

4. Intermodal focus (2.5 points each):

How many surface transportation modes will this project enhance? All listed will be enhanced.

- ✓ Pedestrian
- ✓ Bicycle
- ✓ Transit
- ✓ Rail
- ✓ Automobile



✓ Pedestrian and Bicycle

The premise behind the Salem to Concord Bikeway is the provision of intermodal opportunities as part of the I-93 project. During the planning process both the Salem to Concord Bikeway Feasibility Study and the Town of Salem Bike-Ped Corridor Analysis conducted two separate studies on the demand for the Salem to Concord Corridor. (see Demand Analysis appendix)

Salem to Concord Bikeway Demand Estimate: The Salem to Concord Bikeway Demand Estimate, conducted in 2003 for the New Hampshire DOT. This analysis represents a comparison of trails in similar locations extrapolating the use of the examples trail as a model for the Salem to Concord project. The following text and table is excerpted from the Salem to Concord Demand Estimation Study:

The southern off-road path linking Manchester and Salem is estimated to attract about 2,000 daily trips in 2007. The two trails combined would have about 3,000 daily users in 2007. Trail use would rise to about 3,600 daily users in 2025. Based on a study of similar trails; weekend use is estimated to be about 3 times greater than weekday use. Also, due to cold weather and snow conditions, winter use drops off by about 75 percent compared to spring through Fall use. In the spring through fall 2007,

average weekday use is estimated to be about 2,500 trips per day, while weekend use is estimated to be 7,800 trips day. In a typical month from spring through fall, 122,600 trips are projected to take place on the path (2007).

Table 16. Projected Use of Salem -Concord Bikeway in 2007(Off-road segments)

Season	a. No. of Days	b. No of Weekdays	c. Estimated Avg. No. of Users (Weekdays)	d. No. of Weekend Days	e. Estimated Avg. No. of Users (Weekend Days)	f. Estimated No. of Users per Year (b*c) + (d*e)
Spring, Summer, Fall	274	195	2500	79	7800	1.1 million
Winter	91	65	625	26	1900	90,000
						1.19 million

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Salem Pedestrian/Bicycle Corridor Demand Analysis: The following text is excerpted from the Salem Pedestrian/Bicycle Corridor Demand Analysis conducted for the Town of Salem Community Development Office by Hawk Planning Resources. The scope of the study limited the catchment area to one mile.

Daily Bicycle Demand: The bicycle demand estimate projected that 56 commuters currently bicycle to work. That figure is double the 2000 Census figure and can be accounted for by considering that only about 30,000 people live in Salem and the remainder that make up the total of 77,227 people live within three miles of the bike corridor in the surrounding communities of Windham, Pelham, Atkinson, Haverhill, Lawrence, Andover, Methuen and Dracut. Factoring in that additional population from these communities makes the estimated existing commuting bike figure proportionately consistent. Knowing the density characteristics of Salem and the surrounding communities, the Low and Medium estimates appear to be the most appropriate figures to use for this corridor evaluation. The predicted new cyclists from the development of the ped/bike corridor therefore ranges from a low of 245 cyclists per day to a

	Bicycle Estimate			Pedestrian Estimate		
Segment 1	low est	Med est	High est	Low	Med	High
Residents	51810	51810	51810	14131	14131	14131
Existing Commuters	37	37	37	55	55	55
New Commuters	9	9	9	25	25	25
Total Existing	555	8852	13064	197	2469	3699
Total new	139	2083	3070	116	1161	1727
Segment 2	low est	Med est	High est	Low	Med	High
Residents	6990	6990	6990	4048	4048	4048
Existing Commuters	5	5	5	16	16	16
New Commuters	2	2	2	7	7	7
Total Existing	75	1194	1763	56	707	1060
Total new	27	402	593	34	340	506
Segment 3	low est	Med est	High est	Low	Med	High
Residents	5070	5070	5070	3105	3105	3105
Existing Commuters	4	4	4	12	12	12
New Commuters	1	1	1	6	6	6
Total Existing	54	866	1278	43	542	813
Total new	20	304	448	26	264	392
Segment 4	low est	Med est	High est	Low	Med	High
Residents	13356	13356	13356	5680	5680	5680
Existing Commuters	10	10	10	22	22	22
New Commuters	3	3	3	10	10	10
Total Existing	143	2282	3368	79	992	1487
Total new	44	656	966	48	477	709
Total -All Segments	low est	Med est	High est	Low	Med	High
Residents	77227	77227	77227	30698	30698	30698
Existing Commuters	56	56	56	120	120	120
New Commuters	15	15	15	57	57	57
Total Existing	828	13195	19474	427	5363	8036
Total new	245	3674	5414	257	2,578	3834

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high of 3,674. This is a very large range of predicted bicycle utilization but is indicative of the nature of bicycle demand estimation due to the current very low utilization rates.

