BANGOR AREA COMPREHENSIVE TRANSPORTATION SYSTEM

VISION 2043

Metropolitan Transportation Plan

PREPARED FOR

BACTS VISION 2043

Bangor Area Comprehensive
Transportation System
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Introduction

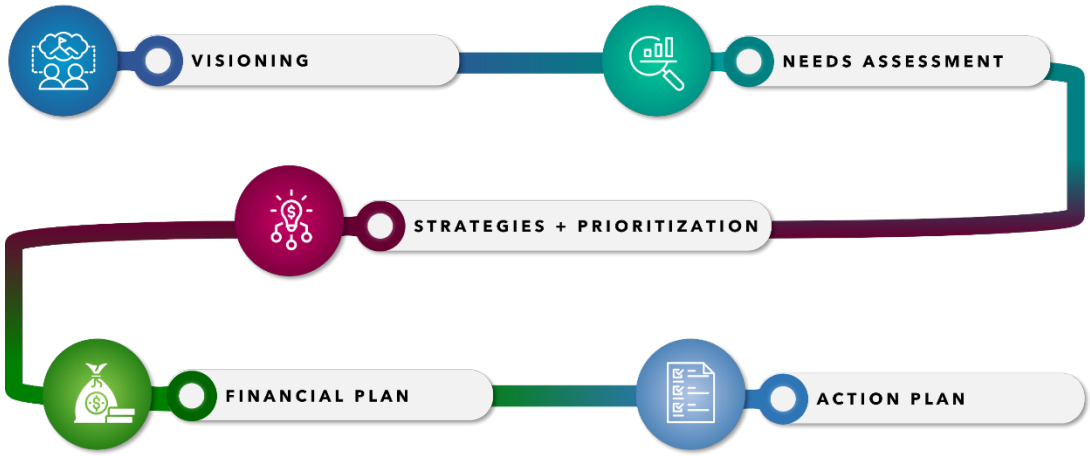
The Metropolitan Transportation Plan (MTP) is an important document which defines the goals and vision for the BACTS region. Formerly known as the Long-Range Transportation Plan (LRTP) and now titled VISION 2043 in this iteration, the document serves as the conduit between understanding public needs and implementation of infrastructure investments. VISION 2043 is needed more than just to fulfill a federal mandate, but also to help ensure the long-term success and resiliency to anticipated change in the region. In addition, BACTS is looking for VISION 2043 to include climate resiliency and long-term sustainability efforts.

1.1 MPO Overview

By federal law, all urbanized areas over 50,000 persons are required to have an organization that plans and coordinates decisions regarding the area's surface transportation system, known as a Metropolitan Planning Organization (MPO). The MPO is required to conduct a continuing, cooperative, and comprehensive transportation planning process.

The five core functions of the MPO are to:

- Establish a fair and impartial setting for effective regional transportation decision making in the metropolitan area;
- Evaluate transportation alternatives, scaled to the size and complexity of the region;
- Maintain a long-range transportation plan covering a 20-year planning horizon;
- Develop a four-year Transportation Improvement Program (TIP) and prioritize projects; and
- Involve the public.



There are three key documents produced by the MPO, including the Unified Planning Work Program (UPWP), the Transportation Improvement Program (TIP), and the Metropolitan Transportation Plan (MTP). The UPWP is a bi-annual statement of work identifying the transportation planning priorities and activities to be carried out by the MPO within a metropolitan planning area (MPA). Updated every two years, it includes a description of the planning work and resulting products, who will perform the work, time frames for completing the work, cost of the work, and source(s) of funding. The TIP is an annual program of projects covering a period of four years that is developed and formally adopted by an MPO and is required for projects to be eligible for federal funding under 23 U.S.C and 49 U.S.C Chapter 53, as well as state funding through the Maine Department of Transportation (MaineDOT). The MTP is the official multimodal transportation plan addressing a 20-year planning horizon (updated every 5 years) that the MPO develops, adopts, and updates through the metropolitan transportation planning.

BACTS Overview

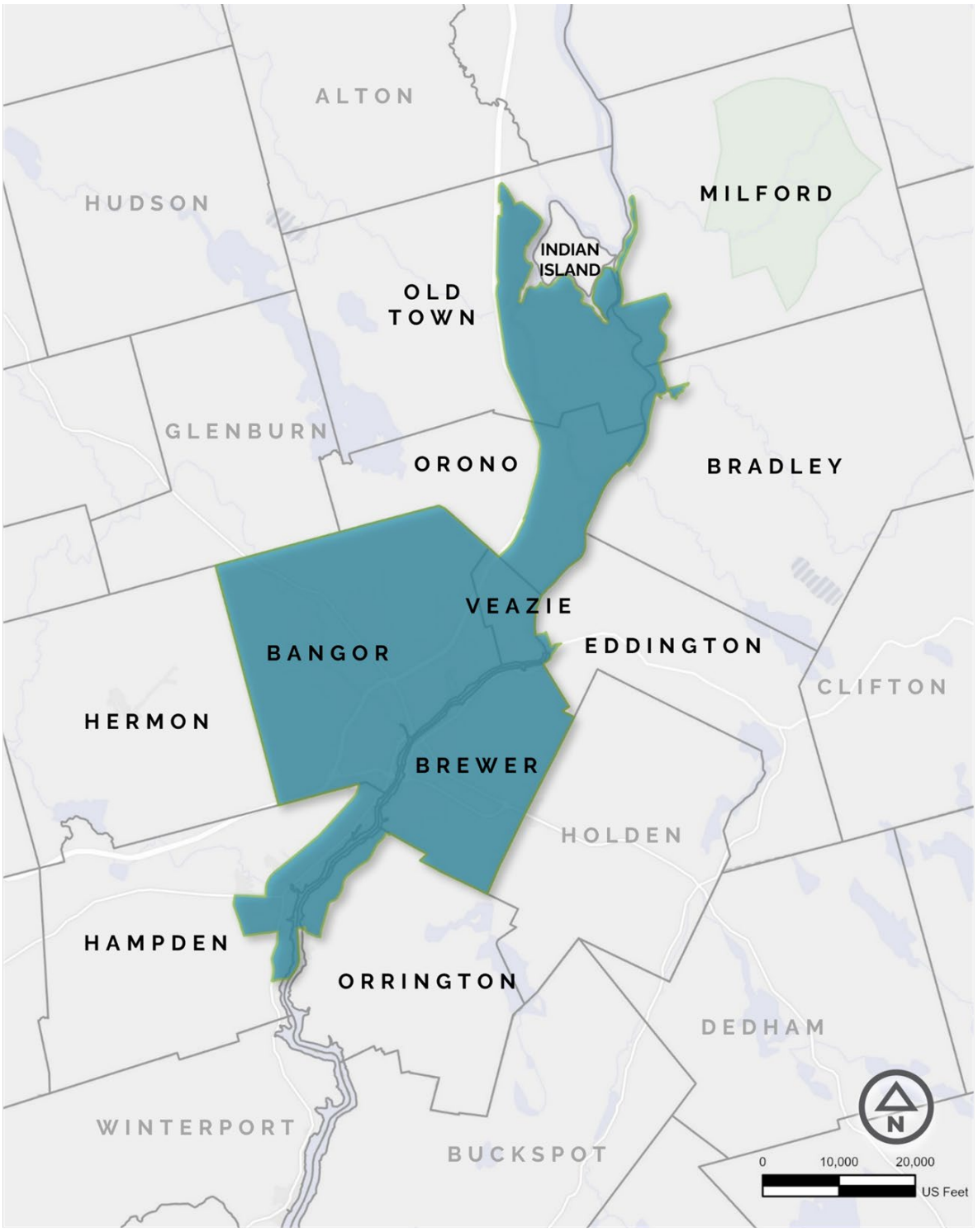
The Bangor Area Comprehensive Transportation System (BACTS) was designated in 1982 as the Metropolitan Planning Organization (MPO) responsible for continuing, cooperative, and comprehensive transportation planning in the Greater Bangor Urbanized Area (UZA) and is governed by a Policy Committee. Each municipality and tribe can appoint one voting representative for every three thousand (3,000) people in their urbanized area with a minimum of one member and a maximum of 4 members per municipality or tribe. The Maine Department of Transportation, Federal Highway Administration, and Federal Transit Administration also has one voting representative to the Policy Committee. The Policy Committee meets regularly to establish transportation priorities and to allocate specific categories of federal funds to meet the area's transportation needs.

In order to receive Federal funding for transportation projects in the urbanized area, BACTS is required to produce a broad-based, long-range, multimodal transportation plan addressing the needs of its constituency. To meet this mandate, BACTS prepares and presents an updated Metropolitan Transportation Plan (MTP) every five years. This plan, herein called VISION 2043, represents several iterations of input and feedback from the public transportation users and the MPO.

Study Area

The BACTS metropolitan planning area consists of 11 municipalities (3 cities, 7 towns and 1 Indian Nation), which make up the 2020 Census designated Greater Bangor urbanized area (UZA). These municipalities include Bangor, Brewer, Veazie, Penobscot Indian Island and portions of Hampden, Orono, Old Town, Milford, Bradley, Orrington and Hermon. With the 2020 Decennial Census, the UZA boundaries shifted slightly to include a portion of the Town of Eddington and Holden. The MPO area will always include the urbanized area, but the towns optionally may include other portions or the whole of their town. While the towns may optionally increase the size of the planning area, the new portions will be out of the area in which the MPO can use their capital funds. The 2020 Census indicates that 65,585 people live in the BACTS urbanized area, making it the third largest urban center in the state of Maine. The geographic boundaries of the MPO are shown in Figure 1.

Figure 1 MPO Boundaries



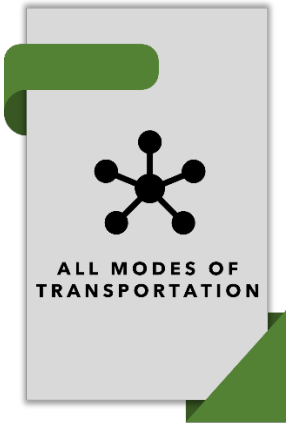
1.2 Guiding the Plan

VISION 2043 is a federally required and fiscally constrained document that is developed on a five year update cycle and provides highlights of the entire transportation network for BACTS. The development for the 2043 Update follows both federal and state guidelines as outlined below.

Federal and State Guidance

VISION 2043 is developed in accordance with the following Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) legislation:

- 23 CFR 450 – Planning Assistance and Standards
- U.S. Code Tile 49, Chapter 53 – Public Transportation
- National Environmental Policy Act (NEPA)
- Americans with Disabilities Act (ADA)
- Clean Air Act Amendment (CAA)
- Title VI of the Civil Rights Act



The plan will also incorporate guidance from MaineDOT's Long Range Transportation Plan, the Maine Sensible Transportation Policy Act (MSTPA), 'Maine Won't Wait' – Maine's Climate Action Plan, and Penobscot Climate Action, an adaptation and mitigation plan being developed for BACTS members.

Bipartisan Infrastructure Law (BIL)

On November 15, 2021 the Bipartisan Infrastructure Law (BIL) was signed which reauthorizes surface transportation programs for FY 2022-2026 and provides advance appropriations for certain programs. The Bipartisan Infrastructure Law authorizes up to $108 billion to fund federal public transportation programs. The BIL was preceded by the Fixing America's Surface Transportation Act (FAST Act), which was the first long-term surface transportation authorization enacted in a decade. Each transportation bill has built on previous funding and policy, with provisions to make the Federal surface transportation more streamlined, performance-based, and multimodal. The BIL seeks to address challenges facing the U.S. transportation system, including improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery.

Planning Factors

The BIL has continued previous law which dictates the planning factors and goals for MPO's to consider for projects, strategies, and studies for the transportation planning process. The ten factors include:

1. **Economic Vitality:** Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency;
2. **Safety:** Increase the safety of the transportation system for motorized and non-motorized users;
3. **Security:** Increase the security of the transportation system for motorized and non-motorized users;
4. **Accessibility & Mobility:** Increase the accessibility and mobility for people and freight;
5. **Environment & Quality of Life:** Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
6. **Connectivity:** Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. **Efficiency:** Promote efficient system management and operation;
8. **Preservation:** Emphasize the preservation of the existing transportation system;
9. **Resiliency & Reliability:** Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation; and
10. **Travel & Tourism:** Enhance travel and tourism.

Performance-Based Planning Performance Measures

In 2012, the Moving Ahead for Progress in the 21st Century (MAP-21) transportation law instituted a national performance measure system for highway and transit programs, which continued under the BIL that required MPO's to incorporate a performance-based approach to address challenges facing the national transportation system. To ensure these challenges are addressed at the state and regional levels, federal performance measures have been established in 23 CFR 490 and 49 CFR 625 and 630. BACTS has incorporated the statewide goals established by MaineDOT.

These performance measures will be used to evaluate the condition and performance of the transportation system moving forward.

Consistency with Planning Documents

During the development of VISION 2043, a comprehensive screening of major planning documents, including statewide and local planning documents, to ensure it reflects the planning efforts established in those plans. Elements discussed in VISION 2043 are consistent with currently adopted documents produced by BACTS, including:

Metropolitan Transportation Plan Priority Recommendations Report

The purpose of this exercise was to gather information to determine the priorities for this current VISION 2043 update, which will be completed in the next Unified Planning Work Program (UPWP). Although the primary focus of this report is to set priorities for the upcoming VISION 2043, the findings will also be useful in the development of future work plans. Priorities for the current VISION 2043 update include funding (research opportunities to increase formal funding for transportation in the region), connectivity (identify the gaps in the existing network and prioritize projects to address these gaps), planning for the future (focus on technologies related to transportation and mobility and develop a plan to prepare the region for the impacts of climate change), and system management (prioritize investment in maintenance of existing infrastructure over expansion, or construction, of new facilities and have a strong understanding of the existing system).

Unified Planning Work Program (UPWP 2022-2023)

The UPWP describes transportation studies and other planning tasks that BACTS intends to undertake in its urbanized area with federal, state, and local planning funds. The UPWP is updated every two years. The 22-23 UPWP is broken into ten tasks. Task 1 is administration and coordination in which BACTS staff will facilitate the management and supporting administrative tasks necessary for the operation of the MPO – this includes project management and community coordination, professional development, and public outreach. Task 2 is programming in which BACTS will develop the TIP project prioritization and selection policy and maintain the TIP document. Task 3 includes data and studies (data collection, inventories and assessments, GIS, and performance measures). Task 4 is planning which includes multimodal planning (bike/ped, transit, rail), safety and VISION 2043 update. Task 5 includes the development of the regional traffic signal inventory, regional collector paving inventory and analysis, and regional climate action plan development through unallocated 20-21 funding due to covid. All of this equaling approx. $1 million over the two-year period.

Transportation Improvement Plan (TIP 2022-2025)

The Transportation Improvement Program (TIP) is an annual document that contains

transportation projects recommended for federal funding during the next four years. This document describes both the transportation-related projects and the methodologies employed to determine the projects to be accomplished within the BACTS Metropolitan Planning Area (MPA) using Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Maine Department of Transportation (Maine DOT), and local matching funds during the years of 2022, 2023, 2024, and 2025. The projects included in the TIP ultimately establish an overall program strategy reflecting the BACTS VISION 2043 and the State of Maine transportation plans, which are aimed at meeting the long-range needs of the transportation system. Where VISION 2043 defines goals and objectives for transportation planning operations for the next twenty years; the TIP defines the actual expenditures and efforts to move towards or meet those goals and objectives.

Other BACTS Planning Documents

- Public Participation Plan – 2021
- TIP Project Prioritization and Selection Policy – 2021
- Long-Range Pedestrian and Bicycle Transportation Plan – 2019
- Community Connector Transit Study – 2020
- Community Connector Transit Asset Management Plan 2021-2025 – 2022
- Community Connector Public Transportation Agency Safety Plan – 2022
- BACTS Transportation Performance Management Report – 2021
- BACTS Transit Structural Analysis – 2021

Other Planning Documents

- MaineDOT Working to Move Maine: Long-Range Transportation Plan (LRTP) – 2023
- Maine's 2022 Strategic Highway Safety Plan – 2022
- Maine State Active Transportation Plan – 2023
- MaineDOT Complete Streets Policy – 2019
- 2023-2026 Statewide Transportation Improvement Program – 2023
- MaineDOT Transportation Asset Management Plan – 2019
- MaineDOT Locally Coordinated Transit Plan 2019-2023 – 2019
- MaineDOT State Management Plan (SMP) – 2019
- Maine State Transit Plan 2025 – 2023
- MaineDOT Transit Asset Management (TAM) Plan – 2022
- Maine State Rail Plan (MSRP) – 2023
- Maine Integrated Freight Strategy – 2017
- Maine State Aviation System Plan – 2023
- Maine Won't Wait – Maine's Climate Action Plan – 2020
- Maine Plan For Electric Vehicle Infrastructure Deployment (MAINE PEVID) – 2022

Fiscal Constraint

The federal transportation planning requirements state that VISION 2043 must be based on reasonable financial commitments and constrained to the reasonably-anticipated public funding projected to be available. In order to fulfill this task, BACTS has taken the following steps:

- Project funding sources that are expected to be available for transportation uses.
- Estimate the cost of constructing, maintaining and operating the existing system.
- Plan for the future transportation system.
- Evaluate projects within BACTS region that align with the goals within VISION 2043.
- Identify projects that can meet the confinements of the fiscally constrained element of the plan.

Title VI & Environmental Justice

It is the BACTS' responsibility to ensure transportation investments are equitably distributed across the region, including to areas with high minority populations or areas with a high proportion of low-income individuals and families. To assure VISION 2043 meets this important responsibility, BACTS complies with Title VI of the Civil Rights Act and Environmental Justice Executive Order 12988. As such, each project identified within VISION 2043 undergoes a cost-benefit analysis for Title VI and Environmental Justice.

1.3 Planning Process

The MPO followed the seven key strategies outlined in the 2018 Public Participation Plan (PPP), to ensure that sufficient opportunities for public participation was completed in the VISION 2043 development process.

Public Engagement

The MPO followed the seven key strategies outlined in the Public Participation Plan (PPP), adopted May 18, 2018, to ensure that sufficient opportunities for public participation was completed in the VISION 2043 development process.

1. Inform and engage local and state agencies, planning partners and stakeholders in plans and programs.
2. Obtain an understanding of transportation needs and desires.
3. Engage the public in transportation decision-making early and often.
4. Provide the public reasonable access at key decision points during the development of plans and programs.
5. Ensure full and fair participation in the transportation decision making process.

6. Provide timely and adequate notice to the public about meetings and plans.
7. Seek out and consider the needs of those traditionally underserved by existing transportation systems, who may also face challenges accessing employment and other services, including:
    - Low-income households
    - Minority households
    - Limited-English proficiency populations
    - Senior populations
    - Zero-car households
    - Persons with disabilities

2

Existing Conditions

You can't know where you're going if you don't know where you are. This section contains a review of the current state of the transportation system in the BACTS region.

