

DRAFT
PLYMOUTH TRANSPORTATION PROFILE
March 22, 2005

1. Overview

- Single-occupancy vehicles are the dominant mode of transport in Plymouth.
- The average Plymouth commuter spends about 18 minutes traveling in one direction or 28% less time than the average NH commuter.
- More than half of Plymouth resident labor force (53%) works in Plymouth while the remaining percentage commutes out-of-town. About 53% of those commuters are employed in Grafton County.
- The Town is served by 66 miles of road and highway. Three Interstate 93 exits feed into Plymouth; two are located within the Town's borders.
- Plymouth has not designated any roads as “Scenic Road” (under RSA 231:157 which provides protection of features located within rights-of-way.)
- Traffic volumes east of the traffic circle on Routes 3A and 25 increased by 61% from 1982 to 2003. Traffic on other roads seems to be increasing as well.
- The *Route 25 Plymouth Tenney Mountain Access Management Study* recommends a number of techniques to improve traffic along TMH.
- Unlike most rural NH towns, Plymouth has public transportation options.
- Parking in the downtown area is seen as a challenge that needs to be addressed.

2. Commuting Patterns

Like most rural places in the United States, automobiles are the dominant mode of transportation in New Hampshire. Compared with the county and state as a whole, however, Plymouth residents are more likely to walk, bicycle, and take public transit to work or work at home. According to the US Census:

Mode of Travel to Work	Plymouth	Grafton County	New Hampshire
Drove Alone	60.6%	72.8%	81.8%
Carpooled	14.0%	12.2%	9.8%
Transit	1.2%	0.7%	0.7%
Bicycle	1.2%	0.6%	0.2%
Walk	15.7%	7.7%	2.9%
Work at home	6.2%	5.3%	4.0%
Other	1.1%	.7%	0.6%
Mean Travel Time (one direction in minutes)	18.3	21.3	25.3
<i>Source: US Census 2000</i>			

- Plymouth residents are more likely to carpool than residents of the county as a whole, and the rate of carpooling is nearly 5 percentage points greater than that of the state.
- About three-quarters of Plymouth's resident labor force drive to work.
- The mean travel time of Plymouth residents' commute is 7 minutes less than the state average commute and 3 minutes less than that of the county.
- Nearly half (46.7%) of Plymouth's resident labor force traveled to jobs located in other communities. Of these commuters 51.3% were employed elsewhere in Grafton County; an additional 20% traveled to communities in Belknap County. The remainder traveled to jobs located in seven NH counties, with a few town residents holding jobs in other states (see Economic Profile Figure __.)

3. Road and Highway Network

Given the dominance of the car for local transportation, roads and highways are key networks in Plymouth. Approximately approximately 66 miles of roads and highway serve the town. There are 24.67 miles of state highway and 35.57 miles of maintained town roads. An additional 5.49 miles of Class 6 town roads are not maintained on a year-round basis by the municipality, although private landowners maintain some segments of Class 6 roads.

State and local roads serve different transportation functions depending upon their design. The functional classification of a particular road is defined by the degree

of access to adjacent land, the mobility it provides, and particularly in the case of rural highways, the region or area it serves. A simplified functional classification system applicable to Plymouth includes limited access highways, arterial highways, collector roads and local roads. These may be described as follows:

Type	Classification Description	Name of Route	Miles	Speed (Mph)
Limited access highways	Designed for rapid movement of heavy volumes of traffic. Direct access to adjacent property is not allowed nor is parking, cycling nor walking along the right-of-way.	Interstate 93 Exits 25 and 26 serve Plymouth with full north/south access	17.5	45-65
Arterial highways	Regional and statewide routes, linking cities, larger towns, and other major traffic generators. Generally, provides direct access to abutting properties and may be subject to some regulation.	Tenney Mountain Highway (Route 25), Routes 3, 3A and 175A	7.0	30-50
Collector roads	Serve local community and links to neighboring towns and region, rather than statewide travel. Also provides access to abutting properties, although access may undermine transportation function of busy collector routes.	Highland Street		25-35
Local roads	Provide access primarily to adjacent land and roads of higher classification and provide for travel over relatively short distances when compared to collectors. Local roads offer the lowest level of mobility.	All of Plymouth's rural highways - Class 5 roads	35.57	20-25
Class 6 roads	Roads discontinued as open highways, highways subject to gates and bars, and highways not maintained for year-round vehicular travel for five successive years or more. Not maintained with town highway funds.	Pike Hill Road, portions of Binks Hill, Hunt and Loon Lake Roads	5.53	
Total Road Mileage			65.73	
<i>Source: NH Department of Transportation</i>				

