

4.0 Public Transportation

4.1 Introduction

Public transportation is a key component of the region's transportation system. While most travel in the BACTS area is accomplished by automobile, there is a significant and growing segment of the population that relies on public transportation to fulfill its needs. In addition, visitors who have traveled to the region by non-automobile modes need public transportation to travel in the area during their visit. Public transportation is provided by a mixture of for-profit and non-profit organizations, supplying intercity, fixed route urban, fixed route rural, and demand response bus services.

4.2 Fixed Route Bus Service

The fixed route bus service in the BACTS area is provided by Community Connector, which is owned and operated by the City of Bangor. Community Connector operates within the Greater Bangor urbanized area servicing Bangor, Brewer, Hampden, Old Town, Orono, the University of Maine (Orono) and Veazie. The 2015 Community Connector National Transit Database (NTD) report shows the system supplied 602,553 annual vehicle revenue miles, 47,210 annual vehicle revenue hours, and provided 888,223 annual unlinked trips over an area of 29 square miles comprising approximately 90 percent of the population within the Bangor Urbanized Area (UZA).

Community Connector offers bus service Monday through Saturday in all areas, except Hampden, where service runs Monday through Friday. The system is operated on a "pulse system" designed to facilitate the transfer of riders from one route to another. This system requires buses from all routes operating out of Pickering Square in downtown Bangor to arrive and depart from the Pickering Square bus depot at approximately the same time, to minimize layover time for passengers transferring from one route to another. All routes meet at Pickering Square with the exception of the Black Bear Orono Express shuttle service, which operates within the Town of Orono primarily servicing the University of Maine and student housing areas; and the Mall Hopper shuttle, which originates from the Airport Mall linking to the Broadway Shopping Center, the Bangor Mall and back to the Airport Mall.

Routes

The current Community Connector route structure operates on a flag stop basis, allowing for pick up and drop off of passengers at any safe location passengers request along the bus route. The routes are within walking distance of the majority of the population within the communities serviced. The routes are described below:

1. The *Hammond Street Route* serves the Union Street-Hammond Street area by a one-way loop via Union Street, Vermont Avenue, Maine Avenue, Texas Avenue, Hammond Street, West Broadway, Buck Street, 3rd Street, Cedar Street, and Main Street. The service is provided by a single bus operating on 30 minute headways on weekdays and 60-minute headways on Saturdays. On Saturdays, this vehicle interlines with the Center Street Route. This route begins weekdays at 5:53 a.m. at University College and ends at 6:10 p.m. at the Pickering Square Depot, and Saturdays begins at 9:15 a.m. at Pickering Square and ends at 5:40 p.m. at Pickering Square.
2. The *Capehart Route* serves the Ohio Street-Union Street Corridor, including Bangor International Airport and the Capehart housing complexes via Ohio Street and Union Street. The service is provided by two buses, giving 30-minute headways on weekdays and Saturdays. During weekday

peak travel demand, a third bus is assigned to this route. This route begins weekdays at 6:06 a.m. at Capehart and ends at 6:27 p.m. at DHHS/BIA on Texas Avenue. On request, the bus will make an additional stop at the Airport Mall following the last stop. Saturday service starts at 7:06 a.m. at Capehart and ends at 6:11 p.m. at Bolling Drive. On request, the bus will also make an additional stop at DHHS/BIA and/or the Airport Mall following the last stop.

3. The *Center Street Route* serves the Center Street Corridor and the Husson University area via Center Street, Broadway, and Kenduskeag Avenue. The service is provided by a single bus operating on 30-minute headways on weekdays and 60-minute headways on Saturdays. On Saturdays, this vehicle interlines with the Hammond Street bus. This route begins weekdays at 6:15 a.m. at Pickering Square and ends at 6:08 p.m. at Pickering Square, and Saturdays begins at 8:45 a.m. at Pickering Square and ends at 5:08 p.m. at Pickering Square.
4. The *Mount Hope Route* serves the area of Mount Hope Avenue, Hogan Road, Eastern Maine Community College and the Bangor Mall. The service is provided by one bus, giving 30-minute headways on weekdays and Saturdays. This route begins at 6:15 a.m. at Pickering Square and ends at 6:05 p.m. at Pickering Square.
5. The *Stillwater Avenue Route* serves the area of Broadway, Stillwater Avenue, the Bangor Mall and Ridgewood Drive. The service is provided by one bus, giving 60-minute headways on weekdays and Saturdays. This route begins at 6:45 a.m. at Pickering Square and ends at 6:35 p.m. at Pickering Square.
6. The *Mall Hopper Route* provides a direct link between the Bangor Mall, the Airport Mall, and the Broadway Shopping Center. Service begins and ends at the Airport Mall but does not directly link to the downtown terminal. There are three routes that connect with the Mall Hopper at various locations: the Capehart route at Airport Mall, the Center Street route at Broadway Shopping Center, and the Stillwater Route at the Bangor Mall, giving 60-minute headways on weekdays and Saturdays. This route begins at 6:55 a.m. at the Airport Mall and ends at 6:45 p.m. at the Airport Mall.
7. The *Brewer North Route* serves the more urbanized areas of the City of Brewer via North Main Street, Wilson Street, Parkway North, and State Street. The service is provided by one bus giving 60-minute headways on weekdays and Saturdays. This route begins at 7:15 a.m. at Pickering Square and ends at 5:48 p.m. at Mardens. On request, the bus will also make a stop at North Brewer and/or at the depot at Pickering Square following the last stop.
8. The *Brewer South Route* serves the more urbanized areas of the City of Brewer, via South Main Street, Parkway South, and Wilson Street. The service is provided by one bus, giving 60-minute headways on weekdays and Saturdays. This route begins at 6:45 a.m. at Pickering Square and ends at 6:22 p.m. at the Brewer Shopping Center. On request, the bus will also make a stop at South Main and Elm and/or the depot at Pickering Square following the last stop.
9. The *VOOT (Veazie, Orono, Old Town) Route* serves the U.S. Route 2 corridor to Orono, and the US Route 2/ Stillwater Avenue/ College Avenue loop through Old Town and Orono. The service is provided by two buses on 60-minute headways on weekdays and by a single bus on 2-hour headways on Saturdays. This route begins weekdays at 5:45 a.m. at the University of Maine Union and ends at 7:00 p.m. at Pickering Square, and Saturdays begins at 6:15 a.m. at Pickering Square and ends at 7:05 p.m. at Pickering Square.

10. The *Hampden Route* serves the US Route 1A corridor from Bangor to Hampden. The route is served by a single bus operating on 60-minute headways on weekdays. This route begins at 6:15 a.m. at Pickering Square and ends at 6:10 p.m. at Pickering Square. There is no service on Saturdays.
11. The *Black Bear Orono Express Shuttle* Route operates during the academic year and serves the University of Maine campus and areas of Mill Street and Orchard Trails housing. The route is served by a single bus operating on 30-minute headways on weekdays starting at 6:55 a.m. at Mill Street and ending at 9:55 p.m. at Mill Street. The route also operates a single bus on Saturdays that serves the University, Mill Street, Orchard Trails, the University Mall and Godfrey Drive with 30-minute headways beginning at 12:13 p.m. at the University of Maine Union and ending at 4:43 p.m. at the University of Maine Union. The Black Bear Orono Express Shuttle is funded jointly by the Town of Orono and the University of Maine and is offered to riders fare-free.