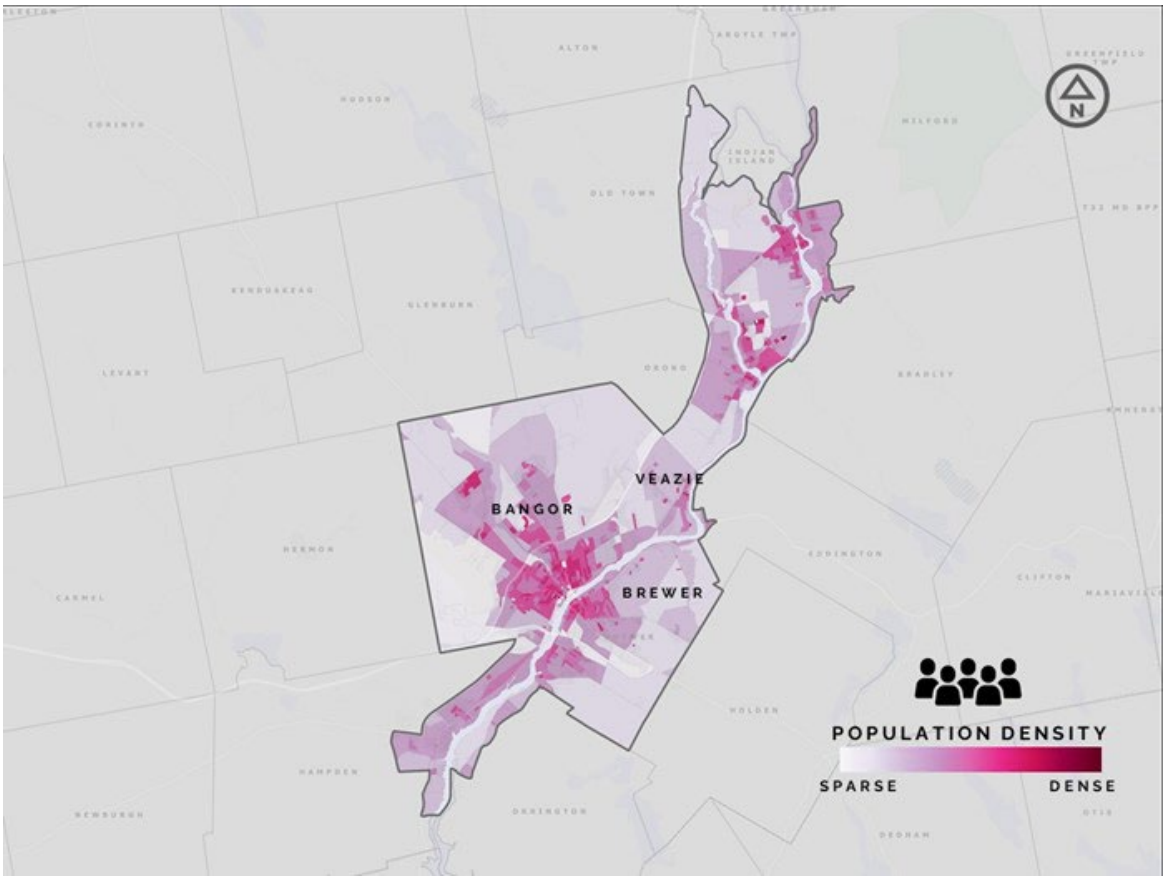
2.1 Regional Context

The regional context refers to the geographical, cultural, social, and economic factors that shape a specific region. It provides the framework for understanding the unique challenges and opportunities that exist within a particular area.

Population

The BACTS area is the third largest urban center in the State of Maine. The 11 municipalities that comprise the BACTS region cover a total of 318 square miles with a total population of 85,470, with the urbanized area (UZA) occupying slightly more than 1 /8 of the total area and including nearly 80% of the total population (65,585).

Figure 2 Population Density



BACTS Storymap based on Census Data

The region as a whole has experienced a consistent slowing in population growth over the last 40 years. The BACTS area is not alone in experiencing this trend, as the entire state of Maine and northeast region are trending in a similar way. The patterns of low growth may be attributed to the higher cost of living and labor present in the New England area as compared to elsewhere in the country. This trend of minimal growth is anticipated to continue through 2050.

Between 2000 and 2020, the BACTS area, as well as Penobscot County and the State of Maine as a whole, experienced slight population growth. The State of Maine total population increased by

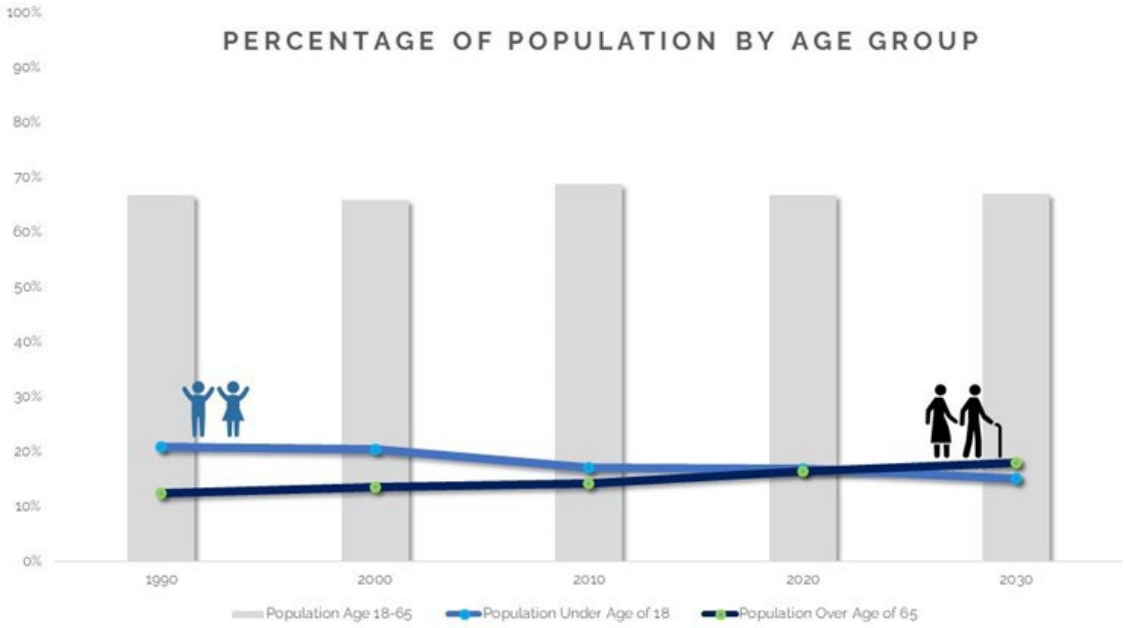
6.9 percent while the total population of Penobscot County and the BACTS region increased by 5 percent and 4.1 percent, respectively. This is representative of a trend suggesting that people are choosing to move to suburb communities to enjoy a more rural lifestyle while taking advantage of the accessibility and opportunities of nearby metropolitan areas. The impacts of COVID-19 may have only increased this trend which may lead to greater automobile dependence due to the lack of public transportation and other multimodal options in more rural settings.

Age

The population in the BACTS region is aging, a trend that is being experienced throughout the country. While the median age of the region is younger than that of the state of Maine, the number of residents over the age of 65 has increased to 16.9% in 2020 from 13.7% in 2000. This trend is expected to continue through 2050, at a faster pace than previously seen in the region. As the population ages, there will be a change in the region's mobility needs as older adults often experience barriers to transportation.

The transportation system must adapt to provide safe and comfortable streets while expanding transportation choices to ensure quality life for seniors. Additionally, an aging population in conjunction with a declining birth rate and relatively stagnant in-migration may lead to economic distress due to a decline in the available skilled workforce. The area must adapt to increase the labor market participation rate by attracting business and talent to enter the workforce through offering flexible working practices and incentives.

Figure 3 Percentage of Population by Age Group

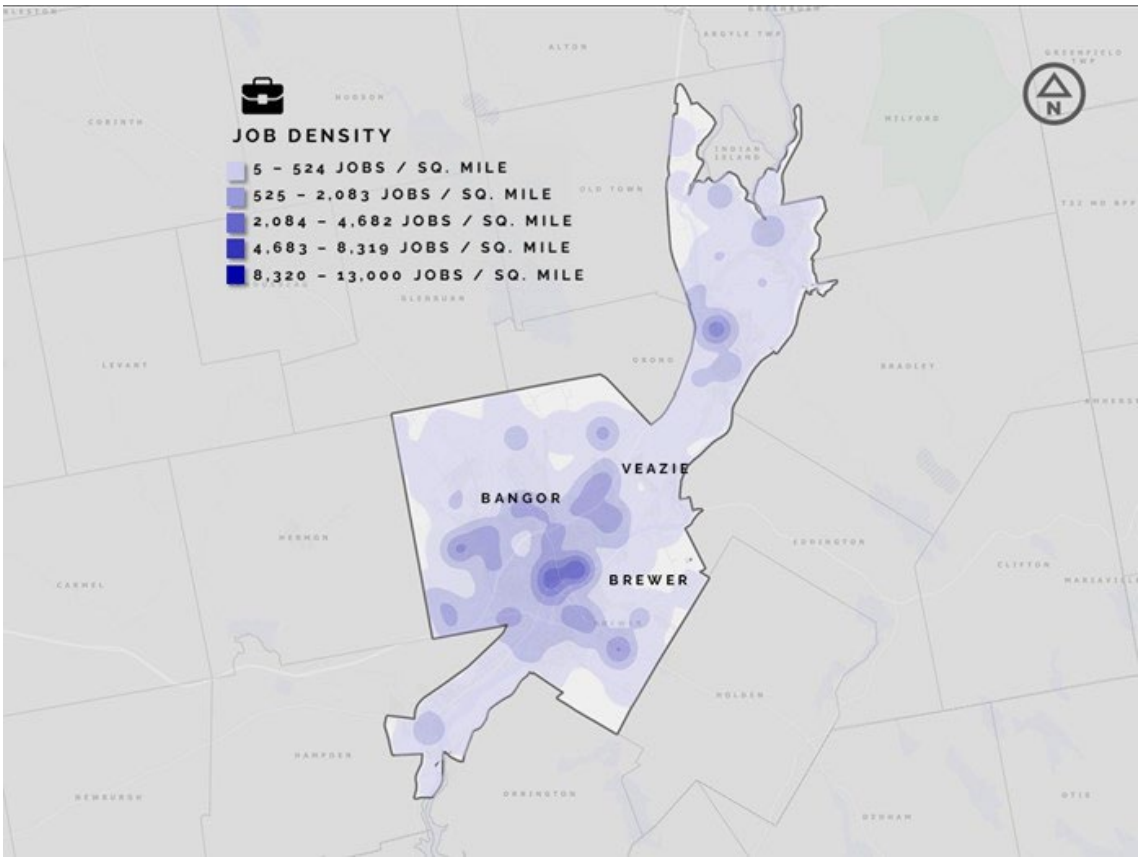


BACTS Storymap based on Census Data

Employment

As the largest market town, distribution center, transportation hub, and media center in a five-county area with a population exceeding 330,000, downtown Bangor boasts the highest job density. The region's most significant employers include healthcare providers such as Northern Light Healthcare, Acadia Hospital, St. Joseph's Healthcare, and Community Health & Counseling Services, as well as major manufacturer General Electric.

Figure 4 Job Density

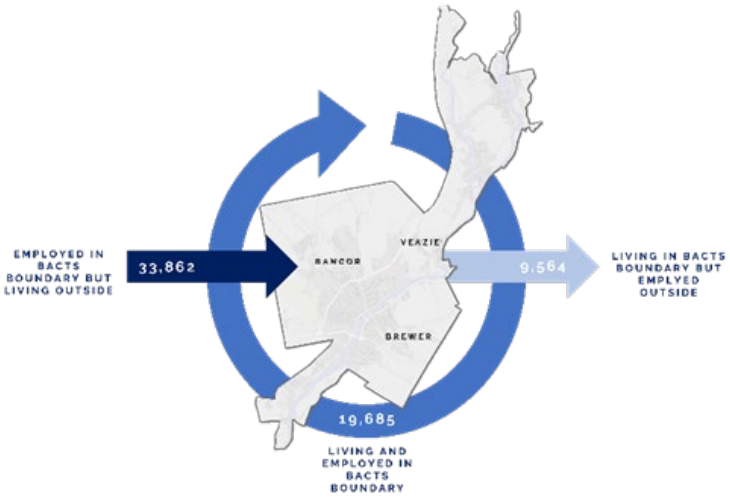


BACTS Storymap based on Census Data

The universities in the area are also significant employers, and educational attainment has a significant impact on employment in the region. In the BACTS area, 93% of individuals over the age of 25 have obtained a high school diploma, with 29% having some college education, 21% having a bachelor's degree, and 16% having a Graduate degree. The most common bachelor's degrees in the region are in Education, Business, Science & Engineering, and Biology, Agriculture, and Environmental Science. According to data from the U.S. Census Bureau on county-to-county commuter patterns, the BACTS area is mostly self-sustaining, with 67.3% of the local labor force residing within the area. Looking at the 11 communities in the BACTS region, 71.3% of the local labor force resides within the area. The number of available jobs compared to the number of workers reflects the area's role as a regional service center for eastern and central Maine. In 2015, there were 2.03 jobs for every employed resident in Bangor and Brewer. Of the 25 largest employers in Penobscot County, 24 are based in the greater Bangor area, bringing over 41,000 employees from outside the region to work in the BACTS area.

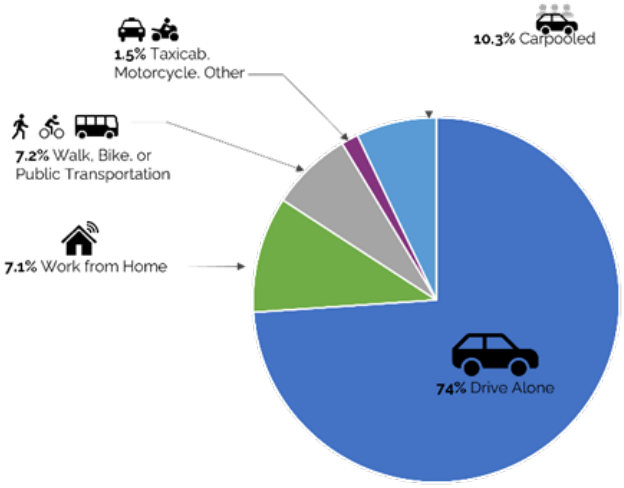
The majority of workers in the BACTS area commute to work by personal automobile, with 74% driving alone and 10.3% carpooling. A small percentage of workers, 7.2%, use alternative transportation options such as public transportation, walking, or biking, while 1.5% use taxicabs, motorcycles, or other means. Additionally, 7.1% of workers work from home, a trend that is expected to increase due to the COVID-19 pandemic. Despite the low usage of alternative transportation, 11% of households in the area do not have access to a vehicle.

Figure 5 Employment and Residence Relationship



BACTS Storymap based on Census Data

Figure 6 Mode of Transportation to Work

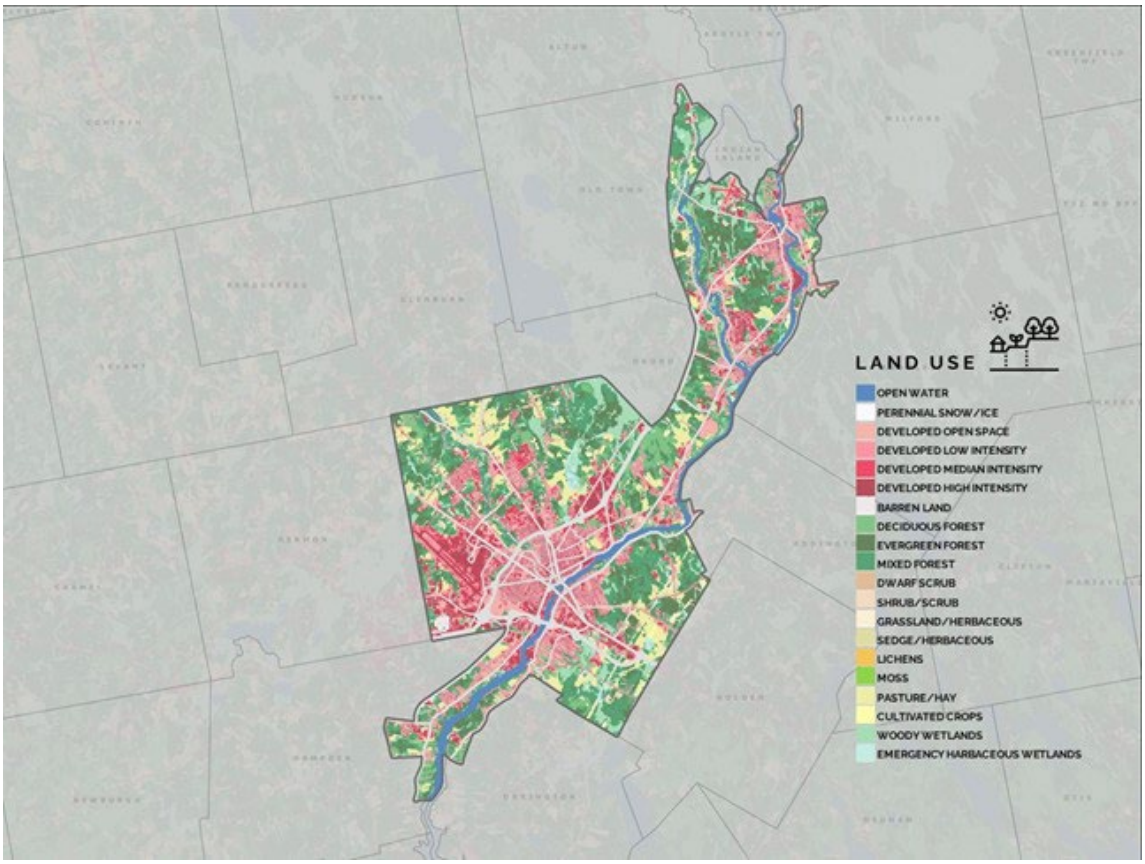


BACTS Storymap based on Census Data

Land Use + Development

The relationship between land use and transportation is central to understanding a regional transportation system. Transportation systems are affected by where people live, work, and recreate or socialize. The relationship between land use and the transportation system can be either complimentary or conflicting. An improvement in the transportation system can decrease travel time and spur adjacent new development and economic growth. On the other hand, new developments can strain the existing transportation system and impede economic growth if not appropriately designed.

Figure 7 Land Use



BACTS Storymap based on Census Data

Transportation and land use planning are strongly connected. Transportation systems impact important local land use decisions, which ultimately influence a region's connectivity and economic vitality. If land uses are not appropriately designed to ensure the most effective and efficient use of public infrastructure, facilities and systems, the transportation system will not work well and may impede economic growth, feasibility of expansion and opportunity.

Typical of many Maine arterial highways, commercial and residential development pressures along the major highways result in increasing friction from driveways and entrances. Development presents local economic opportunities but also reduces mobility while raising transportation costs for businesses and commuters, affects the efficient delivery of municipal services, and results in a higher number of entrance-related vehicle crashes.

Maine's population and jobs are spreading out of urban centers and into suburban areas. The typical, low density development pattern separates residential areas from business and shopping requiring more commuting between destinations. Sprawling development and isolating housing from commercial and retail centers are at the root of an inefficient transportation system. The car has become the only option for getting around, and there are unintended consequences as a result. Most households have more than one car per household. People are taking more and longer trips for shopping and recreation. There are relatively few alternatives to vehicle travel in the suburban and rural areas, and safe pedestrian and bicycle routes are not always available.

Zoning that leads to urban sprawl and the separation of jobs, housing and retail creates traffic congestion, makes it hard provide transit, and reduces the accessibility of jobs. The impact of expanding rural residential development is already being felt by transportation and social service providers in the region. Aging residents living in relatively remote rural homes are creating a challenge for transit and paratransit providers and will require creative solutions to effectively serve an increasingly dispersed elderly and disabled population.

Livable Communities

The most successful, and desirable, transportation systems result from planned land use designed with attention to density, diversity and distance between land uses and design which preserves the character of the community or region. These considerations have the objective of managing traffic, reducing congestion, and increasing options for moving traffic along corridors.

> "Livable communities are places where transportation, housing and commercial development investments have been coordinated so that people have access to adequate, affordable and environmentally sustainable travel options." —FHWA

Density of Development

Density of development is a predictor of the viability of buses and other alternative forms of transportation. Transit is feasible when residential land use is developed with three to five units per acre, with viability of improved service frequency and route design, and with land use development.

Diversity and Distance Between Land Uses

Diversity and distance between land uses refers to mix of uses within half a mile of residences. The traditional neighborhood, which is predominantly residential interspersed with non-residential amenities frequented by residents (e.g., stores, restaurants, schools, parks, places of worship, etc.), offers a mixture of uses in close enough proximity to each other that daily activities could easily be accomplished by walking, biking or otherwise traveling on a local street.

Design

Design or "sense of place" is anything which captures the character of the unique combination of elements that define a place and give it a distinct identity to those who live, work, or visit it.

When a street can be easily accessed by walking, biking, and transit, it attracts a wider variety of people to it than if it is only within reach of those with a car. Streets that function as places prioritize the pedestrian. People lingering and walking along a street make it a more vital and vibrant place. Pedestrian-friendly streets often have shorter block lengths, which facilitates more encounters and interactions among people and creates better access and egress points to the street.

