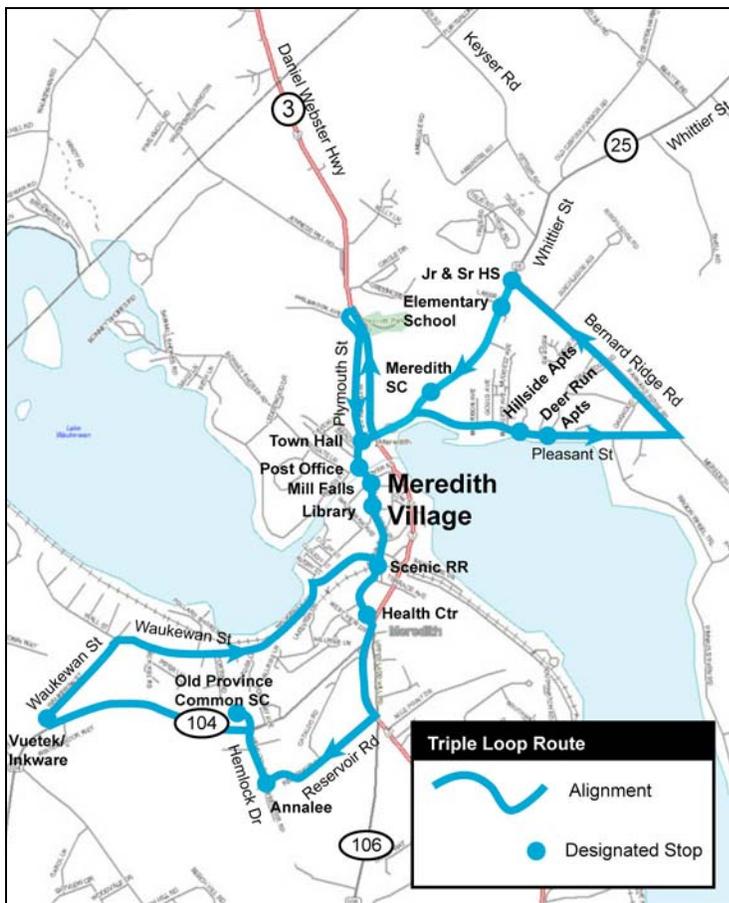
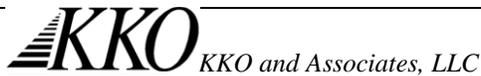


Study of Expanded Transit Service in Meredith, NH

Final Report



Prepared by:



For:



Lakes Region Planning Commission

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1. Introduction

Meredith, which is located in the heart of New Hampshire's Lakes Region, is a community whose year-round and seasonal populations are growing rapidly. This growth, and the changing demographics of long-time and new residents, has increased transportation needs. While most of the town's residents have automobiles and prefer to travel by automobile, the number of persons who need alternative transportation is increasing. The town also suffers from a lack of parking in the downtown shopping and business district during tourist season.

While these changes have occurred, public transportation options have become more limited. Due to financial cutbacks, the Greater Laconia Transportation Agency (GLTA) terminated the Laconia – Plymouth route that operated through Meredith. This has left the summertime Meredith Trolley as the only public transportation that is available to the general public. However, service coverage on this route is largely limited to service along Route 3 between Meredith Village and Weirs Beach and is oriented more toward visitor travel. The Community Action Program (CAP) of Belknap and Merrimack Counties provides demand responsive service to seniors, but this service only operates five hours per day and is not designed for the general public.

For residents of Meredith who do not drive or do not have access to a private vehicle, improved public transportation can help preserve their individual independence and enhance their quality of life. For family members, friends, and others who are now providing transportation for these persons, the availability of public transportation can relieve some of that load.

The Lakes Region Planning Commission (LRPC) received, through the New Hampshire Department of Transportation (NHDOT), State Planning and Research Program (Section 5313(b)) funding from the Federal Transit Administration (FTA) to conduct a feasibility study of expanding transit service in Meredith from a seasonal service to a year-round service with a connection to Laconia. Funds to match the FTA funding are provided by the Greater Laconia Transit Agency (GLTA).

The LRPC solicited proposals from consultants with expertise in transit planning to conduct the Study. KKO and Associates, L.L.C. was hired to conduct a six (6) month study of the feasibility of expanding transit service in Meredith from a seasonal service to a year-round service.

The "Study of Expanded Transit Service in Meredith" examined the feasibility of expanded transit service in Meredith. This report documents the work that was conducted as part of the study and presents the study's conclusions and recommendations. This includes:

- An examination of Meredith travel and socio-economic characteristics as they relate to the development of transit service.



- The development and evaluation of transit service options.
- The selection of a preferred transit alternative.
- The identification of next steps.

2. Market Analysis

At the beginning of the study, KKO conducted a market analysis to document local demographic and socio-economic characteristics and local attitudes, and to determine potential demand for transit service. This work included:

- Consultation with LRPC and the Working Group to identify opportunities and challenges.
- Examination of 2000 census data and state data to determine population and employment characteristics.
- Identification of low income and elderly housing concentrations, employment centers, major retail areas, and tourist attractions.
- Examination of 2000 Journey-to-Work data to determine the work trip patterns of Meredith residents and employees.
- Surveys of Meredith residents, visitors, and businesses.

SERVICE AREA AND DEMOGRAPHICS

Meredith has approximately 5,940 permanent residents (2000). The median age of these residents is 43 years, which is higher than most surrounding communities and the state as a whole. A contributing factor to the relatively high median age is that 17% of the population is 65 or older. This, in turn, is likely due to the fact that Meredith is the home to a number of retirement communities and assisted living facilities. At the other end of the age spectrum, 19% of the population is 19 or under, which is slightly lower than the state average of 22%.

In addition to Meredith's 5,940 permanent residents, the town estimates that, mainly during the summertime, there are also 8,055 part-time residents in second homes, and 2,400 transient overnight visitors in hotels, inns, B&Bs, and campgrounds.¹ These figures mean that during peak weekends Meredith's total population swells from 5,940 to as high as 16,400.

INCOME LEVELS

Average household incomes in Meredith are \$42,758, which are 14% below the New Hampshire Average of \$49,467. Many of those who would be most likely to use transit would be lower income residents. As shown in Table 2-1, 11% of households earned less than \$15,000 per year, 24% earned less than 25,000 per year, and 40% earned less than \$35,000 per year.

¹ Meredith Community Plan, 2002.

Table 2-1: Meredith Income Levels

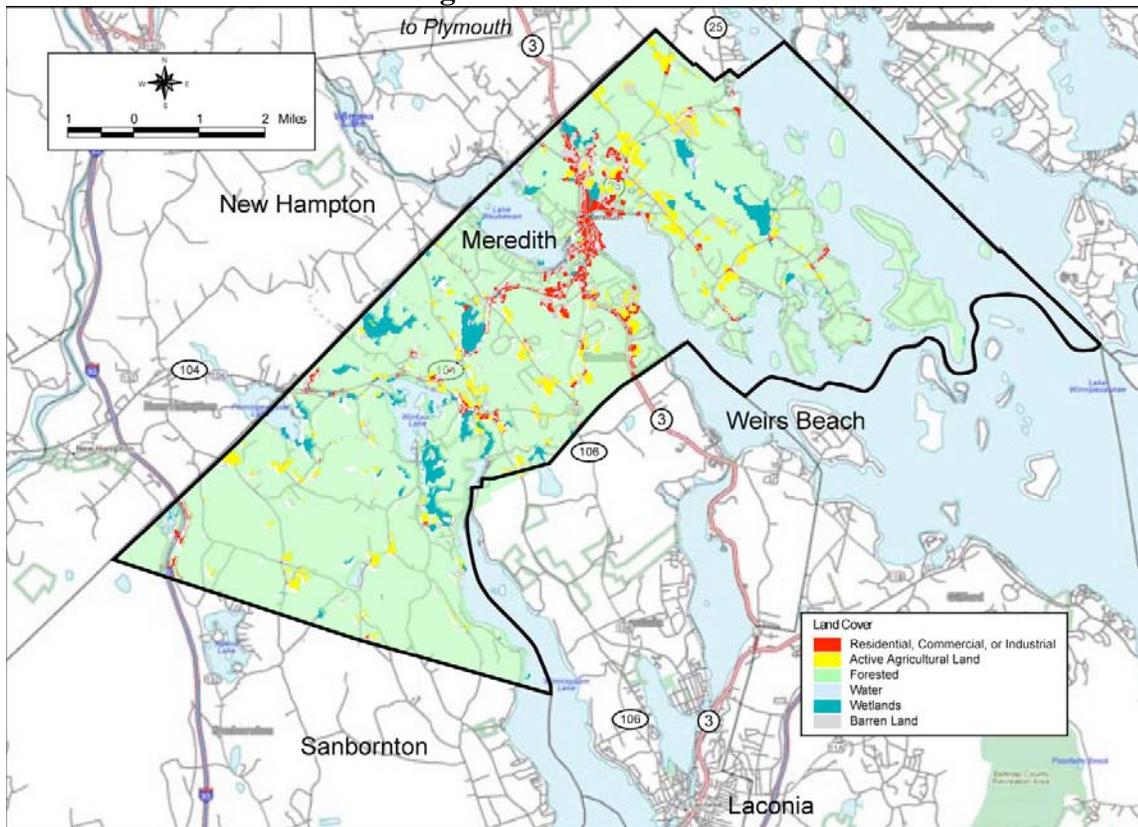
Average Household Income	Number of Persons	Percent	Cumulative Percent
\$15,000 or less	671	11.3%	11.3%
\$15,001 to \$25,000	724	12.2%	23.5%
\$25,001 to \$35,000	968	16.3%	39.8%
\$35,000 or Less	2,363	39.8%	39.8%

Of these residents, based on federal definitions, 72 families with a total of 382 family members live below the poverty line.

