Maine State Active Transportation Plan

DRAFT

vhb MaineDOT

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Appendices (saved in separate document)

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Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
ADA	Americans with Disabilities Act
AT	Active Transportation
AT Plan	*Maine State Active Transportation Plan*
ATRC	Androscoggin Transportation Resource Center
ATV	All-terrain vehicle
BACTS	Bangor Area Comprehensive Transportation System
BCM	Bicycle Coalition of Maine
BIL	Bipartisan Infrastructure Law
CDC	Centers for Disease Control and Prevention
CHIP	Collector Highway Improvement Program
COVID-19	Coronavirus Disease 2019
DACF	Maine Department of Agriculture, Conservation and Forestry
DOT	Department of Transportation
ECG	East Coast Greenway
EJ	Environmental justice
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
GDP	Gross domestic product
HCP	Highway Corridor Priority
HPAT	High-Priority Active Transportation
KACTS	Kittery Area Comprehensive Transportation System
LED	Light-emitting diode
LD	Legislative Document
LRTP	Long-Range Transportation Plan
MaineDOT	Maine Department of Transportation
MnDOT	Minnesota Department of Transportation
MP	Mile point

MPH	Miles per hour
MPO	Metropolitan Planning Organization
PACTS	Portland Area Comprehensive Transportation System
PennDOT	Pennsylvania Department of Transportation
PIMA	Public Involvement Management Application
PM	Performance measure
PPI	Planning Partnership Initiative
PROWAG	Public Right-of-Way Accessibility Guidelines
ROW	Right-of-way
RPA	State Railroad Preservation Act
RPO	Regional Planning Organization
RR	Railroad
RRFB	Rectangular rapid-flashing beacon
RUAC	Rail Use Advisory Council
RWT	Rail-with-Trail
SHSP	Strategic Highway Safety Plan
SMPDC	Southern Maine Planning and Development Commission
SUV	Sport utility vehicle
TUR	Trail-until-Rail
VMT	Vehicle-Miles Travelled
VPI	Village Partnership Initiative
VTrans	Vermont Agency of Transportation
U.S.	United States of America
USBR	United States Bicycle Route
USDOT	United States Department of Transportation

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Executive Summary

The first-ever *Maine State Active Transportation Plan* (*AT Plan*) assesses the current state of active transportation (AT) in Maine, identifies and evaluates the state's goals, and proposes an implementation plan to achieve those goals. The plan will enable MaineDOT to enhance safety and accessibility throughout the Pine Tree State.

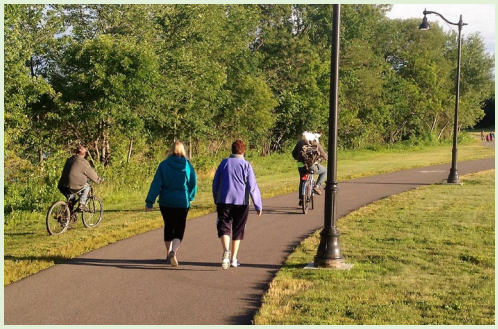
The AT Plan serves as a guide for state agencies, Metropolitan Planning Organizations, Regional Planning Organizations, Tribes and Nations, municipalities, and advocacy groups to work together to accommodate pedestrians, bicyclists, and other AT users in a coordinated and holistic manner within available resources.

The plan provides an opportunity to significantly enhance AT infrastructure and programs for people of all abilities in Maine. Three critical questions framed the year-long planning process and helped structure the AT Plan:

- Where are we now?
- Where do we want to be?
- How do we get there?

What is Active Transportation?

Active transportation includes human-powered modes of transportation—walking, bicycling, skating, skateboarding, operating a wheelchair or other mobility device, cross-country skiing, and snowshoeing. Some exceptions include small-scale electric vehicles such as electric bikes and electric scooters.



Bangor Waterfront Trail

Where are we now?

To understand the current context for AT in the State of Maine, the planning team assessed existing conditions related to walking, rolling, and bicycling: current programs, policies, and AT infrastructure—sidewalks, road crossings, bicycle lanes, shoulders, and multiuse trails. The assessment included MaineDOT's current safety efforts; a review of existing bicycle education programs; efforts to promote equity; and an inventory of existing multiuse trails, paths, and inactive state-owned rail corridors that could potentially be used for interim trail use.

Current Practices and Programs

One aim of the AT Plan is to understand how existing policies, plans, funding, design guidance, and procedures benefit—or sometimes hinder—the development of AT infrastructure. Many of these are items that have positively received or have demonstrated successful outcomes, and MaineDOT will continue implementing them while also finding areas for improvement. Highlights of current or recently completed MaineDOT efforts related to AT include:

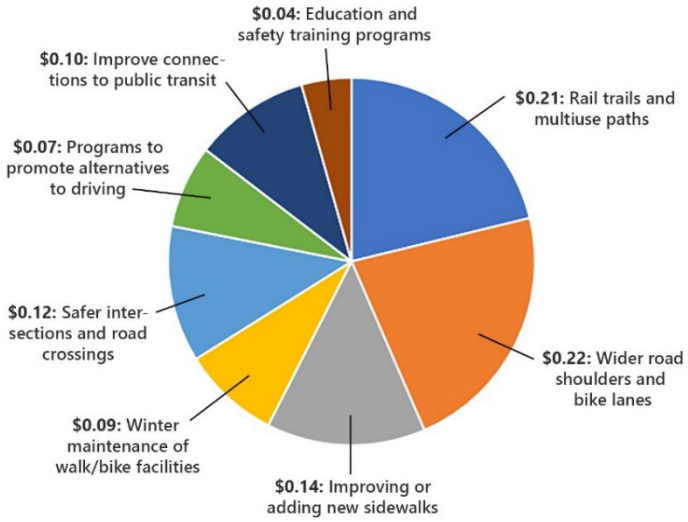
- Updating the MaineDOT Complete Streets Policy (anticipated for 2023).
- Continued contracting with the Bicycle Coalition of Maine (BCM) on AT safety education, including 4,400 activities with more than 200,000 participants.
- Conducting the Heads Up! Pedestrian Safety Planning Initiative from 2017-2022, focusing on 21 high-population/high-crash-incidence communities.
- Increasing support for low-cost traffic calming to reduce motor vehicle speeds and pedestrian safety visibility-enhancing projects.
- Identifying dedicated funding for the bicycle/pedestrian program.
- Providing "on-bike training" and Americans with Disabilities Act (ADA) experiential training to MaineDOT staff.

Where do we want to be?

Informed by the assessment of existing conditions, feedback from the general public, and best practices from other states, Maine's numerous AT needs were identified and placed into eight overarching categories. The needs assessment includes a more in-depth review of two overarching types of needs: on-road and off-road.

Public Input

MaineDOT received more than 2,000 comments through four public meetings, 12 stakeholder interviews, and an online input map and survey. One survey question asked participants how they would distribute $1.00 to improve AT in Maine, with results shown on the left.



Active Transportation Need Categories

- General Programs and Policies
- Complete Streets and Trails
- Local Cost-sharing
- Public Transit
- System Equity
- Maintenance
- Roadway Design
- AT Programs

On-Road Active Transportation System Needs

In much of Maine, especially in rural areas, the existing highway system lacks significant AT facilities. There are a wide variety of AT improvements that have been identified as important for Maine people, especially in more populated areas, such as improved sidewalks, improved crossings, and reduced speeds. The primary constructive feedback MaineDOT has heard related to our sidewalk improvement program is the desire to increase funding and reassess both cost-sharing and winter maintenance polices, but many of the comments regarding the application process for sidewalks and other on-road improvements were favorable. These needs are being further addressed through the Village Partnership Initiative (VPI), which will provide funding for both small, spot improvements as

well as major, transformative changes to AT infrastructure in Maine's villages and downtowns. However, based on additional feedback related to on-road AT improvements, MaineDOT recognizes the need for a greater focus on shoulder improvements to primarily rural highways and improvements between rural and village or urban areas.

In many rural areas, paved shoulders along existing roadways can provide an important, basic facility for people walking, bicycling, or rolling where a sidewalk or multiuse pathway may not be feasible. In many cases, shoulders of at least four feet can provide additional space for AT users and for motorists pulling over to the side of the road. Although narrow rights-of-way, environmental conditions, and topographical constraints can provide a challenging context, wider shoulders are possible on many of Maine's Highway Corridor Priority (HCP) 3 and some HCP 4 roadways—lower-traffic minor arterial and collector roads. Wider shoulders would be especially valuable where current and latent demand for bicycling is high. Identifying these areas will help MaineDOT to develop a listing of "High-Priority Active Transportation" (HPAT) highway corridors to prioritize for shoulder paving efforts as a part of the MaineDOT Regional Program's efforts.

Off-Road Active Transportation System Needs

In addition to the on-road system, the AT Plan also identifies a need to expand the off-road trail system in Maine. In 2022, a coalition of AT and recreational trail advocacy groups published Maine Active Transportation Arterials, which proposed an off-road trail network connecting 25 of Maine's largest cities. Building on this vision, as well as on other trail proposals throughout Maine, will be important for MaineDOT to develop a network of HPAT trail corridors to prioritize for development, given available resources.

Some state-owned, inactive rail corridors can be used for AT purposes either as rail-with-trail or as an interim trail-until-rail, depending on the Rail Use Advisory Council process (including local preferences) and legislative approval. Four corridors were evaluated and prioritized for potential implementation (see map at right). Anticipated trail use and estimated costs for both rail-with-trail and interim trail options were included, resulting in these priorities if these corridors were to be developed for AT use following the RUAC process:

1. **Berlin Subdivision Corridor** from Portland to Auburn (26.5 miles)
2. **Lower Road Corridor** from Brunswick to Augusta (25.9 miles)
3. **Mountain Division Line** from Gorham to Fryeburg (31.0 miles)
4. **Calais Branch Line** from Ayers Junction to Calais (13.0 miles)

How do we get there?

Goals and Implementation Strategies

Goal 1: Make prioritized, cost-effective improvements to the on-road AT network

- Strategy 1A: Improve AT in villages and downtowns.
- Strategy 1B: Improve AT on rural roads by paving shoulders along High-Priority AT corridors.
- Strategy 1C: Assess speed limits and identify opportunities to adjust road design.

Goal 2: Make prioritized expansions to the off-road AT network, given available resources

- Strategy 2A: Develop a list of High-Priority AT trails and begin building out the network.
- Strategy 2B: Pending community feedback and legislative approval, develop HPAT trails along some state-owned, inactive rail corridors.

Goal 3: Enhance multimodal connections for all Maine people

- Strategy 3A: Increase AT access to multimodal connections.
- Strategy 3B: Provide additional consideration for underserved communities.

Goal 4: Improve AT education and outreach efforts

- Strategy 4A: Support regions, Tribes and Nations, and municipalities in their AT planning, implementation, and maintenance efforts.
- Strategy 4B: Continue AT education and outreach efforts directed at all transportation system users.

Goal 5: Identify and pursue new funding opportunities

- Strategy 5A: Continue existing funding.
- Strategy 5B: Explore and pursue new and expanded funding opportunities.
- Strategy 5C: Review local match policy.

Active Transportation Vision

MaineDOT will maintain, improve, and expand safe AT options statewide by leveraging investments in infrastructure to improve pedestrian and bicyclist safety; expand mobility; support economic development; reduce greenhouse gas emissions; and enhance community vibrancy, quality of life, and public health for Maine people and visitors alike. MaineDOT envisions an AT system that:

1. *Supports and improves people's quality of life and ability to access jobs, education, businesses, healthcare, essential services, social/recreational opportunities, and other destinations;*
2. *Can serve as a first- and last-mile connection to other modes of transportation;*
3. *Is accessible to all Maine people and visitors; and*
4. *Can serve as an integrated, safe, and connected system regionally and statewide.*

A robust AT system statewide will support the Maine Climate Action Plan and the Maine Economic Development Strategy 2020-2029 and enhance the vibrancy of Maine's cities, quintessential villages, and rural areas.

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Introduction

The first-ever *Maine State Active Transportation Plan* (*AT Plan*) assesses the current state of active transportation (AT) in Maine, identifies and evaluates the state's goals, and proposes an implementation plan to achieve those goals. Applicable to municipalities, metropolitan planning organizations (MPOs), regional planning organizations (RPOs), and other stakeholders, the AT Plan will enable MaineDOT to enhance safety and accessibility for bicyclists and pedestrians throughout the state. This strategic effort, originally proposed and led by MaineDOT, is in accordance with Resolves 2021, Ch. 61, "Directing the Department of Transportation to Develop and Adopt an Active Transportation Plan," which was passed by the Maine State Legislature and signed by the Governor on June 15, 2021.

The AT Plan is one of four statewide modal plans—along with the Maine State Transit Plan (Transit Plan), the Maine State Rail Plan (Rail Plan), and the Maine State Aviation System Plan Phase II (Aviation Plan)—developed as a part of MaineDOT's "Family of Plans" in coordination with Maine's Long-Range Transportation Plan (LRTP) and other MaineDOT planning efforts, such as the Strategic Highway Safety Plan (SHSP).

MaineDOT's Mission

The Family of Plans provides the necessary direction and priorities for MaineDOT to achieve its mission:

To support economic opportunity and quality of life by responsibly providing our customers the safest and most reliable transportation system possible, given available resources.

The *AT Plan* features a summary of more than 2,000 comments received during plan development, including from four public meetings, 12 stakeholder meetings, an online survey, and an online comment form. It uses this feedback and a review of existing conditions, current programs, and policies to identify high-level AT needs for Maine's multimodal transportation system. Based on this, the *AT Plan* presents a vision for AT in Maine. It also provides a set of goals for MaineDOT to achieve, and a series of strategies to implement in order to reach those goals.

The *AT Plan* serves as a guide for state agencies, RPOs, MPOs, Tribes and Nations, municipalities, and advocacy groups to work together to accommodate pedestrians, bicyclists, and other AT users in a coordinated and holistic manner within available resources. AT includes "human-powered modes of transportation"—walking, bicycling, skating, skateboarding, operating a wheelchair or other mobility device, cross-country skiing, and snowshoeing. Some exceptions include small-scale electric vehicles such as e-bikes and e-scooters. The AT programs, policies, and facilities recommended in the *AT Plan* will improve the quality of life and economic opportunity for Maine residents and visitors. With the phased implementation of the recommendations, the many benefits of an improved environment for AT will become clear: new human-powered travel options, improved public health outcomes, mitigation of air pollution, reduction of traffic congestion, and new economic development opportunities (e.g., recruiting new businesses and employees to a state that puts even more emphasis on active living and environmental stewardship).

The *AT Plan* is an action-oriented document designed to help bridge the gap between current conditions; what residents and visitors envision for safe, comfortable, and connected AT facilities; and the policies and programs that support them. The plan provides strategies—including programs, policies, and projects—

AT Case Study #1: Augusta Downtown Street Redesign

The Augusta Downtown Street Redesign converted Water Street--the main commercial corridor in downtown Augusta--from a one-way to a two-way traffic flow. In addition to the new traffic pattern, the project also included improvements to parking, lighting, and accessibility along Water Street and the parallel one-way Commercial Street. The $2.2-million project was carried out by the City of Augusta with the support of MaineDOT.

This project, completed in 2020, has had a significant positive impact on downtown Augusta. Providing a two-way traffic pattern shifts the purpose of the road from moving people through downtown as quickly as possible to maximizing accessibility to downtown shops and restaurants. Community feedback has indicated that since the project there has been an increase in activity and new businesses opening along Water Street.

<u>Key Takeaways:</u>

- Changing the design of downtown streets, even over relatively small distances, can have an important impact on the character of an area.
- When appropriate, it is important to assess whether legacy roadway designs or traffic patterns that may have once served an important purpose remain relevant.

within the context of the state's current fiscal constraints. Strategies that may have significant fiscal impacts have been carefully considered to ensure the best use of available funds. This is Maine's first statewide plan of this type and provides an opportunity to significantly enhance walking, bicycling, and rolling for people of all abilities in the Pine Tree State.

2.1 MaineDOT Guiding Principles

Originating from a desire to deliver achievable results, MaineDOT uses a set of practical guiding principles which frame how MaineDOT planning, development, implementation, and operations will be conducted. These three guiding principles require a department-wide, conscientious effort to center strategies and actions.

- **Meet customers where they are.** Commit to pursuing equitable solutions that best address the diverse needs of all users of Maine's transportation system.
- **Be responsible stewards by making reasoned, long-term decisions.**
    - Serve as responsible stewards of the funds entrusted to MaineDOT by seeking the most cost-effective solutions to demonstrated transportation needs.
    - Make reasoned, fact-based decisions including those relating to system and asset management; resource allocation; and the selection, scoping, and development of projects.
    - Consider long-term benefits and costs of transportation investment, including the need for ongoing funding for operations and maintenance.
- **Improve continuously and embrace the future.**
    - Be open to new ideas, best practices, and technologies that will result in continuous and sustainable improvement.
    - Anticipate and meet future transportation needs - including the transition to cleaner transportation – through thoughtful study and pragmatic implementation, including pilots when feasible.

2.2 Summary of the AT Plan Process

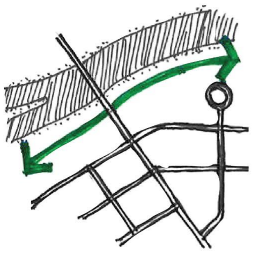
The *AT Plan* process focused on answering three primary questions related to AT conditions in Maine:

1. Where are we now?
2. Where do we want to be?
3. How do we get there?

The public engagement and input process helped to respond to all three questions. Input from the multiple stakeholder meetings, public meetings, the *AT Plan* survey, and from MaineDOT's Public Involvement Management Application (PIMA) site provided the direction the consultant team needed to move forward with the plan. This feedback helped inform the analysis of current conditions and recommendations for programs, policies, and infrastructure projects. The infographic on the following page highlights the public input—along with the research and analysis—that enabled the planning team to answer the three foundational questions above.

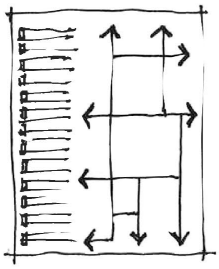
Active Transportation Plan Overview Graphic

Where are we now?



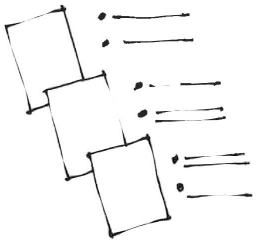
AT Facilities

- Multiuse trails
- Sidewalks
- Shoulders/bike lanes



GIS Data Analysis

- Shoulder widths
- Network gaps
- Crash analysis



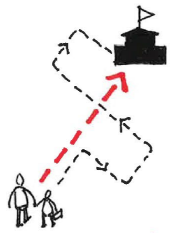
Current AT Policies

- Complete Streets
- Project development & review
- Education programs

Where do we want to be?

Vision Statement

- Active transportation in 2050
- Supportive goals
- Coordination with other MaineDOT modal plans



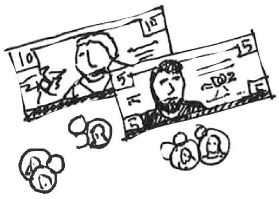
Remove Barriers

- Sidewalk gaps
- ADA accessibility
- Discontinuous and/or narrow shoulders

Safe System

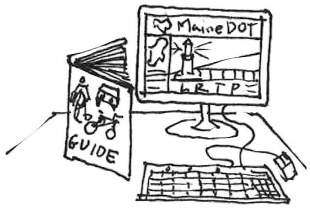
- Lower traffic speeds
- Complete streets
- Improved intersections

How do we get there?



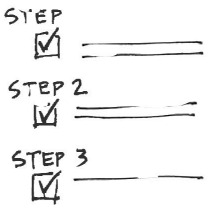
Prioritize Investments

- On-road
- Off-road
- Multimodal connections



Outreach & Education

- Work with stakeholders
- Geographic equity
- Education for all users
- All ages and abilities



Implementation Strategy

- Goals and strategies
- Funding sources
- State and local cooperation

PUBLIC INPUT

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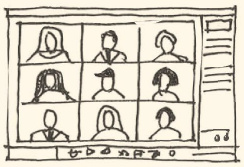
STAKEHOLDER MEETINGS



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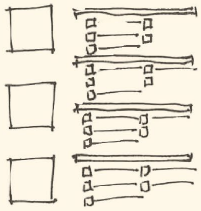
PUBLIC MEETINGS



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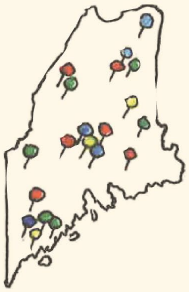

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MAINEDOT PIMA SITE COMMENTS

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Benefits of Active Transportation

AT infrastructure provides a low-cost transportation option and creates opportunities for increased exercise and improved quality of life.AT infrastructure has also increased local investment in outdoor recreational tourism and employment. Currently, a modest but growing network of trails in Maine allows people to walk, bike, hike, run, or cross-country ski. In urban and village areas, striped bike lanes, sidewalks, and shoulders provide complementary facilities. The following are some of the economic, transportation, and environmental benefits that greenways, interim trails along inactive rail corridors, and on-road AT facilities corridors can offer communities throughout Maine.