Daily Pedestrian Demand: Because the catchment area for pedestrian use of the ped/bike corridor is much smaller (no more than one mile from the trail), the number of people who live and work in that smaller geographic area is also less. National and local pedestrian and bicycle utilization figures indicate that pedestrian activity is normally many times higher than bicycle use. For this reason we believe that it is appropriate to utilize both the medium and high demand estimates summarized in figure 2. The medium to high range is from 2,578 to 3,834 for the entire 5.6 mile corridor length.

Total Daily Demand: Combining the demand projections for bicycles and pedestrians yields a potential total new demand that ranges between 2,823 and 7,508 for the entire corridor. Demand for each of the segments is also included in figure 2.

Annual Corridor Utilization: For comparison purposes with other transportation modes, it is also beneficial to project the annual corridor utilization. Applying the same annualized estimating methodology as the 2003 report of “Salem – Concord Bikeway Demand Estimate”³ will provide a basis of comparison. Figure 3 takes the daily demand data included in figure 2 and separates them into average weekday and weekend trips by season. The Salem-Concord report concluded that weekend trips were three times more prevalent than weekday trips and winter pedestrian/bicycle trial activity was only 25% of the average levels during the other three seasons.

		Avg	Avg	Avg	Avg	No.	No.	Annual	Annual	Annual	Annual	Total	
Annualized Bike Demand		Weekday	Weekday	Weekend	Weekend	Weekday	Weekend	Wkdays	Wkdays	Wkend	Wkend	Annual	
Segment	Season	Low	Med	Day Low	Day Med		Days	Low	Med	Low	Med	Low	Med
1	Spring.Summer,Fall	88	1,326	265	3,977	195	79	17,249	258,481	20,964	314,154	41,375	620,024
	Winter	22	331	66	994	65	26	1,437	21,540	1,725	25,848		
2	Spring.Summer,Fall	17	256	52	767	195	79	3,350	49,885	4,072	60,629	8,037	119,659
	Winter	4	64	13	192	65	26	279	4,157	335	4,988		
3	Spring.Summer,Fall	13	193	38	580	195	79	2,482	37,724	3,016	45,849	5,953	90,488
	Winter	3	48	10	145	65	26	207	3,144	248	3,772		
4	Spring.Summer,Fall	28	417	84	1,252	195	79	5,460	81,404	6,636	98,937	13,097	195,264
	Winter	7	104	21	313	65	26	455	6,784	546	8,140		
Total	Spring.Summer,Fall	146	2,192	439	6,577	195	79	28,541	427,493	34,688	519,569	68,462	1,025,436
	Winter	37	548	110	1,644	65	26	2,378	35,624	2,854	42,749		

Annualized Ped Demand		Med	High	Med	High	Wkdays	Wkends	Med	High	Med	High	Med	High
1	Spring.Summer,Fall	739	1,099	2,216	3,297	195	79	144,070	214,305	175,100	260,463	345,582	514,057
	Winter	185	275	554	824	65	26	12,006	17,859	14,407	21,431		
2	Spring.Summer,Fall	216	322	649	966	195	79	42,191	62,790	51,278	76,314	101,204	150,616
	Winter	54	81	162	242	65	26	3,516	5,233	4,219	6,279		
3	Spring.Summer,Fall	168	249	504	748	195	79	32,760	48,644	39,816	59,121	78,582	116,682
	Winter	42	62	126	187	65	26	2,730	4,054	3,276	4,864		
4	Spring.Summer,Fall	304	451	911	1,354	195	79	59,191	87,980	71,940	106,930	141,983	211,040
	Winter	76	113	228	338	65	26	4,933	7,332	5,919	8,798		
Total	Spring.Summer,Fall	1,427	2,122	4,280	6,365	195	79	278,212	413,719	338,134	502,828	667,352	992,395
	Winter	357	530	1,070	1,591	65	26	23,184	34,477	27,821	41,372		

Annualized bicycle and pedestrian demand totals produce overall utilization rates of 2.6 trips per day per 100 population within the catchment area at the low end estimate and 7.15 trips per day

per 100 people at the high end. Put another way, the demand projections suggest a low end utilization of one pedestrian or bicycle trip per day for every 38 residents in the catchment area. The high end estimate suggests that there would be one trip per day for every 14 residents.

