehicles should be low floor cutaways given the concentration of older adults utilizing the service. The cost to replace each of the vehicles is around $180,000 (WMTS procures vehicles from the state's bid list). For vehicle purchases, state and federal funding generally covers 90 percent of the cost with the remaining 10 percent coming from local sources.

WMTS maintains an inventory of technological assets that aid in the operation of the Brunswick Explorer. These assets include Automatic Vehicle Locators (AVLs), Smartcard capabilities, contactless fare payment, on-board cameras, dispatching software, and is currently beta testing fixed route scheduling software. WMTS also uses tablets to track ridership (including geolocation).

Transit Needs

A variety of sources were consulted in the identification of needs for this study. The team relied on the U.S. Census Bureau for demographic and employment data, looking at the data spatially along with current transit service to identify gaps in service in areas of higher demand. Past plans relating to current and future development in the region were also reviewed to locate historic needs relevant to this planning process. The team relied on regular input from community members and other stakeholders throughout the planning process—including during the development of needs.

Market Analysis

Demographic and socioeconomic characteristics of the community can indicate where there might be demand for public transit. This section includes analysis of the following populations as they tend to indicate higher transit usage and meet agency goals and federal regulations to provide equitable service:

- Zero vehicle households
- Households below poverty
- Minority groups
- Limited English Proficiency (LEP)
- Children (under 18)
- Older adults (aged 65 or older)

The findings from this analysis found several locations with high transit propensity that are not served by the Brunswick Explorer. These locations include the northeastern region north of Bath Road, neighborhoods in the vicinity of Gurnet Road, Brunswick Landing, and areas to the west of the downtown Brunswick stretching toward I-295.

Summary Demographics

Brunswick has roughly the same median income and share of population living below the poverty line as the state average (Table 1). However, Brunswick has a proportionally higher minority population and more zero vehicle households, seniors, and LEP populations relative to the rest of the state. Regionally, Brunswick has higher shares of people living in poverty, minorities, zero vehicle households, seniors, and LEP households relative to most of its municipal neighbors.

Table 4. Aggregate Demographic Data by Municipality and State

	Median Income	Below Poverty Line	Minority	Zero Vehicle Household	Senior	LEP
Maine	$55,425	12.5%	5.5%	7.3%	19.4%	0.1%
Brunswick	$54,646	12.0%	9.8%	12.2%	22.6%	0.9%
Bath	$50,160	14.6%	4.3%	11.0%	19.6%	0.0%
Durham	$73,030	4.4%	2.9%	4.3%	15.6%	0.0%
Freeport	$64,224	1.8%	11.4%	15.4%	24.6%	0.0%
Topsham	$72,537	10.6%	3.6%	9.4%	26.1%	0.2%

Source: ACS 5-year estimates (2018)

These summary demographics suggest that Brunswick has populations that have a higher propensity for transit use. The following analysis describes the geographic distribution of the data above and how it relates to existing Brunswick Explorer service. For a more detailed analysis (including maps) see Appendix B.

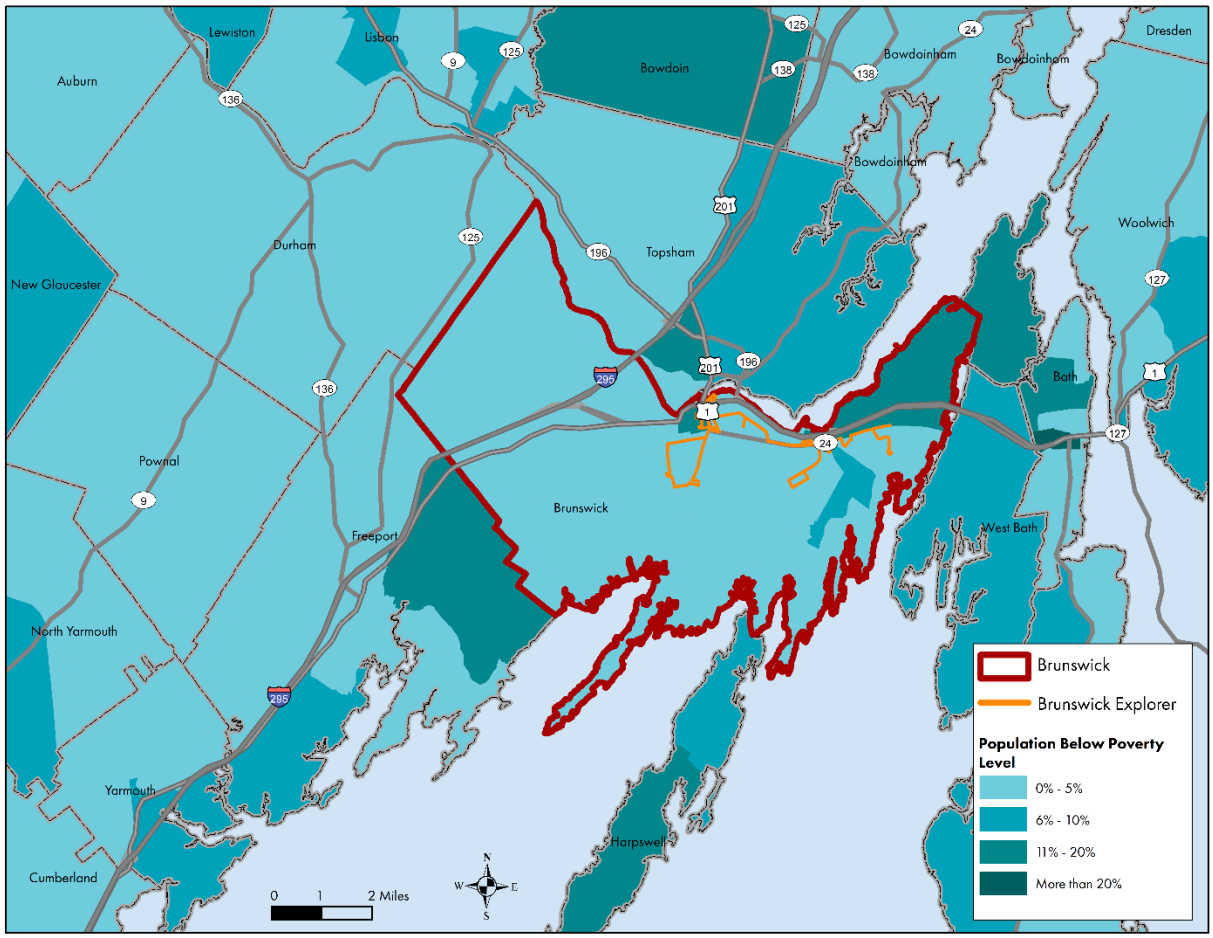
Zero Vehicle Households

Zero vehicle households frequently rely on transit, carpooling, walking or other modes to access their destinations. Most residents of Brunswick have access to a vehicle in their household. There are two locations where more than 30% of the population does not have access to a personal vehicle: the downtown and an area to the southwest of downtown. The latter is home to several assisted living communities, which may help explain the low rate of vehicle ownership. Both these locations are currently served by the Brunswick Explorer. However, areas to the west of the downtown stretching to I-295 are not served by the Explorer, yet 11 to 20 percent of these households do not have access to a vehicle.

Population Below Poverty

People who live below the poverty line are more likely to take transit due to the high cost of car ownership. Brunswick's downtown and northeastern region have the highest concentrations of people living below the poverty line. The Explorer serves both these areas, but many residents in the northeastern region (e.g., Bay Bridge Estates) have to walk more than two miles to reach Brunswick Explorer service (which travels on Bath Road). Figure 11 shows the regional distribution of residents living below the poverty line. It is important to note that the Brunswick Explorer allows for route deviations, so many of the areas that are not served directly are still within the range for route deviation.

Figure 11. Population Living Below the Poverty Level



Source: ACS 5-year estimates (2018)

Minority Population

Minority populations live throughout Brunswick but are most highly concentrated to the south of Bath Road near Southern Maine Community College, Brunswick Landing, and Gurnet Road. Although the Brunswick Explorer serves Southern Maine Community College, many of the other areas are not served.

Limited English Proficiency (LEP)

Only about one percent of households have LEP; these households tend to be located in downtown Brunswick and just to the west of downtown. Although the downtown is served by the Explorer, areas to the west are not.

Children (Under 18)

The areas with the highest density of people aged 18 and under are outside of downtown: near I-295 and beyond, the northeast region of the Town, and the Gurnet Road/Brunswick Landing areas south of Bath Road. Few of these areas are served by the Explorer.

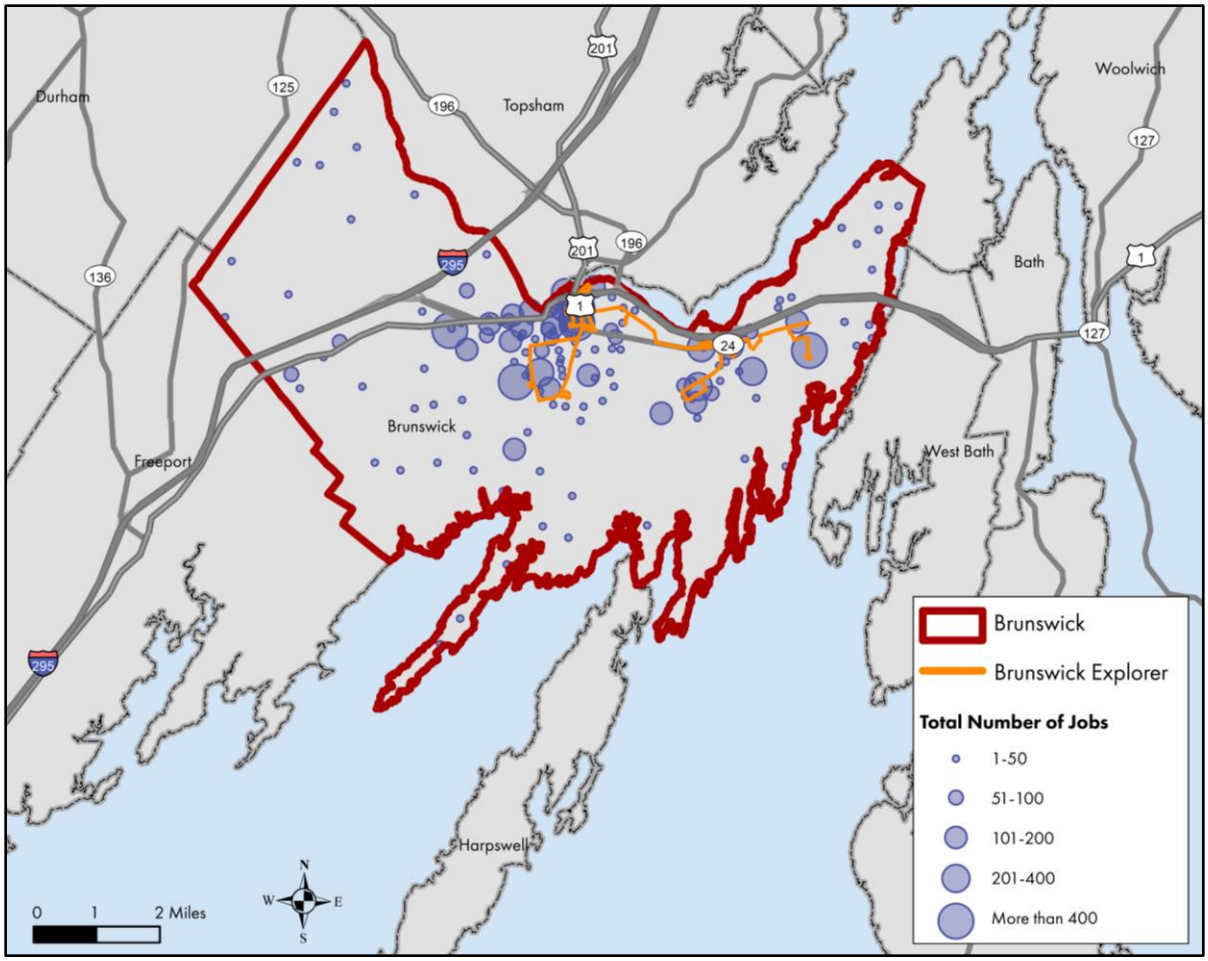
Older Adults (Aged 65 and older)

Older adults are concentrated in downtown Brunswick, south of downtown along Mere Point Road, and on the eastern edge of town. With the exception of the downtown area, the Explorer does not serve these areas. These locations have high rates of vehicle ownership, which suggests that much of Brunswick's older population relies on private vehicles.

Employment

The Brunswick Explorer serves many of the top employment destinations in Brunswick including Bowdoin College, Mid Coast Hospital, Sweetser Mental Health Services, Parkview Medical Center, and many of Brunswick's shopping destinations (Figure 12). The areas with a significant number of jobs that lack Explorer service are mostly located in areas west of the downtown that stretch toward I-295 on U.S. Route 1, Church Road, and Greenwood Road. These corridors contain a variety of industrial and retail destinations. While the Brunswick Explorer currently serves the Landing, service is limited as it is not included on every trip.

Figure 12. Employment Destinations



Source: Longitudinal Employer-Household Dynamics (LEHD) (2017)

Key Takeaways

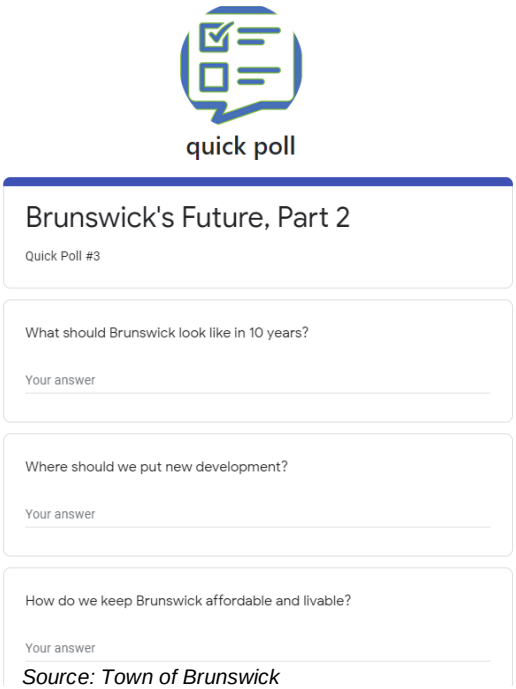
Based on the demographic data, the Brunswick Explorer serves many areas that have high transit propensity, including the downtown, points east along Bath Road, and areas to the southwest of the downtown. Locations with high transit propensity that are not served by the Brunswick Explorer include the northeastern region north of Bath Road, neighborhoods in the vicinity of Gurnet Road, Brunswick Landing, and areas to the west of downtown Brunswick stretching toward I-295.

Current and Future Development

The MidCoast region has seen an influx of development and population in recent years. Brunswick is no exception with the ongoing development at Brunswick Landing, a hotspot of commercial activity that has significantly contributed to the thousands of jobs that have been added to the region. As part of the needs identification process, the planning team reviewed recent documents related to transportation and land use that might have bearing on the future transit market in Brunswick. Below is a list of documents reviewed and a brief summary of how they informed this planning process, a more in-depth review can be found in Appendix A:

- **Maine DOT Strategic Transit Plan 2025:** This 10-year comprehensive plan focuses on the future of public transit in Maine. The plan is focused on how to serve an aging population with decreasing access and mobility, making it particularly relevant to this study as nearly one quarter of Brunswick's population are seniors.
- **Western Maine Transit Feasibility Study:** In response to the recent growth in the region Western Maine Transportation Services (WMTS) (operator of the Brunswick Explorer) conducted a planning process in 2017 to comprehensively inventory and examine their network and establish a plan for the future. This 2018 study included a five-phase service improvement program that recommended increasing or modifying service on existing routes as well as establishing new routes. This included a new route in Phase One that would connect Lewiston and Auburn to Brunswick via Route 196 and a second route connecting Bath to Brunswick via Route 1 or Bath Road. Both routes would have limited trips daily but would expand in future phases.
- **Feasibility of Bus Service in Topsham:** Topsham has not had transit service since the mid-1990s. In the last 15 years there have been multiple plans aimed at resuming transit service as local groups have indicated it is an unmet need given the region's growing and aging population. A 2017 plan recommended the community implement a bus route that would operate on weekdays and would serve multiple destinations in Topsham and connect to Brunswick at the rail station.
- **Regional Transit Network Study for Topsham, Brunswick, Freeport, West Bath and Bath:** This 2012 plan provided an inventory and analysis of the transit network available to the Topsham, Brunswick, Freeport, West Bath, and Bath areas. The investigation, which included demand modeling and stakeholder interviews, found a need to connect the two existing transit networks, Bath CityBus and the Brunswick Explorer. These findings led to two primary approaches to service improvements:
  - Create a new regional service that connects riders to the existing services of each system.
  - Expand and modify the routes of the existing two systems such that users could readily access both of the previously independent service areas.
- **Brunswick Comprehensive Plan:** At the time of this planning process, Brunswick was updating their 2008 Comprehensive Plan to address land use changes, development goals, and transportation needs, among other things. The plan update process included a robust public engagement process that has revealed that while transit may not be the community's greatest priority, there

Figure 13. Public Poll on Brunswick Comprehensive Plan Update website



Source: Town of Brunswick

is no specific opposition towards it and many of the plan's priorities would be complemented by expanded transit service.

- **Downeaster Corridor Service Development Plan:** The objectives of this 2016 plan were to increase mobility for Maine residents and to increase tourism for major landmarks and municipalities along the Maine coastline by connecting Downeaster service to a state-owned local rail branch and making infrastructure and operations improvements. Overall, this project is expected to generate 36,500 new riders annually and increase passenger rail access for riders in Maine.

Outreach Summary of Needs Identification Process

Along with the Town of Brunswick, the Maine Department of Transportation (MaineDOT), and WMTS, the project team involved a diverse group of stakeholders who helped identify transit needs in Brunswick and the surrounding region. The following organizations were just some of the participants who aided in the development of this plan:

- Educational institutions including Bowdoin College, Southern Maine Community College, University of Maine at Augusta (Brunswick Center), and Brunswick High School
- Midcoast Regional Redevelopment Authority (MRRA)
- Transit providers such as Amtrak Downeaster, Concord Coach, Greyhound, METRO BREEZ, and Mid-Cost Public Transportation
- Brunswick Downtown Association
- Southern Midcoast Maine Chamber of Commerce
- Major employers such as Wayfair, LL Bean, Hannaford, SaviLinx and Bath Iron Works
- Mid Coast Parkview Health
- People Plus
- Brunswick's Asylum Seekers
- Brunswick Housing Authority

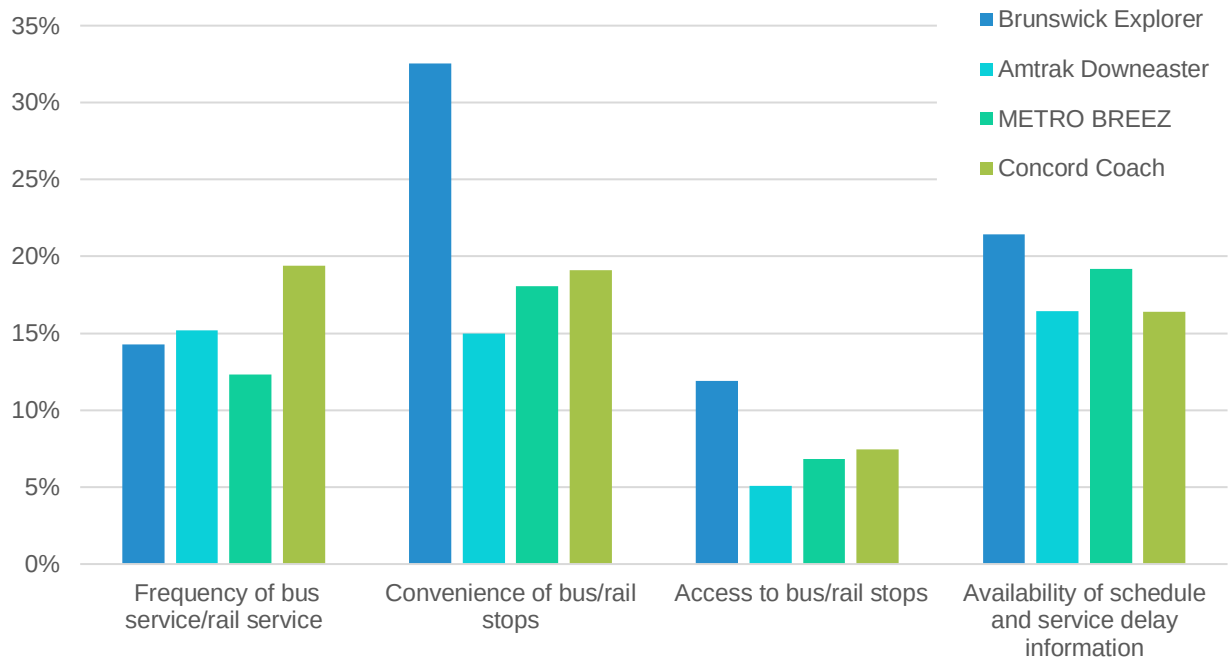
Figure 14. Screenshot from One of the Virtual Public Meetings

Three outreach events were held in beginning of the planning process (summer and early fall of 2020): a public survey, a focus group with New Mainers (including Lingala interpreters), and a public meeting. The focus group and public meeting were held over Zoom due to the COVID-19 pandemic (Figure 14). Although this study focuses on the Brunswick Explorer, the study team collected input on all bus and rail services as part of the outreach efforts. Below are the summary findings from these outreach events, more detailed descriptions can be found in Appendix C and Appendix D. Key takeaways from the initial outreach events included:

- Transit riders are often walking more than 30 minutes to reach bus stops (see Figure 15 for related survey result).
- Increasing service frequency is a top concern among transit riders.

- Participants would like to see weekend service and service later in the evenings to accommodate commuting schedules.
- Lack of information regarding bus arrival times and stop locations emerged as a concern.
- Riders would like to see service extended to Bay Bridge Estates and Maplewood Manor, as well as to points west of downtown.
- Regional connectivity to Bath, Topsham, and Portland were among the top priorities of participants. Riders would like to see transit schedules be better coordinated to allow for transfer among different services.
- Serving older adults and New Mainers is a common request among participants.
- Most riders are generally pleased with the level of comfort on the buses and trains.

Figure 15. Top Concerns by Transit Service Used



Summary of Findings

There were several significant findings that came out of the research conducted in the first phase of the study:

- Brunswick is part of a growing region with an aging population.
- The Brunswick Explorer covers many of the areas in the Town with a strong transit market, with several exceptions: the northeastern region north of Bath Road, neighborhoods in the vicinity of Gurnet Road, Brunswick Landing, and areas to the west of downtown Brunswick stretching toward I-295.
- WMTS and several other transit providers in the region have identified expanded transit service in Brunswick as a need.

- Bus stop accessibility, improved communications surrounding transit service, better connections to regional transit, and expanded service hours and frequency are the top needs identified by Brunswick residents and other stakeholders.

Based on these findings, the project team focused on the feasibility and costs associated with expanding the Brunswick Explorer's service span, frequency, and coverage, as well as connections to other transit services when developing recommendations. Improving communications surrounding Brunswick Explorer's service was also identified as an important need that should be addressed by the Town as it works to improve the service.

Routing and Service Options

With the key needs identified, the project team developed routing and service options, designing a menu of cost-neutral routing options to share with stakeholders. There were several service characteristics that were included in each option:

- **Service to the Landing on every trip:** provide service to the Landing on every trip in each direction (eastbound towards Walmart and Westbound towards downtown)
- **Service to the train station/METRO BREEZ connection** (Portland, Freeport)
- **Service to Shaws/Blue Line connection** (Bath, Topsham)

Routing Workshops

The project team hosted a routing workshop where the following options were explored:

- **Single Route**: Runs a bidirectional route between Parkview Hospital and Sweetser with expanded routing in Brunswick Landing included on each run.
- **Single Route (with shortened Brunswick Landing service):** Runs a bidirectional route between Parkview Hospital and Sweetser with existing routing in Brunswick Landing included on each run.
- **Dual Route:** Two routes that overlap between Brunswick Station and Walmart; one route runs from Parkview Hospital to Walmart, and the other runs from Brunswick Station to Sweetser; both stop in Brunswick Landing on each run.
- **Dual Route (with service to Maplewood Manor):** Two routes that overlap between Brunswick Station and Walmart; one route runs from Parkview Hospital to Walmart, and the other runs from Brunswick Station to Sweetser; both stop in Brunswick Landing on each run. The Sweetser route stops at Maplewood Manor on each run.

"I like expanding the bus route around Pegasus and Brunswick Landing. It would be easier to mothers with children and other car-less residents to use the Explorer." – Survey Respondent

Any of these routing options could be operated as fixed route service with the associated, required Americans with Disabilities Act (ADA) complementary paratransit (demand response service to allow for equal access to transit service for people of all ages and abilities) or as deviated fixed route service.

Prior to the workshop, the project team modeled the possible outcomes of the proposed service changes, developing pros and cons of each option for participants (Table 5). Additionally, the workshop participants were given a glimpse into the effects each service change would have on operations, including the additional costs associated with hiring drivers to provide more service and asked to consider trade-offs that would have to be made given fiscal constraints.

Table 5. The Pros and Cons of Workshopped Service Changes

Service Change	Pros	Cons
Streamlined Downtown Routing	• Save time to serve other areas of the community (e.g. the Landing or Maplewood Manor) • Reduces risk of traffic causing challenges with on-time performance	• Reduced visibility of vehicles downtown • Potentially reduced advertising revenue on vehicles

Service Change	Pros	Cons
Serve the Landing on Every Trip (both directions)	• Community with a lot of need gets regular service • Economic development opportunity	• Non-Landing riders have a diversion off Bath Road • Adds time to the route with diversion off Bath Road
Serve Maplewood Manor	• Serve major residential area identified as having transportation needs through outreach	• Non-Maplewood Manor riders have a diversion off Bath Road • Adds time to the route with diversion off Bath Road
Stagger the Vehicles	• Expanded span of service • Meet the BREEZ with at least one later trip • Same or increased frequency during the middle of the day	• Reduced frequency of service in the morning and evening periods • Likely will not allow consistent service frequencies (or “clockface termini”)

Routing Options

With the feedback from the routing workshop, the project team was able to refine the options and focus on three routes that could be implemented with either streamlined fixed route or deviated fixed route service models. The three routing options that came out of the workshop included:

- **Expanded Service to Brunswick Landing**: serve Brunswick Landing on every trip and with service to Pegasus Landing, Coastal Shores, Coastal Landing, and destinations on Neptune Drive (Figure 16)
- **Existing Service to Brunswick Landing with Improved Frequency:** serve Brunswick Landing on every trip using the current (shorter) routing with more frequent service (Figure 17)
- **Service to Brunswick Landing and Maplewood Manor:** serve Brunswick Landing on every trip utilizing the shorter routing and extend route to Maplewood Manor (Figure 18)

Figure 16. Alternative 1: Expanded Service to Brunswick Landing

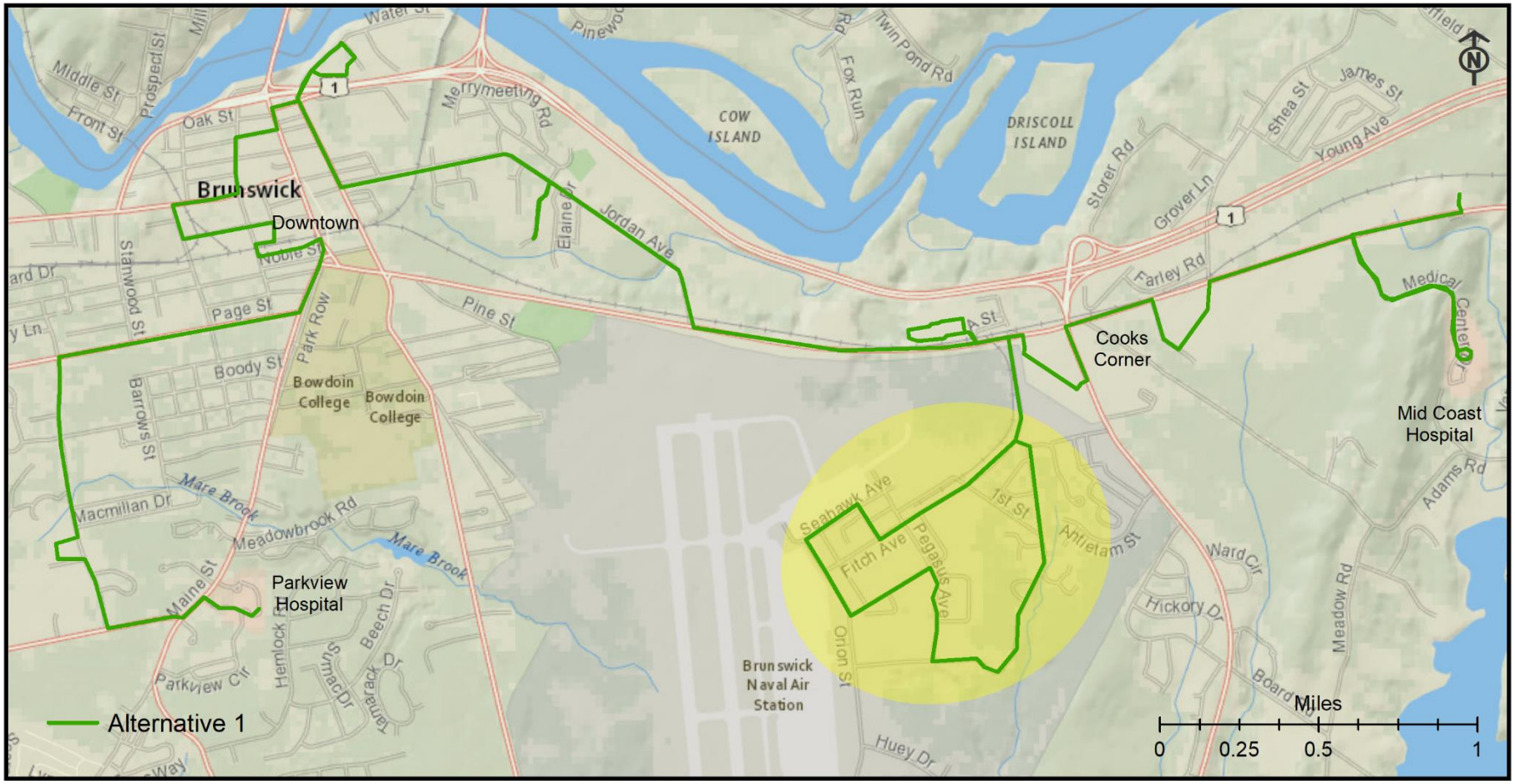


Figure 17. Alternative 2: Same Service to Brunswick Landing – Expanded Service Hours

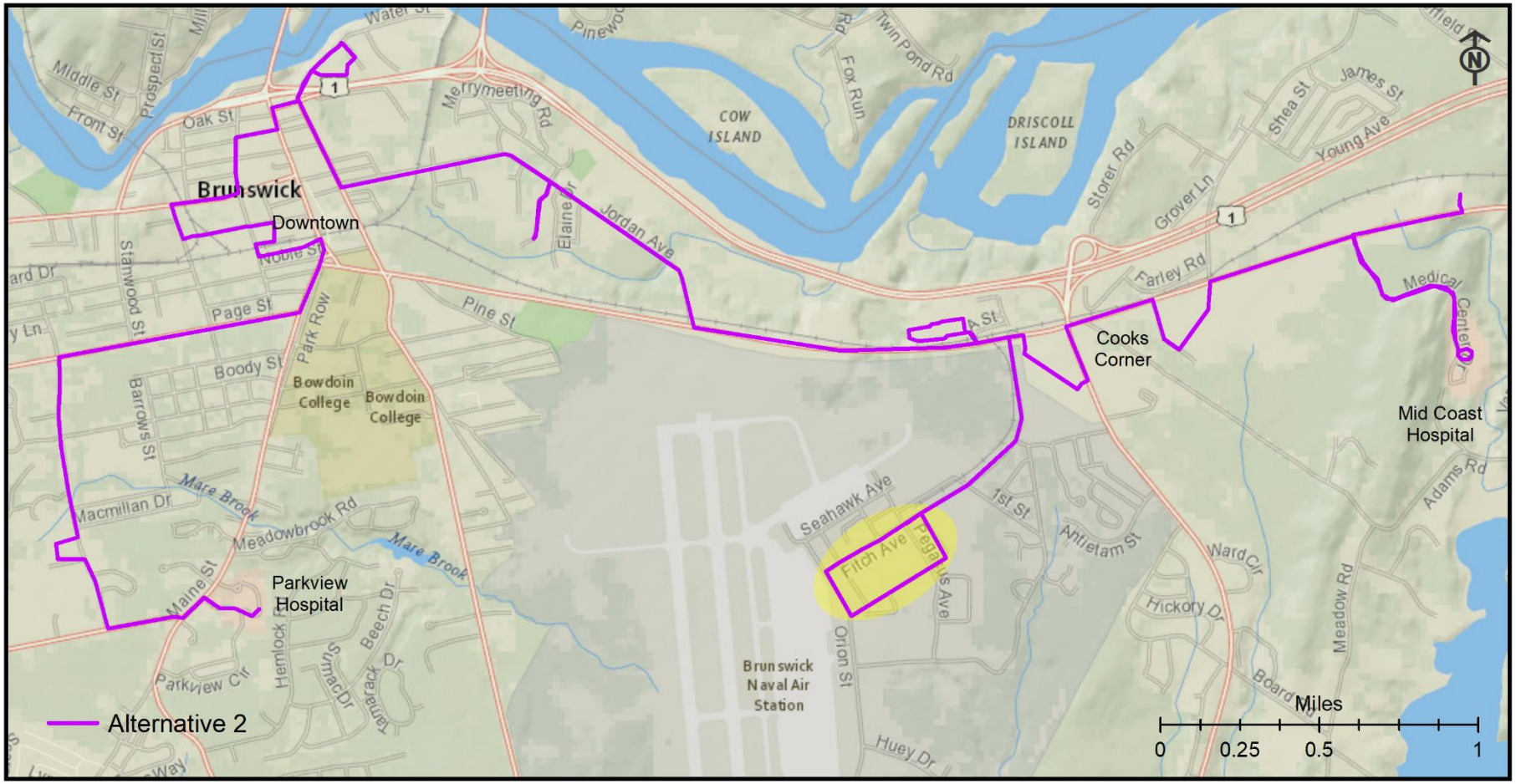
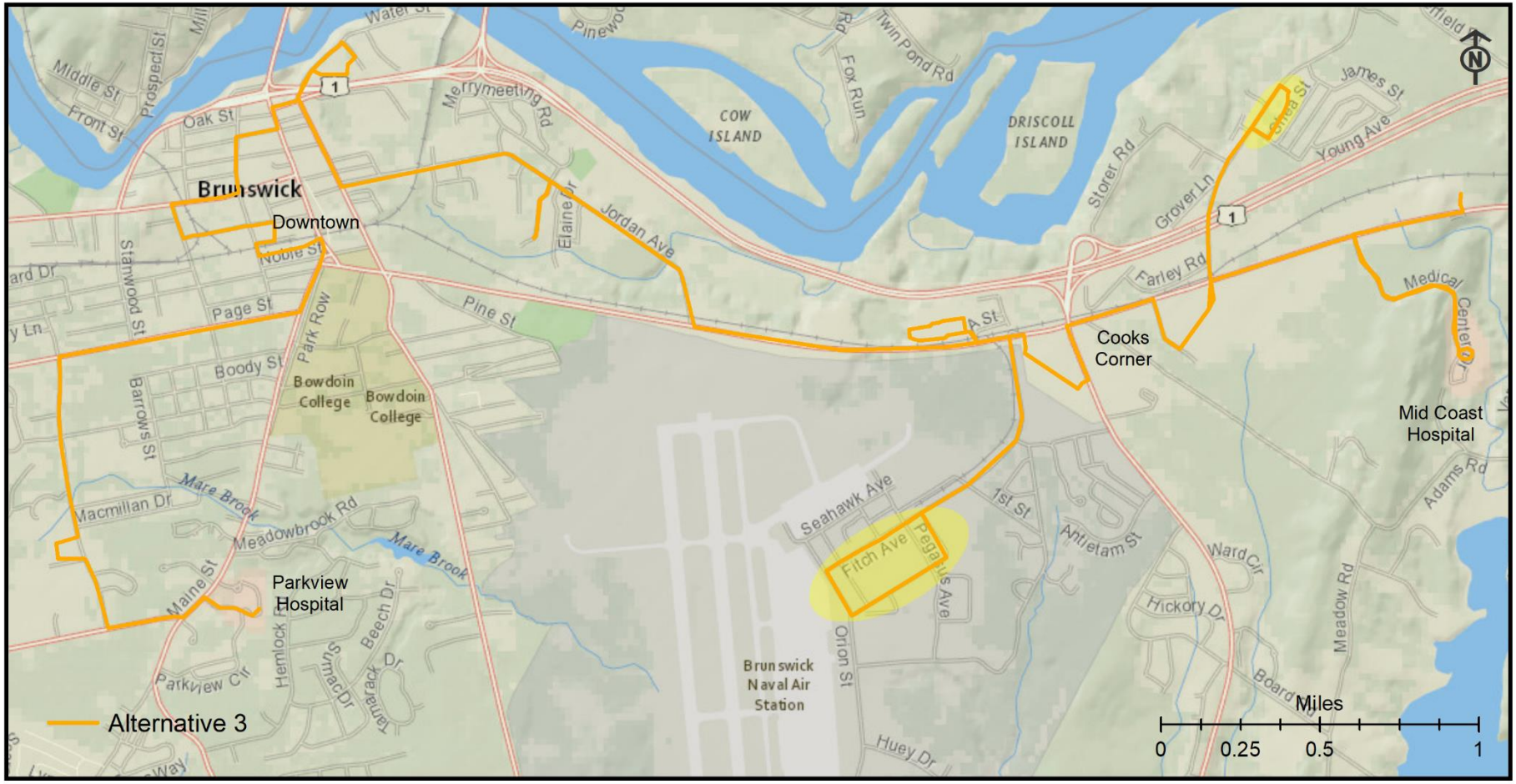


Figure 18. Alternative 3: Service to Brunswick Landing and Maplewood



Travel Time Scenarios

In addition to considering different routing options, the project team envisioned how each option would operate as a fixed route and a deviated fixed route. The Brunswick Explorer currently operates as a deviated fixed route service, traveling as far as ¾ mile from its fixed route to pick up passengers if advanced notice is provided. While this deviation makes the service more accessible to a broader area geographically, it also decreases the quality of service, slowing it down and making it challenging for the Explorer to adhere to a schedule.

Estimated travel times (in minutes) for the fixed route and deviated fixed route version of each routing option are shown below (see Table 6 and Table 7) by showing travel times along potential segments. The projections demonstrate how the Brunswick Explorer could shave an average of 32.7 percent off its running time if operated as a fixed route, allowing for quicker, more reliable travel and creating the possibility for more frequent service.

Table 6. Deviated Fixed Route Options – Segment Trip Times (minutes)

	Alt. 1	Alt. 2	Alt. 3
Walmart to Brunswick Station	43	36	36
Brunswick Landing to Brunswick Station	28	26	26
Sweetser to Brunswick Station	52	45	50
Maplewood Manor to Brunswick Station	-	-	42
Total	**123**	**107**	**154**

Table 7. Fixed Route Options – Segment Trip Times (minutes)

	Alt. 1	Alt. 2	Alt. 3
Walmart to Brunswick Station	29	24	24
Brunswick Landing to Brunswick Station	19	18	18
Sweetser to Brunswick Station	35	30	33
Maplewood Manor to Brunswick Station	-	-	28
Total	**83**	**72**	**103**

Public Feedback on Routing and Service Options

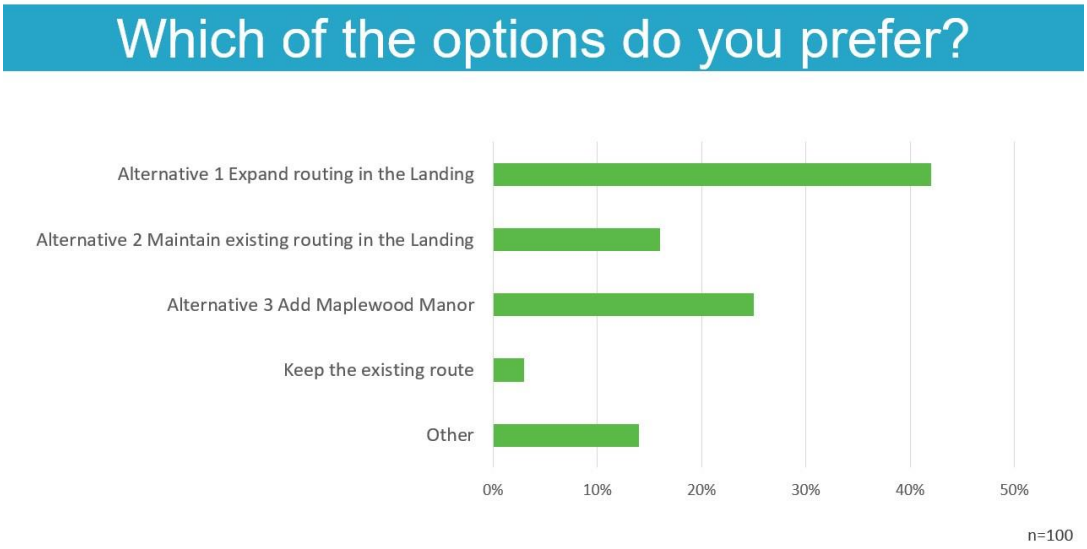
The three options developed during the routing workshop, along with the travel time scenarios for each option (fixed route and deviated fixed route) were presented for public feedback in a final round of public outreach. The outreach included an online survey (open from November 16, 2020 through December 10, 2020) and a public meeting held on December 10, 2020. The outreach events and findings are detailed below, with a more extensive description of the meeting available in Appendix E and the survey in Appendix F.

Survey Results

The 132 respondents to the second public survey generally agreed on service priorities for the Brunswick Explorer moving forward. When presented with the three routing options described in the previous section, expanding service to Brunswick Landing emerged as the key priority for future, with over 40

percent of respondents selecting it as their preferred option (Figure 19). There was strong interest in serving Maplewood Manor and other destinations—however respondents identified these as lower priorities than more service to Brunswick Landing and expanding service hours. Respondents also shared concerns about transportation access for seniors, New Mainers, unaccompanied minors, and low-income families.

Figure 19. Preferred Routing Option in Public Survey

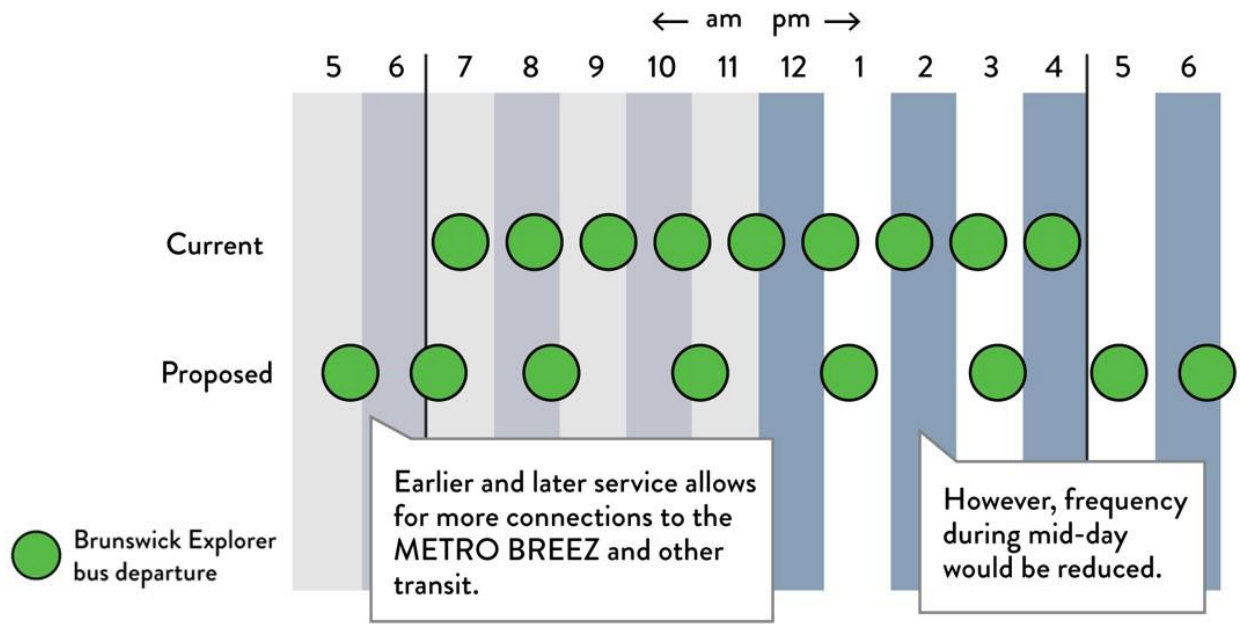


Public Meeting

The final public meeting was held on the final day of the survey so the project team was able to incorporate the survey results into the meeting discussion. Additionally, respondents were asked to consider several trade-offs including:

- Should expanded service to the Landing be prioritized over serving Maplewood Manor and other destinations?
- Should hourly service be preserved, or should there be longer service hours with less frequent service (Figure 20)?

