

4. Transportation

Introduction

The location of transportation routes is important to development patterns and the overall economic health of Brewer and the surrounding region. Brewer's transportation system consists of state, local and private roads and bridges, sidewalks and trails, as well as rail and transit systems. This multi-modal system is extremely important to existing and future development characteristics, both at the local and regional levels.

BACTS

BACTS is the Bangor Area Comprehensive Transportation System. It is the organization designated by the federal government and Maine state government to carry out transportation planning on the Greater Bangor urbanized area. The BACTS area includes Bangor, Brewer, and major portions of Hampden, Orono, Old Town, Milford, Bradley, Orrington, and the Penobscot Indian Nation.

BACTS evaluates and approves proposed transportation improvement projects and facilitates communication between its member communities and state and federal transportation agencies. It provides opportunities for public participation in transportation planning, and funding decisions. It also sponsors and conducts studies to assist in the transportation planning process.

BACTS is governed by a policy committee and a technical committee. The members of these committees are drawn from municipal officials (both elected and appointed) of the member cities and towns, a member from the Maine Department of Transportation, Federal Transit Administration and Federal Highway Administration. In addition, there are non-voting members on the policy committee representing the Bangor Region Chamber of Commerce, and the Comprehensive Economic Development Strategy Transportation Subcommittee. There is a staff of four; a director, a transportation planner, a technician and an office manager, with offices at 12 Acme Road in Brewer.

Highway System

The overwhelming majority of people and goods are transported over the highway system in Brewer and the region. As described in the BACTS Long Range Transportation plan, "The present day network has been shaped by a number of historical factors including:

- The formation of compact urban centers around major waterways in the 18th and 19th centuries, and the development of primitive roadways for pedestrians and horse-borne travelers and traders;
- The mass production of motor vehicles and subsequent construction of the Maine state highway system from 1925 to 1960, including the construction of Interstate I-95 during the 1950s and subsequent development in areas close to the exit ramps; and
- The opening of the I-395 spur including the third Penobscot River Bridge in the mid-1980s."

Highway classifications. There are a total of 63.67 miles of road in Brewer including 3.04 miles of federal highway, 11.53 miles of State highways, 4.59 miles of collector roads, and 44.52 miles of local

roads. The City of Brewer is responsible for winter maintenance of all highways and roads in the City except I-395 and a small portion of outer Wilson Street.

Arterial highways: These are the major travel routes in the state. These roads carry high speed, long distance travel and attract a significant amount of federal funding. The state is responsible for road repair and resurfacing on arterial highways. Brewer's arterials include:

Route	Centerline Miles
Interstate I-395	3.04
15/South Main Street	2.26
9/178 North Main Street	4.01
Parkway South from Wilson to I-395	0.54
1A/State Street	1.16
1A Wilson Street	3.39
Betton Street	0.09
Penobscot Street	0.08
Total	11.53

Collectors. These roads collect and distribute traffic between local roads and arterials. These roads are eligible for federal and state funding. Collectors in Brewer include:

Route	Centerline Miles
Eastern Avenue	1.39
Elm Street	0.5
Mill Street	0.48
Parkway South (S of I-395)	1.21
Pierce Road	1.01
Total	4.59

Local Roads. Local roads are designed primarily to serve adjacent land areas and usually carry low volumes of traffic.

Traffic volumes. MaineDOT and BACTS monitor traffic volumes and traffic growth in the City of Brewer using fixed and movable monitoring systems. The following table shows Annual Average Daily Traffic (AADT) on several major roads during the period 2003/04 to 2011/12. Traffic volumes are not measured every year at every location. According to the BACTS long range plan, traffic in the region is no longer increasing as it was up to 2003. Traffic decreases began occurring before the recession began and were probably connected to increased fuel costs.