DEVELOPMENT PATTERNS

Most development is concentrated in Meredith Village and just outside the village on Routes 104, 3, and 25 (see Figure 2-1). General patterns of development include:

Figure 2-1: Meredith Land Use

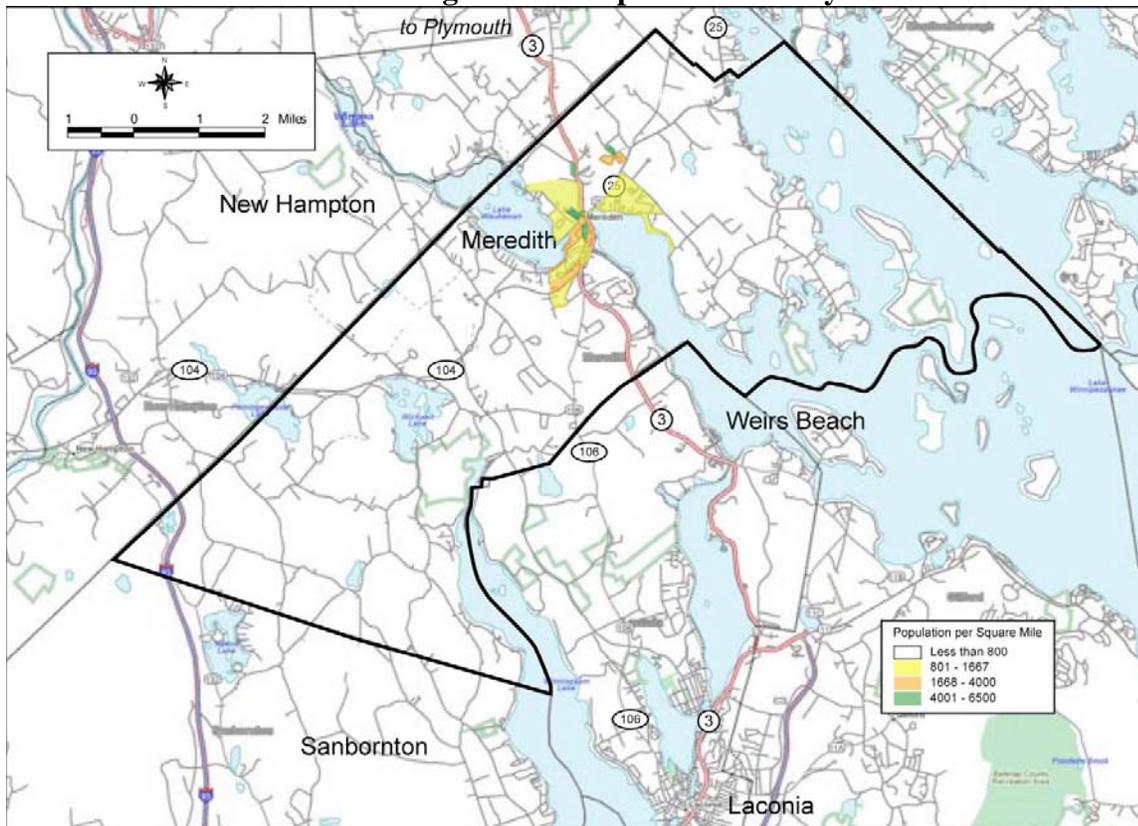


Source: Meredith Master Plan

- A concentration of commercial uses in and around Meredith Village and along the US Route 3 corridor.
- Limited, light industrial opportunities in and around NH Route 104, east of Pease and Winona Roads.
- Low density, rural residential character along the NH Route 25, NH Route 104 and NH Route 106 (Parade Road) approaches to the village.
- A mix of residential densities throughout the community with the most intensive development directed towards areas with supporting infrastructure.
- Large areas for forestry and conservation purposes west of Meredith Center Road.

For Meredith as a whole, population density is only 143 full time residents per square mile. Even with seasonal population included, population density is still only 345 persons per square mile. Consistent with the overall development patterns described above, population is also concentrated in the village area. As shown in Figure 2-2, the only areas with more than 800 full-time residents per square mile are:

Figure 2-2: Population Density



- Meredith Village.
- Just south of the village along Routes 3 and 104.
- North of the village between Lake Waukegan and Route 3.



- Northeast of the village between Route 25, Barnard Ridge Road, and Lake Winnepesaukee.
- Mobile home parks.

These figures are particularly important in that transit demand is closely related to population density. One rule of thumb is that there must be an average of three households per acre in order for an area to be able to support fixed route transit.² Given Meredith’s average household size of 2.4 persons, this translates to approximately 4,600 residents per square mile. As was shown in Figure 2-2, this level of demand exists in only a few very small areas in the village and in mobile home parks.

A second rule of thumb is that employment levels of four jobs per acre, or 2,560 jobs per square mile can support fixed-route transit service. Meredith has approximately 3,000 total jobs, or only 74 jobs per square mile. Furthermore, most Meredith employment is at small businesses (see Table 2-2), and there are no very large employers around which transit could be focused.

Table 2-2: Largest Meredith Employers

Company	Type of Business	Jobs
Vutek	Color ink machinery	300
Golden View	Nursing home	125
Meredith Village Savings Bank	Banking	89
Hampshire Hospitality Holdings	Hospitality	80
Remcom/North Corporation	Machine electrical connectors	65
Annalee Mobilite Dolls, Inc.	Soft sculpture dolls	50
Ippolito's Furniture	Furniture sales	36
Comstock Industries, Inc.	Metals, plastics manufacturing	24
Salmon Press	Job printing, newspapers	17

Source: New Hampshire Economic and Labor Market Information Bureau

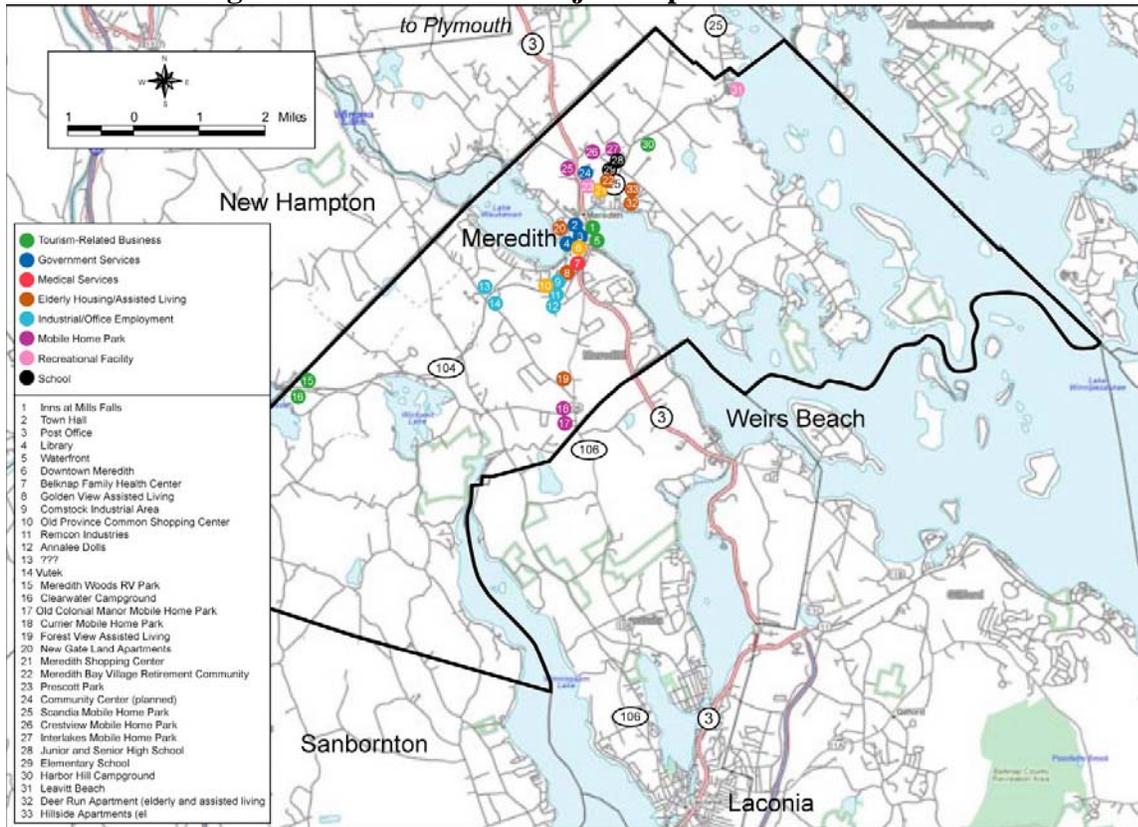
MAJOR TRIP GENERATORS AND ATTRACTORS

With few exceptions, the location of major trip generators and attractors in Meredith are located in the most densely developed areas. As shown in Figure 2-3, the large majority are located in Meredith Village, or just outside of Meredith Village on Routes 104, 3, or 25. Exceptions are campgrounds on Route 104 on the New Hampton Line, Leavitt Beach, and mobile home parks and an assisted living facility on Route 106 near the Laconia line.

The location of most activity centers in and around Meredith Village indicates that expanded transit service should also be focused on this area.

² Transit Capacity and Quality of Service Manual, 2nd Edition, Transportation Research Board, 2003.

Figure 2-3: Location of Major Trip Generators and Attractors



EXISTING TRANSIT SERVICES

At the present time, the only transit service that is provided in Meredith that is open to the general public is GLTA's summer time Meredith Trolley. This service operates from the end of June through Labor Day, and provides hourly service between Meredith Village and Weirs Beach along Route 3. It is oriented largely toward the visitor market, and does not provide service to many of Meredith's large activity centers. Ridership on this service averaged approximately 22 trips per day in the summer of 2004.

In addition, the Community Action Program of Belknap-Merrimack Counties (CAP) provides transportation to senior citizens in Meredith. This service is provided on weekdays from 9:00 am to 1:00 pm. These trips must be pre-scheduled and are provided for free (although donations are accepted). CAP provides approximately 45 trips per day, including trips to and from neighboring towns.



SURVEYS OF RESIDENTS, VISITORS, AND BUSINESSES

To determine more specific information on local travel characteristics and attitudes on existing travel options and potential transit services, surveys were conducted of residents, visitors, and business. The results of these surveys are summarized below.

Resident and Visitor Survey

The survey of residents and visitors was conducted over a two-day period on July 9 and 10, 2004 (a Friday and a Saturday). Surveys were conducted at three of the busiest locations in Meredith: Mills Falls, Jackson Star Market, and the Post Office.

These surveys confirmed that most residents and visitors have automobiles available to them, and that the overwhelming majority of visitors and residents travel to, from, and within Meredith by private automobile. At the same time, relatively large percentages of both residents and visitors indicated that they would consider using transit if it were available.

Resident Survey Findings

In total, 104 area residents were surveyed. Slightly less than two-thirds (63%) were from Meredith, 11% were from Laconia, and 26% were from other nearby towns. Two-thirds of the respondents are employed either full time (55%) or part time (12%). Of the employed residents, 51% work in Meredith and 16% work in Laconia. Twenty percent of the respondents were retired.

The most frequent destinations that residents travel to are: Meredith Village, Laconia, the Old Province Common Shopping Center, and the waterfront (see Table 2-3). The numbers of trips made to other locations are small.

The overwhelming majority of resident respondents normally travel around the area by driving themselves (94%). All of the respondents had at least one automobile in their household, and on average, there are 2.4 automobiles per household. Extrapolated for the entire town, this indicates that there are more automobiles than adults in Meredith. Nine percent indicated that they get rides from friends and family. This segment of the town's population would be among the most likely to use improved transit services.