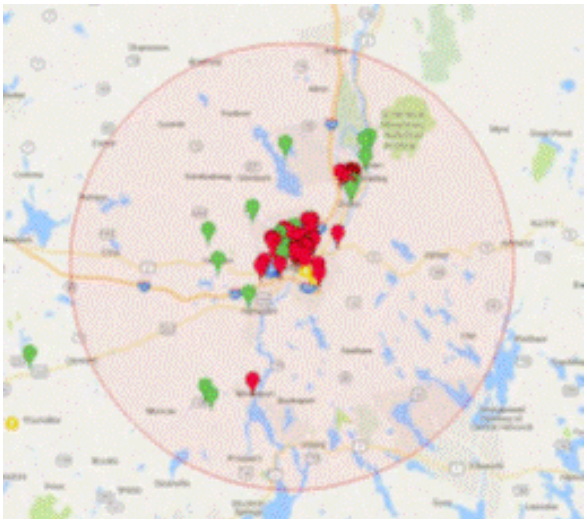
Transportation Alternatives

There is growing interest in Maine to promote transportation alternatives for daily travel needs. In order for alternative transportation to be viable, land use and development must provide for public spaces and streetscapes that are inviting for pedestrians while still providing adequate car access; encourage individuals to walk between home, work, shopping, and recreation; create safe and direct bicycle and pedestrian routes; connect neighborhoods with workplaces, shops, schools, and other destinations; and provide for and connect with transit service that is reliable, convenient, and reasonably time and price competitive with driving a car.

Ridesharing

GO Maine is the statewide commuter services program sponsored by MaineDOT and the Maine Turnpike Authority. There are a total of 5,528 members of the GO Maine rideshare community and 166 reported commuting to destinations within 20 miles of Bangor. The green place markers on the map (Figure 8) show the location of commuters' residence and the red place markers show place of employment or school within a 30 mile radius of Bangor. The map also depicts the location of park and ride lots and electric vehicle charging stations.

Figure 8 Commuters' Residence and Employment



Source: GO Maine

Ride Services

Car share services replace an estimated 20 passenger vehicles for every car share vehicle operated. Car sharing service is a relatively new concept which allows for hourly and daily shared use of a vehicle. These services are currently most closely available in New Hampshire. They were previously available in locations in the State south of the BACTS area, however they were discontinued during or just before the Pandemic. The closest car sharing location to the BACTS area is Durham, New Hampshire. Car sharing has essentially been replaced by app based ride services such as Uber and Lyft.

Electric Vehicle Charging and Alternative Fuels

Alternative fuels are derived from sources other than petroleum, and largely create less pollution than gasoline or diesel. Most alternative fuels are produced domestically (reducing dependence on imported oil), and some are derived from renewable sources. In

the BACTS area, alternative fuel stations readily available to the public are electric vehicle charging and liquified petroleum.

Electric vehicles are the most common alternative fuel vehicle utilized in Maine. Hybrid and electric vehicles accounted for slightly more than one percent of the 1,330,399 vehicles registered in Maine during calendar year 2021.

According to the Efficiency Maine Charging Station Locator there are 430 public EV charging stations in Maine. In the BACTS area, there are 18 locations with public EV charging stations (14 in Bangor with 24 outlets, three in Brewer with a total of 11 outlets, and one in Orono with one outlet).

Electric Vehicle Corridor

Several major interstate highways including I-95, were designated as alternative-fuel corridors by the U.S. Department of Transportation, recognizing the state support for electric vehicles (EV) in the region and setting the stage for the expansion of electric vehicle travel in the northeast and mid-Atlantic. In Maine, I-95 was designated in the section from Kittery to Augusta to build support infrastructure for alternative fuel vehicles.

In 2022 MaineDOT worked with Efficiency Maine Trust and other state agencies to develop a Plan for Electric Infrastructure Deployment (PEVID) describing how the NEVI funds would be used to expand the electric vehicle charging network across the state.

Figure 9 FHWA Alternative Fuel EV Corridors

Source: Maine .gov

Governor Janet Mills signed an Order to Advance Clean Transportation Solutions for Maine on March 30, 2021. The goal of this Executive Order is to develop a Clean Transportation Roadmap to 2030 designed to accelerate the adoption of electric vehicles, plug-in hybrid electric vehicles, and other clean transportation technologies.

Complete Streets

Complete Streets are transportation systems that are designed and operated to ensure safe access for all users. They are created with the intention of facilitating easy crossing of streets, walking to shops or transit stations, and cycling to work. Adopting a Complete Streets approach may necessitate modifications to transportation planning, design, maintenance, and funding decisions, but it can result in cost savings and enhanced safety for all users.

Complete Streets are transportation systems that are designed and operated to ensure safe access for all users.

A Complete Streets policy aims to guarantee that transportation projects are planned and designed to cater to the requirements of all users, irrespective of their age, ability, or mode of travel, and provide secure and efficient access to the transportation system. Considering the needs of bicyclists, motorists, pedestrians, and transit users at the outset of the system planning process is economical, effective, and crucial to the establishment of a well-rounded and secure transportation system.

MaineDOT is committed to promoting a transportation system that caters to the needs of all users and recognizes the importance of pedestrian and bicycle infrastructure, such as sidewalks, bicycle lanes, separated facilities, transit stops, ADA-accessible routes, and travel lanes. A multimodal system is crucial for ensuring the safety and economic vitality of businesses, villages, downtowns, neighborhoods, and rural areas. The MaineDOT Complete Streets policy applies to all relevant projects that receive funding (in full or in part) from MaineDOT, including Metropolitan Planning Organization and Local Project Administration Program projects, regardless of their origin.

Quality of Life

The concept of livability involves connecting the quality and placement of transportation infrastructure to broader opportunities, such as access to employment, affordable housing, high-quality education, and safe streets. Sustainable transportation offers excellent mobility and accessibility to meet the demands of development without sacrificing the well-being of future generations. Livability and sustainability can be tackled simultaneously, as pursuing one often aligns with the goals of the other. Comments as part of public outreach frequently cited improved quality of life as a priority.

BACTS prioritizes the development of transportation options that promote livability and sustainability by considering non-automobile modes in its assessment of potential highway projects for the BACTS Transportation Improvement Program (TIP). Projects that support alternative modes and their integration into the transportation system receive higher scores and are more likely to receive funding through the TIP project evaluation criteria and scoring. For instance, a highway project that incorporates sidewalks, transit provisions, or cycling infrastructure would receive additional points compared to a project without such features. Moreover, a highway project situated in an area that already has alternative modes in place is also credited for those modes in its scoring as a potential highway project.

Access Management

By implementing Access Management along highway corridors, the capacity of the highway can be preserved without compromising mobility. This approach also ensures safer access to destinations and protects investments in public and private infrastructure. The control of site access along highways is governed by

local municipal ordinance and the MaineDOT's traffic movement permitting process, in which BACTS is often invited to participate. Several BACTS communities have already developed successful access management plans for major corridors, including Wilson Street in Brewer.

Traffic Operations

For many years, BACTS has acknowledged the increasing frequency of traffic congestion on numerous roadways throughout the day. However, funding for new highway and transit capacity projects is limited, and the planning and construction process can take years to complete. Therefore, prioritizing the maintenance of existing facilities is crucial. Additionally, traffic delays are often caused by various factors such as ineffective traffic control devices, accidents, weather conditions, and special events. These issues require immediate solutions that cannot be solely addressed through transportation infrastructure. BACTS has developed some transportation system management and operations strategies in the planning process designed to optimize the performance of the transportation system. They allow for a more immediate response to traveler concerns than capacity projects offer while improving the reliability, security, and safety of the multimodal transportation system.

Traffic Incident Management (TIM) consists of a planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM reduces the duration and impacts of traffic incidents and improves the safety of motorists, crash victims and emergency responders. The Maine TIM program focuses on the following objectives:

- Increase responder safety by eliminating secondary crashes.
- Minimize disruptions to mobility.
- Decrease the time it takes to clear an incident.
- Improve inter-agency communication during incidents.

The importance of BACTS' involvement in managing and operating current transportation systems is growing due to several factors. As travel demand rises and the potential for new infrastructure development is limited, congestion is worsening and negatively impacting mobility, the environment, and economic productivity. This emphasizes the necessity for careful attention to transportation planning.

Climate Change

The projected long-term harmful effects of climate change is a growing concern for both the public and private sectors. The transportation sector not only plays a significant role in contributing to climate change through Greenhouse Gas (GHG) emissions but our aging infrastructure is also particularly vulnerable to the impacts of flooding, extreme precipitation, fluctuating temperatures, and sea level rise. Transportation infrastructure is crucial to maintaining access for emergency response vehicles, workforce, school, healthcare, and businesses. Communities must adapt to reduce GHG emissions and withstand the effects of climate change by developing a more resilient transportation system.

Penobscot Climate Action

In coordination with the City of Bangor and Town of Orono, BACTS is leading a project called Penobscot Climate Action[1], a regional collaboration of 11 communities to strengthen the region's infrastructure, environment, communities, and economy in the face of a changing climate. In 2022, the Penobscot Climate Action project team conducted the first phase of the plan, a baseline assessment including a Regional Climate Vulnerability Assessment (CVA)[2] and GHG Inventory[3]. The purpose of these plans is to identify the region's susceptibilities to projected climate change impacts and identify the distribution of local GHG emissions.

Figure 10 Regional Climate Vulnerability Assessment

1 https://www.penobscotclimateaction.org/

2 Regional Climate Vulnerability Assessment https://www.penobscotclimateaction.org/_files/ugd/620b80_72256025af584e9cb09b133e681261be.pdf

3 Regional Inventory of 2019 Greenhouse Gas Emissions https://www.penobscotclimateaction.org/_files/ugd/620b80_39127b03924845d2a1883311256ce79f.pdf

Infrastructure Vulnerability – Transportation System

Deferred maintenance on transportation facilities is already a concern during extreme precipitation events. Climate change will continue to impact roads, bridges, public transportation, air travel, rail, and bicycling. Impacts and vulnerabilities of transportation infrastructure in the region are highlighted below.

Rising Temperatures: Vulnerabilities to the transit system indicate that only 5 percent of bus stops in the region have shelter. Community members that use public transit, walking, and bicycling as their means of transportation will be impacted by extreme heat and rising temperatures. The Bangor International Airport is heavily impacted by the Urban Heat Island effect which necessitates additional runway maintenance. Extreme temperature fluctuations can reduce the life cycle of pavement and increase structural deficiencies on bridges which may in turn cause an increase in maintenance needed.

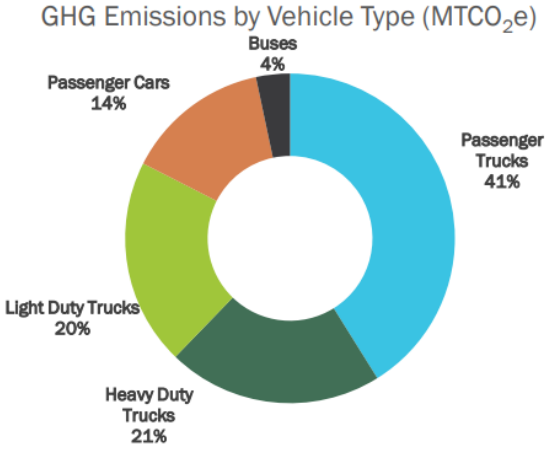
Extreme Precipitation/Flooding/More Frequent and Intense Storms: Many of the roads in the region intersect the 100- and 500-year floodplains. Flooding and erosion associated with major storms may cause road and culvert washouts, rendering transportation infrastructure inoperable for long periods of time and requiring unplanned and high-cost replacement and repair. Spring ice jams may cause the Penobscot River to overflow resulting in road and bridge closures and/or damage. Traffic signal mast arms are already susceptible to high winds knocking them down which is expected to occur more frequently in the future. Some of the region's bus routes are located within the 100-year FEMA flood plain and 500-year flood plain. Much of the region has a small workforce to prepare roads for storm events.

Sea Level Rise: Flooding due to sea level rise is expected to impact 3.5 miles of roads by mid-century.

Greenhouse Gas Emissions Inventory

The GHG Inventory was completed for 2019 to represent baseline conditions for the BACTS metropolitan planning area. The City Inventory Reporting and Information System (CIRIS) tool from C40 Cities[4] was used to perform the GHG Inventory. The results indicate that the region generated approximately 1,036,402 tons of greenhouse gas emissions measured in metric tons Carbon Dioxide Equivalents ($MTCO_{2e}$) in 2019 which equates to 13.5 tons per resident. Table 1 summarizes the GHG emissions by sector and scope.

Figure 11 Greenhouse Gas Emissions by Vehicle Type



4 C40 Cities. Reporting GHG emissions inventories https://www.c40knowledgehub.org/s/guide-home?language=en_US

Table 1 Regional GHG Emissions by Sector and Scope

Sector	Scope 1 Emissions ($MTCO_{2e}$)	Scope 2 Emissions ($MTCO_{2e}$)	Scope 3 Emissions ($MTCO_{2e}$)	Total GHG Emissions ($MTCO_{2e}$)
Buildings	470,633	149,448	7,622	627,703
Transportation	345,700			345,700
Waste	16,164			16,164
AFOLU	46,835			46,835
BACTS Region	**879,332**	**149,448**	**7,622**	**1,036,401**

When comparing this BACTS regional per capita rate, it is less than the national average of 20.7 tons per resident, but greater than Portland, Maine with a rate of 12.6 tons per resident.

The Transportation sector was responsible for 345,700 $MTCO_2e$ (33.4%) in 2019. See Figure 11 for the distribution of emissions by vehicle type.

GHG emissions could be reduced by decreasing vehicle miles traveled through improving public transportation systems and increasing walkability in communities. Additionally, transitioning to the use of more electric vehicles and increasing fuel efficiency would further reduce GHG emissions.

Climate Action Plan

Phase II of this process is taking place between March 2023 and March 2024. The Climate Action Plan will build on Phase I findings and continue to work directly with residents, municipalities, and other local stakeholders to co-develop strategies which will:

- Foster a vibrant, resilient, low-carbon region.
- Be directly informed and centered around local priorities, knowledge, and experiences.
- Be positioned for simple and immediate implementation.

The results of the Penobscot Climate Action Plan will help guide future decision making at the local and regional planning level to reduce greenhouse gas emissions and adapt to climate vulnerabilities. BACTS will support the plan recommendations, however possible, including through capital projects, programs, policies, studies, and outreach to local stakeholders.

Air Quality

Efforts to reduce GHG emissions from transportation are essentially the same as those used to address air pollution. Notwithstanding the global extent of elevated GHG levels and the small geographic extent of the BACTS area, reduction of GHG emissions need to be focused on the reduction in use of GHG generating fuel.

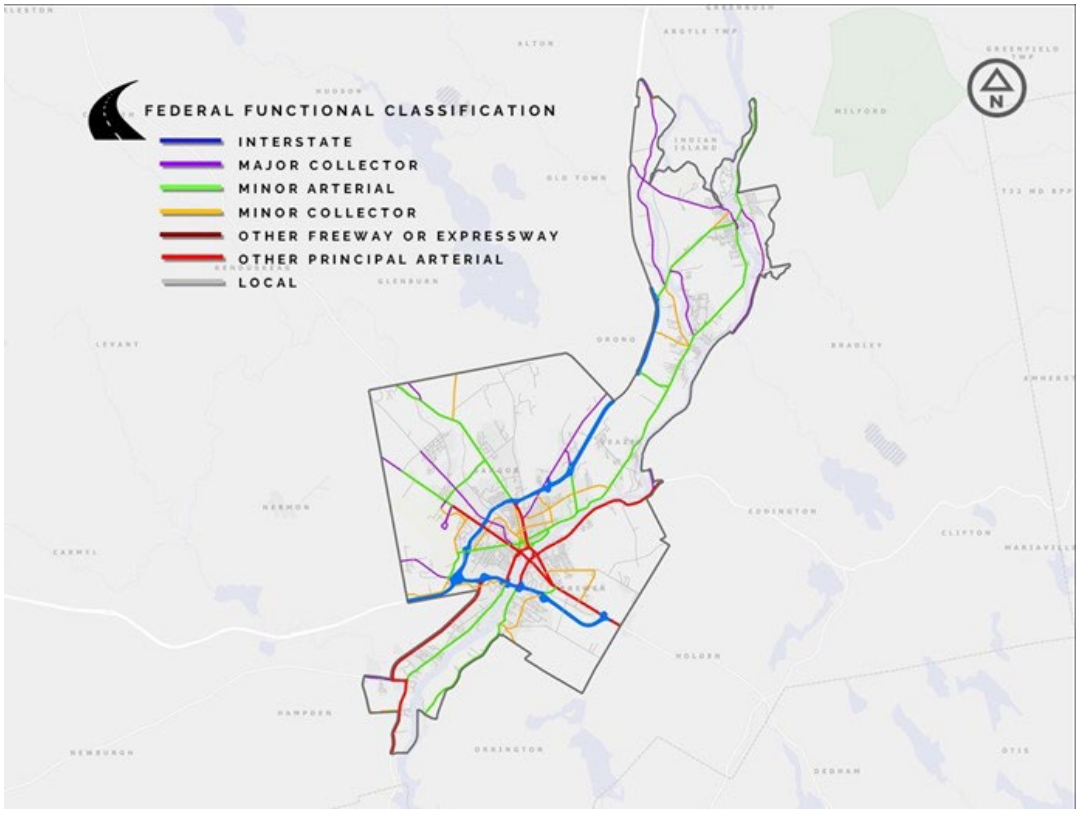
2.2 BACTS Roadways

Roadways are the most visible component of the surface transportation system and are the primary means by which people and goods travel in the BACTS area. One of the greatest assets to the regional economy and quality of life is the region's location within the national and state highway system. The BACTS area, specifically Bangor, serves as the convergence of two major

highways; I-95 and I-395. These strategic highways are supported by the regional network of state and local highways and roads such as U.S. highways US 1A, US 2, and US 2A, and state routes such as SR 9, SR 15, SR 15 Business, SR 100, and SR 222. Three major bridges connect Bangor to neighboring Brewer.

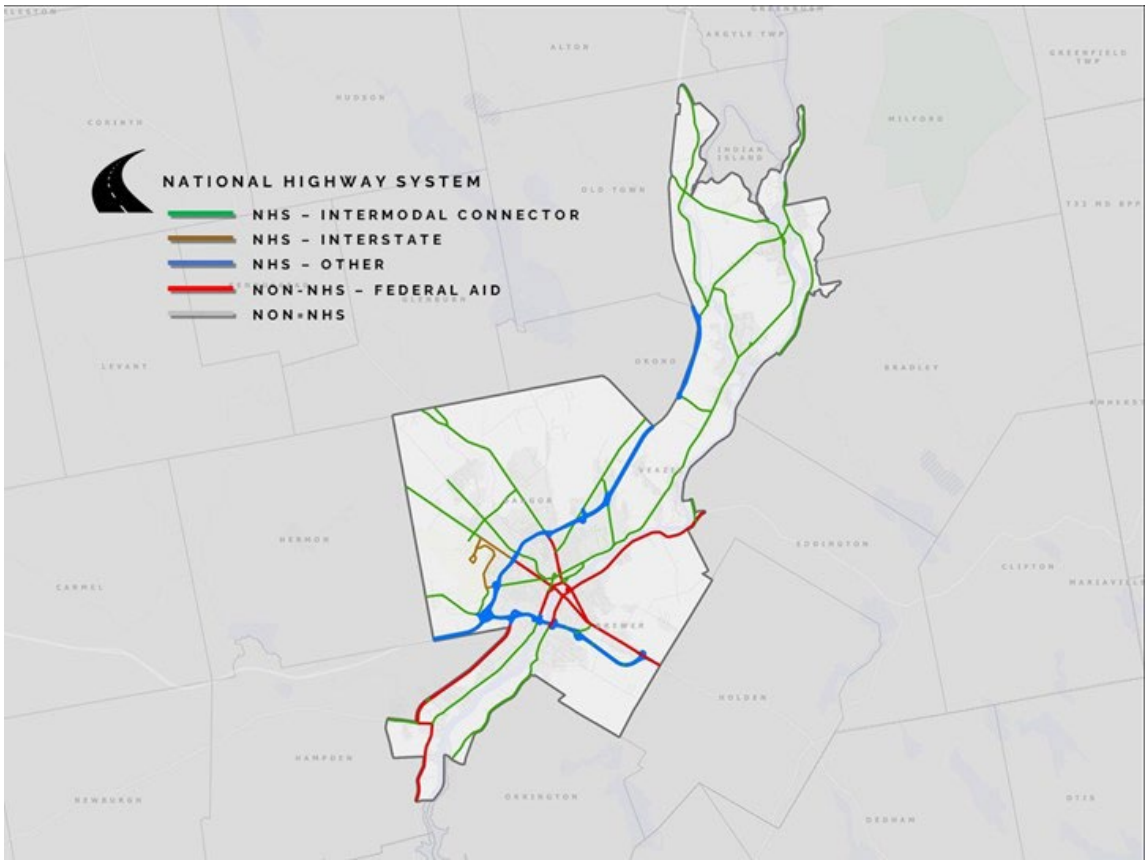
Federal Functional Classification. For planning purposes, roadways are classified according to two functions, mobility and access. These two functions lie at opposite ends of the spectrum; most roads provide some combination of both. Higher speeds and fewer intersections are preferred for mobility, while lower speeds and more frequent intersections support access. Roadways are classified by the role they play in the overall transportation network, known as Functional Classification. This hierarchy is broken into Arterial, Collector, and Local categories. Arterials provide the highest level of mobility; local roads provide mostly land access; and collectors have a balanced combination of both. Local roads are excluded from the BACTS inventory, falling under the jurisdiction of each municipality. For the remaining functional classifications, BACTS receives federal funding based on the total mileage for each classification within the highway network.