AADT on Major Roads 2003/04 – 2011/12						
Route	2003	2004	2006	2008	2011	2012
US 1A (Wilson St) SE/O SR 9/15 (N Main)	10,460	10,790	9,150	9,520	9,100	
US 1A (Wilson St) SE/O Parkway South		22,830	17,990	21,010		
US 1A @ Holden TL	23,330	20,160	20,080	20,290	20,120	21,660
SR 9/15 (N Main St) NE/O US 1A (Wilson St)	16,020		13,450	12,270	11,180	
SR 15 (S Main St) SW/O US 1A (Wilson St)	17,580	16,010	11,130		13,780	
SR 15 (S Main St) @ Orrington TL	11,410		11,130	9,140	10,060	
I-395 EB W/O S Main St Ramp	14,650	15,190		14,910		
Parkway South E/O I-395 Interchange	14,660				14,000	

High crash locations. Each year, MaineDOT publishes a list summarizing the previous three years' worth of crash data and identifies high crash locations statewide. The standard comparison statistic is known as the Critical Rate Factor (CRF). The CRF is determined by comparing the historical crash rate on a section of roadway (link) or intersection (node) to what would be expected based on road type, traffic volumes, and a statewide average of crash rates at similar locations. A CRF greater than 1.0 indicates that the number of crashes exceeds expectations (the location is more dangerous than average) while a CRF less than 1.0 indicates that the location is safer than average. A node or link must have a CRF of more than 1.0 and at least eight reportable crashes over a three-year period to meet the criteria for listing as a high crash location. BACTS has compiled a list of highway crash locations that are especially serious due to a CRF greater than 3.0, 20 or more crashes in a three-year period, or both. The only Brewer location on this list is Route 1A and Business Route 9 (CRF of 1.04, 41 crashes).

Critical problem areas. BACTS has identified a number of highway segments in the region as critical problem areas because the current and predicted traffic volumes and land use demands already exceed the capabilities of the existing road design. If left unaddressed, these roadways could prove to be a hindrance to future growth and development within the region. The only highway segment on this list in Brewer is Wilson Street (1A) from Acme Road to I-395.

BACTS truck route study. In 2007, BACTS commissioned a study that identified a list of spot improvements needed at specific locations needed to accommodate trucks on the region's roads. Needed improvement in Brewer include:

- State Street at Wilson Street
- Wilson Street at North Main Street
- Route 15 near the Orrington Town Line
- State Street at North Main Street

Major river crossings. While there are a number of bridges in Brewer, the three most important ones cross the Penobscot River and connect Brewer and Bangor. These bridges are the Veterans Memorial Bridge on I-395, the Joshua Chamberlain Bridge on U.S. 1A/Route 9, and the Penobscot Bridge on Route 15.

Highway projects. There are several transportation projects that are funded through BACTS or directly by the Maine Department of Transportation that are either underway or are scheduled for FY 2014/15. These include:

BACTS Projects

- Wilson Street widening from Parkway South to Green point Road to accommodate a fifth turning lane;
- Pavement Preservation: State Street from the Penobscot Bridge to Eastern Avenue, and from Mullen Way to Wilson Street;
- Pavement Preservation: Wilson Street from Parkway South to Main Street; and

MaineDOT Projects

- Construction of waterfront bicycle and pedestrian trail;
- Route 1A near the Holden Town Line.
- Painting of Joshua Chamberlain bridge.

Public Transportation

Community Connector. The City of Brewer is served by Community Connector (formerly Bat Community Connector), a fixed route bus system owned and operated by the City of Bangor. Community Connector operates within and serves the urbanized areas of Bangor, Brewer, Hampden, Veazie, Orono and Old Town as well as the University of Maine at Orono. The routes are within walking distance of 95% of the population of the six communities.

Community Connector provides service system-wide Monday through Friday. Saturday service is available in all communities except Hampden. The basic hours of operation are from 6:15 a.m. to 6:15 p.m. Except for the Mall Hopper and the Black Bear Orono Express, all buses offer service to and from a central point (Bangor Depot) located at Pickering Square in downtown Bangor. Most buses are scheduled to depart from the downtown terminal 15 minutes before or after the hour. Schedules are designed to allow quick and easy transfers between buses at Pickering Square.

There are two routes serving Brewer:

- **Brewer North** – a single bus serves this route. The route begins at Bangor Depot, travels north on Main Street in Brewer, then serves neighborhoods north of Wilson Street before arriving at Wilson Street via Washington Street, State Street, and Chamberlain Street. The route then continues on Wilson Street to the LaFayette Family Cancer Center before reversing direction and returning through North Brewer to Bangor Depot. Buses run every hour on weekdays and on Saturday. During the year ending in May of 2013, monthly ridership (boardings) ranged from a low of 4,328 (September) to a high of 5,079 (June).
- **Brewer South** – a single bus serves this route as well. The route begins at Bangor Depot, travels through the southern part of Brewer along South Main Street, Elm Street, Parkway South and outer Wilson Street as far as the LaFayette Family Cancer Center and back. Buses run every hour on weekdays and on Saturday. During the year ending in May of 2013, monthly ridership ranged from a low of 4,204 (February) to a high of 5,542 (June).