Class 6 Roads

Class 6 roads may be upgraded to serve development, provided such upgrade meets the town's standards and is paid for by the developer. In March 2005, the Town began drafting a policy to guide development of land served by Class 6 roads, although subdivisions are discouraged unless the road is brought up to town standards.

Scenic Roads

Plymouth has not designated any road segments as “Scenic Roads” under RSA 231:157, which provides protection of features located within the right-of-way that contribute the road’s scenic character. Although in the past, there has been discussion about designating Old Hebron Road as "scenic."

4. Town Road and Bridge Maintenance: Highway Department

Plymouth's roads are maintained by the Highway Department, which is located at 32 South Street at the south end of Green Street adjacent to the Plymouth Village Water and Sewer District sewage treatment plant. The 50' by 122' foot steel building houses the offices and equipment required to maintain streets and sidewalks in the Town of Plymouth. There are five full-time employees including the Highway Department Manager. Part-time employees are usually hired during the winter months to help with plowing.

In addition to local funding through property taxes, New Hampshire provides highway block grants to communities to assist with maintenance. The amount of funding is based upon highway mileage. In fiscal year 2004 (which ended June 30, 2004),

Maintenance expended on roads while they are still in good condition costs less than structural and surface repairs when roads are deteriorated.

Plymouth received \$114,764 in state highway assistance. This constitutes approximately 20% of the annual maintenance budget. Other state assistance is available for bridge repair and reconstruction.

According to the 2005 Community Attitude Survey, the Plymouth Highway Department is doing a relatively good job of taking care of the Town’s roads (51% of total respondents were satisfied while 39% were not). This is an 11 percent increase in resident satisfaction compared with the 1995 survey that identified 50% of the respondents dissatisfied with Plymouth roads.

Road Standards

All new roads built to serve development in Plymouth must be constructed to Town standards and turned over for acceptance as Town roads. Road construction standards are set forth in the Plymouth Subdivision Regulations, and the Highway Department Manager inspects roads to determine compliance with such standards.

Bridges

There are twenty bridges in Plymouth, all but two of which are State owned and maintained. The two Town owned bridges are the 150-foot long covered bridge crossing over the Baker River on Smith Bridge Road and the two twelve-foot metal pipes that allow Clay Brook to flow under New Hebron Road. Plymouth owns and is responsible for maintaining both of these bridges.

In the past five years, the Highway Department has rebuilt a number of bridges throughout Town. The Old Hebron Road Bridge is scheduled to be re-built in 2005.

5. Traffic

Volumes

Traffic volumes on local roads and highways have generally increased in the past two decades, although irregular traffic counting has made the identification of trends difficult.

Traffic Counter Location	1982	1985	1990	1994	1998	2003
NH 25 & 3A West of Highland Street	NA	NA	NA	10,000	12,000	NA
US 3 North of Warren Street	NA	NA	NA	3,400	3,100	3,800
US 3 North of Fairgrounds Road	NA	NA	NA	2,700	2,300	NA
Highland Street West of Moosilauke Street	4,800	5,500	5,200	5,600	5,500	5,900
NH 3A (Mayhew Turnpike) at Hebron TL	1,740	1,500	2,200	2,000	2,400	NA
NH 3A & 25 East of Plymouth Traffic Circle (SB/NB)	5,270	6,500	7,000	7,500	8,200	8,500
River Road South of US 3 and NH 25	NA	NA	300	520	490	520

Source: NH DOT Note: NA means traffic counts not available

It appears, however, that:

- Traffic on Route 3 north of Warren Street increased by 13% between 1994 and 2003.
- Traffic east of the traffic circle on Routes 3A and 25 has also increased in excess of 13% during the same time period. However, since 1982 traffic along this stretch of road has increased by 61%.
- South of the traffic circle at the Hebron town line, average annual daily counts have increased about 1% annually since 1982.