While automobile availability and use are very high, a relatively high number of resident respondents (27% to 39%, depending upon the type of trip) stated that they "probably" would use transit if it were available (see Table 2-5). Respondents in these types of surveys typically overstate their willingness to use transit, and as described in more detail at the end of this chapter, the proportion that could realistically be expected to use transit would be much lower. However, these responses do indicate that improved transit service would be viewed favorably by many residents.



Table 2-3: Residents: Frequent Travel Destinations

	Number of Respondents	Percent of Respondents	Trips per Week
Meredith Village	86	4.6	83%
Laconia	73	2.9	70%
Old Province Common Shopping Center	54	2.9	52%
Meredith waterfront	54	2.7	52%
Concord	6	2.7	6%
Plymouth	5	0.8	5%
Center Harbor	4	3.8	4%
Gilford	4	2.3	4%
Manchester	3	1.0	3%
Tilton	3	1.3	3%
Wolfboro	2	2.0	2%
Moultonborough	2	5.0	2%

Table 2-5: Resident Indications of Probable Transit Use

	Probably	Probably Not	Don't Know
Work	30%	63%	7%
School	28%	44%	3%
Shopping	38%	51%	10%
Visit friends	27%	66%	7%
Medical appointments	34%	58%	8%
Beaches	39%	55%	7%
Restaurants	37%	51%	12%

Visitor Survey Findings

Tourism accounts for a significant amount of Meredith's summertime travel. The visitor survey results indicate that the large majority of visitors are from New England and New York (74%), and most are repeat visitors (84%). Over half (54%) visit for three days or less, but one-third (many of whom are second home owners) stay for one week or longer.

A large majority of visitors (84%) stay overnight in the Lake Winnepesaukee area. Of these overnight visitors, 47% spent the night in Meredith, 11% stayed in Gilford, 8% stayed in Weirs Beach and 8% stayed elsewhere in Laconia. Over half (58%) stay in private or rental homes, 35% stay in motels, hotels, inns, and B&Bs, and 5% camp.

Most groups were comprised of families with adults and children (48%) or two adults (39%). The majority of adult visitors are middle-aged or older, with 75% over 40 years old. While in the Meredith area, the most popular activities are shopping, eating at restaurants, visiting tourist sites and beaches. Over forty percent also visit Weirs Beach and other parts of Laconia as part of the same trips.



Nearly all visitors travel to Meredith by private vehicle. Once in Meredith, the two main modes of travel are by private vehicle and walking. None of the respondents reported using the GLTA Meredith Trolley.

As with residents, a relatively high proportion of visitors indicated that they would “probably” use transit service if it were available (see Table 2-6). The visitor responses were somewhat lower than resident responses, but still indicate a willingness to consider transit use. (As with the resident responses, these visitor responses almost certainly overstate the actual use that would be expected.)

Table 2-6: Visitor Indications of Probable Transit Use

	Probably	Probably Not	Don't Know
Beaches	27%	53%	20%
Shopping	44%	35%	21%
Restaurants	44%	35%	21%
Tourist Attractions	36%	40%	24%
Bars/ nightclubs	19%	59%	22%

Business Survey Findings

Representatives from a total of nine businesses and organizations that represented a mix of small and large tourist and non-tourist-related enterprises were interviewed (see Table 2-7).

Table 2-7: Businesses and Organizations Surveyed

Business	Business Type	Contact	Title
Annalee Mobilitee Dolls	Doll maker/retailer	Jason Ray	Director of Retail Sales
Community Action Program (CAP) of Belknap-Merrimack Counties	Social Services	Carol Gerken Pam Jolivette	Local Director Regional Director
Funspot	Entertainment Venue	Sandra Lawton	Assistant to the General Manager
Golden View Health Care Center	Assisted Living	Ben Sanders	Manager
Hampshire Hospitality Holdings	Tourist lodging, shops	Rusty McClear	President and CEO
Harbor Hill Campgrounds	Campgrounds	Chuck Palm	Owner
Interlakes Mobile Home Park	Land Rental	Jim Breen	Manager
Jackson Star Market	Grocery Store	Curt O'Hara	
Vutek	Manufacturer (printers)	Ray Huizenga	VP, Human Resources

In general, there is a significant degree of skepticism among the business and organizations surveyed regarding the utility of existing transit service in Meredith, and the need for expanded transit. In general, the respondents believed that, with the exception of bike week, demand for



transit is low. As such, most did not believe that improved service would provide significant direct benefits to their businesses or operations.

However, somewhat surprisingly based on the level of skepticism exhibited, many businesses understood the potential funding needs of expanded transit service and provided conditional support for funding from a number of sources. In general, businesses would want to review financial data before supporting additional bus service either as a business or a community. Several respondents mentioned the “user fees”; in other words, people don’t want to pay for something they don’t use. Two businesses mentioned that Wolfeboro’s “Molly the Trolley” could be studied as a model and applied to Meredith.

Another common theme found in the interview process was that there is a lack of knowledge about GLTA services. Most of the respondents are aware that service exists, but know very little about it.

MEREDITH TRANSIT DEMAND

As described above, most travel within Meredith is by private vehicle. This is by choice and by necessity. The rural development of much of the town makes automobile travel the most convenient option, and the lack of comprehensive transit service means that those who would like to travel by transit do not have that option.

Low population and development densities indicate that ridership on “traditional” fixed-route transit service would be relatively low. As described in the “Development Patterns” section, there are only a few small pockets of Meredith that have the population densities that are typically needed to support fixed-route transit. The resident, visitor, and business surveys also indicate that the large majority of residents and visitors are not negatively impacted by a lack of transit service—largely because nearly all adult residents and visitor groups have a private vehicle available. Still, the surveys did indicate a relatively high willingness to use, or at least consider, transit were it available, and certain groups would benefit from expanded transit service. These groups include:

- The elderly
- Individuals with mobility limitations
- Low income residents
- Children

Expected transit demand levels among these groups, and other residents and visitors are described in the following sections.



Resident Demand

The development of demand forecasts for rural areas such as Meredith is, at best, approximate. There are few established procedures, and those that do exist often produce very different projections. For this project, we used two different methodologies, plus professional judgment, to produce a range of estimates.

Overall Market Demand

Even with expanded transit service, automobile travel will continue to be the most convenient option for most residents, and most residents with a choice will continue to make most trips by automobile. Consistent with experiences in other small areas, it can be expected that most transit trips would be made by seniors, persons with mobility limitations, and those with low incomes.

Specific demand would be dependent upon the characteristics of the services that would be provided, such as locations served, hours of service, service frequencies, and travel times. However, general estimates of the market demand for transit can be developed based on experiences elsewhere.

The first methodology used was developed by the Transit Cooperative Research Program (TCRP).³ This methodology projects demand as a function of:

1. The size of the three population groups most likely to use transit services in a rural area:⁴
 - The elderly
 - Persons with mobility limitations
 - Persons living in poverty.
2. The size of the service area.
3. The amount of service to be provided.
4. Trips rates based on observed transit ridership in other rural areas.

As indicated above, one of the variables included in the TCRP methodology is the amount of service to be provided, expressed in vehicle miles, and which is not yet known. For the purpose of producing these order of magnitude estimates, it was assumed that one vehicle would be used to provide service Monday to Friday between 7:00 am and 7:00 pm, and that service would operate at an average speed of 15 miles per hour. On this basis, approximately 38,000 miles of service would be provided per year.

³ “TRCP Report 3, Workbook for Estimating Demand for Rural Passenger Transportation,” Transit Cooperative Research Board, 1995.

⁴ Although the methodology focuses on three specific population groups that would make up the large majority of all trips, there would also be additional riders that would not belong to one of these three groups. To the extent that this would be expected to occur, the trip rates that are used are slightly higher than they would be otherwise. As a result, the total estimates also include “general public” demand.



The use of this service assumption and the TCRP methodology produces an estimate of resident transit demand of only 23 trips per day (see Table 2-8). This estimate is low—largely because that while transit dependent groups make up a significant portion of the population, the numbers are small in absolute terms. Also, the TCRP methodology is very sensitive to the amount of service provided. If the amount of service when increased four-fold, demand would increase to 96 trips per day; if it were increased by six-fold, it would increase to 243 trips.

Table 2-8: Estimate of Resident Transit Demand

	TCRP Methodology	Washington State Methodology
<i>Market Characteristics</i>		
Land Area	40.2	
Population		
Aged 60 and Over	1,427	1,427
16-64 w/ Mobility Limitations	149	149
65+ w/Mobility Limitations	133	133
Total	5,943	5,943
Families with Income below Poverty Line	72	
Persons in Families below Poverty Line	382	
% Persons below Poverty Line	6.4%	6.4%
<i>Service Characteristics</i>		
Number of Vehicles	1	
Average Speed (mph)	15.0	
Percent of Time in Service	75%	
Span of Service		
Service Start	7:00	
Service End	19:00	
Days of Service	5	
Annual Vehicle Service Miles	38,025	
Annual VSM/Square Mile	946	
<i>Projected Ridership</i>		
TCRP Methodology		
Annual		
Persons Aged 60 and Over	4,690	5,741
Persons w/Mobility Limitations	428	21,273
Persons in Families below Poverty Level	960	
Other		46,700
Subtotal	6,078	73,715
Daily		
Persons Aged 60 and Over	18	22
Persons w/Mobility Limitations	2	82
Persons in Families below Poverty Level	4	
Other		180
Subtotal	23	284



Weaknesses in this TCRP methodology, especially in terms on making initial assumptions on what types of services would be provided, led to the development of an alternative methodology in Washington state. This alternative methodology used similar population characteristics, but that was based on observed trip rates in rural counties of Washington that did have transit service and does not consider service levels.⁵ The application of this methodology produces a significantly higher estimate of demand of 284 trips per day.

Both methodologies produce similar estimates of ridership among seniors, of 18 and 22 trips per day. The largest differences are in other categories. The TCRP methodology produces an estimate that implies very low demand for other types of trips, while the Washington State methodology implies that there would be significant demand among those with mobility limitations and the among the general public.

Visitor Demand

Estimates of general visitor demand are also difficult to produce, as they are dependent on a large number of variables, including type of visitor, length of stay place of residence, travel mode, available transit services, etc. However, based on work conducted by KKO as part of the recent Bangor – Trenton Transportation Alternatives Study in Maine,⁶ it is evident that the transit mode share among visitors would be low. As shown in Table 2-9, visitor ridership to, from, and at a number of other locations ranges from 0.002 trips per visitor, for since discontinued rail service to Cape Cod, to 0.160 trips per visitor at Acadia National Park.

Visitor transit use at Acadia National Park is significantly higher than at other tourist destinations, due in large part to effective service design, high levels of service, and parking shortages within the park. Excluding trip rates from Acadia, trip rates at other locations imply that visitor ridership would range from 0.002 trips per visitor to 0.034 trips per visitor.