Total City ridership on the two routes combined for the year ending May, 2013, ranged from a low of 8,76 (February) to a high of 10,621 (June).

The LYNX. The LYNX is a service of Penquis that provides door-to-door service in Brewer for seniors, low income customers, people with disabilities, the general public and customers of MaineCare, Maine Department of Health and Human Services and many other social service agencies. Service is provided with accessible vans/light duty buses, volunteer drivers, taxis, and the MaineCare friend and family reimbursement program.

Bicycle and Pedestrian Facilities

The 1996 BACTS Pedestrian Plan includes an inventory and maps of existing roads with sidewalks throughout the BACT area, including Brewer. This plan has been updated several times, most recently in 2009. The 2009 update includes sidewalks within ¾ mile of the current bus routes.

A portion of the East Coast Greenway come through Brewer. The trail extends from the Joshua Chamberlain bridge, along Parkway South below I-395, and out Wiswell Road to Route 1A towards the Acadia region.

The BACTS Long Range Plan notes that while there has been a great deal of progress in making communities more bicycle and pedestrian friendly, there are still serious deficiencies in all communities. Some of these include:

- Many sidewalks are not ADA compliant
- Sidewalks are nonexistent on at least one side of many urban streets
- Crosswalks are missing or are difficult to see at the majority of intersections in the BACTS area
- Many intersections are not yet ADA compliant for pedestrians
- Few intersections contain bike lane markings, land striping or advance bike lane signage to alert motorists to the potential for cyclists within intersections.

BACTS recently completed a Safe Routes to School study that recommended the construction of several sidewalks:

- Extend the sidewalk on the north side of Parkway South to Elm Street;
- Add a sidewalk on Grove Street;
- Build the walkway on the City owned property across from the schools which will align with the current crosswalk on Parkway South in front of the school and connect Sherwood Forest neighborhoods to the crosswalk.

Air Transportation (from BACTS Long Range Transportation Plan)

Commercial passenger service is available to residents of Brewer through Bangor International Airport (BGR), while general aviation service is available at both BGR and DeWitt Field in Old Town.

BGR offers domestic air service to the region and serves as a transit point for commercial and international flights. The Airport is also home to the 101st Maine National Guard Air Refueling wing. BGR is the closest full service US airport to Europe with fuel and customs services available 24 hours a

day, seven days a week. The airport, known as a world class transatlantic facility has all weather access, CAT III, ILS, an 11,440 foot runway, and is capable of handling any aircraft flying today.

The Brewer Airport is a small, privately owned airport that is not used very much. Its future is uncertain.

Rail Transportation (from BACTS Long Range Transportation Plan)

Two rail systems, 1) Pan AM and 2) Montreal, Maine and Atlantic (MMA), operate in the region and provide freight rail connections to Canada and the remainder of the United States. Total tonnage of goods hauled by Maine's railroads continues to decline, as is the case nationally. There are no passenger rail facilities in the region.

Pan Am Railways. The largest regional railroad in Maine is Pan Am Railways (formerly Guilford Industries). It owns three railroad companies operating in Maine: the Boston and Maine Corporation, the Maine Central Railroad Company, and the Springfield Terminal Railway Company, which operates the rights-of-way of the other two companies. The Boston and Maine line extends from the New Hampshire border to Portland, where it connects with the Maine Central line.

The Maine Central and the Springfield Central lines (Guilford Industries) extend from Portland, through Waterville, through Northern Maine Junction in Hermon, then through the BACTS area (along the Penobscot River in Bangor, Orono, Old Town), Lincoln, and Mattawamkeag. Springfield Central serves the James River paper mill in Old Town. The line crosses the Penobscot River from Bangor into Brewer where a branch line extends down to the Verso paper mill in Bucksport. A second rail line, known as the Calais Branch and now owned by the State of Maine, extends from Brewer to Calais. The Calais Branch has been inactive since 1985 and MaineDOT has proposed several options for the line's reuse including freight and passenger rail traffic, bus service, and a recreational trail for hikers, bikers, and snowmobiles. The Calais Branch east of Ellsworth has been converted to a multi-use trail while a portion of the line west of Ellsworth is being leased by the Downeast Scenic Railroad for excursion trips.