Figure 20. Trade-off for Increased Frequency vs. Expanded Service Hours



The project team also sought attendees' opinions on the use of advance pick-up/drop-off request (also known as Dial-a-Ride) and the expanded routing in the Landing.

Based on feedback received from the final round of outreach, the project team determined the following changes be prioritized as Brunswick Explorer service is adjusted to better meet the needs of Brunswick residents:

- Expanded service to Brunswick Landing (including destinations like Pegasus Landing)
- The preservation of hourly trip frequencies

"I feel very strongly about adding regular service to Brunswick Landing to help weave it into the fabric of Brunswick, increase Rec Center use, and support the new residences and businesses there." – Survey Respondent

While the expansion of service to Maplewood Manor and longer service hours were not identified as top priorities overall, public feedback indicated that both are important improvements that should also be considered in future service changes.

Recommendations

The guiding principles identified at the start of the study, along with the market analysis conducted by the project team, and public feedback, established a clear path forward for Brunswick Explorer service. All of the guiding principles listed below have remained top priorities:

- Streamline the bus route
- Maintain or improve frequency of service (currently every hour along the main part of the route)
- Serve the Landing on every trip
- Assume a two-bus weekday system, but also look at possible future expansion options
- Meet other services when possible (METRO BREEZ, Blue Line, Downeaster, Concord Coach)

A summary of the proposed service changes as they compare to the existing service is outlined in Table 8. The sections that follow provide more detailed information about the proposed changes.

Table 8. Recommendation Summary

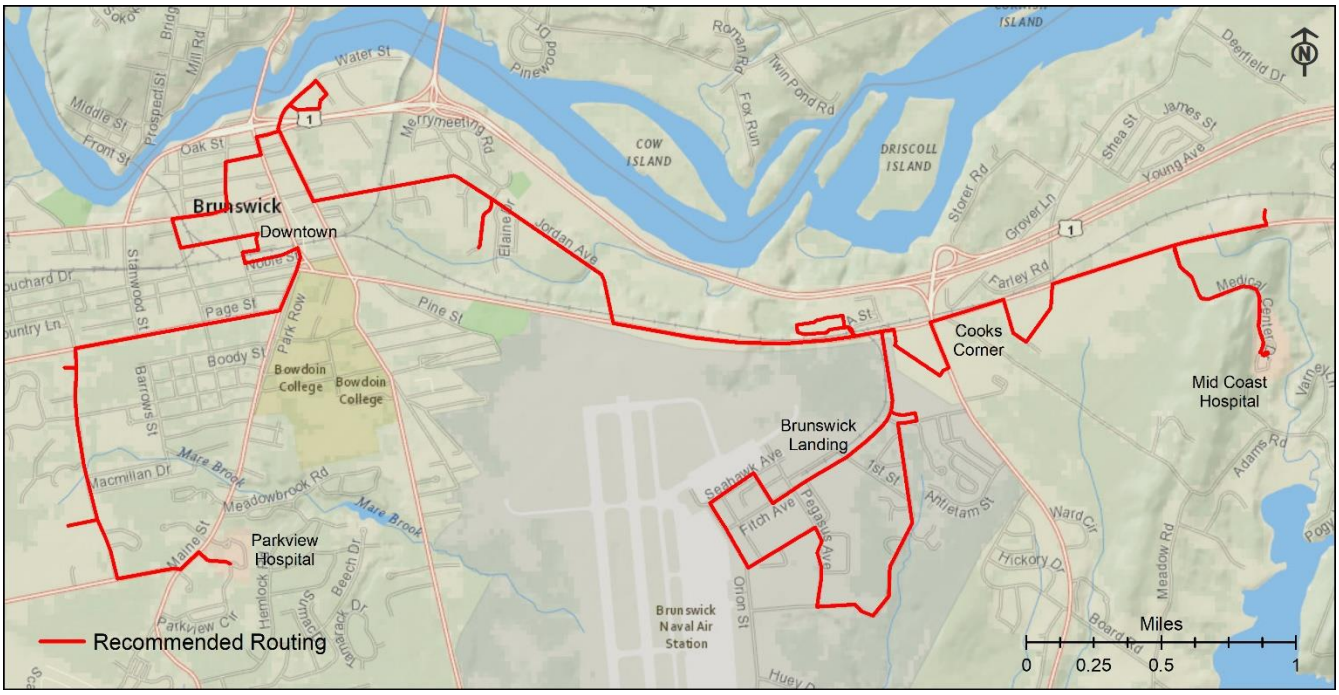
Service Characteristic	Existing Service	Recommended Service
Hours of Service	7:00 AM - 4:42 PM	6:00 AM – 6:30 PM
Headway	60 minutes	45-60 minutes
Days Operated	Monday-Friday	Monday-Friday
Designated Bus Stops	18	32
ADA Compliance	Deviated Fixed Route	Complementary ADA Paratransit
Downeaster Connections Possible	3 Trips Southbound 1 Trip Northbound	4 Trips Southbound 2 Trips Northbound
METRO Breeze Connections Possible	8 Trips	11 Trips
Concord Coach Connections Possible	2 Trips	2 Trips

Proposed Service Changes

The project team developed three recommendations informed by analysis of the existing Explorer service and public feedback that fit within the fiscal constraints established at the start of the project. While the majority of needs that were identified through the planning process are addressed in these recommendations, there are several that are not included, particularly service to Maplewood Manor, that should be considered for implementation in the future as funding permits. In the longer term, Mobility-on-Demand and other emerging technologies should be considered if additional fixed route service, beyond

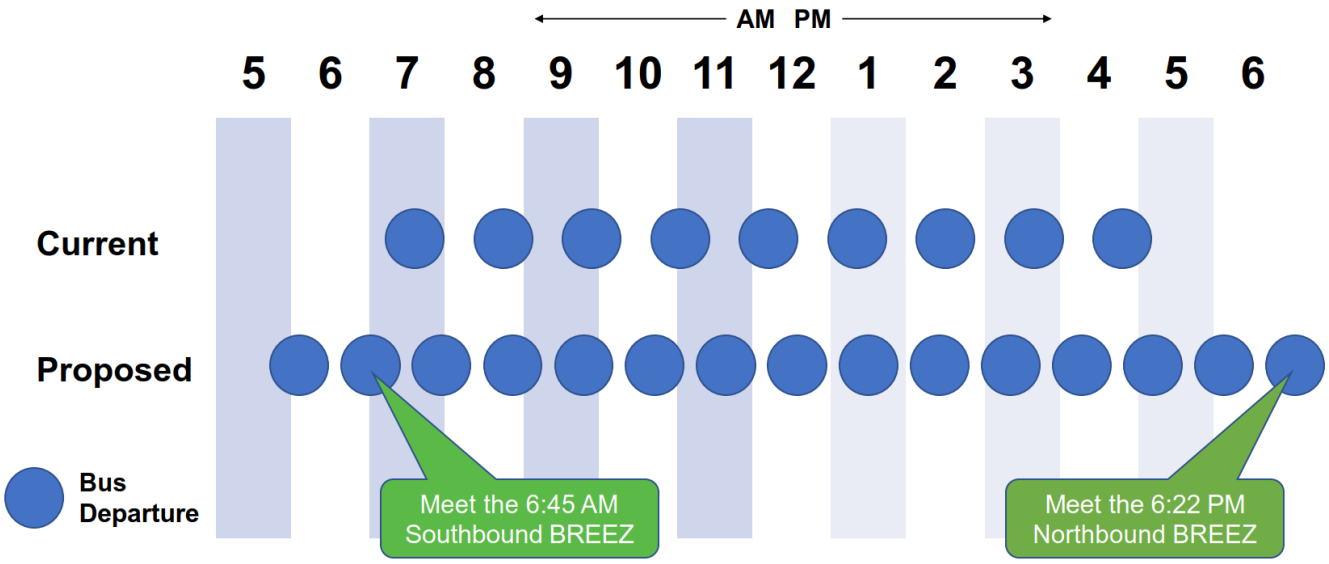
the recommendations below, is not feasible in Brunswick. The recommended routing is mapped in Figure 21.

Figure 21. Preferred Alternative: Expanding Brunswick Landing Service



Service would be operated Monday through Friday from 6:00 AM to 6:30 PM with service every 45 to 60 minutes (Figure 22).

Figure 22. Frequency and Expanded Service Hours



Expand Service in Brunswick Landing

The Brunswick Explorer does not currently serve Brunswick Landing on every trip. The ongoing development at the Landing, which already includes public resources like Southern Maine Community

College Midcoast Campus, healthcare facilities, a YMCA, and a rapidly expanding list of employers and residential developments, makes increased service to the area a clear priority.

Streamlined Fixed Route Service

In order to maintain hourly headways and add service in Brunswick Landing to every trip, the ¾ mile deviation that the Brunswick Explorer makes on request, must be eliminated. The streamlined service will not only enable service to Brunswick Landing on every trip while maintaining hourly headways or less, it will also make Brunswick Explorer service more reliable – without deviations, drivers can adhere to a regular schedule. In addition to improving the local riding experience, the streamlined service also enables the operator to set a schedule that riders can use to connect with other transit services in the area. Based on initial testing by the operator, it is possible that the frequency of service could be improved from 60 minutes to 50 minutes on the new fixed route on some trips.

If the operator staggers the vehicles and reduces service in the middle of the day, it is also possible that the span of service could be extended earlier in the morning and later in the evening.

Complementary ADA Paratransit

While eliminating the ¾ mile deviation improves reliability and access to Brunswick Landing, it also means that residents with mobility issues that prevent them from accessing the Brunswick Explorer's fixed route need a different option to access transit. This deviation would be replaced by complementary ADA paratransit service provided during the same service span as the fixed route and also within ¾ mile of the fixed route. In order to utilize ADA paratransit service, riders must first be pre-certified as eligible before riding. Once eligibility is determined, riders must call ahead to request paratransit service (usually 24 hours in advance of the requested trip). WMTS operates other ADA paratransit services elsewhere in the region.

Costs

Implementing the proposed Brunswick Explorer service changes will require some additional operating and capital costs. Operating costs are annual costs, whereas capital are one-time costs. A summary of the costs is presented in Table 9. The changes listed above can implemented relatively quickly. In order to implement the service, the Town of Brunswick, MaineDOT, and WMTS need to design a new schedule for the Brunswick Explorer, work with drivers to adjust service, install new bus stops, and reach out to local organizations to make sure that riders have time to learn about the new service model before it is implemented (see the upcoming Implementation Plan for more information).

Table 9. Breakdown of Cost Elements

Item	Amount	Responsibility
Additional Operating Cost	$27,000	$10,000 Town of Brunswick; $17,000 MaineDOT
Vehicles	No cost – have already been purchased	MaineDOT
Bus Stops & Marketing	$5,000	Town of Brunswick

Operations

The project team discussed the feasibility of operating complementary ADA paratransit service along with the conversion of the Explorer to a fixed route service, including the vehicles and drivers that would be required, and found that as long as WMTS' existing resources and staff levels are utilized, operating the service would likely not be financially prohibitive. Based on data detailing previous deviation requests, it is estimated that only one vehicle will be needed to provide complementary ADA paratransit service. It should be noted, however, that demand could increase rapidly, and the provision of the complementary ADA paratransit service may need to be re-evaluated after the service launches.

WMTS currently has the equivalent of two-and-a-half drivers and a lead driver who manages the office, creates the schedules, drives when needed, and transfers vehicles between facilities for maintenance, among other tasks. This correlates to three-and-a-half full-time equivalent (FTE) employees. The lead driver has a flexible schedule and could provide the ADA paratransit trips as they will differ every day being that they are on-demand. The proposed service will also need ADA eligibility and scheduling assistance from WMTS' Auburn office, so the total employees needed to operate the new fixed route/ADA service is estimated to be four FTE. With these proposed service changes, the Brunswick Explorer's annual operating cost would be $325,000, approximately $27,000 more than the cost to operate service in FY 2020[4]. The additional cost is associated with the need for an additional labor (one half FTE) required to offer expanded service hours and the staff time to determine ADA eligibility and assist with scheduling. The Town of Brunswick has committed to funding 39 percent of the additional costs ($10,000), and the remaining operating funding ($17,000) will come from MaineDOT.

Capital

The additional capital costs associated with the new Explorer service include expenses related to installing new bus stops and improving existing stops and marketing the new service. Ideally, converting to an entirely fixed route system is an opportunity to improve wayfinding and other bus stop amenities. To that end, improved bus stops, especially with signage and informational materials, are very important. Bus stop infrastructure can be altered and improved over time to include amenities like benches, shelters, lighting, etc. as the ridership patterns emerge from the new service and demand increases, but signs and informational materials are the top priority when the new service is rolled out.

The map in Figure 23 shows the likely bus stop locations for the new service. Bus stops are also presented in Table 10 below. The Town of Brunswick will be responsible for developing a bus stop plan, procuring signs, installing the bus stop signs, and maintaining the bus stops over time. More detailed information on bus stop guidelines the Town should follow when implementing the new service is included in Appendix H with information on signs, amenities as appropriate, and concrete work as needed.

Table 10. Proposed Bus Stops

Bus Stop	Previous Annual Ridership	Bus Stop	Previous Annual Ridership
1. Parkview Hospital	706	17. Merrymeeting Plaza	1,105
2. Martins Point, Baribeau	26	18. Fitch & Sewall	new
3. Baribeau Health Loop	351	19. Molnlyke	moved

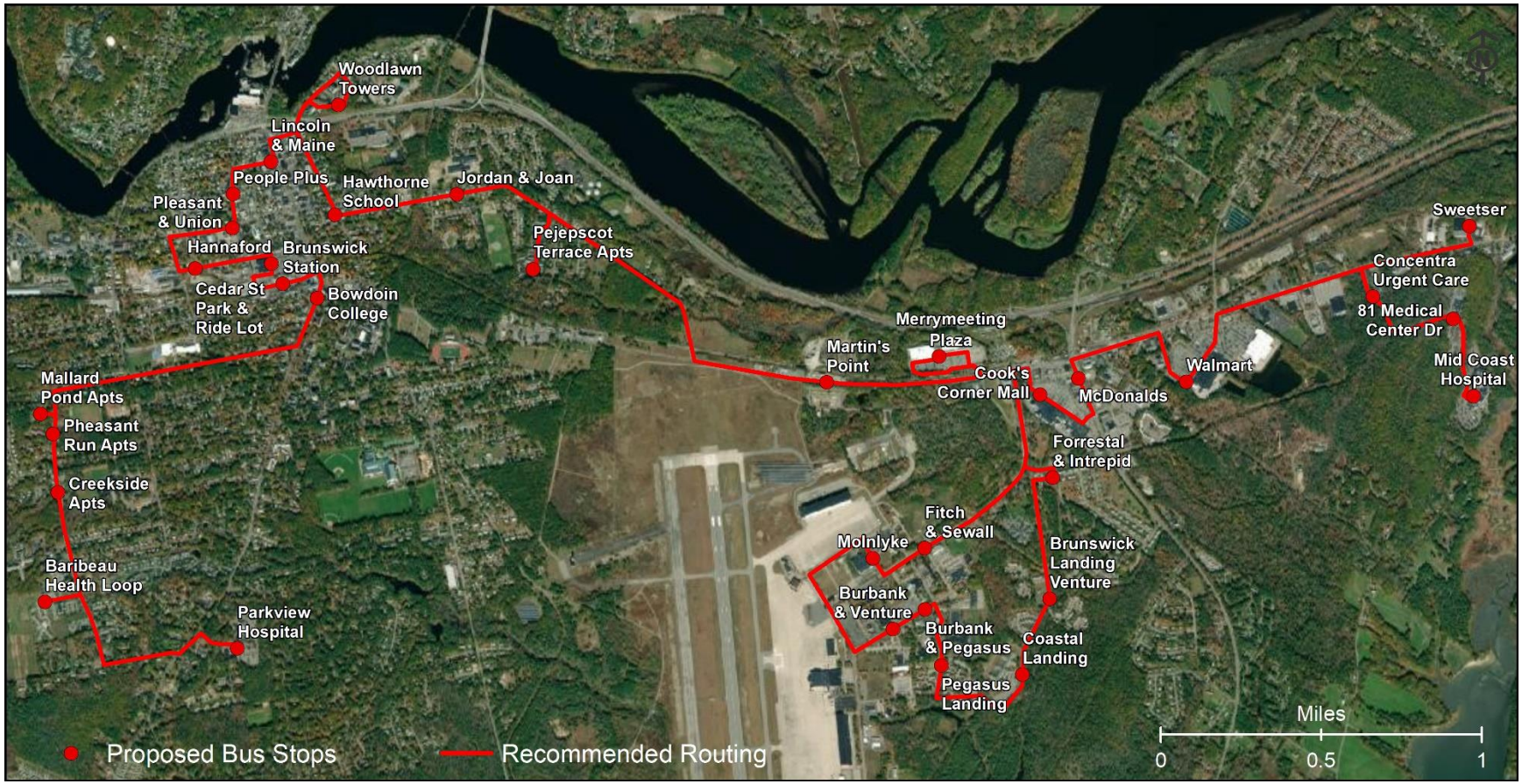
[4] The Brunswick Explorer's operating cost dropped significantly between FY 2019 ($314,146) and FY 2020 ($298,000) due to service reductions in response to the COVID-19 pandemic.

4.	Pheasant Run Apts	145	20.	Burbank & Venture	18
5.	Mallard Pond	1,803	21.	Burbank & Pegasus	new
6.	Bowdoin College	307	22.	Pegasus Landing	new
7.	Brunswick Station	721	23.	Coastal Landing	new
8.	Hannaford	4,906	24.	Brunswick Landing Venture	new
9.	Cedar St Park & Ride Lot	new	25.	Neptune & Forrestal	new
10.	Pleasant & Union	new	26.	Cook's Corner Mall	1,860
11.	People Plus	1,139	27.	McDonalds	new
12.	Lincoln & Maine	new	28.	Walmart	2,198
13.	Woodlawn Towers	3,091	29.	Concentra Urgent Care	30
14.	Hawthorne School	new	30.	81 Medical Center Dr	20
15.	Libby's Market	26	31.	Mid Coast Hospital	559
16.	Pejepscot Terrace	1,301	32.	Sweetser	703

In addition to the costs associated with improving existing bus stops and installing new infrastructure, the launch of the new service should coincide with a rebranding including renaming the service, advertising, bus wraps, and other marketing materials. Besides schedules and wayfinding materials, redesigning the Brunswick Explorer website will be a crucial element in the launch of the new service. The new website should include the new name and branding along with additional information about the new ADA complementary paratransit service. A new route map will also need to be developed, along with printable schedules. The cost to install new stops and rebrand the service will be $5,000, which will be covered by the Town of Brunswick.

WMTS has a bid out for vehicle procurement as of the drafting of this plan and will likely see four new vehicles that could be used to operate the new service in Fall 2021. New vehicles are ideal for operating this service as they will reduce ongoing maintenance costs and provide easier (low-floor) access for passengers. The new vehicles have no additional cost associated with them – they have already been scheduled for procurement. In the future, the vehicles will need to be replaced according to useful life benchmark (ULB) guidelines.

Figure 23. Recommended Routing and Proposed Stops



Longer-Term Options

In addition to expanded service to Brunswick Landing, several other needs were identified in this planning process including expanding transit service to Maplewood Manor and Bay Bridge Estates in northeast Brunswick and adding weekend service to the Brunswick Explorer (Figure 24). Other locations that were recognized as being potential areas for future service expansion included locations along Gurnet Road including Perryman Drive, Ward Circle, and Cluf Bay Road. While fiscal constraints at the time of the drafting of this report limit the short-term feasibility of these service expansions, they have been identified as priorities in the long-term. The Town of Brunswick and WMTS agree that procuring a third vehicle and hiring additional drivers will be goals moving forward so these services can be offered in the future.

"There are many elderly people, young people, and others, that today do not have transportation abilities that would be served by expanding to both Maplewood Manor and Bay Bridge Estates."
– Survey Respondent

With a third fixed route vehicle and driver, many of the recommendations that came out of this planning process become feasible including: converting to a two-route system, expanding to serve the other priority locations throughout Brunswick, improving frequency along the core of the system, and expanding the span of service. Adding a third fixed route vehicle and driver to the service would cost an additional $90,000 per year in operating costs and plus the cost of procuring the additional vehicle. Service design guidelines and thresholds to assist the Town in understanding how the service is performing and when to consider expansion are included in Appendix I.

In addition to the service improvements mentioned above, Saturday service was identified as a priority for some during the planning process. Saturday service could be added for approximately $60,000 in additional annual operating costs. No additional vehicles would be needed to operate the service, but additional administrative support on the weekend would be required as well as an additional driver. The cost estimate assumes deviated fixed route service covering the destinations open on Saturdays using two vehicles for eight hours of service.

Figure 24. Long Term Options Summary

Expand Service locations

- Split Explorer into two routes with more frequency service on Bath Road
- Serve Bay Bridge Estates, Maplewood Manor and destinations on Gurnet Road
- Would require additional vehicle to be procured
- An additional driver would need to be hired; staff would go from 4.0 FTE to 5.0 FTE
- Additional operating cost $90,000/year; local share would be $34,000

Saturday Service

- Operate as deviated fixed route
- Eight-hour service span
- Would require two vehicles, but no procurement needed
- Annual operating cost $60,000; local share would be $23,000
- Would require additional drivers to fill-in shifts

Implementation Plan

The following guide was developed in concert with stakeholders who shared considerations that would need to be made in order to implement a new expanded and streamlined fixed route service with complementary ADA paratransit service. The Town of Brunswick will need to work with MaineDOT and WMTS (the operator) to refine recommendations and develop a plan like the one listed below to implement the service changes. The party responsible for each item is denoted in parenthesis. When the new fixed route service launches, it will have a new brand and a new name. The rebranding process will occur in the tandem with the service redesign and delivery of the new vehicles.

2021

Spring

Re-Name/Re-Brand the Service
Identify a new name for the service that implies speed and reliability. (Town)

Finalize/Test the New Route
Lay out the new expanded route and create a new schedule, testing the new service with the operator. Start work to rebrand the service. (WMTS)

Develop the Funding Plan
Continue discussions to determine how costs will be allocated. (Town, MaineDOT, WMTS)

Finalize the Span of Service
Continue discussions to finalize the hours of service given fiscal constraints. (Town, WMTS)

Develop a Bus Stop Plan
Identify bus stop locations and amenities (signs, ADA infrastructure, benches, shelters). (Town)

Finalize the New ADA Service Plan
Setup ADA eligibility determination/approval process with support from the operator. (Town, WMTS)

Summer

Procure Bus Stop Signs and Amenities
Purchase and install the signs, shelters, and other materials needed for new bus stops. (Town)

Take Delivery of New Vehicles and Apply New Branding
WMTS is receiving four new vehicles for this expanded service (two for active service, one spare and one for ADA paratransit); delivery is expected in Summer 2021. (WMTS)

Coordinate Schedules with Connecting Services
Confirm scheduled connections with METRO BREEZ, Amtrak Downeaster, and Blue Line. (Town, WMTS)

Finalize New Schedule
Runcut the new schedule (operator). (Town, WMTS)

Fall

Develop Communications Materials
Design and produce new schedules, brochures, and update website to reflect the new service options, service name, and updated brand. Provide educational opportunities. (Town, WMTS)

Install the Bus Stop Signs
Obtain necessary permissions and install signs. (Town)

Launch the New Service
Begin providing the new service. (Town, WMTS)

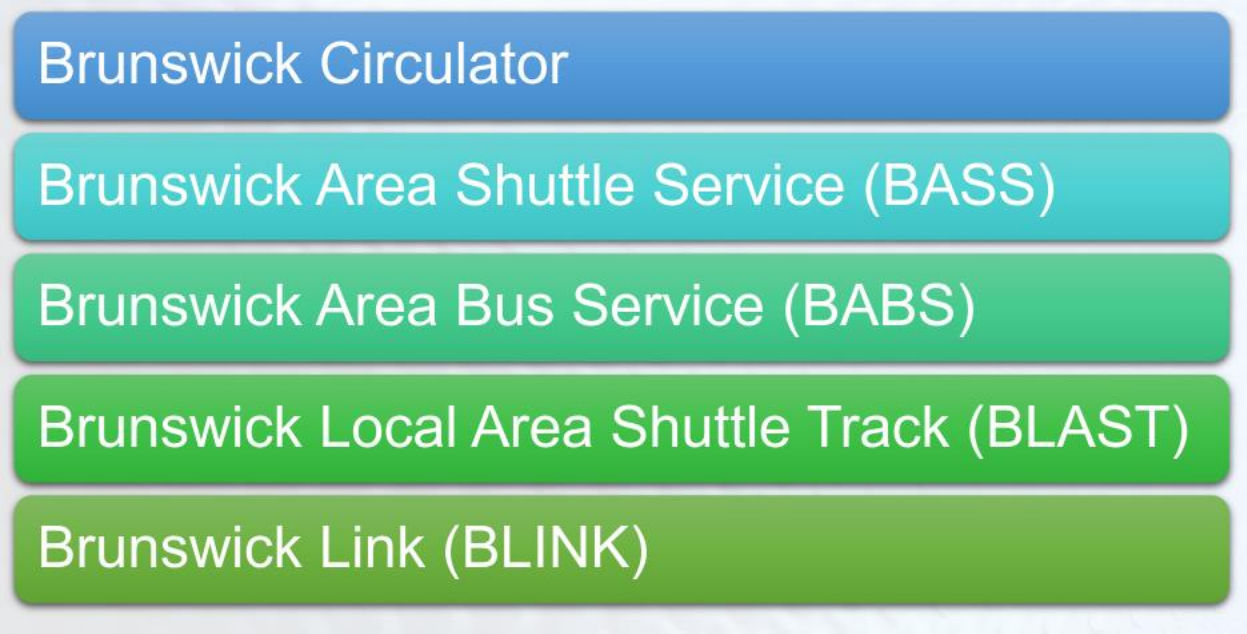
Marketing Plan

As part of the Implementation Plan the Town of Brunswick and WMTS should use the launch of service as an opportunity to market the new faster, more direct, convenient, community-focused local service. The following marketing plan was developed by the project team to use as a reference leading up to the launch of the new service and includes guidance on rebranding the service, public engagement strategies that should be followed to ensure that existing riders and new potential customers are aware of the new service patterns, and industry-wide best practices and lessons learned from marketing other system redesigns.

Rebranding Service

When transit providers redesign their systems, many choose to rebrand the service as part of a strategy to leverage the redesign to build excitement among existing customers and potential riders. As part of the planning process, the study team developed a menu of new identities for the Brunswick Explorer (Figure 25). The options were presented to the Brunswick Town Council and the rest of the project team at the end of the planning process. After further discussion the re-branded name selected was the **Brunswick Link – the Link or B-Link**.

Figure 25. Rebranding Options



When rebranding the service, it is important that the new identity is carried into all aspects of the service, creating a unified brand that is easily recognizable to riders. The Town of Brunswick and WMTS should coordinate to make sure that branding is consistent across all media including: the website, schedules, maps, service notices, social media, and bus wraps.

Public Outreach

A robust public outreach process is an essential component of a successful system redesign. Riders who have been using the service prior to the redesign risk being alienated if there is not sufficient education and outreach leading up to the launch of the new service. The Town and WMTS should work together to develop a Public Engagement Plan (PEP) in the months leading up to the launch of the new service to make sure their customers are sufficiently supported during the transition to the new service. A PEP guiding the launch of a new service should cover three phases: pre-implementation, the day of the new service launch, and post-implementation (Figure 26).

Figure 26. Basic Elements in a Public Engagement Plan

Pre-Implementation

- Inform public of high level changes coming
- Develop public schedules and create a media plan and marketing material to push the information out digitally and non-digitally through the Brunswick Explorer's platforms (e.g. website) and various stakeholder channels
- Create a plan for installing new bus stops
- Post notices at bus stops to be eliminated or changed at least two weeks in advance
- Have staff members ride the Explorer where service will be modified at least two weeks in advance to inform riders
- Contact riders who have scheduled deviated fixed route trips in the past to raise awareness about new ADA service and register them for service if they are eligible
- Place staff at key bus stops along the route to share marketing material with customers one week prior to new service implementation

Day of New Service Rollout

- Uncover any new bus stop signs
- Place staff at key bus stops to assist customers and answer questions
- For one week, have an individual on stand-by to pick up passengers who are stranded at modified stops and unaware of changes, offering transportation to the nearest bus stop

Post-Implementation

- Obtain rider, operator and staff feedback

Best Practices

As other system redesigns have been implemented, additional strategies have been identified as being key to a successful transition to new service. Transit providers have lauded the following as best practices or important lessons learned during their own system redesigns:

- Make the service free for one to two weeks so that customers can adjust to the system
- Integrating new technology at the same time may seem daunting, but it is easier to implement while other elements are changing than after changes are implemented
- Do not underestimate the amount of public outreach needed

- Rebranding the service at the same time helps distinguish between the old and the new
- The process is much smoother if there is a board member or elected official who is a “champion” of the redesign
- Internal and cross-departmental communication is key; setting up standing meetings for cross-department check-in can make the process go smoother

Developing a solid brand and outreach strategy and investing in the materials and manpower needed to support the strategy will be key to the successful launch of the new Brunswick Link service. Through marketing, the Town of Brunswick and WMTS can sustain their existing ridership and attract new customers to the improved service.

Appendix A Existing Operations (Expanded)

The transit services currently operating in Brunswick include (as of April 2021, Greyhound intercity bus service has been suspended in Brunswick):

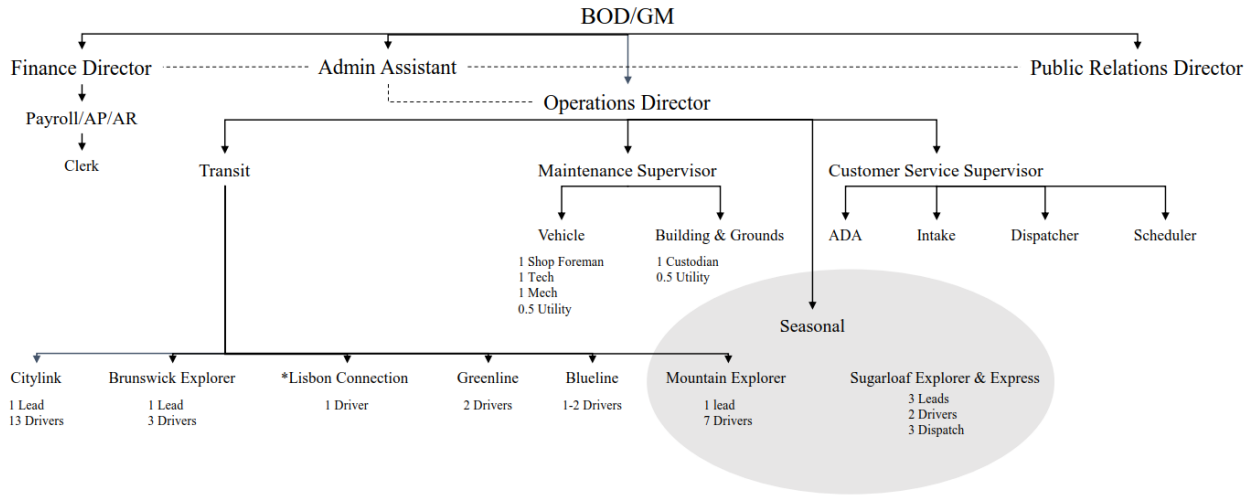
- Brunswick Explorer: local circulation in the Town of Brunswick
- METRO BREEZ: regional connections to Freeport and Portland
- Bath CityBus: local circulation in the City of Bath
- Mid-Coast Public Transportation: program-specific non-emergency medical transportation
- Amtrak Downeaster: intercity passenger rail service to points south including Portland and Boston
- Concord Coach: intercity bus service to points north and south including Camden, Rockport, and Bangor and Portland and Boston

Brunswick Explorer is the primary focus of the routing and local circulation needs elements of this study, but overall transportation needs throughout the Town and connecting to other communities in the region includes the other public transportation services.

Brunswick Explorer

The Brunswick Explorer is a public-private partnership with funding provided by the Federal Transit Administration (FTA), the Maine Department of Transportation (MaineDOT), the Town of Brunswick, and several local funding partners. The route began operating in 2010 as a result of a collaborative effort with the Midcoast Collaborative for Access to Transportation, which showed the need for public transit in Brunswick. The route was originally operated by Coastal Trans but in April 2016 was taken over by Western Maine Transportation Services (WMTS). WMTS was created in 1976 as a non-profit public transportation corporation to serve transportation needs in the region and operates several routes and transit services in surrounding communities. WMTS is overseen by a board of directors, with a general manager and team responsible for the day to day operations (Figure 27). Three drivers (2.5 FTE) are needed to operate the Brunswick Explorer service, including one lead driver who acts as dispatcher and supervisor.

Figure 27. WMTS Organization Chart



Source: WMTS

Description of Existing Service

The Brunswick Explorer is a deviated fixed route and will deviate up to ¾ mile off the route to pick up and drop off passengers when advance notice is provided. The route operates on weekdays[5] only between 7:00 AM and 4:42 PM, with nine round trips daily connecting many major destinations throughout the Town. Service begins at Mallard Pond and heads eastbound serving downtown, Woodlawn Towers, Pejepscot Terrace, Cook's Corner, Walmart, Mid Coast Hospital and terminates at Sweester. Heading westbound, the route serves Walmart, Cook's Corner, Merrymeeting Plaza, Pejepscot Terrace, Woodlawn Towers, downtown Brunswick, Parkview Hospital, and Baribeau Drive before arriving at Mallard Pond. Limited service is provided to Brunswick Landing on select trips throughout the day in both directions (Figure 28). Additionally, there is one trip in the afternoon to Brunswick High School to transport individuals to an after-school program at People Plus.

The bus will automatically stop at each location listed on the schedule with a timepoint. The Explorer has 18 scheduled stops, 19 deviation stops, 1 flag stop, 49 on-request stops, and 3 stops that vary depending on the time of day or direction of travel. The scheduled stops, flag stop, and the stops that vary throughout the day comprised 23 percent of all locations the route stopped in 2019 (Figure 28). The majority of stops (55 percent) were on-request stops. Deviated stops comprised the remaining 22 percent of locations.

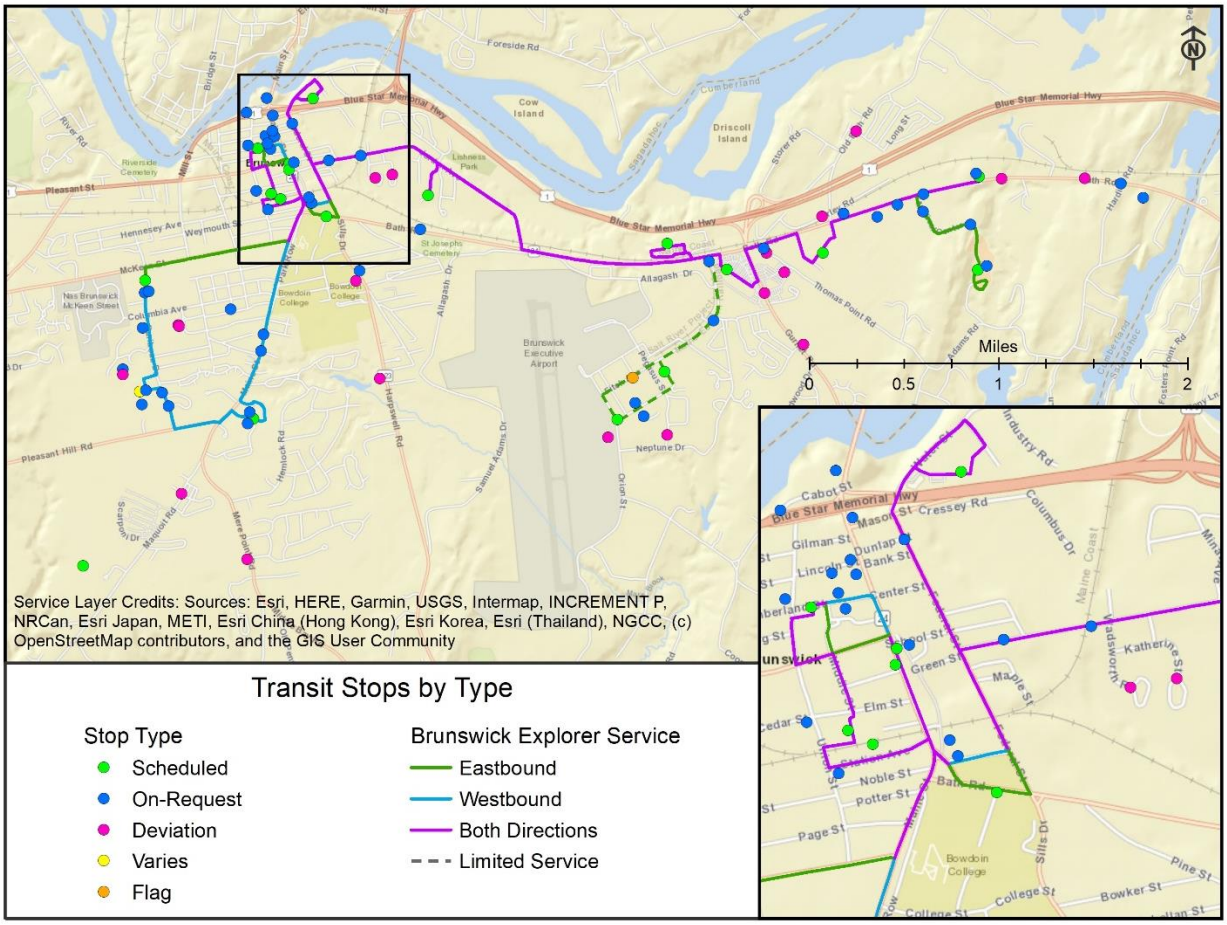
- **Scheduled Stop:** No advance notice is needed. The bus will automatically stop at this location. Stops are typically signed.
- **On-request Stop:** Stop is not listed on the schedule, typically does not have bus stop signs, and is located along the route's alignment. Individuals must call at least an hour beforehand to be picked up. If on-board, the passenger can indicate to the driver they would like to get off.
- **Deviation Stop:** Stop is not listed on the schedule, typically does not have bus stop signs, and is not located along the route's alignment. Individuals must call at least 24 hours beforehand to request a pickup or drop off.

[5] Except the following major holidays: New Year's Day, Memorial Day, 4th of July, Labor Day, Christmas Day, Thanksgiving.

– **Flag stop:** The bus will only stop if an individual is waiting at this location and flags the driver to get on or notifies the driver they would like to get off. The schedule indicates which stops are flag stops.

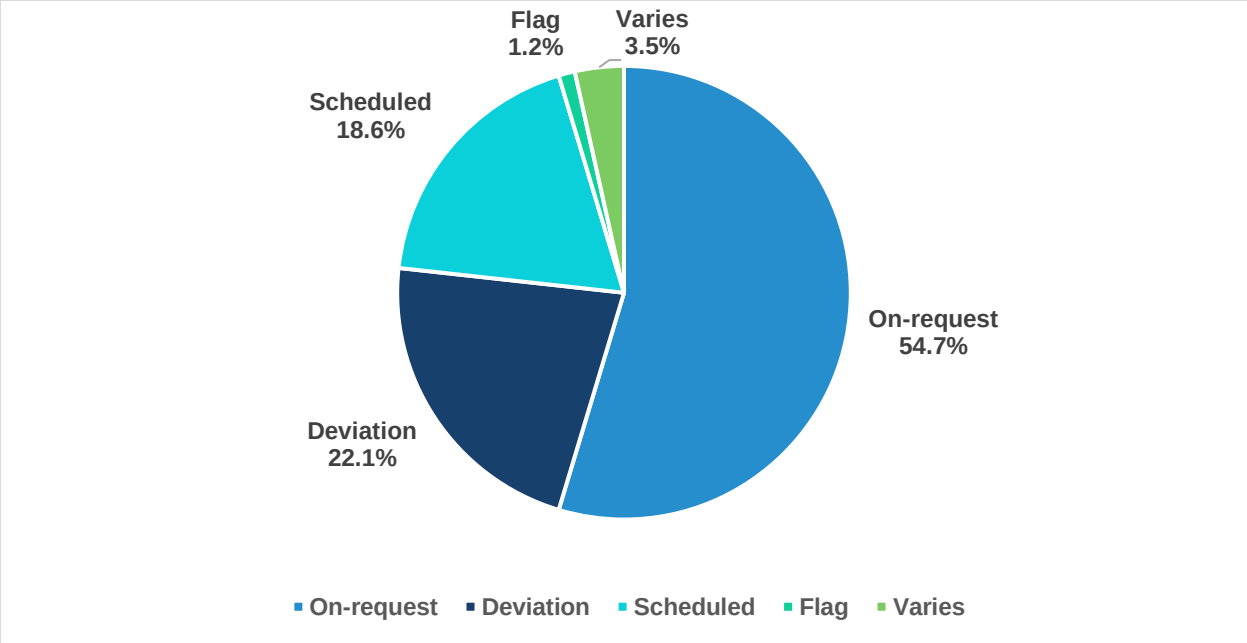
Roadway restrictions in Town impact the routing of the transit service. Downtown Brunswick has numerous one-way streets that are narrow and difficult to navigate. In the summer months, the issue is exacerbated by traffic because of tourism. While not currently used by the Brunswick Explorer, three bridges have restrictions that could impact routing. The Frank J Wood Bridge over the Androscoggin River has a weight restriction, and the Mill Street bridge between Cushing Street and Cumberland Street and the Jordan Avenue bridge between Stetson Street and Wadsworth Road have height restrictions.