Figure 12 Federal Functional Classification



National Highway System. The National Highway System (NHS) is a network of strategic roadways important to the nation's economy, defense, and mobility. The NHS is developed by the U.S. Department of Transportation in coordination with the states, local officials, and MPOs. More than one-third of all federal transportation funds are dedicated to the maintenance and improvement of NHS roads. The NHS includes the following subsystems of roadways:

Figure 13 National Highway System



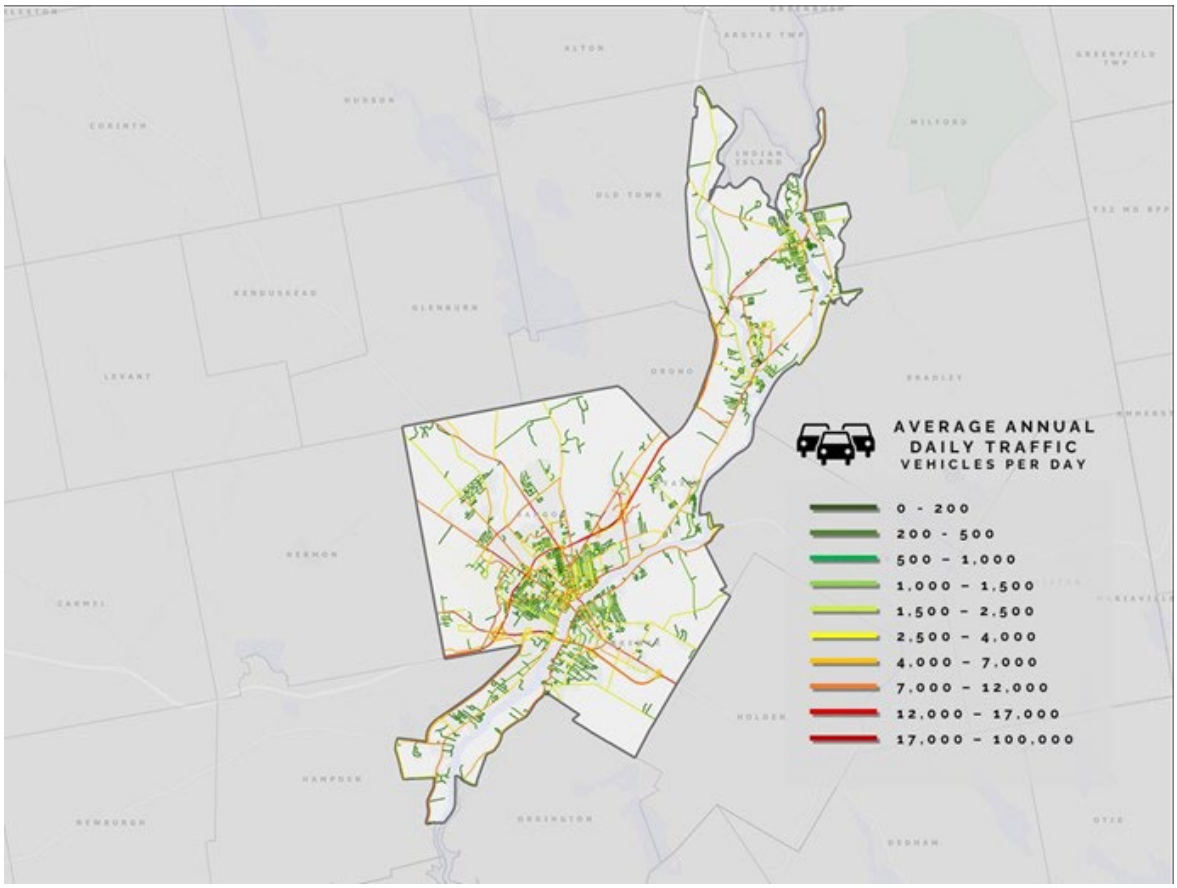
- **Interstate:** The Eisenhower Interstate system of highways retains it separate identity within the NHS. Interstate 95 and Interstate 395 have this designation within the BACTS area.
- **Other Principal Arterials:** These highways provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility. The I-395 Off-Ramps to Maine Street (Bangor), Wilson Street (Brewer), Broadway (Bangor), Union Street (Bangor), State Street (Brewer), Independence Street (Bangor), Main Street (Brewer), Main Road South (Hampden) have segments that are designated as Principal Arterials.

Intermodal Connectors: These highways provide access between major intermodal facilities and the other four subsystems making up the National Highway System. Intermodal Connectors within the BACTS area include Hammond Street and Union Street, both in Bangor.

Economic Development and Tourism

BACTS' future economic competitiveness in a global market hinges on several factors, including the provision of secure, convenient, and reasonably priced transportation options to attract and retain employees from across the region. As the population ages and the birth rate stagnates, the region must devise strategies to lure skilled workers to fill the workforce gap. To compete for talented young professionals, economic development tactics must prioritize walkable neighborhoods with transit access and safe streets for all users.

Figure 14 Average Annual Daily Traffic



Regional Economic Development

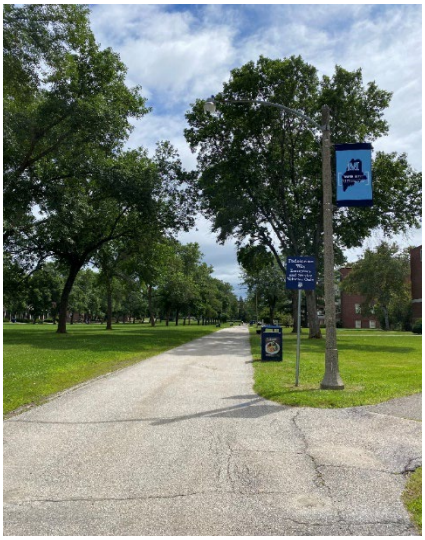
The goal of regional economic development is to enhance employment opportunities and elevate the standard of living by fostering profitable business ventures within the region. The Greater Bangor area faces various challenges, both actual and perceived, that hinder economic growth and development, such as exorbitant energy expenses, insufficient digital infrastructure, a secluded location, a restricted customer base, and subpar transportation infrastructure. Economic development and tourism can impact the needs and capacity of the regional transportation network and an inability to process that volume could hinder the success of the BACTS area. The BACTS region has three primary business development organizations:

- Bangor Region Chamber of Commerce
- Four Directions Development Corporation
- Eastern Maine Development Corporation

Higher Education

Maine is home to a variety of educational institutions, ranging from community colleges to prestigious universities. Higher education in Maine is diverse and offers a range of opportunities for students seeking to further their education. The state is home to several universities, community colleges, and specialized schools that offer undergraduate and graduate programs in various fields. The University of Maine System is the largest provider of higher education in the state, with campuses located throughout Maine. Additionally, private institutions such as Husson University and Bangor Theological Seminary offer specialized programs in fields such as business, broadcasting, and ministry. Community colleges, such as Eastern Maine Community College, provide affordable options for students seeking one-year certificates or two-year degrees. Overall, Maine's higher education system is designed to meet the needs of students seeking to advance their careers and pursue their passions.

The University of Maine, founded in 1865, is a land and sea grant institution and the flagship campus of the University of Maine System. It offers 90 undergraduate majors, 85 master's degree programs, and 35 doctoral programs. University College, a satellite campus of the University of Maine at Augusta, provides associate degrees in liberal studies and specialties in various fields. Husson University, established in 1898, offers programs in business, nursing, broadcasting, occupational therapy, physical therapy, criminal justice, paralegal studies, and physical education. The New England School of Communications, an affiliate of Husson University, offers a two-year program in broadcast communications. Eastern Maine Community College, part of Maine's six-campus community college system, offers one-year certificates and two-year degrees in various fields. Bangor Theological Seminary, established in 1814, offers degrees in Master of Divinity, Master of Arts, and Doctor of Ministry. Beal College, founded in 1891, is primarily a business school offering associate degrees in accounting, medical administrative assisting, office management, and law enforcement.



Healthcare

Healthcare is also an important segment of Bangor's economy. In addition to providing a major portion of the jobs filled by residents in the Bangor Labor Market Area, the majority of residents in Penobscot County also come to the BACTS area to obtain hospital and/or surgical care. There are six hospitals in Penobscot County, four located in Bangor - Eastern Maine Medical Center, Acadia Hospital, Dorothea Dix Psychiatric Center and St. Joseph Hospital. These four hospitals comprise 94 percent of all licensed and 92 percent of all setup and staffed hospital beds in the County. In addition, there are three Veterans Affairs (VA) sites in Penobscot County, two of which are located in Bangor. Penobscot County also has two ambulatory care surgery centers, both located in Bangor, and two ambulatory end-stage renal disease (ESRD) centers, one of which is in Bangor. Of the 50 primary care practices in Penobscot County there are four dedicated pediatric practices, three located in Bangor and one in Brewer. There are two school-based health centers located in Penobscot County, both in Brewer.

A 2016 report on transportation as a barrier to healthcare access in Bangor, reports that a significant barrier, especially for the underserved population, is transportation. Patients indicate a general unawareness of the types of transportation resources available and medical schedulers indicate regular appointment cancellations due to lack of transportation.

Travel and Tourism

Tourism is important to the Maine economy. Economic impact begins when a visitor spends money in an area. According to 2022 statistics from the Maine Office of Tourism, Tourism is one of Maine's largest industries, supporting about 151,000 jobs, with $5.6 billion in earnings to Maine's households. The total economic impact is estimated to be $8.5 billion. With the COVID-19 pandemic waning, spending in the state is up, though there was a slight decrease in visitation from 2021. Maine residents traveling 50 or more miles are considered tourists in the research, which means 19% of tourists are Maine residents. Other New England regional residents accounted for 32% of visitors (14% from Massachusetts), 20% came from the Mid-Atlantic region, and 4% from Canada.

The tourism sector in Maine heavily relies on a secure and dependable transportation system. The quality and dependability of a locality's transportation infrastructure affect the ease of access to various activities and destinations, including conferences, trade shows, sports and entertainment events, parks, resort areas, social gatherings, and routine business meetings. An upgraded transportation system enhances the accessibility of leisure and business travel

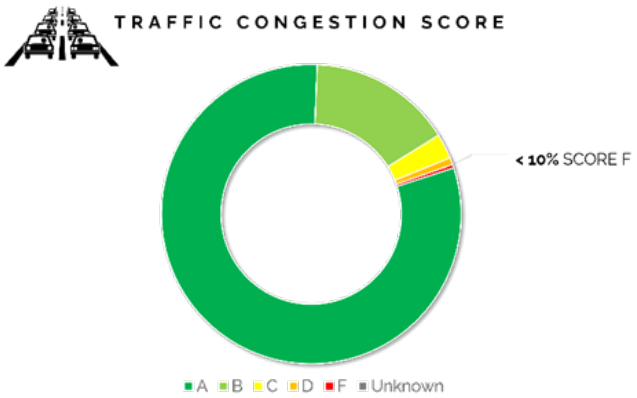
destinations, thereby boosting economic activity. Despite the Greater Bangor area not being part of the Downeast/Acadia tourism region, a significant number of the over three million visitors who tour Acadia National Park annually pass through the Bangor area.

Traffic + Congestion

Congestion in the transportation network can be a significant impediment to the efficiency of freight movement. One of the most apparent factors in traffic and freight congestion are bottlenecks on highways. Congestion is worst along the following segments within the BACTS area:

- US 2 between Hammond Street & I-395 Ramps (Bangor)
- Route 15 between I-95 Ramps & Griffin Road (Bangor)
- Maine Avenue between US 2 Hammond Street & Godffrey Blvd (Bangor)
- Stillwater Avenue between Broadway Rte 158 & I-95 Ramps (Bangor)

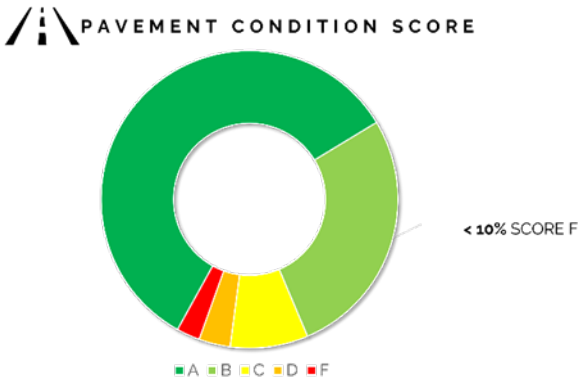
Figure 15 Traffic Congestion Score



Condition Assessment

Less than 10% of BACTs area roadways have a pavement condition score of F indicating that maintenance efforts have been effective. BACTS staff have recently completed a Regional Collector Paving and Assessment Project which sought to establish an up to date, comprehensive regional understanding of arterial road pavement and sidewalk conditions in order to prioritize investments and to be competitive for discretionary funding when it becomes available.

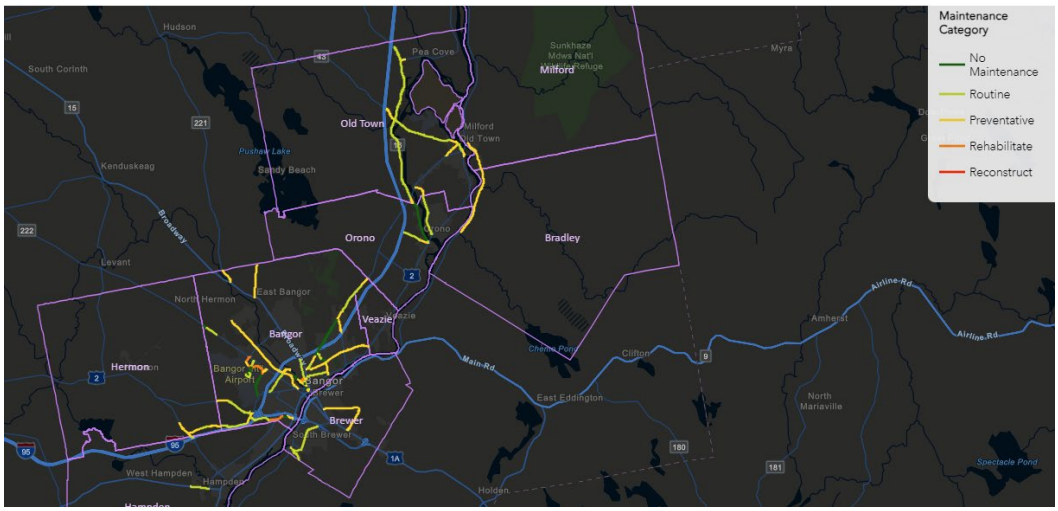
Figure 16 Pavement Condition Score



The area should continue to prioritize the good condition of infrastructure to ensure long term sustainability and system reliability.

Pavement condition is of concern along the following roadway segments within the BACTS area:

- Route 2 between Rangeley Road (Orono) & Center Street (Old Town)
- Route 2 between I-95 Ramps & Mount Hope Road (Bangor)
- Oak Street (Bangor)
- State Street (Brewer)
- South main Street (Route 9/158) between I-395 & State Street (Brewer)

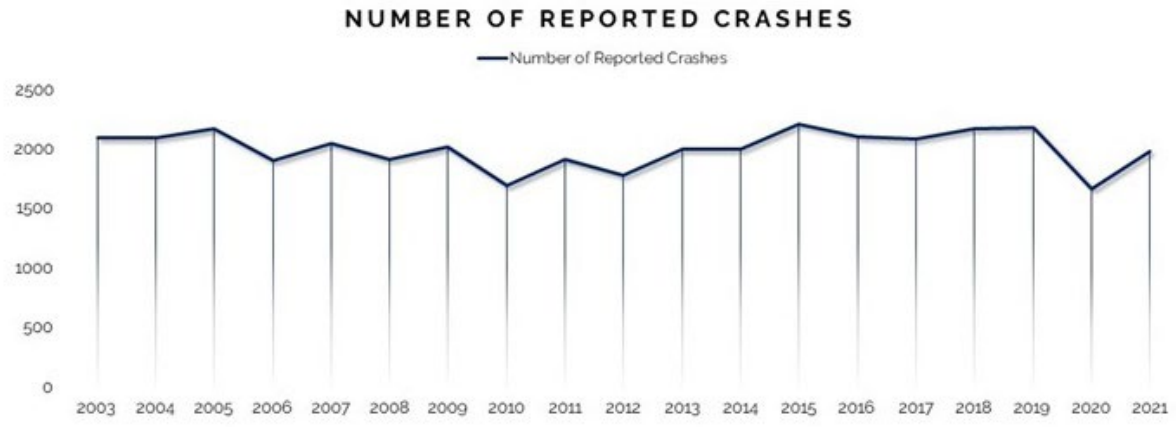


Roadway Safety

MaineDOT provides crash data through their Crash Data Portal. According to the portal, the BACTS area experienced a total of 2,175 reported collisions in 2019 followed by a decline in 2020 likely due to lack of traveling caused by the COVD-19 pandemic. Since returning to more "normal" traffic patterns following COVID-19, the area experienced a total of 1,980 reported collisions in 2021.

Vehicle collisions are generally concentrated in high density areas - most notably, downtown Bangor.