Fares

The Community Connector has an integrated fare system. Bus drivers distribute free transfer vouchers to passengers who wish to transfer from one route to another. Current fares are listed in Table 4.1 below.

| Table 4.1 | |
|------------------------------------------|---------|
| Single ticket/Cash Fare | \$1.50 |
| Book of 5-ride tickets | \$6.00 |
| Monthly pass | \$45.00 |
| High school student monthly pass | \$20.00 |
| Senior Cash Half-Fare | \$0.75 |
| Students Cash Half-Fare | \$0.75 |
| Children up to age 5 (with paying adult) | FREE |

As of July 2017, University of Maine at Orono, University of Maine at Augusta Bangor Campus, Eastern Maine Community College, Husson University and Beal College have all entered into agreements with Community Connector to provide free bus rides to students, faculty and staff who show a valid ID card.

Fixed-Route Ridership

Ridership for the Community Connector steadily increased from fiscal years 2000 to 2010. This decade of upward trend in ridership may be attributed to many different factors. Improvements and changes implemented as a result of a study to evaluate the public transportation system in the BACTS area and a transit route design study conducted by Tom Crikelair Associates prompted an offering of monthly bus pass option, increased marketing efforts, and changes to routes and schedules. In addition, the average gas price in Maine reached a record \$4.12 per gallon in July 2008 (Figure 4.1). The price of gas in Maine dropped to \$2.68 per gallon in 2009. Between 2010 and 2011 ridership slumped slightly (Figure 4.2a & 4.2b). The dramatic increase in ridership between 2011 and 2013 may be attributed to gas prices rising again in 2010 and an arrangement in which monthly bus passes were provided to MaineCare Transportation Program riders living along the fixed bus routes. An estimated annual monthly pass sales of approximately 430,000 passes per year were sold for MaineCare transportation program riders.

MaineCare, Maine's name for Medicaid, will pay for rides to MaineCare funded services such a medical appointments. Prior to the introduction of the brokerage system, Penquis provided monthly passes to MaineCare recipients who had more than three MaineCare trips per month, as providing three or more

rides on Penquis transportation alternatives would cost more than the price of a monthly bus pass. There was also the advantage of the pass recipient being able to make unlimited rides on Community Connector.

Since 2013 ridership numbers have decreased annually. The dramatic decrease from 2013 to 2014 may be attributed to the August 2013 change to the MaineCare transportation program, which was intended to reduce the overall cost of the MaineCare transportation program. MaineCare implemented a brokerage system to arrange rides for members to covered appointments in the most cost-efficient manner based on qualification determination by the Broker. The Broker determined that providing monthly bus passes was not the least expensive way to provide rides for MaineCare appointments. During this time, gas prices continued to stabilize and dramatically decreased in 2014. During fiscal year 2015, Community Connector increased fares and discontinued the Odlin Road route. Saturday service on the Hampden route was discontinued in fiscal year 2016.