- Traffic counts on local roads are too infrequent to identify clear trends, although the limited data and increases in traffic on state routes likely indicate increasing traffic on many local roads.

Access Management

The frequency, location and design of highway accesses – or curb cuts – have a direct bearing on the safety and efficiency of both town roads and state highways. The design of curb cuts also is important with regard to storm water management and road maintenance. Managing access can improve safety and better maintain highway capacity over time.

From 2002-2003, the Town working with North Country Council prepared the *Route 25 Plymouth Tenney Mountain Access Management Study*. A number of techniques to improve traffic along Tenney Mountain Highway were recommended, some of which may be applied through zoning ordinances, road policies, and additional land use regulations (e.g., subdivision regulations). These include requirements for:

- minimum sight distance at a driveway or street intersection;
- maximum number of driveways per lot;
- mandatory shared driveways;
- maximum width of curb-cuts;
- minimum and maximum driveway lengths;
- minimum or maximum on-site parking, shared-parking, and parking design;
- minimum area for loading and unloading; and
- landscaping and buffers to visually define and enhance access points.

Implementation of these recommendations could improve traffic flow over time.

Traffic Calming

Techniques to maintain relatively slow traffic speeds in settled areas, enhance pedestrian safety, and improve the overall environment are often referred to as “traffic calming.” Such techniques include narrow vehicle traffic lanes, wide sidewalks, medians, on-street parking, roundabouts, raised and/or textured crosswalks, bulb-outs, and street-tree plantings and street furniture. Traffic calming is especially important in downtown and neighborhoods, and where pedestrians may be present.

The new intersection of Bridge and Main Street will be Plymouth's first roundabout. It has been designed to improve traffic flow as well as clearly define the entrance to downtown Plymouth and the PSU campus. *[Add design sketch?]*

7. Transit and Public Transportation

Public transportation options are often somewhat limited in rural areas and even when available public transit is under-utilized. In the 2004 Community Attitude Survey, respondents often asked "what public transportation system?" In fact, Plymouth does have a number of public transportation options including:

- a free shuttle provided by Plymouth State University during school year;
- two handicap accessible vans for seniors provided by Plymouth Regional Senior Center;
- private bus lines;
- local taxi service;
- limited rail service; and
- air travel (Plymouth, Laconia, Concord and Manchester.)

Transit

The Plymouth State University on-campus shuttle service began providing service in 1989 when the campus core was closed to vehicle traffic. The shuttle runs approximately 31 weeks of the year with service during the fall and spring academic semesters. There is no shuttle service during Winterim or over the summer. The service consists of two Ford shuttle buses holding 20 passengers and 2 wheelchair passengers. The shuttle service is free for students, faculty and staff as well as residents and visitors.

For the 2004-2005 school year (through December 2004), PSU on-campus shuttle made 8,532 runs for a total of 16,705 miles. Table 4 shows ridership increases of a factor of 2.5 since 2001. This increase is due to double shuttles making campus runs every 7-½ minutes for most of each day Monday through Friday. In 2001 a single shuttle was making runs every twenty minutes.

Academic year	# of people transported
2001-2002	39,529
2002-2003	63,166
2003-2004	103,687
2004 (through 12/04)	59,527
<i>Source: PSU 1/05</i>	

Bus Lines

Plymouth is served by Concord Trailways bus service. From the front of Chase Street Market, buses arrive and depart once a day to Littleton in northern New Hampshire, and twice a day connecting with Concord, Manchester, Boston and Logan International Airport to the south. Passenger tickets can be purchased on the bus or at the Market.

Taxi

Town Taxi provides taxi service in Plymouth. However, it does not operate on a 24-hour, 7-day per week basis.