Economic Spillover From Trails

A report on the economic impact of the Eastern Trail found that there were significant economic impact from trail investments.

One-time trail building impacts for every $1 million invested:

- 13 jobs statewide
- $903,000 in earnings statewide
- $1.8 million in sales statewide
- $19,000 in sales tax

For every 1,000 new trail users on newly built trail:

- 2 jobs statewide
- $103,000 in earnings statewide
- $266,000 in sales statewide
- $8,500 in tax revenue statewide

Source: Camoin Associates, Eastern Trail Economic Impact for Newly Built Trail, *2021,* Nov2021ETEconomicImpactReport.pdf (easterntrail.org)

3.1 Economic Benefits of Trails

In 2019, outdoor recreation employed almost 5.2 million people nationwide, generating more than $226.3 billion dollars in economic activity.[1] In 2020, Maine ranked as one of the top five states in the contribution of outdoor recreation to gross domestic product (GDP).[2] Furthermore, Maine's outdoor recreation economic activity has contributed $3 billion to Maine's GDP and created 41,000 jobs.[3][4] Though specific data are not currently available, it is evident

[1] U.S. Bureau of Economic Analysis, "Outdoor Recreation," 2019, Outdoor Recreation | U.S. Bureau of Economic Analysis (BEA)

[2] U.S. Bureau of Economic Analysis, "Outdoor Recreation Satellite Account, U.S. and States, 2020," November 9, 2021, Outdoor Recreation Satellite Account, U.S. and States, 2020 | U.S. Bureau of Economic Analysis (BEA)

[3] Maine Department of Agriculture, Conservation & Forestry, *2020-2024 Maine State Comprehensive Outdoor Recreation Plan*, December 2019, 2020_ME_SCORP_final_1_2_2020.pdf (maine.gov)

[4] Headwaters Economics, "The Outdoor Recreation Economy by State," November 2021, The Outdoor Recreation Economy by State - Headwaters Economics

that a good portion of outdoor recreation in Maine—and the economic spin-off that comes with it—is due to visitors and residents walking, hiking, bicycling, cross-country skiing, or snowmobiling on trails.

The National Association of Realtors supports studies indicating that living near trails and greenways likely raises property values by an average of 3-5 percent and sometimes upwards of 15 percent.[5] The 2022 Mountain Division Trail Feasibility Study further supported this trend by analyzing property values within the four towns along the proposed interim trail and found a total estimated increase in property values of over $11 million dollars.[6]

Tourism

Trails throughout Maine have drawn visitors of all abilities from neighboring states and throughout the U.S. to contribute to Maine's local economy. In a 2018 Annual Report, the Maine Office of Tourism showed that 23 percent of visitors coming to Maine for overnight leisure trips traveled to engage in outdoor recreation.[7] Communities next to trails have also reported new openings of tourism-related businesses, such as restaurants and lodging facilities, and increased business sales volumes following the trail's opening.[8]

In a hypothetical analysis of the expansion of the Eastern Trail in Maine, Southern Maine Planning and Development Commission's (SMPDC's) report indicated that each new trail user could spend $118 per trip to the trail. While many locals may take a bike ride or walk along the trail without spending money, the $118 figure is an average that includes visitors who spend money on lodging, food, retail goods, and equipment before, during, or after using the Eastern Trail. Per the SMPDC's 2021 Economic Impact of the Eastern Trail by Camoin Associates, the trail brings many annual benefits to the SMPDC Region, such as:

- 223 jobs with $7.6 million in earnings
- $19.6 million in retail/service industry sales
- $598,000 in property tax revenue[9]

3.2 Health Impacts and Benefits

In 2022, the estimated annual medical cost of obesity and related chronic diseases cost employers up to $93 billion per year in health insurance claims.[10] In 2020, the state of Maine had a 34.8 percent prevalence of self-reported obesity from Non-Hispanic Black adults, 31 percent prevalence from Non-

[5] National Association of Realtors, "Trails and Greenways, Quick Takeaways," accessed December 21, 2022, Trails and Greenways (nar.realtor)

[6] HNTB, *Mountain Division Feasibility Study: Potential Uses and Economic Benefits*, prepared for MaineDOT, May 2022, https://www.maine.gov/mdot/ofps/docs/mdrcc/HNTB_Mtn%20Div%20Feasibilty%20Study_2022-05-09.pdf

[7] Maine Office of Tourism, *Visitor Tracking Research 2018 Calendar Year Annual Report,* April 2019, Maine Office of Tourism Visitor Tracking Research 2018 Calendar Year Annual Report (motpartners.com)

[8] The Economic Impact of Greenways and Multi-use Trails, John McDonald and Laura Brown, 2015, p.13 https://cdn2.assets-servd.host/material-civet/production/images/documents/The-Economic-Impact-of-Greenways-and-Multi-Use-Trails.pdf

[9] Camoin Associates, *Eastern Trail Economic Impact for Newly Built Trail,* 2021, Nov2021ETEconomicImpactReport.pdf (easterntrail.org)

[10] National Association of Chronic Disease Directors, *Nutrition, Physical Activity & Obesity, FY22 Appropriations Fact Sheet, Centers for Disease Control and Prevention*, NACDD-Fact-Sheet-2022_DNPAOFINALv3.pdf (chronicdisease.org)

Hispanic White adults, and 28.2 percent prevalence among Hispanic adults.[11] The CDC also recently reported Maine's inactivity rate at 24.8 percent.[12]

AT infrastructure offers significant opportunities to counteract the impacts of inactivity. A 2014 American Trails study indicated people living within a mile of a new trail engaged in an average of 45 minutes more exercise a week after the trails were built than before they had that available infrastructure.[13]

3.3 Connectivity Benefits

The Waterfront Trail provides a critical recreational and transportation resource in Bangor

Trails, sidewalks, and on-road AT facilities are important elements for a seamless multimodal transportation system. Per the 2017 National Household Travel Survey, roughly 21 percent of all trips are one mile or less, and about 46 percent are three miles or fewer.[14] More-robust AT facilities can accommodate a larger share of these short trips and can help connect people to jobs, education, recreational and essential services such as groceries or medical facilities, and other transportation routes. With increased connectivity to trails and other AT facilities, residents can spend less on vehicle maintenance, fuel, and roadway repair. Instead, residents can experience a shared-use path with increased safety, access, and reduced transportation costs.

Filling in Maine's portion of the East Coast Greenway (ECG) could complete a 350-mile corridor from Calais to the New Hampshire line at Kittery. The ECG offers the potential to provide enhanced AT connectivity between dozens of cities and towns along the route, enhancing transportation and recreational opportunities for hundreds of thousands of Maine people. When complete, more than 80 percent of the route in Maine will be off-road—up from 39 percent today—according to the ECG Alliance.

3.4 Environmental Benefits

AT facilities provide the opportunity for human-powered transportation as an alternative to driving a motor vehicle for a commuter trip or to run errands. Transportation is responsible for approximately 54 percent of greenhouse gas emissions, the single largest source of climate-changing air pollution in Maine.[15] Creating trails that connect homes to jobs and people to services permits the expansion of

[11] U.S. Centers for Disease Control and Prevention, "Adult Obesity Prevalence Maps," September 2022, NACDD-Fact-Sheet-2022_DNPAOFINALv3.pdf (chronicdisease.org)

[12] U.S. Centers for Disease Control and Prevention, "Adult Physical Inactivity Prevalence Maps by Race/Ethnicity," January 2022, Adult Physical Inactivity Prevalence Maps by Race/Ethnicity | Physical Activity | CDC

[13] Anna Goodman, Shannon Sahlqvist, David Ogilvie, and on behalf of the iConnect Consortium, 2014:
New Walking and Cycling Routes and Increased Physical Activity: One- and 2-Year Findings From the UK iConnect Study
American Journal of Public Health 104, e38_e46, https://doi.org/10.2105/AJPH.2014.302059

[14] U.S. Federal Highway Administration, *National Household Travel Survey,* 2017, National Household Travel Survey (ornl.gov)

[15] Maine Climate Council, *Maine Wont' Wait*, December 2020, https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/MaineWontWait_December2020.pdf

carbon-free transportation options such as walking, biking, or the use of appropriate electronic bicycles (e-bikes) or other appropriate micromobility devices (small, lightweight, sometimes-electric vehicles).

In 2020, Maine unveiled a four-year Climate Action Plan, "Maine Won't Wait," which aims to decrease greenhouse gas emissions in the state by 45 percent by 2030, by 80 percent by 2050, and achieve carbon neutrality by 2045. A 20-percent reduction of vehicle-miles traveled by 2030 is one of the transportation goals listed in the Plan.[16]

[16] Ibid.

4

Public Engagement

As a component of the larger Family of Plans, the *AT Plan* featured a comprehensive public engagement process. MaineDOT reached dozens of key stakeholders during 12 distinct meetings and hundreds of members of the public at four public meetings, during web interactions, and through an online survey. MaineDOT received more than 2,000 total comments, many of which are summarized later in this chapter. More detailed information can be found in the MaineDOT *LRTP* Appendix C.

4.1 Public Meetings

Four online public meetings were held between March and June 2022 to present the vision, objectives, and themes for the *AT Plan*. Nearly 500 Maine people were able to participate during the live webcasts of the meetings, verbally and through group chat.

These meetings helped the *AT Plan* team understand the critical issues facing AT users in Maine and hear ideas for potential improvements.

4.2 Stakeholder Meetings

A series of 12 stakeholder and expert meetings were organized, providing a diverse set of organizations to provide input on AT needs throughout Maine. Key stakeholders included:

- Environmental and smart-growth organizations.
- Staff and board members from the Bicycle Coalition of Maine (BCM).
- Trail advocates.
- Metropolitan and Regional Planning Organizations (MPOs and RPOs).
- Age-friendly and disability-rights advocates.
- Organizations supporting people experiencing homelessness.
- Public health and safety organizations.
- Pedestrian or bicycle advisory committees.
- Social justice advocates.
- Staff from Tribes and Nations.
- MaineDOT leadership and technical experts.

4.3 Key Meeting Takeaways

Participants in the public process wanted:

Infrastructure

- Safer and more **separated roadway facilities** for pedestrians and bicyclists.
- A strong desire for **more pedestrian and bicycle off-road trails** in the state and for completing gaps in regional trails.
- Continued desire to leverage the high benefit-to-cost ratio of **quick-build pilot projects** that allow MaineDOT and municipalities to experiment with some AT facility designs.
- Additional **AT facilities and transit access** are needed in communities with a high number of people experiencing homelessness or those without access to a private automobile.

Traffic Calming

- Slowing traffic will encourage more AT use and increase safety. The biggest concern for many is **speeding traffic**; revisiting speed limit procedures and roadway design guidelines to slow traffic was of paramount concern to some.
- **Calming of high-speed rural highway traffic** on the approaches to urban areas and village centers with the anticipation that the Village Partnership Initiative (VPI), a program focused on helping municipalities revitalize village centers and improve safety and accessibility for all users, can help to mitigate the challenges.

Programs and Policies

- The need for **more education** for all transportation system users regarding driver behavior around pedestrians and bicyclists.
- The **impact of ATVs on multiuse trails** from noise, speed, safety, and environmental/erosion perspectives.
- A desire for **enhanced communication** between MaineDOT and MPO/RPO representatives regarding AT policies, funding, programming, and prioritization to facilitate timely project planning and construction processes.
- Improved **sidewalk maintenance**, especially snow clearance, by local public works departments will provide a more accessible system.
- The ongoing desire by MaineDOT to **institutionalize AT planning and design** among a broader range of staff.
- Walking, bicycling, and rolling can be encouraged for people of all abilities with **more effective traffic enforcement** and education efforts.

Prompting Questions

At both stakeholder meetings and in break-out rooms at the public meetings, participants were asked a series of prompting questions including:

- How does AT fit into the scope/mission of your group or as an individual? How might the MaineDOT state AT Plan influence your organization's mission or your personal behavior?
- What are barriers to people walking, rolling, or bicycling, and what do you think would change that?
- What types of policies, programs, and facilities should MaineDOT focus effort and potential funding on?

› Signage and safety education efforts should **consider other languages besides English**, especially in parts of the state with significant numbers of limited English-speaking households.[17]

4.4 Online Input Tools

An online input strategy that included MaineDOT's Public Input Management Application (PIMA) site, and the *AT Plan* survey supplemented the stakeholder meetings and public meetings.

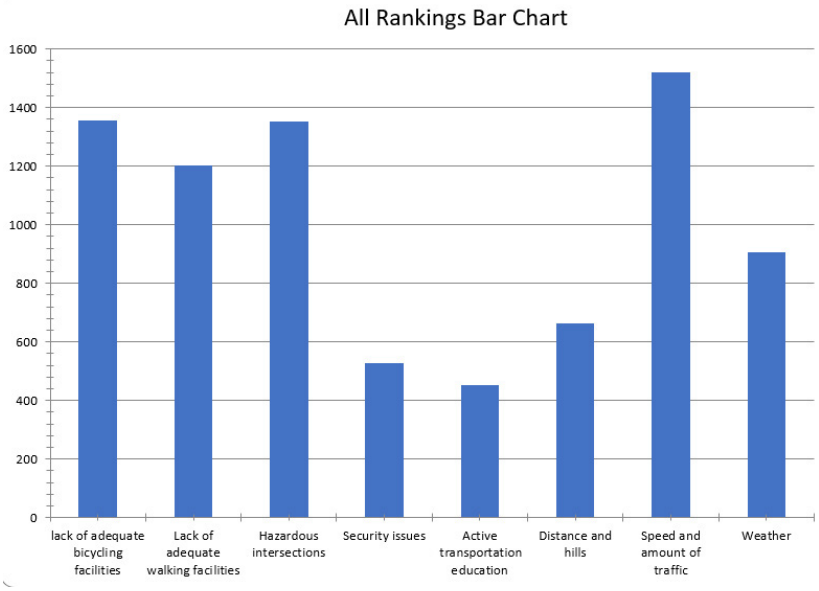
MaineDOT PIMA Site

MaineDOT developed the PIMA site for the *LRTP* process; it included links to the four modal plans. The PIMA site provided the opportunity for community members to learn about the *AT Plan* through an introductory video narrated by MaineDOT staff and included links to the scope of work and other relevant websites. Participants were able to provide their demographic information and make general comments on an online input map. At the end of the public input process, all comments were categorized and sorted into common themes. The latter helped the AT Plan planning team recognize important on-road and off-road corridors in Maine with the potential for improved AT facilities.

AT Plan Survey

MaineDOT created the *AT Plan* survey to seek information from residents about AT conditions throughout the state and to provide feedback about potential enhancements. The survey received 1,667 responses between February and June 2022. Responses provided feedback on the most significant barriers to AT, mitigation strategies to overcome the barriers to AT, and the public's preferences for distributing funding for various mitigation strategies. Highlights of the survey results include:

Figure 1—Barriers to AT Survey Rankings



› Of the top five barriers to walking, bicycling, and rolling in the state, "speed and amount of traffic" (~1500 responses), "lack of adequate bicycling facilities" (~1350), "hazardous intersections" (~1350), and "adequate walking facilities" (~1200), were identified as the most significant with "weather," "distance and hills," "security issues," and "AT education" much further behind.

[17] According to the U.S. Census Bureau's American Community Survey (2020 5-year average), the five Maine counties with the highest percentage of limited English-speaking households: Aroostook (18.6%), Androscoggin (12.7%), York (10.8%), Cumberland (8.6%), and Washington (7.3%)—with rates in the other counties ranging from Kennebec (6.7%) to Franklin (3.7%).

› Survey participants were asked to rank the anticipated effectiveness of a series of mitigation strategies in addressing each barrier. Scores of one to five stars were allowed, with five stars indicating high confidence in success.

- **Speed and the amount of traffic:** Approximately 850 respondents thought "trails and paths" and roughly800 thought "shoulders and bike lanes" would be the most effective mitigation strategies and deserved five-star designations.
- **Lack of adequate bicycling facilities:** Nearly 800 respondents thought "multiuse paths" and roughly 700 thought "paths along inactive rail corridors," "wider shoulders," and "bike lanes" would be the most effective mitigation strategies and deserved five-star designations.
- **Hazardous intersections:** Roughly 460 respondents thought "traffic signals" and approximately 360 thought addressing "turning radius and/or bump-outs" would be the most effective mitigation strategies and deserved five-star designations.
- **Adequate walking facilities:** Each of the proposed mitigation strategies—new sidewalks, road shoulders, paths, sidewalk improvements, and crosswalks at high density locations—received a roughly equal number of five-star scores.
- **Weather:** Approximately 350 respondents thought "better facility maintenance" would far-and-away be the most effective mitigation strategy and deserved a five-star designation. All other options received mixed reviews with a mix of scores one through five stars.
- **Distance and hills:** Roughly 280 respondents thought "comfortable routes" and about 270 thought "public transit" would be the most effective mitigation strategies and deserved five-star designations.
- **Security issues:** Roughly 200 respondents thought "pedestrian safety" and approximately 170 thought "traffic enforcement" would be the most effective mitigation strategies and deserved five-star designations.
- **AT education:** A little more than 200 respondents thought "education for all road users" and approximately 170 and 160 thought "AT maps" and "school safety education," respectively, would be the most effective mitigation strategies and deserved five-star designations.

› Finally, when participants were asked to distribute $1.00 to improve AT in Maine, the average total committed for AT facilities was $0.69. Preferences for the other $0.31 included non-infrastructure improvements such as winter maintenance, programs to promote alternatives to driving, improved connections to public transit, and education and safety training programs.

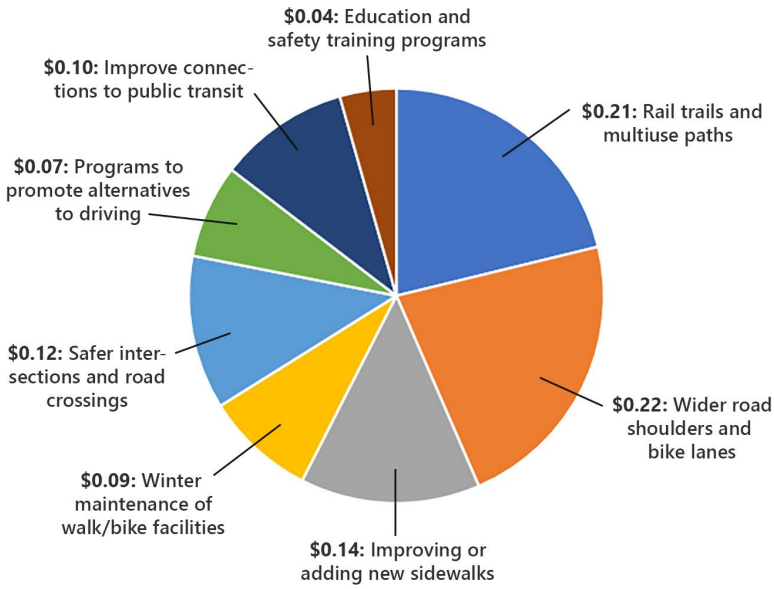


Figure 2—AT Spending Priorities per AT Plan survey

5

Existing Conditions

The assessment of existing conditions includes a review of current programs, policies, and infrastructure relevant to AT in Maine. The assessment features current safety efforts by MaineDOT, a review of existing bicycle education programs, efforts to promote equity, and an inventory of existing multiuse trails; paths; and inactive, state-owned rail corridors that could potentially be used for interim trail use.

AT Case Study #2: Brewer Riverwalk

MaineDOT partnered with the City of Brewer to construct the Brewer Riverwalk in two phases from 2012 to 2018. It is a non-motorized, shared-use path along the Penobscot River with connectivity to Bangor across the Chamberlin Bridge and the renowned Children's Garden. The Brewer Riverwalk has directly supported commercial and residential improvements along the Penobscot River. It provides recreation activities for residents and visitors while enabling users to reduce vehicle trips by accessing many destinations and recreational activities without vehicle trips. Because the path is fully separated from motor vehicle traffic, it provides a safe option for all users.