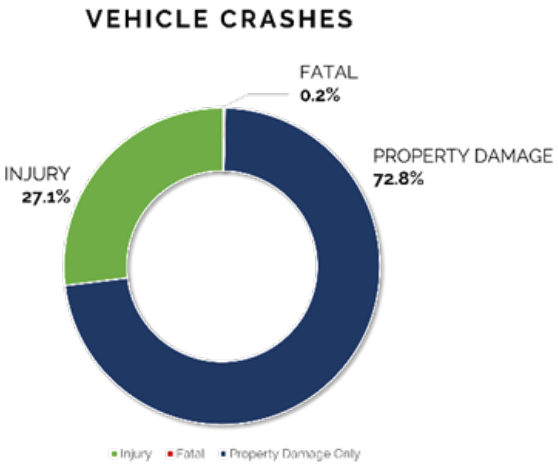
Figure 17 Number of Reported Crashes



High Crash Locations

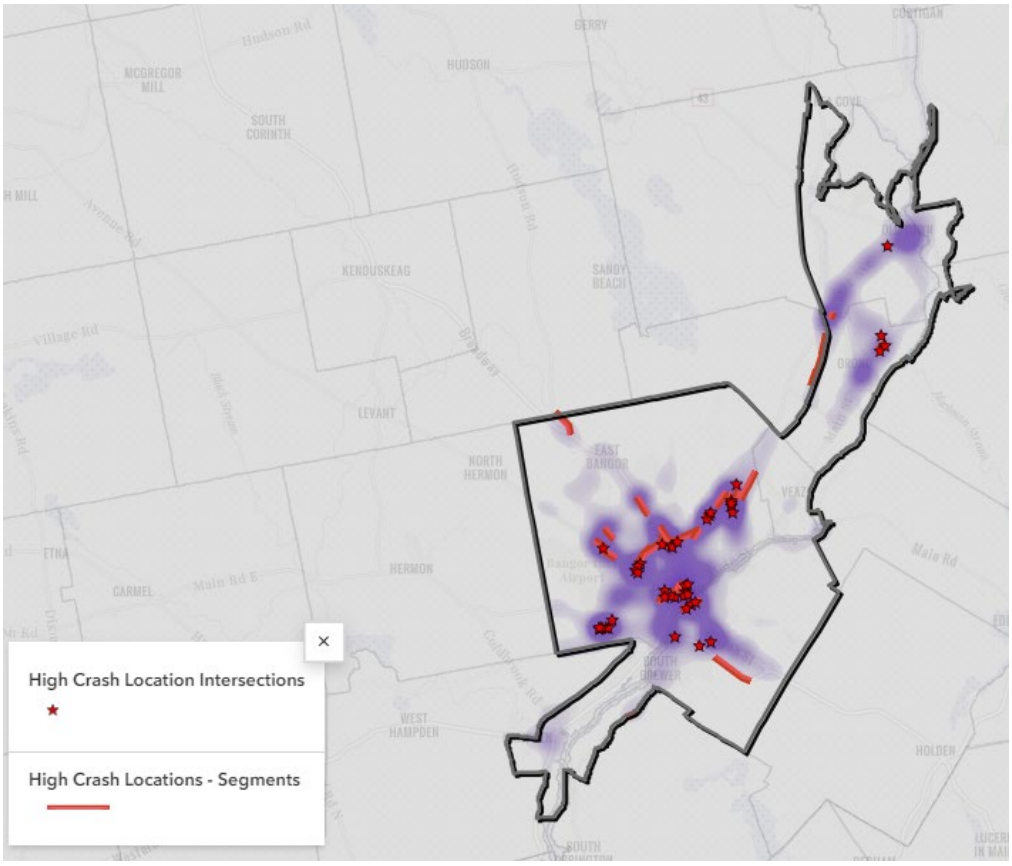
MaineDOT provides a list of high crash locations. A High Crash Location (HCL) is a location that has had eight or more traffic crashes and a Critical Rate Factor (CRF) greater than 1.00 in a three-year period. A highway location with a CRF greater than 1.00 has a frequency of crashes that is greater than the statewide average for similar locations. A CRF is a statistical measure to determine the "expected crash rate" as compared to similar intersections in the State of Maine. In this regard, the analysis considers both the number of crashes and exposure over a three year period. Figure 19 shows the high crash locations (both intersections and segments) for the 2020-2022 period.

Figure 18 Vehicle Crash Injury Statistics



There were a total of 41 High Crash Intersections and 39 High Crash Segments.

Figure 19 High Crash Locations



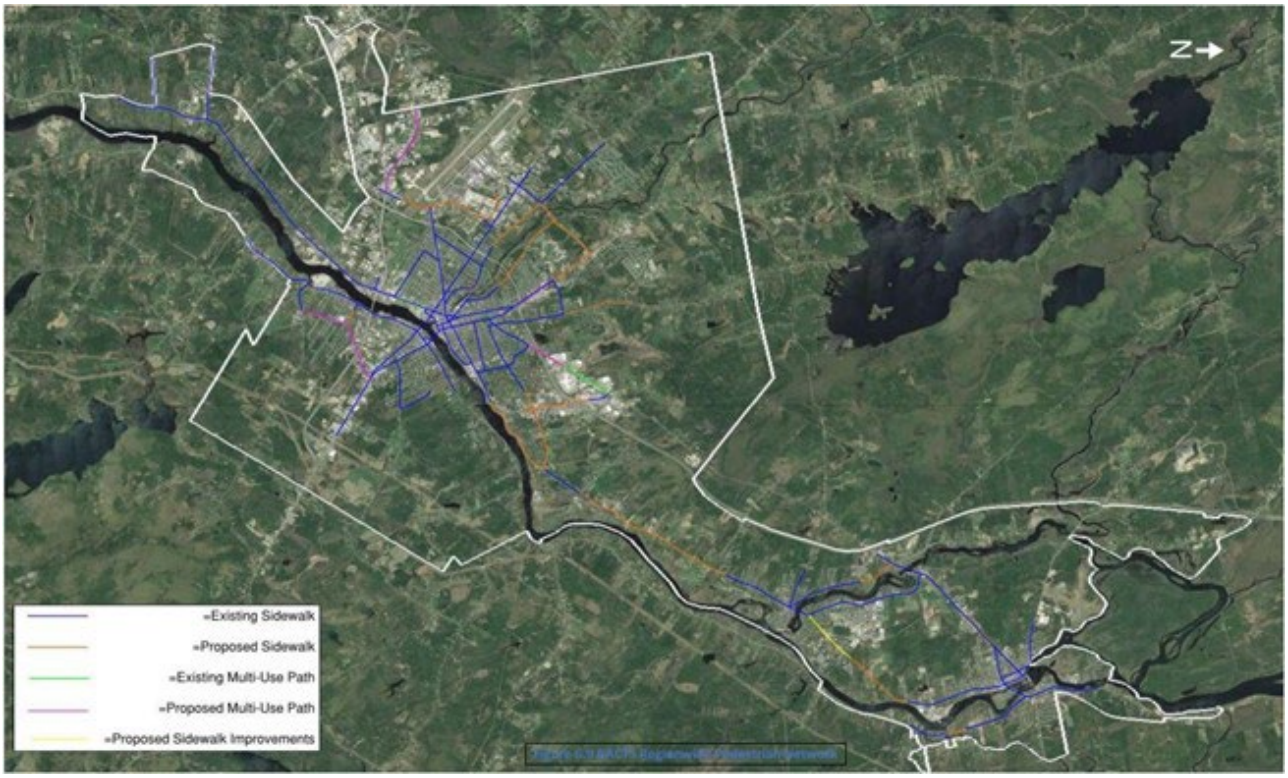
Pedestrian Network

A community with an extensive multimodal transportation network that balances the needs of all users of the transportation system offers a variety of benefits, including: economic, environmental, equity, health, quality of life, safety, and transportation. In 2019, T.Y. Lin International developed the Long Range Pedestrian and Bicycle Plan for the BACTS area. The plan inventoried the existing pedestrian and bicycle facilities, identified network facility gaps and deficiencies, and offered recommendations to create a connected regional pedestrian and bicycle transportation network in the greater Bangor urbanized area.

Pedestrian Existing Conditions

Pedestrian facilities are generally concentrated in the downtown areas of Bangor, Brewer, Orono (near the University of Maine), and Old Town. Sidewalk availability is relatively sparse in the low-density, sprawled communities further exacerbating automobile dependency in these areas. There are significant network gaps.

Figure 20 Pedestrian Facilities

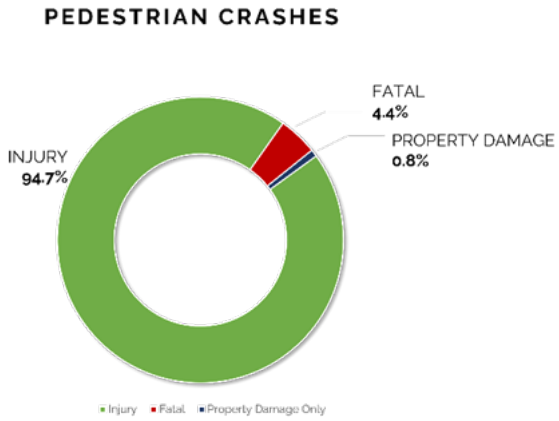


Pedestrian Safety

Speed can have a detrimental effect on pedestrian safety. The faster a vehicle strikes a pedestrian, the more likely the crash will result in a severe injury or fatality. As such, pedestrians face disproportionately higher injury risks than motorists, which is clearly displayed when looking into crash severity between vehicle and pedestrian related crashes in the BACTS area.

Pedestrian collisions are highest in densely populated areas with the most pedestrian trips, such as downtown Bangor, Brewer, Orono (near the University of Maine), and Old Town.

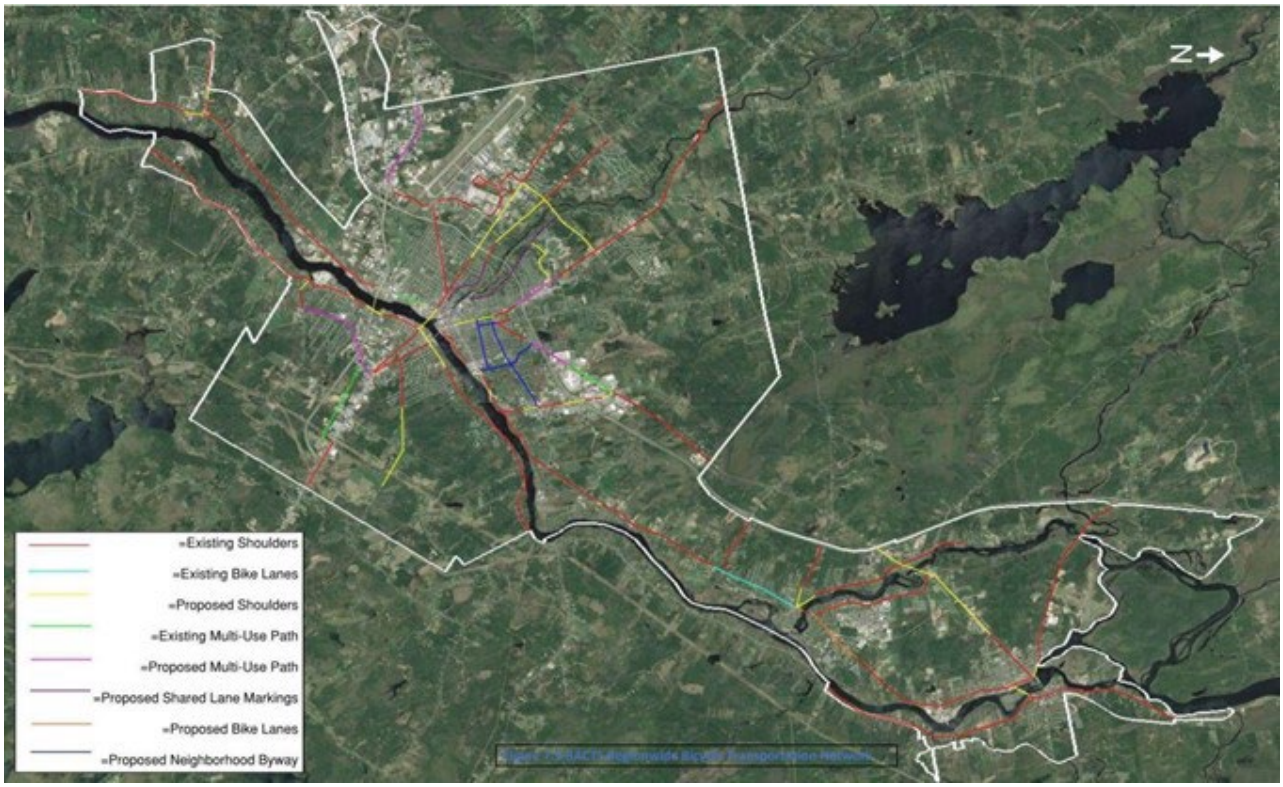
Figure 21 Pedestrian Crash Injury Statistics



Bicycle Network

The Long Range Pedestrian and Bicycle Plan also looked at the existing bicycle network within the BACTS area. Bicycle facilities that were inventoried included bicycle lanes, wide shoulders (5 feet and greater), and multi-use paths where bicycles are allowed. Very few dedicated bicycle facilities are provided within the BACTS region. Although wide shoulders can accommodate bicycle travel on some roadways, vehicle speed and volume may negatively alter the level of comfort for bicyclists on these roads thus discouraging use.

Figure 22 Bicycle Facilities



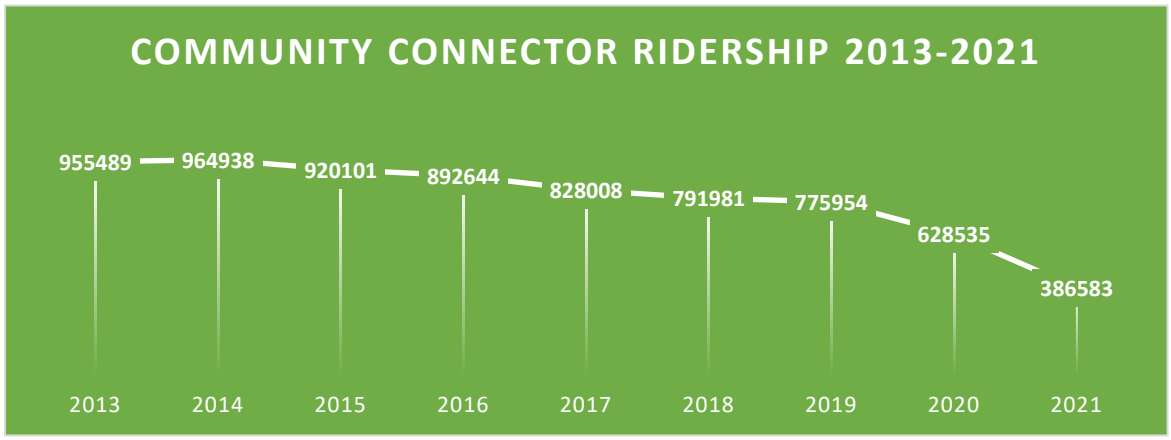
It should be noted that both the U.S. Bicycle Route 1 and the East Coast Greenway cross through the BACTS region. U.S. Bike Route 1 is a cross country bicycle route that runs the length of the United States eastern seaboard. It is 1,525.6 miles with the southern segment beginning at Key West, Florida and the northern segment terminating at Calais, Maine at the Canadian border. The East Coast Greenway (ECG) is a 3,000-mile bicycling and walking path which begins in Calais, Maine at the Canadian border and extends to Key West, Florida. In the BACTS region, the ECG route runs through Bangor and Brewer.

In addition, Northern Maine Development Commission (NMDC), in conjunction with the Maine Department of Transportation (MaineDOT), is working towards establishing a permanent federally designated bicycle route in northern Penobscot and Aroostook Counties. The bike route designation would complement and connect to the existing U.S. Bike Route 1. As currently envisioned the Proposed Northern US Bike Route will connect to the existing U.S. Bike Route 1 in Bangor (also extending through the BACTS region in Veazie, Orono, and Old Town) and terminates at the International Bridge in Fort Kent, a total of 320 miles.

Public Transportation

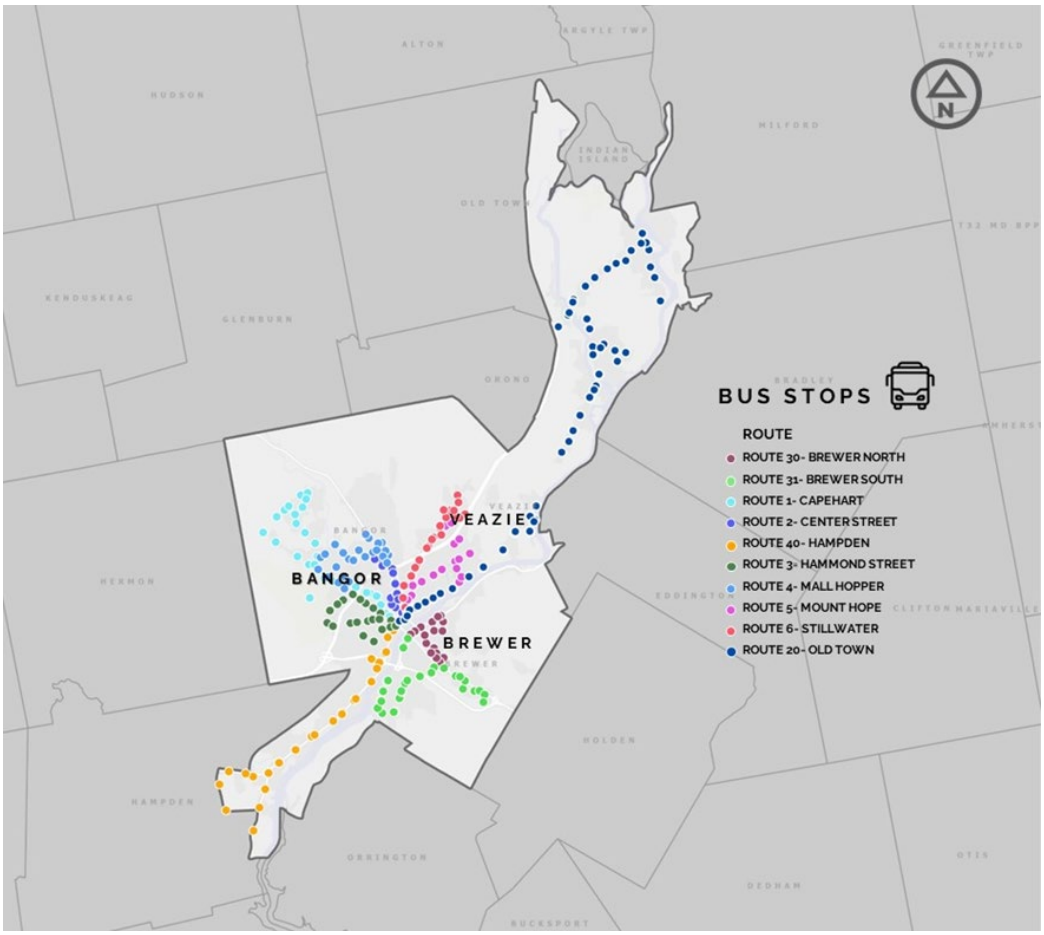
The fixed route bus service in the BACTS area, Community Connector, is owned and operated by the City of Bangor. Community Connector provides service in the urbanized areas of Bangor, Brewer, Hampden, Old Town, Orono, Veazie, and the University of Maine within 11 routes and carries around 800,000 passengers per year. However, there has been a steady decline of ridership since 2014 which has been exacerbated from the COVID-19 pandemic due to social distancing—a trend experienced across the United States. However, with economic impacts including rising gas prices, inflation and interest rates, the need for an expansive, affordable public transportation system is greater than ever. In 2022, the Bangor Transit Center opened. The station is a 2,200 square foot facility that includes public bathrooms, an electronic bus schedule kiosk, and heated sidewalks. The investment in the transit system will simultaneously address logistical issues, be an amenity for riders, and make transit more visible in the region.

While most of the BACTs area population falls within the service area (walking distance or 1/4 mile of a stop), many first mile and last mile connections do not exist such as adequate sidewalks and bicycle facilities. With more population choosing to migrate out of the urban area and more of the job growth continuing to occur within the urban area, it is critical to expand the transit system to avoid congestion on local roadways and provide reliable, efficient travel to and from work.



Expansion of service to lower density areas is also critical due to the aging population who tends to live in these areas and will become more reliant on alternative modes of travel.

Figure 23 Bus Stops



Maine also has several private inter-city transit carriers that provide regular service connection between communities in the greater Bangor area and are listed below:

- Concord Coach
- Cyr Bus Lines
- Greyhound
- West's Coastal Connection

2.3 Freight Network

Maine's Freight System consists of seaports, airports, border crossings, intermodal facilities, distribution centers, and a network of rail and road connections. Trucks carry the largest shares by value, tons, and ton-miles for shipments moving 750 or fewer miles, while rail is the dominant mode by tons and ton-miles for shipments moved from 750 to 2,000 miles. Air, multiple modes and mail, and other modes accounted for more than half of the value of shipments moved more than 2,000 miles.

Factors that contribute to determining which mode of freight transportation is most effective and efficient include size, weight, and resource of the product and location of both customer and seller. However, the primary factors that determine the transportation decisions are how much it costs to get freight from origin to destination, reliability and consistency of the arrival/departure of freight and the amount of time it takes to get from origin to destination.