Figure 4.1

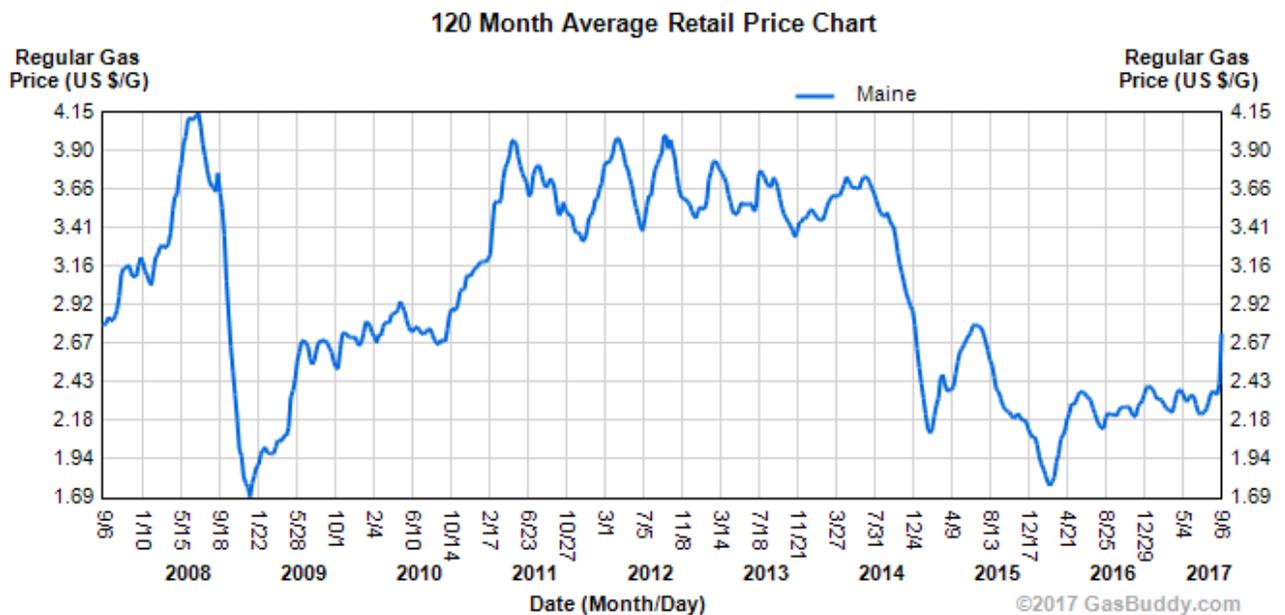


Figure 4.2a
Annual Ridership
1997 - 2015

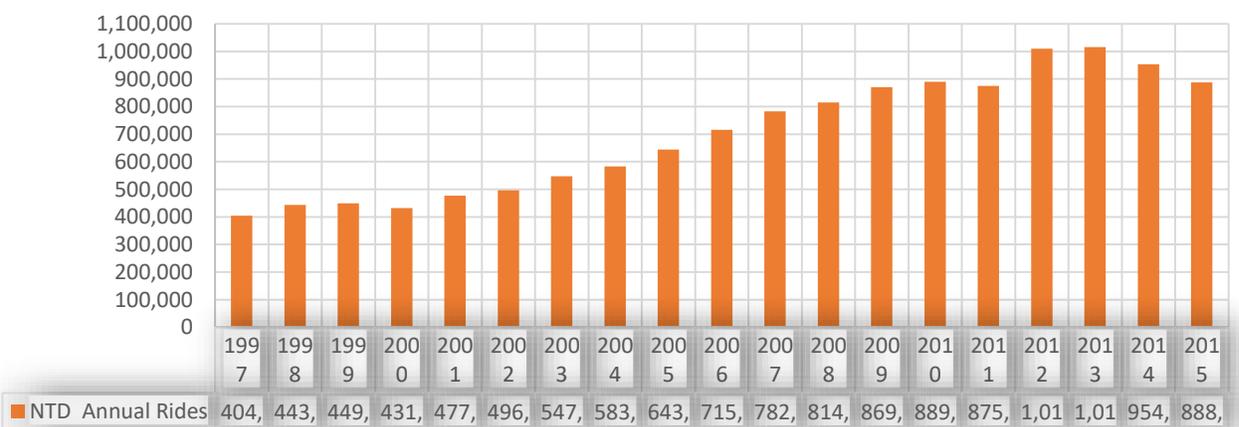


Figure 4.2b
Annual Change in Ridership
1997 - 2015



from: <https://www.gasbuddy.com/Charts>

Americans with Disabilities Act (ADA) Compliance

The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination and ensures equal opportunity and access for persons with disabilities. As no entity shall discriminate against an individual with a disability in connection with the provision of transportation service, the FTA requires public transportation agencies, providers, and operators receiving federal funding to certify that practices in the provision of public transit services comply with FTAs mission to enhance the social and economic quality of life for all Americans.

Public transportation agencies must maintain and make provisions for alternate reasonable accommodations in instances of failure or vehicles taken out of service for repair of accessibility features on vehicles used in public transit operations. Public transit agencies must also ensure personnel are trained as appropriate to their duties. They must be able to operate vehicles and equipment safely and properly assist individuals with disabilities using the service in a respectful and courteous way, with appropriate attention to the difference among individuals with disabilities.

If a fixed route system has stops that service more than one bus line, ADA requires the operator to either announce or provide automated announcements to identify bus line, stop, transfer and route locations both outside and inside the vehicle.

ADA Complementary Paratransit Service

Fixed route public transit providers are required to provide ADA complementary paratransit services comparable to the fixed route service within $\frac{3}{4}$ mile of the fixed route on the same days and during the same hours as fixed route service. However, unlike the regular fixed-route service, ADA complementary paratransit service operates as a demand service and must be scheduled the day prior to the requested ride. Rides may be scheduled for up to one hour before or after the requested time. Service must be provided regardless of the nature of the trip with no restrictions or priorities based on trip purpose.

Transit providers determine eligibility for complementary paratransit service to individuals who are not able to use accessible fixed route services due to a disability. Establishing and following an accurate ADA paratransit eligibility process is critical both to protecting individuals' civil rights under the ADA and to managing demand so that paratransit service is available for those who need it.

Community Connector performs eligibility determinations, receives trip requests and forwards the scheduled trips to Penquis Transportation Services (the Lynx), who provides vehicles, equipment, maintenance and operation of the ADA complementary paratransit service.

Funding for Urban Fixed Route Bus Service

The Fixing America's Surface Transportation (FAST) Act was signed into law in December 2015. The Act, which supports transit funding through fiscal year 2020, reauthorizes FTA programs and includes changes to improve mobility, streamline capital project construction and acquisition, and increase the safety of public transportation systems across the country. The Act's five years of predictable formula funding enables transit agencies to better manage long-term assets and address the backlog of state of good repair needs. It also includes funding for new competitive grant programs for buses and bus facilities, innovative transportation coordination, workforce training, and public transportation research activities. Funding for Community Connector's operations is provided through fare box receipts, local municipal funds, state funds, contract agreements with local higher education providers, and Federal Transit Administration (FTA) funds. The municipalities served by Community Connector are invoiced by the City of Bangor on a quarterly basis for the local share of costs associated with system operations, equipment, maintenance and capital expenses.

Federal Funding

FTA Federal funding is made available to designated recipients that are public bodies with the legal authority to receive and dispense federal funds. In Maine, the Governor acts as the designated recipient for urbanized areas (UZA) with populations between 50,000 and 200,000. Prior to the 2013 federal fiscal year, Community Connector received FTA federal funding as a sub-recipient of the State of Maine. In February 2012, Governor Paul LePage made the determination that funding recipients in the urbanized areas have the legal, financial, and technical capacity to serve as direct grant recipients for FTA funding and have the capacity to administer such grants in cooperation with the FTA Regional office, local funding recipients, and in consultation with MaineDOT.

This declaration shifted direct recipient status and responsibility for these areas from MaineDOT to a designee within each UZA giving more opportunity, determination and responsibility for local control over the provision of transit services, including operations, administration, and capital procurement. With the start of the 2013 federal fiscal year (October 1, 2012), the City of Bangor – Community Connector was designated by the Governor as the direct recipient of FTA Section 5307 funding in the Greater Bangor UZA and is directly apportioned to the City of Bangor by formula based on the level of transit service provision, population and other factors (Figure 4.3).

Figure 4.3

| GREATER BANGOR UZA FTA FEDERAL FUNDING 2009 - 2017 | | | | | | | |
|----------------------------------------------------------|---------------------------------------|--------------|--------------|-----------------------------------------------------------|--------------|--------------|----------------------|
| FFY | 49 USC §5307 Urbanized Area Grants | | | FTA 49 USC §5339 Bus and Bus Facilities Program Grants | | | Total FTA Funding |
| | Formula | STIC Funding | Total §5307 | Formula | Competitive | Total §5339 | |
| 2009 | \$ 707,511 | \$ 140,553 | \$ 848,064 | | | | \$ 848,064 |
| 2010 | \$ 705,162 | | \$ 705,162 | | | | \$ 705,162 |
| 2011 | \$ 706,737 | | \$ 706,737 | | | | \$ 706,737 |
| 2012 | \$ 709,172 | | \$ 709,172 | | | | \$ 709,172 |
| 2013 | \$ 781,716 | \$ 541,382 | \$ 1,323,098 | \$ 81,981 | | \$ 81,981 | \$ 1,405,079 |
| 2014 | \$ 791,608 | \$ 576,049 | \$ 1,367,657 | \$ 83,905 | | \$ 83,905 | \$ 1,451,562 |
| 2015 | \$ 790,064 | \$ 377,575 | \$ 1,167,639 | \$ 85,687 | | \$ 85,687 | \$ 1,253,326 |
| 2016 | \$ 806,035 | \$ 378,864 | \$ 1,184,899 | \$ 77,372 | \$ 1,441,600 | \$ 1,518,972 | \$ 2,703,871 |
| 2017 | \$ 819,065 | \$ 382,076 | \$ 1,201,141 | \$ 93,469 | | \$ 93,469 | \$ 1,294,610 |

Figure 4.4

| GREATER BANGOR UZA COMMUNITY CONNECTOR CHANGE IN FTA §5307 FORMULA FUNDING 2009 - 2017 | |
|-------------------------------------------------------------------------------------------------|---------------|
| FFY | Annual Change |
| 2009 | |
| 2010 | -0.33% |
| 2011 | 0.22% |
| 2012 | 0.34% |
| 2013 | 10.23% |
| 2014 | 1.27% |
| 2015 | -0.20% |
| 2016 | 2.02% |
| 2017 | 1.62% |