More information on the project history and importance to the local community is available at https://brewermaine.gov/community/riverwalk-trail/.

Key Takeaways:

- In addition to their transportation utility, pathways can support residential and commercial redevelopment efforts, supporting local economic development.
- Multiuse paths can help to greatly enhance existing community resources, such as underutilized waterfront areas.

AT Facilities in Maine

All over the state, MaineDOT and municipalities have improved AT facilities in cities, villages, and rural areas. These improvements typically include sidewalks, road crossings, bike lanes, shoulders, and multiuse trails.

- **Sidewalks:** Typically five-feet wide to meet accessibility standards, sidewalks provide a dedicated space for pedestrian travel adjacent to a roadway or separated by a grass buffer. In downtown areas and business districts with high levels of pedestrian activity, eight-to-12-foot-wide sidewalks are the preferred width.
  - *Needs: Sidewalk repair and closing of gaps with new accessible sidewalks in cities, villages, and rural areas throughout the state.*

Marginal Way crosswalk and median island, Portland

- **Road Crossings:** Pedestrian access across roads is usually provided by striped crosswalks. Additional measures such as flashing beacons, signage, raised crossings, accessible curb ramps, and refuge islands/medians can improve safety and accessibility on four-lane roads or where traffic volumes and speeds are high.
  - *Needs: Crosswalks are non-compliant or lacking on state roads in some urban areas and villages; others should be reviewed to determine if they require additional safety countermeasures.*
- **Bicycle Lanes:** These lanes are a designated space for bicycles along the edge of a roadway using line striping, stencils, and signs. Some include painted buffers for additional separation between modes.
  - *Needs: Where space allows and where a sidewalk is present, designating shoulders as bike lanes can encourage bicycling.*

Route 1 bike lane, Ogunquit

- **Shoulders:** Many roadways in Maine feature paved shoulders that are wide enough for walking or bicycling. Depending on traffic volume and speeds, shoulders between four and eight feet (minimum four feet per Federal Highway Administration [FHWA] guidance) in width provide a relatively comfortable environment for AT users.[18]
  - *Needs: Especially on roadways without sidewalks and those that connect to schools, bus stops, and other destinations, shoulders should be at least four feet wide.*

Narrow Gauge Path, Carrabassett Valley

- **Multiuse Trails:** Also called shared-use paths, multiuse trails often run alongside bodies of water or within inactive rail corridors owned by the state that have been designated for interim trail use. In winter, many are used by snowmobiles and cross-country skiers.
  - *Needs: Potential use of state-owned, inactive rail corridors for interim trails or rail-with-trail (while preserving the corridor for future rail service) can provide useful facilities for transportation and recreation.*

[18] U.S. Federal Highway Administration, *Small Town and Rural Multimodal Networks*, October 2016, https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/fhwahep17024_lg.pdf

5.1 Assessment of Past and Current Practices and Programs

State policies and practices significantly impact conditions for Maine people and visitors of all abilities who need or choose to walk, roll, or bicycle for transportation or recreation. One aim of the *AT Plan* is to understand how existing policies, plans, funding, design guidance, and procedures benefit—or sometimes hinder—the development of AT infrastructure and the ability of people in Maine to walk, roll, and bicycle safely and comfortably. Current or recently completed MaineDOT efforts related to AT include:

- Incorporating MaineDOT's Complete Streets Policy as part of the Preliminary Design Process.
- Updating the 2014 Complete Streets Policy (anticipated for 2023).
- Requiring Preliminary Design Reports to describe existing AT conditions and note which upgrades are part of the design.
- Implementing a bicycle and pedestrian safety education contract with the Bicycle Coalition of Maine from 2000 to present; since 2017, this included 4,400 activities with more than 200,000 participants.
- Carrying out the *Heads Up!* Pedestrian Safety Planning Initiative, 2017-2022, focused on 21 high-population/high-crash incidence communities.
- Revising the Traffic Movement Permit rules in 2019 (formally adopted by the legislature in 2022) for projects that explicitly require more consideration of impacts on pedestrians and bicycle riders.
- Conducting speed limit reviews, taking into account a variety of factors.
- Reforming MaineDOT's newly relaunched Regional Program with a mission to expand both shoulder paving and reconstruction on Highway Corridor Priority (HCP) 3 and some HCP 4 roadways, which would not likely be reconstructed for many years.[19]
- Increasing support for low-cost traffic calming to reduce motor vehicle speeds and pedestrian safety visibility-enhancing projects.
- Identifying dedicated funding for the bicycle/pedestrian program.
- Spending highway and safety money on bicycle/pedestrian improvements in addition to the dedicated program funding.
- Providing on-bike trainings to MaineDOT staff planners, engineers, and division directors, including a 45-minute Complete Streets principles presentation and bicycle ride in a variety of contexts throughout the state.
- Providing ADA experiential training to MaineDOT staff planners, engineers, and division directors.

[19] Highway Corridor Priority (HCP) is a system MaineDOT uses to classify the public highway system. There are five classifications: HCP 1 (interstate and key principal arterial highways), HCP 2 (other high-priority arterial highways), HCP 3 (other arterial and some major collector highways), HCP 4 (remaining major collector and some minor collector highways), and HCP 5 (local roads). The higher ranked HCP 1 and 2 roads tend to see the greatest amount of traffic, while HCP 3 and 4 roads generally see lower traffic volumes and are often rural. More information is available here: https://www.maine.gov/mdot/about/assets/glossary/

- Implementing a program for municipal distribution of lower-cost safety items including Rectangular Rapid Flashing Beacons (RRFB), Dynamic Speed Feedback Signs, School Zone Flashing Beacons, in-street signage, LED-enhanced signage, and distribution of AT-related safety signage.
- Revising the MaineDOT Guidance on Crosswalks in 2019.
- Developing of the new Village Partnership Initiative (VPI) program to accommodate larger and more comprehensive improvements.
- Increasing the number of Planning Partnership Initiative (PPI) program grants and increasing the state's funding share.

AT Education Programs

The State of Maine features a robust support system for communities wishing to provide bicycle or pedestrian education programming. While bike/ped programming is available statewide, the actual delivery of education programming in Maine is characterized by gaps. Besides the Bicycle Coalition of Maine/MaineDOT Education Program, only a handful of entities provide consistent programming in fairly limited geographic areas.

AT education programming—especially MaineDOT's *Head's Up!* program—has been instituted throughout the state. From 2017 to 2021, roughly 4,400 activities were offered with more than 200,000 people participating (see map at right). An interactive version of the map provides additional detail and is available at the AT Plan Education Overview Map.

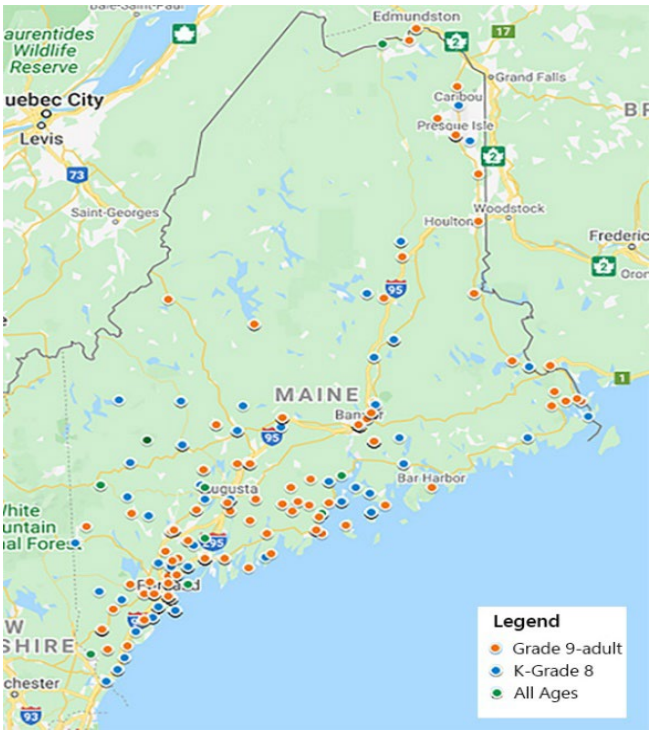


Figure 3—2017-2021 Main AT Education Program Locator Map

A compendium of AT education programs by type with an explanation of the various program categories can be found in Appendix A1.

5.2 Assessment of Existing AT Infrastructure

In more dense urban areas and village centers, pedestrian mobility is primarily accommodated on sidewalks, while bicycles and other micromobility devices like electric scooters are typically accommodated on the road. Striped bike lanes have been provided in some cities and towns. In suburban and rural areas without sidewalks, AT users are typically accommodated with paved or unpaved roadway shoulders. Some communities feature multiuse trails and greenways that provide both transportation and recreational opportunities.

Existing AT infrastructure throughout the state would easily cost more than $100 million to replicate or reconstruct today. Due to utilities, right-of-way, and potential impacts including (but not limited to) historical properties, improving/reconstructing pedestrian and bicycle infrastructure in one location can potentially cost more than building new AT facilities elsewhere. While much of Maine's AT infrastructure is new or in good condition, a significant number of sidewalks and other AT facilities in Maine have deteriorated or do not meet ADA standards.

Wide sidewalk in Downtown Wiscasset

As part of the *AT Plan*, a large share of public comments was related to requests for new or expanded AT infrastructure. While this is understandable, state and municipal officials also need to plan to maintain existing infrastructure in a state of good repair and rehabilitate or even reconstruct failing sidewalks and other AT facilities. These existing needs will compete for scarce transportation funding with requests for new AT projects and require MaineDOT to balance these needs with available resources.

Existing Pedestrian Infrastructure

Approximately 225 miles of state roadways feature sidewalks on both sides and nearly 400 miles of roadway include a sidewalk on one side—a total of 625 miles with some degree of sidewalk coverage, out of more than 8,400 miles of state highways. Approximately half of these are located along roads posted at 25 miles per hour (MPH) or lower, while approximately 90 percent are located on roads posted at 35 MPH or lower. Although the total is difficult to determine, many more miles of sidewalks are located on local roads throughout the state. Ranging in quality and width—though typically four-to-five feet wide—sidewalks may be wider where pedestrian volumes are high and within downtown business districts. In many urban areas, village centers, and older residential neighborhoods, sidewalks form the core of the pedestrian network. However, in suburban neighborhoods, car-oriented business districts, and rural areas, sidewalks are less frequent and are often less than four feet wide. In many of these areas, people walk and roll in roadway shoulders, where they are available. Shoulders less than four feet in width can create an uncomfortable pedestrian environment, especially when traffic speeds exceed 30 MPH.

Example of a sidewalk in need of repair in Kingfield

In any context, gaps exist in the network and many sidewalks require repair or upgrades to be safe, accessible, and ADA-compliant. Insufficient funding dedicated to ongoing maintenance needs is a significant barrier to creating an accessible sidewalk network in many cities and towns. Lack of resources also impacts the state's ability to develop more linear miles of shoulders on rural roadways for all AT modes.

Ideally, existing sidewalks should remain in a state of good repair and must:

- be firm, stable, and slip-resistant;
- not be broken, heaved, or separated;
- be at least three feet wide, but should have a five-foot passing space every 200 feet (ADA/PROWAG requires four foot width)[20];

Prioritization of sidewalk improvements should be based on need and connectivity to public facilities such as schools, hospitals, post offices, courts, public transit, and public parks. Also important is the assessment of driveway entrance compliance, which should not exceed a maximum 2 percent cross slope when feasible.

Existing Bicycle Infrastructure

Roadway with wide shoulder in Hallowell

Given Maine's size and rural nature, most bicycling occurs on road shoulders. While four-foot-wide shoulders provide a relatively comfortable facility for bicyclists on most roadways, this is not the reality for many roads in Maine that frequently include minimal shoulders or lack them entirely. Other roads feature wide shoulders that may not extendfor the entire length of the roadway, may have poor pavement conditions, or may not be paved. Some shoulders disappear on the approaches to intersections where turn lanes are included. An effort has been made to create shoulders wider than five feet on some HCP 1-4 highways. With help from MaineDOT, an increasing number of communities have striped designated bike lanes on streets in both commercial and residential areas. These include Belfast, Falmouth, Lewiston, Norway, Ogunquit, Portland, South Portland, Topsham, Yarmouth, and York.

Existing Trails and Greenways

In Maine, more than 500 miles of trails provide transportation and recreational opportunities for many communities. Approximately 325 miles (mostly in Northern Maine and Down East) are open to non-motorized users, snowmobiles, and ATVs. The remainder are mostly open only to non-motorized users, with snowmobiles permitted on some trails. Much of the trail network is built around abandoned or currently inactive rail corridors [see Figure 4—Existing Trails and Greenways (total miles)]. Some of these trails are part of the East Coast Greenway (ECG), a 3,000-mile route that runs from Calais, Maine to Key West, Florida. Comprised of both off-road trails and on-road bike routes, the ECG encompasses the Down East Sunrise Trail, the Capital to Coast Trail, the Eastern Trail, and segments of state roadways, some of which feature wide, bikeable shoulders. Significant portions of the ECG overlap with U.S. Bike Route (USBR) 1. While USBR 1 runs inland from Brunswick to Bucksport (passing through Lewiston, Augusta, and Bangor), USBR 1A connects Brunswick and Bucksport along the coast. A third route, USBR 501, links Bangor to Allagash via Houlton, Caribou, Van Buren, and Fort Kent.

[20] Occasionally, the natural or built environment, or historical impacts do not allow for 4 feet of passage. If that occurs, the minimum limit is 3 feet and any exceptions must be approved by MaineDOT's Chief Engineer

A significant cluster of gravel rail trails lies in Aroostook County and allows the use of snowmobiles and all-terrain vehicles (ATVs). In other parts of Maine, some pedestrian/bicycle-only trails are open for motorized use in winter only but otherwise provide opportunities for snowshoeing, cross-country skiing, and fat-tire biking. A compendium of existing trails in Maine can be found in Appendix A2.

Figure 4—Existing Trails and Greenways (total miles)

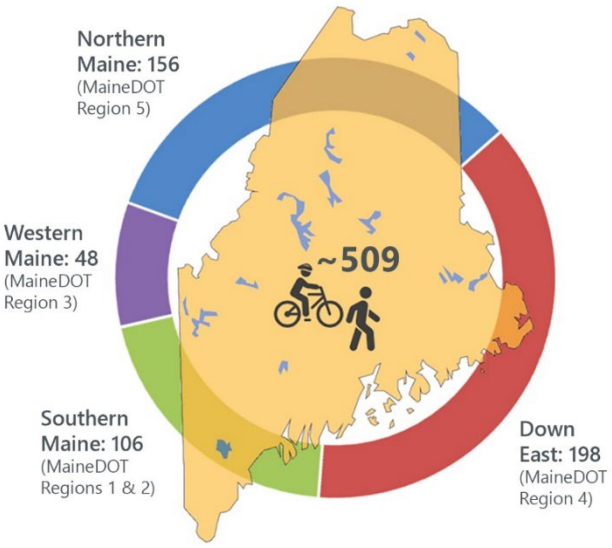
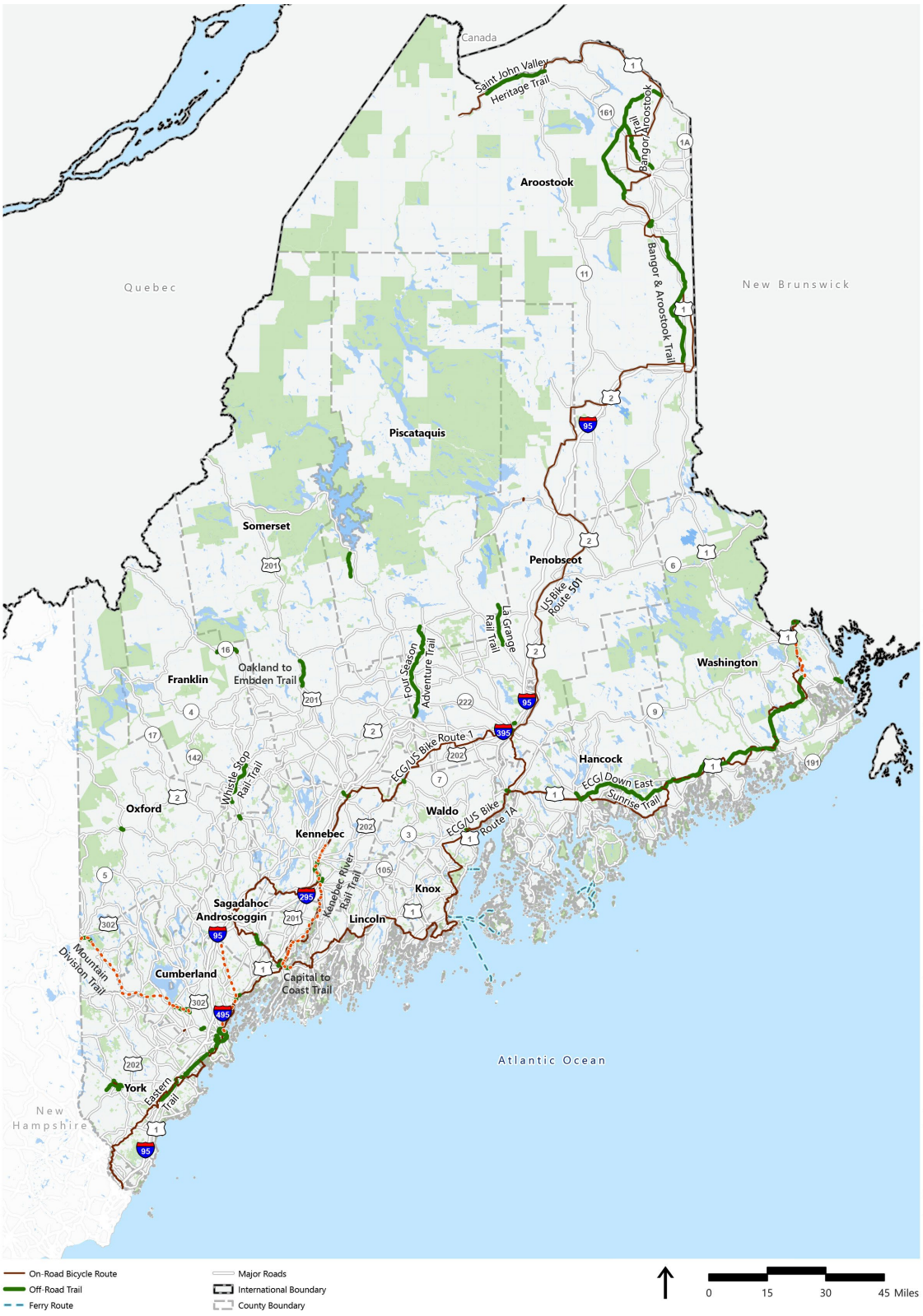


Figure 5—Statewide Map of Existing Trails and Greenways



5.3 Trends Impacting AT

The elements contributing to the AT environment in Maine include demographics, micromobility trends, synergy with public transit, and regional and municipal planning efforts.

Maine Demographics

As of 2019, there are roughly 560,000 households in Maine, according to the U.S. Census's American Community Survey (ACS).[21] The median age of Maine residents is roughly 45 years old and approximately 20 percent are age 65 or older.[22] Many Maine people do not or cannot drive a motor vehicle, including children below the legal driving age (15.4 percent of the state's population)[23], those with a disability that precludes them from driving, residents who cannot afford to own and maintain an automobile, and those who have temporarily lost driving privileges. In 2019, approximately seven percent of Maine households had no vehicle available, while more than 33 percent had one vehicle available.[24]

Related to race and ethnicity, non-white residents make up six percent of Maine's population, including 1.4 percent who have self-identified as exclusively Black or African American, 1.1 percent as exclusively Asian, 0.6 percent as Native American, and 2.6 percent as a mix of races or ethnic groups or a member of another group altogether.[25]

Overall, 11.8 percent of Maine residents live below the federal poverty line, including:[26]

- 13.0 percent of the Asian population.
- 34.8 percent of the Black population.
- 18.6 percent of Hispanic or Latino population.
- 29.1 percent of the Native American population.
- 11.1 percent of the White population.

For additional perspective, the percent of working families in the state living under 200 percent of the poverty line is 28.5 percent (e.g., a family of four with a total household income of only $55,500 or less). Lower-income households and communities are typically more dependent on ways to access jobs and services without using a personal automobile. Many

AT in Lewiston/Auburn

"In parts of the Auburn Downtown and the Lewiston Downtown, as many as 50% of households do not own a car. Built before the dawn of the automobile, these cities possess a number of assets that facilitate bicycling and walking. Most of the area's attractions (e.g., colleges, businesses, hospitals, parks, schools and shopping centers) are located within two miles of either downtown.