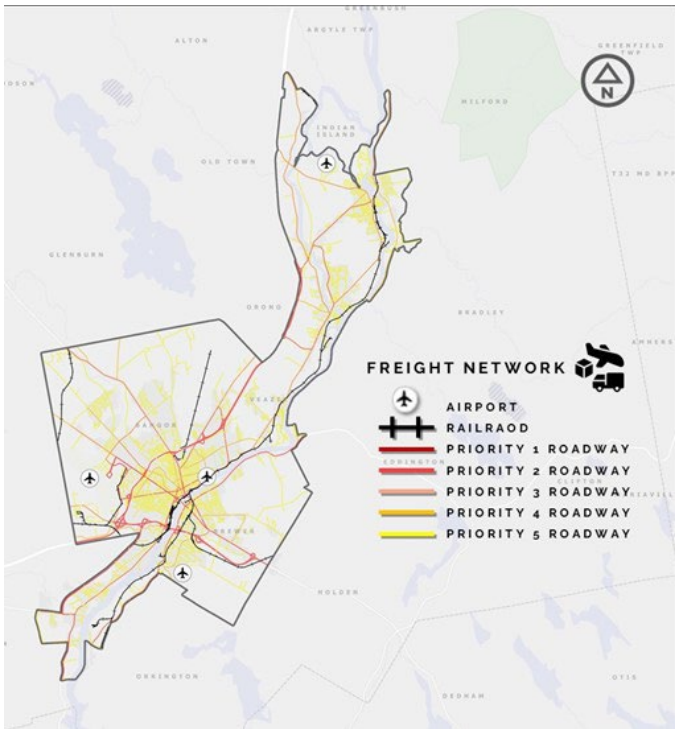
Highway

The largest and most important component of Maine's transportation system is its highway network. Trucking is the dominant mode for freight shipments accounting for almost 90 percent of all freight tonnage moved to, from, and within the State. As with passenger-related travel, system performance for freight-related traffic focuses on congestion, pavement condition, and reliability. Throughout the BACTS area, a subsystem of roadways has been designated as truck routes. The purpose of this system has been to limit truck traffic to roadways that are geometrically designed and properly constructed to accommodate large heavy vehicles hauling freight.

Rail

Rail transportation, particularly freight, provides the region with promising opportunities for economic development, job creation, and return on investment. Rail provides the most cost efficient transportation costs among all modes, though hampered by the intermodal transfer time delay and last mile delivery.

Figure 24 Freight Network



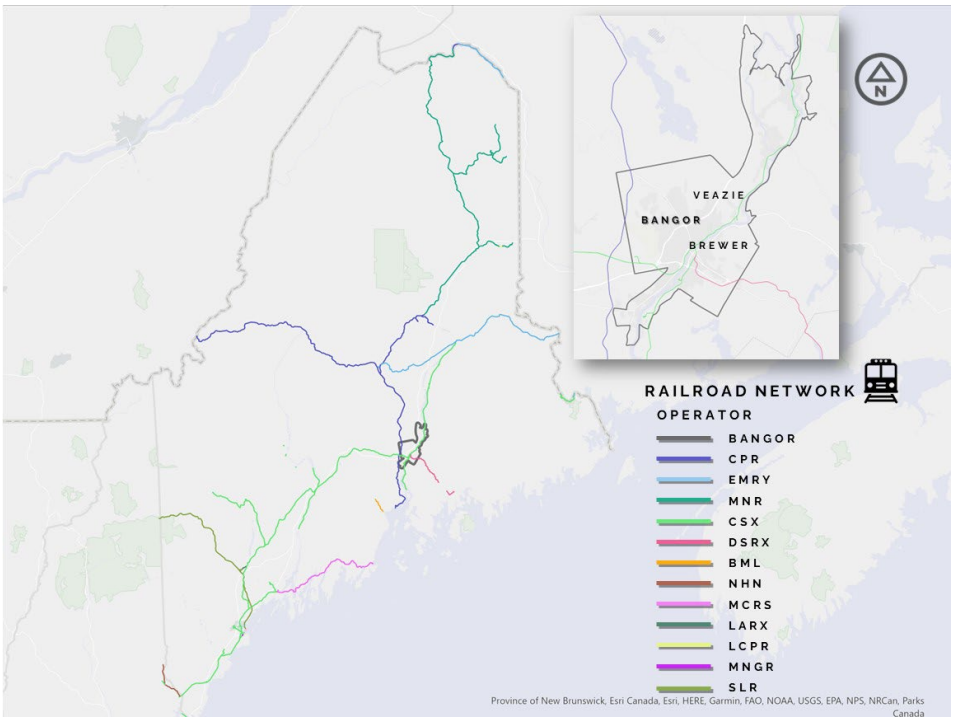
Operators

Freight rail service is primarily privately owned, operated and maintained, and infrastructure investment is related to market forces and business cycle with little to no influence by governmental policy or priority. While government may establish policy and funding priorities, planning for rail is unlike other modes of transportation that rely on publicly owned and maintained infrastructure. Rail operators in Maine include Central Maine and Quebec Railway (CMQ), Maine Northern Railroad (MNR), CSX Corp. (CSX), St. Lawrence & Atlantic Railroad (SLR), and Eastern Maine Railway (EMR).

Rail is not a major component of the transportation network in the BACTS region. BACTS will continue to work with MaineDOT to improve rail connections and cooperate with rail operators.

Rail can be a very efficient mode of travel, but suffers from the coordination and expense of 'last mile' delivery for the intermodal transfer. BACTS will continue to work with MaineDOT to assess passenger rail feasibility when and if a study is conducted in the future. There may be potential for the interim use of inactive rail for regional trails, pending the outcomes of the Rail Use Advisory Council process.

Figure 25 Railroad Network



General Purpose Freight Interchange Facilities

The sole railyard situated within the BACTS area is Northern Maine Junction in Hermon. It was formerly a bustling yard where tens of thousands of cars were exchanged annually between the Maine Central Railroad (now PAR) and the Bangor & Aroostook Railroad (now CMQ). However, in recent times, the interchange volume has dwindled to a few thousand cars per year, and the active tracks in the yard have been reduced. Presently, it is mainly utilized to manage interchange volumes and to provide support to local industries that have set up shop within or near the yard.

Intermodal/Transloading Facilities

More than 90 percent of all freight shipments in Maine are moved by truck for at least part of their journey. Intermodal rail facilities are locations within the rail network where international and domestic containers or trailers are exchanged between the rail mode and highway or port mode of transporting freight. Intermodal Facilities in Maine include:

- Auburn Intermodal Facility (Auburn)
- Savage-Safe Handling (Auburn)
- The Port of Auburn (Auburn)
- Turners Island Terminal (South Portland)

› The Waterville Intermodal Facility (Waterville)

Freight Intermodal Facilities

Intermodal transportation involves moving freight between points of origin and destination using two or more modes. An example of this would be rail cargo being moved to a truck to finish the trip to its final destination. Intermodal connectors are critical components of the Maine freight system which provide access between major intermodal facilities, such as ports and truck/pipeline terminals, and the highway.

There are 18 FHWA-designated intermodal connectors in Maine. The only FHWA designated connector location in the BACTS area is Bangor International Airport.

Freight Rail Funding

MaineDOT collaborates with private railroads on various capital projects throughout the state. The agency's three-year work plan generally allocates $1.2 million per year in FHWA crossing safety funds to enhance safety at highway-rail crossings, which usually finances four to five crossing improvement projects each year.

In 2019, the U.S. Department of Transportation's Federal Railroad Administration's (FRA) Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program granted MaineDOT $17,468,840 to enhance infrastructure and improve rail crossing safety along roughly 75 miles of the former Pan Am Railways freight mainline in rural areas of central and southern Maine. The project aims to modernize 75 miles of track, upgrade 25 switches, enhance at-grade rail crossings, replace signal systems, and replace bridge deck timbers on eight rail bridges to address rail safety concerns.

Rail Passenger Transportation

NNEPRA is responsible for operating the Amtrak Downeaster passenger service, which runs daily from Boston to Brunswick, with a new stop in Freeport added in 2012. In 2016, NNEPRA completed a layover and maintenance facility in Brunswick and secured $1.15 million in funding for a new rail siding in Cumberland. While there has been some interest in extending passenger

rail service to the Bangor area, there are currently no plans to expand the Downeaster service or introduce service with a different operator. To introduce new services, investments in existing railroad infrastructure will be necessary to meet passenger operating standards, expand capacity to accommodate ongoing freight needs, and establish station locations. The overarching objectives of such investments are to improve mobility, promote more sustainable land development patterns, and reduce highway congestion in the region.

The MaineDOT Bangor Transit Propensity Study in 2023 examined the extension of passenger rail service in two ways to Bangor, from either Lewiston or Brunswick. The study also looked at the existing bus service that services the region in comparison to the cost of the infrastructure needed to expand passenger rail service. Table 2 below provides the range of estimates for track upgrades, which does not take into consideration certain unknown factors like land acquisition for layover yards and station buildings.

Table 2 High Level Conceptual Costs for Passenger Rail Service

Alignment	Approximate Length	Low Estimate	High Estimate
Downeaster Extension from Brunswick	100 Miles	$628M	$902M
L-A Extension from Lewiston	100 Miles	$375M	$538M

MaineDOT determined that the cost-effective and equitable way to improve public transportation in the study area was to work with the current intercity bus operators in the corridor to advance a 2-year pilot to provide additional round trips and/or adding additional stops or route deviations.

Air

Bangor International Airport (BGR) and DeWitt Field Old Town Municipal Airport are the primary providers of cargo, military, and commercial passenger services in the BACTS region. Cargo, military, and commercial passenger service within the BACTS region is serviced at Bangor International Airport (BGR) and DeWitt Field Old Town Municipal Airport. BGR currently provides up to 20 daily departures through Allegiant Air, American Airlines, Delta Air Lines and United Airlines. Formerly a military installation known as Dow Air Force Base, Bangor International Airport remains home to the 101st Air Refueling Wing of the Maine Air National Guard.

While there is no scheduled air cargo service at BGR, various U.S. and foreign all-cargo carriers fly into the airport. Wiggins Airways operates daily cargo feeder flights from Manchester-Boston Regional Airport (MHT) under contract to UPS and FedEx. The three passenger airlines also carry belly cargo, but it only represents a small portion of the total cargo. BGR does not have dedicated air cargo hangars, ramps, or sorting facilities, but charter cargo aircraft can use the cargo (heavy duty), joint use, and GA aprons to load and unload cargo as needed.

In the BACTS region, cargo, military and commercial passenger air service is available through Bangor International Airport (BGR), while general aviation service is available at both BGR and DeWitt Field in Old Town.

Bangor International Airport

The City of Bangor owns and operates Bangor International Airport (BGR), which spans 2,079 acres. The FAA has classified BGR as a commercial service small hub airport, capable of accommodating large air carrier aircraft for both scheduled and non-scheduled services. BGR provides a range of services, including refueling, aircraft servicing, passenger and cargo services, and transit for passenger, cargo, military, and corporate flights. BGR offers domestic air service to the region and serves as a transit point for commercial and international flights, making it the closest full-service U.S. airport to Europe. Allegiant Air, American Airlines, American Eagle, Delta, and United Express are among the five major airlines operating out of BGR. FedEx and UPS also operate air cargo services from BGR.

DeWitt Field – Old Town Municipal Airport

DeWitt Field is a publicly owned general aviation airport located on approximately 360 acres on the north end of Marsh Island. It has two asphalt paved runways, a seaplane landing area, and 32 hangar slots in 6 hangar units. The primary runway is 4,000 feet in length and the secondary runway measures 2,800 feet by 75 feet. The Maine Forest Service is headquartered adjacent to the airport and has its own seaplane base at DeWitt Field.

Military Activity

The Maine Air and Army National Guard are based at BGR. Based military aircraft are comprised of the Maine Air National Guard 101st Air Refueling Wing with KC-135R refueling aircraft; and the Maine Army National Guard 521st Troop Command, which includes the 126th Aviation and 142nd Aviation Units, UH-60 and HH-60 Blackhawk, and UH-72A Lakota helicopters. BGR also serves a wide variety of transient U.S. and foreign military units. Every branch of the military cycles aircraft through BGR, particularly those to or from overseas.

Air Passenger Transportation

Because of its strategic location BGR is used regularly as a diversion destination by U.S. and foreign airlines, the military, and other aircraft operators. Bangor Airport accommodates the most irregular operations (IROPS) of any airport in the U.S. With BGR's long runway (11,440 feet),

U.S. customs and immigration facilities, ground handling services, BGR serves as a primary option for diverted transatlantic flights.

Passenger intermodal connectivity is lacking at Bangor International Airport. Despite the presence of various public transportation providers in the Bangor urbanized area, there is no designated facility that allows for easy transfers between these providers.

Capital Improvements and Funding

The FAA provides about $8 million annually to Maine for airport improvement purposes. FAA funds are administered by MaineDOT and are made available on a 95/2.5/2.5 (federal/state/local) percentage matching basis. The State of Maine typically has approved bond issues to provide the match for FAA funds, and to support engineering studies for future airport improvement projects.

Marine

The Penobscot River corridor extends from Searsport to Bangor on the west side of the river, and from Verona Island to Brewer on the east side. The corridor includes several highways, the Penobscot River, the Bangor International Airport (BGR), two rail lines, and commercial port facilities at Searsport, Bucksport, and Brewer. The Corridor also includes facilities such as the Maritimes and Northeast natural gas pipeline, which crosses the Penobscot River at Orrington. The Penobscot River carries a variety of freight, passenger and recreational vessels. The river

Pilotage is required for foreign and U.S. vessels under register in the foreign trade, and large vessels bound for upriver usually need a tug to assist in making turns and docking. The Penobscot River is used for commercial transportation of prefabricated components of industrial structures in Brewer, shipped by barge at a deep water facility.

Marine Ports

The State of Maine's three ports of Eastport, Portland and Searsport have shown steady, consistent growth. The ports collectively handle over 1.5 million tons of dry cargo. Additionally, Portland and Searsport also handle significant amounts of petroleum products.

Bangor Harbor is a United States port of entry about 30 miles upriver from Penobscot Bay. It is owned by the City of Bangor and open through the freshwater boating season from mid-May until mid-October. Bangor Harbor was once the busiest lumber port in the world, shipping the products of Maine's northern forests to the world. Bangor Landing offers two public docks. Water and power are available, as are pump-out services. Bangor Landing is located on Bangor's historic waterfront adjacent to the downtown. Future commercial growth of the harbor is not foreseen, but continued access to the water will for tourism and recreation will provide economic development benefits to the waterway.

Other private marine facilities include Pike Industries, Webber Energy Fuels, Cold Brook Energy, Dead River Company, and Cianbro.

Marine Passenger Transportation

Although there are no passenger marine services in the BACTS area, recreational marine traffic has been on the rise due to the availability of improved dockage facilities and increased mooring space. The current river depth of 11 feet at low water is sufficient for most recreational vessels. Both Bangor and Brewer have implemented waterfront redevelopment plans that are enhancing opportunities for recreational boating and passenger ferry services. Bangor Landing, which is owned by the City of Bangor, is open from mid-May until mid-October during the freshwater boating season. It is situated at the river front park just downstream of the Joshua Chamberlain Bridge and offers two public docks for recreational vehicles and three floating docks with steel ramps. Water and power are available, as well as pump-out services. The docks can accommodate private vessels of almost all sizes, although larger vessels must provide notice before arrival. In 2019, MaineDOT completed a float replacement and expansion project on the Bangor waterfront.

COVID-19 Impacts

The COVID-19 pandemic changed how BACTS area residents live, work and travel. As a regional long range plan developed during an unprecedented global health pandemic, VISION 2043 was shaped by and responds to COVID-19's new challenges in many ways. While the long term effects of this global event may change many aspects of life in the BACTS area, VISION 2043 meets the present moment and plans for the future by balancing equity and resiliency to the uncertainty.

The pandemic significantly disrupted travel, locally and globally. Many people moved from urban areas to rural areas. Maine became a significant receiver of residents making that move, significantly increasing home prices in Maine. Though Maine has a lower population growth than most states, the pandemic increased the number of people living and working in Maine, many taking advantage of work-from-home employment allowances. As the pandemic has ended, the future economic and employment for Maine has not yet unfolded with some reluctance by employers to indefinitely continue work-from-home policies.

Outside of the oil embargo of the 1970's, no other event has impacted the transportation system more strongly than the COVID-19 pandemic. Not only for the extended time in which there was a massive reduction in the number of vehicles driving on the roads, but the prolonged impact in work-from-home policies and the ability for many workers to relocate to where they want to live, and not where they have to.

Scenario Development

In order to inform regional policy and project prioritization decision, VHB utilized regional traffic models to understand what future transportation and land-use may be depending on three different scenarios. With the uncertainty of what the future may hold, VHB projected scenarios based on what has usually been done, a more conservative scenario, and a drastic action scenario. These three outlooks should provide low, average, and high constraints.

- **Conservative:** The 'conservative' scenario envisioned a reduction in the overall growth for the region.
- **Business as Usual:** The 'usual' scenario modeled the typical growth for the region and serves as a baseline average. A 25% increase in the growth of households for the identified 'transit' regions in the urban areas was utilized, with a corresponding decrease of 40% in the growth for the non 'transit' regions. Please note that this is not for the total population, but merely an increase or decrease in the overall projected rate of growth.
- **Drastic Action:** The 'drastic' scenario considered what elevated growth would look like in the region. Further, the scenario considered that the regional growth would occur in locations closer to the urbanized areas and areas where there is existing transit routes. As part of this forecasting, a 100% increase in the growth of households for the identified 'transit' regions in the urban areas was utilized, with a corresponding decrease of 57% in the growth for the non 'transit' regions. Please note that this is not for the total population, but merely an increase or decrease in the overall projected rate of growth.

After running the regional model, VHB found that the person-trips in the region would not change significantly between each scenario. Person-trips are the actual individual trips taking into consideration the various modes of travel. To achieve the significant growth that would drastically change the traffic patterns of the area would mean not only the assumption of growth to the urban areas, but a significant number of the existing population moving to urbanized areas from the rural areas. The future remains uncertain, but this scenario did not seem to be a reasonable assumption. A summary of results of the scenario development are provided below.

Figure 26 Scenario Development "Business as Usual"

The future trips for the BACTS region show the most growth in the northeast of Bangor, within the downtown and out to Stillwater Avenue. The twenty year time-frame shows relatively less growth outside of the Bangor region.

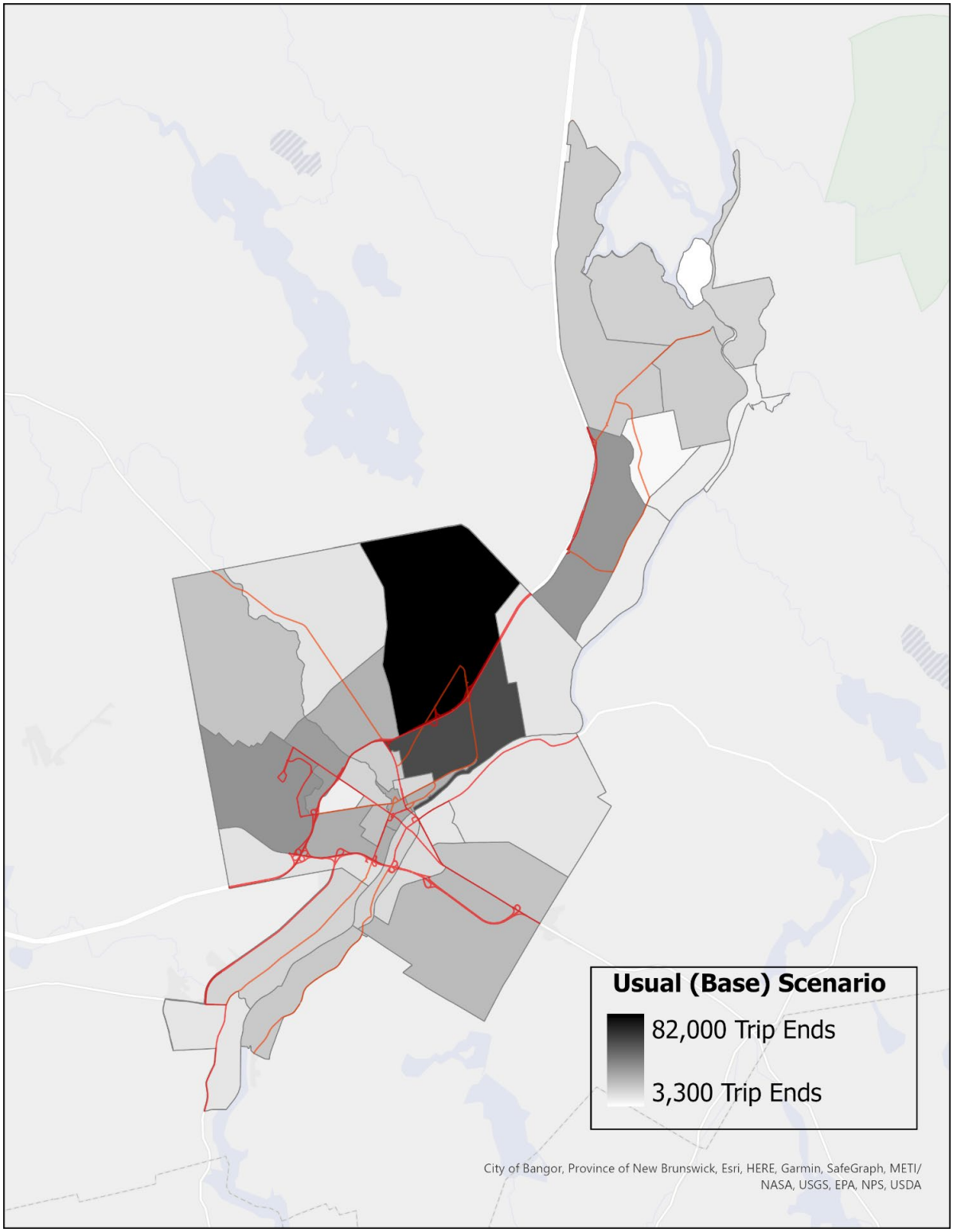


Figure 27 Scenario Development "Conservative"

When growth policies and investments are not made to target urbanized areas, more development occurs outside of the urban core and away from transit services and active transportation infrastructure.