Figure 28. Brunswick Explorer Map



Source: WMTS

Figure 29. Brunswick Explorer Stop Type

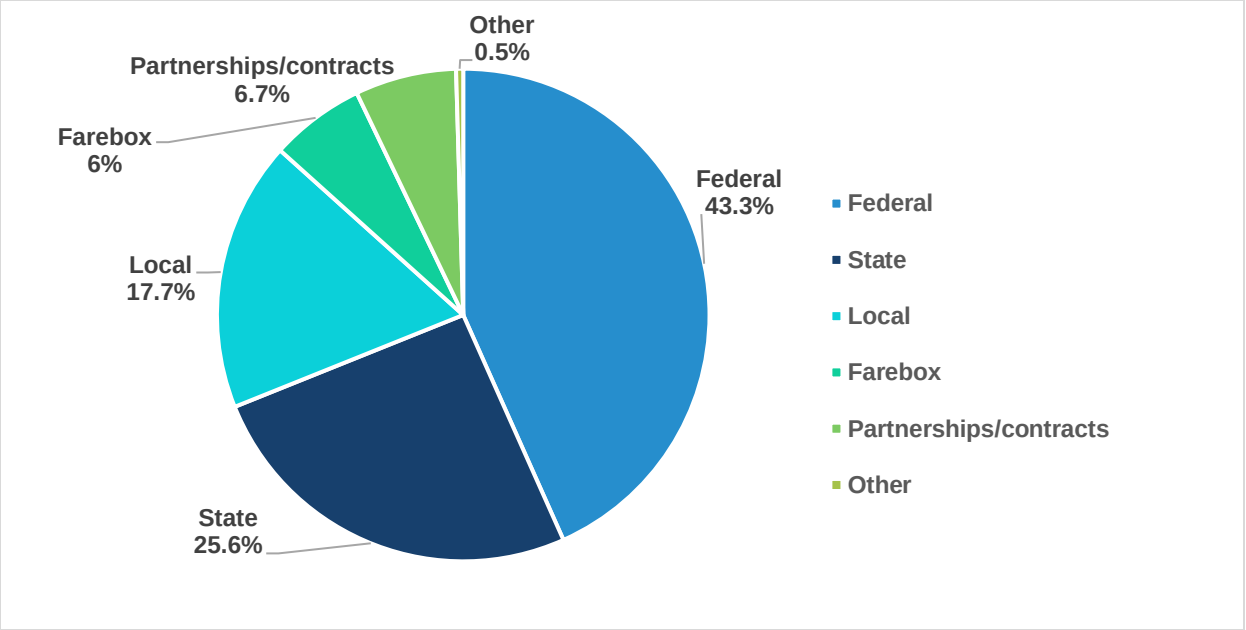


Source: WMTS

Funding

The fiscal year (FY) 2019 operating cost for the Brunswick Explorer was $314,146, which was an increase of 11.9 percent from FY 2017. The Brunswick Explorer is funded through fare revenue, contracts/partnerships, federal funding, state subsidies, and other (advertising revenue). The largest share of funding (43 percent) is federal, followed by the state (Figure 30). Overall 13 percent of the cost of service is from within (fares, partnerships, and advertising revenue). The Brunswick Explorer has five contracts, including sponsors, fares, and advertising.

Figure 30.Brunswick Explorer Funding (FY 2019)



Source: WMTS

Table 11. Brunswick Partnerships and Contracts

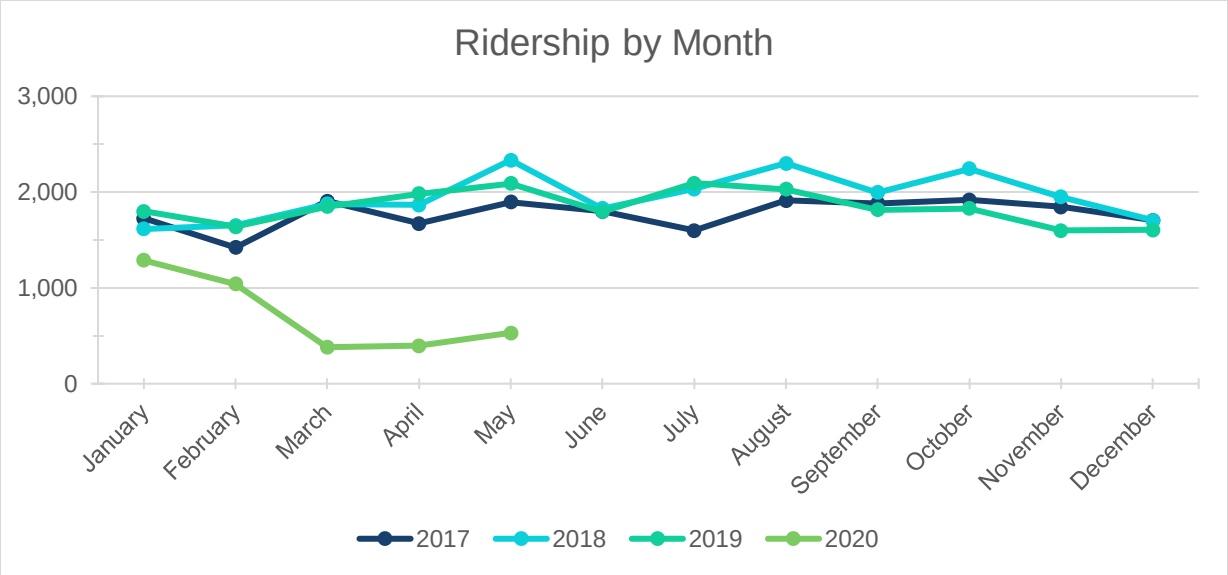
Contract	Revenue	Description
Brunswick Housing Authority	$10,000	Sponsors service
Sweetser	$10,000	Sponsors service
Creekside	$2,500	Sponsors service
Southern Maine Community College	$305	SMCC pays the fares for all students showing an ID
Mid Coast Parkview	$1,577	Advertising revenue

Source: WMTS

Ridership

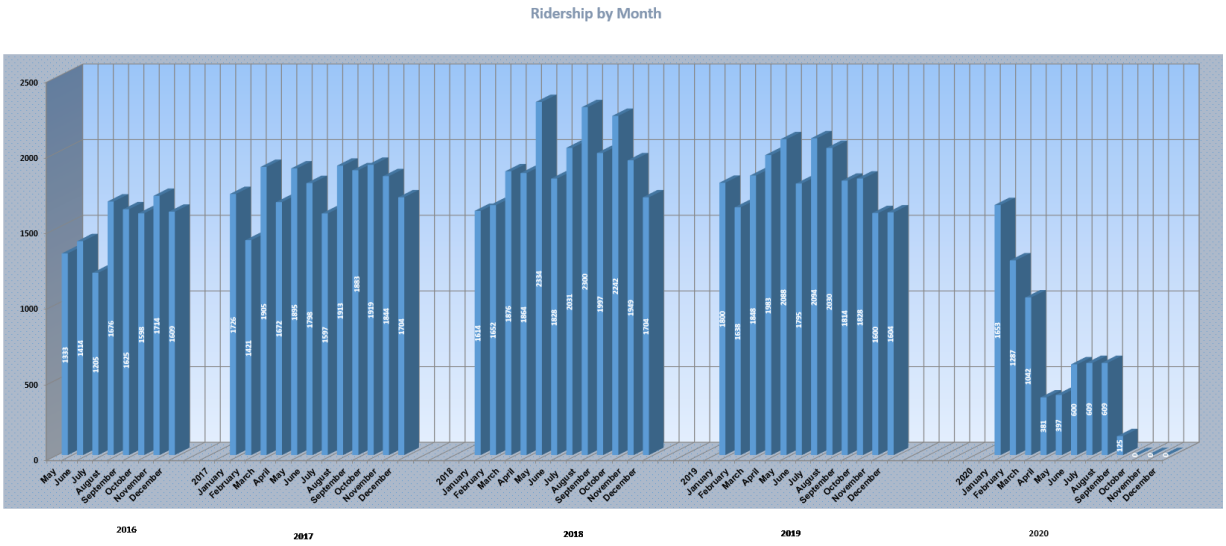
Ridership is counted using a tablet that the driver can tap each time someone boards and it geolocates their location. The tablet also allows the dispatcher to feed in any deviations or request stops. Ridership between 2017 and 2019 remained steady around 22,000 annually, but in 2020 decreased significantly due to the global pandemic (Figure 31). Prior to the pandemic, ridership averaged 1,844 per month, or 425 per week. Figure 34 is a map of annual ridership activity by stop. The top five stops with the highest ridership were Hannaford, Woodlawn Towers, Walmart, Cook's Corner Mall, and Mallard Pond. Among the scheduled stops,15 stops have at least one passenger per day, with Hannaford having 19 and Woodlawn Towers 12 (Figure 35). Of the scheduled stops, only three stops (The Landing, Walgreens, Brunswick Mall (west)) average less than one person per week (Figure 36). For the unscheduled stops, the most popular deviation is Jordan Court and the top request stop is Creekside. Jordan Court is the only deviation stop to average more than one passenger per week (two passengers), but four request stops average more than one passenger per week: Creekside Village – six, Family Practice – three, Dionne Commons – two, and Pheasant Run – three.

Figure 31. Monthly Ridership (2017–2020)



Source: WMTS

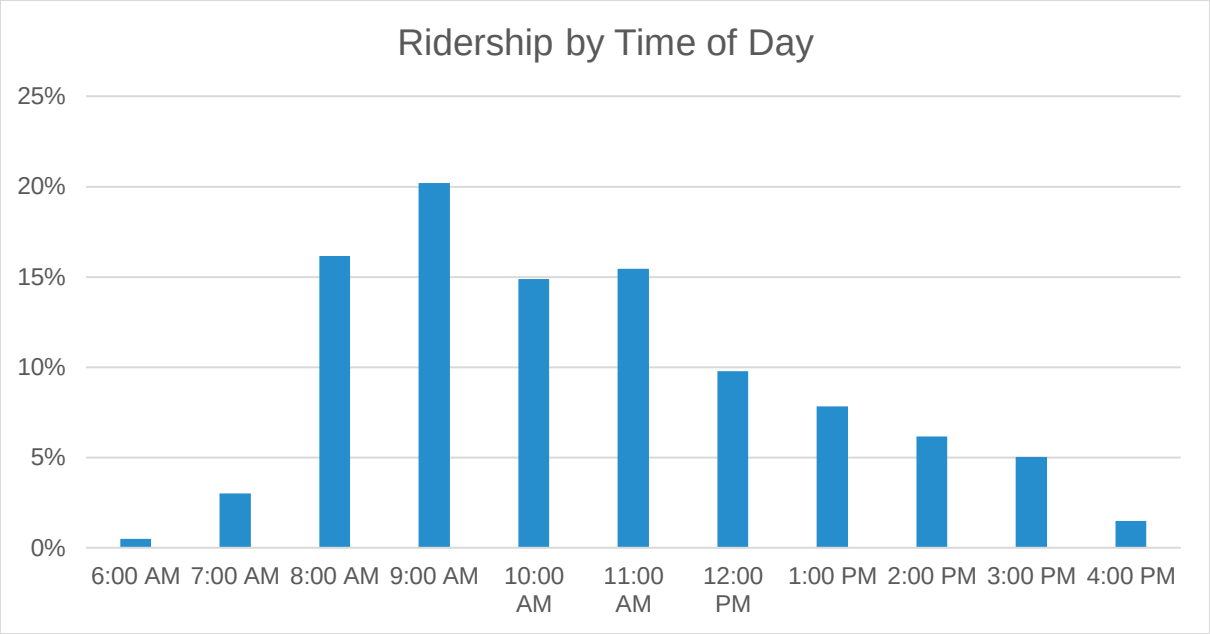
Figure 32. Ridership 2016-2020



Source: WMTS

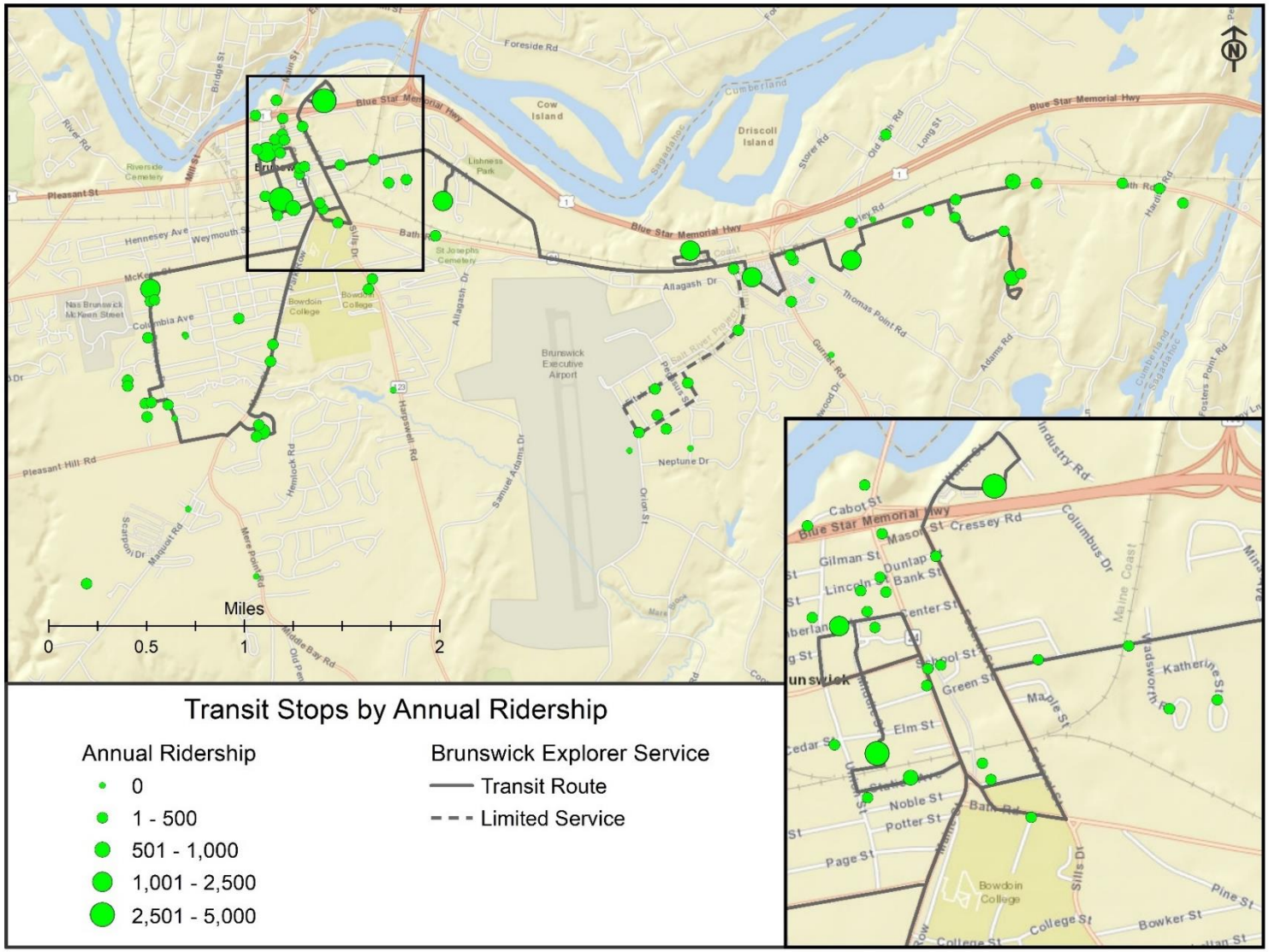
Time of day ridership is available for on-request and deviation stops (both pick-ups and drop offs). This data can give an approximate idea of travel patterns, but it only represents about 6.5 percent of ridership. Figure 33 provides a breakdown of the percentage of ridership that occurs during each hour of service. There is very little ridership before 8:00 AM, when it begins to increase rapidly, peaking at 9:00 AM. Between 10:00 AM and 4:00 PM ridership slowly declines.

Figure 33. Ridership by Time of Day



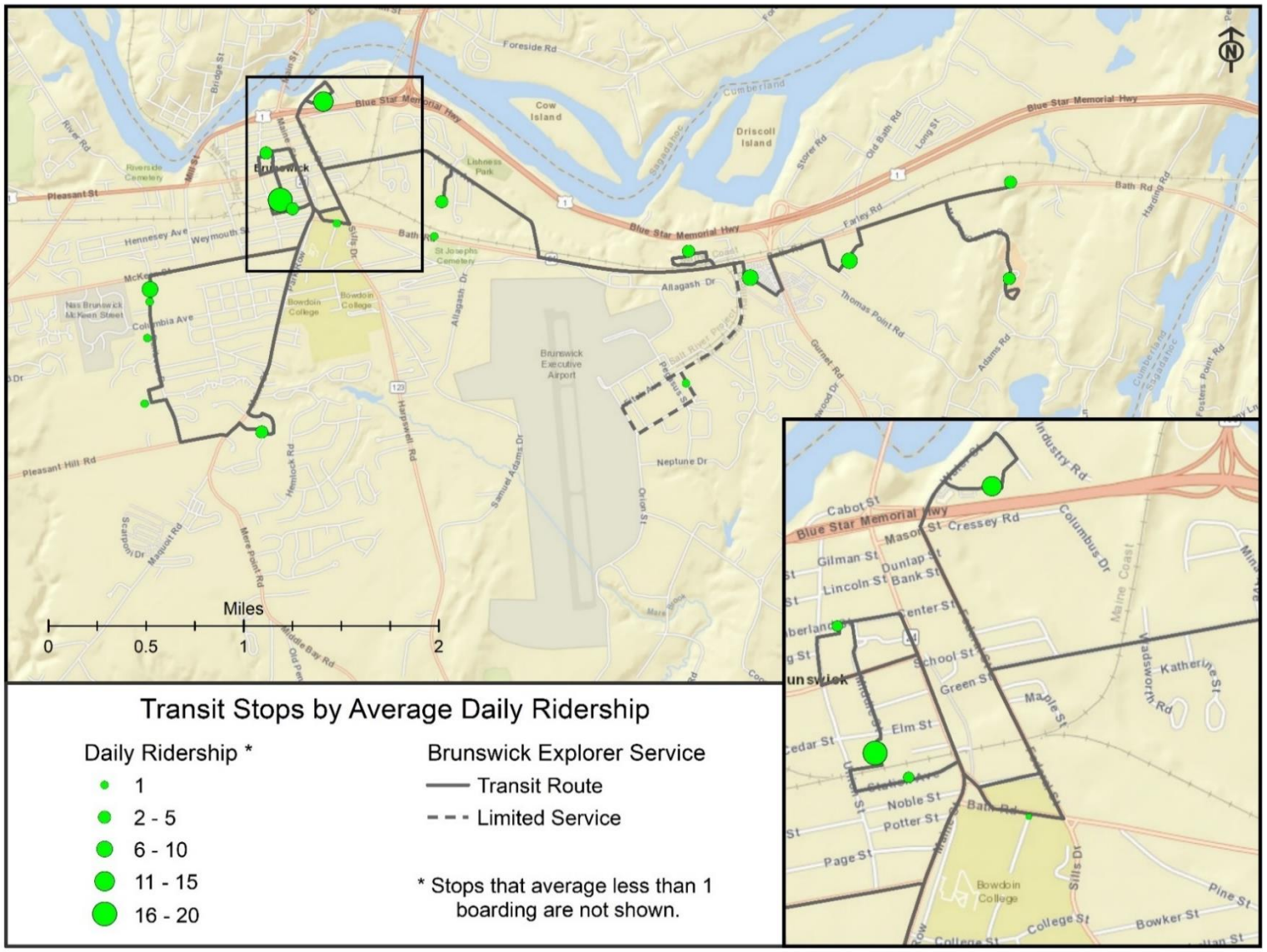
Source: WMTS

Figure 34. Annual Ridership by Stop



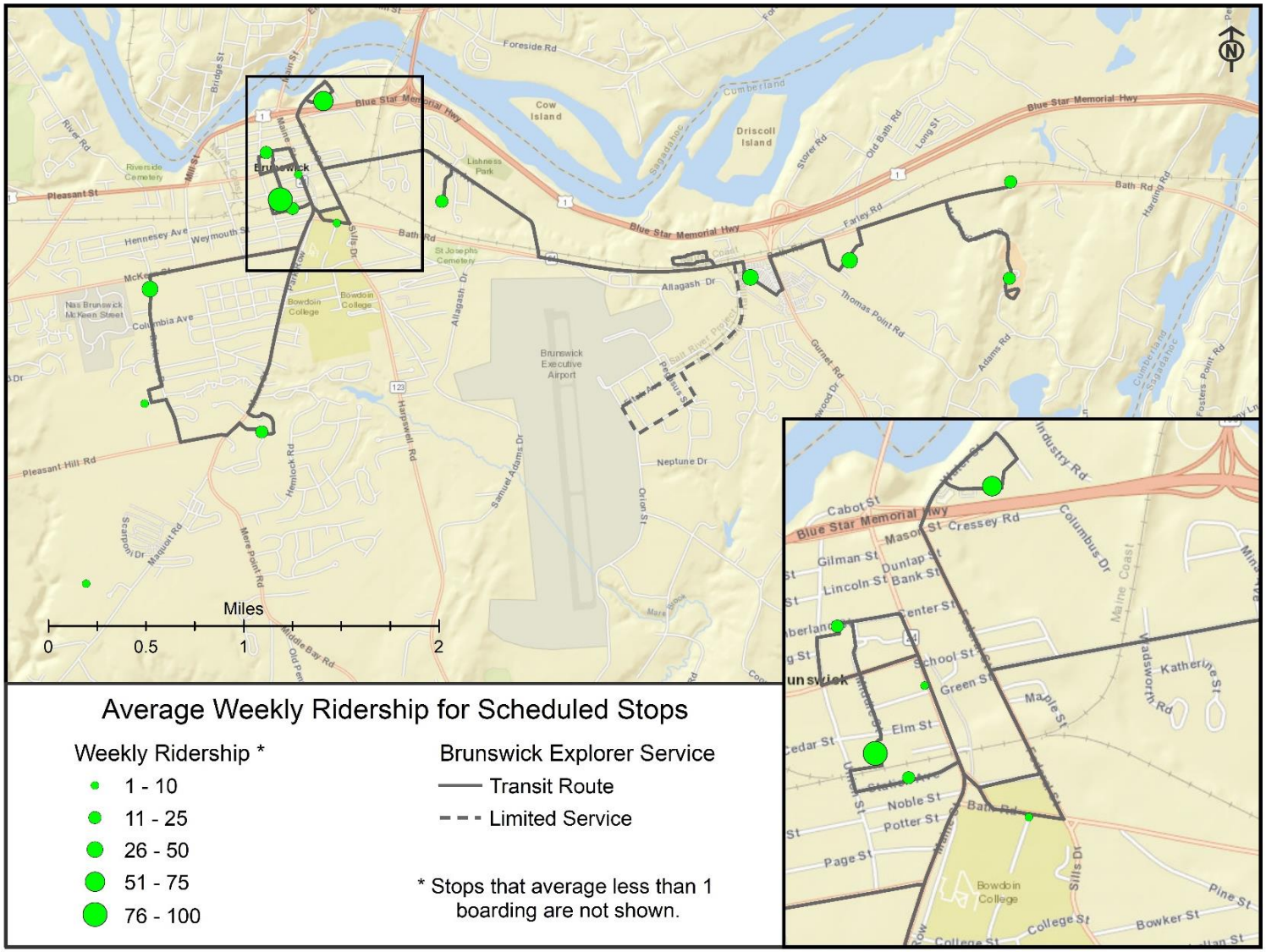
Source: WMTS

Figure 35. Average Daily Ridership for Scheduled Stops



Source: WMTS

Figure 36. Average Weekly Ridership for Scheduled Stops



Source: WMTS

Performance Evaluation

In FY 2019 the Brunswick Explorer operated 4,394 revenue hours of service over 52,160 revenue miles. Of the 52,160 revenue miles, 97 percent were scheduled, and 3 percent were for deviations. Overall, the route carried 5.03 passengers per revenue hour, which is less than state and national averages. While Brunswick is in an urbanized area, designated due to population size by the US Census Bureau, the Brunswick Explorer operates more like a rural transit service than an urban one, which is expected given the history of the route's development. The cost to operate the service per hour is less than the state, national, and rural averages and the cost per mile is less than the national average, on par with the state, but more than rural systems. While the operating cost is efficient, the cost per passenger is higher than the state and national averages, as is the subsidy per passenger. Farebox recovery is low. The financial data indicates that the system is being operated financially efficiently, and it is lower ridership that is creating higher costs per passenger. A more in-depth analysis on how the Brunswick Explorer is performing compared to peer systems follows in a later section.

Table 12. Route Productivity (2019)

Measure	Passengers/Mile	Passengers/Hour
Brunswick Explorer	0.42	5.03
Maine Average	1.19	16.0
National Average	2.26	27.21
National Rural Average	0.15	2.6

Source: WMTS, NTD

Table 13. Financial Productivity (2019)

Measure	Cost/ Mile	Cost/ Hour	Cost/ Passenger	Subsidy/ Passenger	Farebox Recovery
Brunswick Explorer	$6.02	$71.50	$14.20	$13.35	6.68%
Maine Average	$6.06	$80.91	$5.06	$4.14	18.20%
National Average	$11.15	$133.99	$4.92	$4.92	22.08%
National Rural Average	$3.51	$102.72	$9.11	$8.02	12%

Source: WMTS, NTD

Asset Management

Vehicles

When WMTS took over operating the Brunswick Explorer, they acquired the three branded vehicles. Two vehicles are needed in peak, and the third is a spare. Since then, the spare bus has been used for parts to maintain the other two as they are the original buses procured when the service began operating in 2010. If one of the two operating vehicles is down for maintenance, WMTS utilizes another vehicle from

their fleet in order to operate the routes per the schedule[6]. The two vehicles are 2010 27-foot high-floor cutaways with a 16 + 2 configuration for seating (16 seats and 2 wheelchair positions). They are hybrid vehicles, but due to their age and condition, the electric component of the hybrid no longer works and the vehicles operate entirely using gasoline. The vehicles are beyond their designated useful life and need to be replaced as many components, including the floors, have already been rebuilt to extend the life. Maintenance on the vehicles is completed at the WMTS facility in Auburn, although some larger projects are contracted out. In 2019 $13,240 (4.2 percent of the operating cost) was spent on parts, supplies, and contracted out maintenance work, an increase of $2,872 from 2017.

WMTS procures vehicles from the state bid list. The vehicles should be replaced with low floor cutaways given the concentration of older adults utilizing the service. Due to the narrow roadways, the vehicles cannot be wider than 96 inches. The cost to replace each of the vehicles would be around $180,000,[7] a total of $540,000 for three vehicles. Typically funding for vehicles comes from federal, state, and local sources using an 80/20 match where federal funds cover 80 percent of the vehicle cost. The remaining 20 percent must be covered by other sources, and, in Maine, the state has typically covered half of the 20 percent match. Under this potential scenario, the state would cover $54,000, and federal funds would cover $432,000, but the remaining $54,000 would need to come from local sources.

Technology

To operate the Brunswick Explorer, various technologies are used as outlined in Table 14.

Table 14. Brunswick Explorer Technology

Technology	Technology Used (Yes/No)	Vendor	Comments
Automatic vehicle locations	Yes	Sychromatics	For dispatch only
Automatic passenger counters	No	—	Manual passenger counting, including some GPS information, is possible using the tablets
Mobile trip planning app	No	—	—
Smartcard	Yes	—	SmartCommute Card
Automated announcements	No	—	—
Contactless Fare payment	Yes	—	—
On-board cameras	Yes	Pro vision	Not operational
Service alert system	No	—	Social media is used
Dispatching software	Yes	Easy Rides	—
Fixed route scheduling	Yes	Easy Rides	Beta testing in process
On board tablets	Yes	—	—

Source: WMTS

[6] As of October 2020, only one of the Brunswick Explorer branded vehicles is operational. WMTS is using another vehicle from their fleet to operate the service daily.

[7] Based on similar vehicle costs from the American Public Transportation Association (APTA) fleet database for 27-inch low floor cutaways, that are 96 inches wide and not hybrid.

Fare Policy

Brunswick Explorer fares may be paid with cash, credit card, debit card, SmartCommute Pass, or Apple, Samsung, and Android mobile pay. In October 2019 WMTS expanded the fare collection[8] system to an open payment system and launched the SmartCommute Pass on all WMTS vehicles, including those used on the Brunswick Explorer route. This coincided with a fare increase of $0.50 and elimination of multi-ride passes. The SmartCommute Pass is a stored value card that individuals can use to pay for trips. To incentive its use, for every $50 loaded onto the card, an additional 10 percent in value is added. Additionally, the technology allows individuals to pay the fare on board using one of the various mobile payment apps or traditional credit/debit cards. The single trip fare for the Brunswick Explorer is $2; day passes are also available for $5, which allow for unlimited trip use. There are no discount fares and there is no additional charge for deviations.

Figure 37. SmartCommute Pass

Source: WMTS

Peer Analysis

As part of this study, a peer review was prepared to gain an understanding of how other similar systems are operating compared to the Brunswick Explorer. Although each transit system is unique, the similarities and differences in these six peers provide useful insight into how service is provided and operated.

Description of Peers

Peers were selected that operate three routes or less, have populations or population densities similar to Brunswick, are rural or small urban reporters, and are geographically dispersed. Data was gathered from the National Transit Database (NTD), agency websites, and the U.S. Census Bureau. Table 15 outlines the peers selected for this analysis: CitiBus, Oldham's Public Bus, Altavista Community Transit System, Lyon County Area Transportation, Coos County Area Transit, and Sweetwater Transit Authority Resources. Brunswick has a higher population compared to most of its peers; however, it has a relatively small population density. Compared to peers, Brunswick has lower poverty levels but a median household income that is on par with the peers. The percentage of the population that is minority for Brunswick is five percentage points lower than the closest peer; this corresponds with low levels of limited English

[8] For cash fare payments there is a traditional vault style farebox.

proficiency (LEP) individuals. Brunswick does have an older population than five of its peers[9]. Four of the six peers have colleges or universities (Table 17). In each of the peer communities, the peer is the only public transit provider, and a few operate other services such as commuter bus or intercity transit.

All peers but CityBus operate routes with an hourly headway, like the Brunswick Explorer (Table 16). Three of the peers operate Saturday service and none provide Sunday service. While service hours vary slightly, Brunswick Explorer hours are in line with the peers. Among peers, Brunswick Explorer ranks fourth in ridership, but has lower ridership than the peer average. Operating costs vary widely, but the Brunswick Explorer is in line with the average. Brunswick Explorer fare revenue is greater than all but two peers (Table 19).

Table 15. Peer System Characteristics

System	Location	Population	Density
CitiBus	Watertown, NY	24,838	2,996
Oldham's Public Bus	La Grange City, KY	8,082	1,100
Altavista Community Transit System (ACTS)	Altavista, VA	3,450	676
Lyon County Area Transportation (LCAT)	Lyon County, KS	24,598	2,100
Coos County Area Transit (CCAT)	Coos County, OR	16,361	1,544
Sweetwater Transit Authority Resources (STAR)	Sweetwater County, WY	22,653	1,191
Brunswick Explorer	Brunswick, ME	20,535	435

Source: WMTS, NTD

Table 16. Peer Service Characteristics

System	Number of Routes	Average Headway	Deviated Fixed Route?	Days Operated	Service Span
CitiBus	3	40 minutes	No	M-Sa	7:00 AM-5:00 PM
Oldham's Public Bus	1	1 hour	Yes	M-F	6:00 AM-5:00 PM
Altavista Community Transit System (ACTS)	1	1 hour	Yes	M-Sa	8:00 AM-6:00 PM
Lyon County Area Transportation (LCAT)	2	1 hour	Yes	M-Sa	6:45 AM-6:00 PM

[9] A more detailed demographic and socioeconomic profile of Brunswick is included in a later section of this document.

System	Number of Routes	Average Headway	Deviated Fixed Route?	Days Operated	Service Span
Coos County Area Transit (CCAT)	2	1 hour	No	M-F	8:30 AM-6:00 PM
Sweetwater Transit Authority Resources (STAR)	2	1 hour	Yes	M-F	7:00 AM-6:00 PM
Brunswick Explorer	1	1 hour	Yes	M-F	7:00 AM-5:00 PM

Source: WMTS, NTD

Table 17. Peer Community Characteristics

System	College Present	Connect to Other Transit Systems
CitiBus	Yes	Trailways intercity
Oldham's Public Bus	No	No- TARC discontinued in 2016
Altavista Community Transit System (ACTS)	No	Virginia BREEZe
Lyon County Area Transportation (LCAT)	Yes	LCAT also operates county routes
Coos County Area Transit (CCAT)	Yes	CCAT also operates intercity routes
Sweetwater Transit Authority Resources (STAR)	Yes	No
Brunswick Explorer	Yes	Yes - METRO BREEZ, Downeaster

Source: WMTS, NTD

Table 18. Peer Census Characteristics

System	% Below the Poverty Line	Median Household Income	Minority %	Seniors (65+)	LEP	% no Car Households
CitiBus	25.6%	$41,339	21%	12%	2.9%	18.5%
Oldham's Public Bus	15.3%	$59,266	19%	13%	1.1%	7.7%
Altavista Community Transit System (ACTS)	24.1%	$34,659	38%	21%	2.3%	15.4%
Lyon County Area Transportation (LCAT)	17.4%	$44,191	29%	14%	8.4%	6.8%
Coos County Area Transit (CCAT)	17.1%	$43,308	15%	25%	1.5%	8.4%
Sweetwater Transit Authority Resources (STAR)	12%	$73,008	20%	11%	3.9%	2.4%
Brunswick Explorer	12%	$54,646	9.8%	22.6%	0.9%	12.2%

Source: WMTS, NTD

Table 19. Peer Operating Statistics

System	Ridership	Rev. Miles	Rev. Hours	Operating Cost	Fare Revenue	VOMS	Avg. Fleet Age
CitiBus	107,431	113,018	10,109	$878,333	$107,378	3	13.8
Oldham's Public Bus	16,099	36,428	3,032	$134,158	$9,655	1	2.7
Altavista Community Transit System (ACTS)	19,584	47,993	3,021	$98,698	$5,258	2	N/A
Lyon County Area	19,591	60,451	4,792	$180,857	$9,143	2	N/A

System	Ridership	Rev. Miles	Rev. Hours	Operating Cost	Fare Revenue	VOMS	Avg. Fleet Age
Transportation (LCAT)							
Coos County Area Transit (CCAT)	28,097	69,699	5,050	$134,254	$27,943	3	N/A
Sweetwater Transit Authority Resources (STAR)	22,811	89,556	6,631	$272,173	$7,191	3	N/A
Peer Average	39,304	78,217	6,171	$335,437	$31,258	2.75	N/A
Brunswick Explorer	22,122	52,160	4,394	$314,146	$20,984	2	10

Source: WMTS, NTD

Funding and Fares

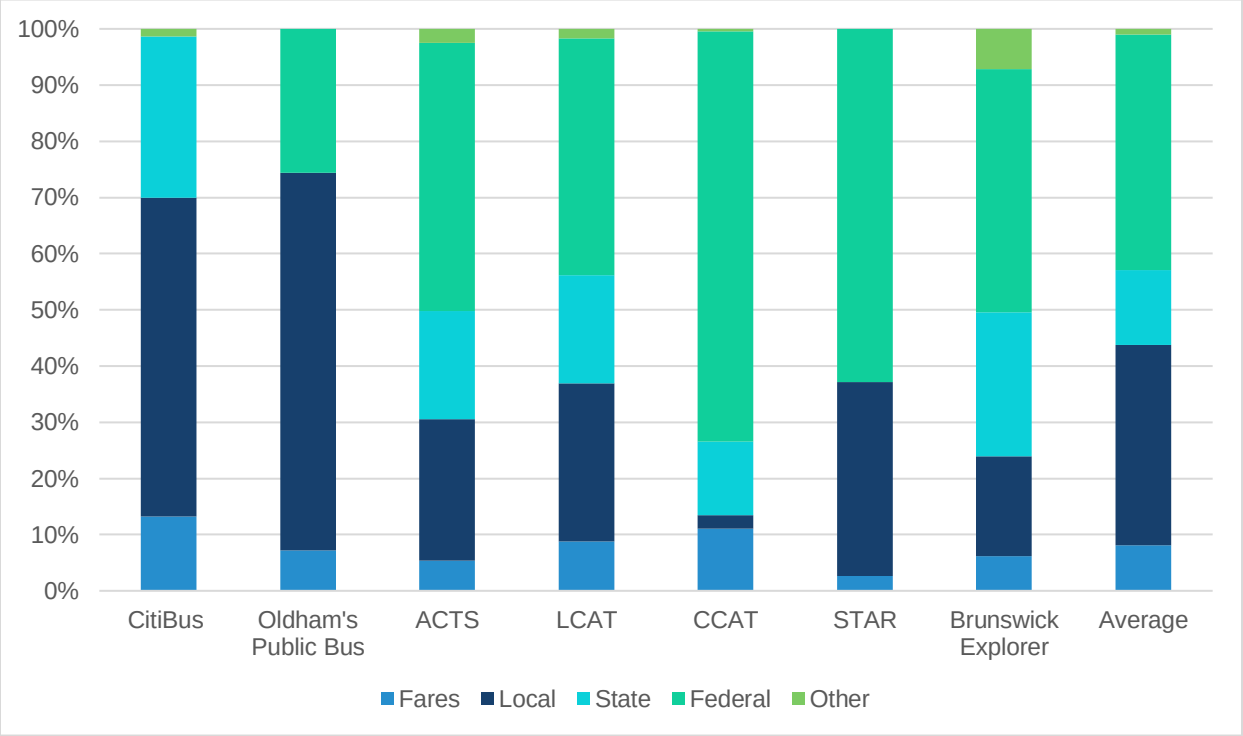
The Brunswick Explorer has the highest fare among the peers, and, like the peers that operate deviated fixed route service, do not charge a fee for deviation. For two of the peers, local funding makes up the largest share, but for the remaining four, federal funding is the largest share. Two peers do not receive any state funding and one does not receive federal funding. Overall, the Brunswick Explorer receives less local funding than the peer average, but more state funding (Figure 38). Federal funding for the Brunswick Explorer is just over of the peer average of 41.9 percent. Peer federal funding comes from FTA Sections 5307, 5310, and 5311. Capital expenses in FY 2019 ranged from $0 to $174,000; Brunswick Explorer had no capital funding because the only assets are the vehicles, and they are still the original vehicles (they have not been replaced since service inception). Peer capital funding from federal sources comes from FTA Sections 5339, 5310, and 5311.

Table 20. Peer Fares

System	Base Fare	Charge for Deviation
CitiBus	$1.50	N/A
Oldham's Public Bus	$1.00	No
Altavista Community Transit System (ACTS)	$0.50	No
Lyon County Area Transportation (LCAT)	$1.50	No
Coos County Area Transit (CCAT)	$1.00	N/A
Sweetwater Transit Authority Resources (STAR)	$2.00	No
Brunswick Explorer	$2.00	No

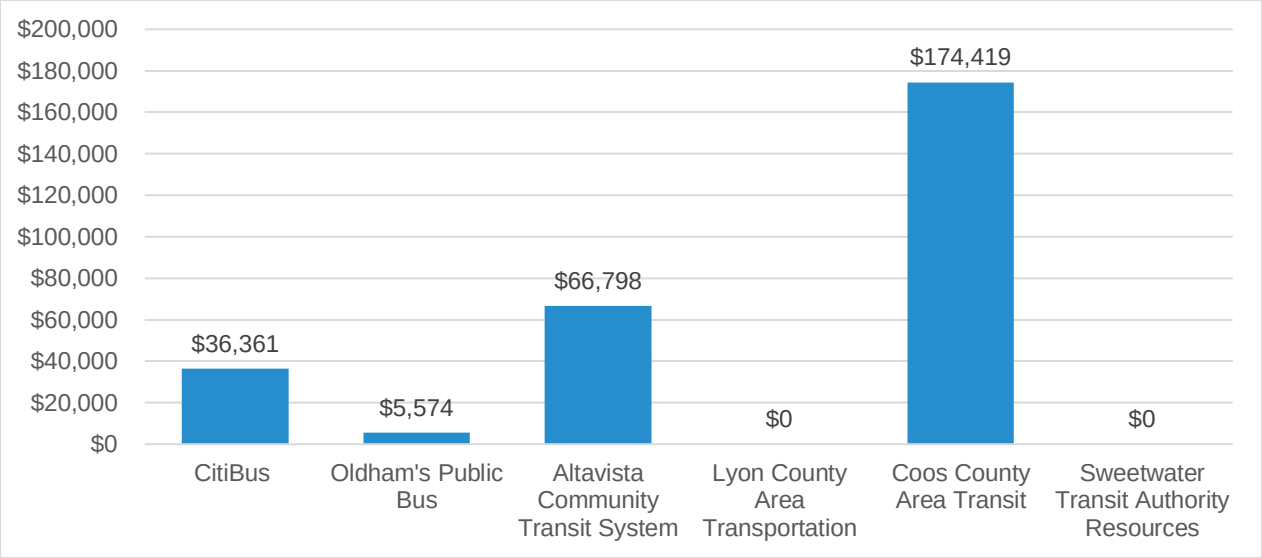
Source: WMTS, NTD

Figure 38. Peer Operating Funding Break Down



Source: WMTS, NTD

Figure 39. Peer Capital Funding



Source: WMTS, NTD

Performance

Comparing system performance in Brunswick Explorer falls within the middle of its peers (Table 21). Brunswick Explorer has passengers per hour greater than two peers, slightly below the peer average. In terms of financial efficiency, the Brunswick Explorer has a cost per hour higher than the peer average and the highest cost per passenger, but, despite this, has the third highest farebox recovery. The peer analysis shows that, while Brunswick Explorer has higher costs than peers, some of which may be geographic/region-specific in nature, they generate more fare revenue than most. Brunswick Explorer passenger trips per capita is less than half of the peer average, but this is as expected given the lower population density.

Table 21. Peer Performance Statistics

System	Cost/ Hour	Cost/ Passenger	Farebox Recovery	Passengers/ Hour	Trips/ Capita
CitiBus	$86.89	$8.18	12.2%	10.63	4.33
Oldham's Public Bus	$44.25	$8.33	7.2%	5.31	1.99
Altavista Community Transit System	$32.67	$5.04	5.3%	6.48	5.68
Lyon County Area Transportation (LCAT)	$37.74	$9.23	5.1%	4.09	0.80
Coos County Area Transit (CCAT)	$26.58	$4.78	20.8%	5.56	1.72
Sweetwater Transit Authority Resources (STAR)	$41.05	$11.93	2.6%	3.44	1.01
Peer Average	**$54.35**	**$8.53**	**9.3%**	**6.37**	**2.34**
Brunswick Explorer	$71.50	$14.14	6.7%	5.06	0.89

Source: WMTS, NTD

Technology

Overall, the peers lack technology such as mobile trip planning apps or real time schedule information (Table 22). Two of the peers do have schedule information in Google Transit. While some systems have punch cards and passes, no peers offer mobile payments or utilize smart cards or open payment systems like Brunswick Explorer.

Table 22. Peer Technology

System	Trip Planning App	Mobile Payment	Smart Card	Wi-fi on-board	Google Transit
CitiBus	No	No	No	No	No
Oldham's Public Bus	No	No	No	No	No
Altavista Community Transit System	No	No	No	No	No
Lyon County Area Transportation (LCAT)	No	No	No	No	No
Coos County Area Transit (CCAT)	No	No	No	No	Yes
Sweetwater Transit Authority Resources (STAR)	Yes	No	No	No	Yes
Brunswick Explorer	No	No	Yes	No	No

Source: WMTS, NTD

Key Findings

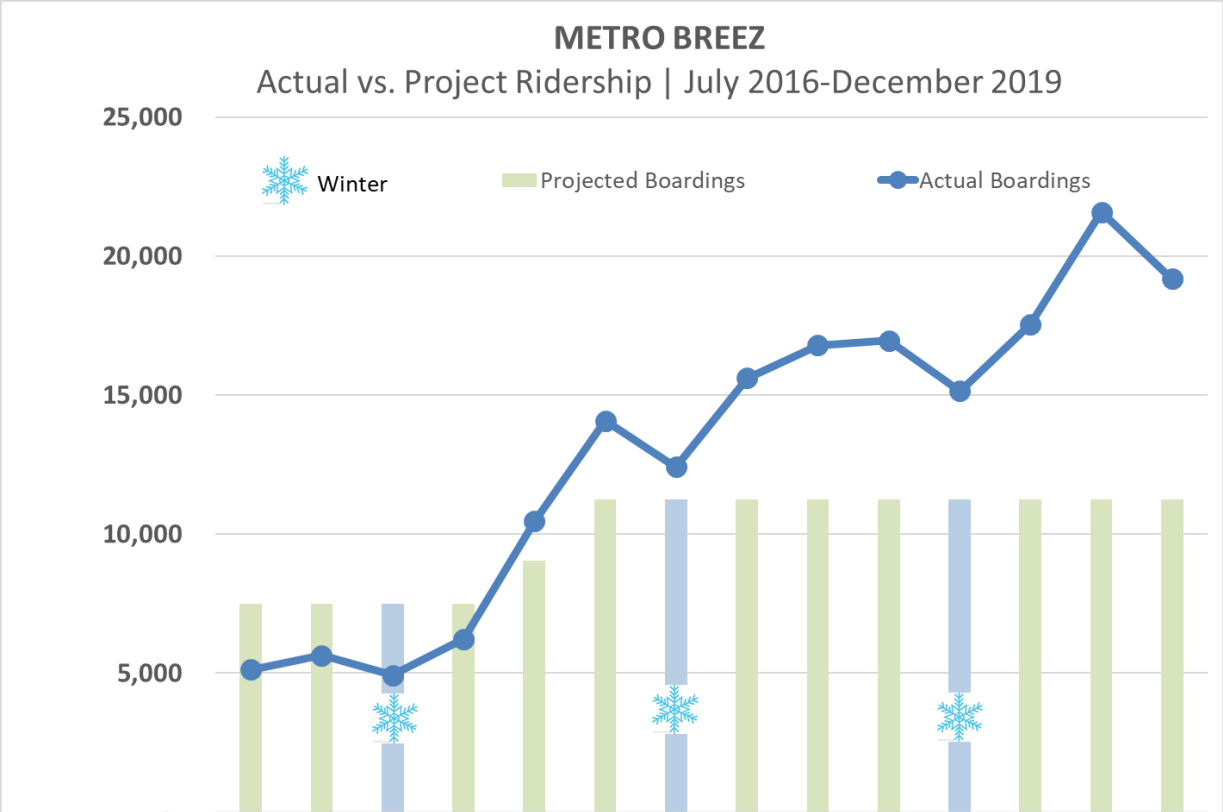
The following are key findings from the peer analysis:

- The Brunswick Explorer receives less local funding than almost all peers and has the second highest proportion of state funding.
- While the Brunswick Explorer has a lower farebox recovery than most peers, when accounting for other revenue generated from contracts and partnerships, its farebox recovery rate is among the highest.
- In terms of service consumed, the Brunswick Explorer has one of the lower rates for trips per capita, but this is as expected when population density is considered.
- Two-thirds of the peers incurred capital expenses in FY 2019, but Brunswick Explorer did not because the vehicles utilized for the service have never been replaced.
- Overall, peers, like the Brunswick Explorer, lack technology that aids in trip planning or fare payment.