Public officials and residents have already voiced support for physical improvements to the region's bicycling and walking network. Over 66% of respondents to an ATRC [Androscoggin Transportation Resource Center] survey conducted in 2000 indicated that they would commute to school or work by bicycling or walking if safe routes were provided. Of 150 municipal officials in Western Maine who responded to a transportation survey conducted by AVCOG [Androscoggin Valley Council of Governments] in 2000, 76% supported paved shoulders for bicycling on rural roads and 64% supported bicycle routes on urban streets.""

Metropolitan Transportation Plan for 2019-2040, *Androscoggin Transportation Resource Center (2019), p. 41*

[21] FactFinder, American Community Survey, U.S. Census, Table B08201: Household Size by Vehicles Available, 2019, 5-Year Estimates.

[22] FactFinder, American Community Survey, U.S. Census, Table S0101: Age and Sex, 2019, 5-Year Estimates.

[23] Ibid.

[24] American Community Survey, Table B08201: Household Size by Vehicles Available, 2019, 5-Year Estimates.

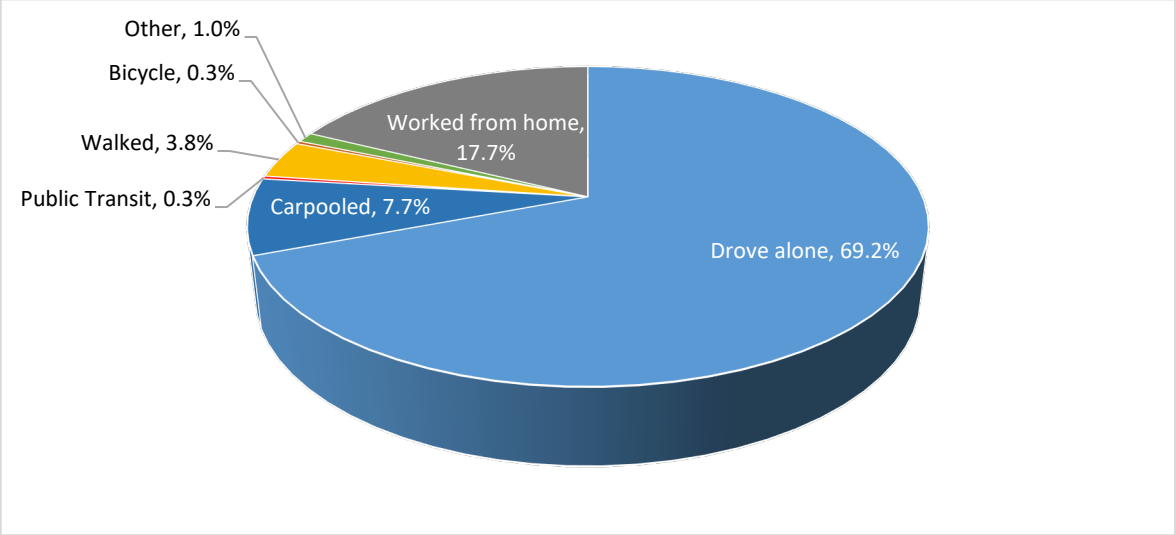
[25] FactFinder, American Community Survey, U.S. Census, Table B02001: Race, 2019, 5-Year Estimates.

[26] FactFinder, American Community Survey, U.S. Census, Table S1701: Poverty Status in the Past 12 Months, 2019, 5-Year Estimates.

lower-income residents do not have access to a personal car, making them more likely to walk, bike, or roll on roadways that may lack AT facilities. This frequently results in higher rates of crashes involving pedestrians and bicyclists.

More than 340,000 people in Maine live with one or more disabilities. Among the six types of disabilities identified, the highest prevalence rate was for "mobility disability," at 13 percent. (The national average is 13.7 percent). Visual disabilities account for five percent.

Figure 6—2021 Maine Commuter Transportation Mode Share (2021 ACS)



According to the most recent estimates from the U.S. Census Bureau's American Community Survey (ACS) for 2021, approximately 4.1 percent of Maine people bike or walk to work.[27] While the 2021 data (a one-year estimate) is less accurate than figures available for 2019 or 2020, it presents a snapshot of how Maine people were traveling to work after the beginning of the COVID-19 pandemic—especially the significant increase in those working from home. Notably, the shift in the walking or bicycling commute mode shares from the 2020 ACS five-year estimate (4.0 percent) or the pre-pandemic 2019 ACS five-year estimate (4.3 percent) remains within the margin of error. In most instances, working from home has replaced automobile and public transit trips—not AT trips.

The total share of people walking or bicycling to work varies throughout the state and is generally higher in cities, towns, and villages that are compact, feature a well-connected network of streets and sidewalks, and include a mix of uses. For example, according to the 2021 ACS figures, 12.4 percent of people in Portland walk or bike to work.

It is also important to note that only 30 percent of total trips are commute-related and a higher percentage of non-commute trips are typically taken by walking and bicycling. Therefore, the 4.1 percent figure does not paint a complete picture of the amount of daily walking and bicycling that occurs throughout the state.

[27] U.S. Census Bureau, American Community Survey, S0801, ACSST1Y2021, https://data.census.gov/cedsci/table?q=Maine&tid=ACSST1Y2021.S0801

Micromobility Trends

Micromobility is an emerging part of AT. It includes human-powered devices and lightweight electric vehicles ranging from electric scooters to delivery trikes that can haul hundreds of pounds of cargo. Shared vehicles for short-term use—typically e-scooters and bicycles—are an element of micromobilty. Micromobility can improve connections to public transit, helping to solve the "last mile" issue (the distance between a transit rider's destination and the nearest transit stop). Of the 128 million bikeshare and scootershare trips made in North America in 2021, 18 percent were for the purposes of connecting to transit.[28]

Public Bikeshare in Maine

While bikeshare or other micromobility systems have been slow to come to Maine, Portland has initiated several iterations of a bikeshare program. The city experimented with an interim Zagster bike rental option at the Portland Transportation Center between 2014 and 2016. Portland has since continued its efforts and partnered with Tandem Mobility to operate a dock-less pilot of 150 traditional bikes and 50 e-bikes. With MaineDOT as one of the critical system sponsors, the program launched in the summer of 2022.

Maine Electric Scooter and Electric Bicycle Laws

E-scooters are legal in the State of Maine and the first e-bicycle law, "LD 1222, An Act Regarding Electric Bikes" (Maine Public Law 349) was passed in 2019. This defines what an e-bicycle is and the classification system distinguishing different types of e-bicycles from one another. However, the Maine Bureau of Motor Vehicles still applies specific safety regulations, originally intended for motorized scooters and bikes, to e-scooters (i.e., front lights and reflectors).[29]

"To make that trip to the store that is maybe three to four miles away. A lot of folks would take an e-bike now, rather than drive. I do think e-bikes are a tool to reduce vehicle-miles traveled." (Joyce Taylor, MaineDOT Chief Engineer)

[28] North American Bikeshare & Scootershare Association, *3rd Annual Shared Micromobility State of the Industry Report*, 2021, 2021 State of the Industry Report.pdf (dropbox.com)

[29] Me. Rev. Stat., tit. 29-A § 2084

Synergy with Public Transit

Many transit riders start or end their journey as pedestrians, so enhancing facilities for walking, bicycling, and rolling to public transit is important for people of all abilities. Even if a private vehicle is used to access the bus or train, people who take public transit walk to and from stops and stations or make other trips on foot during their day. Furthermore, some transit riders also bicycle to and from transit stops, and often put their bikes on the bus or train to extend their ability to travel at the other end of their transit trip.

A literature review of the research in the Federal Highway Administration (FHWA)'s white paper "Pursuing Equity in Pedestrian and Bicycle Planning" (2016)[30] offers these transportation equity perspectives:

- "As individuals age, they are increasingly likely to depend on transit as primary transportation. Safe pedestrian access to bus stops and transit stations is a key aspect of accessibility among older adults, who are especially at risk of social exclusion if they are unable to get out of the house… (similarly for individuals with physical or cognitive disabilities)."[31]
- Residents of underserved communities are less likely to live near or travel along roads with safe, accessible, and high-quality pedestrian and bicycle facilities.
- Low-income individuals are less likely to own a car, so they are more likely to walk, wheel, or bike, even when conditions are not safe and are, therefore, exposed to more risk of injury.
- The risk of crashes with motorized vehicles increases when pedestrians are forced onto substandard or nonexistent facilities.

Thus, improving first-mile and last-mile AT connections between transit stops and homes, workplaces, services, and recreational areas is critical.

AT facility improvements create mutually beneficial results as well:

- More people have improved access to the public transportation system and rely less on their personal vehicle.
- The transit system itself is more viable because more people are able to use it and to extend the range of their trips along various routes.

AT and Public Transit

Public transportation options exist across the state in both rural and urban areas, with more frequent service and geographic coverage available generally in our largest cities. Currently, less than 1 percent of Maine residents use public transit for their trip to work. However, given that just 30% of total trips are commute-related, this underrepresents all the transit trips that are taken for other purposes – such as to access health services and for tourism (e.g., on Mount Desert Island).

"For public transit to be an attractive option, pedestrian connections to the transit stops from residential neighborhoods must be good. In addition, the pedestrian conditions at people's destinations must also be perceived as safe and accessible. While public transit will take people out to shopping malls, walking between stores in the mall is often daunting.

In addition, consideration should be given to providing safe areas at transit stops where passengers are at least protected from motor vehicles if not the weather."

Maine Pedestrian Plan, 2005

30 Sandt, Laura; Combs, Tabitha; Cohn, Jesse; *Pursuing Equity in Pedestrian and Bicycle Planning,* U.S. Federal Highway Administration, April 2016, https://www.fhwa.dot.gov/environment/bicycle_pedestrian/resources/equity_paper/

31 Ibid.

AT Case Study #3: Millinocket PPI Study

Penobscot Ave. as seen from Route 157 in Millinocket

MaineDOT and the Town of Millinocket completed a Planning Partnership Initiative (PPI) study in 2022 aimed at improving bicycle and pedestrian facilities; supporting independent mobility regardless of age or ability; and to promote walking, bicycling, and rolling as part of an active lifestyle. The PPI study considered AT in all seasons and considered strategies to minimize conflicts with snowmobiles and all-terrain vehicles. The study included a number of significant recommendations related to new or improved sidewalks, multiuse paths, parking and intersection projects. MaineDOT and the town have funded a sidewalk improvement project for preliminary engineering in MaineDOT's 2022-2024 Work Plan.

Key Takeaways:

- Conducting initial feasibility studies may seem time-consuming and lack an assurance of future funding for implementation, but it is vital to identifying community needs and is a critical first step in getting to the engineering and construction phase.
- In many areas of Maine, it is important to consider the realities of transportation needs in all seasons and factor in the need to reduce conflicts not only with motor vehicles, but also snowmobiles and ATVs.

MPO and RPO Planning Efforts

Many Metropolitan Planning Organizations (MPOs) and Regional Planning Organizations (RPOs) in Maine have recently developed their own regional AT, bicycle, or pedestrian plans. Several cities, towns, and villages within each of these regions have adopted local pedestrian, bike, or pedestrian/bicycle plans for their respective communities. Although the *AT Plan* is a statewide plan, full consideration of regional or local AT plans will be given when any policies conflict or do not conform to the desires of the local communities.

Table 1—Maine MPO AT Plans

MPO	Long Range Transportation Plan w/ AT element?	Stand-Alone Active Trans-portation Plan?	Stand-Alone Ped or Bike Plan?
Androscoggin Transportation Resource Center (ATRC)	Yes (2019)	No	Yes
Bangor Area Comprehensive Transportation System (BACTS)	Yes (2018)	No	Yes
Kittery Area Comprehensive Transportation System (KACTS)	Yes (2019)	No	No
Portland Area Comprehensive Transportation System (PACTS)	Yes (2018 and 2021)	Yes	No

5.4 Pedestrian and Bicycle Safety Analysis

The 2022 *Maine Strategic Highway Safety Plan (SHSP)* continues the state's commitment to "driving towards zero deaths," while also acknowledging the life-changing impacts of serious injuries on those who use the transportation system. One of its key focus areas is pedestrians and bicyclists. The 2023 safety performance targets are listed below.

Table 2—Maine 2023 Safety Performance Targets

Safety Target	2023 Target (5 Year Average)
Number of Fatalities	160
Number of Serious Injuries	710
Rate of Fatalities	1.12
Rate of Serious Injuries	4.80
Number of Non-Motorized Fatalities and Serious Injuries	85

On the federal level, FHWA's *Strategic Agenda for Pedestrian & Bicycle Transportation* (2016) established the following national goals:

- Achieve an 80-percent reduction in pedestrian and bicycle fatalities and serious injuries in 15 years and zero pedestrian and bicycle fatalities and serious injuries in the next 20 to 30 years.

With these goals in mind, MaineDOT collected and analyzed pedestrian and bicycle crash data over a ten-year period (2012-2021). With the long-term goal of "driving towards zero deaths" the *AT Plan* uses the crash data and analysis to inform the needs assessment. For example, the analysis clarifies for the need to lower traffic speeds where possible and provides safe and accessible facilities for vulnerable roadway users such as pedestrians and bicyclists.

Sidewalks are a Critical Part of any Roadway Safety Program

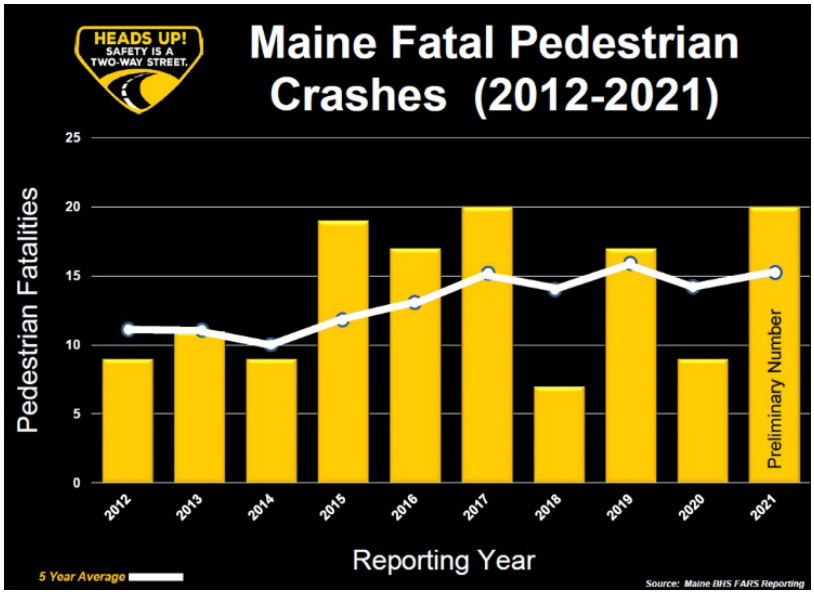
In 2021, approximately 67 percent of pedestrian fatalities occur on roads **without** sidewalks, according to a report from the Governors Highway Safety Association.

Source: Governors Highway Safety Association, Pedestrian Traffic Fatalities by State, *May 2022,* Pedestrian Traffic Fatalities by State - 2021 Preliminary Data

Summary of Pedestrian and Bicycle Collisions, Injuries, and Fatalities

In Maine, total crashes resulting in pedestrian injuries have generally declined over the past ten years, from 295 in 2012 to 217 in 2021. Fatal pedestrian crashes account for five percent (132) of collisions involving pedestrians, while severe injuries for pedestrians are 18 percent (462). Pedestrian fatalities (as distinct from total crashes) over that period totaled 136, with another 488 suspected serious injuries.

Figure 7—Maine Pedestrian Fatalities



Over the past decade, there has been a gradual increase in fatalities. Per Figure 7—Maine Pedestrian Fatalities, increases in 2015-2017, 2020, and 2021 have offset the dip in pedestrian fatalities experienced in 2018 and 2020.

Total crashes resulting in bicyclist injuries have generally declined over the past ten years, from 209 crashes in 2012 to 167 in 2021, with a low of 137 crashes in 2020. Fatal crashes account for one percent (21) of all bicycle crashes, while severe injuries resulted from 11 percent of crashes (209). Bicyclist fatalities (as distinct from total crashes) over this period totaled 21, with an additional 213 suspected serious injuries. Bicyclist fatalities have remained relatively stable year-over-year.

Table 3—Pedestrian Injury Crash Data

Crash Year	Fatal or Suspected Serious Injury (Person Count)	Suspected Minor Injury (Person Count)	Possible Injury (Person Count)	No Apparent Injury (Person Count)	Total Person Count
2012	80	96	121	13	310
2013	48	94	116	12	270
2014	68	85	136	8	297
2015	65	75	136	16	292
2016	66	62	139	14	281
2017	74	82	120	20	296
2018	59	83	115	30	287
2019	65	99	126	21	311
2020	43	64	96	13	216
2021	56	96	77	14	243
Total	**624**	**836**	**1086**	**77**	**2803**
Percent	**22%**	**30%**	**39%**	**3%**	**100%**

Table 4—Bicyclist Injury Crash Data

Crash Year	Fatal or Suspected Serious Injury (Person Count)	Suspected Minor Injury (Person Count)	Possible Injury (Person Count)	No Apparent Injury (Person Count)	Total Person Count
2012	31	78	92	9	210
2013	26	84	89	12	211
2014	31	70	92	14	207
2015	18	69	86	17	190
2016	27	79	89	14	209
2017	24	65	94	9	192
2018	21	55	73	20	169
2019	14	77	77	9	177
2020	15	56	58	8	137
2021	27	81	54	12	174
Total	**234**	**714**	**804**	**124**	**1876**
Percent	**12%**	**38%**	**43%**	**7%**	**100%**

Table 5—Total Crashes Involving a Pedestrian

Crash Year	Fatal or Suspected Serious Injury (Crash Count)	Suspected Minor Injury (Crash Count)	Possible Injury (Crash Count)	No Apparent Injury (Crash Count)	Total Crash Count
2012	77	93	111	14	295
2013	47	87	105	7	246
2014	65	78	122	5	270
2015	63	73	132	10	278
2016	60	58	128	6	252
2017	69	73	110	11	263
2018	58	79	106	8	251
2019	63	95	117	3	279
2020	41	60	84	6	191
2021	51	86	74	6	217
Total	**594**	**782**	**1089**	**77**	**2542**
Percent	**23%**	**31%**	**43%**	**3%**	**100%**

Table 6—Total Crashes Involving a Bicyclist

Crash Year	Fatal or Suspected Serious Injury (Crash Count)	Suspected Minor Injury (Crash Count)	Possible Injury (Crash Count)	No Apparent Injury (Crash Count)	Total Crash Count
2012	33	79	88	9	209
2013	24	82	89	13	208
2014	31	71	91	11	204
2015	17	68	85	15	185
2016	26	76	90	14	206
2017	24	62	87	8	181
2018	20	54	73	19	166
2019	13	74	77	8	172
2020	15	56	60	6	137
2021	27	77	51	12	167
Total	**230**	**699**	**792**	**115**	**1835**
Percent	**13%**	**38%**	**43%**	**6%**	**100%**

Pedestrian and Bicycle Crashes and Proximity to Traffic Signals

Related to pedestrian and bicycle crashes at traffic signals and stop-controlled intersections, data from 2012-2021 indicate that:

- 17 percent of pedestrian injury crashes (435) occurred at traffic signals, while 12 percent (323) occurred at crossings with stop signs.
- 12 percent (73) of fatal or severe injury pedestrian crashes occurred at traffic signals, while eight percent (51) occurred at crossings with stop signs.
- 16 percent (287) of bicycle injury crashes occurred at traffic signals, while 24 percent (421) occurred at crossings with stop signs.
- 10 percent (23) of fatal or severe injury bicycle crashes occurred at traffic signals, while 21 percent (50) occurred at crossings with stop signs.

These data imply that while traffic signals and stop signs can provide opportunities for pedestrians and bicyclists to cross busy roadways, they are not without risk. High motorist speeds and errors in judgement from both sides lead to crashes, injuries, and in some cases, deaths of people walking, bicycling, and rolling at intersections throughout Maine.