§5307, Urbanized Area Formula Grants

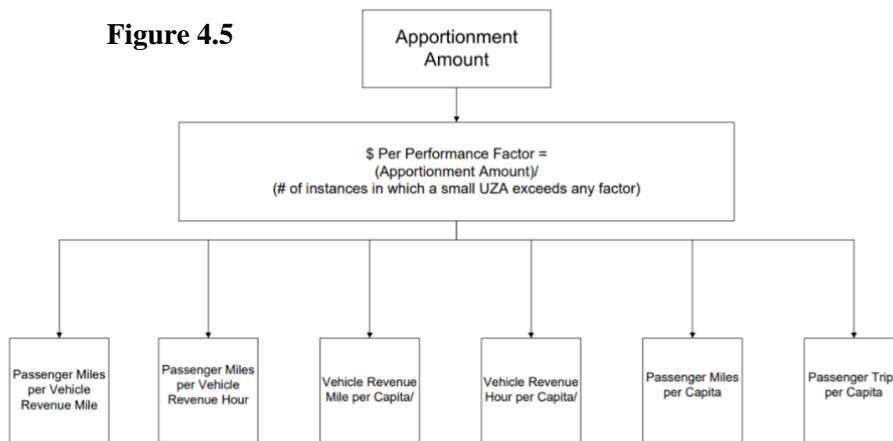
Federal funding for Community Connector operations comes from FTA’s 49 USC §5307, Urbanized Area Formula Grants, the largest of FTA’s grant programs. Funding is apportioned annually by formula (based on the level of transit service provision, population and other factors) and allocated directly to The City of Bangor - Community Connector by FTA (Figure 4.4). The increase in funding in 2013 coincides with the MAP-21 funding authorization bill. However, formula funding has remained consistent and predictable since then and is expected to continue through 2020 as provided by the FAST Act implementation in 2016.

Transit Agencies may use §5307 funding for eligible activities such as planning, engineering, design and evaluation of transit projects and other technical transportation-related studies; capital investments in bus and bus-related activities such as replacement, overhaul and rebuilding of buses, crime prevention and security equipment and construction of maintenance and passenger facilities; and capital investments in new and existing fixed guideway systems including rolling stock, overhaul and rebuilding of vehicles, track, signals, communications, and computer hardware and software. In addition, associated transit improvements and certain expenses associated with mobility management programs are eligible under the program. All preventive maintenance and some ADA complementary paratransit service costs are considered capital costs.

Small Transit Intensive Cities (STIC) Formula Funding

The Small Transit Intensive Cities (STIC) funding, a component of the §5307 program, is a performance-based incentive program that rewards small urban systems that are generating significant ridership. The STIC formula was first included in SAFETEA-LU (2005) to provide fixed amounts of funding to small urbanized areas (less than 200,000 in population) that exceed the averages of larger urbanized areas (over 200,000 in population) for one or more of the FTA set six service factors (Figure

4.5). Eligibility for this funding is not assured, as the averages used for benchmarks are calculated based on previous performance of both the larger systems and the local system and are subject to change each year, making it difficult to know whether or not eligibility for funding has or will be met.



The six service factors for the STIC program have not changed since 2005, but the amount of \$5307 set-aside for the program increased from 1% to 1.5% of the overall allotment. The FAST Act increases funding for the STIC program set-aside to 2% of the overall allotment

beginning in fiscal year 2019. Increases in the program allotment does not cause any increase of the total federal transit spending, it simply allocates the existing allotment differently (Figure 4.6).

Although the number of factors met have changed, Community Connector has been awarded STIC funding every year for the past five years.

§5339, Bus and Bus Facilities Program Grants

Community Connector receives FTA 49 USC §5339 Bus and Bus Facilities formula funds annually as allocated by the MaineDOT Multimodal Planning Division, as the designated recipient authorized by the Governor responsible for administering the §5339 program in Maine (Figure 4.7). This funding is provided to assist in financing capital projects to replace, rehabilitate, purchase buses and related equipment, and to construct bus-related facilities.

Figure 4.6

| GREATER BANGOR UZA STIC FUNDING AS A PERCENTAGE OF COMMUNITY CONNECTOR TOTAL FTA §5307 FUNDING | | | |
|---------------------------------------------------------------------------------------------------------|--------------------|-------------|---------------------|
| FFY | Total STIC Funding | Factors Met | Percentage of Total |
| 2009 | \$ 140,553 | 1 | 16.57% |
| 2010 | \$ - | 0 | 0.00% |
| 2011 | \$ - | 0 | 0.00% |
| 2012 | \$ - | 0 | 0.00% |
| 2013 | \$ 541,382 | 3 | 40.92% |
| 2014 | \$ 576,049 | 3 | 42.12% |
| 2015 | \$ 377,575 | 2 | 32.34% |
| 2016 | \$ 378,864 | 2 | 31.97% |
| 2017 | \$ 382,076 | 2 | 31.81% |

Figure 4.7

| GREATER BANGOR UZA COMMUNITY CONNECTOR CHANGE IN FTA §5339 FORMULA FUNDING 2013 - 2017 | |
|-------------------------------------------------------------------------------------------------|---------------|
| FFY | Annual Change |
| 2014 | 2.35% |
| 2015 | 2.12% |
| 2016 | -9.70% |
| 2017 | 20.80% |

In addition to the formula grant program under 49 USC §5339, this funding also includes a discretionary grant program whereby transit agencies competitively apply for funding for capital projects to replace, rehabilitate, purchase buses and related equipment, and to construct bus-related facilities. In 2016, FTA awarded Community Connector a discretionary §5339 grant for \$1,441,600 to purchase five new buses for the system.

Bus Fleet

In fiscal year 2017, Community Connector’s bus fleet consisted of 24 vehicles. Two of these buses are out of service and are anticipated to be disposed of in fiscal year 2018. The Community Connector rolling

stock bus fleet is aging (Figure 4.8). Many of the vehicles are experiencing regular breakdowns and require more and more extensive repair. Overall, 62.50% of the fleet, or 15 out of 24 buses, have met or exceeded the defined ULB.

Figure 4.8

| COMMUNITY CONNECTOR BUS FLEET AS OF JULY 1, 2017 | | | | | | | | | | | | |
|-----------------------------------------------------|-------------------|-----------|-----------|-----------|--------------|-------------|------------|-------------|--------------------------------|---------------|-------------------|---------------|
| Rolling Stock | | Fleet | | | Age of Fleet | | | | Assets that Meet or Exceed ULB | | | |
| Sub-Category | Class | Total | Additions | Disposals | Average | Median | Newest | Oldest | ULB | Total | FY 17 Performance | FY 18 Target |
| Bus (BU) | (S) Standard | 12 | 3 | 6 | 10.75 | 13.0 | 1.0 | 16.0 | 14 | 6 | 73.33% | 50.00% |
| Bus (BU) | (E) Extended Life | 6 | 2 | 0 | 12.33 | 15.0 | 7.0 | 15.0 | 18 | 0 | 0.00% | 0.00% |
| BU Subcategory Total | | 18 | 5 | 6 | 11.28 | 14.5 | 1.0 | 16.0 | 10 | 3 | 57.89% | 33.33% |
| Cutaway Bus (CU) | | 4 | 0 | 1 | 10.5 | 11.0 | 9.0 | 11.0 | 10 | 3 | 80.00% | 75.00% |
| Total | | 22 | 5 | 7 | 11.14 | 11.5 | 1.0 | 16.0 | 9 | 62.50% | 40.91% | |

In fiscal year 2018, it is anticipated that two new 2017 Gillig buses (BU), two overhauled previously-owned 2003 New Flyer buses (BU-E), and one previously-owned 2004 Gillig bus (BU) will be added to the fleet. With these additions, five buses with advancing age and deteriorating condition will be identified for disposal. Based on the anticipated fleet changes and the competitive \$5339 grant monies awarded by FTA for the purchase an additional five new buses (to be added to the fleet over the next few years), the percentage of rolling stock meeting or exceeding ULB is expected to continue decreasing significantly.