Charter Vans/Coaches

Charter service on both a scheduled and arranged basis between Plymouth and Concord, Manchester, Boston and other areas is available from Buckboard Transportation operated by James Buckland out of Ashland.

The Plymouth Regional Senior Center also operates two handicap accessible vans for senior citizen transportation needs throughout the region. Senior citizens can arrange for transportation for doctor's appointments, shopping, and travel to/from the senior center

Rail Service

The **Concord to Lincoln Line** originally became part of the New Hampshire railroad system in 1895. In 1977, the State purchased this line from the Maine Central Railroad, including all 75 miles of track rights-of-way between Concord and Lincoln. The state also owns rail rights-of-ways for an abandoned length of track (rails removed) extending off the Concord and Lincoln Line just north of the Baker River and running west into Rumney. These rail rights-of-way can be seen on the *Map* __. The State leases to the Plymouth and Lincoln Railroad Company (Hobo) and New England Southern Railroad.

The **Plymouth and Lincoln Railroad (Hobo)** has the operating rights and offers passenger trips along the scenic Pemigewasset River on the State-owned Concord to Lincoln Line. The train departs and returns to the Hobo station located on Route 112 in Lincoln. It operates primarily during the summer months and holidays. Other special excursions along the Concord and Lincoln Line can be arranged. The old Plymouth train station, renovated as the Plymouth Regional Senior Center, serves as a pleasant stopping place for these tourist trains.

On the north side of the Baker River floodplain is about five miles of state owned rail right-of-way (no rails). There are no known plans to upgrade into a railway. It

does have the potential of being converted into a bike/foot path. The rail-to-trail would provide an excellent public access across the entire floodplain and serve to link east side biking/walking corridors with west side transportation lanes.

New England Southern Railroad, in a non-subsidized agreement with the State, leases rights to operate on the Concord to Lincoln line. They currently provide rail freight service from Concord to Meredith while interchanging with the Boston and Maine in Concord. They have the capability of extending their hauling services north to Plymouth with only minor upgrading of bed and track beyond Meredith.

Air Transport

The **Plymouth Municipal Airport** caters to recreational aircraft. It is a federally classified, state approved and town authorized airport. The authority to operate the airport comes through the Plymouth voters, who have voted since 1941 to raise and appropriate the funds to repair, maintain and operate the airport. The airport is further regulated as a licensed and approved “landing area,” through the authority of the State of New Hampshire Department of Transportation, Division of Aeronautics. It is located on 125 acres of town land in the northwestern part of town (see Map _ .) Facilities, which are located on 50 acres on the south side of Quincy Road, include:

- a 90' x 2,350' turf landing field;
- an aircraft parking apron with 14 aircraft tie-downs; and
- a 40' x 50' hanger with a 10'x 20' office.

The remaining 75 acres on the north side of Quincy Road is undeveloped.

The airport serves small single engine and twin-engine aircraft weighing 12,500 pounds or less. Air taxi passenger service is currently not available. Due to soft turf conditions or snow and ice, the airport is frequently closed in the early spring and winter. An appointed airport manager and a volunteer airport committee manage the airport. The Flight Service Station in Bangor, Maine serves it.

Although passenger service is not locally available, there are two municipal airports (Laconia and Concord) and one international airport (Manchester) within 60 miles of Plymouth that provide passenger air service.

The **Manchester International Airport** is the nearest international airport to Plymouth. Served by seven major airlines, four regional carriers and six freight and cargo airlines, Manchester has experienced some of the fastest growth in the

number of passengers served in the nation in recent years. In 2003, 3.6 million passengers arrived or departed the airport - up from 777,258 in 1990 (or 363% increase in 13 years.) More than 162 million pounds of cargo also went through the airport, up from 45 million pounds in 1990.