Connecting Transit

Within Brunswick and surrounding communities are five other transit providers that connect Brunswick to the region at large (see Figure 42). Greater Portland METRO operates the BREEZ, an express route that connects Portland to Brunswick with stops in Yarmouth and Freeport. The BREEZ follows Route 1 into Brunswick, continues along Pleasant Street, turns right onto Maine Street, and stops in downtown before proceeding to the train station and the Bowdoin College. One-way fares are $3, with a reduced fare of $1.50 for those that qualify. The route operates 13.5 round trips on weekdays, with the first trip departing Brunswick at 5:55 AM and the last trip arriving at 10:18 PM. One-way travel time between the Portland Transportation Center and the Brunswick Train Station ranges from 0:58 to 1:10 minute depending on the time of day. On Saturdays there are 6.5 round trips with the first trip arriving in Brunswick at 9:03 AM and the last at 10:28 PM. There is no Sunday service. Ridership on the route grew substantially in the summer of 2017 when service was expanded to Brunswick and ridership began to exceed projections (Figure 40). In 2019 the route had 73,461 boardings, of which 29 percent were in Brunswick.

Figure 40. METRO BREEZ Ridership (July 2016 – December 2019)



	2016-Q3	2016-Q4	2017-Q1	2017-Q2	2017-Q3	2017-Q4	2018-Q1	2018-Q2	2018-Q3	2018-Q4	2019-Q1	2019-Q2	2019-Q3	2019-Q4
Projected Boardings	7,500	7,500	7,500	7,500	9,050	11,250	11,250	11,250	11,250	11,250	11,250	11,250	11,250	11,250
Actual Boardings	5,132	5,648	4,922	6,224	10,460	14,079	12,420	15,620	16,784	16,960	15,143	17,544	21,591	19,183

Source: Greater Portland METRO

The Bath CityBus runs weekdays from 8:00 AM to 5:00 PM and is operated by the City of Bath. Two routes, a North and a South route, circulate throughout the City using one bus to provide service on both routes. Both routes operate on hourly headways and will flex upon request to pick up passengers. The fare is $1 per trip and 12-ride passes can be purchased for $10. In addition to the two routes, the city provides service to Mid Coast Hospital in Brunswick and to Bath Iron Works (BIW). Service to the hospital is provided daily upon request only with the morning trip departing City Hall at 9:30 AM and return service in the afternoon at 1:30 PM. The cost is $2 per one-way trip. The BIW Employee Shuttle will pick up any employee at their

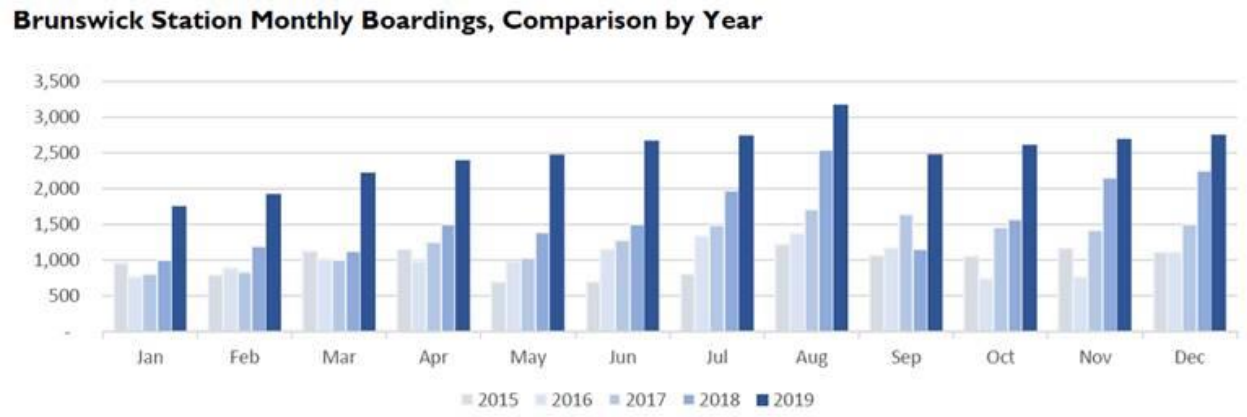
residence (in Bath only) and bring them to BIW. The pickup times are scheduled so that employees arrive before 7:00 AM. In the afternoon, the shuttle departs BIW at 3:10 PM for the return trips. The fare is $1 each way. In 2018 Bath CityBus provided 13,263 trips across all services and operated just over 3,000 hours. The annual operating cost was $153,160, of which 40.6 percent was funded by the City, with the remaining 59.4 percent coming from farebox revenue and state and federal funds.

Amtrak operates the Downeaster, a service overseen by the Northern New England Passenger Rail Authority (NNEPRA). The Downeaster operates five trips a day between Boston and points in Maine. Service to Brunswick began in late 2012 with the extension of two trips daily to Brunswick from Portland and was increased to three trips in 2016 when the new layover facility was constructed and then to five trips daily in 2018 when the Royal Junction siding was completed. Service is operated seven days a week and the first train departs Brunswick at 4:30 AM on weekdays and 5:30 AM on weekends. The last train arrives in Brunswick at 1:40 AM. The travel time between Brunswick and Portland is 50 minutes, slightly shorter than the BREEZ service.

Due to the timing of the Downeaster service and eastbound and westbound Brunswick Explorer trips, the only direct connecting times (where the passenger would have to wait no more than 20 minutes to connect) are the 7:30 AM and 1:30 PM Downeaster departures for individuals heading eastbound on the Brunswick Explorer and the 12:25 PM Downeaster arrival for individuals heading westbound on the Brunswick Explorer.

Utilization of the route in Brunswick has grown each year, with the greatest increase in 2019 after service was expanded. Ridership is greatest in the summer months, peaking at over 3,000 boardings for the month of August (Figure 41). In the winter months ridership drops to just under 2,000 boardings monthly.

Figure 41. Downeaster Brunswick Ridership (2015–2019)



Source: NNEPRA

Intercity bus service is operated by Concord Coach, which stops at the train station in Brunswick. Concord Coach operates a route between Bangor, Maine and Logan Airport in Boston, Massachusetts with daily service. Concord Coach operates one trip northbound and one trip southbound daily with a stop in Brunswick. From Brunswick individuals can travel northbound to Bangor, Searsport, Belfast, Lincolnville, Camden/Rockport, Waldoboro, Damariscotta, Wiscassett, Bath, and southbound to Portland plus South Station terminal and Logan Airport in Boston. One-way fares range from $10 to $33, depending on the destination.

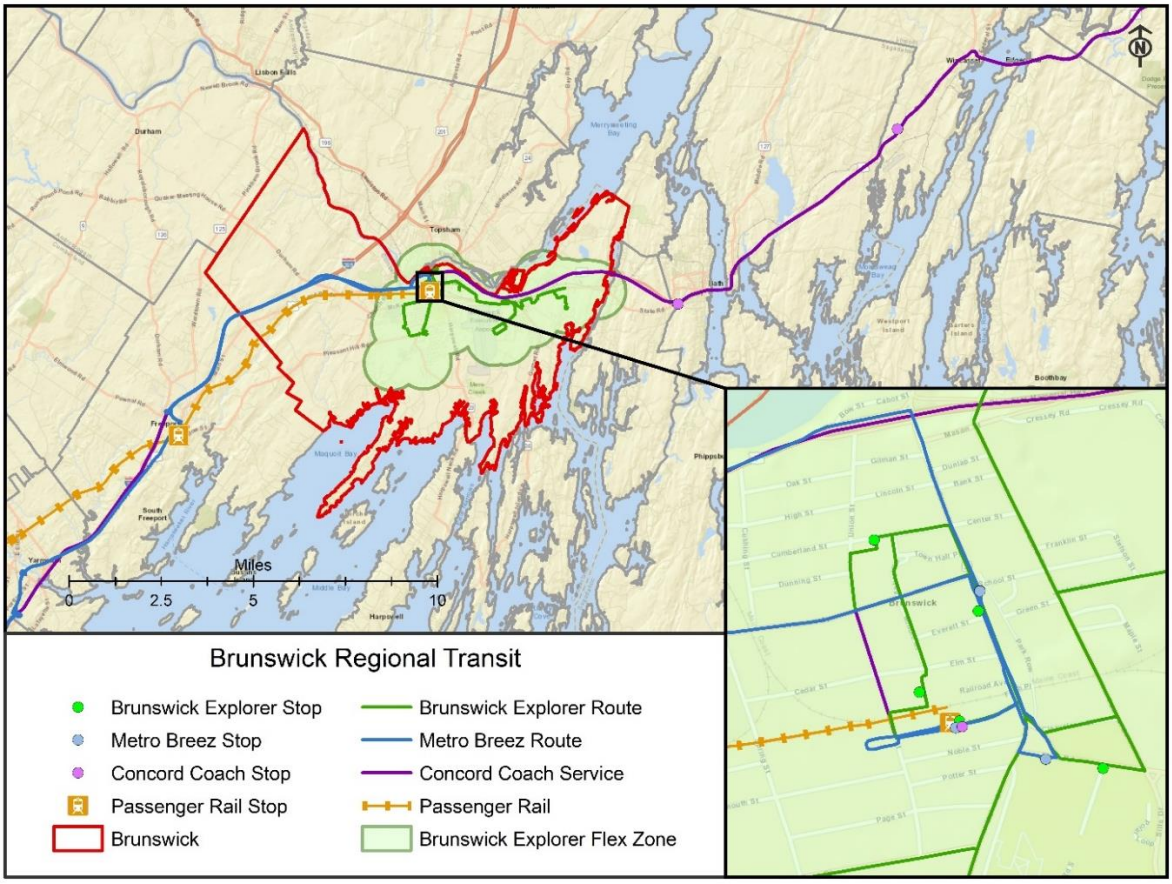
Non-emergency transportation through the Office of MaineCare is brokered and operated by Mid Coast Public Transportation, a division of Waldo Community Action Partners (CAP) in the Town of Brunswick. Riders must be eligible for Medicaid transportation, be MaineCare members and be pre-registered to request demand response service.

Table 23. Brunswick Transit Operators

Route	Operator	Trips Daily	Service hours	Base Fare
Brunswick Explorer	WMTS	9	7:00 AM-4:42 PM M-F	$2.00
Intercity Bus	Concord Coach	1 in each direction		$10-$33
Downeaster	Amtrak	5	4:30 AM – 1:40 AM M-F 5:30 AM – 1:40 AM Sa & Su	
BREEZ	METRO	13.5 M-F 6.5 Sa	5:55 AM – 10:18 PM M-F 9:03 AM – 10:28 PM Sa	$3
North loop	Bath CityBus	9	8:00 AM – 5:30 PM M-F	$1
South Loop	Bath CityBus	8	8:30 AM – 5:00 PM M-F	$1
Mid Coast Hospital Service	Bath CityBus	2	9:30 AM trip & 1:30 PM trip M-F	$2
Bath Iron Works Shuttle	Bath CityBus	2	6:15 AM – 7:00 AM 3:00 PM – 4:00 PM Weekdays	$1

Source: WMTS, Concord Coach, NNEPRA, Greater Portland METRO, Bath CityBus

Figure 42. Brunswick Regional Transit Map



Source: WMTS, Concord Coach, NNEPRA, Greater Portland METRO

Review of Previous Studies

In order to better understand the region, six previous studies were reviewed.

Maine DOT Strategic Transit Plan 2025

The *Maine DOT Strategic Plan 2025* (2015) is a 10-year comprehensive plan for the future of public transit in Maine. The goal of the plan was to generate strategies for improving service as well as identifying performance measures that respond to a dynamic environment. This plan focuses on an aging population with decreasing access and mobility, and limited service areas and service availability.

The report outlines recommendations for meeting three major goals:

- The first goal is to manage the existing system for safety and effectiveness within reliable funding levels.
- The second goal is to support economic opportunity by investing resources to support economic opportunity for riders. This can be accomplished through supporting a mix of transit services and supporting new expansion projects.
- The last goal is to build trust through increased education and outreach, as well as uphold core values of integrity, competence, and service.

Western Maine Transit Feasibility Study

With recent growth in the Western Maine region Western Maine Transportation Services (WMTS) conducted a planning process in 2017 to comprehensively inventory and examine their network and establish a plan for the future. The *Western Maine Transit Feasibility Study* (2018) identifies what services exist and where there are service limitations and provides recommendations on how to provide for greater service continuity across the region. The goals of the project were to (1) improve connections between rural and urban areas and between regions; (2) foster economic development; (3) increase access to education and employment; (4) build on the success of current services; (5) match service and vehicle type to demand ; and (6) provide economically feasible and sustainable solutions. The result was a 5-phase service improvement program that recommended increasing or modifying service on existing routes as well as establishing new routes. This included a new route in Phase 1 that would connect Lewiston and Auburn to Brunswick via Route 196 and a second route connecting Bath to Brunswick via Route 1 or Bath Road. Both routes would have limited trips daily but expand in future phases.

Feasibility of Bus Service in Topsham

Topsham has historically had bus service and studies aimed at redeveloping transit services in the community have occurred periodically (2005, 2007, and 2012) since service was stopped in the mid-1990s. While these studies have led to redevelopment of transit service for Bath and Brunswick, bus service has not been redeveloped in Topsham. However, local groups have indicated a consistent need for transit service in their community. This need is attributed to projections of a growing population (while the Maine population is projected to shrink) and more specifically an aging population that is projected to double by 2034. A 2016 survey on aging in place indicated that 48 percent of residents believe that it is very or extremely important that Topsham have bus service. A 2017 plan recommended the community implement a bus route that would operate on weekdays and would service multiple destination in Topsham and connect to Brunswick at the rail station.

Regional Transit Network Study for Topsham, Brunswick, Freeport, West Bath and Bath

The *Regional Transit Network Study for Topsham, Brunswick, Freeport, West Bath and Bath* provides an inventory and analysis of the transit network available to the Topsham, Brunswick, Freeport, West Bath, and Bath areas. The study was conducted by Midcoast Council of Governments (MCOG) and was published in 2012. The investigation found a need to connect the two existing transit networks, Bath CityBus and the Brunswick Explorer. The two systems do not officially interconnect; however, both systems do service Mid Coast Hospital. Transit demand modeling conducted for the study indicated that there is demand for additional rides in the region, which is supported by changing demographics (a growing aging population). Additionally, interviews with stakeholders suggested that there is a desire for better interconnection between the two service providers in the region. These findings led to two primary approaches to service improvements:

1. Create a new regional service that connects riders to the existing services of each system.
2. Expand and modify the routes of the existing two systems such that users could readily access both of the previously independent service areas.

Brunswick Comprehensive Plan

Brunswick is currently in the process of updating their 2008 Comprehensive Plan to address land use changes, development goals, and transportation needs among other things. Brunswick is using a robust engagement process to develop insight into what direction the community would like to head. Relative to the conversations around public transit during the public comment phase 7 percent of comments and 11 percent of 'dot' votes addressed transit or transit investments. Additionally, a majority (64.8 percent) of respondents indicated that they either somewhat support or support expansion of the Brunswick Explorer service. The community also highlighted targeted support for improving pedestrian and bike infrastructure and addressing the impacts of climate change, both of which align well with the expansion of transit services. In a survey conducted with Brunswick High School students there was mixed support for expansion of transit, with a substantial portion of respondents indicating that they neither supported nor opposed it. The responses seem to indicate that while transit may not be the community's greatest priority there is no specific opposition towards it and many of their priorities would be complemented by expanded service.

Downeaster Corridor Service Development Plan

The *Downeaster Corridor Service Development Plan* (2016) described a plan to increase operating speed, reduce travel time, and improve service reliability on the Downeaster. The goal was to increase mobility for Maine residents by connecting existing service to a state-owned local rail branch that extends 58 miles from Brunswick to Rockland, Maine, to the existing Amtrak serviced line. A secondary goal of the project is to increase tourism for major landmarks and municipalities along the Maine coastline.

The project identified major infrastructure improvements to complete the expansion of the Downeaster route, including track improvements and rehabilitation for 27 miles of track. This improvement will result in an increased operating speed for both Amtrak and freight trains. Other major enhancements include new passenger platforms, right-of-way improvements, grade crossings/signal work, and communication system updates. Overall, this project is expected to generate 36,500 new riders annually and increase access for riders in Maine.

Appendix B Market Analysis (Expanded)

Demographic and socioeconomic characteristics of the community can help indicate where there might be demand for public transit. This section includes analysis of the following populations:

- Zero vehicle households
- Households below poverty
- Minority populations
- Limited English proficiency (LEP)
- Children (under 18)
- Older adults (aged 65 and older)

The findings from this analysis found locations with high transit propensity that are not served by the local bus routes. These locations include the northeastern region north of Bath Road, neighborhoods in the vicinity of Gurnet Road, Brunswick Landing, and areas to the west of the Downtown stretching toward I-295.

The data used for the demographics analysis is the most recent data available from the U.S. Census, the 2014-2018 American Community Survey Five-Year Estimates. Any changes to populations or developments since 2018 will not be captured. The employment data following the summary demographics section comes from 2017 Longitudinal Employer-Household Dynamics (LEHD) data through the U.S. Census.

Summary Demographics

Table 24 shows summary demographic information in Brunswick and nearby municipalities as well as the state as a whole. Brunswick has roughly the same median income and share of population below the poverty line as the state averages. Brunswick, however, has higher shares of minorities, zero vehicle households, seniors, and LEP populations relative to the rest of the state. Regionally, Brunswick has higher shares of people living in poverty, minorities, zero vehicle households, seniors, and LEP populations relative to most of its municipal neighbors.

Table 24. Aggregate Demographic Data by Municipality and State

	Median Income	Below Poverty Line	Minority	Zero Vehicle Household	Senior	LEP
Maine	$55,425	12.5%	5.5%	7.3%	19.4%	0.1%
Brunswick	$54,646	12.0%	9.8%	12.2%	22.6%	0.9%
Bath	$50,160	14.6%	4.3%	11.0%	19.6%	0.0%
Durham	$73,030	4.4%	2.9%	4.3%	15.6%	0.0%
Freeport	$64,224	1.8%	11.4%	15.4%	24.6%	0.0%
Topsham	$72,537	10.6%	3.6%	9.4%	26.1%	0.2%

Source: ACS 5-year estimates (2018)

These summary demographics suggest that Brunswick has populations that have a higher propensity for transit use. The following section provide maps of Brunswick and surrounding communities that show

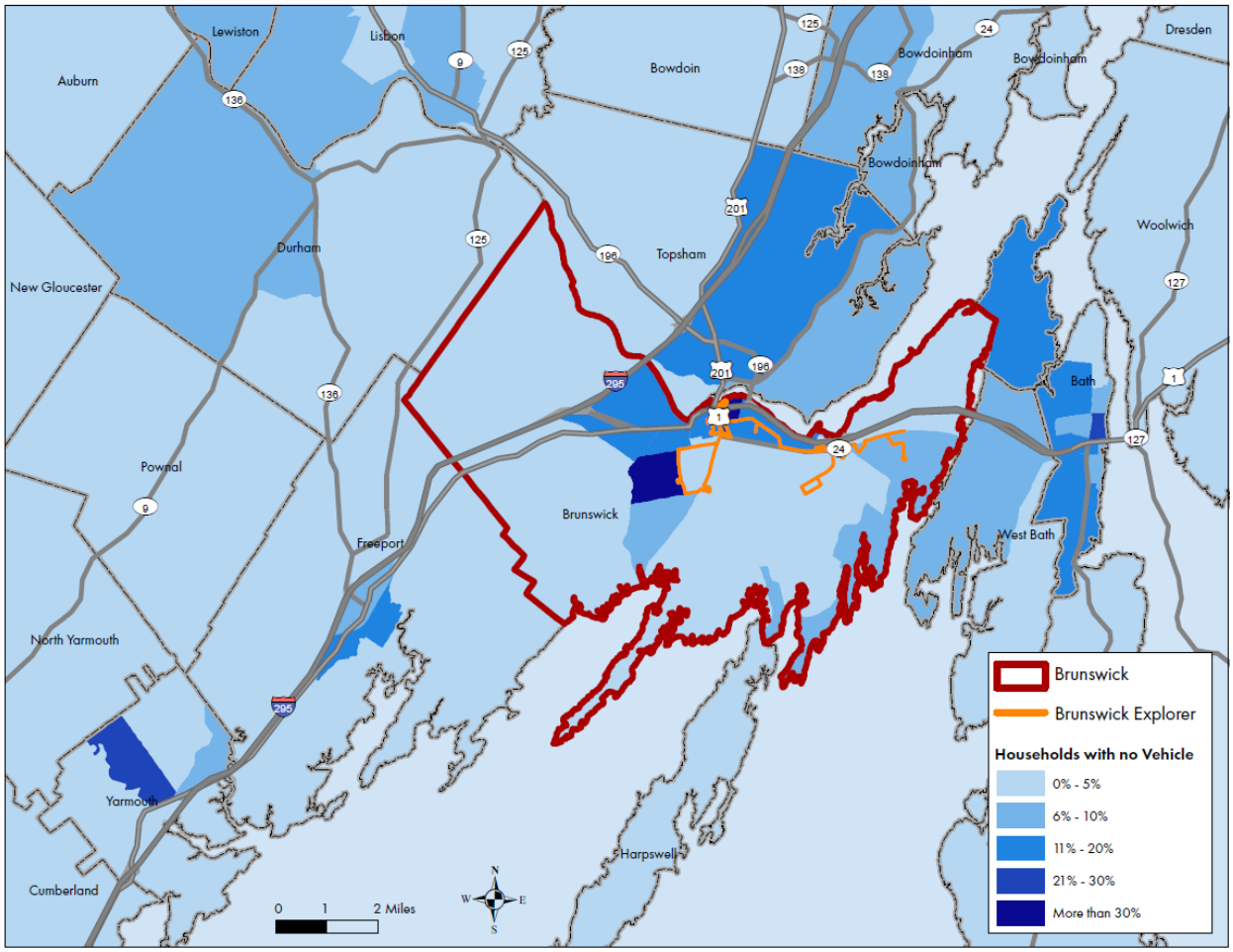
where high concentrations of these populations reside. Each map shows the local, fixed route for the Brunswick Explorer. It is important to note that the Brunswick Explorer allows for route deviations, so many of the areas that are not directly on the local route are still within the range for route deviation.

Demographic Maps

Zero Vehicle Households

Zero vehicle households frequently rely on transit, carpooling, walking or other modes to access their destinations. Most residents of Brunswick have access to a vehicle in their household. There are two locations where more than 30% of the population does not: the downtown and an area to the southwest of downtown. The latter is home to several assisted living communities, which may help explain the low rate of vehicle ownership. Both these locations are currently served by the Brunswick Explorer, but areas to the west of the downtown stretching to I-295 do not have local bus service, yet 11% to 20% of these households do not have access to a vehicle.

Figure 43. Zero Vehicle Households

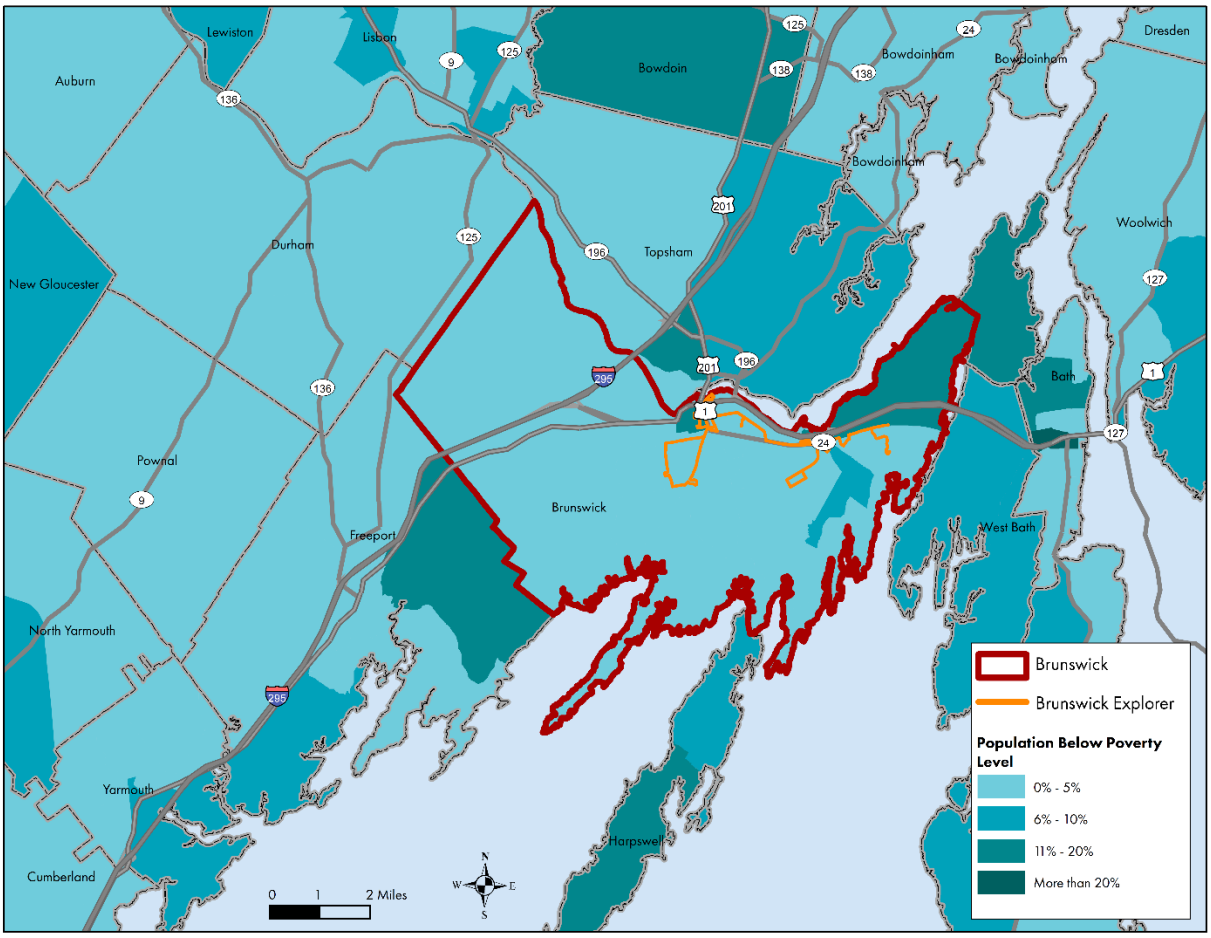


Source: ACS 5-year estimates (2018)

Population Below Poverty

People who live below the poverty line are more likely to take transit due to the high cost of car ownership. The downtown and northeastern region of Brunswick have the highest concentrations of people living below the poverty line (Figure 44). The Brunswick Explorer local service goes to both these areas, but many of the residential properties in the northeastern region (e.g., Bay Bridge Estates) would be more than a two-mile walk to reach Bath Road.

Figure 44. Population Below Poverty

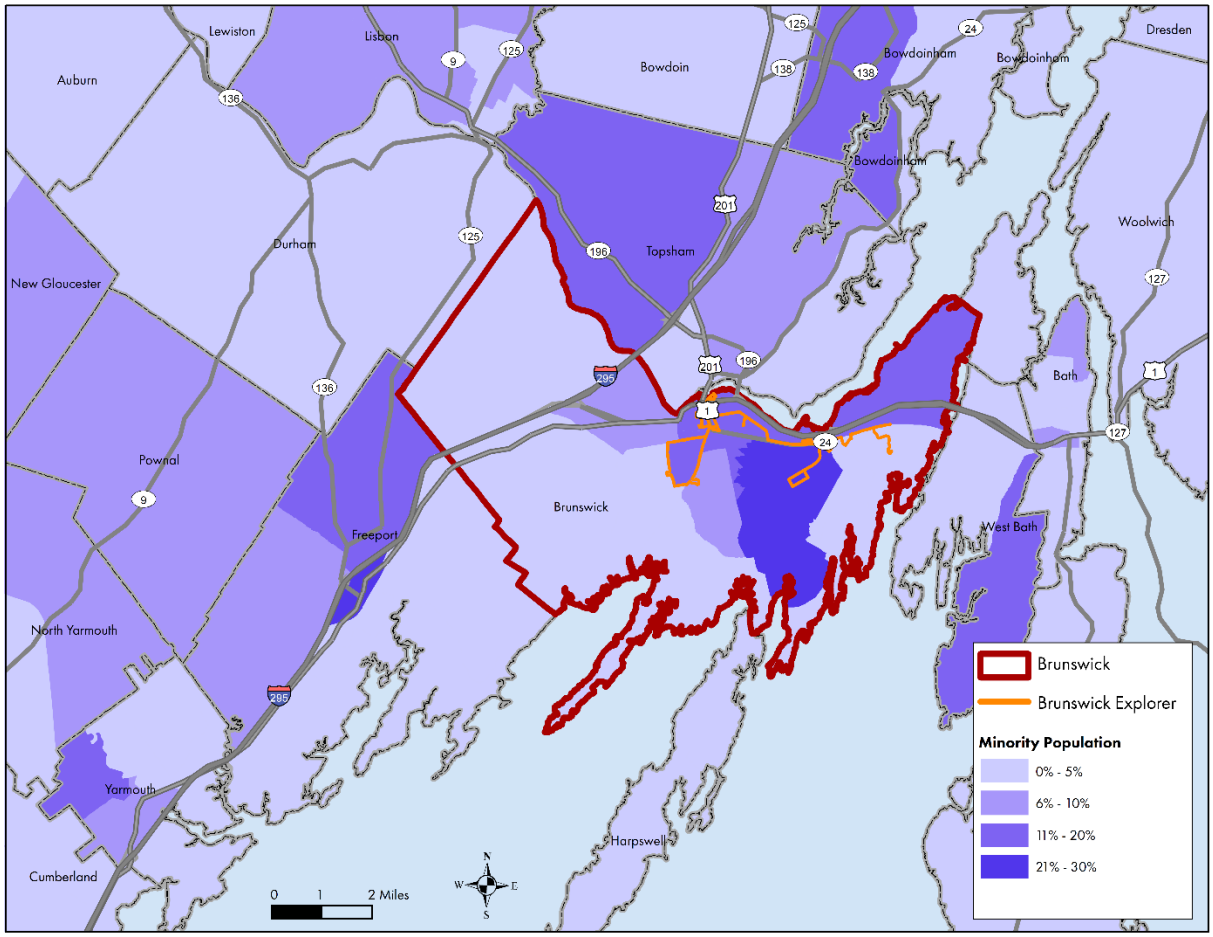


Source: ACS 5-year estimates (2018)

Minority Population

Minority populations live throughout Brunswick but are most highly concentrated in the Census Block Groups to the south of Bath Road near Southern Maine Community College, Brunswick Landing, and Gurnet Road. Although the Brunswick Explorer serves Southern Maine Community College, many of the areas are not served by local service.

Figure 45. Minority Population

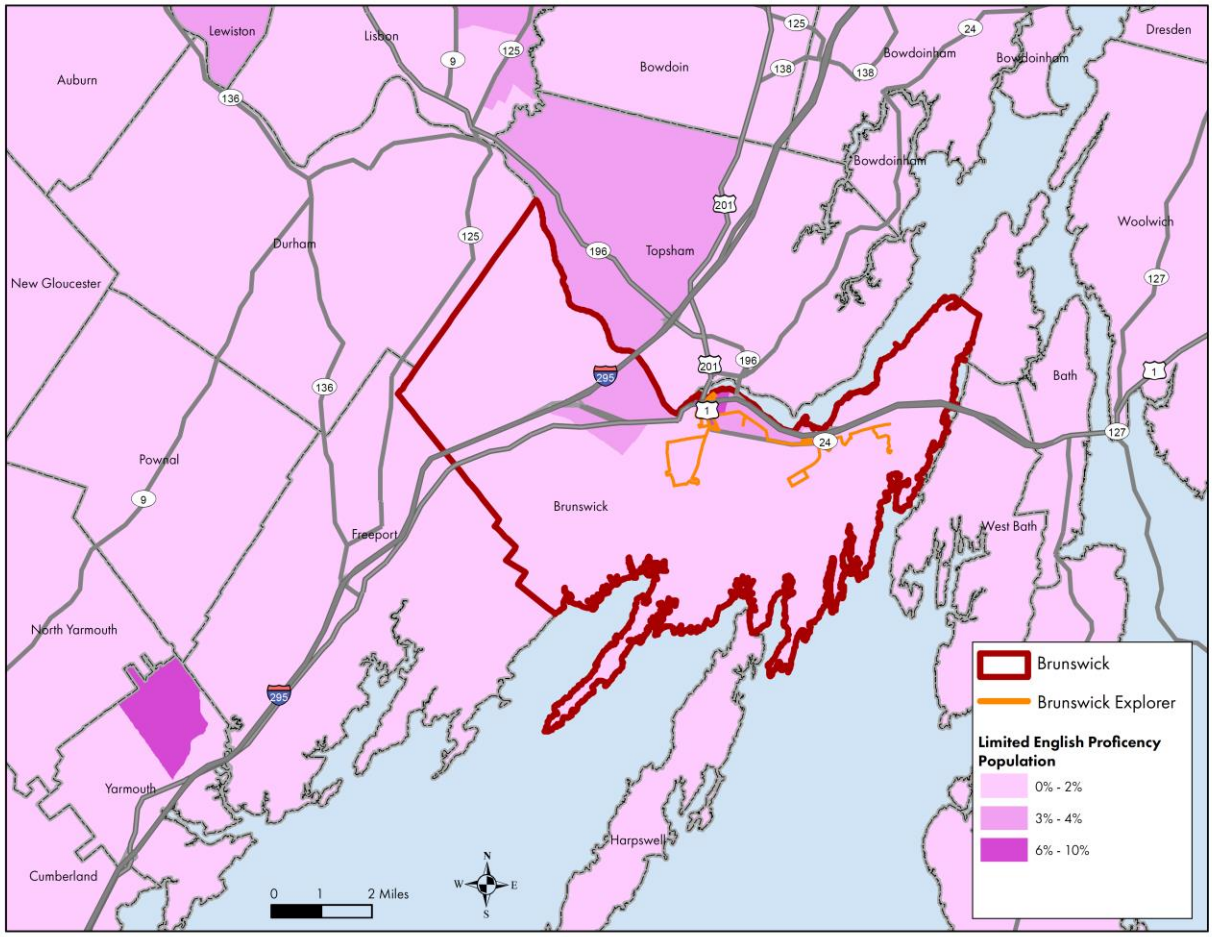


Source: ACS 5-year estimates (2018)

Limited English Proficiency (LEP)

Only about 1% of households are LEP, and these tend to be located in the downtown and just to the west of downtown. Although the downtown is served by local bus service, areas to the west are not.

Figure 46. Limited English Proficiency Households

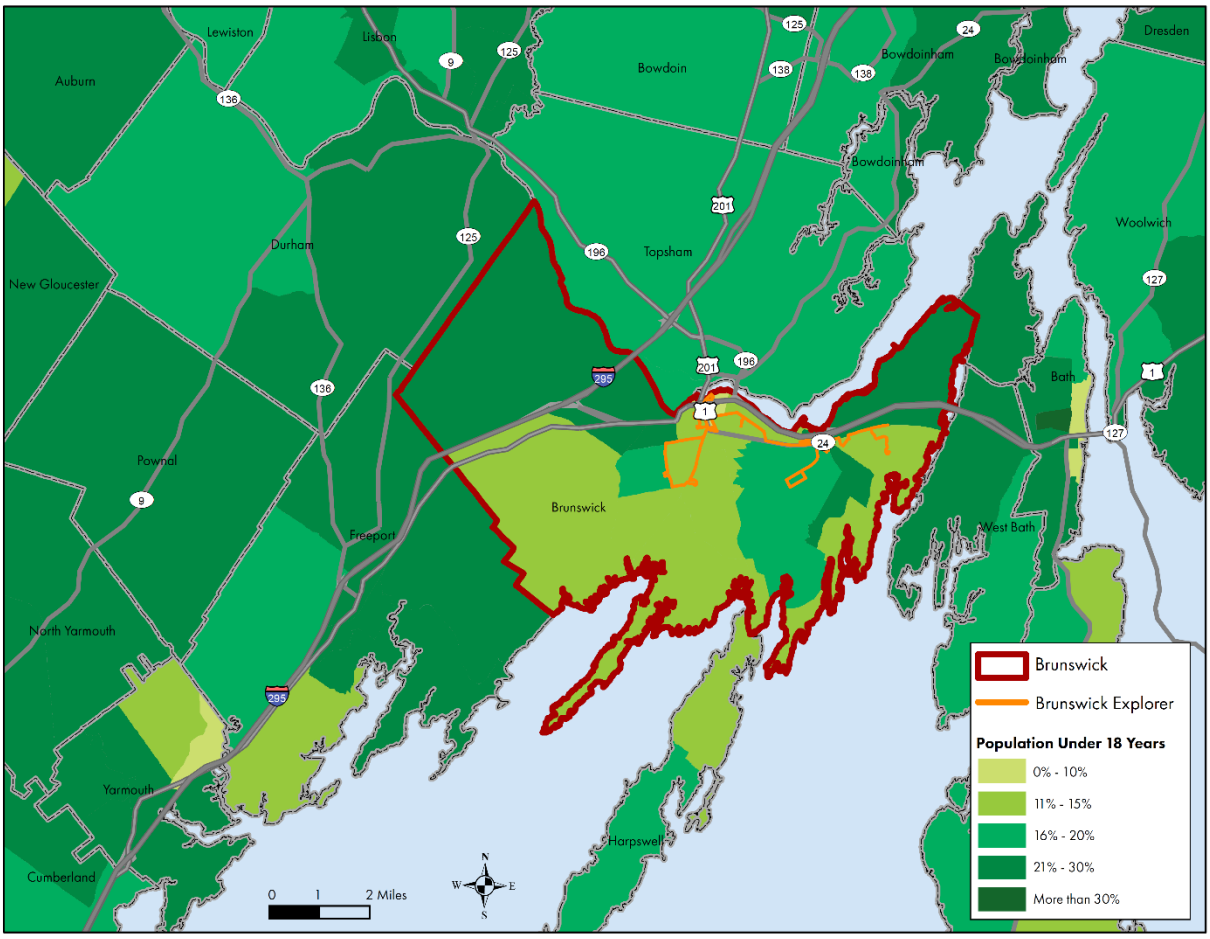


Source: ACS 5-year estimates (2018)

Children (Under 18)

The highest concentrations of children are away from downtown – toward I-295 and beyond, the northeast region, and the Gurnet Road/Brunswick Landing areas south of Bath Road. Few of these areas are served by local transit options. This likely means the children in Brunswick depend on household vehicles, carpooling, or school buses to reach their destinations.

Figure 47. Children (Under 18)

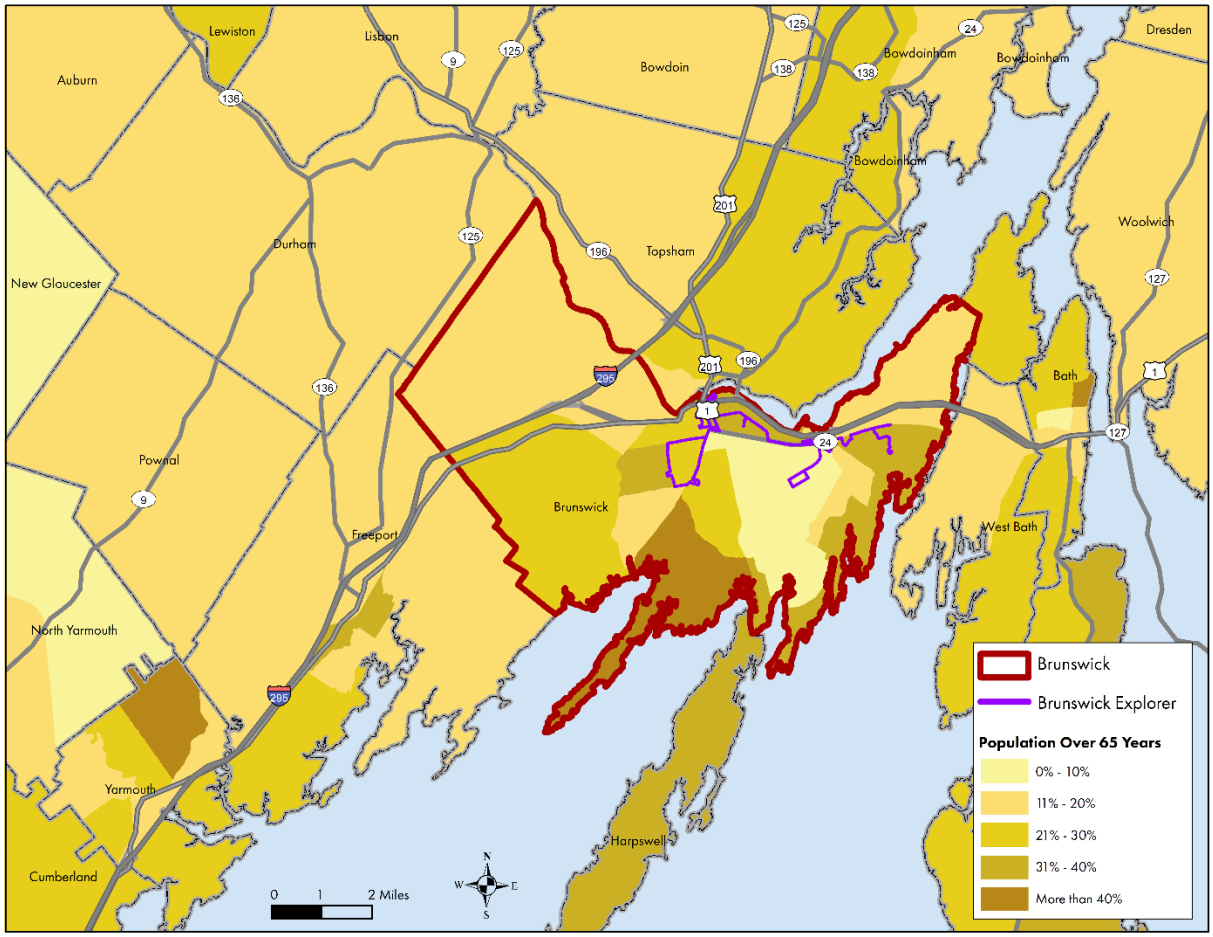


Source: ACS 5-year estimates (2018)

Older Adults (Aged 65 and older)

Older adults are concentrated in the downtown, south of the downtown along Mere Point Road, and the eastern edge of Brunswick. Other than downtown, local transit service is not available in these areas. These locations have a high rate of vehicle ownership, which suggests that many of Brunswick's older population rely on private vehicles.