It is the intent of the Community Connector to eventually eliminate Cutaway Buses (CU) from the fleet. Until the time that these buses can be replaced and completely removed from the fleet, this subcategory will exceed the ULB. The improvement in performance shown from FY 2017 to FY 2018 in the Cutaway Bus subcategory is a result of an anticipated disposal and removal from the fleet.

Bus Facilities

Administrative and Maintenance Facilities

The Community Connector administrative office is situated within the City of Bangor Motor Pool complex on Maine Avenue in Bangor. The administrative office has limited space and needs significant renovation. The City of Bangor has approved the construction of a new administrative office with anticipated completion in late fall 2017. The new office will be a stand-alone building located at the same address at the City’s Motor Pool complex.

Bus drivers no longer sell bus tickets and passes on the bus, but passengers can purchase bus tickets and bus passes in several locations. The Pickering Square bus depot has the only automatic vending machine for passengers to purchase tickets and passes. Passengers may purchase tickets and passes at the Community Connector administrative office, the Bangor Public Library and the municipal offices in Bangor, Old Town, Orono, and Veazie. Several retail establishments along the bus routes also sell bus tickets and passes, including Fairmount Market; Garland Street Market; Hannaford Supermarket in Bangor, Brewer, Hampden and Old Town; Paradis Shop N’ Save; Bell’s IGA; Leadbetter’s Superstop - Hammond Street, Ohio Street and Wilson Street; and Weebiez Deli & Market - Court Street, Mt. Hope Avenue and Blue Hill East.

General maintenance and repairs of the fleet are performed by the City of Bangor Motor Pool at the Motor Pool Garage on Maine Avenue in Bangor. The University of Maine Motor Pool in Orono provides a limited amount of light maintenance to buses that serve the Black Bear Orono Express shuttle (BBOE).

Painting, major overhaul and rebuilds are conducted off-site by a third-party vendor. Except for the BBOE Shuttle buses, which have been stored outdoors at the Town of Orono Fire Department, the fleet is garaged in the bus barns located on Maine Avenue in Bangor. In order to ensure reliability during the winter months, options for sharing the BBOE shuttle buses indoors are being explored. The bus wash facility is adjacent to the bus barns.

Passenger and Parking Facilities

Passenger and parking facilities are often collectively referenced as “passenger facilities.” The Community Connector combined passenger and parking facility is located at Pickering Square on Broad Street in Bangor. The passenger facilities are located on the street level of the Pickering Square side of the parking garage.

Fixed-Route Transit Bus Hub

In 2014, the City of Bangor, with financial assistance from MaineDOT, contracted with Tom Crikelair Associates to perform a study on alternatives for the Community Connector bus hub. The report concluded the current Pickering Square location, with some improvements, is the most affordable and viable site for the Community Connector bus hub. Although the report recommended to keep the bus hub at Pickering Square, the City of Bangor later identified an alternate option for Community Connector bus hub. No formal study or analysis has yet been conducted on the identified site.

Inter-urban

Current transit and paratransit services linking the urban area and the surrounding more rural areas, are limited in passenger capacity. The formation of a suburban ring of population in towns around the urban area poses a problem and a challenge for public transportation. It would be beneficial if people could travel to and from the urban area without having to drive automobiles and contribute to traffic congestion. However, the low densities of the rural communities make regular transit operations inefficient, and uneconomical.

4.3 Other Public Transportation Services Operating Within the BACTS Region

The Lynx, which is operated by Penquis Transportation Services (Penquis), is a demand response transportation provider. A significant number of the trip destinations provided by the Lynx are in Bangor, with lower but still significant numbers in Dover-Foxcroft, Lincoln, Millinocket, Old Town, and Brewer. Penquis is the regional rural public transportation provider for Penobscot (and Piscataquis) County as a sub-recipient of Maine DOT §5311 Rural Area Systems funding.

In addition to providing rural public transportation to the general public in Penobscot County, The Lynx provides transportation services under funding agreements with and/or for many different social service programs for specific populations such as the elderly and disabled, cancer patients, low-income and MaineCare qualified individuals. Individuals who use the transportation services under these programs must meet the requirements of the funding sources in order to qualify for the transportation services or pay a fare as a general public rider.

The Lynx is also the provider of the fixed route ADA Paratransit services under agreement with Community Connector. Eligible individuals within $\frac{3}{4}$ mile of a bus route who cannot access the fixed route service are provided curb-to-curb accessible transportation to any location within $\frac{3}{4}$ of a mile of the fixed route during the same set operational hours of the fixed route service.

The Cyr Bus Line, owned by John T. Cyr & Sons, Inc., is a privately owned bus company headquartered in Old Town, which operates an intercity bus service between Bangor and Caribou. The Bangor-Caribou route runs round trip daily 365 days per year between the two communities.

Most of the people who ride the Bangor-Caribou route are students and older people travelling between Northern Maine and the Bangor area. Financial support for the Bangor-Caribou route comes from FTA 49 USC §5311 grant funding, MaineDOT, fares and freight. The Bangor-Caribou route is the only route operated by Cyr Bus Line which receives a federal funding subsidy. This route has stops in Caribou, Presque Isle, Mars Hill, Houlton, Oakfield, Sherman, Medway, Howland and makes connecting stops in Bangor at the Concord Coach Lines transportation center and Hermon at the Greyhound terminal. The route terminates in Old Town at the Cyr Bus Terminal.

In addition to the intercity bus service provided by Cyr Bus Line, Concord Coach Lines and Greyhound provide daily competing services from Bangor to southern Maine and beyond.

Concord Coach Lines offers daily service from Orono to Boston, with stops in Bangor, Waterville, Augusta, Auburn and Portland. Concord Coach Lines also offers daily service from Orono to Boston along coastal US Route 1, with stops in Bangor, Searsport, Belfast, Lincolnville, Camden/Rockport, Rockland, Waldoboro, Damariscotta, Wiscasset, Bath, Brunswick and Portland. From the Portland Transportation Center, service continues directly to Boston via the Interstate. From the Portland Transportation Center, passengers can continue south on Concord Coach to Concord and Nashua New Hampshire, and New York City, or connect to the Amtrak Downeaster rail service. There are no connecting transfers from the Portland Transportation Center to the Greyhound station two miles away or the Portland International Jetport three miles away, but taxi service and local bus services are available. The Concord Coach Transportation Center is located on Union Street in Bangor.