Fatality Analysis Reporting System (FARS) Data Trends for All Vehicle Crashes

- **Maine ranking of number of vehicle crashes per 100 million vehicle-miles traveled (2019):** In 2019, Maine reported 11.7 deaths per 100,000 people and 1.06 deaths per 100 million vehicle miles traveled. Maine is just below the national average for deaths per 100 million vehicle miles traveled (U.S. reported 1.11 deaths in 2019).
- **Death By Roadway User:** Maine ranked above the total national percent of fatal crashes for pickup/SUV (31 percent ME, 27 percent U.S.) and motorcycle crashes (17 percent ME, 14 percent U.S.); it matched the national average for fatal car occupant crashes (34 percent). *Source: State by state (iihs.org), FARS Encyclopedia (dot.gov)*
- **Crash Type:** Maine had the highest percentage of deaths in single-vehicle crashes (68 percent—106 out of 157). Source: State by state (iihs.org), FARS Encyclopedia (dot.gov)

Rural vs. Urban Fatalities: Maine ranked sixth in rural crash fatalities for 2019 (79 percent) and was significantly over the national percentage (45 percent). Source: State by state (iihs.org), FARS Encyclopedia (dot.gov)

Source: State by State (iihs.org), FARS Encyclopedia (dot.gov) – 2019; Population, fatal motor vehicle crashes, motor vehicle crash deaths and motor vehicle crash death rates per state, 2019.

Pedestrian and Bicycle Crashes and Top Manner of Vehicle Collision

Regarding the top reported manner of collision from 2012 to 2021, drivers' failure to yield to right-of-way accounted for 24 percent (639 of 2,712) of all pedestrian crashes. Drivers' failure to yield crashes also accounted for 18 percent (110 of 622) of all fatal and severe injury crashes as well.

Regarding the top reported manner of collision from 2012 to 2021, drivers' failure to yield to right-of-way accounted for 27 percent (515 of 1875) of all bicycle crashes. Drivers' failure to yield crashes also accounted for 25 percent (60 of 236) of all fatal and severe injury crashes reported.

Pedestrian and Bicycle Crashes and Posted Speed Limits

Cross-referencing crash rates and posted speed limits is difficult, as about half of crashes do not have the posted speed limit recorded. This section will develop informative (if imperfect) estimates based on the subset of crashes for which speed limit data is available.

Looking at pedestrian crashes from 2012 to 2021, 43 percent (601) occurred on roads with 20-25 MPH posted speed limits. Looking strictly at fatal crashes however, only 13 percent (13) occurred on roads with 20-25 MPH posted speed limits. By contrast, while only 27 percent (381) of pedestrian crashes occurred on roads with posted speeds over 40 MPH, 59 percent (61) of fatal crashes occurred there.

From 2012 to 2021, 43 percent (342) of all bicyclist crashes occurred on road with 20-25 MPH posted speed, while these roads only accounted for 11 percent (two) of fatal crashes. Roads posted at 40 MPH and over saw 21 percent of crashes (167) but accounted for 63 percent (12) of fatal crashes.

It is important to note that although the proportion of pedestrian and bicycle injuries is heaviest along Maine's roadways with a 20-35 MPH speed limit, this is not necessarily reflective of a safer environment compared with roadways posted at 40 MPH or greater. Firstly, 85th percentile speeds can be >5 mph more than posted, and pedestrians and bicyclists tend to avoid high-speed roads unless no other option exists. Although not apparant in the data, lowering traffic speeds and providing safe and accessible facilities for vulnerable roadway users is critical to AT safety.

Figure 8—Pedestrian Fatality Rates by Vehicle Speed

Table 7—Pedestrian-Related Crashes and Posted Speed Limits, 2012-2021

Posted Speed Limit	Fatality Crash Total	Suspected Serious Injury Crash Total	Suspected Minor Injury Crash Total	Possible Injury Crash Total	Property Damage Crash Total	Grand Crash Total	% of Total Crashes (with listed speed)
< 20 MPH	0	0	3	0	0	3	0%
20-25 MPH	13	109	180	286	13	601	43%
30 - 35 MPH	30	104	129	135	15	413	30%
40 - 45 MPH	34	58	81	91	11	277	20%
> 45 MPH	27	20	35	19	2	104	7%
No Speed Listed	*28*	*171*	*354*	*558*	*36*	*1147*	*N/A*
Total	***132***	***462***	***782***	***1089***	***77***	***2542***	
Total not including crashes with no speed listed	**104**	**291**	**428**	**531**	**41**	**1395**	**100%**

Table 8—Bicycle-Related Crashes and Posted Speed Limits, 2012-2021

Posted Speed Limit	Fatality Crash Total	Suspected Serious Injury Crash Total	Suspected Minor Injury Crash Total	Possible Injury Crash Total	Property Damage Crash Total	Grand Total	% of Total Crashes (with listed speed)
< 20 MPH	0	0	1	0	0	1	0%
20-25 MPH	2	28	143	141	28	342	43%
30 - 35 MPH	5	36	102	131	10	284	36%
40 - 45 MPH	9	29	37	50	2	127	16%
> 45 MPH	3	10	16	10	1	40	5%
No Speed Listed	*2*	*106*	*400*	*459*	*74*	*1041*	*N/A*
Total	***21***	***209***	***699***	***791***	***115***	***1835***	
Total not including crashes with no speed listed	**19**	**103**	**299**	**332**	**41**	**794**	**100%**

Safety Analysis Findings

The pedestrian and bicycle safety analysis highlights several key issues facing AT users in Maine:

- While the total number of fatal and serious injury crashes involving pedestrians and bicyclists has remained relatively stable over the past decade, total pedestrian fatalities have seen an upward trend.
- Intersections are the site of a significant percentage of injuries for pedestrians and bicyclists.
- Driver failure to yield right-of-way remains a significant factor in crashes—including fatal and serious injury crashes.
- A disproportionate number of pedestrian and bicyclist fatalities occur on roads posted above 35 MPH—indicating that speed and separation are critical factors in reducing fatalities.

5.5 Review of Peer States' AT Plans

MaineDOT reviewed peer states' pedestrian/bicycle and AT plans and identified those most relevant to Maine—e.g., predominantly rural states with some dense urban areas and with cold and snowy winters—regarding program and policy recommendations and performance measures. The selected peer states for review were Minnesota, Pennsylvania, and Vermont. The *AT Plan* gathers information about existing facilities, AT-related programs and policies, funding levels, approach to Complete Streets, and performance measures from each of the three states' AT plans. For reference, FHWA guidance on AT performance measures was also reviewed. These data inform the implementation strategies for Maine's *AT Plan*.

MaineDOT's AT efforts are generally comparable to those of our peer states, including our winter maintenance efforts. Where peer state programs or policies may be relevant for Maine, the *AT Plan* takes them into consideration. It uses them to inform our needs assessment and some of the strategies in the implementation plan. A matrix summarizing the more detailed findings can be found in Appendix E.

Minnesota

Consistent themes found in the Minnesota Department of Transportation's (MnDOT's) AT plans include an emphasis on separated bike facilities and creating supplementary design guidance for municipal engineers and leadership to inform and enforce decisions. These dedicated spaces aim to benefit bicyclists and pedestrians, especially along rural state roadways with high traffic volumes and speeds. Additionally, MnDOT developed evaluation criteria specific to each mode to help secure funding, planning, and engineering capacity and reach long-term goals serving all roadway users.

AT Case Study #4: Downtown Sanford Village Partnership Initiative

Before and after images of Main Street (source: VHB)

MaineDOT provided funding for a PPI study that focused on safety and mobility improvements while complementing economic development initiatives throughout the downtown area. The City of Sanford has since used the results of the study to identify and commit a local funding match for Complete Streets enhancements in partnership with MaineDOT for inclusion into the department's current Work Plan as a VPI project. The plan was recently awarded a $25-million federal Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant to implement the VPI.

Key takeaways:

- In coordination with MaineDOT, results of a PPI study can help a desired AT project to be incorporated into a future Work Plan for implementation.
- Realistic and compelling visualizations can build strong community support for complete streets and AT projects and improve the likelihood of backing from MaineDOT and other partners.

MnDOT Programs and Policies for Consideration

- Emphasis on developing separated bike lanes in urban areas and providing dedicated space for pedestrians and bicyclists in rural areas.
- Complete Streets projects that affect Environmental Justice populations receive higher priority for funding and implementation.
- There are two distinct sets of evaluation criteria, guiding principles, goals, and performance measures for pedestrians and bicyclists.
- Establishment of a statewide pedestrian and bicycle traffic count program to understand trends in various regions.
- Emphasis on ways MnDOT can assist municipalities with winter maintenance of pedestrian and bicycle facilities without committing to being fully responsible.

Performance Measures (PM)

The department measures performance broadly across Minnesota's transportation system and establishes PMs and targets through public and stakeholder-driven processes, typically as part of long-range planning efforts. MnDOT's PMs are established in the Statewide Multimodal Transportation Plan and focus on five objectives: open decision-making, transportation safety, critical connections, system stewardship, and healthy communities. The PMs include strategies for MnDOT and its transportation partners for each objective. MnDOT's *Statewide Bicycle System Plan (SBSP)* uses the *Statewide Multimodal Transportation Plan (SMTP)* and the original *2012 Statewide Bicycle Planning Study's* objectives as the basis of its PMs. The MnDOT *Statewide Pedestrian System Plan (SPSP)* uses the *SMTP* objectives as a starting point. It also created Complete Streets goals to address mobility challenges and barriers, such as acknowledging existing and historic MnDOT practices, existing infrastructure, funding, staff capacity, and technical resource barriers. Combined, PMs for both the *SBSP* and the *SPSP* include:

- Bicycle PMs include ridership, bicycle-related crashes, growth in bicycling (compared to an increase in crashes), and expansion of bicycling assets.
- Pedestrian PMs include sidewalk and curb ramp accessibility, the number of state-owned sidewalk miles, and the number of accessible pedestrian signals installed.

Pennsylvania

The Pennsylvania Department of Transportation (PennDOT) provides a clear commitment to creating sustainable and equitable policies, projects, and programs and improving conditions for walking and bicycling. The vision and goals for Pennsylvania's 2021 AT Plan emphasize an interest in and prioritization of AT projects throughout the state, improving pedestrian and bicycle connectivity, shared-use paths, bicycle lanes, and other protected bicycle facilities. Like in Maine, PennDOT has developed an equity analysis and is looking to increase AT connectivity by installing shoulders and improved bicycle facilities on urban and rural roadways.

PennDOT Programs and Policies for Consideration

- Equity-related criteria will soon be incorporated into the funding prioritization process for pedestrian and bicycle projects.
- Collaboration with municipalities and transit providers to incorporate AT infrastructure projects with transit investments.

- Evaluation criteria for AT projects and policies include safety, equity, connectivity, partnerships, public health, and economic mobility.
- With shrinking gas tax revenue, PennDOT employed aggressive cost-saving strategies and public-private partnerships.
- Creation of an online tool listing all AT funding resources and grant opportunities to inform local community AT initiatives (currently under development).

Performance Measures

The *Pennsylvania Active Transportation Plan* created six general themes to identify PMs and establish readily trackable timeframes. Pennsylvania included categories for enhancing safety, connecting walking and bicycle networks (which documents miles of facilities and percentage of trips), and reporting assets like the other AT plans reviewed. PennDOT also included additional themes for public health, economic mobility, and providing transportation equity. These were included to ensure grant funding was secured to create plans and projects that serve the state's most vulnerable roadway users and historically marginalized populations. The *Pennsylvania Active Transportation Plan*'s PMs targeted high-level goals and objectives, including those that could track the progress of implementation strategies.

Vermont

Vermont's Agency of Transportation's (VTrans's) *2021 Bicycle and Pedestrian Strategic Plan (BPSP)* advances multimodal safety and access by prioritizing Complete Streets investments. VTrans requires a Complete Streets checklist for planners and engineers during project development to ensure compliance. Furthermore, Vermont has prioritized projects within the plan to secure funding and meet strategic goals within the state's desired timeframe.

VTrans Programs and Policies for Consideration

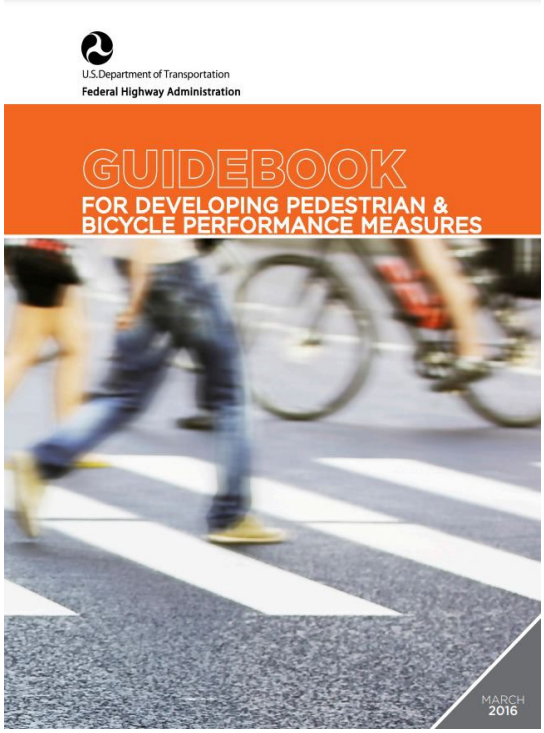
- *Complete Streets: A Guide for VT Communities* and the *VTrans Pedestrian and Bicycle Facility Planning and Design Manual* emphasized snow removal from sidewalks and bikeways.
- A Bicycle Level of Traffic Stress analysis was conducted for all state-owned, paved roadways in the lead-up to the 2021 *BPSP*.
- Location and use data for current and future multiuse trails are utilized to assess opportunities to connect AT with transit.
- Revised grant selection criteria rewards transit connectivity with AT, especially at high-crash locations.
- Recent legislation (2021 VT Transportation Bill, Act 55) provides residents a $200 rebate for purchases of an e-bike, the first state to do so.

Performance Measures

The *BPSP* developed Performance "Indicators" to track the progress of the plan's implementation, instead of Performance Measures. Previously, Vermont used PMs in a 2008 *Pedestrian and Bicycle Policy Plan*, but data for the measures either had not been tracked or had been challenging to attain. The Performance "Indicators" were selected based on data availability and tracking capabilities. Unlike PMs, "Indicators" do not provide details about a target, and only a few included potentially

feasible tracking within the next five years. The Performance "Indicator" categories include general and long-term goals related to:

- Infrastructure and Maintenance (encouraging an increase in the percentage of roadway miles that offer varying levels of bicycle comfort).
- Pedestrian and Bicyclist Activity (utilizing American Community Survey data and pedestrian and bicyclists counts from universities annually).
- Safety, Education, and Transit Connectivity (increase the number of transit stops with sidewalk access and bike parking and increase the percentage of buses with bicycle racks).



FHWA Performance Measure Considerations

The FHWA *Guidebook for Developing Pedestrian and Bicycle Performance Measures* mirrors the community-anchored PMs found throughout the peer review states, including connectivity, economic growth, environmental sustainability, equity, public health, livability, and safety. The FHWA guide offers a cross-cutting subset of Transportation Measures (TMs) to support the PMs since the TMs relate directly and indirectly to them. The additional measures include accessibility, compliance, demand for existing and potential walking and bicycling, mobility, and infrastructure, including all pedestrian and bicyclist-related facilities.[32]

When looking at FHWA's Performance Measures for equity, recognizing the disparate costs and impacts of transportation decisions on populations of different income levels, households without access to vehicles, and lack of connected or accessible transit infrastructure is essential. Another identified equity component within FHWA's guide is ensuring pedestrian facilities along public rights-of-way are accessible, so they do not discriminate against people with disabilities and serve people of all ages and abilities. Finally, the guide addresses the challenges of land use context impacting opportunities for identifying and implementing effective walking and bicycling PMs in a rural setting. A preferred recommended measure is to document the level of tourist activity generated by rural walking and bicycling facilities. This would be an interesting PM for Maine, but narrowing in on the level of tourist activity and how it is connected to AT facilities in rural areas will likely be challenging and time-intensive.

[32] U.S. Federal Highway Administration, *Guidebook for Developing Pedestrian & Bicycle Performance Measures*, March 2016, pg. 13, https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/performance_measures_guidebook/pm_guidebook.pdf

5.6 Current AT Funding

MaineDOT uses both federal and state funding sources in projects that relate to the planning, design, and construction of AT infrastructure, along with local matching funds and grants where applicable. Below is a list of funding sources and amounts utilized by MaineDOT and the Maine Department of Agriculture, Conservation and Forestry for AT projects:

- Federal Transportation Alternatives Program (Maine Bicycle and Pedestrian Funding Program):
    - 2021: $2.06 million.
    - 2022: $4.26 million.[33]
    - 2023: $4.37 million.[34]
- Federal Recreational Trails Program (RTP), administered by Maine Department of Agriculture, Conservation and Forestry:[35]
    - 2021: $1.4 million.
    - 2022: $1.4 million.
    - 2023: $1.4 million.
- Planning Partnership Initiatives (PPI), which facilitate multimodal studies with an emphasis on AT deficiencies and related improvements for safety and compliment municipal economic development efforts:
    - Approximately $400,000 annually across multiple PPI studies.[36]

In addition to AT-specific funding, several MaineDOT programs with responsibilities for other elements of the transportation system regularly incorporate AT elements into their work. This can include things such as sidewalk installation during road reconstruction or installing crosswalk or lighting improvements during intersection work. While it can be difficult to separate out the total funding spent on AT elements of a larger project, MaineDOT has developed the following estimates of AT investments:

- Highway Program: $26.6 million total from 2017 to 2019 ($8.9 million per year)
- Bridge Program: $15.7 million total from 2017 to 2019 ($5.25 million per year)
- Multimodal Program: $21.3 million total from 2017 to 2019 ($7.1 million per year)

[33] Federal Transportation Alternatives increased in 2022 due to passage of Federal Bipartisan Infrastructure Law (BIL).

[34] Ibid.

[35] RTP may fund trails that serve as bike/ped Active Transportation infrastructure, as well as many projects more focused on a recreational purpose.

[36] PPI facilitates multimodal studies with an emphasis on AT deficiencies and related improvements for safety, to complement municipal economic development efforts. The total does not include some additional VPI funding supporting some PPI studies.

6

Needs Assessment

Building on the findings of the existing conditions assessment and informed by feedback from the public as well as best practices from other states, the *AT Plan* needs assessment identified and categorized Maine's high-level AT needs. The needs assessment also includes a more in-depth review of two overarching types of needs: on-road system needs on lower-priority state highways and off-road AT needs—including along state-owned, inactive rail corridors.

6.1 Overview of AT Needs

The assessment of current AT practices and programs described earlier in the report highlights the demographic, geographic, and technological trends that either encouraged or suppressed walking, bicycling, and rolling for people of all abilities in Maine. This assessment—along with public feedback from the dozen stakeholder meetings, four public meetings, feedback from the *AT Plan* survey and PIMA site, and detailed information provided by MaineDOT staff—informed the *AT Plan's* understanding of AT needs in Maine.

Based on this information, the *AT Plan* identifies the following general categories of AT needs in Maine:

- **General Programs and Policies:** providing safety education for all road users and more AT count data to help understand where people are walking, bicycling, and rolling throughout the state.
- **Complete Streets and Trails:** putting a greater focus on ADA accessibility, safe connections to schools, and closing sidewalk and trail gaps; continuing to institutionalize MaineDOT staff's multimodal design expertise.
- **Local Cost Sharing:** exploring opportunities to assist under-resourced communities with local match funding and continuing to build off the VPI and other MaineDOT programs.
- **Public Transit:** mapping out AT gaps to transit; providing more opportunities to carry bicycles on buses and trains and to park them at stations.
- **System Equity:** ensuring funds for planning and implementing AT facilities are spread throughout the state and development of creative ways to engage underrepresented communities.
- **Maintenance:** helping local public works departments identify additional resources for winter maintenance and to upgrade damaged sidewalks and other facilities.

- **Roadway Design:** designing appropriate AT treatments based on land use context, traffic volume, and traffic speed, especially the transition between rural highways and village centers; implementing demonstration projects and pilots to test the effectiveness of low-cost pedestrian and bicycle safety improvements.
- **AT Programs:** emphasizing education and encouragement programs for children (school-based) and adults (e.g., transportation demand management programs), especially aging adults and those without access to private automobiles.

The following sections of the needs assessment will help to provide additional details about needs facing two different (but connected) elements of Maine's AT system: the on-road system and the off-road system.

6.2 On-Road System Needs

The *AT Plan* process included an assessment of HCP 3 and 4 roads throughout Maine to highlight shoulder-enhancement opportunities. This information will serve as the starting point for a subsequent effort to identify **High-Priority Active Transportation (HPAT)** highway corridors. The HPAT segments will be used by the newly reinstated MaineDOT Regional Program to help prioritize HCP 3 and some HCP 4 roadways for shoulder paving.