The number of visitors to Meredith is not known precisely, but appears to average approximately 3,700 per day in the summertime. Meredith's Master Plan estimates that the town has capacity for up to 10,449 overnight visitors in second homes, lodging establishments, campgrounds and camps. Specific occupancy rates are not known. However, the summertime occupancy rate for lodging in all of New Hampshire is 62%, and based on the results of the visitor survey, we estimate average occupancy of second homes at approximately 27%. Applying these occupancy rates to the capacity numbers produces an estimate of an average of 3,659 overnight visitors per night in the summertime (see Table 2-10). The visitor survey also indicates that visitors staying overnight in Meredith represent 39% of all visitors. On this basis, there are an average of 5,609 day visitors, and a total of 9,268 visitors per summer day.

⁵ "Demand Forecasting for Rural Transit," Report No. TNW 98-08, Casavant, Kenneth L. Ph.D., and Painter, Kathleen M. Ph.D., et al. (1998). University of Washington, Seattle, Washington.

⁶ Bangor – Trenton Transportation Alternatives Study, Phase 2, produced by SYSTRA Consulting with assistance by KKO for the Maine Department of Transportation, July 2004.



Table 2-9: Visitor Transit Ridership at Other Tourist Destinations⁷

	Transit Trips/ Visitor	Transit Service
Acadia National Park, ME	0.160	Island Explorer bus
Yosemite National Park, CA	0.005	YARTS bus
The Hamptons, NY	0.017	Long Island Railroad
Mystic, CT	0.008	Amtrak
Central Vermont/Killington	0.034	Amtrak
Burlington, VT	0.008	Amtrak
New York State Parks	0.003	Metro-North Rail Road
Boston's North Shore	0.002	MBTA Commuter Rail
Cape Cod, MA	0.006	Cape Cod & Hyannis RR and Amtrak ⁸
Low	0.002	
High	0.160	
High w/o Acadia	0.034	
Median	0.008	
Average w/o Acadia	0.010	

Table 2-10: Estimated Average Daily Summertime Visitor Volumes

	Units	Persons/ Unit	Total Persons	Occupancy Rate ⁹	Persons/ Day
Overnight Visitors					
Second Homes	1,611	5	8,055	27%	2,175
Commercial Campgrounds	431	3	1,293	62%	802
Lodging Establishments	191	3	573	62%	355
Non Profit Camps			528	62%	327
Total			10,449		3,659
Day Visitors					5,609
Total Visitors					9,268

Applying these visitor trip rates from other areas to Meredith trip volumes indicates that summertime visitor ridership demand would be in the range of 22 to 316 per day (see Table 2-11).

⁷ Due to data limitations, all figures are approximate.

⁸ Services discontinued due to low ridership.

⁹ 27% Second home estimate is KKO estimate based on visitor survey results; 62% occupancy rate from New Hampshire Division of Travel & Tourism Visitor Barometer, Annual 2002 Report, and is a summer 2002 figure for all of New Hampshire.



Table 2-11: Estimate of Summertime Visitor Transit Demand

	Average Summertime Daily Visitors	Transit Trips/Visitor	Transit Trips Per Day
Meredith	9,268		
Low		0.002	22
Median		0.008	70
High w/o Acadia		0.034	316

Total Transit Demand

Using the methodologies described above, resident transit demand would range from approximately 23 to 284 trips per day, and visitor demand would range from 22 to 316 trips per day (see Table 2-12). Total summertime demand would range from 45 to 600 trips per day.

Table 2-12: Total Summertime Average Daily Demand

	Low	High
Market Demand		
Residents	23	284
Visitors	22	316
Total	45	600

It should be noted however, that actual ridership on individual services would be dependent upon service design, and other characteristics of the Meredith market. Given that experience with transit is relatively low in Meredith, that most residents either have automobiles available or have developed other options, and that ridership on the existing Meredith Trolley is low, we believe that ridership on new Meredith services would be between the lower to mid-point of the ranges, at least initially.

3. Service Options

This chapter describes the types of transit services that could be implemented in Meredith, and presents four options. Each of the options would serve Meredith’s most densely populated areas and most major activity centers. Each would also provide connections with the summertime Meredith Trolley.

TYPES OF SERVICE

Several types of bus service can be provided. Those that could be appropriate for Meredith include:

- Fixed-route
- Deviated fixed-route
- Rider-Request

Fixed-Route Bus Service

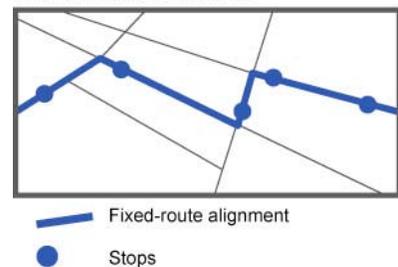
Fixed-route bus services operate along a fixed route at set times and headways. Services in areas such as Meredith typically operate with designated stops or as a flag stop service, where riders “flag down” the bus at any safe location along the route.

Most fixed-route services operate as linehaul service, which means that they travel along the same alignment in both directions. This type of route generally provides the fastest service, as riders only ride the segment of the route between their origin and destination in both directions.

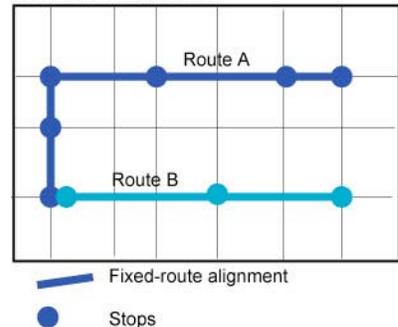
In low density areas, routes often operate as loops. One-way loop routes allow transit systems to provide greater service coverage with fewer vehicles. However, service is less convenient for riders as round trips require a trip around the full loop, rather than just the segment between the rider’s origin and destination.

Routes can also operate as a combination of linehaul and loop service. This is the case with the Meredith Trolley, which operates as linehaul service for most of its length, but with a

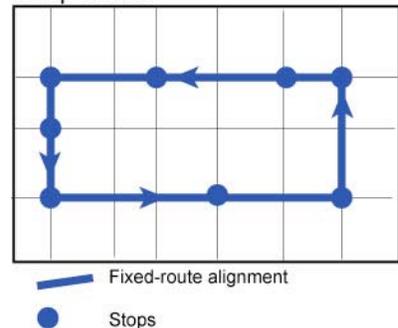
Fixed-Route Service



Linehaul Routes



Loop Route

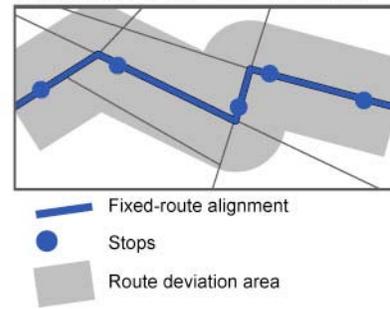


loop around Weirs Beach at its southern end.

Deviated Fixed-Route Service

Deviated fixed-route service is a type of fixed-route service that deviates off of the fixed route in order to provide curbside service in certain locations. When there are no requests for the deviation, service operates in the same manner as standard fixed-route service.

Deviated Fixed-Route Service

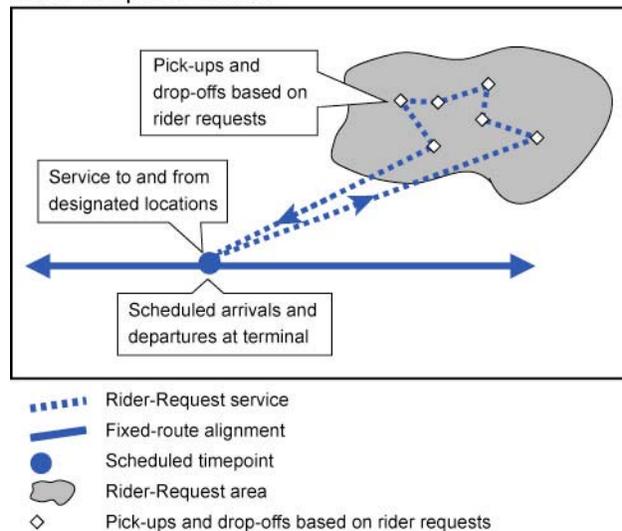


In order to be dropped off of the normal route, riders simply request the service from the driver when they board the bus. For pick-ups, riders must call the transit system in advance with the location where they want to be picked-up, and the time or trip that they want to be picked-up by. Specific reservation procedures vary and are determined by the transit system based on factors such as policy, level and type of demand, and other factors.

Rider-Request Service

Rider-Request service is a hybrid of fixed-route service and demand responsive service. At one end it operates on a fixed schedule to and from specific locations. At the other end, it operates within a designated Rider-Request area along a variable route providing demand-responsive service. Rider-Request routes are a flexible way to expand service to areas where current population and employment densities or the road network make traditional fixed route service infeasible.

Rider-Request Service



Rider-Request routes serve a number of different types of trips, only some of which would require reservations:

- For trips from scheduled departure points to the Rider-Request areas, riders do not need reservations. Riders board the Rider-Request route in the same manner as a regular route, and upon boarding, tell the driver where they want to go. They are then dropped off at the curb in front of their destination.
- For trips from Rider-Request areas to terminal points, riders would need to make reservations to be picked up directly at the curb in front of their origin. They call the transit office and schedule the trip based on their desired arrival time.



- For trips entirely within Rider-Request areas, riders make reservations for curb-to-curb service.

Hybrid Services

Services can also operate as combinations of the types described above. For example, the Meredith Trolley operates largely as a linehaul route, but with a loop at the Weirs Beach end. Routes can also operate as traditional fixed route, but with short segments of route deviation service. Rider-Request service can also be combined with traditional fixed route service, with fixed-route service on one end and rider-request service at the other.

MEREDITH SERVICE OPTIONS

There would be a number of options for providing transit service within Meredith. The most promising appear to include combinations of linehaul and loop routes, and a combined fixed-route/rider-request route:

- A “Triple Loop” route that would operate around loops north and south of Meredith Village, and as linehaul service through Meredith Village. This route would serve the most densely populated areas of Meredith, as well as most activity centers, but would not serve more rural areas of the town.
- A semi-loop route that would operate as linehaul service between Leavitt Beach and Meredith Village, and then as a loop between the Village and the Old Province Common Shopping Center. This route would also serve the most densely populated areas of Meredith, as well as most activity centers, except for those along Route 3 north of Meredith Village. It also would not serve more rural areas of the town.
- Two combined fixed route/Rider-Request services that would provide fixed-route linehaul service between Meredith Village and Old Province Common Shopping Center, and then Rider-Request service north and south of Meredith Village. The two options would differ by service coverage and frequency. One option would provide more frequent service to smaller areas, and the second would provide less frequent service to larger areas.

Each of these services was developed for operation with one vehicle. As such, service frequencies presented herein represent the minimum level of service that would be provided. With additional vehicles, more frequent service could be provided. Each of the service options was also designed so that coordinated transfers could be provided to and from the Meredith Trolley.