Greyhound offers daily service from Bangor to Boston, with stops in Waterville, Augusta, Lewiston, Brunswick, Portland, Wells and Portsmouth. From Boston's South Station Transportation Center, passengers can either continue travel with Greyhound to New York or connect with other providers and alternate modes of transportation. The Greyhound terminal is located at Dysarts on Coldbrook Road in Hermon.

West Coastal Connection provides daily service from Calais to Bangor through Hancock and Washington Counties via U.S. Routes 1A and 1. DownEast Transportation provides service from Bar Harbor to Bangor on Mondays and Fridays year-round (except for holidays) via Ellsworth, along U.S. Route 1A. DownEast Transportation also operates a daily subscriber service from Bangor to the Jackson Lab in Bar Harbor. Waldo County Transportation operates a bus between Belfast and Bangor on Fridays, with stops in Searsport, Stockton Springs, Prospect, Franklin and Winterport. Concord Coach offers a daily trip between Bangor and Portland via Route 1 with stops in Searsport and Belfast.

Taxi service is very often used by public transportation dependent persons in the Greater Bangor area for trips at times when public transportation (fixed-route or on-demand) is not available, and for those destinations not served. The importance of the role played by taxi service, for all riders, is likely to grow in the future.

There is no formal **intermodal facility** where all riders can transfer easily between providers even though there are several public transportation providers operating within the Bangor urbanized area. This results in a loss of potential riders and revenues for all providers. In 2014, as part of a study the City of Bangor commissioned to examine conditions at, and possible alternatives to, the Pickering Square bus hub,

consultants investigated the possibility of developing a bus hub that could also serve as an intermodal facility near Bangor International Airport (BIA). The consultant determined that an intermodal facility at that location would not serve as the Community Connector system well as a bus hub.

The Bangor area does not have a formal bus transportation center where riders can interchange between modes and services; however, the Concord Coach Transportation Center on Union Street in Bangor operates as a defacto bus transportation center. Cyr Bus Line, West's Transportation and DownEast Transportation pick up and drop off passengers at this location. Community Connector also provides service to the Concord Coach station, which has passenger facilities including a waiting room, bathrooms, and a parking area which can accommodate day and overnight vehicle storage (limited to two weeks).

4.4 Current Issues

The Bangor region has undergone substantial economic development in recent years; however the types and locations of economic growth trends have changed over the last several years. Downtown retail and eatery areas have been revitalized, while Malls are struggling to retain and attract retail occupants. The Hogan Road/Stillwater Avenue area in Bangor has had several stand-alone storefronts and Mall storefronts vacated by retailers who are choosing to close local stores.

Earlier growth and its associated increase in traffic congestion have had negative impacts on the efficiency of the region's public transit system. One of the recurring issues that has surfaced over the last few years is an increase in public transit needs resulting from new development. New construction and development that did not consider transit service and/or functional design needs at project proposal have caused issues in being able to provide service at locations where it is needed. It is essential that municipal planners, engineers, economic development staff, planning boards and/or city and town councils understand the importance of fully considering, reviewing and planning for the physical needs of a transit bus to maneuver in and around developments to safely drop off and pick up passengers. In addition to the physical infrastructure and design considerations, it is critical to also identify whether or not the proposed development is within an already established bus route, or take early and proactive steps to work with the transit provider to determine whether or not the public transportation system has the financial and/or human resources to extend a route which could service the area of the development.

Demand for Additional Service

Community Connector has always received requests for bus service in areas not served. Some of the requests have been from residents needing service where they live. However, many requests have been from businesses and organizations wanting service at their locations. These requests reflect the importance placed upon the bus service by both residents and business owners. Community Connector has addressed these requests for additional service whenever feasible. However, this has often been accomplished by stretching the existing schedules so those additional destinations could be served. Increased traffic related to Bangor's economic growth makes it very difficult to maintain the stretched schedules. Increased boarding and alighting times further stress current schedules.

Flag Stop, Pulse System

Community Connector operates a pulse system designed to facilitate the timely transfer of riders from one route to another. The pulse system requires buses from all routes to meet at Pickering Square at approximately the same time to ensure passengers do not have to wait too long transferring between routes. Community Connector also operates on a flag stop system, whereby passengers can request boarding and alighting anywhere on a route. In this type of system, there are very few designated stops and limited

signage provided to guide passengers as to where they might be picked up by the bus. In addition to the limited signage, the combination of the flag stop and pulse system creates stressed schedules and passengers have expressed the desire for routes to provide for shorter headways.

Community Connector is in the process of outlining a plan to institute a designated bus stop service. As of summer 2017, GPS data showing boardings and alightings has been gathered on the majority of the routes. When the data is analyzed, Community Connector staff will propose designated stops that are central to the locations identified with the highest number of requests and provide signage and/or shelters in appropriate areas. Implementation of the designated stop project is anticipated for Spring 2018.

Additional Buses

Additional vehicles would enable service to be extended to areas currently not served, without reduction of service in other areas. Operating an expanded fleet of vehicles, however, requires additional operational and maintenance funding. Community Connector received four rehabilitated end-of-life buses between fiscal years 2016 and 2017. Two brand new buses have been ordered and are being custom built with an expected delivery in Fall 2017. In 2016 Community Connector was also awarded a \$5339 grant to purchase five new buses. The Community Connector fiscal year 2018 budget capital improvement program outlines their plan to add these five new vehicles to the fleet over a four-year period, beginning in 2019 with one new vehicle, two new vehicles in 2020, and one new vehicle in both 2021 and 2022.

Service Hours

With the exception of the Black Bear Express, there is no evening service on the Community Connector's regular routes where runs generally end sometime between 6 p.m. and 7 p.m. This gap in service does not allow transportation-dependent people the opportunity to get to and/or from after-hour employment or activities such as shopping, recreation and socializing. There is also no Sunday service, which presents similar constraints. Over the last few years, desire and need for later service hours has been a consistently identified area of interest with a high level of importance for passengers. Community Connector has established a Public Advisory Committee, which will be working on the goal of increasing evening service. The Community Connector fiscal year 2018 budget capital improvement plan also indicates a plan to expand service hours in 2022, which aligns with the anticipated timeframe of adding the last of the five new buses to the fleet.

Increasing Headways

Increasing headways (the time interval between successive bus arrivals) makes bus service less frequent and consequently less convenient. Riders would have to bear increased travel times by waiting longer for their scheduled bus or having to board an earlier bus. Multi-systems, a transportation consulting firm, uses a formula to predict changes in ridership on transit routes. The formula predicts that increasing headways from 30 minutes to 60 minutes would result in a 27.6% drop in ridership. This prediction can be validated by experience in the Bangor area. Community Connector estimates that ridership dropped by at least a third in the mid-1980s on the Old Town route, when service on that route was cut back from 30-minute to 60-minute headways. Desire to decrease headways has been expressed, specifically on the VOOT route.