Figure 48. Older Adults

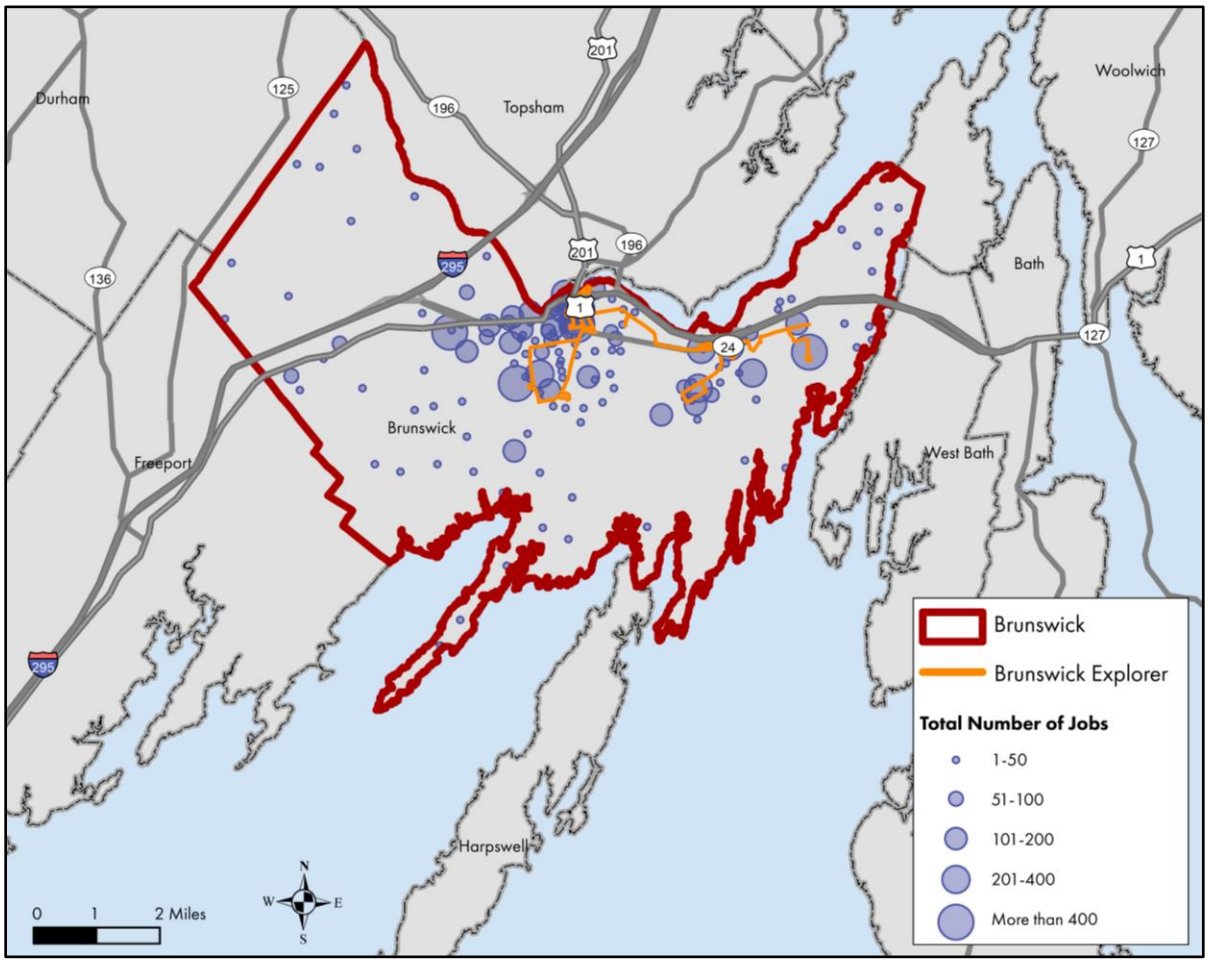


Source: ACS 5-year estimates (2018)

Employment

The Brunswick Explorer serves many of the top employment destinations, including Bowdoin College, Mid Coast Hospital, Sweetser Mental Health Services, Parkview Medical Center, and many shopping destinations (Figure 49). The employment areas not served by the local service are mostly located in areas west of the downtown that stretch toward I-295 on U.S. Route 1, Church Road, and Greenwood Road. These corridors contain a variety of industrial and retail destinations.

Figure 49. Employment Destinations



Source: Longitudinal Employer-Household Dynamics (LEHD) (2017)

Key Takeaways

Based on the demographic data, the current Brunswick Explorer local service goes to many areas that have high transit propensity, including the downtown, points east along Bath Road, and areas to the southwest of the downtown. Locations with high transit propensity that are not served by the local route include, the northeastern region north of Bath Road, neighborhoods in the vicinity of Gurnet Road, Brunswick Landing, and areas to the west of the Downtown stretching toward I-295. The latter has a variety of industrial and retail uses that could be destinations for residents.

Appendix C Survey One Summary

Survey One Results

The first Brunswick Transit Study survey was live from July 13, 2020 to September 22, 2020. The survey asked respondents to share how often they use transit, major barriers to the system, level of satisfaction with service, distance to stops, availability of other transportation options, and demographic information. There were 446 respondents. The project team distributed the survey through email lists, the project website, a press release, paper copies at Town Hall, and at the virtual public meeting held via local access television. The survey was available in English, French, and Portuguese. A New Mainers focus group with Lingala speakers was held in lieu of a survey. This section documents the feedback received. A copy of the survey is available below (see Survey One Instrument).

Ridership Trends among Respondents

Less than ten percent of respondents were weekly riders of area transit systems, and more than 70 percent of respondents rarely or never took the transit system (Figure 50). Among respondents who did take transit, Amtrak Downeaster, METRO BREEZ, Concord Coach, and Brunswick Explorer were the services taken most frequently. Less than five percent of respondents used Greyhound, Bath CityBus, or Mid-Coast Public Transportation (Figure 51).

Figure 50. How often do you ride public transit? (n=444)

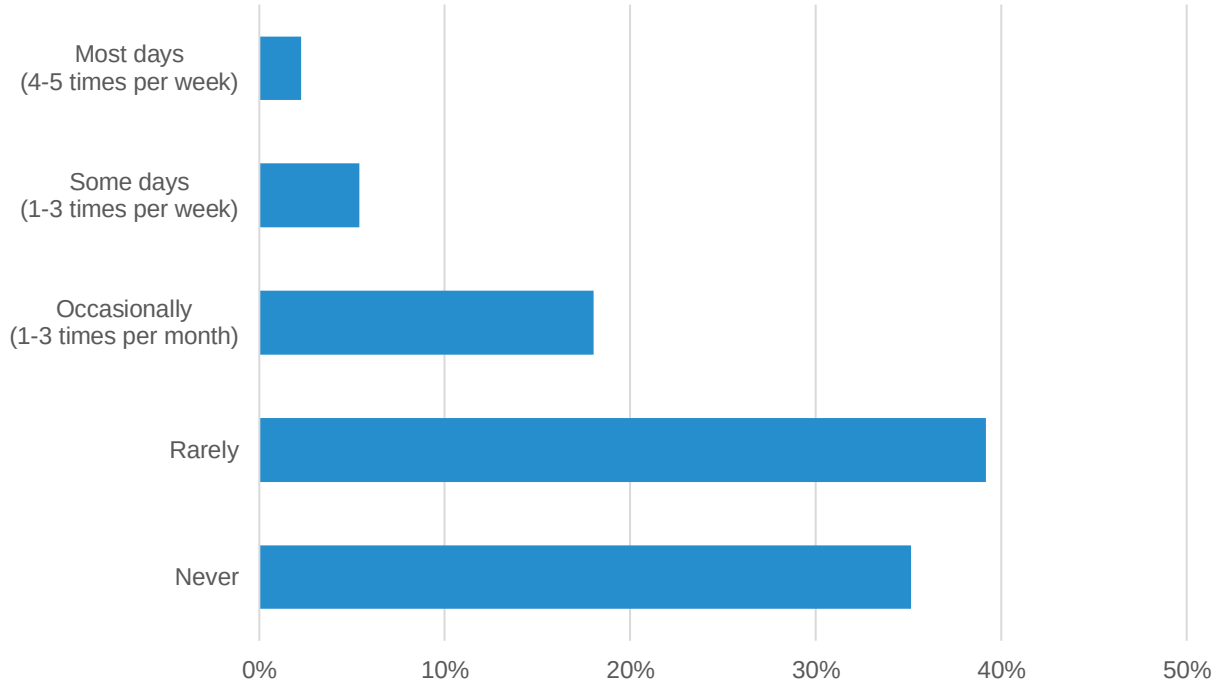
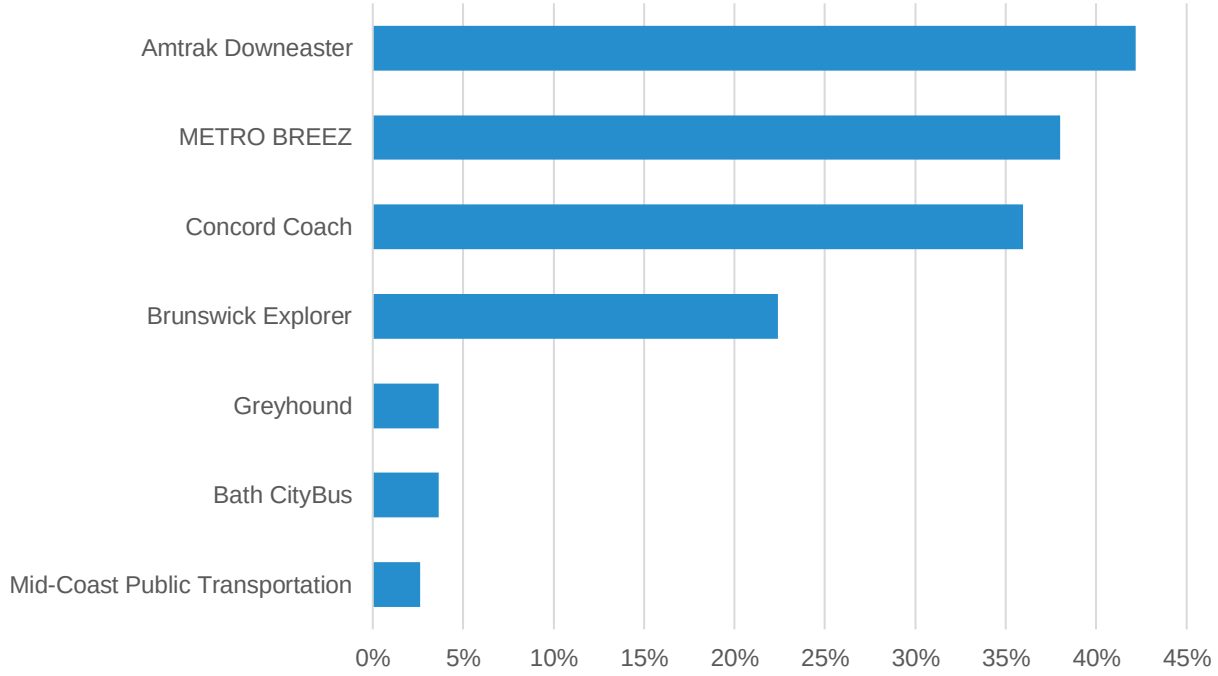


Figure 51. What services do you take most frequently (n=192)



Barriers, Concerns & Priorities

Respondents who did not take public transit reported a variety of barriers including inconvenience, indirect route, infrequent service, and lack of transportation (Figure 52). Comfort onboard the bus, at bus stops, and ease of getting on or off the bus were not major concerns. Health/cleanliness concerns were raised by about ten percent of non-transit rider respondents.

Among transit riders, the top concerns were convenience of bus/rail stops, availability of schedule and service delay information, service frequency, and stop access (Figure 53). Comfort, cleanliness, and ease of boarding the bus were concerns among less than five percent of transit rider respondents.

These results show several common concerns among riders and non-riders. Route directness, stop location, and service frequency were very important to both groups. Availability of information is also a key issue. It should be noted that Brunswick Explorer riders were particularly concerned with the convenience of bus stop locations (Figure 54).

Transit riders were also asked for their top priorities in addressing their concerns. Frequency of service, service span (weekend, early morning/evening service), and expanded service area were the top priorities (Figure 55).

Figure 52. Non-Rider Respondents Barriers to Using Transit (n=135)

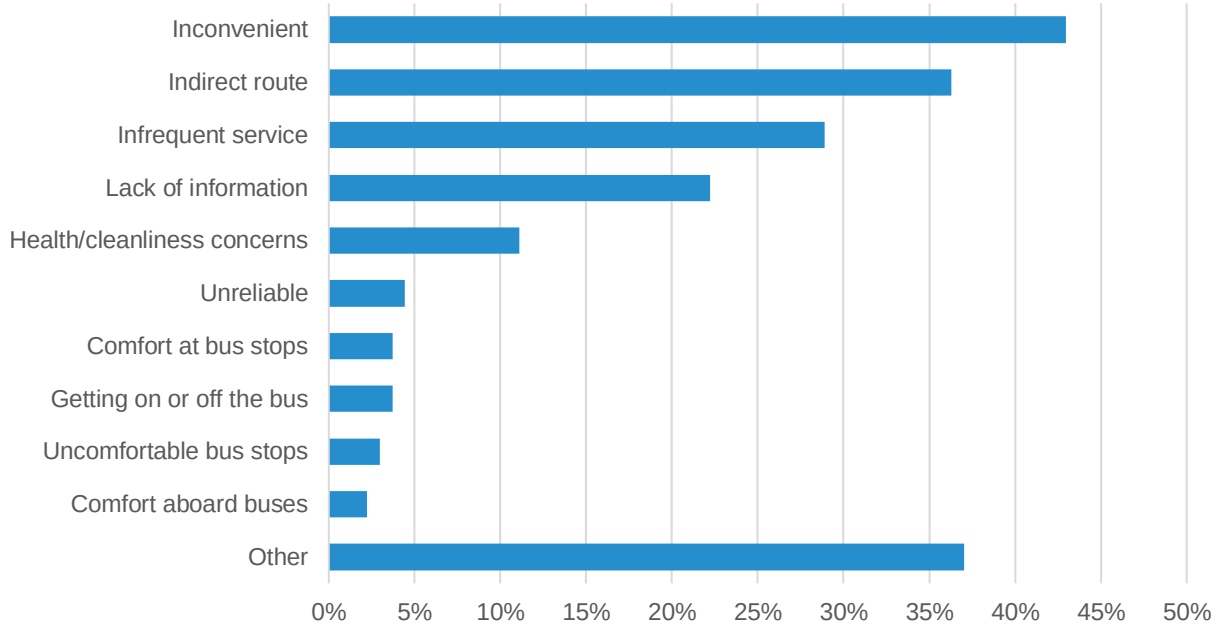


Figure 53. Top Concerns for Transit Riders (n=189)

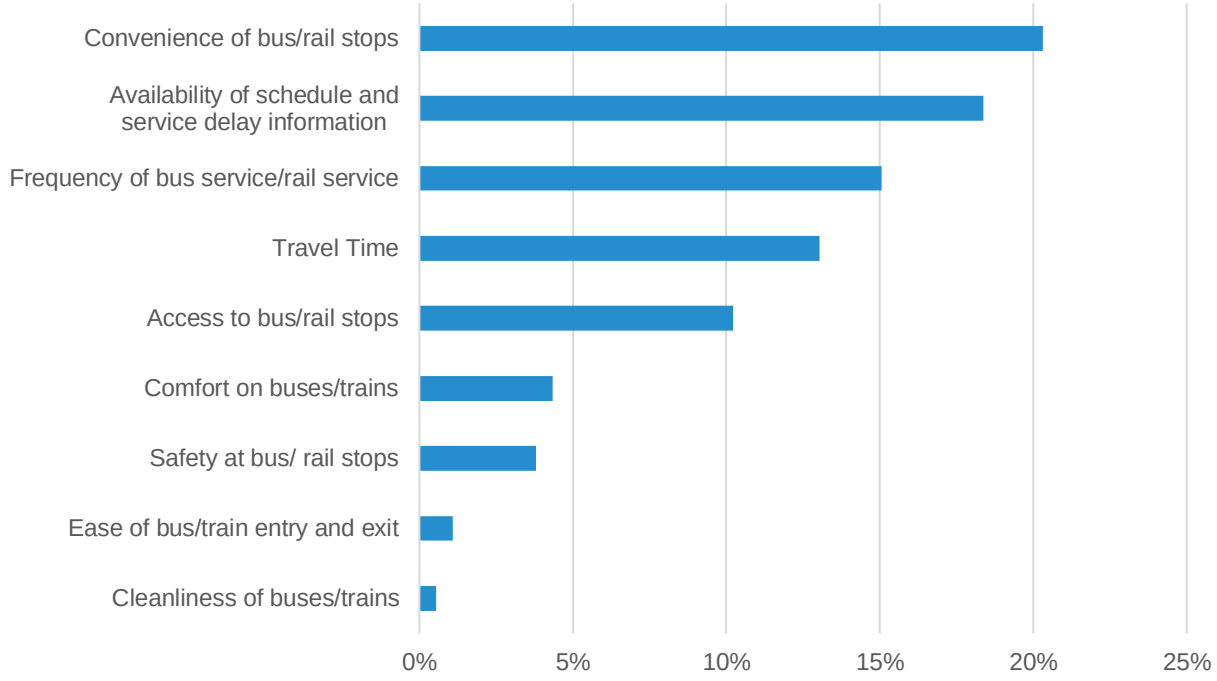


Figure 54. Top Concerns by Transit Service

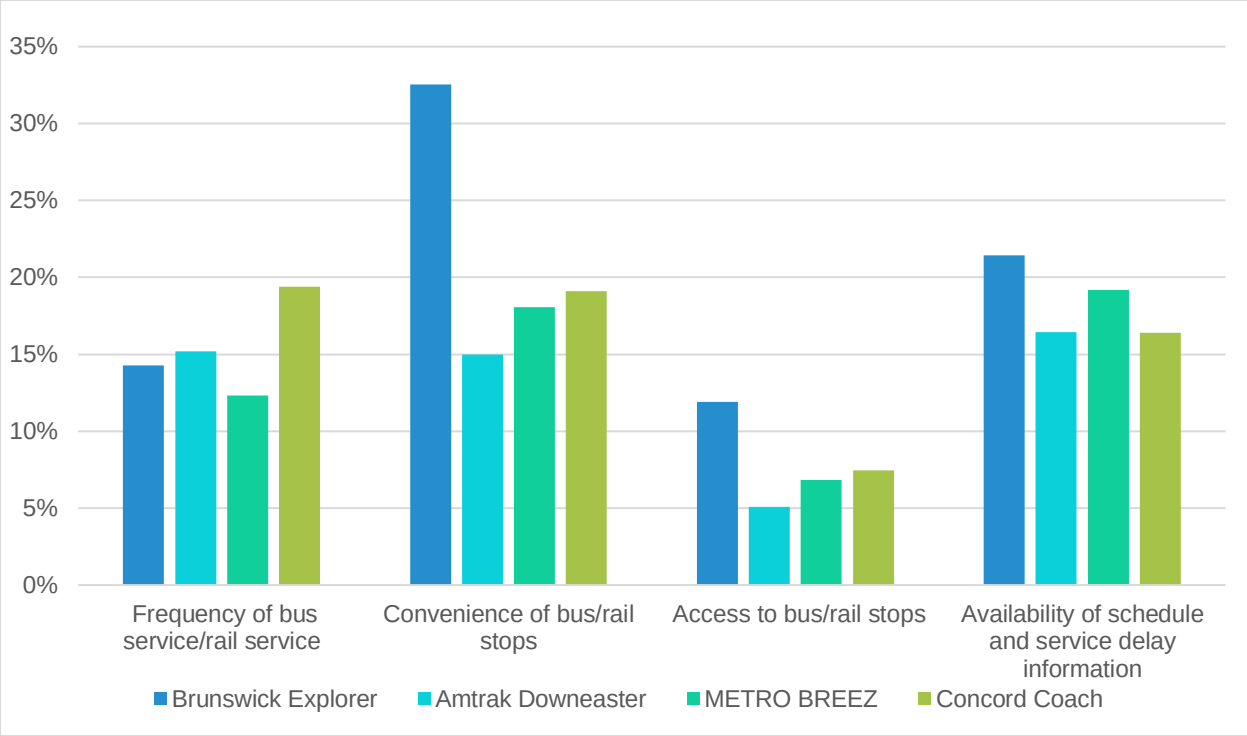


Figure 55. Priorities of Transit Riders (n=185)

Rank	Priority
1	More frequent buses/trains
2	Weekend service
3	Service later in the evening
4	Larger service area to include more destinations
5	Service earlier in the morning
6	Shorter travel times
7	More reliable service
8	Coordinated transfers with other transit providers
9	Real time arrival information (minutes until the next bus)
10	Upgraded transit stops (add shelters, benches)
11	Lower bus/train fare
12	Make it easier to travel with bikes on vehicles

13 Make easier to get on or off the bus/train

Stop Access & Ride Length

The survey asked respondents to provide additional details on how long their trips take, including their walks to stops from home or to their destination. The results across all modes suggest that respondents are frequently located more than a 30-minute walk from their closest stop on either end of their trip (Figure 56 and Figure 57).

Figure 56. Distance to Transit Stop from Home (n=154)

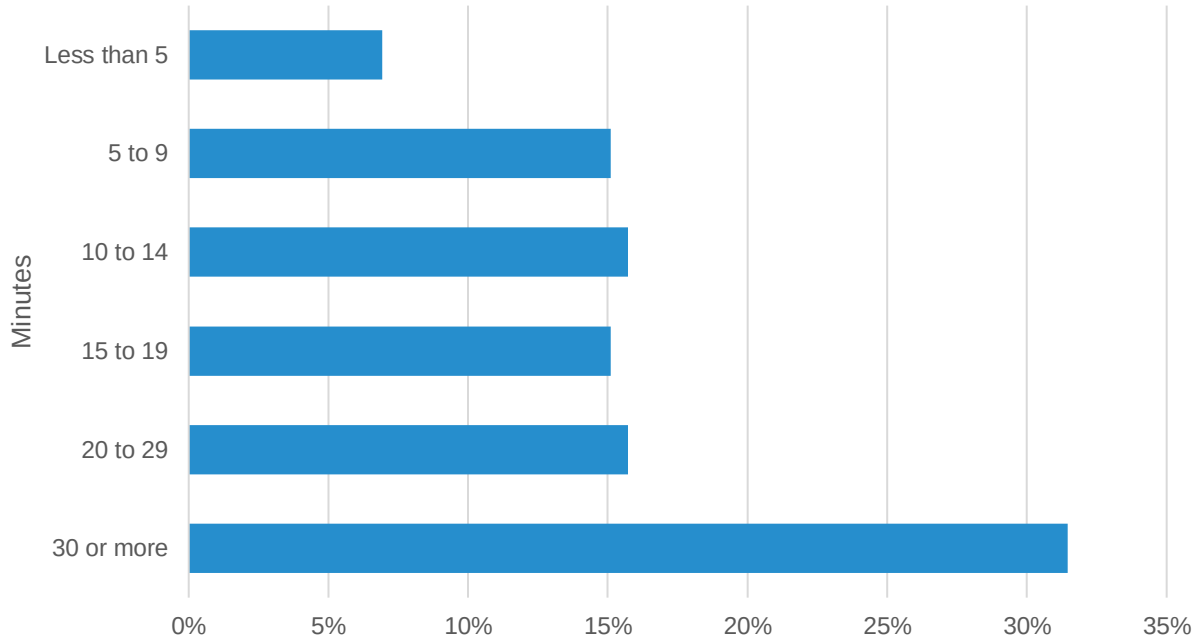
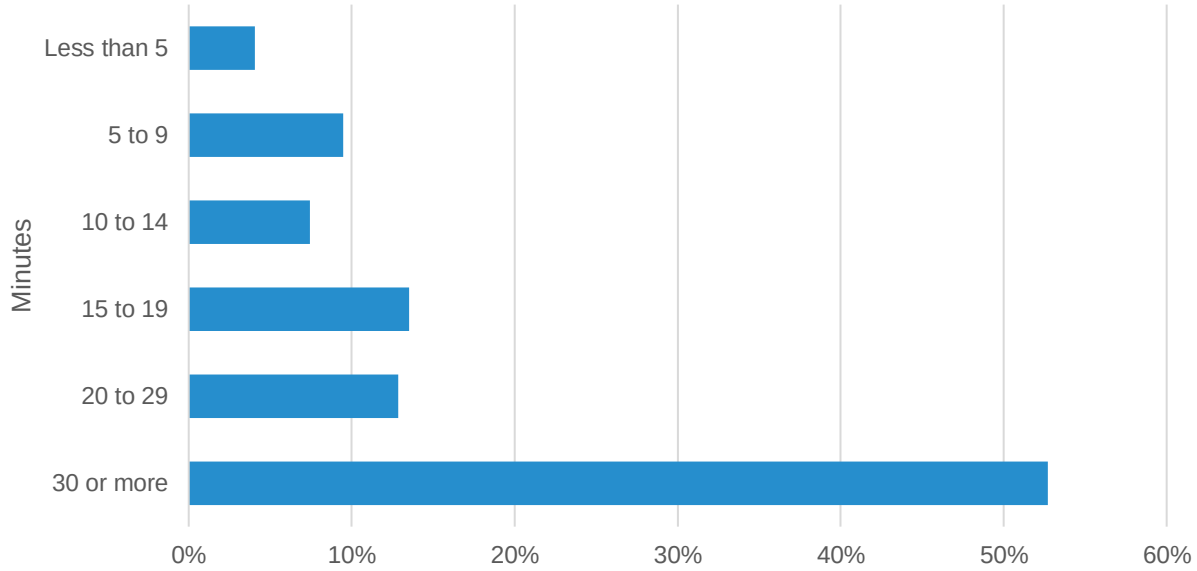


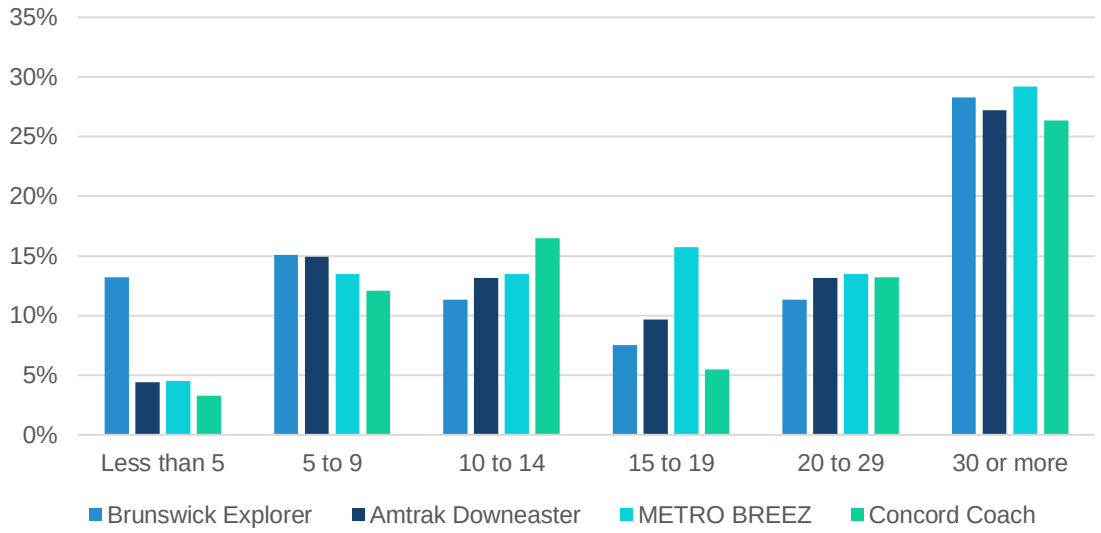
Figure 57. Distance to Destination from Transit Stop (n=146)



The long distances to transit stops could be explained by respondents referring to intercity travel options (e.g., Amtrak Downeaster), which are more likely to be farther away from home or destination. However, when isolating the most popular modes, more than a quarter of Brunswick Explorer users were more than

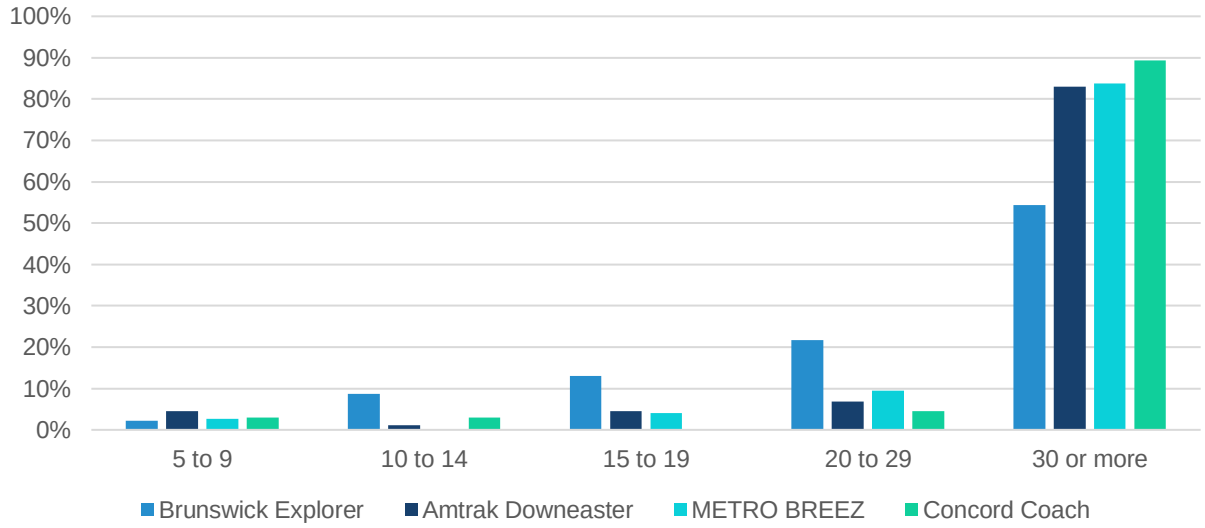
30 minutes from their closest transit stop. Even among riders who use the Brunswick Explorer frequently, some reported walks of 30 minutes or longer. These results help explain why transit stop convenience is a top concern among transit riders (Figure 58).

Figure 58. Distance to Transit Stop from Home by Service



In addition to long walks to/from stops, respondents reported long rides on the transit vehicle. More than half of respondents said their ride on the Brunswick Explorer took longer than 30 minutes. This provides some explanation for why respondents were concerned about trip length (Figure 59) and directness of route (Figure 60).

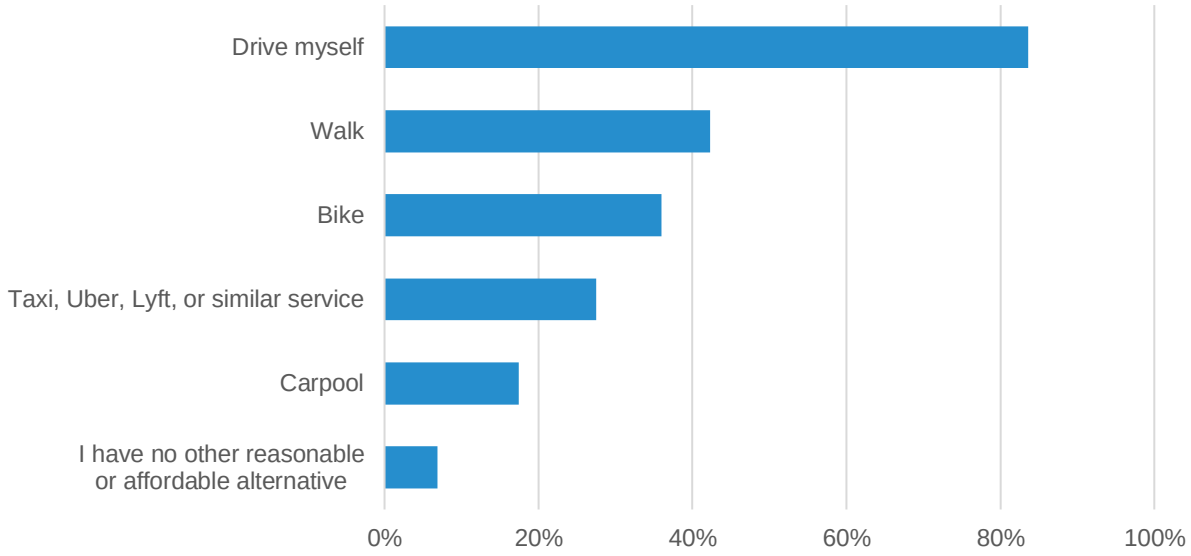
Figure 59. Length of Typical Bus or Train Ride



Choosing Transit

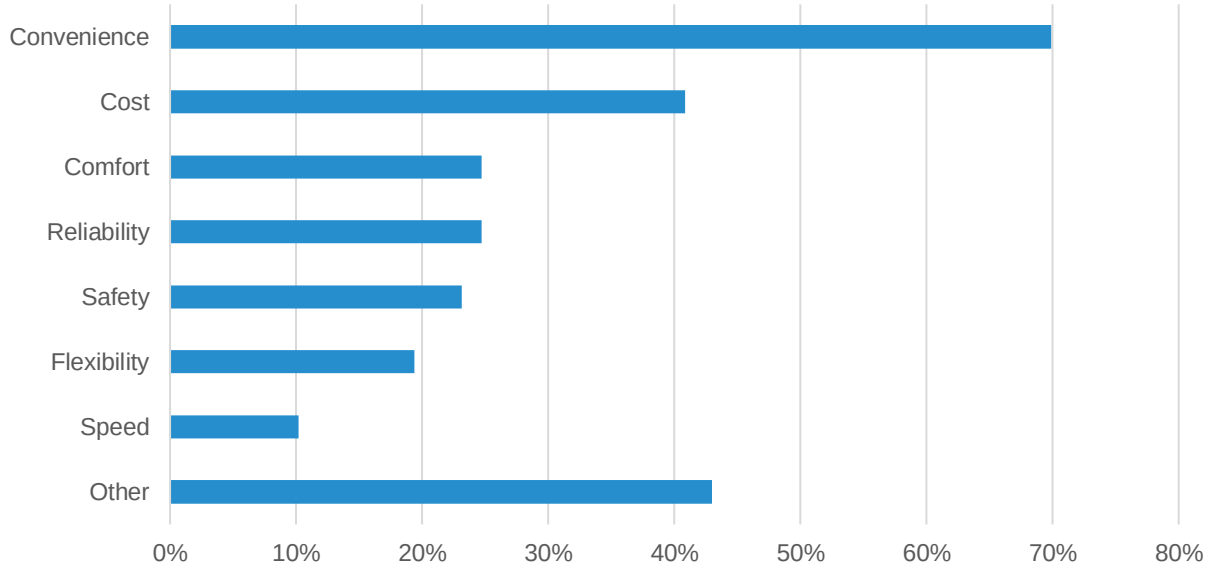
More than 80 percent of respondents were able to drive themselves, and almost everyone who responded had an alternative to public transit. About seven percent of respondents had no reasonable or affordable alternative. Among Brunswick Explorer riders, 23 percent did not have a reasonable or affordable alternative, suggesting that this service is essential for many Brunswick Explorer riders.

Figure 60. Alternatives to Public Transit (n=189)



Respondents opted for transit primarily because of convenience and cost; however, comfort, reliability, and safety were other top concerns.

Figure 61. Reasons Respondents Choose Transit (n=186)



Additional Comments

The survey provided an opportunity for general comments, and 171 respondents provided input. Most comments provided support for service with requests for increased service area, span, and frequency. The key destinations within Brunswick that respondents would like to see have stops (or in some cases more stops paired with more frequent service) were:

- Bay Bridge Estates
- Maplewood Manor
- Brunswick Landing
- Retirement and rehab facilities

- SMCC
- Church Road
- Pleasant Street
- River Road
- Cook's Corner
- Main Street
- Durham Road
- Ward Circle
- Cluff Bay Road

Respondents emphasized the need for regional connections. Destinations for new service, more frequent service, or expanded hours of operation included:

- Topsham Fair Mall
- Bath
- Freeport
- Portland Airport
- Logan Airport
- Topsham
- Newcastle
- Cape Elizabeth
- Lewiston
- Lisbon
- Wiscasset
- Bowdoinham
- Augusta

Additional comments included the following:

- Cost is too high for Amtrak's Downeaster.
- Brunswick Explorer buses need to be upgraded and made more comfortable.
- Online payment options should be provided.
- A "late bus" for Portland would allow people to attend evening events without having to stay overnight.
- METRO BREEZ service should accommodate staff schedules at hospitals.
- Biking infrastructure needs to be improved.
- SMCC students need more frequent service.
- Stops should be signed.
- There is a strong need to serve older adults and New Mainers.

Demographics

The survey concluded with a series of demographic questions (Figure 62 through Figure 67). The results of the demographics suggested the following:

- Respondents were mostly between the ages of 30 and 64.
- More than 60 percent of respondents were women.
- Eight-six percent of respondents were white.
- About eighty-five percent of respondents had access to a vehicle every or most days.
- More than seventy percent of respondents had a Bachelor's, Master's, or Doctorate degree.
- Almost a quarter of respondents lived outside Brunswick, but each neighborhood within Brunswick was represented.

Figure 62. Age of Respondents (n=304)

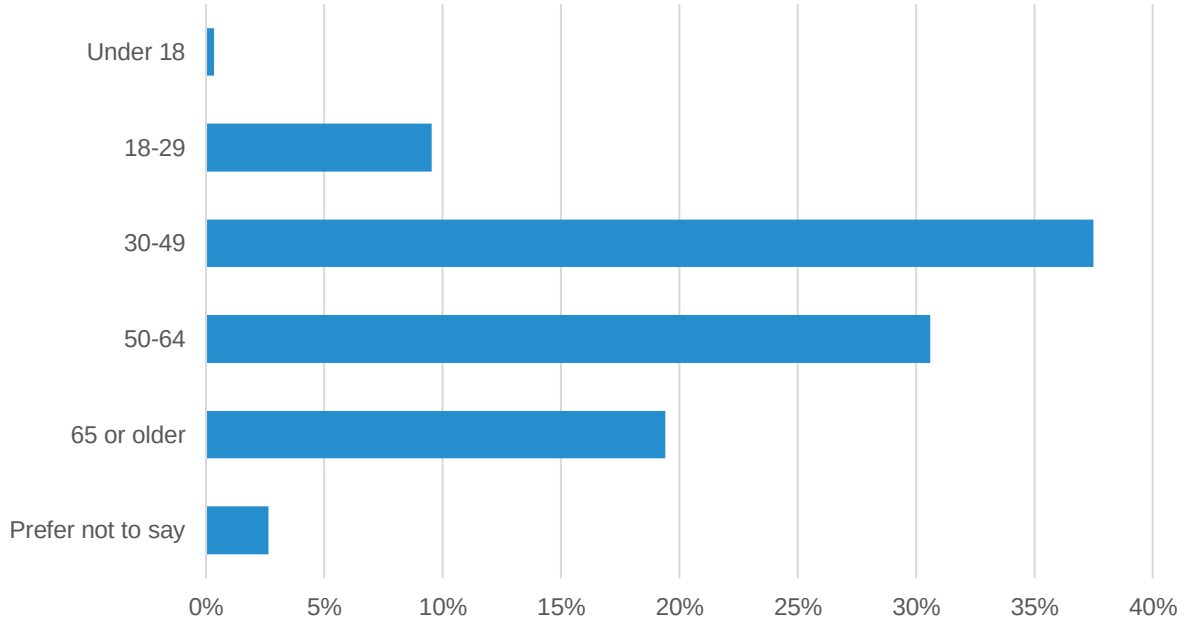


Figure 63. Gender of Respondents (n=303)

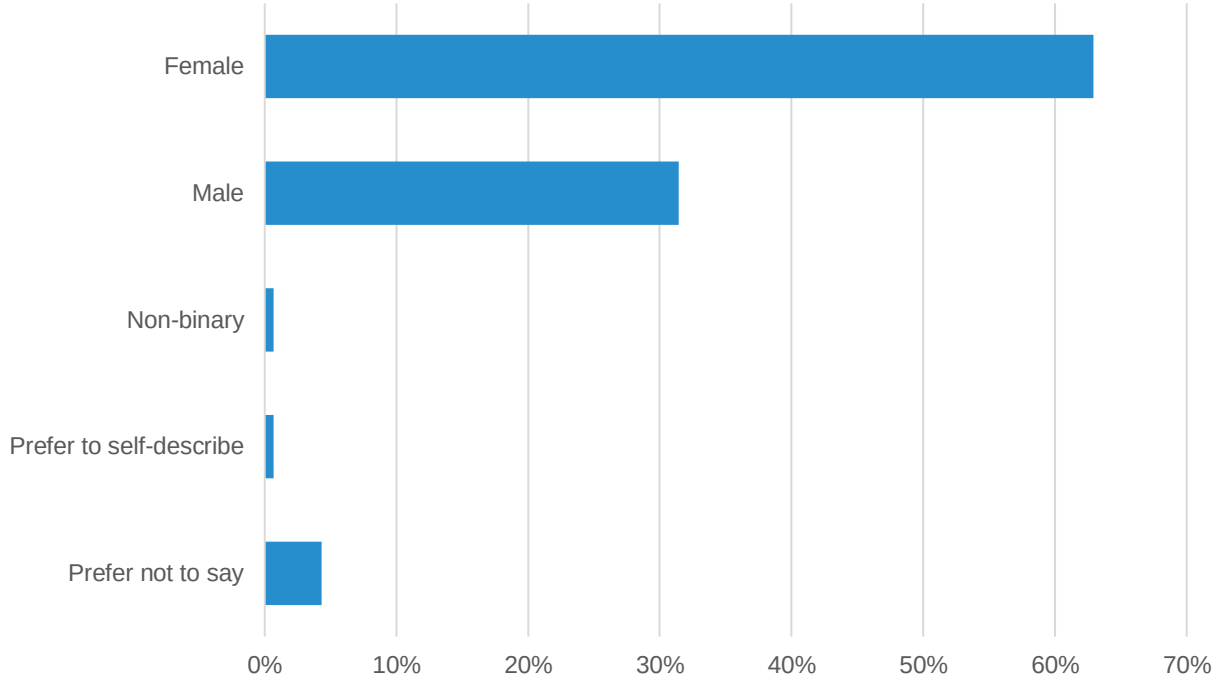


Figure 64. Race/Ethnicity of Respondents (n=304)

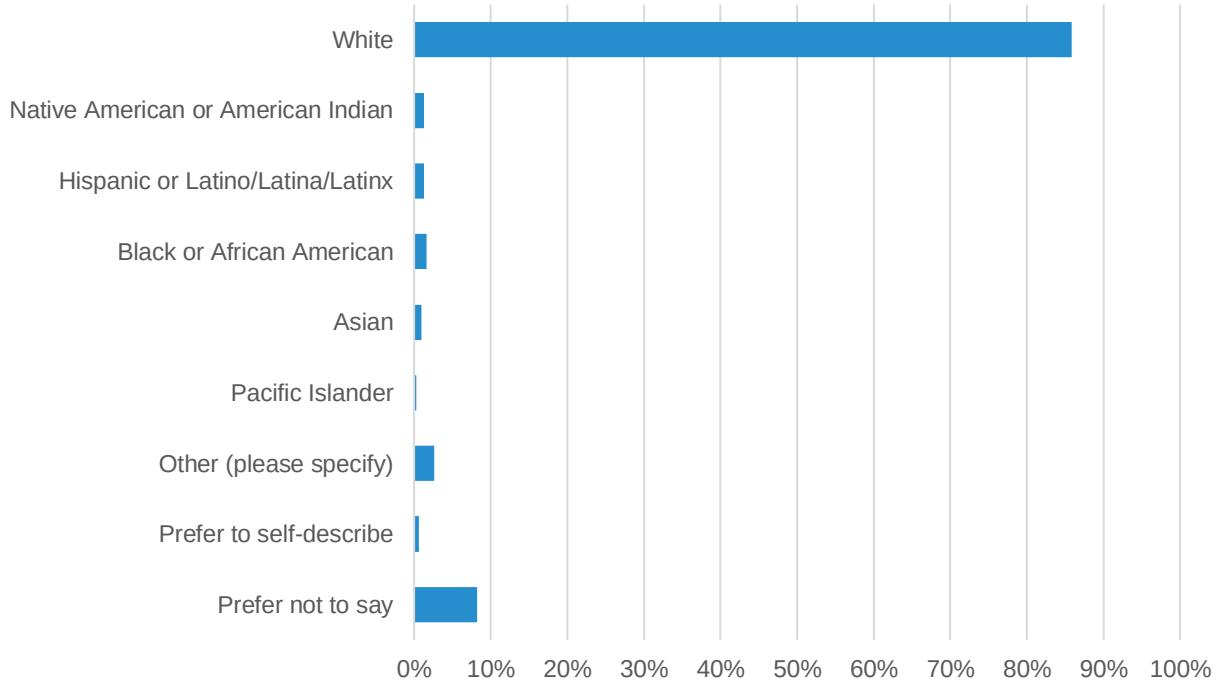


Figure 65. Vehicle Access among Respondents (n=304)