Triple Loop Route

A “Triple Loop” route could serve the most densely populated areas in and around Meredith Village, as well as the most important activity centers north and south of Meredith Village. As shown in Figure 3-1, this route would consist of three loops—two to the north of Meredith Village and one to the south that would be connected by a common segment through Meredith Village.

Beginning in Meredith Village, this route would travel east on Route 25 to right on Pleasant Street to left on Barnard Ridge Road to left on Route 25. From there, it would travel north on Route 3 to left on Plymouth Street back to Meredith Village. In Meredith Village, it would travel along Main Street and Lower Ladd Hill Road to Route 3 south to right on Reservoir Road to right on Annalee Place to the Old Province Shopping Center. From there, service would operate west on Route 104 to right on Waukewan Street back to Meredith Village.

One round trip would take approximately 39 to 53 minutes.¹ With this round trip running time, service could operate every 60 minutes, which would allow schedules to be coordinated with the Meredith Trolley.

Advantages of the Triple Loop route are that:

- The route would serve Meredith’s most densely populated areas.
- It would also serve most of Meredith’s important activity centers.
- The service design would be simple and easily understandable.
- Coordinated transfers could be provided with all Meredith Trolley trips.

Disadvantages would be that:

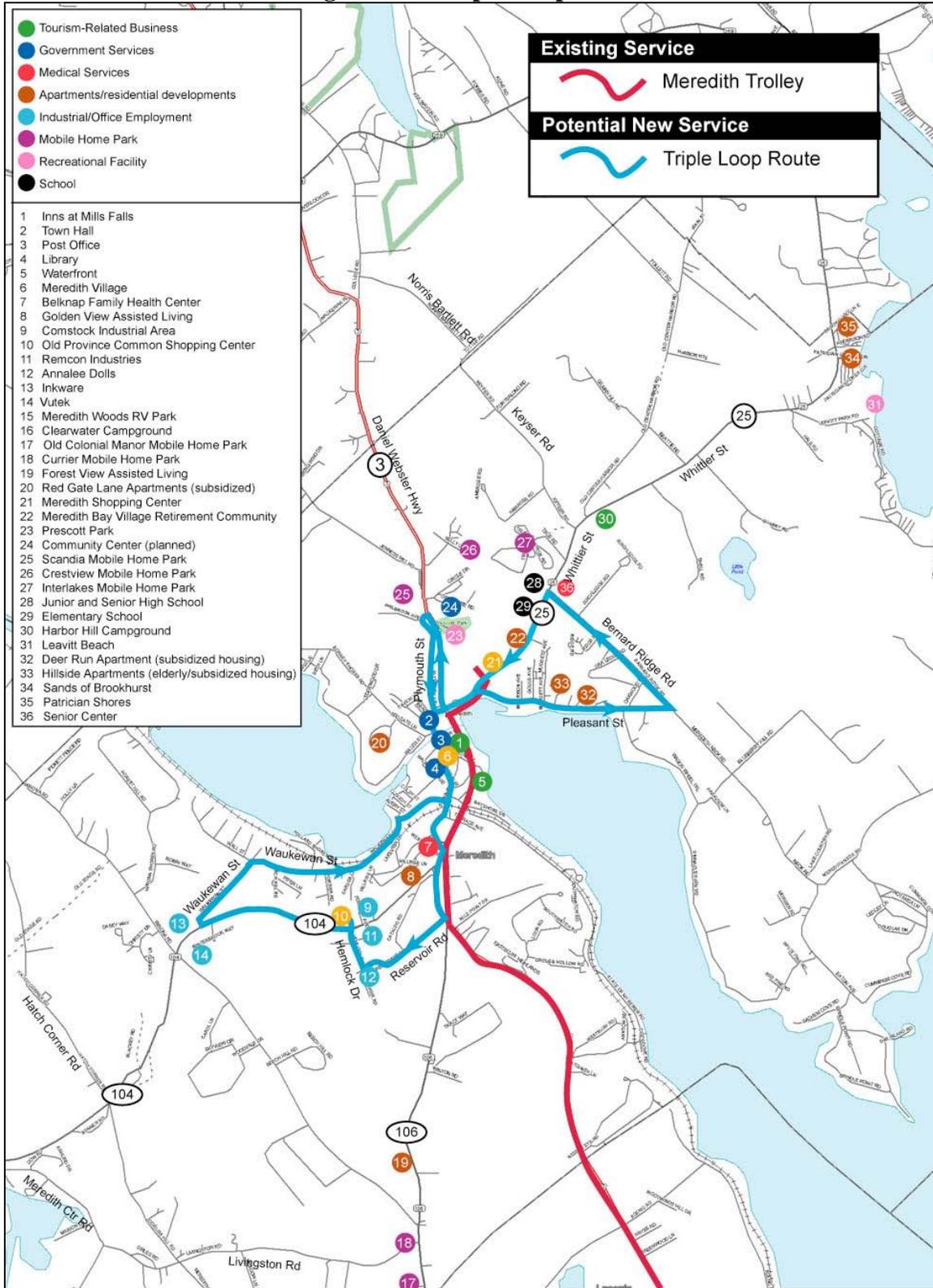
- Round trip travel times would be relatively long, at 39 to 53 minutes for many trips.
- More rural areas of town would not be served.
- The route would likely attract little seasonal resident or visitor ridership.

Travel times would be relatively long because most round trips would involve traveling completely around at least one of the loop segments, and often both. Trips to and from Meredith

Village would involve travel around one of the loops; travel through Meredith Village would require travel around both of the loops. As a result, travel times would be long relative to automobile times, and the route would largely serve transit dependent riders. Also, because few tourist attractions would be served, most riders would most likely be residents.

¹ Based on average speeds of 11 to 15 mph.

Figure 3-1: Triple Loop Route





In total, the Triple Loop route would serve 50% to 55% of Meredith’s population. Based on the use of the TCRP and Washington State methodologies,² and in consideration of the number of residents who would be served, year-round ridership would be approximately 11 to 139 trips per day. Using the low and median value trip rates for seasonal residents and visitors, this ridership would be 21 to 60 trips per day. Total ridership would range from 33 to 199 per day during the summertime, to 11 to 139 at other times of the year.

Table 3-1: Triple Loop Route Estimated Summertime Daily Ridership

	Low	High
Permanent Residents	11	139
Seasonal Residents & Visitors	21	60
Total	33	199

Leavitt Beach - Old Province Common Route

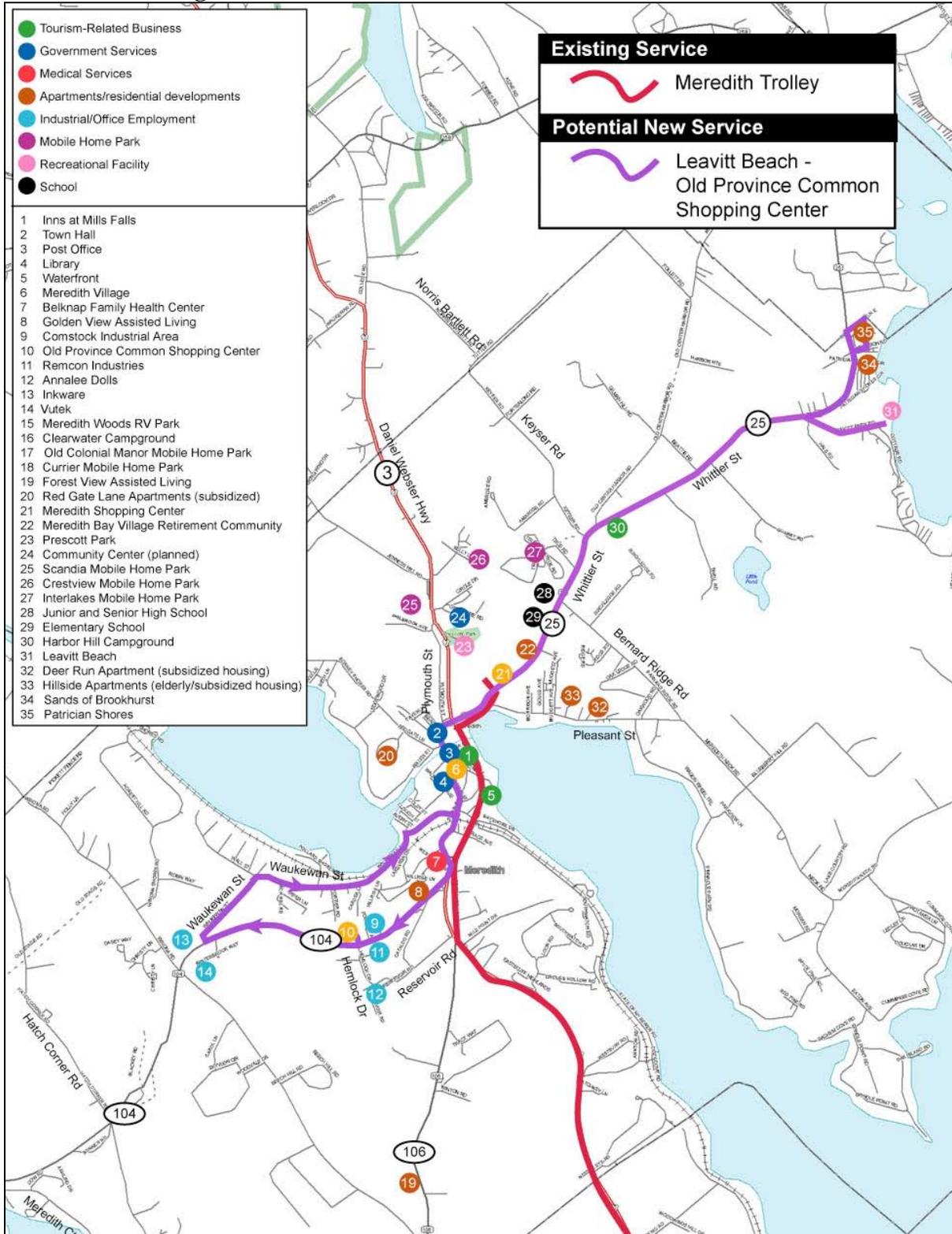
A fixed-route service operating between Old Province Common Shopping Center and the Leavitt Beach area would provide service to many of Meredith’s most densely populated areas, most commercial areas, and the Route 25 corridor (see Figure 3-2). At the Old Province Common Shopping Center end, the route would operate as a loop, similar to that described above for the Triple Loop route.

Beginning near the Meredith/Center Harbor town line, this route would operate from Patrician Shores to Leavitt Beach via Route 25 and Leavitt Park Road, and then back out along Leavitt Park Road to Route 25 to Meredith Village. From Meredith Village, it would travel along Main Street and Lower Ladd Hill Road to Route 3 south to Route 104 and the Old Province Shopping Center. From there, service would operate west on Route 104 to Waukewan Street and back to Meredith Village.