Typical products hauled by Pan Am for the paper mills include finished paper rolls, clay, tapioca, chlorine, and other chemicals.

Montreal, Maine, and Atlantic Railroad. The Montreal, Maine, and Atlantic Railroad (MMA) extends from the Mack Point pier facility in Searsport to Northern Maine Junction in Hermon (located just west of Bangor International Airport), through the northwestern corner of Bangor north to the Millinocket area and Aroostook County. MMA hauls coal, salt, chemicals and petroleum to the BACTS area, Northern Maine Junction, the paper mills in Bucksport and East Millinocket, and north to Aroostook County destinations.

Roadway bridge heights along the rail line are high enough so as to permit double stacking of shipping containers on the MMA railroad from Searsport, through Northern Maine Junction and on to Montreal and western U.S. and Canadian markets. This rail corridor is the only rail connection with a Maine port that has double stack capacity. The rail line has no clearance restrictions as the clear zone is 16 feet wide throughout the corridor.

Currently, there is one train per day in the corridor. Although, the rail line itself could handle more freight movements, rail traffic is metered by the rate at which warehousing and oil tanks can handle the commodities.

Marine Transportation (from BACTS Long Range Transportation Plan)

Penobscot Bay and River. Historically, the Penobscot River played a key role in shaping the development of central and eastern Maine. Beginning in the late 1700s, the river was used to provide transportation to the region, to power sawmills, and to float and boom logs used in the 1800s in the lumber and ship-building industries. The river was later used to generate power and support pulp and paper mills as well as other industries. Settlement patterns of the corridor communities along the Penobscot reflect the importance of the river to their respective historical economies.

The importance of the River to the economy of the region has declined in recent years as the movement of fuel, raw materials and products have moved away from Maine's coast and inland rivers to trucks, rail lines, and pipelines. There is no passenger marine service and minimal commercial marine transportation in the corridor other than occasional asphalt and petroleum barge shipments. However, new manufacturing opportunities have arisen in Brewer that may return the Penobscot River to its status as a vital transportation asset linking eastern Maine communities to world markets.

The Penobscot River's controlling depth in the marked channel is 13 feet between Winterport and Bangor. Buoys, day-beacons, and a lighted buoy to a point about 1.5 miles downstream of Brewer mark the channel. The head of navigation for commercial vessels is immediately downstream of the Joshua Chamberlain Bridge, while smaller recreational vessels can travel to a point about one mile upstream of the Penobscot Bridge. Ice impedes but usually does not prevent navigation above Winterport for nearly 5 months of the year, beginning around December. The river is kept free of ice to a point just upstream of the I-395 Veterans Remembrance Bridge by a Coast Guard icebreaker. However, the Coast Guard has suggested that future ice-breaking operations may be limited, or may cease altogether due to declining commercial marine traffic upstream of the Bucksport area.

Cianbro, a heavy industrial and civil engineering construction company, has redeveloped the former Eastern Fine Paper mill site into a modular construction facility. The Eastern Manufacturing Facility features a deep water bulkhead that will accommodate large ocean-going barges for transporting 1,000 ton modules for industrial process plants. Cianbro has also constructed a smaller commercial dock system located immediately upriver of the deep water bulkhead which will be available to meet the marine shipping needs of other area businesses.

Analysis

1. What are the transportation system concerns in the community and region? What, if any, plans exist to address these concerns?

- The major concern has always been adequate funding for proper maintenance.
- Lack of coordinated signal systems on major corridors, specifically Wilson Street, is also a problem.
- The relationship between projected residential and commercial growth areas and the City's street system needs to be addressed.

- There is a need to upgrade outer rural roads to serve anticipated transportation from future development into urban connectors (e.g. Wiswell Road, Eastern Avenue, Day Road, Lambert Road, Mill Road). There are no sidewalks and the shoulders along most of these connectors are not in good shape.

2. Are conflicts caused by multiple road uses, such as a major state or U.S. route that passes through the community or its downtown and serves as a local service road as well?

One conflict is that North and South Main Street and Route 15 pass through the downtown. The City has made several road realignments, but traffic will always be an issue.

Multiple uses of roadways create conflicts. For example, there are no bicycle signs, there are very few bike lanes, and there are no shoulders along many roads.