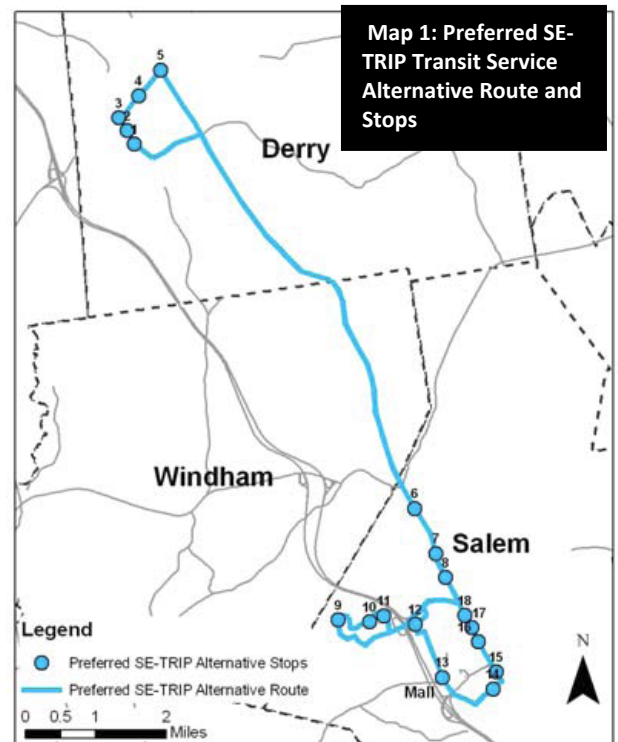
Conclusions: Based on the analysis conducted for this project it is reasonable to conclude that the annual utilization of a completed pedestrian/bicycle corridor adjacent to Route 28 in Salem will be in the range of 736,000 to 2,018 million trips per year for both bicycle and pedestrian travel modes. This results in a low end estimate for average daily use of about one trip for every 34 residents within the catchment area which is very consistent with the utilization developed in the 2006 Salem-Concord Bikeway Demand Estimate.⁴ With longer term acceptance and use of the corridor it is conceivable that corridor use could increase to levels approaching the high end estimate developed in this study of one trip for every 18 residents.

✓ Transit

SE-TRIP Transit Analysis

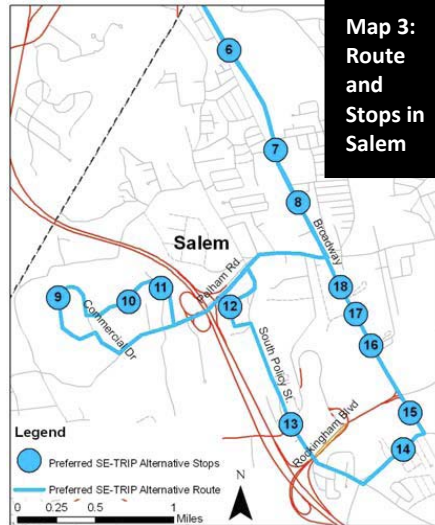
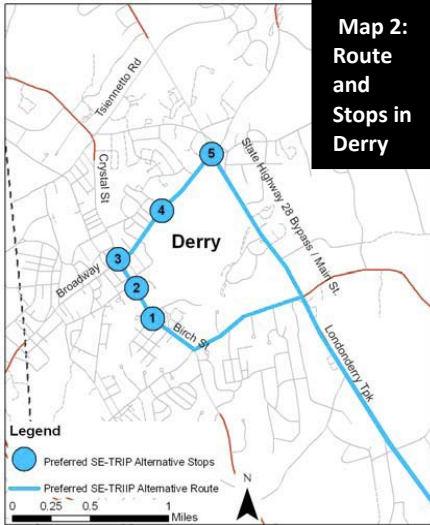
The Town of Salem has developed an analysis for the Salem Derry area to provide fixed route transit. The program titled SE-TRIP for Salem Employee-Trip Reduction Integration Project is planned to provide services between Derry and Salem. The premise for the system is based on 1,649 commuters who travel into Salem from Derry on a daily basis according to the 2000 census. This program is integrally tied to the SNHRTA project as many of the stops are adjacent to the proposed rail trail. The intent of planning both the Rail Trail and transit at the same time creates the opportunity to plan the connections. The key to an integrated program is the ability to provide safe routes for people to seek transit and depart from transit with both the Bike and Pedestrian options.

The routing of the preferred SE-TRIP transit service alternative extends from Salem to Derry, and serves major destinations identified in Salem and downtown Derry using loops at each end. In addition, a third loop now serves the industrial park west of Exit 2 on I-93, increasing potential ridership by serving an area that supports about 1,800 jobs. The entire route alignment is 27 miles long, and requires an 80-minute round trip.