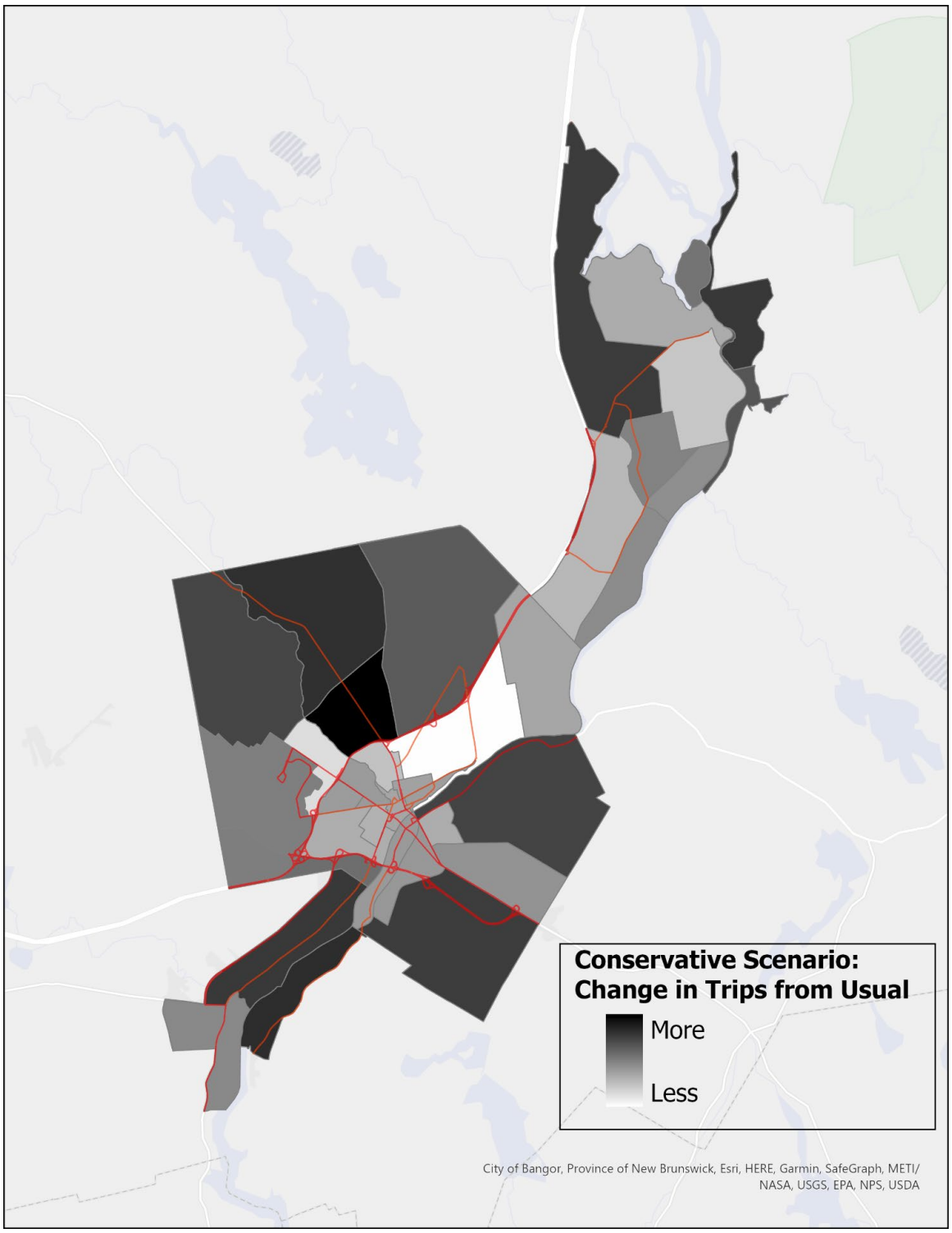
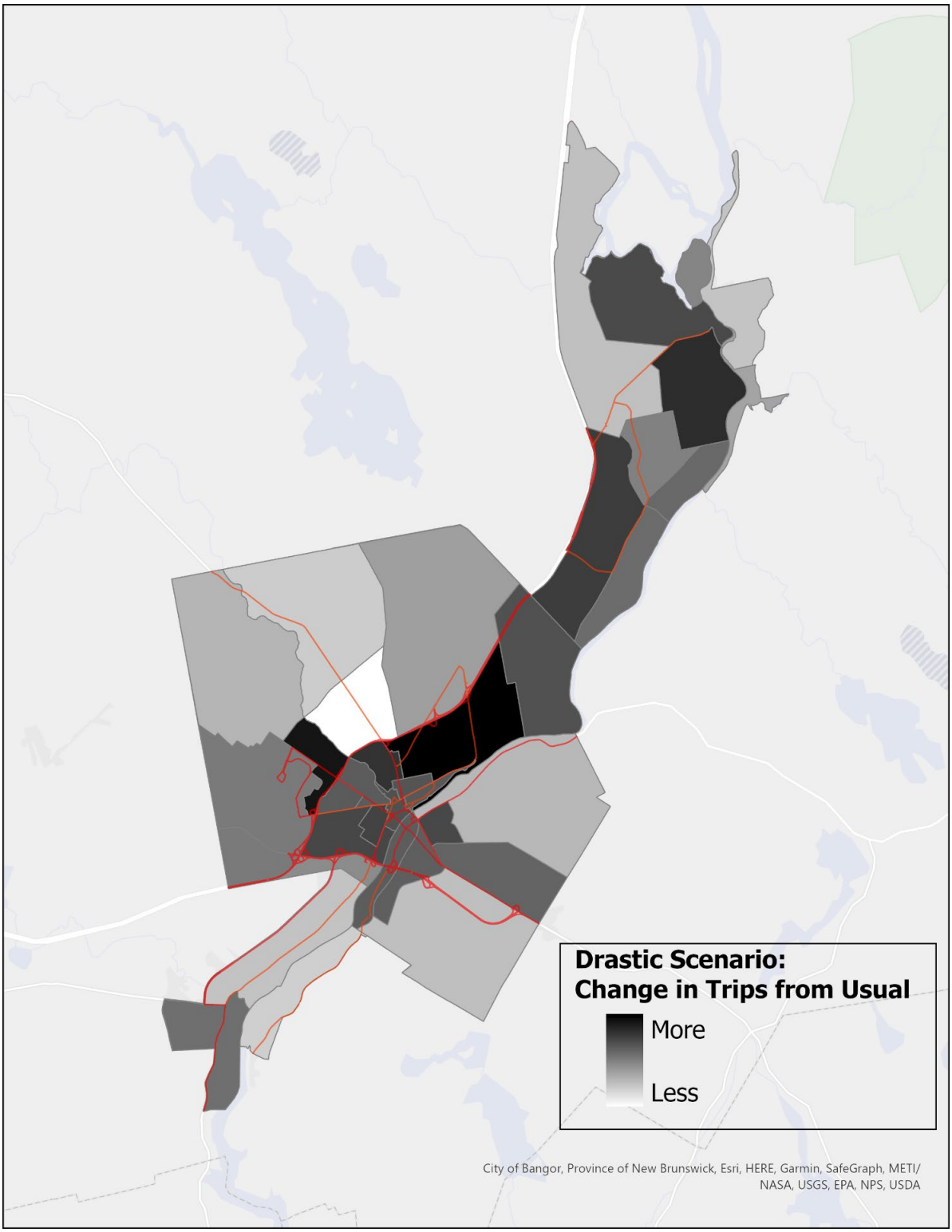


Figure 28 Scenario Development "Drastic"

If future investments are concentrated within the denser areas, trips and people will live, work, and move in areas closer to the more urbanized areas. Growth moves away from the Stillwater Avenue area, identified as a congested area within VISION 2043.



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3

Regional Vision and Goals

Let's lay the foundation down for this plan.

3.1 Regional Vision

As part of the public participation process, BACTS heard from a wide range of voices on what they would like to see the future of the BACTS region look like. However, there are a number of factors which can influence and change that vision in which planning must consider.

- **Shifting Demographics**: The population is aging. Nationally, the population aged 65 and older will grow rapidly over the next 25 years. This growth will increase the demand for alternatives to driving, especially for public transportation for people with limited mobility or disabilities.
- **Employment Shifts:** As the "Baby Boomer" generation continues to age and retire from the workforce, the demographics of the population shifts the average towards a younger population.
- **Environmental Factors:** The future weather patterns and climate are uncertain. The BACTS region could potentially be impacted by these future conditions and will plan for resiliency in the infrastructure.
- **Multimodal Transportation:** The community will need to focus on expanded active transportation facilities within increased first and last mile connectivity.
- **Maintenance and Preservation:** Above all, the priority of local governments is the maintenance of existing transportation facilities over new facilities. Generally, it is more cost efficient to keep a road well maintained, than to fix a road that has deteriorated well beyond its useful life.
- **System Resiliency:** Beyond the environmental factors, a resilient system is needed to maintain area economic development. The loss of key bridges or major highway can cause a cascading effect to area congestion without system resiliency.

VISION 2043

The Greater Bangor Region will have a safe and sustainable transportation network, including infrastructure and services, that supports equity, efficiency, and community goals.

3.2 Goals & Objectives

Based on the feedback provides by staff and the public, Goals and objectives were crafted to meet the needs of the future BACTS transportation network and to support the vision.

- **Support Equitable Access and Quality of Life**
  - Consider all users—and those impacted—in investment decisions.
  - Expand ADA accessible infrastructure and services.
  - Educate on alternatives transportation options and resources.
  - Promote walkable neighborhoods by supporting municipal land use and policies changes.
- **Ensure Safety for All Users**
  - Expand facilities for active transportation users.
  - Educate on pedestrian safety methods.
  - Assess high crash areas for improvements.
- **Promote Sustainability**
  - Promote transit and active transportation options.
  - Support electrification of vehicles and infrastructure.
  - Support development with lower environmental impacts.
  - Maintain fiscal sustainability.
- **Support Regional, Local, and Community Goals**
  - Support land use initiatives.
  - Adapt to new funding opportunities to achieve visionary goals.
  - Create partnerships with major services and institutions.
  - Promote economic growth.
  - Uplift community voices.
  - Support State plans and initiatives.
- **Maintain System Efficiency and Reliability**
  - Reduce traffic congestion.
  - Expand connectivity within and outside the region.
  - Prepare for weather related impacts and accelerated deterioration of infrastructure.
  - Ensure the existing facilities are maintained adequately.
  - Increase project performance and longevity by following construction and maintenance best practices.

The final vision statement was summarized to: ***The Greater Bangor Region will have a safe and sustainable transportation network, including infrastructure and services, that supports equity, efficiency, and community goals***. The vision, goals, and objectives were used as the basis for the prioritization of regional projects in a scoring matrix to rank each project. These goals are generally supportive of and consistent with MaineDOT's LRTP.

4

Public Engagement

Public participation is a vital component of effective planning, and this particular plan is no exception. This section outlines the methods used to engage with the community, where residents had the opportunity to share their thoughts, ideas, and hopes for the future of the BACTS region.

4.1 Public Engagement Overview

Public participation is a vital component of effective planning, and this particular plan is no exception. This section outlines the methods used to engage with the community, where residents had the opportunity to share their thoughts, ideas, and hopes for the future of the BACTS region. The outreach efforts included surveys, community events, a public workshop, and advisory committee meetings. Through these channels, community members were able to share their vision for our future transportation system, express their concerns about our current infrastructure and services, and make suggestions to help us reach our regional goals.

4.2 Advisory Committee

The Public Advisory Committee (PAC) was created to work with BACTS staff to provide input and expertise on materials and key decisions, act as community ambassadors, and assist in engaging stakeholders and the public. The PAC includes representatives from BACTS Cities and Towns as well as several community organizations. The following people were included in the PAC:

- John Theriault, Bangor City Engineer
- Nate Moulton, MaineDOT Freight
- Eric McVay, Disability Rights Maine
- Scott Perkins, Town of Hermon
- Greg Edwards, Bike/Ped Advocate
- Tony Caruso, Airport Director
- Linda Johns, Brewer City Planner
- Mark Leonard, Veazie Police Chief and Town Manager
- Belle Ryder, Orono Assistant Town Manager
- David Pardilla, Penobscot Nation Public Works Director)
- Laurie Linscott, Community Connector Superintendent
- Jarod Farn Guillette, MaineDOT Region 4 Planner
- Sean Stinson, Transit Rider Rep.
- Anne Krieg, Director of Development

4.3 Public Meetings

BACTS conducted significant outreach to the public as well as municipal staff to identify areas of concern. The public workshop invited participants to brainstorm big ideas for the future of transportation in the region.

The first public meeting was a Conditions and Needs Workshop held on February 27, 2023. The goals of the meeting were to gather public feedback on the condition of the transportation infrastructure, educate the public on the Vision 2043 process, and introduce the BACTS website and resources for project information. The meeting included activities to address conditions and needs, a mapping exercise, and an overview of the project.

Additional Outreach

BACTS staff individually met with each municipality to gather input for VISION 2043. Each town was asked about their current projects, goals, and priorities. Then whether they had any particular ideas for future project that would meet transportation, housing, or economic

development needs. Finally, the Towns gave feedback on gaps in information and data that BACTS could help fill. Staff also set up tables at the Bangor Farmers Market, a Brewer Craft Fair, and the Bangor Airport where they asked attendees about the regional vision or community transportation needs.

4.4 Outreach Survey

Two public outreach surveys were advertised to anyone who lived, worked, or recreated within the BACTS area to provide input on for Vision 2043. The first survey was conducted during winter 2023 and the second survey during spring 2023. The first survey focused on the vision and goals; opportunities for the future of transportation in the BACTS regions and highlighting key issues. The second survey focused more on ideal modes of transportation and types of ideal future investments.

The feedback from the stakeholder meetings, the surveys, and public meetings directly informed VISION 2043's objectives, goals, and actions.

Vision and Goals Survey

The first survey was completed from November 2022 to January 2023. In total, there were 116 respondents that completed the survey. The intention of the survey was to gather feedback on the Vision and Goals for the transportation system in the BACTS region. Survey questions asked what transportation opportunities they saw for the BACTS region, future transportation concerns, and the most important criteria for the transportation system of the future.

Vision and Goals Survey Summary

Q: What opportunities do you see for the future of transportation in the BACTS region?

TOP FOUR RESPONSES:

- Expanded bus service
- More bike friendly infrastructure
- Regional/statewide bus/rail connections
- Better walkability

Q: When you think about the future of transportation in this region, what concerns you the most?

TOP THREE RESPONSES:

- Lack of public transit or active transportation options
- Safety for bike/ped/transit users
- Inequitable infrastructure and investments resulting in lack of access for those who cannot drive

Q: What key issues or trends do you think will most impact our region I the next 5-10 years?

TOP FIVE RESPONSES:

- Alternatives to personal vehicles
- Climate Change
- Electrification
- Cost of living increases
- Regional growth/sprawl

Q: What do you think are most important for the transportation system of the future?

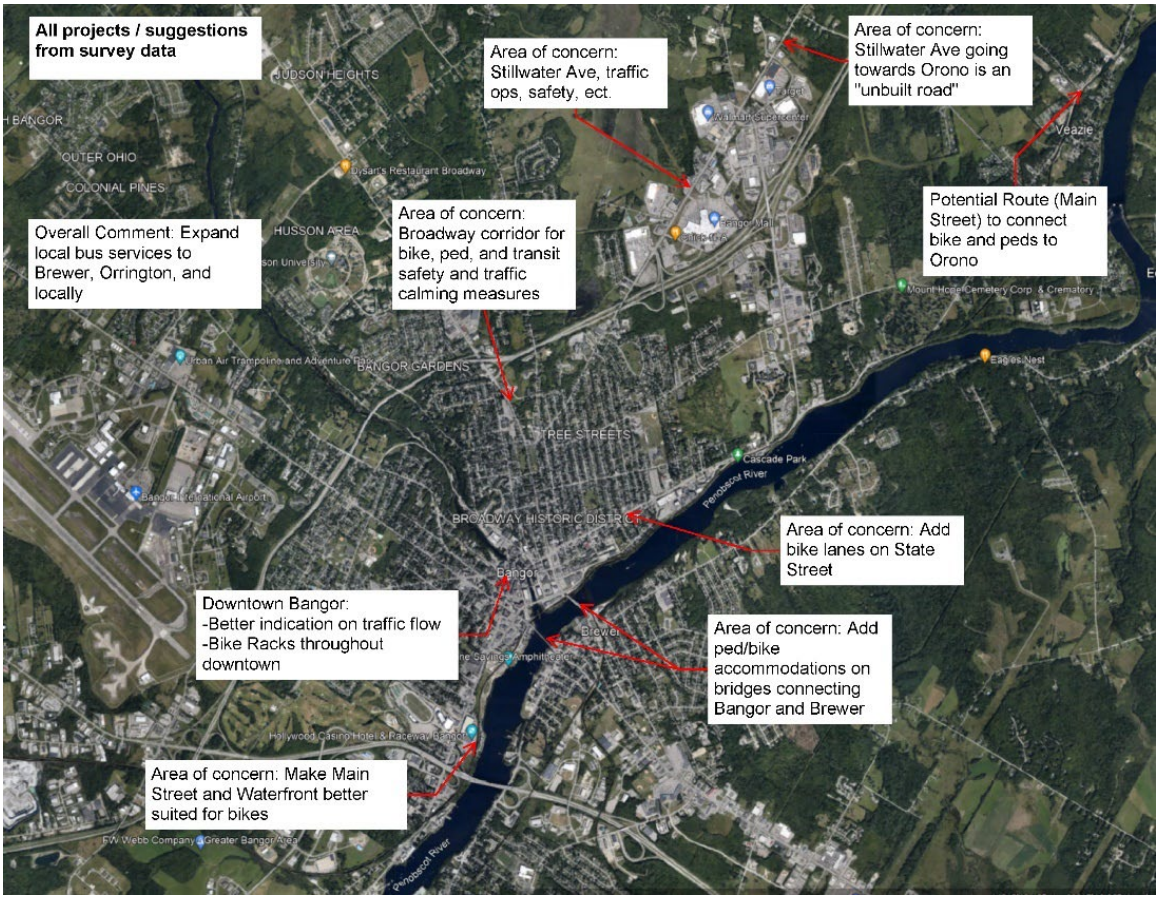
TOP FIVE RESPONSES:

- Improve Equitable Access and Quality of Life
- Improve Safety for all Users
- Protect the Environment and Conserve Energy
- Increase Multimodal Connections
- Reduce Traffic Congestion and Optimize Efficiency

Condition and Needs Survey

The second public outreach survey was completed by community members from January 2023 to March 2023. There were 208 total responses. Survey questions asked the typical modes of transportation used, what would make the responded more likely to use public transportation, and the types of projects they would like to see for the region.