Extending routes to serve additional areas increases ridership potential. However, because the route is longer, riders may be forced to spend extra time on the bus in order to reach their destination. During the early 1970s when Community Connector (then Citibus) was originally designed, all routes were one-hour routes. Customer dissatisfaction with long tours of the neighborhoods prompted the redesign of the routes resulting in much improved point-to-point times.

Service Gaps

Geographic coverage. Areas that may have service gaps include outer Essex Street, outer Broadway, and outer Mount Hope, where there have been occasional requests for service. There are several large mobile home parks along these routes, which suggest there may be potential ridership. Additional buses would be needed to serve these areas, and it is not clear whether there is enough demand at this time. The Community Connector also no longer connects with Greyhound, which relocated to Hermon outside the Community Connector's service area.

Time of day/weekends. With the exception of the Black Bear Express (UMO service that ends around 9:30 p.m. to 10 p.m., and only during the school year), there is no evening service on the Community Connector's regular routes where runs generally end sometime between 6 p.m. and 7 p.m. This gap in service does not allow transportation-dependent people the opportunity to get to and/or from after-hour employment or activities such as shopping, recreation and socializing. There is also no Sunday service, which presents similar constraints.

Clients. Gaps in services for transit dependent groups include those individuals who work evenings and/or Sundays and populations traveling to or from outside the service area, such as those mentioned under gaps in geographic coverage.

Service Quality. Generally, the quality of service in terms of safety, ride comfort and timeliness is good, although a number of buses have been taken out of service because of extensive corrosion damage, and due to the age of the fleet, buses experience frequent break-downs, which require them to be removed from service for repairs. The cleanliness of the bus fleet has been identified as an area of concern. Community Connector is in the process of identifying alternatives for cleaning services and revising bus cleaning practices and procedures to address this concern.

Facilities and Equipment. There are no identified gaps in terms of accessibility of buses. Community Connector buses have bike racks and are wheelchair accessible, with wheelchair tie-downs on the buses. Gaps include the lack of video cameras on older buses and the need for having more clustered bus stops instead of buses stopping at every intersection. Signage is currently inadequate; however, Community Connector has obtained bus stop signs which will be deployed when designated stops have been identified. Although it does not present a service deficiency for riders, bus drivers are currently counting riders manually using denominators. These denominators are not adequate to record all the available types of fare categories, which limits the analysis of ridership data. Community Connector is currently working on an RFP to acquire technology, which will provide an automated digital tracking system that allows for an unlimited number of bus stops and fare types.

4.5 Performance Measures

Transit providers must set state of good repair (SGR) and safety performance targets and provide the targets and supporting documentation to the MPO each year. MPOs are required to set regional targets and incorporate performance tracking into plans and decision-making processes. BACTS will incorporate transit asset management and safety performance measures, as established by Federal and State agencies, into plans and programs and set regional targets that address these performance measures. To the maximum extent possible, BACTS will coordinate with Community Connector to establish targets and track progress toward those goals.

4.6 Transit Asset Management

The purpose of Transit Asset Management (TAM) is to help achieve and maintain a state of good repair (SGR) for the nation’s public transportation assets. The TAM rule develops a framework for transit agencies to monitor and manage public transportation assets, improve safety, increase reliability and performance, and establish performance measures.

All recipients of Federal transit funds that own, operate, or manage capital assets used in the provision of public transportation must collect and report data (for all assets used in the provision of public transportation service, regardless of funding source, and whether used by the recipient or sub-recipient directly, or leased by a third-party) for Equipment and Service Vehicles, Rolling Stock, and Facilities. Although, infrastructure is also a required performance measure, it applies only to rail fixed guideway, track, signals and systems; which is not operated in the Greater Bangor area.

Transit Asset State of Good Repair Performance Targets

The performance-based planning regulations require an MPO to assess progress of a transit provider’s performance to substantiate funding decisions that support regional targets and goals for achieving SGR. Community Connector is currently the only urban transit provider in the BACTS region. For this reason, BACTS has defined the initial Useful Life Benchmarks (ULB) for rolling stock as defined and requested by Community Connector as shown in Figure 4.9.

| BACTS METROPOLITAN PLANNING AREA TRANSIT ASSET CATEGORY: ROLLING STOCK DEFINITIONS AND BENCHMARKS | | | | | | |
|---------------------------------------------------------------------------------------------------------|-------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--|
| Subcategory | Class | | Definition | ULB (Years) | | |
| BU | Bus | S Standard | Revenue Service Vehicles 30 feet or greater in length, regardless of duty | 14 | From date of manufacture | |
| | | E Extended Life | Revenue Service Vehicles 30 feet or greater in length, regardless of duty, significant and purposeful investments made to rebuild mechanical systems with the intent of enhancing reliability and extending the vehicle’s life | 18 | From date of manufacture | |
| CU | Cutaway Bus | | Revenue Service Vehicles 27 feet in length, with a bus body mounted on the chassis of a van or light-duty truck | 10 | From date of manufacture | |

Actual performance of rolling stock in fiscal year 2017 was 62.50% of assets meeting or operating beyond the ULB. In fiscal year 2018, the BACTS target for rolling stock is 40.91% of assets meeting or operating beyond the ULB.

Facilities condition benchmarks are based on the FTA Transit Economic Requirements Model (TERM) scale as shown below. Facilities which fall below an adequate (3.0) TERM rating are considered exceed the condition benchmark (Table 4.2).

Table 4.2

| Rating | Condition | Description |
|------------|-----------|-------------------------------------------------------------------------------------------------------------|
| 5 to 4.8 | Excellent | New or near new condition, no visible defects, may still be under warranty if applicable |
| 4.7 to 4.0 | Good | Good condition, but no longer new, showing minimal signs of wear, may be slightly defective or deteriorated |
| 3.9 to 3.0 | Adequate | Reached mid-life condition, moderately deteriorated or defective |

| | | |
|------------|----------|------------------------------------------------------------------------------------------------------------------------|
| 2.9 to 2.0 | Marginal | Reaching or just exceeded useful life, defective or deteriorated in need of replacement, increasing maintenance needed |
| 1.9 to 1.0 | Poor | Well beyond useful life, critically damaged or in need of immediate repair |

Actual performance in fiscal year 2017 was 28.57% of facilities meeting or exceeding the condition benchmark. In fiscal year 2018, the BACTS target for facilities is 14.29% meeting or exceeding the condition benchmark.

Agency Transit Asset Management Plan

As an operator with less than 100 revenue service vehicles, Community Connector is a Tier II Agency and is required to address only the following four elements in their Transit Asset Management (TAM) Plan.

1. An inventory of assets
2. A condition assessment of inventoried assets
3. Description of a decision support tool
4. A prioritized list of investments

The initial TAM plan must be completed on or before October 1, 2018, covering a four-year horizon, which promotes coordinated capital investments aimed at bringing the transit system into and maintaining a state of good repair for all transit assets. The Plan must be updated at least once every four years and shared with BACTS, including supporting documents of performance targets, investment strategies, and annual condition assessments, to be included in the MPO planning process. In order for BACTS to be able to formulate TIPs for inclusion in the State STIPs, BACTS must have a current inclusive metropolitan plan in place, including the required TAM elements.