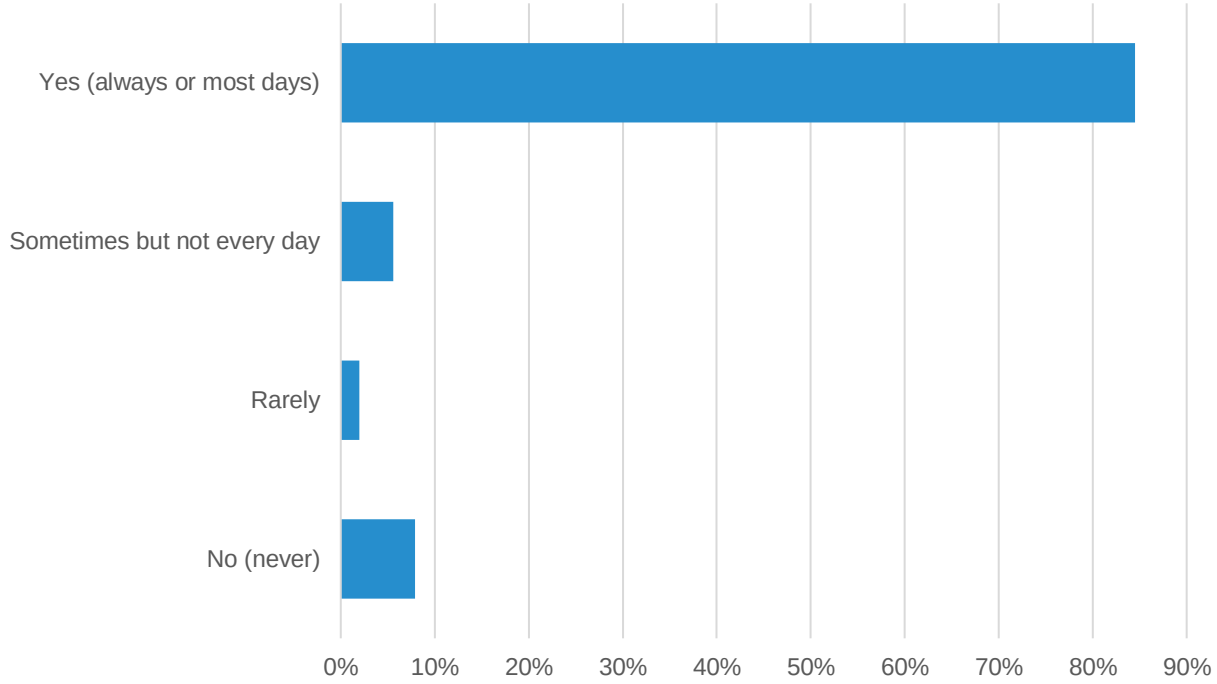


Figure 66. Education Level of Respondents (n=305)

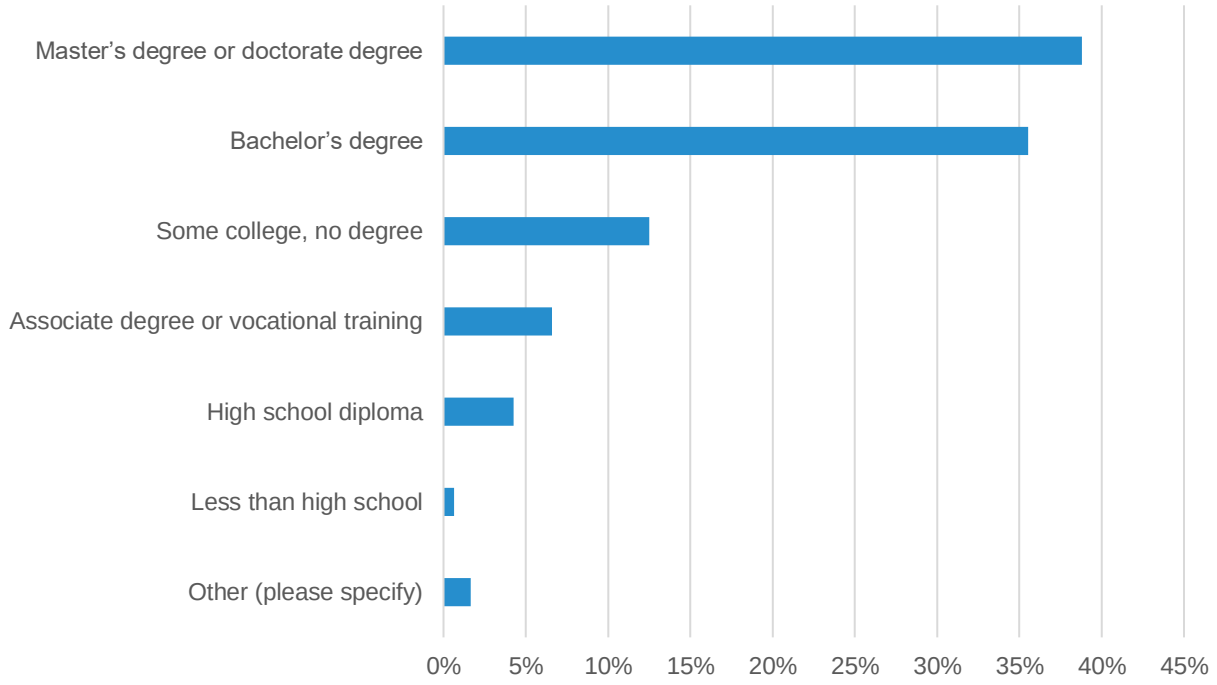
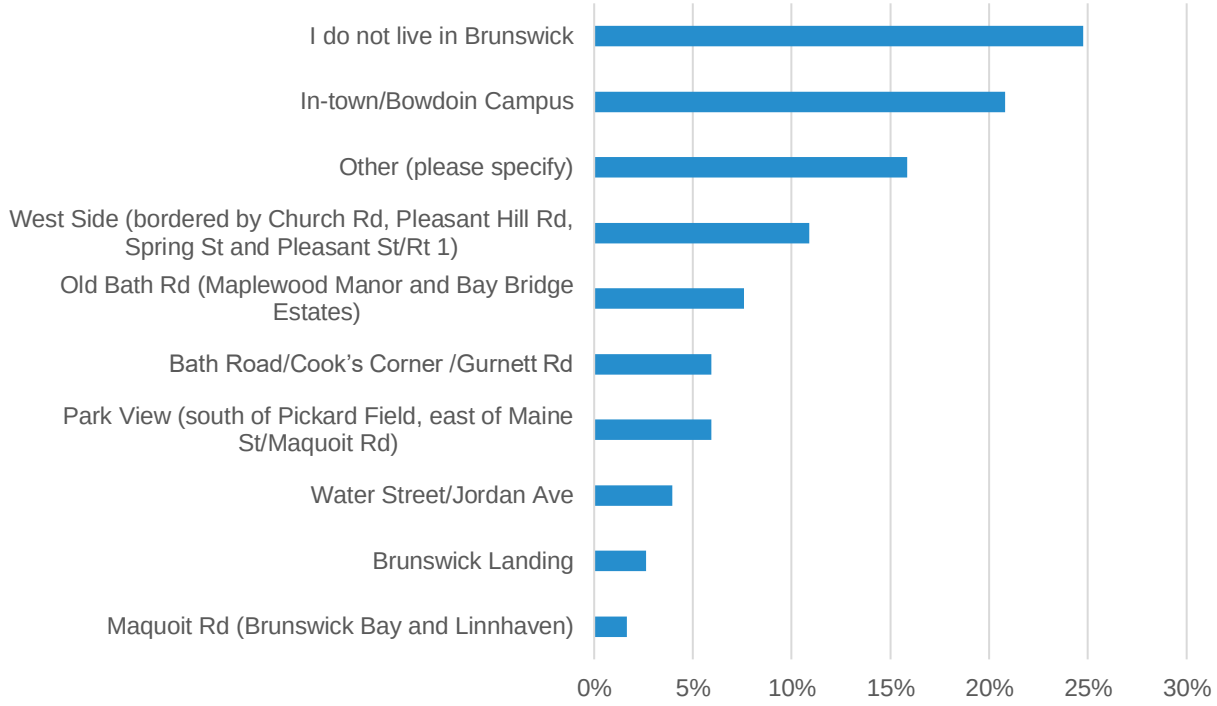


Figure 67. Respondent Place of Residents (n=304)



Survey One Instrument

Thank you for participating in this Brunswick Transit Study survey!
The Town of Brunswick is undertaking a project to better understand the transit needs of the community and how the community is using the existing transit services available in Brunswick.
Hearing from transit riders will help us understand the challenges and opportunities associated with the Brunswick Explorer, Mid-Coast Public Transportation, Amtrak Downeaster, METRO BREEZ, Bath CityBus, Greyhound, and Concord Coach. This survey is one channel for public feedback, part of a broad and inclusive community engagement effort.
At the end of the survey, you may share your email address for project updates and meeting notifications (optional).
For more information, please visit the project website at www.BrunswickTransitStudy.com.

Transit Questions

1. How often do you ride public transit?
    a. Most days (4-5 times per week)
    b. Some days (1-3 times per week)
    c. Occasionally (1-3 times per month)
    d. Rarely
    e. Never

2. What are the major barriers for riding public transit?
    Select all that apply
    a. Inconvenient
    b. Unreliable
    c. Infrequent service
    d. Indirect route
    e. Lack of information
    f. Comfort aboard buses
    g. Comfort at bus stops
    h. Uncomfortable bus stops
    i. Getting on or off the bus
    j. Health/cleanliness concerns
    k. Other (please specify)

3. Which of the following services do you most frequently take?
    Select all that apply
    a. Brunswick Explorer
    b. Mid-Coast Public Transportation
    c. Amtrak Downeaster
    d. METRO BREEZ
    e. Bath CityBus
    f. Concord Coach
    g. Greyhound

4. How would you rate your satisfaction with:

	Not satisfied	Somewhat satisfied	Very satisfied

Frequency of bus service/rail service			
Convenience of bus/rail stops (e.g., bus stops close to where you want to travel)			
Access to bus/rail stops (e.g., sidewalks, crosswalks)			
Travel time			
Safety at bus/rail stops			
Comfort on buses/trains			
Availability of schedule and service delay information			
Cleanliness of buses/trains			
Ease of bus/train entry and exit			
Other issues (please specify)			

5. What are your top priorities for improving transit service?
   Rank your choices, with 1 being your top priority. If any of the choices are not priorities for you, please leave unranked.
   _____ Weekend service
   _____ Service earlier in the morning
   _____ Service later in the evening
   _____ More frequent buses/trains
   _____ Shorter travel times
   _____ More reliable service
   _____ Upgraded transit stops (add shelters, benches)
   _____ Real time arrival information (minutes until the next bus)
   _____ Larger service area to include more destinations
   _____ Coordinated transfers with other transit providers
   _____ Lower bus/train fare
   _____ Make easier to get on or off the bus/train
   _____ Make it easier to travel with bikes on vehicles

6. How long does it take you to walk to the closest transit stop from your home?
   In minutes

7. How long does it take you to reach your destination from your closest transit stop?
   In minutes

8. How long is your typical bus or train ride?

In minutes

9. Which of the following are available to you as an alternative to public transit?
   Select all that apply
   a. Drive myself
   b. Carpool
   c. Bike
   d. Walk
   e. Taxi, Uber, Lyft, or similar service
   f. I have no other reasonable or affordable alternative

10. Why do you choose to take public transit?
    Select all that apply
    a. Convenience
    b. Speed
    c. Reliability
    d. Safety
    e. Comfort
    f. Cost
    g. Flexibility
    h. Other (please specify)

11. Do you have any other comments pertaining to public transit in Brunswick?

Demographic Questions

12. How old are you?
    a. Under 18
    b. 18-29
    c. 30-49
    d. 50-64
    e. 65 or older
    f. Prefer not to say

13. How would you describe your gender?
    a. Male
    b. Female
    c. Non-binary
    d. Prefer to self-describe _____
    e. Prefer not to say

14. How would you describe your race and ethnicity?
    Select all that apply
    a. Asian
    b. Black or African American
    c. White
    d. Hispanic or Latino/Latina/Latinx

e. Native American or American Indian
f. Pacific Islander
g. Other
h. Prefer not to say

15. Do you have access to a vehicle for your own personal use?
    a. Yes (always or most days)
    b. Sometimes but not every day
    c. Rarely
    d. No (never)

16. What is the highest level of education you have completed?
    a. Less than high school
    b. High school diploma
    c. Some college, no degree
    d. Associate degree or vocational training
    e. Bachelor's degree
    f. Master's degree or doctorate degree
    g. Other

17. Where do you live in Brunswick?
    Select one
    a. In-town/Bowdoin Campus
    b. Water Street/Jordan Ave
    c. Bath Road/Cook's Corner /Gurnett Rd
    d. Brunswick Landing
    e. Old Bath Rd (Maplewood Manor and Bay Bridge Estates)
    f. Maquoit Rd (Brunswick Bay and Linnhaven)
    g. Park View (south of Pickard Field, east of Maine St/Maquoit Rd)
    h. West Side (bordered by Church Rd, Pleasant Hill Rd, Spring St and Pleasant St/Rt 1)
    i. Other (please specify)
    j. I do not live in Brunswick.

18. Please provide your street address or nearest cross streets to give us a better understanding of the issues and conditions in your area.
    Optional

19. Please provide your email address if you would like project updates or meeting notifications.
    Optional

Thank You!

If you would like to provide more detailed feedback on the transit issues in your community, please visit the mapping activity found at http://fhiplansurvey.com/brunswick/.
More information about the Brunswick Transit Study is available at the study website: www.brunswicktransitstudy.com.

Appendix D Public Meeting One and Stakeholder Input

The Town of Brunswick held the first public meeting virtually on September 14, 2020. The project team provided an overview of the study, outreach conducted to date, and an opportunity to provide comments. The following comments and questions were received:

- What is the timeline for new transit services?
  - The study team is looking into different routing, service options, and models. We will develop a proposed service plan. We will put together an implementation plan that will be given to the Town to move forward in 2021.
  - It depends on what the recommendations are, but some of these things can be accomplished relatively easily: changing some of the routes or making the stops more permanent, for instance.
- What is the cost to improve the service?
  - The study team will estimate the operating costs and capital costs (vehicles, infrastructure) and work with the Town and MaineDOT to identify appropriate sources of funding.
- It would be great to operate METRO BREEZ on Sundays.
- For people who want to take the Explorer or the BREEZ, there's a need for more parking near the stops. Increased parking will serve businesses as well.
  - The Town is beginning construction on the Cedar Street park-and-ride facility. The facility will provide over 100 new parking spaces, and there will be a new bus stop and amenities servicing the BREEZ, Explorer and Downeaster. The Town anticipates project completion by July 2021.
- Are there plans for new routes in Brunswick Landing?
  - Yes, the study team is looking into the potential for additional options to get into and out of the Landing.
- Is this study just for Brunswick? What about connections to Bath?
  - It's focused on the Town of Brunswick, but the study team is looking at connections to intercity services. Our study findings have revealed that regional transit connections are desired by people visiting, working, and living in the greater Brunswick community. We understand the demand for Bath transit service and connections are relatively high.
- There are needs to get to Bath.
  - Affordable housing is a highly limited resource in the Bath/Brunswick area. Many low-income workers without cars need connected public transport between Bath and Brunswick. The two buses both run close to the same point at Sweetser. If Brunswick and Bath coordinated their schedules, carless workers could use both town buses to get to work in the other town.
  - Brunswick and Bath should coordinate their bus schedules.
- Sweetser is an important employment destination.
- There is a lot of development going on in Brunswick. How is new development accounted for if residents and businesses are not established there yet?

  - The study team has been working with the Town to determine growth projections to understand potential demand. Indications of future demand as well as current demographic information are being considered.

- A resident from Topsham would love to be able to take a bus to Brunswick and requested a route to the Topsham Fair Mall.
- Equally important as increased frequency and expansion of routes is making sure that various transit services make an effort to synchronize schedules to facilitate connections and reduce the in-town equivalent of layovers.

Appendix E Public Meeting Two and Stakeholder Input

The Town of Brunswick held the second public meeting virtually on December 10, 2020. The project team provided an overview of the study, outreach conducted to date, description of three alternatives, and an opportunity to provide comments. The questions and comments received, as well as the project team's responses, are noted below.

Nsiona Nguizani presented several questions from New Mainers:

- What is the routing distinction between Alternatives 2 and 3, with limited service within the Landing?
  - None, the distinction between the two is the frequency of service. Residents of the Landing would still have approximately hourly service. By adding Maplewood Manor on Alternative 3, the wait would be slightly longer, perhaps by 10 minutes.
- Where exactly would the stop at the Landing be?
  - Alternative 1 would provide direct access to residents Pegasus Landing. Alternative 1 includes adding stops for a total of about 5 or 6 stops within the Landing.
  - Alternatives 2 and 3 do not serve Pegasus Landing. The stops would not change from current.
- Will there be a bus shelter with rider amenities?
  - The team is evaluating bus stop amenities, on a general level, where transit amenities would be appropriate. The team may review in more detail in subsequent studies.

Courtney Neff was the first caller. He is in favor or Alternative 1 to best serve the Head Start program. He suggested alternating with Landing Drive, Admiral Fitch Avenue, and Gurnet Road.

Ryan Barnes (Town of Brunswick) reviewed the emailed comments received earlier in the day.

- Courtney Neff noting the need for transportation options to Head Start.
- Larissa Darcy noting the need for transportation options for the High School and Middle School, especially for after-school activities.

Caller Kathleen Thunderburk requested engagement with Maplewood Manor residents.

  - Additional outreach may be warranted, so that we can hear from more residents, including Bay Bridge Estates and Maplewood Manor. This is the start of a larger implementation process. Sally Costello (Town of Brunswick) reiterated that there will be regular evaluations as part of this service improvement, based on feedback.

Caller Katherine [unknown last name] questioned if there could be various service routes to capture a broader ridership. The team has investigated a dual-route option and it may be part of future iterations of the service with additional funding.

Caller Kathleen noted that riders, especially those within Pegasus Landing, must be able to connect with the BREEZ.

Conclusions

In the first round of outreach, which included a survey, the first virtual public meeting, and the first focus group with New Mainers, participants reported long walking times to reach stops, confusion about bus arrival times, and the desire to see new service areas served on every trip. The alternatives shared in the second round of outreach attempted to respond to these requests through proposing routing alternatives. The feedback received on these routings suggested a strong preference to see Brunswick Landing served on every trip, hourly trip frequencies, service earlier/later in the day, and Maplewood Manor served. Based off these comments, the project team will continue to explore feasibility and costs associated with expanded Brunswick Explorer service span, frequency, and coverage.

Appendix F Survey Two Summary

Survey Two Results

The second Brunswick Transit Study survey was live from November 16, 2020 to December 10, 2020, which allowed for input leading up to and following the final virtual public meeting. Whereas the previous survey asked questions pertaining to all transit services offered in Brunswick (e.g., the Amtrak Downeaster, METRO BREEZ), the second survey only asked questions pertaining to the Brunswick Explorer. The survey asked respondents select their preferred routing option, share their top priorities regarding routing and service hours, provide information about their existing use of the Brunswick Explorer, and note their use of the demand response services currently offered. Demographic information was also collected. There were 132 respondents.

The project team distributed the survey through email lists, the project website, a press release, paper copies at Town Hall, and at the virtual public meeting held via local access television. A New Mainers focus group with Lingala speakers was held in lieu of a survey. This section documents the feedback received. A copy of the survey is available below (see Survey Two Instrument).

Use of the Brunswick Explorer and Trip Purpose

Most of the respondents were not regular users of the Brunswick Explorer. Close to ten percent of respondents use the Brunswick Explorer on a weekly basis (Figure 68). Of those who use the Brunswick Explorer, shopping, transfers to other transit services, and medical care/doctor's visit were the most common destinations (Figure 69).

Figure 68. How often do you use the Brunswick Explorer (n=132)

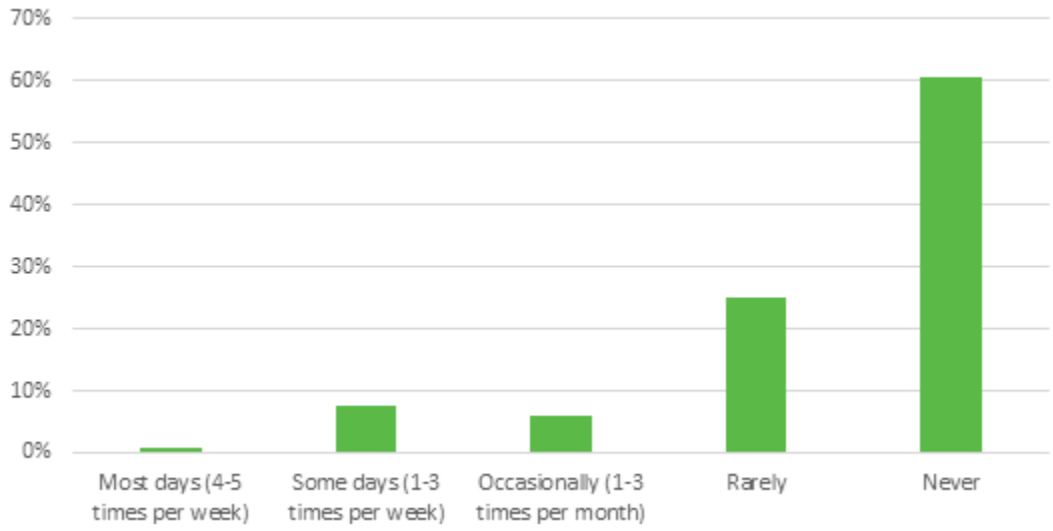
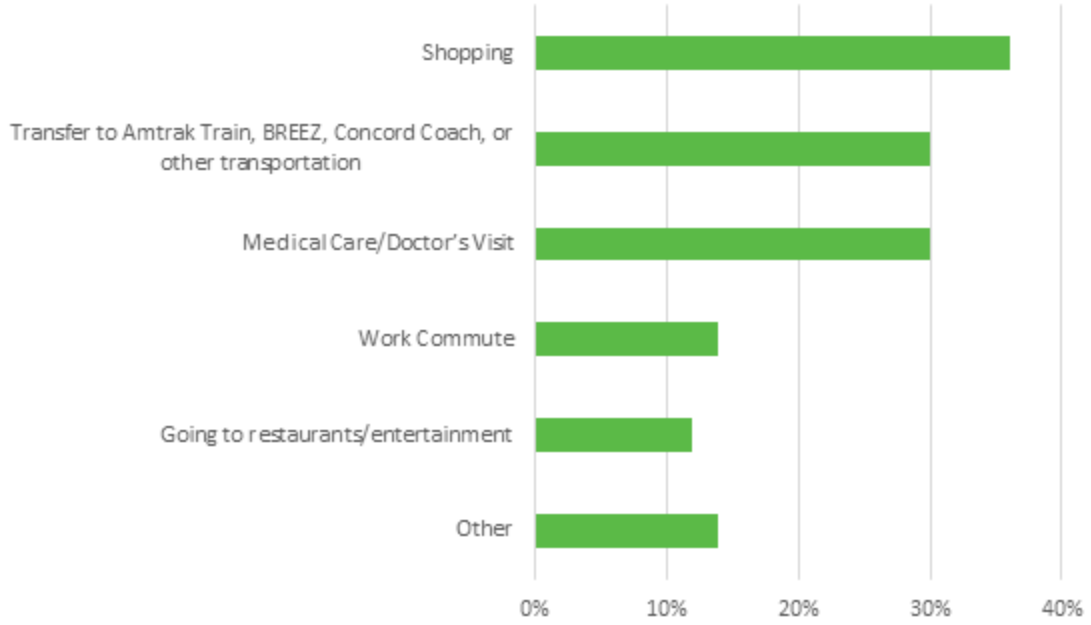
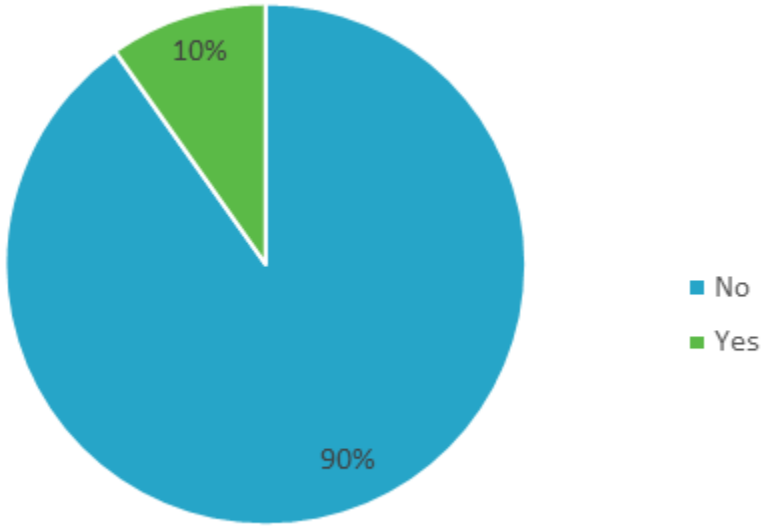


Figure 69. If you use the Brunswick Explorer, what is your primary trip purpose? (n=50)



Requesting an off-route pick-up or drop-off ahead of time is an existing service provided by the Brunswick Explorer. Only about 10 percent of the existing users who responded to the survey used this service (Figure 70). Among those, the majority said they had no other reasonable alternative were this service not provided.

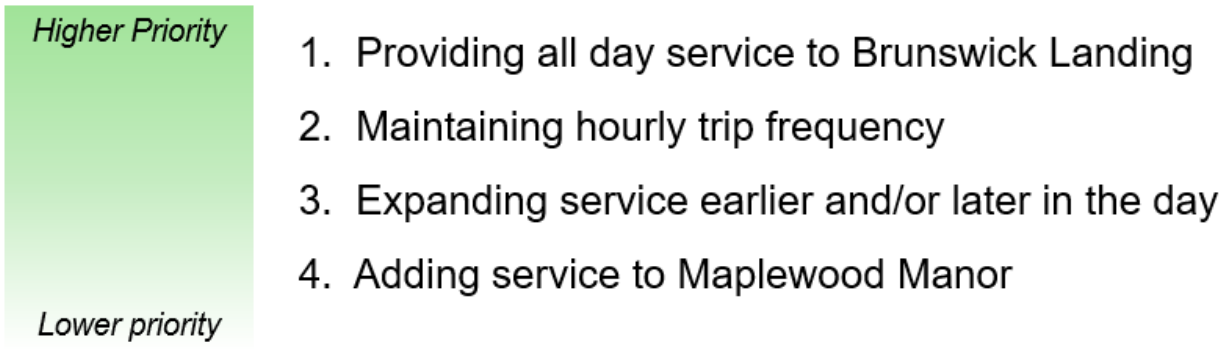
Figure 70. Have you ever requested a pick-up or drop-off ahead of time? (n=51)



Respondent Priorities

The survey asked respondents to rank their priorities pertaining to updated service. The highest ranked priority was providing all day service to Brunswick Landing (Figure 71). As one respondent noted, “I feel very strongly about adding regular service to Brunswick Landing to help weave it into the fabric of Brunswick, increase Rec Center use, and support the new residences and businesses there.” Maintaining hourly trip frequency and expanding service earlier and/or later in the day were roughly tied for second highest priority. Adding service to Maplewood Manor was the lowest ranked priority, but many respondents felt strongly that service should be added to this neighborhood, as well as Bay BridgeEstates. Respondents to the first survey said that Maplewood Manor and Bay Bridge Estates residents walk to Bath Road to use the Brunswick Explorer today. This walk can take 30 minutes or more.

Figure 71. Respondent Priorities

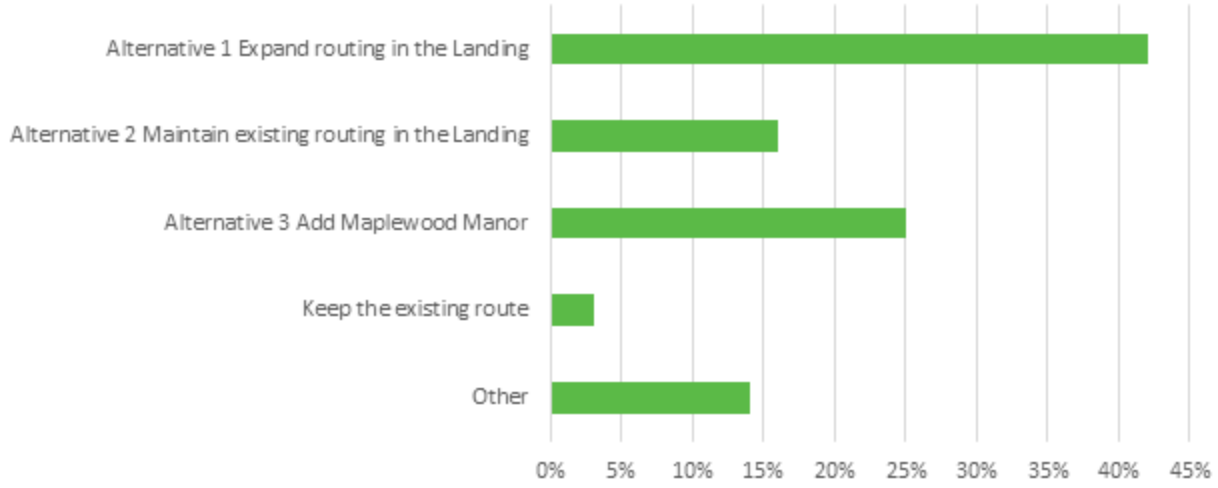


The survey included maps of three routing alternatives:

- **Alternative 1 Add service to Brunswick Landing, including Pegasus Landing and destinations on Neptune Drive**
- **Alternative 2 Maintain existing routing in Brunswick Landing**
- **Alternative 3 Maintain existing routing in Brunswick Landing and add service to Maplewood Manor**

All three alternatives were popular among respondents, with Alternative 1 being the most popular choice. Only three respondents (less than five percent) said they preferred to keep the existing routing.

Figure 72. Which of the options do you prefer? (n=100)



The survey asked for additional input on respondents' preferred routing option. Many comments expressed a strong desire to see service to Maplewood Manor, as well as Bay Bridge Estates. One respondent noted that having occasional trips to Maplewood Manor would be helpful to aid in commuting.

Additional Comments

The survey included an open-ended question for additional comments. Of those who responded, many reiterated a desire to see Bay Bridge Estates served by the Brunswick Explorer. Additional service requests included:

- Brunswick Industrial Park
- Brunswick High School and surrounding communities
- Antietam Street
- River Road
- Maquoit Road
- Locations outside of Brunswick, such as Wiscasset, Bath, and Lewiston

Two respondents mentioned that the pandemic has reduced their use of the Brunswick Explorer, but they plan to use it in the future. One respondent requested that the bus stops be well-marked and have shelters.

Demographics

The survey concluded with a series of demographic questions (Figure 73 through Figure 80). The results of the demographics suggested the following:

- Respondents were mostly between the ages of 30 and 64.
- More than 60 percent of respondents were women.
- Eighty-six percent of respondents were white.
- About 78 percent of respondents have access to a vehicle every or most days.
- Seven percent of respondents use a mobility device (e.g., wheelchair, walker).

- Just over half of respondents are employed full time; nearly 30 percent of respondents were retired.
- More than 75 percent of respondents had a Bachelor's, Master's, or Doctorate degree.
- Almost 20 percent of respondents lived outside Brunswick, but each neighborhood within Brunswick was represented.

Figure 73. How old are you? (n=96)

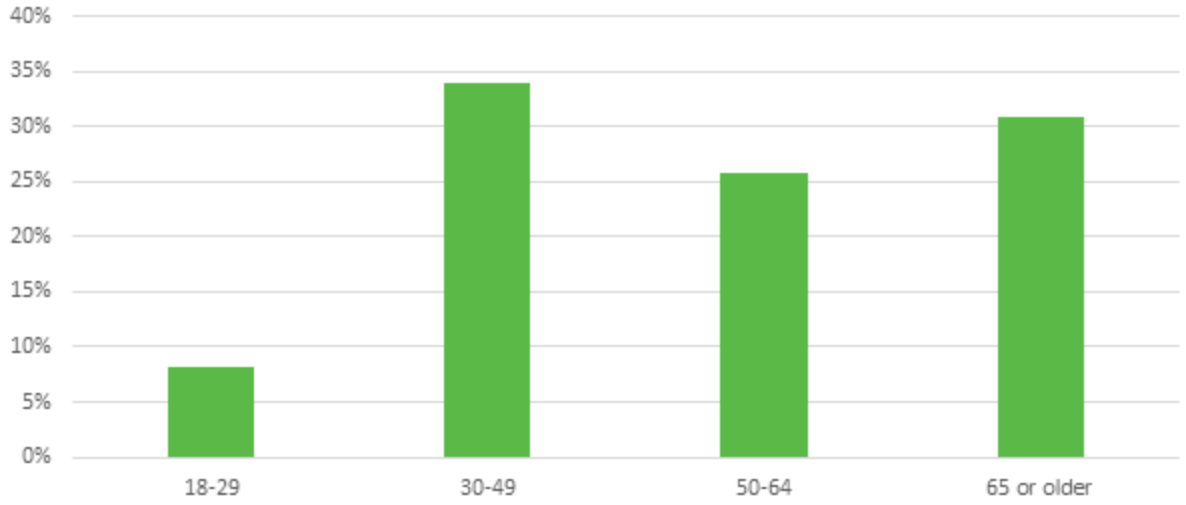


Figure 74. How would you describe your gender? (n=95)

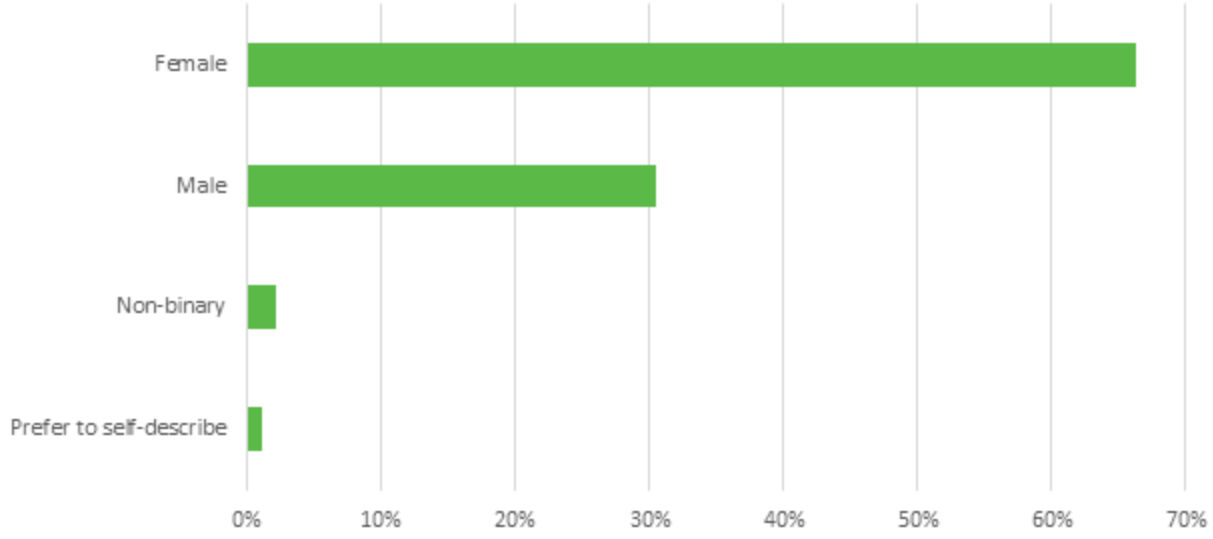


Figure 75. How would you describe your race and ethnicity? (n=98)

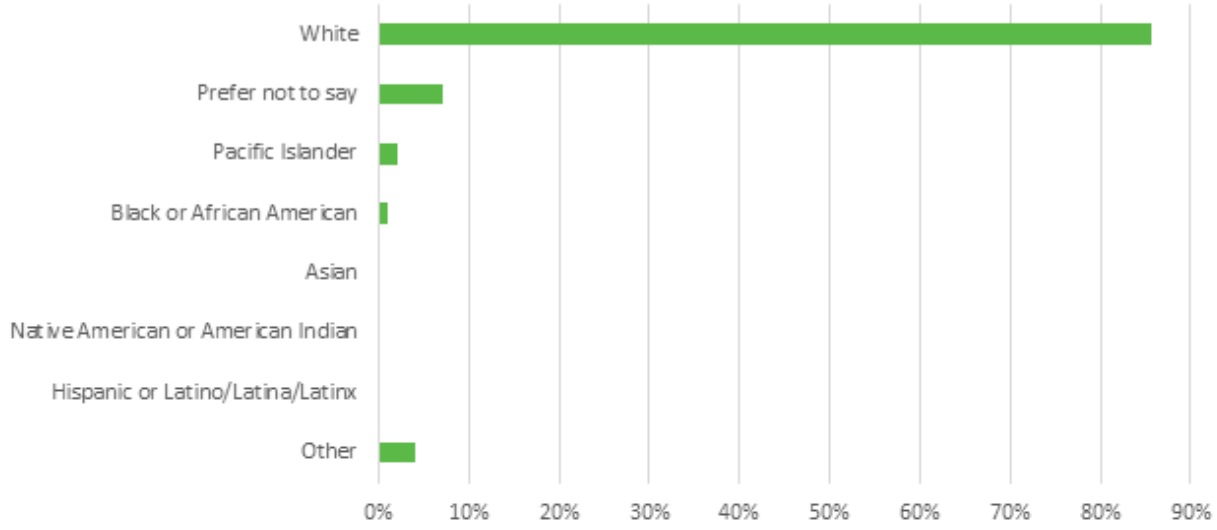


Figure 76. Do you have access to a vehicle for your own personal use? (n=98)

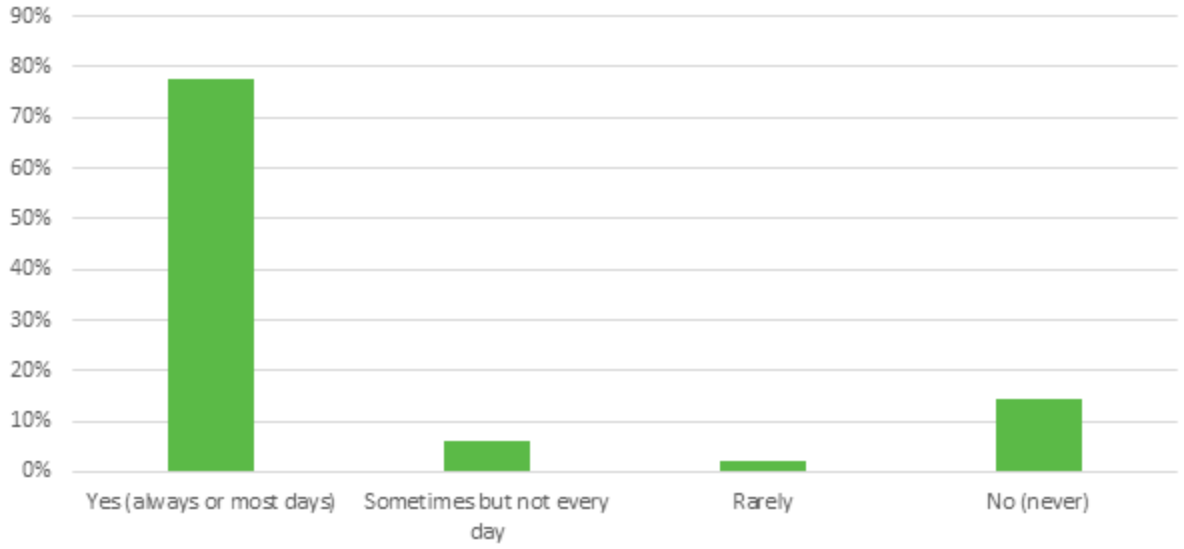


Figure 77. Do you use a mobility device (e.g., wheelchair, walker)? (n=98)

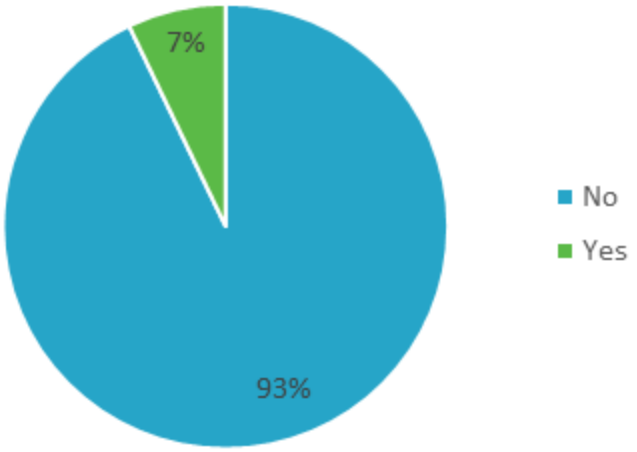


Figure 78. What is your employment status? (n=98)

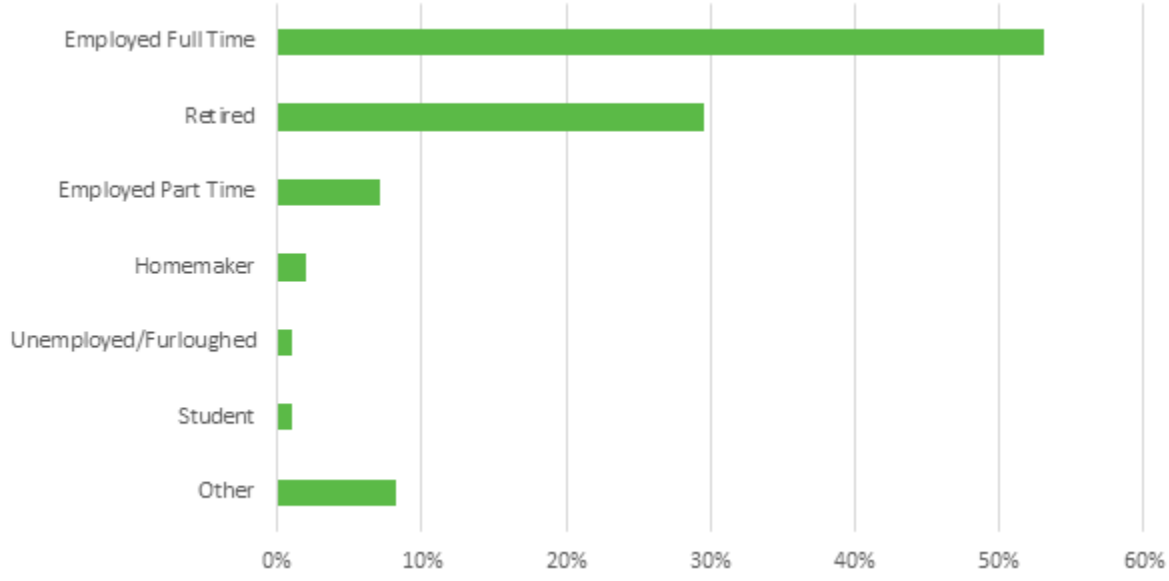


Figure 79. What is the highest level of education you have completed? (n=98)

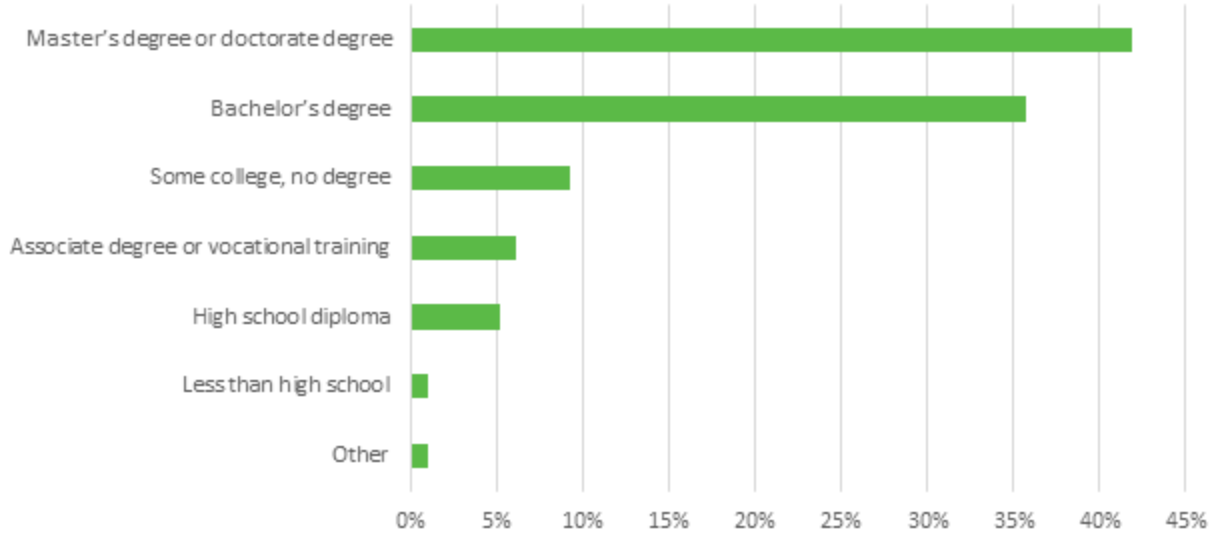
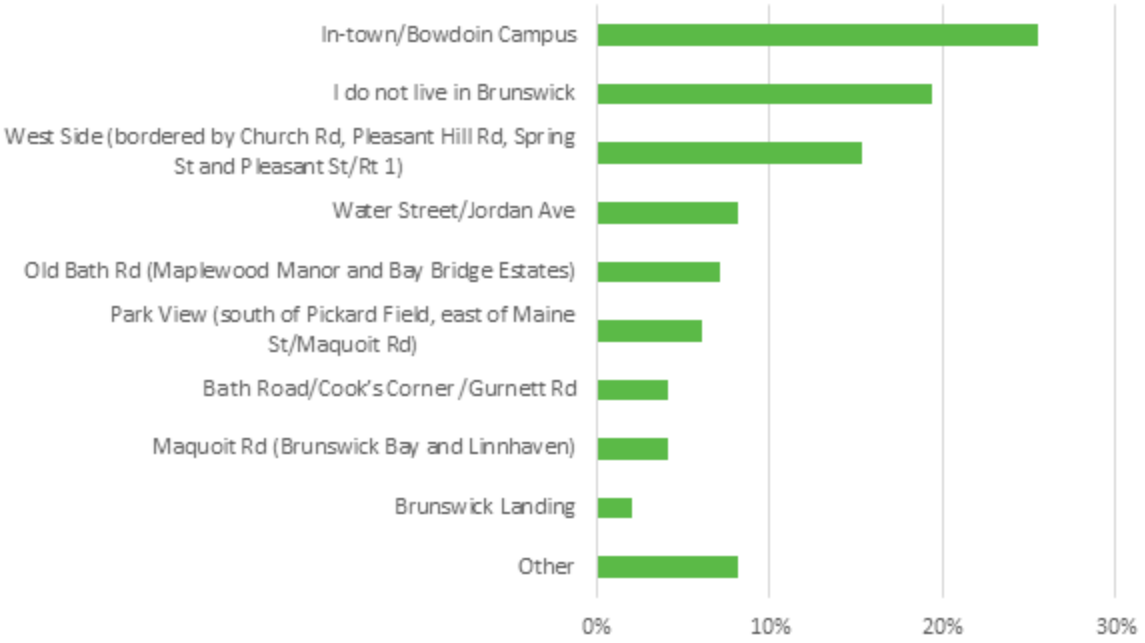


Figure 80. Where do you live? (n=98)



This survey presented the routing and service options developed after a public workshop and a workshop with the New Mainers organization. The purpose of the survey was for the public to communicate their preferred service alternative which would guide the development of final recommendations for Brunswick Explorer Service. The survey results indicated the following preferences:

- Serve Brunswick Landing on every trip
- Provide service earlier/later in the day
- Maintain hourly service

- Strong interest in serving Maplewood Manor and other destinations
- Residents shared concerns about transportation access for seniors, New Mainers, kids, and low-income families.
- Preferred option: Alternative 1
- Add service to Brunswick Landing, including Pegasus Landing and destinations on Neptune Drive

Survey Two Instrument

Thank you for participating in the second Brunswick Transit Study survey!