8. Pedestrians

When walking is a pleasant experience, there is greater incentive for people to leave their cars at home and spend more time on foot, rather than behind the wheel. Downtown Plymouth is relatively pedestrian friendly. In the downtown area, there are sidewalks, crosswalks, and walking paths to the public schools and on the PSU campus. Traffic along Main Street and around the Common travels slowly which allows for street crossings with relative ease. However, downtown neighborhoods have seen a decline in pedestrian friendliness. Curb cuts have increased not only in number but also in size, which makes it more challenging to walk safely, especially for children and the elderly.

Results of the 2004 Community Attitude Survey indicate somewhat dissatisfaction with sidewalks. Respondents spoke loudly for the need to improve the sidewalks along Highland Street.

9. Bicycling

Bicycling has increased in the past decade due to an increase in the public's interest in both human and environmental health, and new technology that makes cycling easier. It has become a transportation alternative for a growing segment of the population. The percentage of Plymouth residents who bike-commute is twice that of the county and six-times the state percentage.

Bikeways or designated bicycle paths provide a safe place for a non-polluting and inexpensive way to get around, may help decrease traffic congestion, parking problems, provides a means for improved physical and emotional health, and provides inexpensive recreation. These benefits make an area more attractive for living, shopping, business, and working. Plymouth does not have any designated bike paths. A range of strategies to expand bicycle opportunities might include:

- improving transportation facilities to better accommodate bicyclists;
- educating the public regarding the benefits of such programs;
- enhancing safety through education and enforcement of existing laws; and
- encouraging concentrated development and discouraging sprawl.

10. Parking

Providing access to convenient and adequate parking in the downtown for residents, visitors and employees as well as Plymouth State University has been the subject of considerable discussion over the years. It is recognized that the health and vitality of downtown is linked to the ease of access.

According to the 2004 Community Attitude Survey, 61% of the respondents are not satisfied with downtown parking. The Town, Main Street Plymouth, Inc. and PSU are working to improve the parking situation. PSU has built additional parking areas in recent years.

As of 2005, a town-wide parking inventory was not available. However, in the November 2004 Campus Master Plan, PSU presents a parking plan that include an inventory of its existing parking supply and identifies future parking spaces. It is envisioned that Main campus parking will increase from its current 623 spaces to 740. The North Campus residential complex will more than double its parking supply while parking in Holderness will be reduced by 85 spaces.

Zone	Existing Spaces	Future Spaces	Change
South	195	238	43
South Center	158	274	116
North Center	270	228	-42
<i>Subtotal Main Campus</i>	<i>623</i>	<i>740</i>	<i>117</i>
North residential	432	991	559
North Holderness	459	447	-12
South Holderness	627	554	-73
<i>Subtotal Holderness</i>	<i>1,086</i>	<i>1,001</i>	<i>-85</i>
Total	2,141	2,732	591

Source: PSU Master Plan November 2004

The Master Plan also recommends that the University: "Provide sufficient PSU parking to alleviate stress on local residential streets; explore options for shared parking."

11. North Country Council Transportation Improvement Program

At a regional level, the Town of Plymouth is an active member of the North Country Council's Transportation Advisory Committee. In the NCC 2003-2004 Transportation Improvement Program, three Plymouth projects were recommended and are presented below in the order of the Committee's priority:

1. **Renovation and Restoration of Second Floor of Plymouth Senior Center (PLY-01 - \$259,922):** This project is a Phase 2 project where funding for the exterior façade, walkways and first floor were granted through the Transportation Enhancement Program. The entire community uses the Senior Center as well as it serves as a senior citizen center for the Town. It is also a stop on the Hobo Railroad. The Grafton County Senior Citizen Council submitted the application to complete the project by renovating and restoring the second floor including installation of an elevator. The building is widely used and they feel the same is well needed. Their plans are to keep the integrity of the old railroad station and restore it's historic value while renovating the space for use. This project received many letters of support and the match is in place.

2. **Merrill Street Sidewalk Project (PLY-03 - \$216,800):** The Town of Plymouth submitted two sidewalk improvement projects. This project was the top priority of both Plymouth and the committee. This project includes the replacement of one section of old sidewalk that has outlived its intended use period as well as construction of a new sidewalk. This project ties a residential neighborhood to the two schools and was featured at the Bike and Pedestrian Conference on the "Safe Route to School" mobile tour. At that time it was a top priority project for the Town and suggestions from the mobile tour participants included improvements to the existing sidewalk and an extension of that sidewalk to the school. The match for this project is in place through the Town's Sidewalk Capital Reserve funds and the project received many letters of support.