Once completed, Community Connector’s Transit Agency Plan will be referenced and incorporated into BACTS regional planning documents and processes. In addition, BACTS will concurrently develop a procedure for the annual submission of transit projects and financial plans to be integrated within the TIP development and obligated project approval process to prioritize transit investments by anticipated project year to achieve or maintain a state of good repair and track performance in meeting targets for the region.

Public Transportation Agency Safety Plan

FTA 49 USC §5329, Safety is pending final regulation. When the final rule is published, Community Connector will be required to develop a Public Transportation Agency Safety Plan including defining a Safety Management System and setting safety performance targets within one year. All transit agencies, regardless of mode, size, or operating characteristics are required to develop and self-certify their Public Transportation Agency Safety Plans within one year of the final rule and re-certify annually.

Taking proactive action to ensure the safety and security of all staff and riders on the fixed-route bus system is of utmost importance to BACTS and is critical to providing a safe and reliable public transportation service. Regardless of, and separate from, the pending regulation on Agency Safety Plans and Performance Targets, BACTS strongly recommends Community Connector develop, document and implement a Transit Safety and Security Plan consistent with FTA guidance. The Plan should address emergency response procedures and protocol related to criminal activity and/or terrorism (i.e., hazardous material, bomb threat, suspicious package/ explosives, active shooter), and may also address weather related/natural disaster plans and protocol (i.e., hurricane, winter (snow/ice), summer/heat, tornado, flood,

earthquake, fire, etc.), Special events plans (i.e., parades, festivals, concerts, sporting events, etc.) and Evacuation plans.

As with the performance targets related to transit asset management, BACTS is responsible for developing regional transit safety performance targets for use in the metropolitan transportation planning processes and will, to the maximum extent possible, work jointly with Community Connector to develop the regional transit safety performance targets.

4.7 Recommendations

- Provide evening and weekend bus service system-wide.
- Ensure bus fleet is in a state of good repair and able in order to minimize disruptions of service because of breakdown and failures.
- Encourage Community Connector to develop a transit asset management plan that promotes timely and planned replacement of vehicles
- Work with Community Connector to develop a long-range capital plan
- Develop commuter Park and Ride lots with a designated transit stop to reduce traffic congestion.
- Using technology to provide additional service and service coordination (real-time apps, shared ride services, links between other public and private transit providers to make services more accessible).
- Coordinating with transit providers outside of the Greater Bangor area for more efficient and convenient connections.
- Addressing sprawl issues where development is geographically challenging to provision of transit service. The trend is that Millennials are moving into urban areas, but Seniors are aging in place.
- Protecting the environment by ensuring newly acquired transit vehicles are environmentally friendly and equipped with accessible features (i.e., low-floor, lifts, etc.)
- Coordinating between the transit operator and municipal planning staff/decision-makers to include public transit factors as part of the application and approvals process for new and proposed developments.
- Connecting services [for students] to regional transit hubs (e.g., Boston, New York) for travel from school to home easily. Non-Maine residents are entering post-secondary schools in this area at a large rate.
- Exploring train service in the area.
- Separating right of way or otherwise creating bus way alternatives.
- Providing convenient and reliable transit service for telecommuting workers employed by organizations in larger cities (outside of the area) who occasionally travel to and from the employer's office.
- Linking transit in the area to other systems further north of Bangor and into Canada through a coordinated system.
- Coordinating transit services from Brewer to Bar Harbor/Acadia National Park to eliminate congestion through Route 1A from Brewer into Bar Harbor and into ANP.
- Organizing services and marketing between other regional and inter-city transit providers coming into and out of the Bangor area so travelers make seamless transitions from one service to the next without too much layover time.
- Partnering with the local business community to fund additional transit service geared toward enhancing customer/client base experiences (i.e., EMMC – parking issues, several employees, patients and visitors each day).
- Partnering with businesses to institute promotional programs (e.g., a paid transfer program with retail establishments where the retailers would provide customers with free transfer vouchers to ride the bus from their store).
- Creating more frequent and closer to door access for high traffic medical facilities and complexes in the area.
- Creating a system that meets the need of, and supports, the level of importance placed on transit, by making it more accessible, available, convenient, frequent and connected to non-motorized/active transportation infrastructure.
- Determining impacts and role of autonomous/self-driving vehicles to public transportation services.
- Making bus services easier to use by clarifying where or when the bus is coming, providing route maps that are explicit and clear, as well as available where riders are (i.e., bus stop locations) and providing real time information on where the bus is and where it will be.

- Utilizing GPS/GIS technology integration for bus route maps.
- Ensuring transit can accommodate the different types of active transportation that are also used by bus riders to ensure easy transition from one mode to another (e.g., BBOE route occasionally cannot accommodate all the bike space required for riders).
- Changing the perception of transit use by providing assistance to those needing extra guidance on how to use the bus as well as increasing marketing and outreach efforts to explain bus services.
- Explore non-conventional and private funding sources to expand services.
- Reduce headways/increase frequency of service to 30 minutes, particularly Old Town route.
- Provide/improve passenger amenities – benches, shelters, landscaping, lighting, walkways, signage, etc.
- Improve marketing through local TV, radio, local access channel, and city channel.
- Examine cost effective options for providing ADA Complementary Paratransit service, as use of the service increases.
- Investigate partnerships with potential large ridership generators, such as colleges, hospitals, and employers.
- Implement an ITS-based – traveler information system – next bus arrival, etc.
- Implement transit priority at signalized intersections.
- Ensure that sidewalks are provided along all bus routes.
- Coordinating the public transportation services in the BACTS area, including the siting of an intermodal passenger facility.
- Better integration of taxi service with other transportation options in the Bangor area.
- Improve routes and schedules to ensure ease of understanding and identification of different routes by color, unique name and/or symbol.
- Implement fixed bus stop locations.
- ADA automated audible internal and external announcement of bus route, next stop, etc.
- Update maps and real-time visual route service stops showing landmarks and previous and next stops.
- App and/or visual board at bus stop/hub showing real-time bus status
- Medical facility transit service more frequent and closer to entrance.
- VOOT Route configuration and schedule is overly complicated and confusing and 60-minute headway is not sufficient to meet rider needs.
- Employer/local business programs to subsidize shuttle services for clients/employees.
- Develop, and distribute to large employers in the area, informational communications regarding programs designed to reduce demand for transportation through various means, such as the use of transit and of alternative work hours.
- BACTS strongly recommends Community Connector develop, document and implement a Transit Safety and Security Plan to address emergency response procedures and protocol related to criminal activity; address weather related/natural disaster plans and protocol; special events plans; and evacuation plans.
- Monitor, and engage in discussions with State and local partners, regarding available technologies and options which may be viable alternatives to large diesel buses for the fixed-route bus service.

<http://www.maine.gov/mdot/planning/docs/2017/smp.pdf>