One round trip would take approximately 50 minutes. As with the Triple Loop route, service could operate every 60 minutes and would be scheduled to provide coordinated transfers with the Meredith Trolley.

² Two different methodologies, which are described in the “Meredith Market Demand” working paper, were used to develop ridership forecasts. The TCRP methodology projects market demand based on a number of socio-economic and service characteristics, while the Washington State methodology projects demand based on observed trips rates from rural regions of Washington.

Figure 3-2: Old Province Common – Leavitt Beach Route





Advantages of this route are that:

- With the exception of the area along Route 3 north of Meredith Village, this route would serve Meredith’s most densely populated areas.
- It would also serve most of Meredith’s important activity centers.
- The service design would be simple and easily understandable.
- Travel times for most passengers would be shorter than with Triple Loop route.
- Coordinated transfers could be provided with all Meredith Trolley trips.
- Service to Leavitt Beach could attract visitor riders as well as resident riders.
- Service would be provided to seasonal resident communities of Patrician Shores and Sands of Brookhurst.

Disadvantages would be that:

- The route would not serve Route 3 north of village, which is an area that includes two mobile home parks and the town’s planned community center.
- More rural areas of town not served.

This route would serve a combination of residents, seasonal residents, and visitors. The proportion of the resident population that would be served would be less than with the Triple Loop route (because Route 3 north of Meredith Village would not be served) – in total, approximately 45%. Considering the number of residents who would be served, year-round ridership would be approximately 10 to 118 trips per day.

Service to Leavitt Beach should produce higher seasonal resident and visitor ridership than with the Triple Loop route, and seasonal ridership would be 21 to 91 trips per day. Total ridership would range from 31 to 209 per day during the summertime, to 10 to 118 at other times of the year.

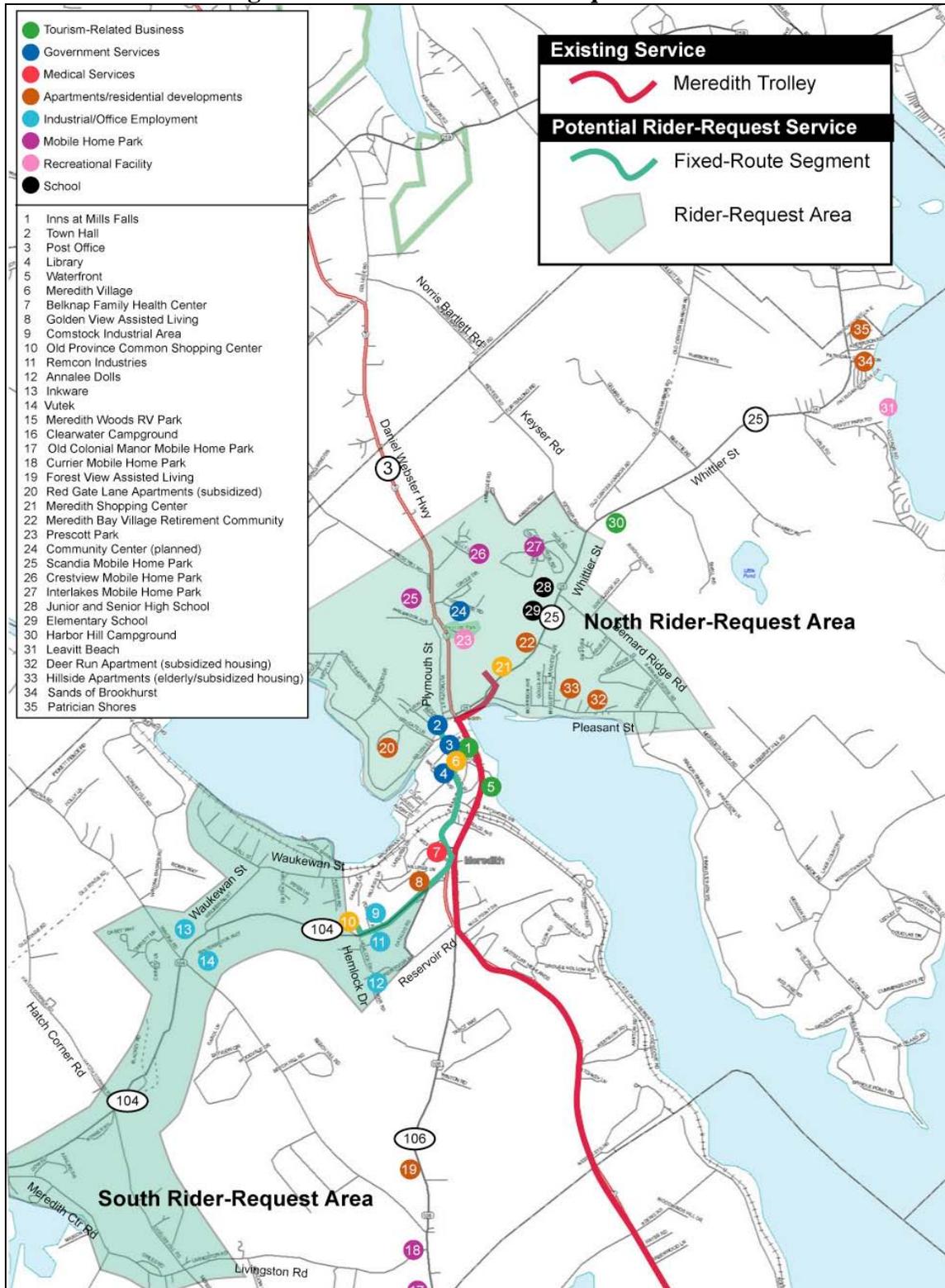
**Table 3-2: Leavitt Beach - Old Province Common Shopping Center
Estimated Summertime Daily Ridership**

	Low	High
Permanent Residents	10	118
Seasonal Residents & Visitors	21	91
Total	31	209

Core Area Rider-Request Service

One way to provide more flexible and more convenient service would be to provide Rider-Request service. As shown in Figure 3-3, Rider-Request service could be provided in the more densely populated and developed core areas of Meredith, and this service would operate to, from, and through Meredith Village. Rider-Request service would be provided to two areas: one to the north of the village, and one to south. The North Rider-Request area would encompass the more

Figure 3-3: Core Area Rider-Request Service





developed areas along Route 25 and Route 3, and the South Rider-Request area would be generally along Route 104, plus Meredith Center.

With one vehicle, this service could operate every 60 minutes. Beginning in the North Rider-Request area, each “round trip” would involve:

1. Approximately 20 minutes in the North Rider-Request area picking up and dropping off passengers, after which the bus would travel to Meredith Village.
2. In Meredith Village, service would operate along the fixed-route segment through Meredith Village along Main Street and Lower Ladd Hill Road, and then along Routes 3 and 104 to the Old Province Common Shopping Center.
3. From Old Province Common Shopping Center, service would continue to the South Rider-Request area, where it would spend the next 20 minutes dropping off passengers already on-board, and picking up new passengers for northbound service. Once all passengers had been picked up, service would return to Old Province Common Shopping Center, and then to Meredith Village and back to the North Rider-Request area.

This type of service would require the use of a reservations system. Riders originating in Rider-Request areas would need pre-schedule trips within certain windows. Riders boarding on the fixed-route portion of the route between Old Province Common Shopping Center and Meredith Village could board the bus at designated stops without reservations and would tell the driver where they wanted to go.

Advantages of this Rider-Request option would be:

- Greater geographical coverage could be provided than with fixed-route service.
- Service for many riders would be more convenient, as most passengers would be picked up and dropped off at the curb on at least one leg of the trip.
- The flexible routings that would be inherent with this service would provide much shorter travel times for many trips.
- The flexible routing would also allow drivers to take alternate routes to avoid seasonal traffic congestion that could delay fixed-route services.
- This service could possibly be combined with CAP’s Meredith operations, which could reduce funding requirements.

The main disadvantage of this type of service is that it would be more complicated than the fixed-route options, both in terms of users understanding the service and operational complexity. The service would need to be effectively operated in order to ensure reliable service.

The flexibility of Rider-Request service, and its ability to provide curb-to-curb service for many trips, would mean that many of the trips served by CAP—especially those to the senior center—could instead be served by this service. As a result, there would be opportunities to combine this service with CAP’s operations, which could provide additional operating efficiencies and cost savings.



This combined Rider-Request/fixed-route service would serve slightly more Meredith residents than the fixed-route options, at approximately 55% to 60%. Year-round ridership would be approximately 33 to 148 trips per day. Seasonal resident and visitor ridership would be 21 to 60 trips per day. Total ridership would range from 33 to 208 per day during the summertime, to 12 to 148 at other times of the year.

**Table 3-3: Rider-Request Service
Estimated Summertime Daily Ridership**

	Low	High
Permanent Residents	12	148
Seasonal Residents & Visitors	21	60
Total	33	208