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The preferred SE-TRIP transit service alternative has 18 stops over 27 miles, or an average stop spacing of 1.5 miles. These are flag stops where vehicles will only stop if there are waiting or alighting passengers. Ridership estimates suggest that riders will not be waiting at every stop. However, as the SE-TRIP transit service matures and demand increases, it would be appropriate to reconsider stop locations and, if it can

increase ridership, add the second priority stops identified in Alternatives 1 through 3. As long as these remain flag stops, this should not cause the service speed to deteriorate.

Maps 2 and 3 show the stops in both Salem, and Derry and Chart 2 lists the stops.

Proposed Schedule: Relying on a single vehicle, the 80-minute round trip with additional recovery time results in 95-minute headways. A longer break in the middle of the day allows the preferred transit service alternative to serve more shift ends, identified through the Employee Survey and summarized in Task C: Survey Analysis Technical Memorandum, at the Mall at Rockingham Park. If desirable, this break can also provide an opportunity to change drivers. The analysis below, however, considers this break to be paid time for a single driver.

Chart 2: Stops on the Preferred SE-TRIP Transit Service Alternative Route

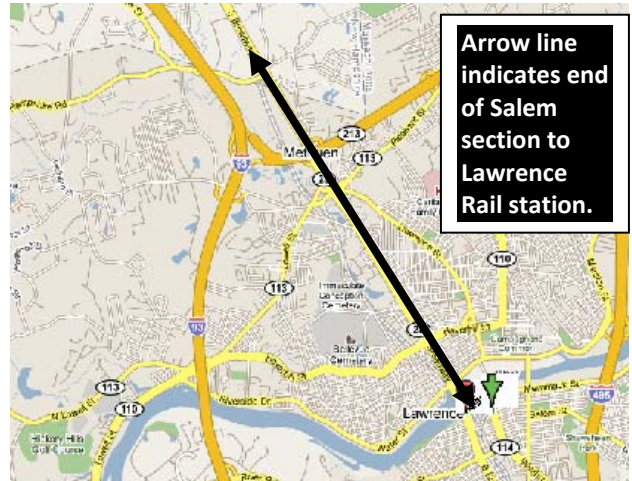
	Stop Name	Destination
1	Parkland Medical Center	Parkland Medical Center
2	Birch St & Wilson Ave.	High-Density Residential Area
3	E. Broadway & Crystal St.	Downtown Derry
4	E. Broadway & Hood Rd.	Nutfield Heights Senior Citizen Assisted Living
5	E. Broadway & Main St.	Derry Village Rotary Residential Area
6	Wal-Mart	Wal-Mart
7	N. Broadway & Old Rockingham Rd.	Shopping Plaza
8	N. Broadway & Francis St.	Banks and Shopping Plazas
9	Northwestern Dr.	Employment Center
10	Industrial Way	Employment Center
11	Manor Parkway	Employment Center
12	I-93 Exit 2 Park & Ride	Park & Ride
13	The Mall at Rockingham Park	The Mall at Rockingham Park
14	Cluff Crossing Rd. & Lancelot Ct.	High-Density Residential Area
15	S. Broadway & Veterans Memorial Parkway	Route 28 Commercial Corridor
16	S. Broadway & Friendship Dr.	Trailer Park and Shopping Plaza
17	S. Broadway & End St.	Trailer Park and Post Office
18	New Hampshire Employment Department	New Hampshire Employment Department

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✓ Rail

The presence of rail in Lawrence, Massachusetts is a definitive link that we have viewed as integral to this project. In addition to the typical recreational uses the intent of the SNHRTA project is to create multiple opportunities for transportation modes. The project is already planned to link to park and rides according to several State DOT plans. The project will make connections to the SE-TRIP bus system as indicated in the above section. Now the project has the opportunity to get people from their homes, to a park and ride, or to a bus stop, and with the advent of the Methuen Trail Alliance we will get to the Lawrence Rail Station. The distance is approximately four miles, well within a typical commuting bike ride to rail. As the SNHRTA concludes the project set forth by this application the next step will be a partnership with Methuen and the Rail Alliances for a 2011 TE application. Further SNHRTA will continue work to the North to expand opportunities for new connections to all forms of transportation.



✓ Automobile

Although the primary purpose of this application is to create intermodal opportunities to reduce motor-vehicle trips the outcome will be an increase in roadway capacity through the diversion of trips to other modes. This increase in capacity will reduce congestion and facilitate better travel for motor-vehicles. Reduced wait and idle tie will create a reduction in emissions. This combined with the Town of Salem ITS project will create greater throughput ability and reduce congestion. Further the separation of Bike-Ped from motor-vehicle creates a safer roadway environment thus reducing traffic incidence. The separation of modes is a reason for selecting the Rail Trail option over the roadway option in the Salem to Concord Bikeway Feasibility Study.