Brewer has taken steps to address some of the conflicts. The City has been upgrading many of its traffic signals with pedestrian signal count-downs to improve safety. The City has also worked with MaineDOT on the planned project to widen Wilson Street between Parkway South and Green Point Road by adding a center turning lane.

3. To what extent do sidewalks connect residential areas with schools, neighborhood shopping areas, and other daily destinations?

Both the Brewer Community School and the High School are served with sidewalks that connect with other locations in the community. However, a recent Safe Routes to Schools study identified several areas where sidewalks are needed to provide better pedestrian connections to the community. Brewer's subdivision regulations require that at least one sidewalk be constructed to serve residents of the development and connect to the existing sidewalks where available.

4. How are walking and bicycling integrated into the community's transportation network (including access to schools, parks, and other community destinations)?

Brewer has a fairly extensive network of sidewalks (41 miles), but as noted above, a recent Safe Routes to Schools study identified several areas where sidewalks are needed to provide better pedestrian connections to the community. Bicycling has not been well integrated into the community. A number of sidewalks are in need of repair.

There is an unused railroad spur owned by Pan Am that has the potential to become part of a regional bicycle and pedestrian trail network.

5. How do state and regional transportation plans relate to your community?

Brewer works closely with BACTS, the Metropolitan Planning Organization for the Bangor/Brewer area.

6. What is the community's current and approximate future budget for road maintenance and improvement?

The City currently invests about \$300,000 to \$400,000 in road maintenance and minor improvements. Major capital improvements are funded more sporadically as funding is available. There is typically a backlog of unfunded improvements on the order of \$2 million to \$5 million.

7. Are there parking issues in the community? If so what are they?

There are a number of parking issues in the community. While there is on-street parking in the downtown, there are relatively few City-owned parking lots. Additional off-street parking may be needed as the downtown continues to grow. Additional parking is needed at the sites of several former schools.

8. If there are parking standards, do they discourage development in village or downtown areas?

Parking standards may have inhibited the redevelopment of the downtown, but significant changes were made when the City recently enacted the Downtown Development zoning district (up to 24 on-street parking spaces may be counted towards meeting parking requirements). There is a need to re-examine the number of spaces that are required for new development (existing standards may be too strict), and to consider innovations such as shared parking spaces.

9. Do available transit services meet the current and foreseeable needs of community residents? If transit services are not adequate, how will the community address the needs?

Community Connector appears to be serving the needs of the community, although there is no evening or Sunday service. Ridership has continued to grow and averages 9,000 to 10,000 boardings each month. There is a need to locate and construct designated bus stops with shelters along arterials and at major destination points.

10. If the community hosts a transportation terminal, such as an airport, passenger rail station, or ferry terminal, how does it connect to other transportation modes (e.g. automobile, pedestrian, bicycle, transit)?

Not applicable.

11. If the community hosts or abuts any public airports, what coordination has been undertaken to ensure that required airspace is protected now and in the future? How does the community coordinate with the owner(s) of private airports?

There is one small, privately owned airport in Brewer that is not used very much. Its future is uncertain.

12. If you are a coastal community are land-side or water-side transportation facilities needed? How will the community address these needs?

There is no known demand at this time for a public ferry, water taxi or other form of water transportation, so there is no need for land-based facilities to provide services. Cianbro has piers for barges.

13. Does the community have local access management or traffic permitting measures in place?

The City's site plan review and subdivision ordinances include permit requirements for developments that will generate traffic. The City also regulates driveway entrances and requires local street opening permits.

14. Do the local road design standards support the community's desired land use pattern?

Yes. The City has adopted standards for different types of roads. These standards require larger cul-de-sacs, street trees, sidewalks and closed drainage systems. Private roads serving developments are not allowed.

15. Do the local road design standards support bicycle and pedestrian transportation?

Local standards support pedestrian facilities (sidewalks are required in new developments) but not bicycle facilities.

16. Do planned or recently built subdivision roads (residential or commercial) simply dead-end or do they allow for expansion to adjacent land and encourage the creation of a network of local streets? Where dead-ends are unavoidable, are mechanisms in place to encourage shorter dead-ends resulting in compact and efficient subdivision designs?

Developers are required to set aside connectors to adjacent land. There is a limit of 15 lots that can be served by a dead-end street.