Wide Area Rider-Request Service

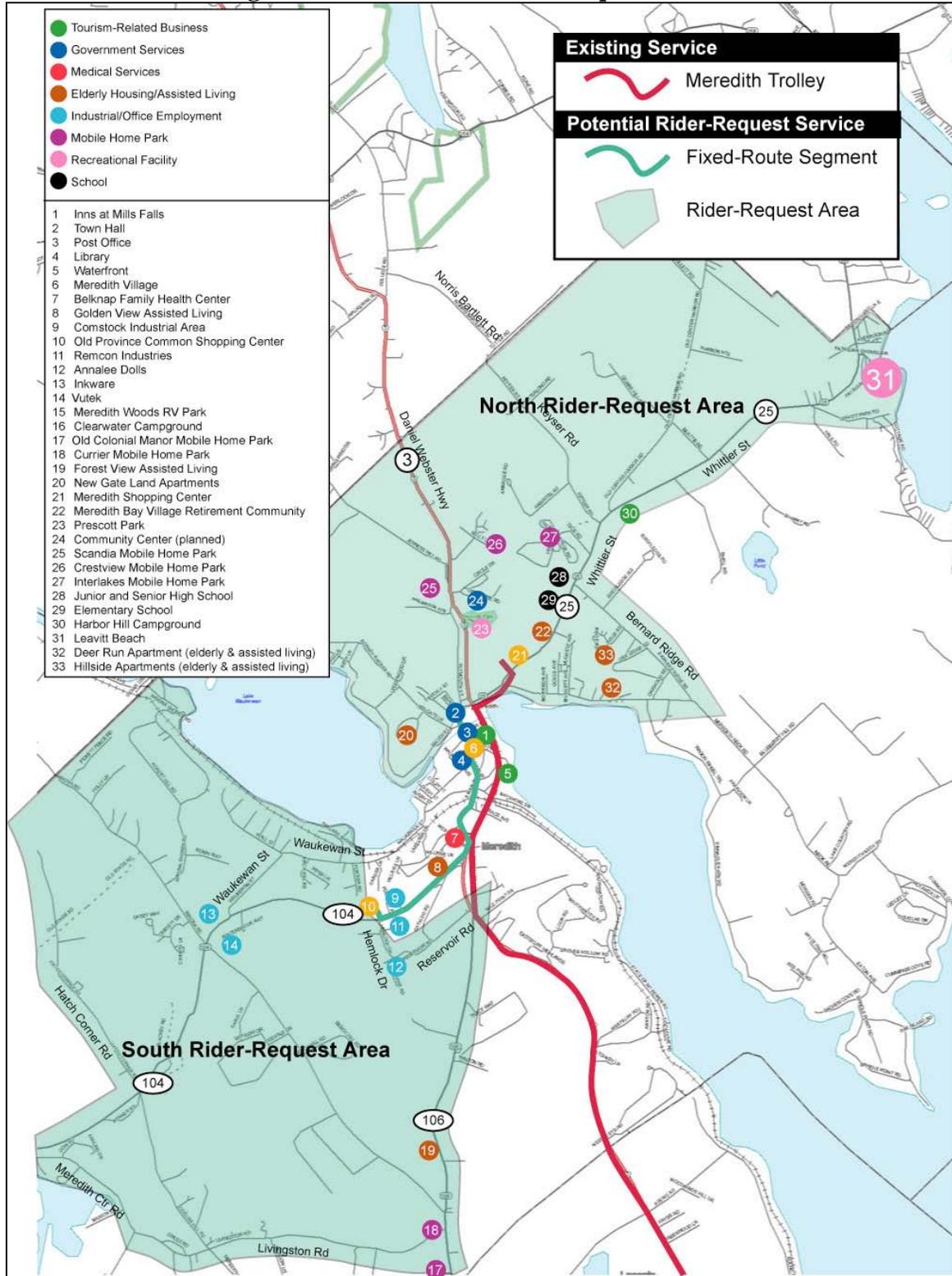
A way to expand service coverage to more rural areas of Meredith would be to provide Rider-Request service to a wider area but with less frequency. With service every 120 minutes instead of every 60 minutes, one vehicle could cover a wider area—a geographic area nearly twice as large as with 60 minute service. As shown in Figure 3-4, the same basic operating strategy would be used, with both North and South Rider-Request areas, but these

areas would be larger. The North Rider-Request area would be bounded by Lake Winnepesaukee, Bernard Ridge Road, Route 25, and the Meredith/Center Harbor Town Line. The South Rider-Request area would be bounded by Route 106 on the east, Livingston and Meredith Center Roads on the south, Hatch Corner Road on the west, and town line and Lake Waukewan on the north. Service would operate between the two Rider-Request areas, and to and from Meredith Village.

With one vehicle, this service could operate every 120 minutes. Beginning in the North Rider-Request area, each “round trip” would involve:

1. Approximately 45 to 50 minutes in the North Rider-Request area picking up and dropping off passengers, after which the bus would travel to Meredith Village.
2. In Meredith Village, service would operate along the fixed-route segment through Meredith Village along Main Street and Lower Ladd Hill Road, and then along Routes 3 and 104 to the Old Province Common Shopping Center.
3. From Old Province Common Shopping Center, service would continue to the South Rider-Request area to drop off passengers already on board and to pick up new passengers for northbound trips. Once all passengers had been picked up, service would return to Old Province Common Shopping Center, and then to Meredith Village and back to the North Rider-Request area.

Figure 3-4: Wide Area Rider-Request Service





Compared to the “core area” Rider-Request option, advantages of this “wide area” Rider-Request option would be that more of Meredith could be served—all of the densely populated areas, nearly all significant activity centers, and many rural neighborhoods. In addition, the wider geographical reach of the service would make it available to more seasonal residents and visitors. The main disadvantage would be that service would only be provided every 120 minutes, which would be very inconvenient for many types of trips (for example, shopping and health care appointments). On other respects the advantages of this Rider-Request option would be the same as for the Core Area Rider-Request service.

This combined Rider-Request/fixed-route service would make transit service available to the greatest number of Meredith residents of the four options, at approximately 75%, but operate less frequently. Accounting for these two factors, year-round ridership would be approximately 11 to 133 trips per day. Using the low and median value trip rates for seasonal residents and visitors, seasonal ridership would be 21 to 67 trips per day. Total ridership would range from 32 to 200 per day during the summertime, to 11 to 133 at other times of the year.

**Table 3-4: Wide Area Rider-Request Service
Estimated Summertime Daily Ridership**

	Low	High
Residents	11	133
Visitors	21	67
Total	32	200

SUMMARY

In summary, service could be provided with traditional fixed-route services, Rider-Request service, or combinations of those services. The four options presented herein would use one vehicle to serve 40 to 75% of Meredith’s population, and most significant activity centers. All four services would also likely attract some degree of seasonal resident and visitor ridership during the summer tourist season. All options would attract similar levels of total ridership (see Table 3-5), but would differ in how service would be provided and where and how frequently service would be provided.



Table 3-5: Summary of Ridership Estimates: Average Summer Day

	Low	High
Triple Loop		
Permanent Residents	11	139
Seasonal Residents & Visitors	21	60
Total	33	199
Leavitt Beach - Old Province Common Shopping Center		
Permanent Residents	10	118
Seasonal Residents & Visitors	21	91
Total	31	209
Rider-Request: Focused		
Permanent Residents	12	148
Seasonal Residents & Visitors	21	60
Total	33	208
Rider-Request: Wide Area		
Permanent Residents	11	133
Seasonal Residents & Visitors	21	67
Total	32	200

4. Preferred Alternative

As described in Chapter 3, each of the four service options would serve a similar number of riders, each could be provided with a single vehicle, and operating costs would be the same. Major differences would be in the percent of Meredith's population that would be served, whether service would be operated as regular fixed-route service or as Rider-Request, and the service frequencies that could be provided with one vehicle. Considering the advantages and disadvantages of the four options, it was the consensus of the study's Working Group that the preferred option is the Triple Loop Route. This is the case for a number of reasons:

- Fixed-route service is preferable to Rider-Request service because it would be more visible. Because buses would operate past the same locations at the same times every day and there would be defined stops, the service would have a greater level of visibility which would generate a higher level of public awareness. This would also make the service easier to market and publicize.
- Fixed-route service operating on a defined schedule would be easier for potential riders to understand.
- Fixed-route service would not require passengers to make reservations, nor would the service operator need to implement a reservations system.
- Of the two fixed-route options, the Triple Loop route would serve a greater proportion of Meredith's population than the Leavitt Beach route.
- The Triple Loop route would serve Route 3 north of Meredith Village, while the Leavitt Beach route would not. There are currently two mobile home parks in this area, and Meredith's planned community center will also be located there. As a result, this is an important area to serve.
- The Triple Loop route would also serve apartment complexes off of Pleasant Street.

TRIPLE LOOP ROUTE ALIGNMENT AND STOPS

The Triple Loop route would consist of three loops—two to the north of Meredith Village and one to the south that would be connected by a common segment through Meredith Village (see Figure 4-1). As described in Chapter 3, this alignment would serve the most densely populated areas in and around Meredith Village, as well as the most important activity centers north and south of Meredith Village.

The alignment of the route would be designed to minimize the impacts of seasonal traffic congestion. This would be done by operating service in a clockwise direction, with service generally making the least congested moves at congested intersections. Beginning in Meredith



It is recommended that designated stops be developed at major point, which would include:¹

- Meredith Village, near Town Hall, the Post Office, Library, and Mills Falls
- Main Street at the Scenic Railroad
- Belknap Family Health Center
- Annalee Dolls
- Old Province Common Shopping Center
- Vuetek/Inkware
- Pleasant Street near the Deer Run Apartments and Hillside Apartments
- The Junior and Senior High Schools
- The elementary school
- Meredith Shopping Center

Elsewhere, service should operate in flag stop mode, in which case passengers would “flag down” approaching buses at any safe location.

TRAVEL TIMES AND VEHICLE REQUIREMENTS

The estimated travel time around the loop would be 39 to 53 minutes during typical traffic conditions, with the longer times during the summer, and shorter times during the rest of the year.² With service provided every 60 minutes, one vehicle would be required.

RIDERSHIP

Projected ridership would be 33 to 199 trips per day in the summertime, and 11 to 139 trips per day during the rest of the year. However, as described in Chapter 2, ridership will be dependent upon characteristics of the Meredith market that could not be completely accounted for within these estimates. While the overall range is considered to be reasonable, there are a number of factors that indicate that ridership could be toward the lower to middle end of the range. These factors include the low level of experience with transit among Meredith residents, that most residents either have automobiles available or have developed other options, and that ridership on the existing Meredith Trolley is also low.

In addition, the study’s Working Group believes that a conservative approach to the development of new Meredith service is prudent. For these reasons, it is recommended that initial decisions regarding new services consider the likelihood that initial ridership would be toward the lower to mid-range of the overall range, which be 33 to 116 trips per day in the summertime, and 11 to 75 trips per day during the rest of the year.

¹ The specific location of these stops, and additional stops, will need to be determined by the town and the operator of the service as part of final service design efforts.

² Note that on the busiest summer weekends, when traffic delays are worst, travel times could be longer.



The use of the lower range for decision making purposes, however, does not imply that higher ridership levels cannot be achieved. As awareness of the service grows over time, ridership levels should also grow. Effective coordination of this general public service with CAP’s elderly service could also increase ridership and improve the overall cost-effectiveness of both services.

LEVEL OF SERVICE

A number of levels of service were considered during the course of the study. These ranged from 12 hours of service a day (from 7:00 am to 7:00 pm) seven days a week, to weekday only service between 8:00 am and 5:00 pm. The most significant advantage of a longer service span is the ability to serve daytime work trips, while shorter service spans and weekday only service would reduce operating costs and funding requirements.

To try to balance these two considerations, two service scenarios are proposed for consideration: a “High Level of Service” that would provide seven day a week service during the summertime and weekday only service for the rest of the year, and a “Low Level of Service that that would provide weekday only service on a year-round basis (see Table 4-1). The High Level of Service scenario would also operate between 7:00 am and 7:00 pm during the summer, and 8:00 to 6:00 pm the rest of the year, while the Low Level of Service scenario would operate between 8:00 am and 6:00 pm throughout the year.