Where they are feasible, paved shoulders of at least four feet provide additional space for AT users and motorists pulling over to the side of the road. Paved shoulders add an impermeable surface to the right-of-way, however, and can have a negative environmental effect, especially along roads near wetlands and bodies of water.

MaineDOT defines HCP 3 roads as "secondary arterials and major collector highways," totaling 1,257 miles (five percent of all road miles) and carrying 12 percent of the state's traffic. [37] HCP 4 roads are "secondary-major or minor collector highways that are often part of the state-aid system," in which responsibilities are shared between the state and municipalities. They total 4,670 miles (20 percent of all road miles) and carry 17 percent of the state's traffic. HCP 3 roads are also typically wider than HCP 4s. Often, they are busier roads with higher speed traffic than HCP 4s.

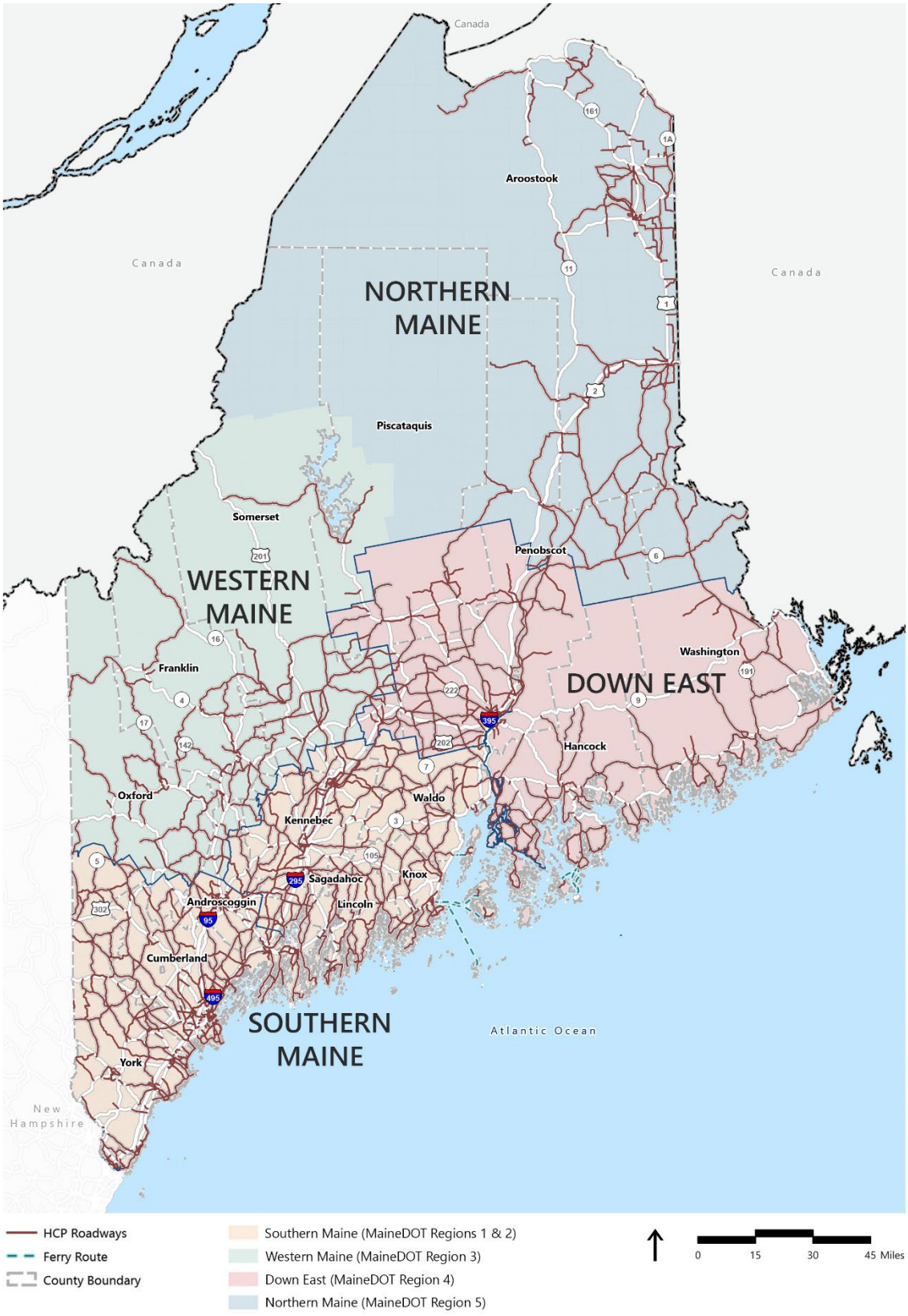
Priority 3 and 4 roads weave their ways throughout the populated parts of the state and provide links for various modes of transportation (Figure 9—Statewide HCP 3 and 4 Roadway Map). However, many of them fail to provide a comfortable environment for people bicycling and, for roads without sidewalks, walking or using mobility devices.[38] In many instances, HCP 3 and 4 roads feature no shoulders or shoulders of fewer than four feet in width.

Although narrow rights-of-way, environmental conditions, and topographical constraints can provide a challenging context, wider shoulders are possible on many HCP 3 and 4 roadways. Wider shoulders would be especially valuable where current and latent demand for bicycling is high.

[37] For more info, see: https://www.maine.gov/mdot/about/assets/glossary/

[38] Irrespective of its width or functionality for pedestrians, road shoulders do not conform to the ADA standards related to accessibility

Figure 9—Statewide HCP 3 and 4 Roadway Map



Evaluation Methodology

The *AT Plan* team developed an initial methodology for prioritizing HCP 3 and 4 corridors, including an inventory of existing conditions, specifying highway corridors, and establishing evaluation criteria to be used to identify corridors for prioritization.

Data Preparation

Using State of Maine GIS data, the *AT Plan* team identified more than 22,000 HCP 3 and 4 roadway "segments" with lengths as small as 150 feet but typically between one-quarter and one-half of a mile. To provide a more-manageable number for evaluation, the *AT Plan* combined multiple segments into 10-to-30-mile-long road corridors that either:

- Linked two towns or village centers.
- Connected nearby destinations (e.g., state parks or beaches) with each other or a municipality.
- Formed logical loops within a sub-region.
- Linked road corridors (i.e., from the intersection of one HCP 3 and 4 corridor to another).

Because each corridor contained multiple road segments (a few dozen segments in some cases), a range of existing shoulder widths can be contained within a single corridor. In some cases, short segments of multiple roadways close to each other were combined into a single corridor.

Evaluation Criteria

Round 1 (quantitative criteria)

1. **Traffic Volumes**: Typically, roadways that carry more traffic have more opportunities for conflicts. Therefore, wider shoulders could provide more benefits. High scores in this category are directly proportional to the amount of traffic present along the roadway or at the considered location.
2. **Vehicle speeds**: Using roadway posted speeds, determine if the roadway has high vehicle speeds. The higher the speed, the higher the priority to widen roadway shoulders for safer travel for pedestrians and bicyclists.
3. **Number of Travel Lanes**: Wider, multilane roadways can create a more uncomfortable environment for people who need to use the shoulder to walk, bike, or use a mobility device. The higher the number of travel lanes, the higher the need for wider shoulders.
4. **Pedestrian/Bicycle Crash History (within 50 ft)**: Does the corridor have known safety concerns, or have crashes involving AT users been reported there (from 2012 to 2021)? The higher the score, the greater the need for shoulder improvements.

5. **Residential Density within a Half-Mile of the Corridor**: Does the density of homes in the half-mile buffer area contain many trip origins and destinations? Higher scores are given to road corridors located next to well-settled residential neighborhoods.
6. **Proximity to AT Destinations (Schools, Colleges/Universities, State Parks, and Beaches)**: Does the roadway corridor lie within a quarter-mile of public or private schools, or a half-mile of a college campus, state park, state beach, or other major destination? Corridors near schools and other destinations receive the highest scores.
7. **Proximity to Environmental Justice Communities**: Do portions of the roadway corridor run through a formally designated Environmental Justice (EJ) population?
8. **Connectivity to Existing Trails and Greenways**: Does the road corridor provide connectivity to other AT facilities such as multiuse trails and greenways? Making these connections reduces potentially hazardous gaps between facilities and elevates the "network effort." Corridors that provide the most connections receive the highest scores.

Round 2 (qualitative criteria)

- **A. Filling in a short gap in a long corridor**: Would enhancing shoulders help to eliminate a short gap along a roadway that features shoulders that are at least four feet wide along its primary length? The goal is to provide a long stretch of roadway with wide shoulders for the relatively minimal cost of improving shoulders along a discrete segment or two.
- **B. Engineering Challenges and Permitting Issues**: Would enhancing of the roadway shoulders create significant engineering and right-of-way challenges, require environmental permitting, and lead to utility conflicts? Any of these would require additional funding, environmental permitting/mitigation, and potentially lengthy negotiations with property owners and utility companies.
- **C. Community Input**: Corridors for which the community expressed support during the *AT Plan* process—e.g., at public or stakeholder meetings or via the survey—and for which ped/bike advocates have shown enthusiasm in the past received the highest number of points.

AT Case Study #5: Westbrook Crosswalks

Example low-cost crosswalk intervention on Main St.

In 2020, the Bicycle Coalition of Maine with support from MaineDOT, collaborated with city staff, community volunteers from the Age Friendly Community group, and the Discover Downtown Westbrook design group to create a series of low-cost crosswalk gateways and curb extensions on Main Street. Considered a pilot project, the typical installation used flex posts, crosswalk signs, and paint to enhance the conspicuity of five crosswalks to help slow motor vehicles, improve yield rates, and enhance safety.

Key takeaways:

- Driver yielding rates improved by as much as 40 percent and averaged 26 percent better compared with unimproved condition.
- A majority of respondents to a public survey (n=30) thought the installation slowed traffic and made the roadway safer.
- Simple, low-cost treatments--$3,000 for five crosswalk treatments—can have a significant impact.

Next Steps

MaineDOT will use the initial HCP 3 and 4 inventory and evaluation criteria, in conjunction with MaineDOT staff and stakeholder input, to identify and list HPAT corridors in the state. Once the corridors most in need of improvement are identified, this information will be shared throughout MaineDOT and with the general public through an overlay layer in MaineDOT's Map Viewer tool.

With the HPAT corridors identified, MaineDOT's Regional Program will be able to provide additional resources for improved, paved shoulders along the HCP 3 and some HCP 4 roadways. More details about this initiative are in the *AT Plan* implementation plan.

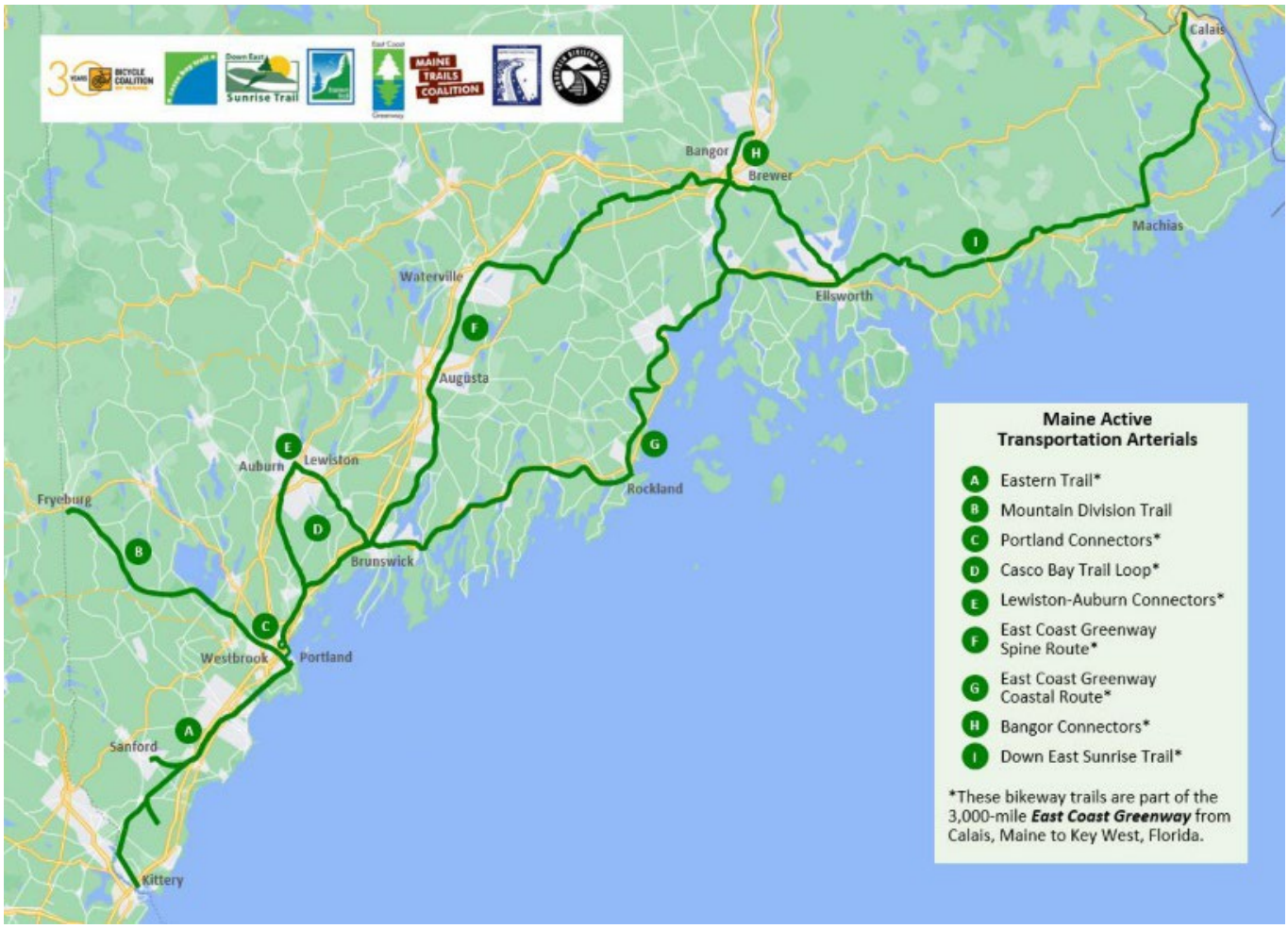
6.3 Off-Road System Needs

An important element of the *AT Plan* is the identification of off-road AT needs in the state—in particular, where state-owned, inactive rail corridors may be able to be used for AT purposes either as rail-with-trail or as an interim trail-until-rail. The *AT Plan* provides a high-level overview of the state's long-term vision for identifying and developing the HPAT trail system, as well as how MaineDOT could potentially prioritize the use of the inactive rail corridors to support this vision (pending the Rail Use Advisory Council [RUAC] process and legislative approval).

Maine Off-Road Regional Trail Network Proposal

In May 2022, a coalition of AT and recreational trail advocacy groups published a report titled "Maine Active Transportation Arterials," a preliminary vision for an "arterial" network of roadway-separated trails in Maine.[39] The corridors identified in the report have the potential to serve both recreational and transportation purposes, depending on many factors, including the future trail surface, intended use, and connectivity to bicycle and pedestrian generators and destinations in nearby communities. Focused near the coast, the arterials would provide regional trail connections between 25 of Maine's largest cities and towns with a combined population of 743,000. The 67 trail segments identified in the plan include portions of the East Coast Greenway, the Eastern Trail, the Mountain Division Trail, the Casco Bay Trail Loop, the Down East Sunrise Trail, and various other regional trails that exist already or have been proposed for future development.

Figure 10--Proposed Maine Active Transportation Arterials Map (from Maine Active Transportation Arterials)



[39] Bicycle Coalition of Maine, Casco Bay Trail Alliance, Down East Sunrise Trail Coalition, East Coast Greenway Alliance, Eastern Trail Alliance, Maine Trails Coalition, Merrymeeting Trailblazers, Mountain Division Alliance, *Maine Active Transportation Arterials,* preliminary release for public comment, May 2022, Maine+Active+Transportation+Arterials+-+May+2022.pdf (squarespace.com)

Some of the trail segments proposed in the report would be located along active or formerly active, state-owned railroad corridors, which may have potential for trail use but would need to follow the Rail Use Advisory Council (RUAC) process as defined in state law before any non-rail use of these corridors may be considered. The RUAC process has already been initiated for some of these segments, which includes an in-depth study of the corridor and public input from a wide array of stakeholders. For any proposed corridor that may consider colocation in the right-of-way of a private railway corridor, an agreement with that private railroad would be required for any project to advance.

Collectively, the trail advocates' vision has helped to inform some of the planning-level recommendations in the *AT Plan*. The report included a high-level analysis of potential costs associated with developing the 67 trail segments, which totals more than $157 million for the identified priority segments. This initial cost analysis helps frame the vision for this interconnected network. Still, as the implementation of select trail segments begins, it will be important to undertake additional cost analysis. Final trail development costs will likely be higher across these trail segments because of many factors that impact construction costs. Due to the large breadth and scope of this proposed regional trail system, realistic implementation of feasible trail segments would constitute a long-term endeavor driven by feasibility, availability of trail corridors, and available funding.

MaineDOT recognizes the hard work and vision put forth by many stakeholder organizations in the "Maine Active Transportation Arterials" report; this vision could provide an array of benefits to the communities along these trail segments as well and the entire state. Building on this vision, MaineDOT will work collaboratively with stakeholders, municipalities, and many others to identify the feasibility and prioritization of trail segments from this vision, as well as requests put forward by other communities, to identify HPAT trail segments to prioritize for implementation, as timelines and resources allow.

Click here to find the full Maine Active Transportation Arterials Report.

State-Owned, Inactive Rail Corridors

The *AT Plan* includes a high-level assessment of four inactive rail corridors owned by the State of Maine. Ranging in length from 13 miles to 26.5 miles, the corridors are potential candidates for interim trail use, designed to either temporarily replace the inactive rail line (Trail-until-Rail), or to run alongside the rail bed (Rail-with-Trail). The assessment of the rail corridors was included in Resolves 2021, Ch. 61.[40] MaineDOT will incorporate this assessment and recommendations from all RUAC studies (which includes the potential of restored rail service) and consider how to prioritize potential trail or rail investments within the corridors.

Background

Concurrent with the *AT Plan* effort, MaineDOT has worked with the RUACs to study three of the four state-owned, inactive rail corridors being assessed for feasibility at a high-level. The corridors are shown on the map on the following page and include:

- The Mountain Division Corridor from the Standish/Gorham line to Fryeburg, a 31-mile corridor bracketed by two existing Rail-With-Trail facilities.

[40] [40] Resolves 2021, Ch. 61, https://legislature.maine.gov/bills/getPDF.asp?paper=HP1004&item=3&snum=130

- The Berlin Subdivision—a.k.a. the St. Lawrence & Atlantic—a 26.5-mile corridor from Portland to Auburn via Yarmouth.
- The Lower Road corridor from Augusta to Brunswick, 25.9 miles long.
- The Calais Branch from Calais to the Down East Sunrise Trail in Ayers Junction, a 13.0-mile segment that is inactive, separate from the still-active Calais Branch along U.S. Route 1.