The Town of Brunswick is undertaking a project to better understand the transit needs of the community and how the community is using the existing transit services available in Brunswick.

Building on feedback received from the first survey and the first public meeting, the Brunswick Transit Study project team is seeking additional input on the Brunswick Explorer bus service.

At the end of the survey, you may share your email address for project updates and meeting notifications (optional).

For more information, please visit the project website at www.BrunswickTransitStudy.com.

Transit Questions

1. How often do you use the Brunswick Explorer?
    a. Most days (4-5 times per week)
    b. Some days (1-3 times per week)
    c. Occasionally (1-3 times per month)
    d. Rarely
    e. Never

2. If you use the Brunswick Explorer, what is your primary trip purpose?
    a. ___ Work Commute
    b. ___ Shopping
    c. ___ Travel to School
    d. ___ Medical Care/Doctor's Visit
    e. ___ Going to Restaurants/Entertainment
    f. ___ Transfer to Amtrak Train, BREEZ, Concord Coach, or other transportation
    g. ___ Other _____

3. If you use the Brunswick Explorer, have you ever requested a pick-up or drop-off ahead of time?
    a. ___ Yes
    b. ___ No

4. If you have requested a pick-up or drop-off ahead of time, how would you have made the trip if pick-up/drop-off were not available?
    a. I still would have taken the Brunswick Explorer from a bus stop
    b. Drive myself
    c. Carpool or friend/family would drive me

d. Bike

e. Walk

f. Taxi, Uber, Lyft, or similar service

g. I have no other reasonable or affordable alternative

h. Other (please specify)

5. If there were to be changes to the Brunswick Explorer, please rank your preferences with 1 being highest priority and 4 being lowest priority.

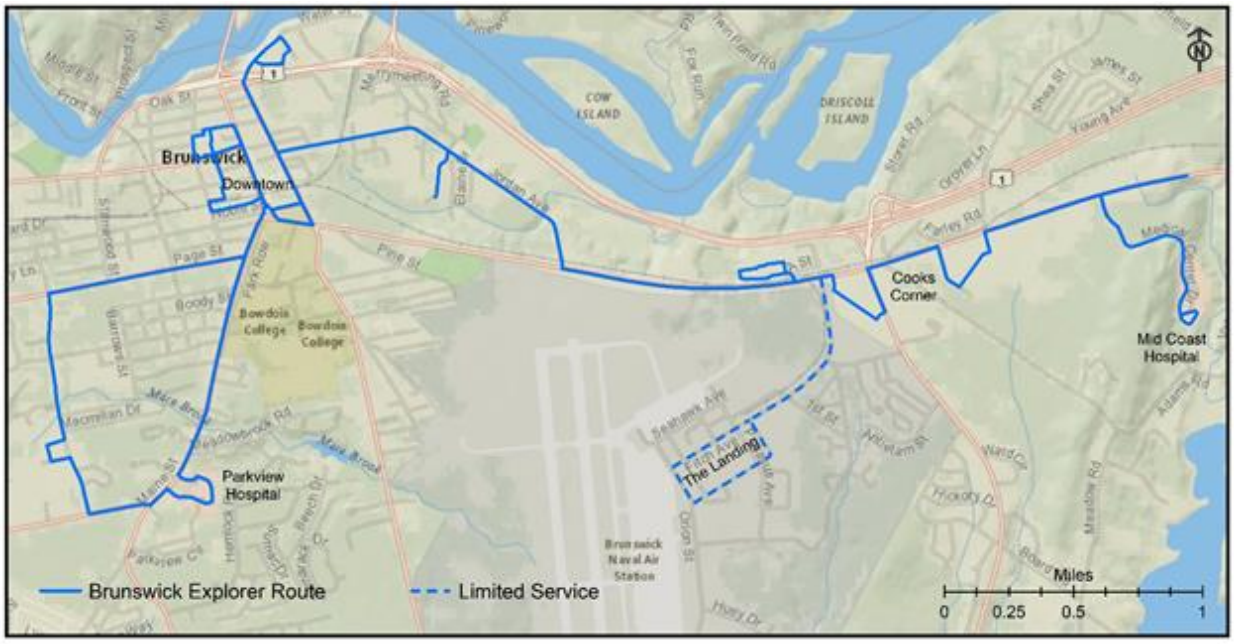
   a. ___ Adding service to Maplewood Manor

   b. ___ Providing all day service to Brunswick Landing

   c. ___ Maintaining hourly trip frequency

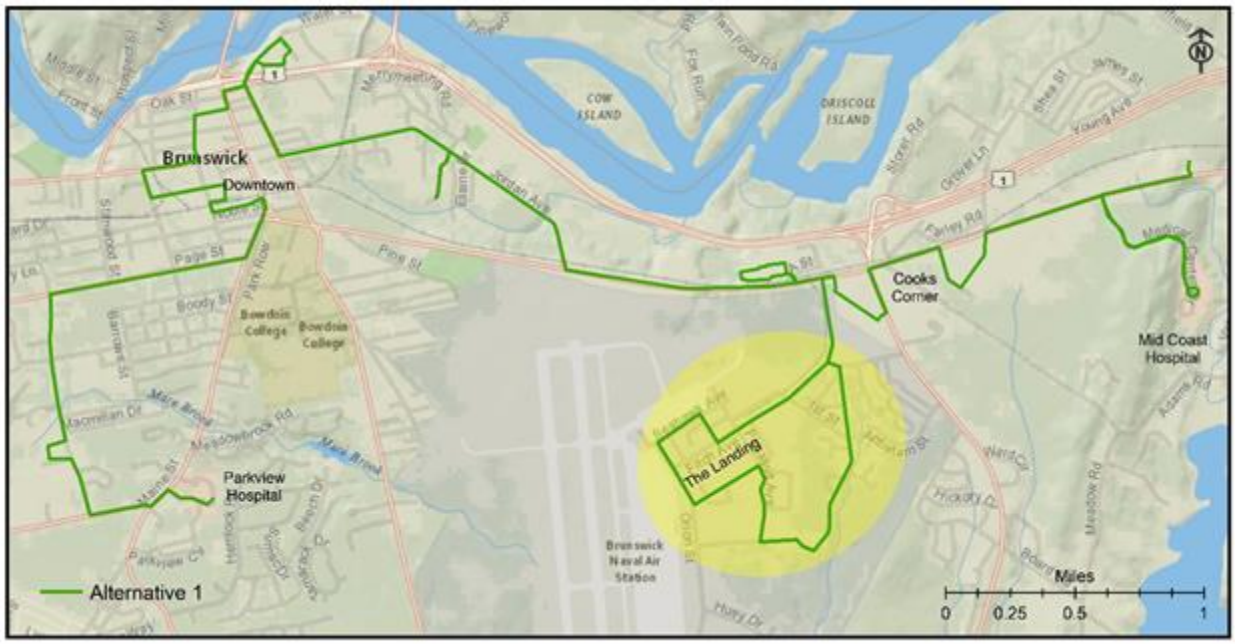
   d. ___ Expanding service earlier and/or later in the day

6. Based on the results of the first survey and feedback received at the first public meeting, the Brunswick Transit Study project team is considering modifying the existing route (shown below).

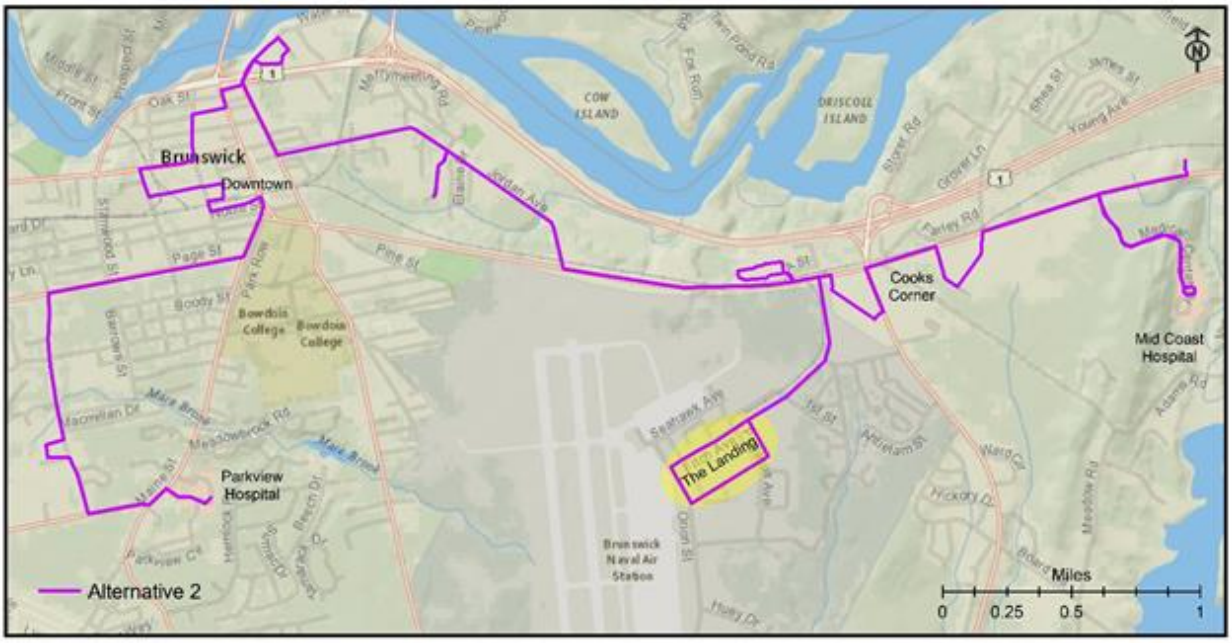


All three alternatives currently include simplified routing in downtown. This saves time, which would allow Brunswick Landing to be served on every trip. Three proposed alternatives are discussed below.

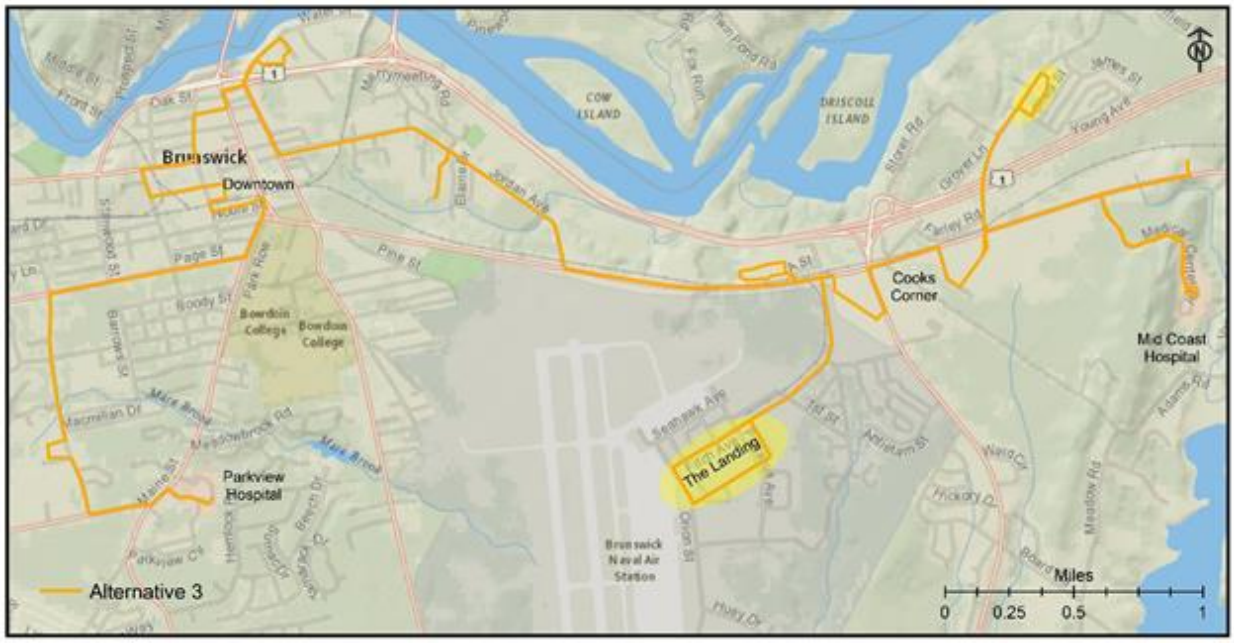
   a. **Alternative 1** would serve Brunswick Landing on every trip and provide service to Pegasus Landing, Coastal Shores, Coastal Landing, and destinations on Neptune Drive would have service.



b. **Alternative 2** provides service to Brunswick Landing using the existing routing. Brunswick Landing would be served on every trip.



c. **Alternative 3** also provides service to Brunswick Landing on every trip but also includes an extension to Maplewood Manor. If the route serves both Brunswick Landing and Maplewood Manor, buses would have slightly less frequent service than today.



- Which of the options do you prefer?
  i. Alternative 1: Add service to Brunswick Landing, including Pegasus Landing and destinations on Neptune Drive
  ii. Alternative 2: Maintain existing routing in Brunswick Landing
  iii. Alternative 3: Maintain existing routing in Brunswick Landing and add service to Maplewood Manor
  iv. Keep the existing route
  v. Other

7. Please provide additional comments on your selection.
8. Do you have any additional feedback?

Demographic Questions

9. How old are you?
   a. Under 18
   b. 18-29
   c. 30-49
   d. 50-64
   e. 65 or older
   f. Prefer not to say

10. How would you describe your gender?
    a. Male
    b. Female
    c. Non-binary
    d. Prefer to self-describe _____
    e. Prefer not to say

11. How would you describe your race and ethnicity? (*Select all that apply)*
    a. Asian
    b. Black or African American
    c. White
    d. Hispanic or Latino/Latina/Latinx
    e. Native American or American Indian
    f. Pacific Islander
    g. Other
    h. Prefer not to say

12. Do you have access to a vehicle for your own personal use?
    a. Yes (always or most days)
    b. Sometimes but not every day
    c. Rarely
    d. No (never)

13. Do you use a mobility device (e.g., wheelchair, walker)?
    a. Yes
    b. No

14. Employment Status *(Choose all that apply)*
    a. Employed Full Time
    b. Employed Part Time
    c. Student
    d. Unemployed/Furloughed
    e. Retired
    f. Homemaker

g. Other _____

15. What is the highest level of education you have completed?
    a. Less than high school
    b. High school diploma
    c. Some college, no degree
    d. Associate degree or vocational training
    e. Bachelor's degree
    f. Master's degree or doctorate degree
    g. Other

16. Where do you live in Brunswick? (*Select one)*
    a. In-town/Bowdoin Campus
    b. Water Street/Jordan Ave
    c. Bath Road/Cook's Corner/Gurnett Rd
    d. Brunswick Landing
    e. Old Bath Rd (Maplewood Manor and Bay Bridge Estates)
    f. Maquoit Rd (Brunswick Bay and Linnhaven)
    g. Park View (south of Pickard Field, east of Maine St/Maquoit Rd)
    h. West Side (bordered by Church Rd, Pleasant Hill Rd, Spring St and Pleasant St/Rt 1)
    i. Other (please specify)
    j. I do not live in Brunswick

17. Please provide your street address or nearest cross streets to give us a better understanding of the issues and conditions in your area. (*Optional*)

18. Please provide your email address if you would like project updates or meeting notifications. (*Optional*

Thank You!

If you would like to provide more detailed feedback on the transit issues in your community, please visit the mapping activity found at http://fhiplansurvey.com/brunswick/.

More information about the Brunswick Transit Study is available at the study website: www.brunswicktransitstudy.com.

Appendix G Engagement Materials

Because public input was the driving force behind the development of this plan, producing accessible outreach materials was a priority for the study team. Due to the COVID-pandemic, it was not feasible to conduct the in-person outreach events that are typical to planning processes. The team relied on a project website and online survey (in addition to two public meetings and stakeholder events – all virtual) to get the majority of public feedback.

The website at https://www.brunswicktransitstudy.com/ was a comprehensive virtual resource for community members (Figure 81). It was updated regularly to include project materials and presentations (including live recordings when applicable).

Flyers advertising the survey (Figure 82) and public meetings (Figure 83) were posted on social media, buses, and emailed to the project stakeholders who were asked to print and post them or distribute them in mailboxes or send to relevant listservs.

Figure 81. Screenshot of the project website's resource library

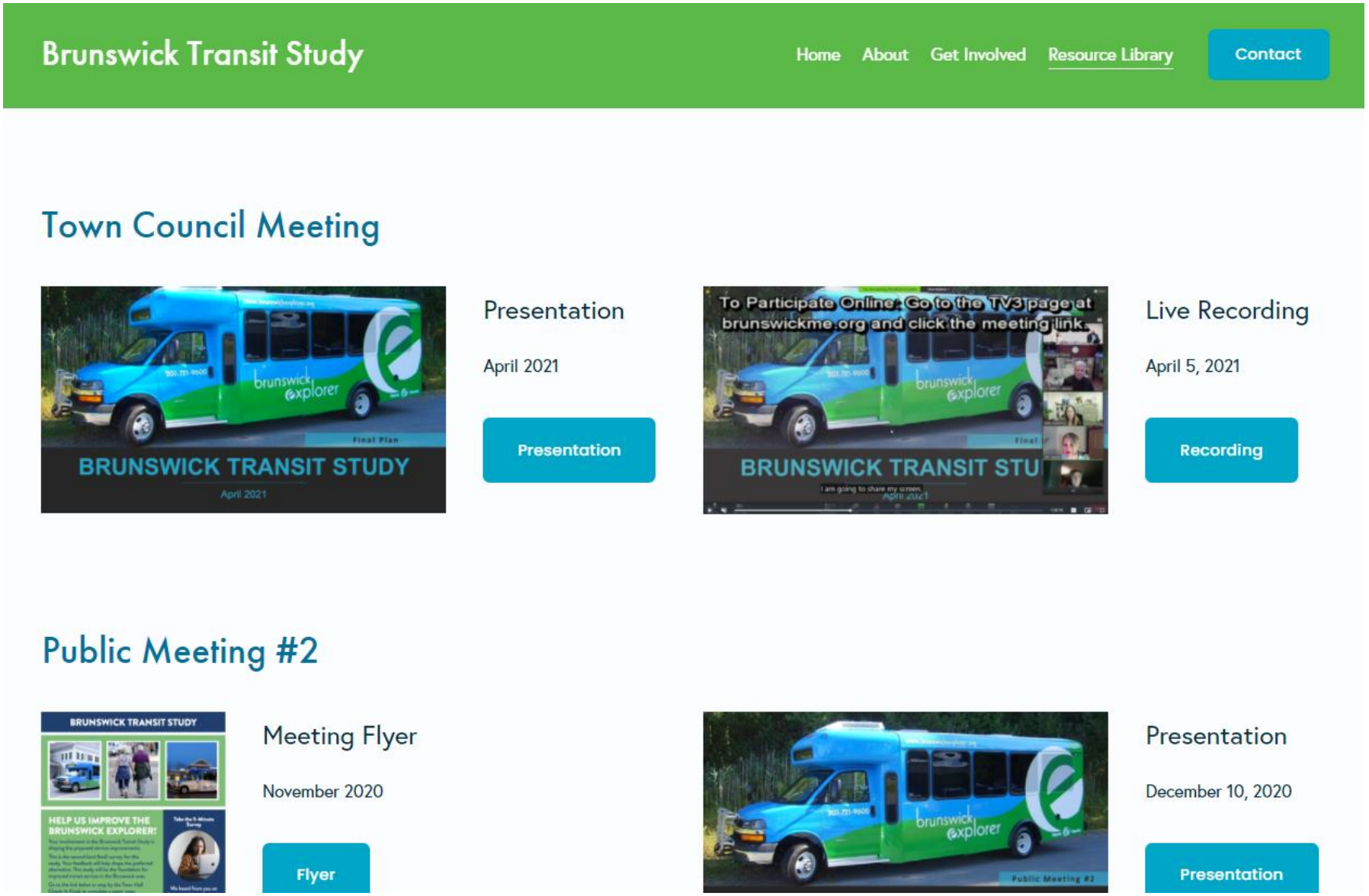


Figure 82. Flyer distributed to advertise survey

BRUNSWICK TRANSIT STUDY

HELP US IMPROVE THE BRUNSWICK EXPLORER!

Your involvement in the Brunswick Transit Study is shaping the proposed service improvements.

This is the second (and final) survey for this study. Your feedback will help shape the preferred alternative. This study will be the foundation for improved transit service in the Brunswick area.

Go to the link below or stop by the Town Hall Check-In Kiosk to complete a paper copy.

Please complete the survey by December 4, 2020.

Take the 5-Minute Survey

We heard from you on Brunswick's transit needs. Now, choose your preferred alternative.

https://www.surveymonkey.com/r/BrunswickTransitStudy2

Save the date! Virtual Public Meeting on 12/10 at 6:30pm
Visit BrunswickTransitStudy.com for details

Brunswick maine

Figure 83. Flyer advertising public meeting

Appendix H Bus Stop Guidelines

Introduction

This document provides guidance on installing bus stops and amenities from selecting a location through installation and maintenance. Figure 84 and Figure 85 provide flow diagrams for installing a bus stop and installing amenities/structures such as a shelter or bench at an established stop, respectively.

There are four basic steps to installing either a stop or structure at a stop:

1. **Ensuring Americans with Disabilities Act (ADA) compliance**
2. **Obtaining necessary permits and permissions**
3. **Installation**
4. **Maintenance**

The subsequent sections of this Appendix provide further information on each of the steps.

Figure 84. Bus Stop Sign Installation

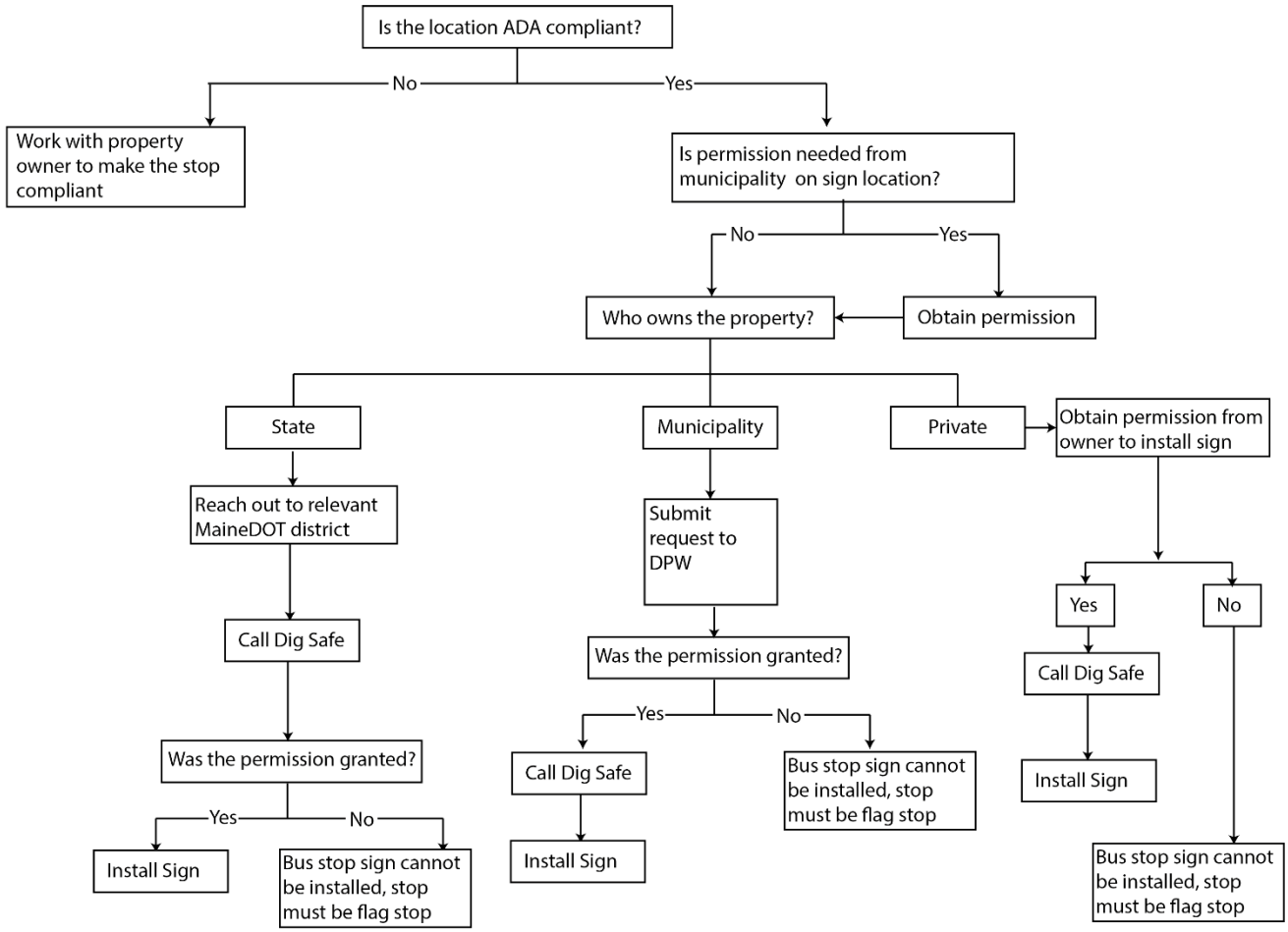
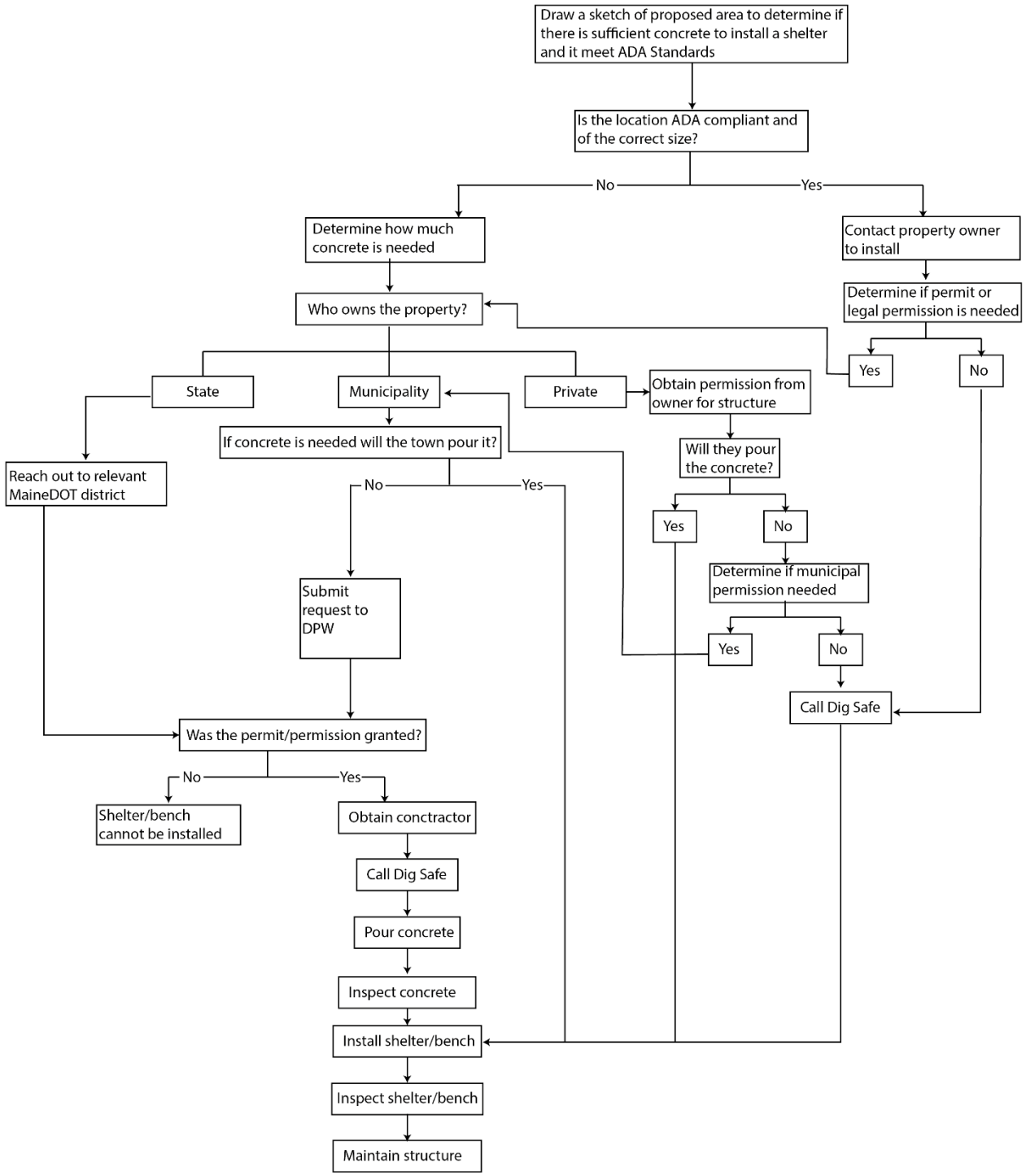


Figure 85. Shelter or Bench Installation



Bus Stop Hierarchy

In order to prioritize limited resources, bus stop types are organized hierarchically into basic stops and transit center stops.

- **Basic stops** make up the majority of bus stops and are served by most routes. They are the primary access point to bus service. At a minimum, they should have a bus stop sign, an ADA

compliant boarding area and an information case. A shelter should be included if there are 50 or more boardings per day.

- **Transit center stops** serve multiple routes and over 50 boardings per day with an array of passenger amenities. To determine which amenities are needed, considerations include the number of routes served, the stops' role as a transfer point, special populations served by the stop and the potential for stop sponsorship.

ADA Compliance

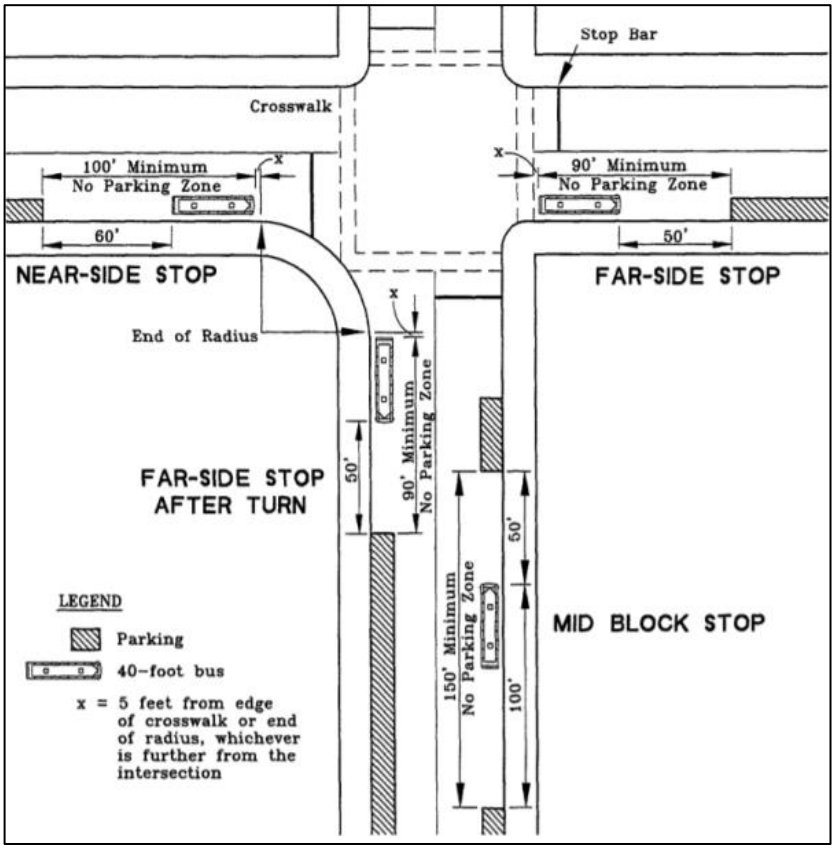
This section outlines the minimum ADA requirements, herein referred to as ADA Standards, for the placement of bus stops and amenities. These standards are based on the Americans with Disabilities Act of 1990 and the subsequent ADA Accessibility Guidelines for Buildings and Facilities (ADAAG). These minimums will help determine whether a stop can be placed or what modifications must be made at the proposed location to meet the minimum guidelines. The ADA Standards presented are the minimum requirements to comply with the law and are not necessarily best practices for universal design. Universal design goes beyond the minimum requirements to create environments usable by all individuals, including those with disabilities, which provide a higher level of access. For each section below, the best practices for universal design are presented in addition to the ADA Standards.

Bus Stop Area

A bus stop area is a designated location where the bus will stop to let passengers on and off. It is indicated by a bus stop sign. Flag stop areas/zones are not considered a designated area and thus not subject to the same requirements.

On-street bus stops are the most frequently used curb-side bus stop facilities and are preferred for their operating efficiency. They provide easy access for bus operators and have minimal delays to service. On-street stops can be those where the bus stops in the travel lane, in a parking lane, or on the shoulder. Stops in the travel lane require minimum design and can be easily established or relocated, however they can result in conflicts with other traffic. Stops in a parking lane or on the shoulder require enforcement to ensure parked cars do not block bus access to the curb. Ideally curb-side bus stops are placed in locations where:

Figure 86. Typical Dimensions for On-Street Bus Stops



Source: TCRP Report 19 Guidelines for the Location and Design of Bus Stops

- Travel speed is less than 40 mph
- Access can be provided for passengers with disabilities

- Major trip generators nearby
- Connections exist to pedestrian facilities
- Street lighting exists
- Adequate curb clearance is present to accommodate bus stop zone
- Nearby major intersections are signalized
- Passengers are not forced to wait, board, or alight in a driveway

On-street bus stops are typically near-side, far-side, or mid-block. Figure 86 depicts each and the minimum distances needed.

- **Near-Side Bus Stop:** bus stops immediately prior to an intersection
- **Far-Side Bus Stop:** bus stops immediately after passing through an intersection

Which type of bus stop to use varies based on adjacent land use; intersection geometry; parking; pedestrian access; presence of trees, poles, driveways, and other roadside constraints; traffic control signal timing; and bus route path. The advantages and disadvantages of each are listed in Table 25. Mid-block, pull-off, right-turn lane, and shallow sawtooth bus stops are generally not preferred and should be avoided whenever possible.

Table 25. Comparison of Bus Stop Locations

Location	Advantages	Disadvantages	When it is recommended
Far-Side	• Minimizes conflicts between right turning vehicles and bus • Provides additional right turn capacity • Minimizes sight distance issues on approach to intersection • Shorter deceleration distance needed since the bus can use the intersection to decelerate • Encourages pedestrians to cross the street behind the bus. • Driver can take advantage in gaps in traffic created at signalized intersections to reenter traffic.	• If multiple buses are stopped at one time and there is only adequate room for one bus, the cross street may be blocked. • If the bus stops in the travel lane, it may result in queued traffic behind it blocking the intersection. • Could increase the number of rear-end accidents; drivers don't expect the bus to stop again after a red light. • Can obscure sight distance for crossing vehicles. • Can increase sight distance problems for crossing pedestrians.	• Primary trip generator is upstream from the intersection • Existing pedestrian facilities are greater than on the near-side • High volume of right turns near-side of intersection • Stop is part of an enhanced bus service (EBS) or Bus Rapid Transit (BRT) service • Pedestrian movements are safer than on the near-side
Near-Side	• The bus boarding door is closer to the crosswalk. • Bus has the intersection to merge into traffic. • Bus driver can see oncoming traffic. • Eliminates double stopping potential associated with a red light. • Allows passengers to board and alight while the bus is stopped at a signal.	• Increases conflicts with right turning traffic due to cars cutting in front of the bus. • Could be difficult for bus to reenter traffic. • Can block sight distance for crossing vehicles stopped to the right of the bus. • The stopped bus may block visibility of the stop signs or traffic signals. • Visibility conflicts with pedestrians having to cross in front of a bus.	• Primary trip generator is downstream from the intersection • Existing pedestrian facilities are greater than on the far-side • Pedestrian movements are safer than on the far-side • Route requires a right turn at the intersection

- Minimizes interference when traffic is heavy on the far-side of the intersection.

For a 25’ bus, far-side stops should be located at least 30’ from the intersection to ensure that the rear of the vehicle does not protrude into the intersection and/or straddles the crosswalk. If curb-side parking is permitted after the stop, adequate clearances must be provided to allow the bus to safely merge back into traffic.

Stops located near-side of the intersection should be placed at least 5 feet from the crosswalk to prevent the bus from straddling the crosswalk while it is stopped to serve the stop. If curb-side parking is permitted before the stop, adequate clearances must be provided to allow the bus to align with the curb. Near-side stops at intersections with dedicated right-hand turn lanes where right-on-red turning is permitted should be avoided. A bus stop should not be located immediately after a curve, so that an approaching vehicle has enough sight distance to see a stopped bus in front of it.

Curb extensions – or “bulb-outs” – extend a portion of the sidewalk out to the travel lane allowing most curbside parking to remain, while providing a connection between the travel lane and the sidewalk. Curb extensions maximize the amount of on-street parking around bus stops while minimizing needed curb clearance. Buses will remain in the travel lane while serving the stop and thus traffic will queue behind the bus, particularly on single lane roadways. While a 5 foot wide by 8 foot deep sidewalk extension of these dimensions will meet minimum ADA standards, a larger clear curb area or extension is preferred to ensure both front and rear door access and egress for most buses (e.g., a typical 40 foot bus requires a 30 foot long curb extension). Curb extensions should be located:

- In areas where curbside parking is critical
- In areas with limited curb clearance
- In areas where buses experience delays in re-entering the traffic lane
- In areas where traffic calming is desired

Bus bays allow buses to pick up and discharge passengers outside of the travel lanes, so traffic flows unobstructed while the bus is stopped. However, a bus bay stop along a travel roadway open to general traffic is discouraged, due to the difficulties buses may have in exiting them and merging back into traffic, regardless of road speed. However, at terminal locations, or at off-street terminals and park-and-ride lots, a bus bay may be necessary due to the longer dwell times of buses at such facilities and the desire to not obstruct the flow of traffic for an extended period of time.

In these cases, a bus bay stop is constructed as an inset into the curb, typically with tapered ends for acceleration and deceleration. This type of structure requires enough right-of-way so that sidewalk capacity would not be adversely affected. The bus bay requires a 50’ minimum stopping area as well as a deceleration lane and an acceleration lane with lengths determined by the travel lane through speed. Additionally, in some cases bus bays increase safety for passengers by increasing the distance between them and traffic. The following locations should be considered for bus bays:

- Traffic speeds exceeds 40 mph
- Average peak-period dwell time exceeds 30 seconds per bus
- Buses are expected to layover
- History of vehicles colliding into back of bus
- Multiple buses serve the stop at the same time

For on-street bus stops, the desirable width is the traffic lane or 12 feet, whichever is greater. For pull-off areas, the desirable width is 12 feet and the minimum width is 10 feet.