3. **Langdon Street/Fox Park Sidewalk Project (PLY-02 - \$72,000):** This project was the Town of Plymouth's second sidewalk priority in town. It links a residential neighborhood to Fox Park, a town owned recreational area. This section of road also is a popular walking loop for patrons and workers in downtown Plymouth. Like the Merrill Street Sidewalk project, cost estimates were derived from SEA Consultants and the Town has the match in place through their Sidewalk Capital Reserve funds. The Committee acknowledged the importance of the project and the need to have a sidewalk connecting through the town but ranked it lower than the other projects due to the need to have projects more reflective of the whole region and not just one area of the region. The Committee did choose this project to be the lower priority of the two Plymouth sidewalk projects based on the fact that it was the town's second priority.

[Need to determine the status of these 3 projects...]

12. Planning Considerations

[Ideas to think about - by no means comprehensive]

Goal: A safe, efficient and cost effective transportation network that provides accessibility for all residents and is designed to maintain the historic, rural character of the community.

Transportation Policies

1. Continue to maintain the town road network in a manner that maintains safe and efficient traffic conditions for current and future demand.
2. Retain the current scale, rural quality and capacity of town roads while conducting improvements and maintaining roads. Address the needs of cyclists whenever road reconstruction projects are undertaken.
3. Coordinate with local, regional and state entities – including the North Country Council’s Transportation Advisory Committee – to plan for Plymouth’s transportation needs in a comprehensive manner.
4. New development shall not result in adverse impacts to traffic or pedestrian safety or a significant decline in the level of service of the impacted road network. The cost of mitigation to avoid such impacts will be the responsibility of the developer.
5. The intersection of Highland Street and Langdon Road should be improved, *possibly through realignment or installation of traffic control devices, to address safety concerns(???)*
6. Ensure safe and efficient traffic movement along principal roads by controlling access, concentrating development within designated villages and avoiding strip development.
7. Explore opportunities to slow traffic, to increase opportunities to safely cycle and to provide for pedestrian access downtown and between the downtown and TMH along Highland Street. Cost effective solutions (e.g., traffic calming including sidewalks, bike paths and trails) should be developed before new infrastructure (e.g., new roads).
8. Support the efforts of local, regional and state organizations, including the Heritage Trail, to provide safe alternative transportation opportunities.
9. Consider establishing a park-and-ride lot near Exit 25 or 26.
10. Maintain the public’s interest in Class 6 roads and access to legal trails. At a minimum, require that new development served by a Class 6 road be only permitted if the road is upgraded to town standards and that the developer funds the cost of the upgrade.
11. New development should provide adequate parking opportunities to accommodate employees, residents and/or patrons.

12. Encourage PSU to provide sufficient parking to alleviate stress on local residential streets.

Transportation Tasks/Strategies

1. Continue to designate a representative to the North Country Council's Transportation Advisory Committee, and be active in transportation proposals.
2. Seek state and/or federal transportation funds to help make the downtown core safer for residents, pedestrians and school children. (KidsWalk)
3. Continue the town's active involvement in all NH DOT proposals to improve roads and bridges to ensure that any proposal enhances Plymouth's rural character and in no way detracts from it, also, to ensure actions by NH DOT in surrounding towns in no way diminishes Plymouth's quality of life.
4. Consider re-designating currently undeveloped portions of Class 6 roads to Class A trails.
5. Develop a Class 6 road policy to clearly set forth the terms under which such roads may be upgraded and property served by such roads developed.
6. Include proposed municipal road and bridge reconstruction projects in annual capital budget and program.
7. Support and expand alternative transportation networks.
8. Apply for technical support grants from the New Hampshire Department of Transportation (I-93 expansion) as well as Transportation Enhancement funds for pedestrian and bike path improvements.