Figure 11—Inactive, State-Owned Rail Corridors with Existing Trails, East Coast Greenway (ECG), and U.S. Bike Routes

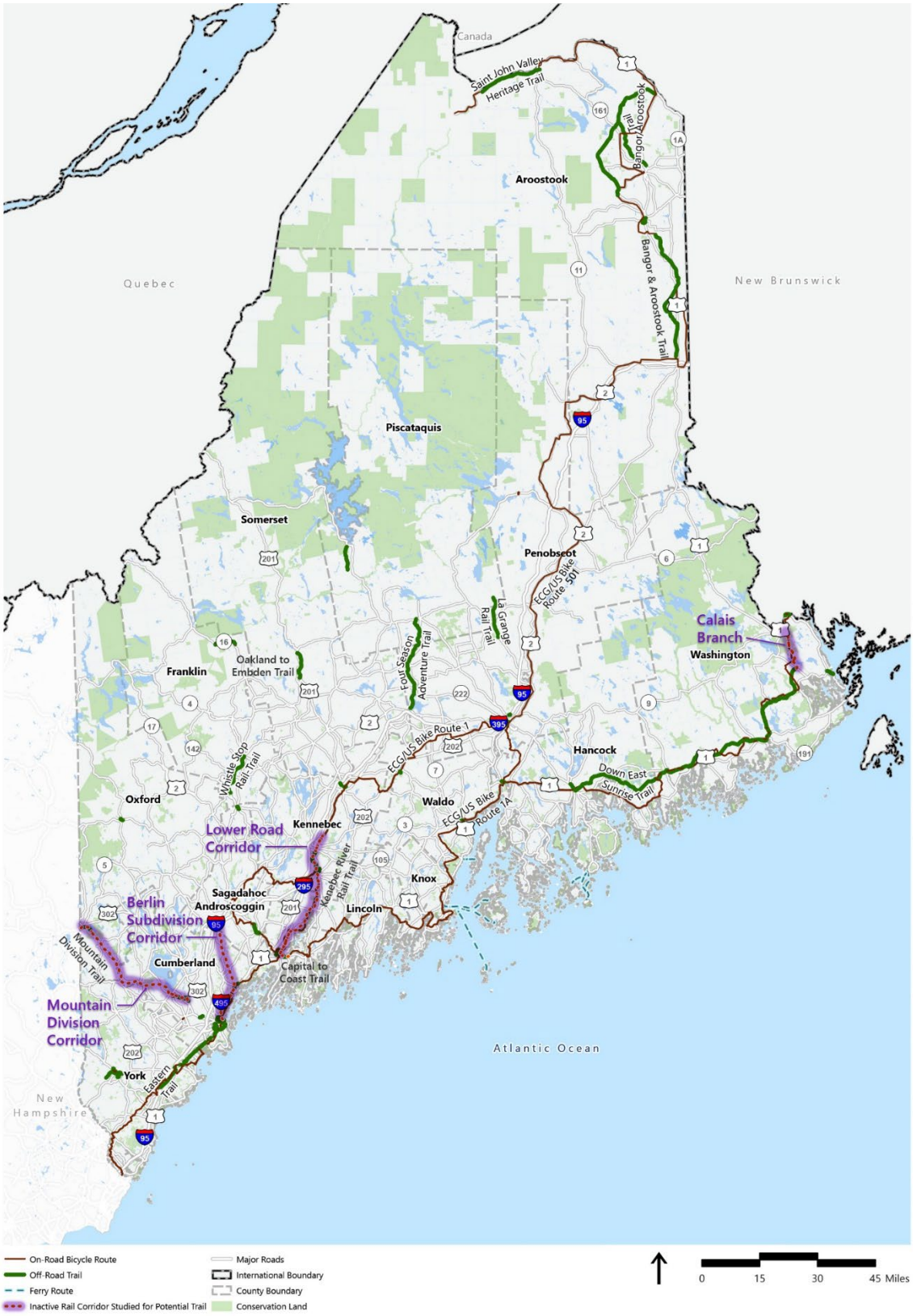


Figure Reference: \\vhb\gbl\proj\SPortland\55569.00 Maine Statewide AT Plan\Graphics\FIGURES\Statewide Trail Maps

The RUAC process was established by 2021 Public Law 239[41]. The goal is to review up to four scenarios:

1. Maintain and preserve tracks and appurtenances in place with no change (not included in the *AT Plan* process)
2. Potential restoration of passenger or freight rail with no trail use (not included in the *AT Plan* process)
3. Rail-with-Trail (RWT): placing a trail adjacent to the existing rails and other rail infrastructure, typically using a 15-foot offset from the track centerline
4. Interim Trail-until-Rail (TUR): replacing any rails, ties, and other infrastructure in the corridor with a temporary trail running on the former rail bed

Note: Depending on the context, the RWT and TUR options could be restricted to AT use only. Some motorized uses, such as snowmobiles and potentially ATVs, may be allowed. Also, in any of the scenarios, the potential for future rail service must be maintained by state statute. Therefore, in option three above, the trail could be removed in the future to make way for rail service.[42]

Rail Corridor Conditions

The *AT Plan* team assessed the four corridors to determine their feasibility for either RWT or TUR use. The assessment includes data-gathering of the four corridors' physical characteristics, including ROW width, the presence of rail tracks and ties, adjacent land use, the existence or absence of rail bridges, at-grade crossings (both signalized and unsignalized), nearby populations, and environmental challenges, if known.

The team assessed geographic elements such as streams and rivers, other water bodies, conservation lands, wetlands, floodplains, wellhead protection areas, and public water supply zones using GIS-based maps and other information. The presence of nearby roads and railroad corridors, existing bridges, road crossing locations, and key destinations such as schools, hospitals, and parks were also considered. The review and assessment of the four corridors can be found in Appendix C.

41 2021 Public Law 239, https://legislature.maine.gov/legis/bills/display_ps.asp?LD=1133&snum=130

42 State law via the State Railroad Preservation Act (RPA) provides MaineDOT the right of first refusal to purchase a rail corridor if rail service has ceased or is proposed for abandonment. While any purchase by MaineDOT under the RPA is intended for rail transportation, through the RUAC process, interim trail use is permissible. For more information, see: https://legislature.maine.gov/legis/statutes/23/title23ch615sec0.html

Table 9—Summary of Rail Corridor Characteristics for Three AT Plan Inactive Rail Corridors [43]

RR Corridor Characteristic	Berlin Subdivision	Lower Road Corridor	Calais Branch
MP Start (Town)	0.0 (Portland)	30.22 (Brunswick)	254.51 (Pembroke)
MP End (Town)	26.48 (Auburn)	56.08 (Gardiner)	267.53 (Calais)
Corridor Length (Miles)	26.5	25.9	13.0
ROW Width (Feet)	96'-126'	50'-135'	50'-66'
At-Grade Road Crossings			
Public, Uncontrolled	7	8	7
Public, Crossbuck with Beacons	12	13 (2 include crossing arm)	0
Private (Typically a Farm Road)	23	14	0
Bridges	15	16	4
Corridor Communities	Portland, Falmouth, Yarmouth, North Yarmouth, Pownal, New Gloucester	Brunswick, Topsham, Bowdoinham, Richmond, Gardiner	Pembroke, Charlotte, Baring Pit, Calais
Corridor Communities' Population	90,000	40,400	3,350
Land Use Character	Urban industrial and suburban residential areas to the south and rural farmland in the north	Rural area crossing through a village center, with much of the corridor along the Kennebec River	Wooded and undeveloped land with many enviro-sensitive zones, including the Moosehorn National Wildlife Refuge

Cost Estimates

Understanding costs is critical to prioritizing potential investments in the four inactive, state-owned corridors. Order-of-magnitude estimates include a RWT and TUR alternative, and each with a sub-option that includes either a stone dust/gravel surface or an asphalt paved surface. The conceptual project cost estimates include:

43 For characteristics of the Mountain Division Corridor, see HNTB, *Mountain Division Feasibility Study: Potential Uses and Economic Benefits*, prepared for MaineDOT, May 2022, https://www.maine.gov/mdot/ofps/docs/mdrcc/HNTB_Mtn%20Div%20Feasibilty%20Study_2022-05-09.pdf

- Trail construction.
- Grade crossing upgrades (marked crosswalk; warning signs; or, depending on speed of traffic, a flashing beacon).
- Bridge improvements.

Costs were estimated for both stone dust or gravel and paved trail surfaces for both TUR and RWT configurations. Each alternative includes 30 percent for a construction contingency, 10 percent for design engineering, and 15 percent for construction administration and engineering. (For assumptions used for the cost estimates, see Appendix C.) Potential additional costs for right-of-way impacts or environmental mitigation were not included.

Table 10—Estimated Costs: Mountain Division Line from Gorham to Fryeburg

Trail Alternatives (31 miles)	Estimated Project Costs[44]
Rail-with-Trail with Stone Dust or Gravel Trail Surface	$82,400,000
Rail-with-Trail with Asphalt Pavement Trail Surface	$85,700,000
Trail-until-Rail with Stone Dust or Gravel Trail Surface	$16,900,000
Trail-until-Rail with Asphalt Pavement Trail Surface	$20,100,000

Table 11—Estimated Costs: Berlin Subdivision Corridor from Portland to Auburn (via Yarmouth)

Trail Alternative (26.5 miles)	Estimated Project Costs[45]
Rail-with-Trail with Stone Dust or Gravel Trail Surface	$90,000,000
Rail-with-Trail with Asphalt Pavement Trail Surface	$94,300,000
Trail-until-Rail with Stone Dust or Gravel Trail Surface	$47,500,000
Trail-until-Rail with Asphalt Pavement Trail Surface	$55,000,000

Table 12—Estimated Costs: Lower Road Corridor from Augusta to Brunswick

Trail Alternative (26 miles)	Estimated Project Costs[46]
Rail-with-Trail with Stone Dust or Gravel Trail Surface	$83,500,000
Rail-with-Trail with Asphalt Pavement Trail Surface	$88,400,000
Trail-until-Rail with Stone Dust or Gravel Trail Surface	$32,600,000
Trail-until-Rail with Asphalt Pavement Trail Surface	$41,100,000

44 Cost estimates derived from *Mountain Division Feasibility Study.* They do *not* include the costs to upgrade the existing rail for renewed rail service.

45 The cost for the TUR (asphalt) option has been updated to match the draft *Berlin Subdivision Rail Corridor Study*, Rail Use Advisory Council | MaineDOT.

46 In the two rail-with-trail alternatives, the segment from Jordan Avenue in Brunswick to Tedford Road in Topsham alone costs $19 million to accommodate wider bridges over the Androscoggin River and Route 1, and wider underpass below Route 196 in Topsham. In both the RWT and the TUR alternatives, cost estimate spreadsheets in the Appendix C include a separate sub-total for this complex segment to distinguish it from the rest of the corridor.

Table 13—Estimated Costs: Calais Branch Line from Calais to Ayers Junction

Trail Alternative (13 miles)	Estimated Project Costs
Rail-with-Trail with Stone Dust or Gravel Trail Surface	$28,300,000
Rail-with-Trail with Asphalt Pavement Trail Surface	$30,400,000
Trail-until-Rail with Stone Dust or Gravel Trail Surface	$12,900,000
Trail-until-Rail with Asphalt Pavement Trail Surface	$16,300,000

Potential Use Estimates

The potential use estimates task includes extracting and reviewing data from shared-use paths and rail trails in similar contexts to the Calais Branch, Lower Road, and Berlin Subdivision corridors.[47] The resulting data have been refined to calculate both high and low usage estimates for interim trail use in each corridor during the "peak month" of AT use (i.e., 30 days in summer or early fall).

Methodology

The planning team reviewed use and impact studies for trails in similar contexts. Existing data were used to establish the respective context, identifying each trail's location, population, development patterns, mileage, and nearby destinations. Existing trail usage data include non-motorized trail user counts recorded before and during the first two years of the COVID-19 pandemic, during which time spikes in trail usage nationwide occurred. The seven case study trails are in Maine and Vermont and include shared-use paths, Rail-to-Trail, and RWT examples:

- Maine's Westside Trail.
- Maine's Kennebec River Rail Trail.
- Maine's Eastern Trail in Scarborough.
- Maine's Mountain Division Line (both the Fryeburg segment and the Windham segment).
- Vermont's Missisquoi Valley Rail Trail.
- Vermont's West River Trail.

Because available count data were collected during different months and for different durations (10-day counts, two-week counts, etc.), the "peak month" was extrapolated for each trail. The goal is to have a peak month trail use for each trail that could be used as an "apples-to-apples" comparison among the seven case studies.

47 The Statewide AT Plan's original Scope of Work included a fourth corridor—the Mountain Division Line—however, the more detailed study by the Rail Use Advisory Council includes both use and benefit estimates that supersede what was proposed for this study.

AT Plan Corridor Use Estimates

Three of the seven case studies were selected for each of the three state-owned, inactive rail corridors based on key trail characteristics that correlate with use by pedestrians and bicyclists:

- Corridor length, in miles.
- Population of towns along the trail corridor.
- Number of destinations (state parks and beaches, other multi-use trails, and town/village centers) within a half-½ mile of the corridor center line.

Averages for each of the three key characteristics were calculated and compared with current conditions along the four corridors assessed in the *AT Plan*. A multiplier was calculated after comparing data from the average of the three case study trails with the available data for each of the *AT Plan* corridors. The multiplier is based on typical monthly temperature and precipitation levels, length of daylight hours, and seasonal recreational patterns. Annual trips were calculated based on a multiplier for all 12 months relative to the peak month. Relative to the peak months of June through September, the proportion of estimated trips for the other eight months of the year include:

- October and May: 75 percent of peak month.
- March, April, and November: 40 percent of peak month.
- January, February, and December: 25 percent of peak month (assumes a mix of walking, bicycling, cross-country skiing, and snowshoeing).

AT Case Study #6: Beth Condon Path, Yarmouth

View of path towards the bridge to Royal River Park (photo: Dan Ostrye)

The Beth Condon Memorial Multiuse Pathway in Yarmouth connects businesses, schools, and the Royal River Park. It was named after a student struck by a drunk driver while walking on Route 1 and was developed with strong support from the local community. The existing pathway stretches for roughly a mile and MaineDOT and Yarmouth have worked in the planning phase to extend it to the Freeport Town Line. There have also been long-term planning discussions in adjacent municipalities regarding a long-term extension of the multiuse path, eventually extending from Portland to Freeport Village. MaineDOT included AT components as part of the Route 1 Bridge over Main Street; the two I-295 Bridges over Route 1 currently under construction will facilitate the extension of the Beth Condon Path.

<u>Key Takeaways:</u>

- Adding separated AT facilities alongside busy corridors can be an effective way to increase safety and better connect communities.
- Community members are critical partners for identifying AT alternatives that work in their context and developing an AT vision for their communities.

The low-use and high-use ranges in the tables below reflect a 20-percent margin of error on the resulting estimate. The peak month, therefore, represents 13.3 percent of the annual total (i.e., the peak month is multiplied by 7.5 to arrive at the annual estimate). More details related to the corridor use eEstimates can be found in Appendix C.

Table 14—Estimated Trips: AT Plan Inactive Rail Corridors

AT Plan corridor	Low-use estimate (peak month)	High-use estimate (peak month)	Low-use estimate (annual)	High-use estimate (annual)
Mountain Division Line[48]	NA	NA	137,300	329,400
Berlin Subdivision Corridor	17,300	26,000	129,750	195,000
Lower Road Corridor	8,500	12,800	63,750	96,000
Calais Branch Line	2,100	3,100	15,750	23,500

Prioritization

Incorporating the analysis above, the four inactive, state-owned rail corridors were evaluated using qualitative criteria derived from the *AT Plan* goals and others related to trail planning. MaineDOT can use the criteria below in the future to evaluate other state-owned, inactive rail corridors.

- *AT Plan* Vision Element 1: Access to jobs, educations, business, recreation, and other destinations
- *AT Plan* Vision Element 2: Serves first- and last-mile connections to other transportation modes
- *AT Plan* Vision Element 3: Is accessible to all Maine people and visitors
- *AT Plan* Vision Element 4: Can serve as part of an integrated, safe, and connected system
- Size of surrounding populations
- Trip estimates (total)
- Can promote outdoor recreation and tourism
- Constructability
- Scenic qualities
- Cost

[48] A much broader low and high use range was developed for the Mountain Division trip estimate, per Table 6-5 of the May 2022 *Mountain Division Feasibility Study* report. Additionally Peak Month trips were not included in the methodology.

An evaluation of the four corridors was based on the criteria above, the detailed findings of which are available in Appendix C, Table 9A (scores when all criteria were equally weighted) and Table 9B (weighting that gave additional priority to criteria such as access to jobs, size of the surrounding population, and trip estimates). Both approaches yielded similar results, though the weighted criteria method highlighted the differences more clearly. As such, the *AT Plan* prioritizes the four corridors in the following order:

- 1: Berlin Subdivision Corridor
- 2: Lower Road Corridor
- 3: Mountain Division Line
- 4: Calais Branch Line

NOTE: Development of any interim trail (TUR or RWT) on any of the four corridors will be contingent on the results of the RUAC process, due for completion in early 2023. Recommendations from individual RAUCs may supersede the preliminary prioritization schedule shown above, pending approval by the Maine Department of Transportation Commissioner.

Berlin Subdivision Corridor near Presumpscot Street in Portland

7

Vision and Goals

MaineDOT's vision and goals for AT in Maine synthesized needs identified in the preparation of this plan, the input received from stakeholders and the general public, and the vision for the statewide multimodal transportation system articulated in the *LRTP*. These will form the basis for the implementation strategies outlined in the next chapter.

7.1 Context

The requirements to integrate walking, bicycling, and rolling for people of all abilities within Maine's transportation system have a clear basis in both state and federal surface transportation and civil rights law and U.S. Department of Transportation (USDOT) and FHWA policy.

Related to the overarching vision for Maine's transportation system, support for AT can be found throughout the *LRTP* goals:





Safe travel for all	A well-managed system	A vibrant economy and world-class quality of life	Environmentally sustainable transportation system	Equitable access
Provide a safe transportation system for all users and modes of transportation.	Effectively manage Maine's existing transportation system within reliable funding levels to provide levels of service that are acceptable to our customers.	Invest in transportation initiatives that support economic opportunity for Maine people, communities, and businesses.	Invest in practical transportation solutions that mitigate impacts on the natural world and prepare for the realities of climate change.	Ensure that all Maine people have access to safe and reliable transportation regardless of who you are or where you are.

Similar to Maine's *LRTP*, federal guidance also supports the development of a connected multimodal transportation system that includes pedestrians and bicyclists in all aspects of public engagement, training, planning, designing, constructing, and maintaining the transportation network. All six of the critical goals in the USDOT's November 2021 *Strategic Framework FY2022-2026* impact active transportation: safety, economic strength and global competitiveness, equity, climate and sustainability, transformation, and organizational excellence.[49]

Over the past several decades, transportation equity for traditionally underserved people has been elevated as a critical concern. Per MaineDOT's *Statement on Equity, "*traditionally underserved" populations are defined as persons or communities who can be identified as:

- Low-income individuals or households
- Older adults
- People of color
- Commuters/workers and potential workers
- Individuals and households without access to a vehicle or for whom a driver's license is unattainable
- Individuals in substance use recovery
- Individuals with physical or mental disabilities
- Individuals for whom English is a second language

7.2 AT Vision

MaineDOT will maintain, improve, and expand safe AT options statewide by leveraging investments in infrastructure to improve pedestrian and bicyclist safety; expand mobility; support economic development; reduce greenhouse gas emissions; and enhance community vibrancy, quality of life, and public health for Maine people and visitors alike. MaineDOT envisions an AT system that:

1. *Supports and improves people's quality of life and ability to access jobs, education, businesses, healthcare, essential services, social/recreational opportunities, and other destinations;*
1. *Can serve as a first- and last-mile connection to other modes of transportation;*
2. *Is accessible to all Maine people and visitors; and*
3. *Can serve as an integrated, safe, and connected system regionally and statewide.*

A robust AT system statewide will support the Maine Climate Action Plan and the Maine Economic Development Strategy 2020-2029, and enhance the vibrancy of Maine's cities, quintessential villages, and rural areas.

[49] U.S. Department of Transportation, *DOT Strategic Framework FY 2022-2026, For Public Comment,* November 2021, https://www.transportation.gov/sites/dot.gov/files/2021-11/DOT%20Strategic%20Framework%20for%20Public%20Comment.pdf

7.3 AT Goals

MaineDOT has developed five goals to move towards achieving the AT vision and meeting the needs identified in Chapter 4. These are meant to provide MaineDOT with a pragmatic, achievable approach to improving the statewide AT system.

1. **Make prioritized, cost-effective improvements to the on-road AT network.**
2. **Make prioritized expansions to the off-road AT network, given available resources.**
3. **Enhance multimodal connections for all Maine people.**
4. **Improve AT education and outreach efforts.**
5. **Identify and pursue new funding opportunities.**

Achieving these goals will require dedication on the part of MaineDOT and cooperation with numerous stakeholders throughout the state. The next chapter will provide a set of strategies that MaineDOT will implement in order to reach these goals.

AT Case Study #7: Route 1 Improvements, Ogunquit

Ogunquit Route 1 looking north to the village center

MaineDOT worked closely with the Town of Ogunquit during project planning, design, and construction for a comprehensive $13.5-million Route 1 Corridor Improvement Project that included 2.6 miles of brick and paved sidewalks, two miles of road construction, two new bridges with sidewalks, and a new downtown streetscape. Bicycle and pedestrian safety was a primary factor in project selection. The project was completed in 2017, and the Route 1 corridor in Ogunquit today is a much safer and more "complete" street relative to what it was a decade ago. This has helped to transform the town into a much more walkable and bikeable village.