Appropriate curb height is necessary to allow passengers to safely alight from the bus and the safe deployment of a wheelchair lift. Many standard and low-floor vehicles can be accommodated by the existing conventional street curb height of 8 inches. Bus stops should also have a 30 foot “clear zone” to

allow passengers to board and alight from the bus. The transit agency should check the curb height needed for level boarding for the fleet; generally 14”.

The areas where buses brake, accelerate, and turn require special attention. Unreinforced pavements, such as asphalt, deform with the weight and frequency of buses coming and going at the stop. During the summer months, the deterioration process accelerates when hot temperatures and sunlight soften the black asphalt. The heat of the bus engine may also contribute to pavements deforming. Other reasons for the road deforming are the pressure when a bus “kneels” or lowers to accommodate passengers who have trouble with the height between the curb and the bus. To address these issues, pads should be built along the following guidelines:

- Location where vehicles brake, accelerate, and turn should be paved with materials of sufficient strength to accommodate the repetitive loads of buses
- The pad should be the width of the curbside lane for bus stops
- The sizes of the pads vary based on the type of bus stop, for bus bays the concrete pad should be a minimum of 11 feet wide (preferably 12 feet)
- The pad length should accommodate the maximum number of buses stopping simultaneously and provide adequate distance for entrance and exit tapers
- If a bus stop is located within private property that is not owned by the transit agency, then the transit agency should present options to the owner and discuss responsibility for installation and maintenance

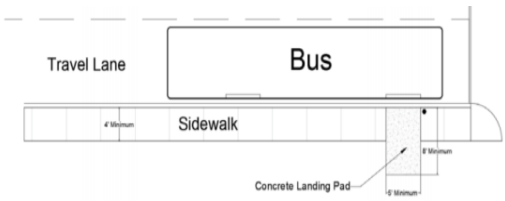
ADA Landing Pads/Passenger Waiting Area

A leveled and paved waiting area with adequate space provides greater access to wheelchair users, the elderly, and other encumbered riders. It also encourages passengers to wait further from the curb and the flow of traffic. Ideally for urban areas and high volume stops, and where there is adequate right-of-way, landing pads should have a firm surface, be a continuous 8-foot wide paved pad along the entire length of the bus stop and be at least five feet wide (thus satisfying the Americans with Disabilities Act). In addition, an accessible pathway to the bus stop should also be considered as part of any bus stop’s basic design in order to be considered “accessible”. Thus, a bus stop should have a curb cut at the corner nearest the bus stop, with a matching curb cut at (at least) one adjacent corner.

Minimum ADA Guidelines

- A firm stable surface including concrete, asphalt, brick, stone, tile and wood. Loose material such as gravel or stone dust do not meet the requirements unless properly treated with binders, consolidants, compaction, or grid forms. Grass is not considered a firm stable surface.
- ADA landing pad is an area that is clear of obstructions and measures 8 feet (perpendicular to the curb) by 5 feet (parallel to the curb, connected to a pedestrian path or accessible walkway, and a firm stable surface) (Figure 87). The landing pad can include part of the sidewalk.
- A cross slope no greater than 2 percent (1/50).
- Accessible connections to a street, sidewalk, path etc. Must be at least 3 feet wide.

Figure 87. ADA Landing Pad



Source: GO GoldCoast Transit Bus Stop Guidelines 2015

Universal Design Best Practices

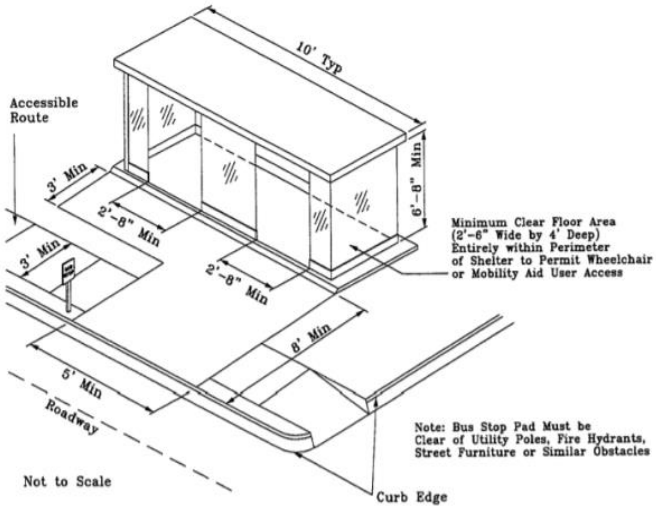
- Clear the bus stop area of all obstacles such as trees, newspaper boxes, trash receptacles, planters, and utility poles.
- Sidewalk is of sufficient width for two wheelchair passengers to pass each other.
- The front and rear door areas of the stop are free of obstructions.
- Tactile surface treatments to help visually impaired riders.

- Accessible connections to a street, sidewalk, path etc., that is 4 feet wide or greater.
- ADA landing pad is elevated above street level.

Shelters

Shelters provide protection from the elements for passengers while waiting for the bus. The decision to install a shelter is typically based on passenger volumes. The *TRCP Report 19: Guidelines for the Location and Design of Bus Stops* recommends for rural areas that a shelter be placed in locations where there are 10 or more boardings per day, in suburban 25 or more and in urban areas 50 or more. They should face the travel lane and minimize the walking distance to the loading area. To provide adequate boarding and alighting space for persons in a wheelchair, efforts should be made to place shelters at the nearside of the landing pad. There must be an accessible path for a wheelchair to enter the shelter. Shelters should ideally be connected to electric power to provide lighting to patrons, and allow for the future installation of real-time information and fare collection machines. Other considerations include providing adequate seating and route information, not obstructing sightlines or the sidewalk, and a suitable appearance for the neighborhood.

Figure 88. Shelter Design Example to Meet ADA Standards



Source: TRCP Report 19: Guidelines for the Location and Design of Bus Stops

Shelter maps are strongly recommended for all on-street stops with at least 300 boardings per day as well as those served by enhanced bus service regardless of ridership. The poster should include a map of transit services with routes that serve the stop and the stop itself highlighted, a close-up map of the immediate neighborhood in a ¼ mile radius around the station and timetables of all transit routes serving the stop.

Minimum ADA Guidelines

- Clear path of 3 feet minimum in front or behind shelter for sidewalk.
- Entrance must be 2 feet 8 inches wide at minimum.
- Minimum clear floor area of 30 inches wide by 4 feet deep.
- Not placed on the ADA landing pad.
- Minimum height of 6 feet 8 inches.
- If it abuts a building, there must be 12 inches between the shelter and building at minimum.
- Connected to route to the landing pad.
- Accessible connections to a street, sidewalk, path etc.

Universal Design Best Practices

- Locate at the far end of the bus stop to improve visibility and improve walking distance from the shelter to the bus.
- Minimum distance of 2 feet between the back face of the curb and the roof or panels of a shelter.
- Minimum of 10 feet in length.

- Transparent sides for visibility and security.
- Constructed of materials that are resistant to weather; from which graffiti is easily removed.
- Waterproof with drainage away from the bus stop.
- Vertical clearance of 6 inches off the sidewalk to prevent trash and debris from collecting and standing water.
- Avoid locating a shelter in front of a store window.
- Orient shelter to minimize exposure to weather elements.
- Non-flat roof.

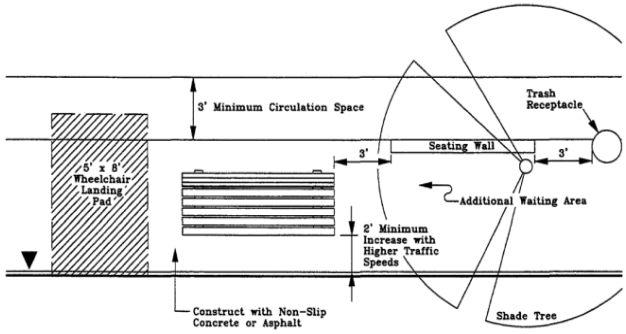
Benches

Benches are recommended for bus stop locations that are near sites that attract riders who may have difficulty walking and standing, particularly at stops where headways are longer than 15 minutes. The ADA specifies dimensions for minimum bench accessibility.

Minimum ADA Guidelines

- Seat dimensions: 20 inches minimum to 24 inches maximum in depth and 42 inches (1,065 millimeters) minimum in length.
- Seat height: 17 inches minimum to 19 inches maximum above the floor or ground.
- Back support: 42 inches minimum in length and that extends from a point 2 inches maximum above the seat to a point 18 inches minimum above the seat.
- Structure supporting vertical or horizontal forces of 250 pounds applied at any point on the seat, fastener, mounting device, or supporting structure.

Figure 89. Conceptual Bench and Waiting Pad Design



Source: TRCP Report 19: Guidelines for the Location and Design of Bus Stops

- Exposed benches: slip resistant and designed to shed water.
- If installed inside the shelter it must be installed in such as manner to allow a wheelchair passenger to still use the shelter (30 inches).
- Do not install bench on ADA landing pad.
- Minimum of 2 feet between the bench and back face of curb.
- Minimum of 3 feet circulation space on either side of the bench for access.

Universal Design Best Practices

- Install bench where there is shade and lighting or inside the shelter.
- Avoid locating benches on undeveloped rights-of-way and anchor to prevent unauthorized movement of the bench.
- Place benches to the back of a sidewalk, to allow for pedestrian circulation.
- Construct using materials that are resistant to weather; from which graffiti is easily removed.
- Locate benches away from driveways.
- Maintain a separation of 4 feet between the bench and the back face of the curb.

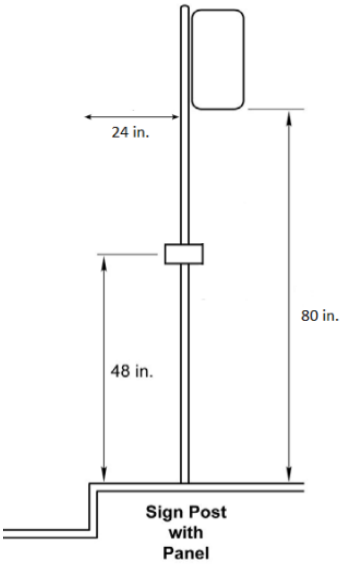
Signage

A bus stop sign should be securely mounted on its own post, at an angle perpendicular to the street; bus stop signs should also be faced away from the roadway to avoid making contact with passing vehicles. Each bus stop should be marked with a bus stop sign indicating to bus operators and customers the location of the bus stop. The bus stop sign should neither block nor be blocked by other street signs; the sign should also not be blocked from view by any trees. The sign indicates to passengers and drivers where buses stop, as well as publicizes the availability of the service. Placement of bus stop signs should take into consideration customer convenience, safety, and stop visibility. Bus stop signs should conform to ADA requirements for height, width, and visibility. Their design should also provide route numbers and agency website and phone information.

Minimum ADA Guidelines

- Letters and numbers to be a width-to-height ratio between 3:5 and 1:1 and a stroke-width-to-height ratio between 1:5 and 1:10.
- Characters and numbers should be sized according to the viewing distance from which they are to be read. The minimum height is measured using an upper case X.
- Accompany pictograms with the equivalent verbal description placed directly below, with a border dimension of 6 inches (152 millimeters) minimum in height.
- Characters and background of signs in a non-glare finish, with characters and symbols contrasting from their background.
- If it is mounted on a wall or telephone pole and between 27 inches and 80 inches off the ground, it cannot protrude into the pathway by more than 4 inches. Below 27 inches can protrude any amount.
- If it is mounted on its own pole between 27 inches and 80 inches from the ground, it can overhang by up to 12 inches.
- If the bottom of the sign is mounted less than 80 inches from the ground, a barrier must be provided to warn the visually impaired.

Figure 90. Sign and Post Dimensions



Universal Design Best Practices

(these best practices assume the sign is mounted on its own pole)

- Bottom of the sign should be placed at least 84 inches (7 feet) above the ground.
- Sign should be located nearest to the location of the buses' front doors when stopped.
- Sign edge should be at least 2 feet from the curb edge to prevent it from being hit by mirrors.
- Signs should be Manual on Uniform Traffic Control Devices (MUTCD) compliant[10] and meet Massachusetts Department of Transportation Standard Specifications.
- Include no parking verbiage or symbol on sign.
- Include route numbers that serve that stop on the sign. Route numbers should be text at least 3 inches high, with 1 inch gap between lines. If multiple routes serve the stop, list them consecutively. Alternatively QR codes can be used and placed on smal signs on the post 48" off the ground
- Include tactile route plaque and/or information holder.

[10] US Department of Transportation Federal Highway Administration. *Manual on Uniform Traffic Control Devices for Streets and Highways*. https://mutcd.fhwa.dot.gov/

- Double sided sign for visibility from both directions. This allows passengers walking to the stop to be able to identify the sign if coming from the opposite direction

Other Amenities

Amenities listed in this section are not required under the ADA Standards but provide an enhanced experience to passengers.

Lighting

Adequate lighting at bus stop facilities allows bus drivers and approaching traffic to see waiting passengers at night. Lighting also provides added security for those waiting at the stop, in addition to illuminating route and schedule information for patrons. Bus stop locations that are served in the evenings should have lighting that is adequate, but not so bright as to create a spotlight effect. Lighting can be provided by a nearby streetlight, ambient light from the adjacent businesses, lighting installed within the shelter, or a stand-alone light pole. In residential areas with low ambient lighting, some type of reflective device on the bus stop facilities should be considered to allow operators to see the upcoming bus stops where passengers are waiting.

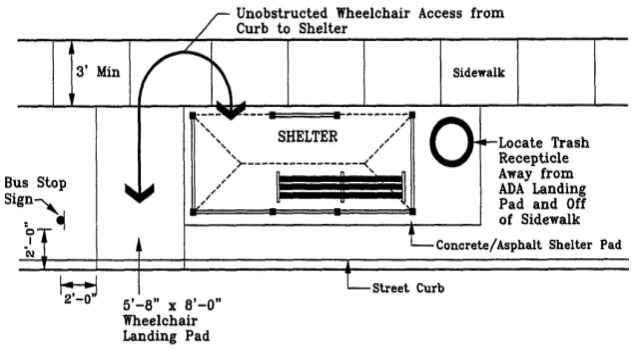
Universal Design Best Practices

- Explore solar powered lighting if hardwiring is unavailable.
- Install lighting that provides between two and five foot-candles.
- Fixtures should be vandal-proof but easily maintainable.
- Locate stops near existing street lights.

Trash Bins

Trash receptacles should be installed where they do not create an obstruction or interfere with the accessibility of the bus stop or the adjacent sidewalk. Considerations should be given to maintenance and trash pick-up whenever trash receptacles are provided.

Figure 91. Trash Bin Placement



Source: TRCP Report 19: Guidelines for the Location and Design of Bus Stops

Universal Design Best Practices

- Constructed of materials that are resistant to weather; from which graffiti is easy removed.
- Anchor bin to prevent unauthorized movement.
- Locate away from the ADA landing pad.
- Provide at least 3 feet of separation from other street furniture to allow pedestrian movement.
- Minimum capacity of 30 gallons.
- When adjacent to a roadway, make sure it does not visually obstruct driveways.
- Create a maintenance plan to ensure trash is being emptied.
- Do not locate the bin in direct sunlight.

Security

Bus stops at which passengers feel secure are likely to be used more often and improve the perception of the service. Items like landscaping, walls, and other solid structures can restrict sight lines and decrease the perceived security.

Universal Design Best Practices

- Construct shelters of clear material.

- Locate stops at highly visible sites.
- Avoid planting evergreens; they act as a barrier. Instead use low-growing shrubs, ground cover and deciduous shade trees for landscaping.
- Ensure there is adequate lighting.
- Site next to businesses and stores when possible to increase surveillance of the site.
- Maintain the cleanliness of bus stops, including removal of graffiti and repaing vandalism damage.

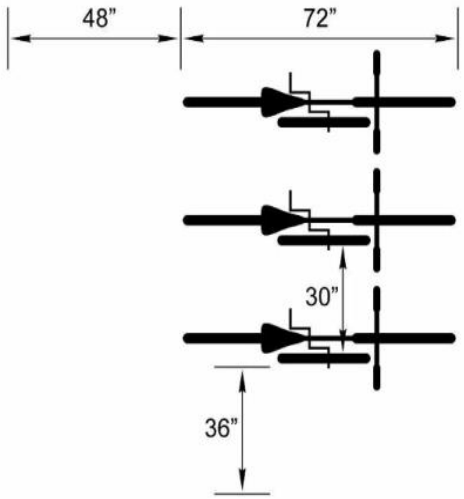
Bicycle Racks

Bicycle racks should be installed whenever a bus stop is near a bike trail and at locations where bicycle use by transit passengers is expected. Bicycle racks should not infringe on the 30” clear zone for boarding and exiting the bus.

Figure 92. One Rack Bicycle Rack Examples

Source: RPTA/Valley METRO: Bus Stop Program and Standards

Figure 93. Bike Rack Clearances



Source: RPTA/Valley METRO: Bus Stop Program and Standards

Universal Design Best Practices

- Provide paved access from the bike racks to the bus stop.
- Coordinate location with existing lighting.
- Ensure parked bikes are visible at all times and not restricted by landscaping, walls, or shelters.
- Provide at least 30” spacing between bicycle racks, 72” perpendicular to the rack, and at least 48” around the bike rack for access and circulation.

Passenger Information Panels

Route maps and schedule information should be provided at all bus stops on either shelter-mounted panels or in a case that is attached to the bus stop post. Real-time bus information at key stops provides customers with up-to-date bus arrivals. Most real-time bus information systems use dynamic message signs (DMSs) and liquid crystal displays to present bus arrival information at stops. Real-time information displays require a bus shelter to attach to, and an electrical connection. Solar panels are sometimes used to power the signs. The Americans with Disabilities Act (ADA) also requires that the screens are accompanied by an audio push button.

Universal Design Best Practices

- Provide updated information when changes are made to the route or schedules.

- QR codes are comonly used.
- Make the information display permanent; do not just tape it up.
- Make sure the information is secure (in a case) and can withstand weather elements.
- Avoid using side panels to display information that might obstruct a driver's view of waiting passengers.
- Panels mounted directly on the bus stop pole should face the same direction as the bus stop sign.
- Information cases should ideally be mounted with a centerline 54 inches above the floor to be at the optimum height for everyone.

Landscaping

Landscaping improves the area around a bus stop and can provide shade in the summer. Effective streetscape plans improve the appearance of a street and can make the area more pedestrian-friendly.

Universal Design Best Practices

- Maintaining visibility
- Ensure that roots won't damage concrete surfaces and recruiting local jurisdictions to provide ongoing maintenance.
- No plantings, tree boxes, et cetera should be within the 8' wide paved pad along the entire length of the bus stop.
- Trees should not interfere with the 30 foot clear zone for boarding and exiting the bus. Branches and leaves should not block view of the bus stop sign.

Incorporation of Public Art

The FTA encourages the incorporation of quality design and art into transit projects and recommends that 0.5-5 percent of construction costs be spend on artwork. This could include includes free-standing sculpture, wall pieces, functional elements such as seating, lighting, or railings, and the inclusion of artists in the overall design. It is strongly recommended that all public artworks be developed with input from the surrounding community, involving them in the creative process to the extent feasible.

Permits and Permissions

The need for a permit and permission to install a stop depends on the location of the stop, who owns the right-of-way it is to be installed on municipal processes.

Municipal

Establishing bus stops along municipal right-of-way requires coordination and permission with the municipality. While the process for each municipality will differ, the first step is to submit a request to the municipal DPW or highway department. In some municipalities permission will also be needed by Town Council if the location of the stops is codified in Town law.

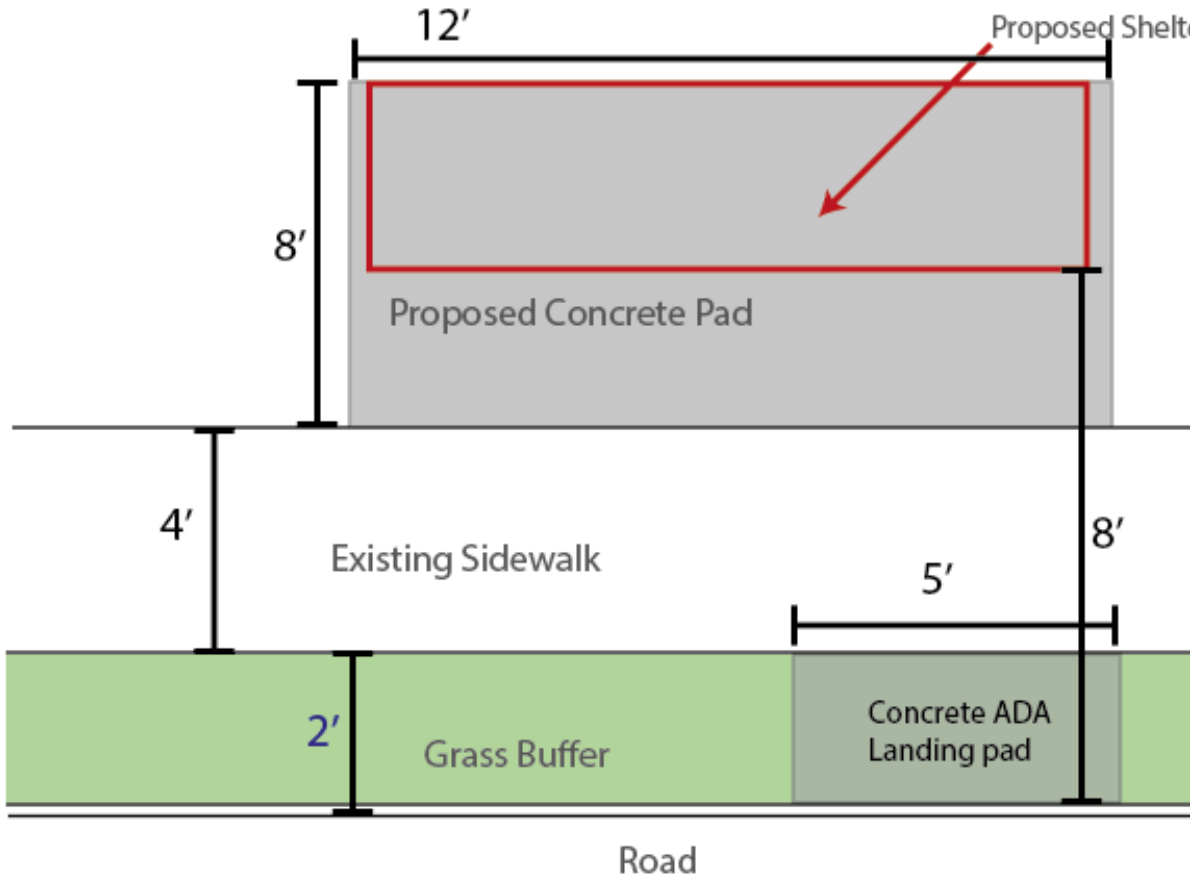
Private

Stops on private property need the permission of the property owner to install the sign and any structure. A written agreement should be signed by both parties identifying the location of the stop, responsibilities, and any amenities. The property owner has the right to request to relocate the bus stop or eliminate it from the property. A study by the Center for Urban Transportation Research on public transit access on private property[11] found that in some instances that after a stop was removed, public pressure resulted in it being reinstated. While it is important to respect the property owner's rights it is equally important to identify the issue that is causing the removal request and try to negotiate a solution. One approach that

[11] https://www.nctr.usf.edu/pdf/PublicTransitAccess_PrivateProperty.pdf

can be used for new developments is the adoption of land development regulations by municipalities that require coordination with the transit agency.

Figure 94. Example of Simple Shelter/Concrete Drawing



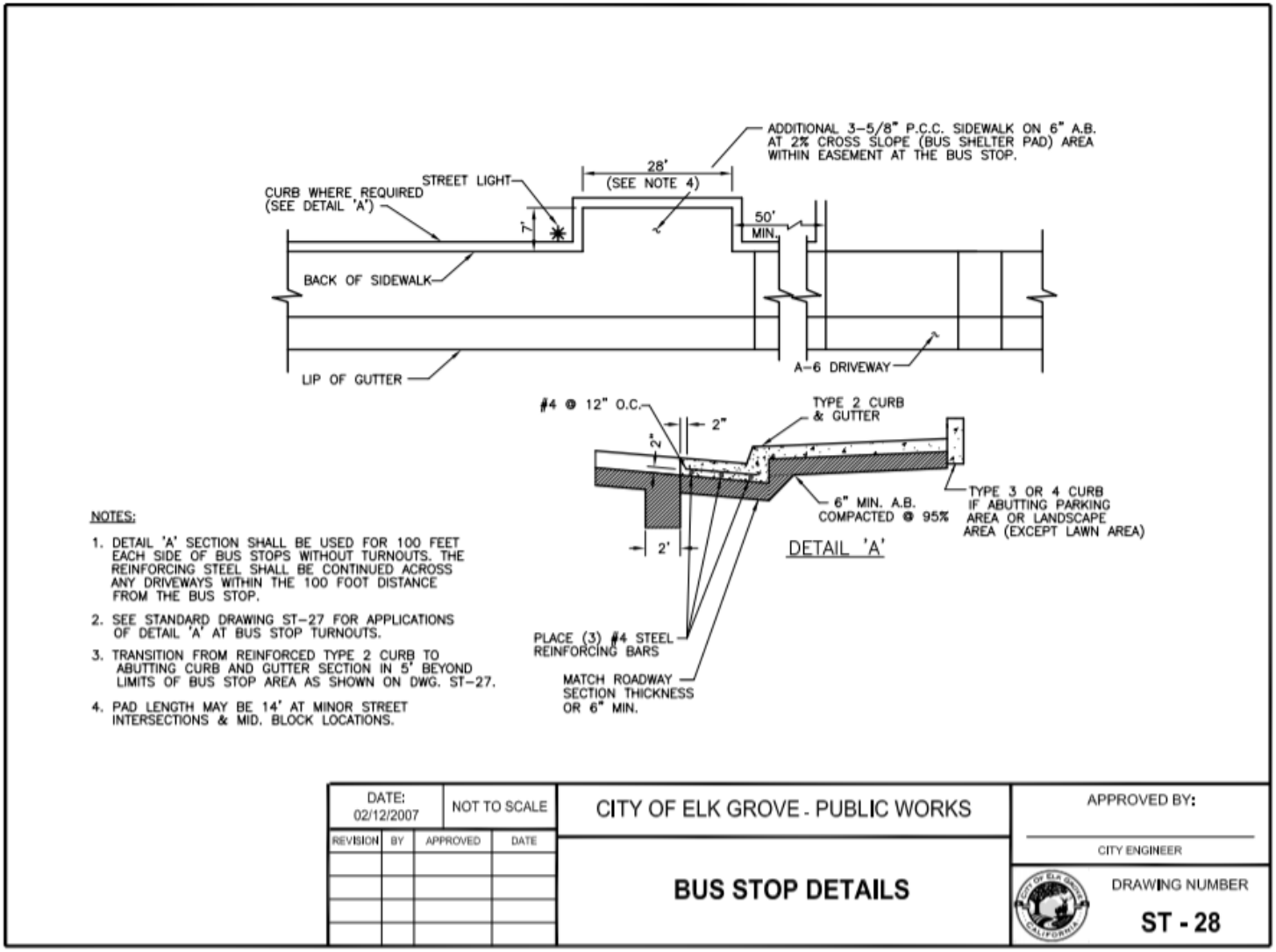
1. Pad Specifications

Shelter pads should be 6" 4000 PSI concrete with 5% to 8% air content.
a 4" of MPDW M1.03.0 type C gravel base with 6" by 6" wire mesh AST
shall be a vapor barrier underneath the concrete. There shall be a minir
control joints.

The concrete shall be protected (covered) for three days. The site shall
graded after the forms are stripped. The surface shall have a light broor
pad shall be edged.

Standard concrete slabs will be 14' long by 8' wide unless otherwise spe

Figure 95. Example of Engineering Drawing

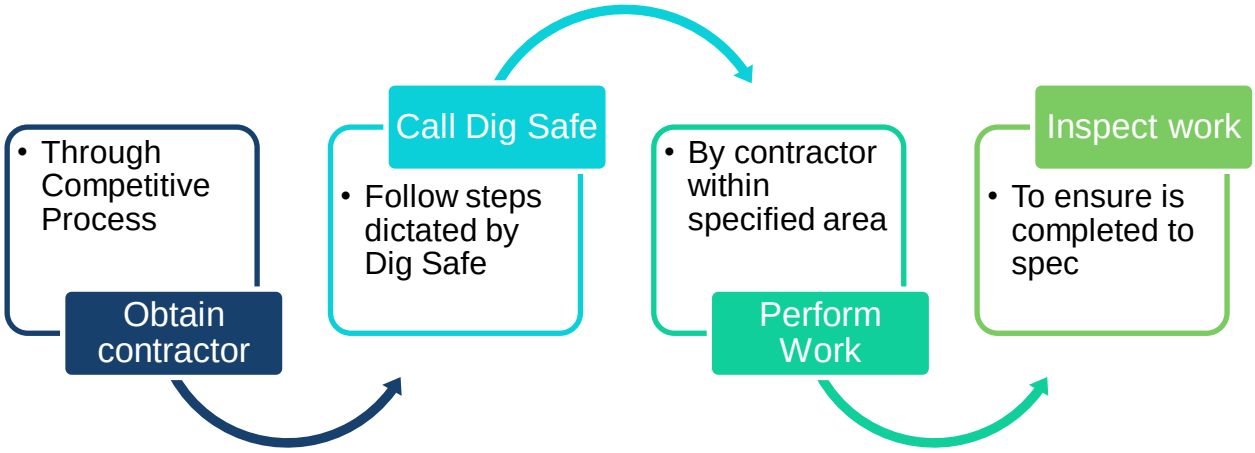


Source: City of Elk Grove – Public Works Bus Stop Detail https://www.elkgrovecity.org/UserFiles/Servers/Server_109585/File/st28-bus-stop.pdf.

Installation

There are four steps to follow when installing a bus stop or doing concrete work that requires any digging once permits or permissions have been granted in writing (Figure 96). Sign installation on existing structures or poles can be done by the transit authority. Installing benches in already poured concrete can be done by the transit authority or contractor. Shelter installation follows the same steps except Dig Safe is not required.

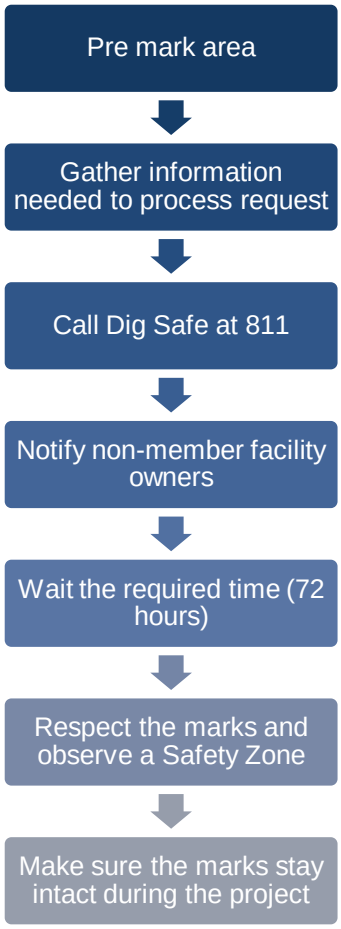
Figure 96. Steps to Installing or Improving a Bus Stop



The first step if concrete is needed or the install is to be contracted out is to obtain a contractor, this should be done through a competitive process. It is recommended to obtain an on-call contractor who can perform both the concrete work and install. Obtaining an on-call contractor with renewal options in the contract would allow flexibility in performing the work. In the contract it should specify that the contractor has liability insurance, payments in full won't be made until work is inspected and for any concrete work it will be re-inspected again after one winter season to ensure that it withstands the elements.

The name of the contractor is needed to request Dig Safe. Dig Safe is required by state law when any earth/rock or ground material is moved. It is a clearinghouse that notifies participating utility companies about planned digs and by filling out a free application utility companies will mark out the location of their underground utilities in the vicinity of the planned dig. Locations must be pre marked and Dig Safe must be notified at least 72 hours in advance of any work. To request Dig Safe call 811 and have the following information available: your contact information, location of the proposed dig (address and latitude and longitude), nearest cross street, type of work being done, the anticipated start day of the work, and name of contractor doing the work.

Figure 97. Dig Safe Steps



Once the work has been formed the transit provider should inspect it to make sure that it was done to spec. Payment in full should not be granted until the work has been inspected, it is recommended that 10 percent of the payments be withhold until the work is inspected and deemed up to spec. Measurements should be taken to ensure all dimensions and slopes are correct. A photo log should be done for record of the work. Once the inspection is complete, the final payment should be processed. Concrete work should be inspected again once it has endured a winter season to ensure that there is no cracking or crumbling.

Maintenance

Well-maintained bus stops are crucial to the image and attractiveness of a transit system. Customer surveys have shown that transit riders consider the bus stop to be their portal to the transit system. Damaged signs, shelters, benches and structures, graffiti, and trash build-up should be addressed in a timely manner to create a positive image of the system and eliminate unsafe conditions. Bus operators and passengers are often the first to report issues and a clear process for such should be developed. A maintenance plan should be created that addresses the responsibility and frequency of the items listed below. To ensure routine maintenance, a database can be created to track the amenities, their condition and maintenance schedule of each stop. The following tasks are typical to bus stop maintenance regimens:

- **Washing of shelter and amenities.** This should be done twice a year by the transit authority or their contractor.
- **Removal of graffiti.** Graffiti includes any markings, unauthorized posted materials and stickers. Markings made with pens, paint, markers, etc. often require chemicals to remove and should be done by the transit authority or their contractor. It should be removed immediately after it is reported. Adopt-a-stop individuals can assist in reporting and graffiti and removing unauthorized postings.
- **Trash removal.** Trash bags should be replaced at least once a week, and more often if trash accumulates. Monitoring of trash levels and replacing bags can be done by the transit authority, the property owner or an adopt-a-stop individual. The plan should outline who is responsible for each stop and how often the trash will be removed.

- **Litter pick up around the stop.** Litter should be removed when the trash is removed and can be done by the transit authority, the property owner or an adopt-a-stop individual. The plan should outline who is responsible for each stop.
- **Pruning of obstructing foliage.** Foliage which obstructs the view of the bus stop and waiting passengers or hangs low enough to come into contact with the bus should be pruned. Initial pruning should be done in the spring and then as needed. This can be coordinated with the DPW who is often responsible for maintaining vegetation within the municipal right-of-way
- **Touch up of chipped paint.** Touching up of paint should be done once a year.
- **Repairing safety concerns.** Safety concerns should be repaired immediately. Annually each structure and sign post should be inspected and tested to ensure all items are secure and to note condition and potential issues to monitor such as rust forming.
- **Replacing light bulbs.** Dim or out light bulbs can be part of the adopt-a-stop individual checklist. The maintenance plan should outline ownership and maintenance responsibility for each lighting fixture. The adopt-a-stop individual or person inspecting the shelter should report the issue to the transit authority to coordinate the responsible party for fixing it.
- **Snow removal.** Snow should be removed within 24 to 48 hours of the completion of the snow event when there is a measurable amount. Often the city, adjacent property owner or state if a state roadway is responsible for the removal of the snow and laws may vary by community. The sidewalk and landing pad should be cleared as well as any snow that has accumulated in the shelter. Snow should not be piled up creating a barrier between the sidewalk and accessing the bus.

Adopt-a-Stop

The maintenance of bus stops can be costly and time-consuming, establishing an Adopt-a-Stop program can assist with maintenance tasks. Adopt-a-Stop is a program where individuals or organizations “adopt” the stop and are responsible for cleaning and monitoring it, similar to how highways are adopted. This can be done for stops with or without shelters. Participants can be given incentives, such as bus passes or tickets, to increase participation. Tri-Met in Portland Oregon has instituted such a program. Adopt-a-Stop individuals can assist with:

- Removing litter
- Replacing full trash bags
- Identifying issues such as out light bulbs, weeds growing, graffiti, damage and safety concerns
- Removing unauthorized postings in shelters
- Snow removal

Appendix I Service Thresholds/Guidelines

In order to establish service guidelines in the pursuit of establishing a monitoring program in the future, service must first be monitored, and data collected. Routes should be defined by the function they serve in order to accurately measure the health of a route. Because the Brunswick Explorer would be operating with a new service pattern and is not part of a larger network, its performance should be measured against other fixed route services operating in rural parts of the Northeast (or FTA Region 1) or peer transit agencies identified for this study (see Peer Analysis in Appendix A).

At the onset new routes or service patterns may not meet the benchmarks set forth, but as the service becomes more popular it may. Service should be implemented for a period of at least two full years in order to garner ridership and monitor monthly fluctuations. While minor changes, such as timing, can be made to the routes within the initial period, large changes, particularly service decreases, should be avoided. On-time data should be checked randomly to ensure that performance remains acceptable; a new service that has low on-time performance will have a difficult time attracting ridership. Approximately halfway through the initial period of service, a passenger survey of the route should be conducted to understand the effectiveness of the route. The Brunswick Explorer should continue to be monitored as a 'new route' beyond two years if ridership has had continual growth. Once ridership has plateaued, the Brunswick Explorer should be evaluated for potential service changes against the benchmarks below. A positive performance might warrant increases in service frequency, span, and/or route coverage while the Town could consider transitioning the route or segments of the route to a demand response service if performance is poor.

Performance Metrics

Performance measures serve as a guide to evaluate the success of a transit service, including the types of data to be collected and the tools necessary to identify transit system opportunities and deficiencies. Performance measures should:

- Be easily measurable
- Have a clear and intuitive meaning so that it is understandable to those who will use it and to non-transportation professionals
- Be acceptable and useful to transportation professionals
- Be comparable across time and between geographical areas
- Have a strong functional relationship to actual system operations so that once changes occur in service operations, changes to the system can readily be determined
- Provide the most cost-effective means of data collection
- Where appropriate, be based on statistically sound measurement techniques
- Be consistent with measures identified for other systems

Recommended performance measures to monitor could include:

- **Passengers/Hour:** Number of total monthly and annual passengers divided by the corresponding revenue hours.
- **Farebox Recovery:** The percentage of operating costs covered by fares collected, calculated by the fares collected divided by the cost to operate the route.

- **Late Trips:** The percentage of fixed route trips that operate late or are missed should be recorded and reported. The recommended standard for late trips is any trip that is more than five minutes behind schedule at any given timepoint.
- **Accidents/100,000 miles:** Measure of driver safety. Also requires definition of 'accident.'

Service Benchmarks

The aforementioned performance measures can be used to create benchmarks for Brunswick Explorer service. The benchmarks will help WMTS track progress and set performance goals. These benchmarks should be seen as short-term goals that should be re-evaluated at set intervals—at least every five years—to ensure that the expectations for the Brunswick Explorer are consistently evolving. If a specific benchmark has been greatly exceeded during the first two years of operation, the criteria should be changed to provide a progressive target for the service. See Table 26 for all benchmark values and sources, sections below provide more detail about the performance measures and benchmarks included.

Table 26. Recommended Performance Benchmark Values and Source

Performance Metric	Source	Value
Passengers per Revenue Hour	Peer Average	6.37
Farebox Recovery Ratio	FTA Region 1 Rural Average (2018)	5%
On-Time Performance	Industry best practices	95% of trips arrive at timepoint no more than 5 minutes late with no trips leaving early
Accidents per 100,000 miles	FTA	No more than 3 accidents per 100,000 miles

Passengers per Hour

Passengers per hour measures ridership as a function of the amount of service provided and will vary based on the type of service. As service improves this value should be adjusted to reflect the change and reevaluated every 3-5 years. It is recommended that the average of the Brunswick Explorer's peer agencies, **6.37 passengers per revenue hour**, act as a benchmark as the new service is established. If the Brunswick Explorer is performing at 75 percent of the benchmark or below, then the route may need to be evaluated to determine remedies to improve performance.

Farebox Recovery

Farebox recovery ratios are typically lower for rural transit service like the Brunswick Explorer. WMTS should strive to meet or exceed the average farebox recovery ratio outlined in the Rural National Transit Database of 8 percent on the Brunswick Explorer. If the ratio drops on a route to below **5 percent** (the average recovery ratio for other rural agencies in FTA Region 1), then the route may need to be evaluated to determine remedies to improve performance.

Late Trips

Late trips measure on-time performance and help evaluate a vehicle's adherence to a schedule. A trip is considered on-time if it departs a timepoint no more than five minutes late; no trips should leave early. The recommended best practice for on-time performance nationwide is **95 percent**; WMTS should strive to meet this benchmark.

Accidents per 100,000 Miles

The FTA suggests that at a minimum transit providers strive towards the goal of six accidents or less per 100,000 miles. WMTS should seek to exceed that minimum with **no more than three (3) accidents per**

100,000 miles. The measure can be calculated by dividing the number miles by the number of accidents in a given time period. Values lower than 33,333 indicate that the indicator is not being met.

Service Guidelines

New Service Warrants

Brunswick often receives requests for new service; new service warrants will help in evaluating proposals and determine service levels. The development of the new services should follow the new service warrants, and Brunswick and WMTS should examine how the route will fit into the context of the system as a whole. The cost to operate any new route should be evaluated in the context of the overall budget. Additionally, when analyzing new service requests and proposals, the following should be considered:

- **Area coverage:** When service is proposed the new route should be evaluated for its ability to connect to other routes, meet service thresholds, and operate cost effectively. Routes that extend the service area may have a demand, but the increased miles per hour may cause the subsidy to be greater than those recommended in the performance measures.
- **Transit-dependent populations:** The presence of transit-dependent populations should be considered when evaluating new service proposals. If there is a high but remote transit-dependent population, alternative service types such as DAR or flex routes might be warranted.
- **Special markets:** New service is often proposed for special markets such as a new shopping center, island gateways, or employment centers. These markets often produce demand but the cost to service them can be high and ridership potential undetermined. Brunswick should work with these destinations to secure some dedicated funding, which can help bring down the cost of the route.

Often deviations are requested to serve shopping plazas or areas just beyond a route's reach. A policy should be established for when to incorporate such a deviation into the regular schedule. Possible policies include:

- **Three minute rule:** The total additional travel time for all through passengers impacted by the deviation (on-board the bus but do not utilize the deviation) does not exceed 3 minutes for each rider boarding or alighting at the deviation. Example: average through passengers = 5, time it takes to do the deviation 4 minutes, average number of passengers served by the deviation = 3. (5 through passengers * 4 minutes)/ 3 passengers served = 6.6 minutes. Since 6.6 minutes is greater than 3 minutes, the deviation is not recommended.
- **Productivity based:** The productivity of the deviation will be greater that the productivity of the overall route.
- **Travel time:** The total travel time (in regard to the deviation) for those benefiting from the deviation is greater than those who do not. Example: The deviation takes 3 minutes to complete, and 1 person will be boarding at the stop and 5 getting off, 4 people will not use the deviation. Travel time for those who benefit 18 minutes (6 people * 3 minutes each), additional travel time from those that would not is 12 minutes. 18 > 12, so deviation occurs.

Regardless the policy selected the deviation should not result in a negative impact to the route's regular frequency. Exceptions can be made for areas that may not meet the minimum requirement but would serve a vulnerable population and result in a decreased use of the demand response system, which is more costly to operate.

Actions for Low Performing Routes

If service fails to meet thresholds for at least one out of the two main indicators (passengers per hour, or farebox recovery) or fall below the minimum suggested values it should be evaluated for possible modification. As post-pandemic ridership stabilizes, implementing thresholds for when actions like more extended analysis or service changes are warranted would simplify service planning and boost transparency if the guidelines were shared with the public.

If a route is not meeting or exceeding the benchmark for productivity, it should be evaluated to determine whether a certain segment of the route or time of day is the reason and adjust accordingly. If the route overall is performing poorly and the routing and span have already been examined and adjusted, the frequency can be reduced if it is exceeding the minimum threshold. Table 27 outlines what to do if a route falls below certain productivity levels.

Table 27. Route Performance Actions

Performance	Definition	Action
Very low	Route is below 50% of standard	Consider replacing route with alternative service type
Low	Route is between 50% and 75% of standard	Consider route adjustments
On par	Route is meeting productivity standard or within 75% standard	No action needed
High	Greater than 10 Passenger per Revenue Hour	Consider improving frequency