Table 4-1: Proposed Levels of Service

	Summer	Rest of Year
High Level of Service		
Days of Service	7 Days	Mon-Fri
Span of Service		
First Trip	7:00 am	8:00 am
Last Trip	6:00 pm	5:00 pm
Low Level of Service		
Days of Service	Mon-Fri	Mon-Fri
Span of Service		
First Trip	8:00 am	8:00 am
Last Trip	5:00 pm	5:00 pm

OPERATING COSTS, FARE REVENUE, AND SUBSIDY REQUIREMENTS

Operating costs would consist of costs to operate the bus service, to market it, and to provide public information. Vehicle operating costs would be directly related to the levels of service that would be provided. This study projects operating costs using GLTA’s fully allocated 2004 operating cost of \$56 per vehicle service hour. On this basis, annual operating costs for the High Level of Service Scenario would be \$168,500 per year, and costs for the Low Level of Service Scenario would be \$145,600 per year (see Table 4-2).



Table 4-2: Annual Operating Costs

	Summer	Rest of Year	Annual
High Level of Service			
Days of Service	7 Days	Mon-Fri	
Span of Service			
First Trip	7:00 am	8:00 am	
Last Trip	6:00 pm	5:00 pm	
Cycle time	60	60	
Daily Vehicle Service Hours	12	10	
Vehicle Operating Costs	\$56,448	\$112,000	\$168,448
Marketing			\$20,000
Total Operating Costs			\$188,448
Low Level of Service			
Days of Service	Mon-Fri	Mon-Fri	
Span of Service			
First Trip	8:00 am	8:00 am	
Last Trip	5:00 pm	5:00 pm	
Cycle time	60	60	
Daily Vehicle Service Hours	10	10	
Cost per Season	\$33,600	\$112,000	\$145,600
Marketing			\$20,000
Total Operating Costs			\$165,600

In addition, there would also be costs to market the service, and to provide public information. This will be especially important during the first year, when a concerted effort will be necessary to develop public awareness of the new service. Marketing costs would be dependent upon the specific actions that would be taken, but a reasonable cost for these activities would be \$20,000. Including these costs, total operating costs would be \$165,600 to \$188,500 per year.

These costs would be offset to a small extent by fare revenue. Assuming that the fare would be set at \$1.00 per passenger, and that ridership would range from the low to mid-range of the ridership projections, fare revenue would range from \$5,100 to \$30,700 once the service has become established (see Table 4-3). For the first year, however, before ridership has grown to mature levels, revenue would likely be significantly lower. Assuming that ridership levels at

Table 4-3: Annual Fare Revenue Estimates

	Summer	Rest of Year	Annual
High Level of Service			
Low End of Ridership Projections	\$2,772	\$3,080	\$5,852
Mid-Point of Ridership Projections	\$9,744	\$21,000	\$30,744
Low Level of Service			
Low End of Ridership Projections	\$1,980	\$3,080	\$5,060
Mid-Point of Ridership Projections	\$6,960	\$21,000	\$27,960



service start-up would be 50% of the level that they would grow to by the end of one year, first year fare revenue would be approximately 75% of the levels indicated in Table 4-3.

Based on these fare revenue estimates, and depending upon the level of service provided, the net cost of service (operating costs minus fare revenues) would range from \$137,600 to \$182,600 (see Table 4-4). This cost would represent the amount of subsidy that would be required to operate the service once it had become established. As described above, in the first year, fare revenues would likely be about 25% less. As a result, first year subsidy requirements would be higher, or approximately \$144,600 to \$184,100.

Table 4-4: Annual Net Cost of Service

	Year 1	Year 2+
High Level of Service		
Low End of Ridership Projections	\$184,059	\$182,596
Mid-Point of Ridership Projections	\$165,390	\$157,704
Low Level of Service		
Low End of Ridership Projections	\$161,805	\$160,540
Mid-Point of Ridership Projections	\$144,630	\$137,640

CAPITAL COSTS

In addition to operating costs, expenditures will also be required for capital items required to implement the service. These costs would be for the purchase and installation of bus stop signage at designated stops, shelters at larger stops, and depending upon the operator of the service, possibly for the purchase of a vehicle.

As described previously, it is recommended that designated stops be used at major activity centers. Fourteen potential locations were identified as part of this study, and it is likely that additional locations would be identified as part of the final design of the service. For the purposes of developing capital cost estimates, it assumed that there would be 20 designated stops, 25% of which would have shelters. As summarized in Table 4-5, the cost for signs and shelters at these stops would be \$13,000.

Table 4-5: Capital Cost Estimates

Item	Number	Unit Cost	Total Cost
Stop Signage	20	\$150	\$3000
Shelters	5	\$2,000	\$10,000
Subtotal: Stops & Shelters			\$13,000
Passenger Van/Small Bus	1	\$50,000	\$50,000
Total			\$63,000

One vehicle would also be required to operate the service, which could be a step-up van or small bus. This type of vehicle would cost approximately \$50,000. However, it should be noted that GLTA currently has surplus vehicles that could be used for Meredith service. Therefore, if GLTA is to operate the new service, this vehicle cost could be avoided, at least initially.

Figure 4-2: Example Vehicle



SERVICE PRODUCTIVITY

Two common measures of service effectiveness and efficiency are the number of passengers carried per vehicle service hour, and the cost per passenger. As shown in Table 4-6, the projected cost per passenger during the first years of service would be \$6.13 to \$32.20, depending upon the level of service provided and the level of ridership attracted. The number of passengers per vehicle service hour would range from 1.9 to 9.5.

Table 4-6: Productivity Measures

	High Level of Service	Low Level of Service	NH Average
Cost per Passenger			
Low End of Ridership Projections	\$32.20	\$32.73	\$11.42
Mid-Point of Ridership Projections	\$6.13	\$5.92	\$11.42
Passengers per Service Hour			
Low End of Ridership Projections	1.9	1.9	3.4
Mid-Point of Ridership Projections	9.1	9.5	3.4

By comparison, the average figures for these same measures for existing New Hampshire rural transportation services for 2003 were \$11.42 per passenger and 3.4 passengers per vehicle service mile. This comparison indicates that at lower levels of the projected ridership range, Meredith service would perform poorly compared to other New Hampshire services. However, at the middle to upper ends of the expected ridership ranges, Meredith service would perform better than other New Hampshire services.



SUMMARY

In summary, the Triple Loop Route would provide service to the most densely populated and developed areas of Meredith and is the preferred option. The route would be expected to largely serve riders who by reason of age, disability, or income, either cannot drive or do not have access to a private vehicle. For these persons, the availability of transit service would provide individual independence and enhance their quality of life. For family members, friends, and others who are now providing transportation for these persons, the availability of public transportation can relieve some of that load.

In total, the route would be expected to serve 11 to 199 riders per day, depending upon season. However, at least initially, ridership levels would be expected to be closer to the low to middle part of the range, or between 11 and 116 trips per day.

Table 4-7: Service and Cost Summary

	High Level of Service			Low Level of Service		
	Summer	Rest of Year	Annual	Summer	Rest of Year	Annual
Service Levels						
Days of Service	7 Days	Mon-Fri		Mon-Fri	Mon-Fri	
Span of Service						
First Trip	7:00 am	8:00 am		8:00 am	8:00 am	
Last Trip	6:00 pm	5:00 pm		5:00 pm	5:00 pm	
Ridership						
Low	33	11		33	11	
High	116	75		116	75	
Operating Costs						
Vehicle Operating Costs			\$168,448			\$145,600
Marketing			\$20,000			\$20,000
Total Operating Cost			\$188,448			\$165,600
Fare Revenue						
Year One (75% of Year 2+)						
Low			\$4,389			\$3,795
High			\$23,058			\$20,970
Year 2+						
Low			\$5,852			\$5,060
High			\$30,744			\$27,960
Net Cost of Service						
Year One						
Low			\$165,390			\$144,630
High			\$184,059			\$161,805
Year 2+						
Low			\$157,704			\$137,640
High			\$182,596			\$160,540



Depending upon the level of service that is provided, annual operating costs would be approximately \$165,600 to \$188,400 per year. In the first year of service, these costs would be partially offset by fare revenue of \$3,800 to \$23,500 per year. With this revenue, the net cost of service, or the amount of subsidy that would be required, for the first year would be \$157,700 to \$184,100.

Once ridership had grown to established levels, fare revenue would increase to \$5,100 to \$30,700. This would reduce annual subsidy requirements in subsequent years to \$137,600 to \$161,800, depending upon the level of service provided, and ridership levels.

5. Next Steps

Before service can be implemented, a number of decisions will need to be made and further work conducted to identify funding and finalize service plans. These next steps include:

1. **Determine Whether or Not to Implement Service** The Town of Meredith must decide whether it wants to pursue increased transit service. In many respects this decision must be a value judgment. As described in the report, projected ridership for expanded service would be relatively low, but not unreasonable compared to existing GLTA services, and to other services in New Hampshire. The Town of Meredith needs to consider this potential new service in the context of other local priorities.
2. **Investigate Coordination Opportunities** Coordination opportunities should be investigated, particularly with CAP's senior transportation. New fixed-route transit service in Meredith would be available to all residents, including seniors. Many of the CAP's current senior riders would be able to use this new service, and the new Meredith service could serve those trips in a more-cost effective manner. This could free up resources for CAP to improve services for seniors who either could not use or would not be served by fixed-route service.
3. **Identify Funding** In New Hampshire, transit is generally funded through a combination of local, federal, and social service agency sources. At least initially, it appears that all or most of the cost of the new service would need to be funded by the Town of Meredith. Over the longer term, federal funds for rural transportation may be available.
4. **Determine Operator** GLTA, as the area's existing general public transit provider, would be the most likely candidate to operate new Meredith service. GLTA currently has vehicles available that could be used to operate the service, is willing to operate the service, and meets all eligibility requirements for the receipt of federal funds.¹ Alternatively, the town could contract with a private operator.
5. **Finalize Service Design** The operator of the service will need to finalize the service design and work with Meredith to determine specific stop locations, and develop public timetables and operator schedules.
6. **Install Stop Signage** Before service start-up, the operator of the service or the town will need to mark and install bus stop signage.

¹ GLTA is the only transit operator in the Lakes Region that is currently eligible to receive federal funding.



- 7. Develop and Implement Marketing Plan** For the service to be successful, a marketing plan will need to be developed and implemented to inform area residents and visitors about the availability of the new service.

Finally, it should be noted that there is a significant amount of uncertainty in implementing any new service. As noted in this report, at the higher projected ridership levels, service would perform well compared to other New Hampshire service. However, at the lower end of the ridership projections, service could be difficult to justify. Considering this degree of uncertainty, service could be initiated on a trial basis, in which service is implemented and then evaluated to determine its effectiveness. Then, if the service is well used, it can be continued; otherwise it could be discontinued.

In considering implementing service on a trial basis, it should be understood that most new services take up to 12 months to become established. Therefore, an initial trial period of 12 months would be preferable. Over this period, ridership levels and ridership trends should also be tracked, and service evaluated at periodic intervals, for example at 6 months and 9 months. If ridership levels are strong or ridership trends are tracking positively, then service could be continued. Appropriate service adjustments could also be made based on those evaluations.