Key takeaways:

- Including AT elements in larger highway projects as part of a Complete Streets approach can have major positive outcomes and increase project efficiency.
- Improving AT infrastructure in village centers can have an important impact on safety, quality of life, and economic opportunity.
- Lessons learned from Ogunquit have helped to inform MaineDOT's Village Partnership Initiative.

8

Implementation Plan

Every successful plan must include sound implementation strategies to achieve the plan's goals. To do so requires coordination among stakeholders; a clear set of strategies; and a clear understanding of funding opportunities, challenges, and reasonable expectations.

8.1 Introduction

Coordinated actions among several agencies and organizations are needed to improve conditions for AT and increase the number of people of all abilities walking, bicycling, and rolling in Maine. Although MaineDOT has taken the lead in creating the *AT Plan* as part of the *LRTP* process, it is meant to be a guide for the entire state. Municipalities, MPOs/RPOs, other state agencies, the FHWA, AT advocates and other non-profits, and users of Maine's transportation system all have roles in helping to plan, design, build, and maintain a transportation system that promotes AT. The AT system will encourage more walking, rolling, bicycling, skiing, and snowshoeing and will improve public health, environmental, economic, and mobility outcomes over the next five to ten years and beyond.

The *AT Plan* is meant to guide MaineDOT decisions, be a resource for MPOs/RPOs and municipalities to develop and implement their own AT plans, and inspire advocates to continue organizing around strategies that increase the number of people using AT modes. The key stakeholders include:

- **MaineDOT** will take the leading role in implementing and monitoring the *AT Plan*. The department's critical responsibilities include:
  - Safety improvements to existing AT infrastructure with particular attention to interfaces between different transportation modes.
  - Developing multi-use trails, including potential interim trails on inactive, state-owned rail corridors and other locations, as appropriate (sometimes in coordination with the Maine Bureau of Parks and Lands).
  - Paving roadway shoulders for AT use through its Regional Program, especially along HPAT HCP 3 and HCP 4 roadways. Financial, geometric, environmental, or property constraints may limit implementation in some areas.
  - Implementing the updated Complete Streets Policy, Local Match Policy, and the Equity Statement.
  - Supporting and assisting municipalities during roadway improvement or construction projects.
  - Developing the *Work Plan* and distributing federal funds to the MPOs.
  - Developing ongoing and new AT education and safety programs.

- Monitoring recommended performance measures to track progress.

› Those supporting the implementation of the *AT Plan* include:

- **MPOs/RPOs** assisting with regional AT network planning and prioritization and collaboration with municipalities for both projects and education/safety programs.
- **AT advocates and other non-profit organizations** (such as BCM, the AARP, or the American Automobile Association) continuing outreach to their members about the *AT Plan* and building community support needed through the public involvement process to help with implementation.
- **Municipalities** providing commitments to maintain AT facilities where needed, assisting with local visioning, planning an expanded pedestrian and bicycle network, and facilitating low-cost pilots to demonstrate potentially effective low-cost AT facility design.
- **State agencies** assisting with the planning and implementation of AT strategies, including the Department of Agriculture, Conservation and Forestry (DACF); the Department of Health and Human Services; the Department of Education; the Bureau of Motor Vehicles; and the Bureau of Highway Safety.
- **State and local law enforcement** to incorporate recommendations related to traffic education and enforcement of traffic laws.

With the support of our partners, MaineDOT will implement a set of strategies to achieve our AT goals for Maine:

1. **Make prioritized, cost-effective improvements to the on-road AT network.**
2. **Make prioritized expansions to the off-road AT network, given available resources.**
3. **Enhance multimodal connections for all Maine people.**
4. **Improve AT education and outreach efforts.**
5. **Identify and pursue new funding opportunities.**

8.2 Implementation Strategies

This section includes strategies to achieve the five *AT Plan* goals, including strategies for revising existing MaineDOT programs and policies and for new programs and policies. All are intended to promote AT with an emphasis on safety for pedestrians, bicyclists, another other AT users—including people with disabilities or who rely on mobility devices such as wheelchairs, powered mobility scooters, and walkers. Note that adopting any of the strategies can be a time-consuming and take months or even years from start to finish.

During plan development, an initial list of recommendations was developed and prioritized. Then, a final synthesis is built upon these and integrated elements of relevant MaineDOT initiatives to form the final list of implementation strategies. The AT Plan public outreach process findings, the existing conditions assessment, and the needs assessment informed these strategies.

The implementation initiatives are organized according to which of the five *AT Plan* goals they most directly support.

AT Case Study #8: Route 27 Improvements, Kingfield

Route 27/Main Street view south

MaineDOT is finalizing construction of a $9.2-million highway reconstruction project in Kingfield. The project includes both new and reconstructed sidewalks, paved shoulders, and other features to improve AT safety and accessibility such as ADA-compliant crosswalks and rapid flashing beacons. The project will also better define on-street parking to improve sight distance and is intended to reduce conflicts between AT and motorized transportation. This project was the culmination of an extensive public involvement and enhanced scoping process with the public and municipal officials.

Key takeaways:

- AT and Complete Streets are not only relevant in urban areas but are also important in smaller villages and rural areas.
- Balancing the needs of motor vehicle users and AT users in a community is possible and can be mutually beneficial as long as the public and local officials are engaged and heard throughout the process.

1. Goal: Make prioritized, cost-effective improvements to the on-road AT network

a. Strategy: Improve AT in villages and downtowns.

i. Complete and implement a substantive update of MaineDOT's Complete Streets Policy.

1. Provide opportunities for training on the Complete Streets Policy for MaineDOT project managers, planners, and engineers.

2. For all paving projects, continue and increase involvement, as appropriate, by the state's AT Planner or regional planners with knowledge of Complete Streets principles and design options.

ii. Promote and implement the Village Partnership Initiative and other Community-Based Initiatives as opportunities to re-envision transportation infrastructure in Maine's villages and downtowns—leveraging federal discretionary funding to support either small, spot improvements to AT infrastructure or large, transformative projects—including speed calming measures, improved crosswalks, and expanded or enhanced sidewalks—among other possible improvements.

iii. At transitions from higher-speed rural roads to lower-speed village roads, implement gateway treatments to alert drivers to reduce their speed as they enter village areas. MaineDOT's recently developed list of Gateway Treatment Options includes many tools to achieve this, such as speed step downs, painted markings, dynamic speed feedback signs, center islands, bump-outs, speed tables, and other options.

iv. Update MaineDOT design standards, as appropriate, in consideration of demonstrated best practices from Maine and other states. Elements to consider include guidance for where/when to incorporate sidewalks and sidepaths, adding crosswalks where there are established pedestrian desire lines, providing effective lighting, and creating safe landings.

v. Continue implementing AT pilot projects in accordance with the *2021 MaineDOT Procedures for Implementing Demonstration Projects and Non-project Related Roadway Changes*. These are intended to test out concepts related to speed reduction through traffic-calming measures and pedestrian and bicycle infrastructure.

b. Strategy: Improve AT on rural roads by paving shoulders along High-Priority AT corridors.

i. Building on the HCP 3 and 4 analysis conducted as a part of the *AT Plan*, MaineDOT will meet with stakeholders to develop a list of High-Priority AT (HPAT) road corridors, which will be incorporated as a layer in MaineDOT's Map Viewer.

ii. The Regional Program will implement shoulder paving on HCP 3 roads and some HCP 4 roads per the Regional Program's Collector Highway Improvement Program (CHIP) parameters, with a target of 15 to 20 miles per year—a portion of which will be along HPAT corridors.

iii. General cross-section expectations from the CHIP parameters are listed below, although cross-section widths on CHIP projects on HCP 3 and 4 roads may be adjusted with the approval of Regional Program Manager or designee when needed to address specific customer or location factors (see "Cross-Section Variances" in the CHIP Parameters).

1. For CHIP projects on HCP 3 (2019) corridors, four-foot-wide paved shoulders are desired, especially when AADT is 2,500 or more, or on HPAT road segments. Three-foot-wide shoulders will generally be the minimum, except as provided in the "Cross-Section Variances."
2. For CHIP projects on HCP 4 corridors, generally provide one-to-three-foot-wide paved shoulders established in accordance with the factors set forth in the "Cross-Section Variances." Four-foot-wide paved shoulders are desired on HPAT road segments.
3. A minimum of 24 feet in total paved width with two 11-foot-wide travel lanes generally will be provided.
4. Obtain a minimum clear width of 16 feet from centerline in guardrail/curb sections.

iv. The light pavement preservation treatment for built HCP 3 and HCP 4 roads will be Light Capital Paving (LCP Preservation) at the most cost-effective interval(s) and **will include the paving of shoulders.** Heavier preservation treatments, such as CPR, may be necessary to bring older built sections into a condition appropriate for LCP Preservation intervals.

c. Strategy: Assess speed limits and identify opportunities to adjust road design.

i. Conduct a study of roads posted at 35-40 MPH and assess their context and use.

ii. Identify opportunities to adjust speed limits and adjust roadway features (such as Gateway Treatments and Complete Streets elements) to match the basic purpose of the road in populated areas focused on human-scale use. This is especially important given the link between speed and fatal and serious injuries outlined in the existing conditions assessment.

2. Goal: Make prioritized expansions to the off-road AT network, given available resources

a. Strategy: Develop a list of HPAT trails and begin building out the network.

i. Review the Maine AT Arterials Vision and consider the needs and trail gaps articulated by the advocacy organizations that developed the report.

ii. Consider other requests from MPOs and RPOs, Maine's Tribes and Nations, municipalities, and other stakeholders for other off-road trail segments.

iii. Building on the AT Arterials Vision and other requests, MaineDOT will work with stakeholders to develop a set of HPAT trails.

iv. MaineDOT will aspire to build five to ten miles of new off-road trails per year (rolling average), given available resources.

v. Cooperate with other State of Maine departments and other stakeholders to develop other connected trails and leverage funding such as the Recreational Trails Program to support a cohesive off-rail AT network.

b. Strategy: Pending community feedback and legislative approval, develop HPAT trails along some state-owned, inactive rail corridors.

i. ***Pending recommendations from the ongoing Rail Use Advisory Council (RAUC) processes and legislative approval,*** implement AT-focused recommendations from the RUAC consistent with the data-driven prioritization process in the *AT Plan*.

ii. Consider classifying additional trails that undergo the RUAC process as HPAT trails and prioritize their construction using the prioritization criteria established in the *AT Plan*.

3. Goal: Enhance multimodal connections for all Maine people

a. Strategy: Increase AT access to multimodal connections.

i. Continue to improve ADA accessibility across the transportation system, per the MaineDOT ADA Transition Plan.

ii. Support transit agencies in securing grant funding to provide bicycle racks on all buses capable of holding them, increase public understanding of how to use them, and develop solutions for transporting e-bikes on public transit.

iii. When appropriate and given available funding, provide bicycle parking racks at well-used bus stops and transit stations along state highways, at multimodal stations, and at state-owned park-and-ride lots—especially where reliance on smaller transit vehicles precludes the use of bus-mounted bicycle racks.

iv. Leverage GO MAINE to facilitate AT and transit use for current residents, especially those who recently relocated to Maine and perhaps have yet to establish their daily commuting patterns.

b. Strategy: Provide additional consideration for underserved communities.

i. In assessing potential AT projects for future funding, consider the needs of underserved communities.

ii. Work with transit providers and local public works to provide transit stops that can be accessible year-round and are ADA-compliant.

4. Goal: Improve AT education and outreach efforts

a. Strategy: Support regions, Tribes and Nations, and municipalities in their AT planning, implementation, and maintenance efforts.

i. Provide municipalities with the option of conducting Heads Up! pedestrian safety audits.

ii. Conduct outreach and education with public works staff to encourage best practices and build capacity related to AT infrastructure planning and maintenance, as well as identifying and applying for grants and other funding options to support AT activities (including winter maintenance).

iii. Continue and expand opportunities for on-bike training programs for technical staff to be up to date on best practices for AT planning and design issues.

b. Strategy: Continue AT education and outreach efforts directed at all transportation system users.

i. Offer safety education, in cooperation with AT advocacy organizations and other stakeholders, for drivers, bicyclists, pedestrians, and other modal users, including a focus on vulnerable users such as aging adults and those without access to private automobiles.

ii. In areas with relatively high numbers of limited English-speaking households, work with municipalities to develop wayfinding, advisory, or regulatory signs in multiple languages or signs that use simple graphics or pictographs to convey information.

5. Goal: Identify and pursue new funding opportunities

a. Strategy: Continue existing funding.

i. As noted in in existing conditions chapter, in recent years MaineDOT (along with DACF) has spent approximately $26 million annually on average on AT infrastructure, through a variety of sources and projects.

b. Strategy: Explore and pursue new and expanded funding opportunities.

i. Achieving the *AT Plan* goals will require funding levels above what MaineDOT currently allocates to AT. While the total amount required will

vary significantly depending on the context of specific projects and initiatives, some major initiatives include:

1. MaineDOT's Regional Program will require funding for its paving efforts, which will cost approximately $175,000 per mile.
2. The Village Partnership Initiative will depend on available federal funding, with a target of approximately $20 million per year.
3. HPAT trail construction costs will vary based on their specific planning, engineering, right-of-way, and construction requirements. Funding for these trails will be subject to the availability of federal funds.

ii. While each project is different, to provide some idea of the cost of new AT infrastructure, MaineDOT developed a high-level estimate for the average construction cost of various types of AT infrastructure, which is reflected in the table below. These are primarily informative, and **actual project costs may vary significantly** depending on local conditions, requirements, and specifications. It is worth noting that some facilities are considerably more expensive than others. For instance, of the four rail corridors reviewed in the *AT Plan*, opting for a RWT over a TUR added between 72 percent and 388 percent to the overall cost of a trail project.

Table 15—Planning-Level Cost Estimates for Example AT Facility Improvements[50]

AT Facility	Rough Cost Estimate
Trail-until-Rail (stone dust or gravel)	$545K-1.7M per mile
Trail-until-Rail (asphalt)	$648K-2.0M per mile
Rail-with-Trail (stone dust or gravel)	$2.2-3.4M per mile
Rail-with-Trail (asphalt)	$2.3-3.6M per mile
New Shared Use Path – paved (range of prices from reconstruction of existing to new path with right-of-way and drainage)	$1.2-2.2M per mile
New or reconstructed sidewalk (range of prices from reconstruction of existing to new sidewalk with right-of-way and drainage)	$1.2-2.2M per mile
Highway shoulder paving (range of prices from Regional Program paving or reconstruction work to construction of new four-foot-wide shoulders).	$175K-1.0M per mile
Restriping road with high-visibility markings	$9,800 per mile
New signage (e.g., "Share the Road"), including pole and installation	$500 per sign

[50] Trail-Until-Rail and Rail-With-Trail costs based on cost estimates for the four rail corridors assessed in the AT Plan Needs Assessment. Other cost estimates based on historical costs for MaineDOT projects and do not always include planning, engineering, or right-of-way costs.

iii. The Bipartisan Infrastructure Law (BIL) includes an assortment of new, competitive funding opportunities for MaineDOT, Tribes, and Nations, MPOs, and municipalities. Federal discretionary opportunities will be required to help fund many of these initiatives, especially the Village Partnership Initiative and other village or downtown projects, the off-road regional trail system, and other multimodal and outreach/education strategies. A more detailed assessment of these opportunities can be found in Appendix F, but a summary of options is listed below:

1. The Rebuilding American Infrastructure with Sustainability and Equity (RAISE) discretionary grant program provides up to $25 million in funding for various multimodal projects. It is a strong option for supporting VPIs—such as the Downtown Sanford VPI that was funded at $25 million in 2022. The BIL provides a total of **$7.5 billion** for RAISE over five years.

2. The Multimodal Project Discretionary Grant (MPDG)—including the Mega, INFRA, and Rural grants—do not focus specifically on AT projects but can incorporate significant AT elements into larger-scale surface transportation projects. The MPDG may be an option for VPIs or other larger-scale multimodal investments. Combined, these programs will provide **$15 billion** over five years.

3. The new Carbon Reduction Program provides formula funds to reduce transportation emissions, including through the construction of on- and off-road AT facilities. In FY23, MaineDOT will receive more than **$5.8 million**.

4. The Active Transportation Infrastructure Investment Program funds federal grants for the planning and construction of eligible AT infrastructure, including both safe and connected AT facilities in an AT network within or between communities, or an AT spine connecting multiple communities, regions, or states. In FY23, this program will provide **$45 million** in federal funding.

5. The Reconnecting Communities Pilot (RCP) Program will provide **$1 billion** over five years to reconnect communities that have been cut off from economic opportunities by legacy transportation infrastructure—including opportunities to enhance AT connections.

6. FHWA's Bridge Formula Program (BFP) requires accommodations for bicyclists and pedestrians in most cases. Maine's 2022 share of BFP funds was **more than $31 million**.

iv. BIL has also provided new and reinforced existing funding opportunities for other entities responsible for AT in Maine. With careful coordination, these can help to reinforce the overall state system.

1. Safe Streets and Roads for All (SS4A) will provide **$5 billion** over five years in discretionary grant funding for regional organizations, municipalities, and Tribes and Nations to improve roadway safety, including AT users.

c. Strategy: Review Local Match Policy.

i. MaineDOT will review potential adjustments to its Local Match Policy to assess consistency with other MaineDOT polices, including Complete Streets and the Village Partnership Initiative.

Municipal Guide to AT Year-Round

While many people either walk, run, or ride bicycles for recreational and commuting only during fair-weather months, there are others who do so year-round because of preference or because they have few other options. Accommodation of AT users during the winter months depends on thoughtful roadway design, maintenance of AT facilities, appropriate snow-removal equipment, and a route prioritization schedule.

The following guidelines should be considered by **local officials**, with **technical support from MaineDOT where appropriate:**

- Plan on-road bicycle facilities and multiuse trails with sufficient room to accommodate snow-removal vehicles and storage space for snow (especially in urban areas where cross-country skiing and snowmobile use is less prevalent).
- When snow clearing of multiuse trails is not required (due to lack of federal funding) or desirable, alternative/parallel facilities for AT users are still necessary and should be clearly marked and maintained with snow removal.
- Implement recurring maintenance schedules targeting sweeping and removal of debris from shoulder bikeways and other AT infrastructure.
- Given budget and staffing challenges, municipalities should seek additional funding (via grants, etc.) to accommodate these best practices:
    - Use smaller, more specialized snow-removal vehicles to plow paths and narrower bicycle facilities, e.g., pickup truck-mounted plows or snowblowers.
    - Recessed thermoplastic pavement markings should be considered along key AT routes to minimize damage to shoulder and bike lane-striping during winter.
    - Where flexible bollards or vertical delineators are removed for winter snow clearing, prompt springtime replacement should be prioritized.
    - Cities and towns with a de-icing program should employ a proactive or anti-icing strategy on well-used paths and on-street bikeways.

A prioritization schedule for snow removal of designated on-street bike lanes and shoulders used by pedestrians and bicyclists is necessary and should focus on destinations that impact the highest volume of pedestrians and bicyclists immediately following snow events (i.e., routes to and from schools and key connections such as bridges). Some cities and towns clear their priority list of bicycle facilities in conjunction with or before many of their roadways.

8.3 Implementation Next Steps

- Maintain and enhance regular outreach and coordination with MPOs and RPOs, Tribes and Nations, municipalities, AT advocates, and underserved communities.
- Meet with stakeholders to assess on-road and off-road HPAT corridors.
- Conduct regular reviews of MaineDOT's progress towards achieving the five *AT Plan* goals, identify gaps in plan implementation, and provide recommendations for how to address those gaps. Share this information with stakeholders and seek regular input on plan implementation.
- Continue coordination between MaineDOT bureaus and other state agencies to track existing MaineDOT performance measures related to AT, especially safety.
- Continue and expand coordination with other state agencies regarding program and policy recommendations that will require their participation and support.
- Continue to identify new funding opportunities—especially federal BIL funding—to support implementation of the *AT Plan* strategies.

AT Case Study #9: Ellsworth Rail with Trail

Existing Ellsworth Trail (above) and Down East Sunrise Trail Sign (below)

MaineDOT partnered with the City of Ellsworth through the PPI program to complete a feasibility study to fill in the gap between the existing Down East Sunrise Trail and the Ellsworth Trail. The rail line through this segment is owned by MaineDOT, and this segment is leased and includes operation by the Down East Scenic Railroad. The study looked at several options for connectivity between the two existing trails, including existing adjacent roadways, and was informed by local public input. The city is now moving forward with the Preliminary Design phase of the project.

Key takeaways:

- The proposed trail connection accommodates non-motorized transportation, recreation, and social interaction.
- This project is a good example of rail with trail within a constrained area.