The survey also included an online mapping tool for respondents to identify areas of concern. Using the map, respondents could note areas where they had safety problems, project ideas, or locations where improvements to the transportation system could be made. The tool also asked respondents to identify areas of strength, locations that promoted safety, aesthetics, or positive feelings about the system. The results were compiled and incorporated into the report, which were then incorporated into a project list of potential projects to strengthen the BACTS region.



Condition and Needs Survey Summary

Q: What transportation modes do you use in a typical week?

TOP FIVE RESPONSES:

1. Drive own vehicle
2. Walking
3. Rides from friends and family
4. Public Transportation
5. Bicycling

Q: What would make you more likely to use public transportation?

TOP FOUR RESPONSES:

1. More bus shelters at bus stops
2. More frequent routes
3. Longer hours
4. Saturday service

Q: What would make you more likely to walk, bike, and/or wheel with a mobility device?

TOP FIVE RESPONSES:

1. Designated bike lanes
2. Sidewalk maintenance
3. More trail connections
4. Better snow removal
5. Well lit sidewalks

Q: How do you get around using other transportation modes?

TOP FOUR RESPONSES:

1. My travel behavior did not change
2. I drive less
3. My travel behavior is back to normal
4. I walk more

5

Project Prioritization

What are the projects that are needed to meet the VISION 2043 goals and vision, and which of all important projects being considered be prioritized over others?

Methodology

BACTS conducted outreach to the public and municipal staff to identify areas of concern and potential projects to include in the Plan. In addition, other recent plans such as the Long-Range Pedestrian and Bicycle Transportation Plan and BACTS Metropolitan Transportation Plan 2018-2038 were researched to document projects identified previously for consideration.

With input from public meetings and survey results, a vision for the greater Bangor region sought to improve quality of life, safety, and sustainability. Surveys also provided maps for specific location based input. That input directed projects for prioritization in future study phases. With public input, goals were crafted to reflect that vision to 2043. By engaging the public in the planning process BACTS aims to foster a community spirit of inclusiveness and ownership of the process.

By establishing the above clear criteria, vison, and goals, the MPO can make informed decisions that maximize the benefits of transportation investments and contribute to the overall development of the region. The Informed goals identified through public input were used in consideration for the creation of a complete project weighting system. A summary of the project weighting is provided below, with the full prioritization metric is shown in the appendix.

Table 3 BACTS VISION 2043 - Prioritization Rubric

Vision	Goal	Weight
Improves Equitable Access and Quality of Life		**5**
	Considers all users in investment decisions	3
	Expand ADA accessible infrastructure and services	2
Ensure Safety for All Users		**5**
	Provides safe facilities for pedestrians, bicyclists and other active transportation	3
	Reduces the dangers of roadway travel	2
Promote Sustainability		**5**
	Reduce emissions by promoting transit and/or active transportation	3
	Feasible future maintenance	2
Support Regional, Local, and Community Goals		**5**
	Support Community Goals	3
	Promote economic growth	2
Maintain System Efficiency and Reliability		**5**
	Reduce traffic congestion	2
	Prepare for weather-related impacts and accelerated deterioration of infrastructure and maintain system	3

Prioritized Project List

Projects were prioritized in two categories, systemic studies with no specific location, and construction projects with defined limits. A summary of the project prioritization is provided below, with the full and complete listing in the appendix.

Table 4 Capital Construction Project Prioritization

Capital Construction Projects	Municipality
Extend Penobscot River Multi-Use Path from Dutton Street to Route 1A	Bangor
Felt Brook Trail Corridor Connection	Brewer
Hammond/Odlin roundabout	Bangor
Ohio Street Sidewalks	Bangor
Marden Park Multi-Use Paths	Orono
Maine Avenue Sidewalk	Bangor
Griffin Road Sidewalk (North side extension to Broadway)	Bangor
Kenduskeag Ave Sidewalk (North side extension to Griffin Road)	Bangor
Route 178 Sidewalk (East side from to Milford line)	Bradley
South Main Street Sidewalks (Cove Street to Harriman Way and South Side over Sedgeunkedunk Stream)	Brewer
Grove Street Sidewalk (West side from South Main Street to Parkway South	Brewer
Main Street Sidewalk (East side from Orono to existing sidewalk)	Old Town
Crosby Street Sidewalk (East side entire street)	Orono
Park Street Sidewalk (East side from The Reserve to Old Town Line)	Orono
Broadway Sidewalk (North side from Grandview to Griffin Road and Husson Ave to Grandview Ave)	Bangor
Main Street sidewalk connection between Hampden and Bangor	Bangor
State Street Sidewalk (North side extension to Veazie line to Orono line to Kelley Road)	Bangor/Veazie/Orono
Wabanaki Way Sidewalk (Connect existing sidewalk to Down Street)	Penobscot Indian Nation
Trail Expansion	Bradley
Odlin Road Sidewalks	Bangor
Mt. Hope Ave Sidewalk to State Street (North side extention to State Street)	Bangor
Hogan Road Sidewalk (West side from Mt. Hope Ave to Dorothea Dix facility)	Bangor
Essex Street Sidewalk (Grandview Ave to Burleigh Road)	Bangor
School Street Sidewalk (Broadway to Hillside Ave)	Bangor
Hillcrest Drive Sidewalk (West side from North Main Street to Oak Grove Drive)	Brewer
Stillwater Ave bike/ped trail crossing interstate	Bangor
Brewer Rail Trail: Wilson to Green Point Rd	Brewer
Stillwater Ave Reconstruction	Various
Western Ave Sidewalk (Mayo Road to Route 202)	Hampden
Stillwater Ave Sidewalk (East side from YMCA to Elementary School and West side to Center)	Old Town
Bennoch Road Sidewalk (West side from Godfrey Drive to Old Town line and Orono line to Stillwater Ave)	Orono/Old Town
Route 15 sidewalks	Orrington
Penobscot Bridge Bike/Ped Improvements	Various
Joshua Chamberlain Bridge Bike/Ped Improvements	Various
College Ave Reconstruction	Orono
Hammond St Width Expansion	Various
Smart Signals	Various

Table 5 Systemic Regional Study Prioritization

Systemic Regional Studies	Municipality
Community Connector Service Hours Study	Bangor
Improved mobility and safety on US Route 1A	Various
Downtown Traffic Movement Study	Bangor
Downeaster/Community Connector Connection	Bangor
Transit Technology (Mobile payment, AVL/GPS, etc.)	Various
Fare Structure Study	Various
Community Connector Brand Recognition Study	Various
On Demand Service Study	Various
Designated Stops Review	Various
Regional Active Transportation Study	Various
Park and Ride Propensity Study	Orono
Transit Connections Study: Airport to Bar Harbor	Bangor
BBOE Service Study	Orono
Community Connector Hub Growth Study	Various
Choice Riders Study	Various
Transportation Impacts Study: Waterfront District Development	Bangor
I-95 / 395 Interchange Clover Study	Bangor
Old Town Transit Service Study	Old Town
395 Connector Ramp Study: Greenpoint Rd	Brewer
Freight Intermodal Facility Study	Bangor
Penobscot River dredging (commercial/industrial)	Various
Freight Study/ Update Truck Routes	Various
Regional Zoning/Development Study	Various
Technical Parking	Various
Transportation Impacts Study: Bangor Mall/Stillwater Redevelopment	Bangor

5.1 Fiscal Constraint

Federal transportation bills, such as the current Bipartisan Infrastructure Law, direct that MPOs must plan transportation projects within fiscal constraints. VISION 2043 is a way to plan for future transportation needs while planning responsibly with the funding available. Available funding includes ongoing system maintenance that must be assumed into the future which limits funding available for new projects and system expansion.

It should be noted that BACTS does not receive any capital funding, but instead acts as a pass-through for federal and state dollars to specific projects. With local participation, BACTS provides limited input to MaineDOT as to their planning and programming decisions. Additional coordination would provide benefit to both agencies to maximize the impact of the limited funding. The anticipated costs of the prioritized projects are evaluated against anticipated funding available for projects in order to develop the MTP.

Metropolitan Transportation Plans must be fiscally constrained so that it proposes only projects that have a chance of receiving funding based on projected revenues over the next twenty years. Table 3 summarizes project funding levels and sources covering the last several BACTS TIPs and

projects the funding level for the next twenty years. These projections are not adjusted for inflation.

Airport and railroad projects are not included in this table. Those projects will be funded through Federal Aviation Administration (FAA), the Federal Railroad Administration (FRA), and sources other than FTA and FHWA. The level of funding for those projects is determined on a statewide basis by MaineDOT.

Historic FTA funding is shown in Table 4 summarizes the FTA project funding level sources from 2011 to 2016 and projects funding level for the next twenty years, without any adjustment for inflation. Additional funding sources for the fixed route bus system will be necessary in order to expand service days and hours, service areas, and regularly replace aging vehicles before they begin to fail and so that the bus fleet is operating in a reliable state of good repair.

Unmet Needs

The amount of funding allocated by MaineDOT to BACTS over the past sixteen years is never enough to meet the needs of the BACTS region, necessitating a prioritization process. Further, the municipal list of essential projects would be much greater if more funding were available. The municipalities submit only those projects that are most in need of repair and have a chance of rating high enough for possible selection for funding. Projects that go unfunded either: 1) continue to deteriorate further, resulting in even higher construction/maintenance costs; or 2) force municipalities to pay a much higher percent of the construction costs instead of typical local match amount of 10 or 20 percent needed for state and federally funded projects. The process of prioritizing important projects becomes increasingly difficult with flat or declining funding levels. This trend is not likely to change. The BACTS Policy Committee historically has shifted its' funding priorities to more pavement preservation and rehabilitation projects and less on reconstruction.

Table 6 TIP Submissions vs Accepted Projects

Revenue Source Year	# of Submitted Preservation projects	# of Submitted OSI/Signal projects	# of submitted Rehabilitation projects	Value of Submitted Projects	# of Projects accepted CWP	Value of BACTS STP/NHS Projects accepted in TIP	Submitted Projects Costs: Accepted Project Costs
2020-2021	14	5	1	$4,524,073	7	$3,715,590	82.13%
2022-2023	6	4	-	$6,063,000	3	$3,242,900	53.49%
2024-2025	8	2	-	$7,260,900	7	$4,784,200	65.89%

Table 7 Historical FHWA Funding by Project Type

	2017-2018	2019-2020	2021-2022
Preservation	$4,277,895	$3,493,003	$2,657,794
Rehabilitation	$12,662,317	$4,285,510	$2,621,481
Signal	$3,900,870	$9,086,285	$3,395,325
Bike/Pedestrian	$1,291,115	$902,955	$843,230
Bridge	$6,499,633	$8,027,265	$23,681,380
MPO Planning	$721,883	$780,414	$780,414
Misc. Road	$257,108	$0	$0
Interstate	$9,638,208	$5,860,830	$39,070,702
Rail	$0	$27,402	$54,804
Total	**$39,249,029**	**$32,463,664**	**$73,105,130**

Table 8 Historical FTA Formula Funding and Discretionary Grant Awards

	2017-2018	2019-2020	2021-2022
5339	$431,966	$456,830	$613,708
5307	$3,926,500	$7,711,506	$14,114,039
5303	$191,747	$208,929	$236,595
Discretionary	$1,696,000	$7,507,700	$496,000

*Includes all funding sources listed in TIP

Methodology

BACTS utilized the most updated funding figure per most recent TIP. For example, if a WIN was awarded in 2017 but there was an updated figure in 2020, the 2020 figure was used and included in the last funding year listed for the summary table (i.e. in 2020). Remaining projects listed on the 2022 TIP have been included in the 2021-2022 summary figures, though these projects may actually utilize the funding in subsequent years.

6

Preparing for 2043

Our action items to achieve our vision.

6.1 Recommendations

Based on the known historical needs and the present desires of our citizens, these are the recommendations for the BACTS region to achieve the VISION 2043 outcome.

The projects, studies, and policies outlined here have to go through additional selection/planning processes to go into implementation (TIP, UPWP, study). Many of which will only be implemented if and when additional funds become available through formula increases or discretionary grants.

6.2 Public Transportation

Capital

1. Ensure newly acquired transit vehicles are equipped with accessible features (i.e., low-floor, lifts, etc.)
2. Ensure transit can accommodate the different types of active transportation such as additional bike racks.
3. Reduce headways and increase frequency of service to 30 minutes.
4. ADA automated audible internal and external announcement of bus route, next stop, etc.
5. App and/or visual board kiosk at bus stop/hub showing real-time bus status.
6. Ensure that sidewalks are provided along targeted high-use bus routes.
7. Provide automated passenger activity data collection.
8. Use technology to provide additional service and service coordination (real-time apps, 3rd party integration, shared ride services, links between other public and private transit providers to make services more accessible).
9. Ensure bus fleet is in a state of good repair to minimize disruptions.
10. Implement transit priority at signalized intersections.
11. Provide increased transit amenities, such as benches, shelters, landscaping, lighting, walkways, and signage.

Study

1. Connecting services for students to regional transit hubs (e.g., Boston, New York) for travel from school to home.
2. Providing convenient and reliable transit service for telecommuting workers who occasionally travel to and from the BACTS region.
3. Link transit in the area to other systems further to the north and south for a coordinated system between regions.
4. Improve bus maps and routes to improve readability and understanding, including improved schedules for identification of routes by color with unique names and/or symbols.
5. Explore non-conventional and private funding sources to expand services.
6. Coordinate and expand transit services from Brewer to Bar Harbor and Acadia National Park to reduce congestion through Route 1A.
7. Explore on-demand or dynamic scheduling of transit services.
8. Implement fixed bus stop locations.

Policy

1. Provide evening and weekend bus service for targeted high-use routes.
2. Develop commuter Park and Ride lots with a designated transit stop to reduce traffic congestion at existing large, under-utilized parking lots.
3. Coordinate with transit providers outside of the Greater Bangor area for more efficient and convenient connections and minimize layover time.
4. Coordinate between the transit operator and municipal planning staff and decision-makers to include public transit factors as part of the application and approvals process for new and proposed developments.
5. Partner with the local business community to fund additional transit service geared toward enhancing customer/client base experiences like transit vouchers.
6. Partner with small and large businesses to institute promotional transit voucher programs for employees.
7. Create more frequent and closer to door access for high traffic medical facilities and complexes in the area.
8. Prepare for autonomous self-driving transit vehicles for public transportation services.
9. Coordinating the public transportation services in the BACTS area, including additional transit services at the Bangor Transit Center.
10. Better integration of taxi service and rideshare services with other transportation options at the transit center.

6.3 Highway Transportation

Capital

1. Implement recommendations outlined in completed corridor studies as funds become available and as appropriate.
2. Work to improve parallel connector roads to provide arterial congestion relief and system redundancy, such as US2.
3. BACTS communities should look to update existing traffic signal controllers and cabinets to the MaineDOT Advance Transportation Controller (ATC) specification standard, including the use of Field Monitoring Units (FMU) for remote monitoring and control of traffic signals.
4. BACTS should update the signal equipment inventory, standardize equipment to MaineDOT specification, and implement a maintenance plan for all signals within the region.
5. BACTS should continue to monitor safety improvements that could be implemented, such as retroreflective borders for traffic signal heads.
6. Implement AI based traffic adaptive signal timing and phasing.

Study

1. Study the connection between I395 and I95 (4-leaf clover) and continue to monitor for improvements for the traffic operations at ramp intersections with area arterials.
2. Study intersections listed in the Congestion + Traffic section.
3. Continue to review and provide input on the design and construction of the proposed Diverging Diamond Interchange at Exit 187 at Hogan Road in Bangor.
4. BACTS should hire a consultant to produce an analysis and action plan for the inspection of sidewalks and arterial roadways.

Policy

1. Continue to update timing, phasing, and signal coordination along all major corridors in the region.
2. BACTS should implement the findings of the MaineDOT Traffic Mobility Working Group.
3. BACTS should continue to monitor technological improvements that could be implemented in the BACTS area.
4. Assist with the Bangor region Traffic Incident Management group.

6.4 Active Transportation

Capital

1. Sidewalks and trails should be expanded, particularly along key corridors and transit routes.

Study

2. Inventory all pedestrian and bicycle facilities and identify potential improvements to pathways, trails, roadway infrastructure, utility and drainage easements, open spaces and parks to increase active transportation options.
3. Update stand-alone Regional Active Transportation Bike/Ped Plan which, when complete, will complement the Metropolitan Transportation Plan and serve as a guide for planning, prioritizing, and for constructing bicycle and pedestrian network improvements in the region.
4. BACTS should seek Safe Streets for All Users (SS4A) funding for the development of action plans in the Bangor region.

Policy

1. BACTS should outline strategies for developing an interconnected transportation network with access to neighborhoods, parks, activity centers, employment centers, parking facilities, bus stops, schools, places of interest, and connectivity to the trails and pathway systems.
2. Increase bike-share programs.
3. Increase E-bike incentives.
4. Support the use and study of micro-mobility.
5. Promote alternative modes; transit, van pool, carpool, walk, and bike.

6.5 Air Transportation

Policy

1. Increase BGR passenger intermodal connectivity with regional bus service to allow tourists to fly into BGR and immediately board a bus to their destination.
2. BACTS should support increased air cargo services at BGR.

6.6 Rail Transportation

Policy

1. Encourage efforts to increase intermodal freight traffic through improved highway-rail and water-rail intermodal connectivity.
2. Encourage improved coordination among freight and intercity passenger systems with other modes of transportation among the railroads, FRA, Canada and other states in the New England region.
3. Support the State's efforts to develop policies to increase and improve intermodal freight transportation,

6.7 Marine Transportation

Study

1. Improve mobility and safety on U.S. Route 1A (from the Port of Searsport to the greater Bangor area) and Route 15 (from Brewer to Bucksport) including access management, construct passing lanes, and improve road shoulders to facilitate more efficient movement of freight to the BACTS region.

Policy

1. Encourage MaineDOT to perform a feasibility study on the potential for an intermodal facility at the Bangor/Brewer waterfront.
2. Support investment in Maine's industrial ports with emphasis on waterfront infrastructure, intermodal connections, rail connectivity, upland storage facilities, and short sea shipping.

6.8 Region Goals

Policy

1. BACTS should work with local governments, agencies and other local-level stakeholders to encourage better coordination of transportation and land use.
2. Encourage municipalities to adopt and implement Complete Streets policies.
3. Participate in local "livable communities" programs.
4. Encourage future development policies that preserve key natural features and the small town/rural character of most of the corridor while promoting economic prosperity;
5. Promote measures that remove or minimize major traffic bottlenecks and safety hazards in the region's service centers.
6. Encourage municipal coordination with adjacent municipalities to recognize the important link between land use and transportation mobility.
7. Integrate Complete Streets considerations more thoroughly into project selection evaluation and funding, to ensure that prioritized projects are those that do the most to meet a comprehensive set of regional goals that include safety, public health and equity.
8. Promote land use policies that are supportive of alternative modes such as Transit Oriented Developments (TOD), and mixed use developments.
9. Implement strategies to adapt for or attract in-migration of non-native residents to the area.

6.9 Penobscot Climate Action Plan

Policy

1. Institute recommendations from Penobscot Climate Action Plan
2. Monitor climate effects and weather vulnerability on infrastructure.
3. Incorporate climate vulnerability criteria into project selection, design, specifications.
4. Promote sustainability in local programs and projects.
5. BACTS will support the Penobscot Climate Action Plan recommendations, however possible, including through capital projects, programs, policies, studies, and outreach to local stakeholders.

6.10 Fiscal Constraint

Policy

1. Seek increased funding for transportation projects in the BACTS area from all possible funding sources including MaineDOT, FHWA, FTA, Federal BUILD and INFRA grants.
2. Work with MaineDOT to seek innovative techniques for transportation projects to extend project life.


BANGOR
WANTS YOU
CALLING ALL CREATIVE PEOPLE!