

Feasibility Study for a Proposed Extension of the Bruce N. Freeman Memorial Path in Sudbury and Framingham

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Executive Summary

This is a study to determine the feasibility, benefits, and costs of building a trail on the South Sudbury Industrial Track in Framingham and Sudbury.

CSX Transportation, Inc., (CSX) owns the 4.8-mile right-of-way. The southern endpoint is the active Fitchburg Secondary line in Framingham and the northern endpoint is the inactive Central Massachusetts line (Central Mass.) in Sudbury. The potential trail under study would make use of the entire South Sudbury Industrial Track, except that it would stop just short of the Fitchburg Secondary line.

The South Sudbury Industrial Track is part of a right-of-way that extends to Lowell. The Commonwealth of Massachusetts owns the line from the Central Mass. crossing in Sudbury to Lowell; this portion is known as the Lowell Secondary. Construction of a trail, called the Bruce N. Freeman Memorial Path, is expected to start on the northernmost section in 2006. This 6.8-mile segment would extend from the Lowell-Chelmsford line into Westford. Detailed engineering analyses have been done or are underway for all additional segments on the 13 miles of right-of-way between that northernmost section and the study area, traversing the communities of Westford, Carlisle, Acton, Concord, and Sudbury. The potential trail on the South Sudbury Industrial Track would be an extension of this Bruce N. Freeman Path.

The rail trail would be a major asset for Framingham, Sudbury, and surrounding communities. The proposed rail trail would provide access to many schools, as well as residential, commercial, and recreation areas. There is a proposal for a trail on the Central Mass. right-of-way, which extends intact west to Berlin and east to Belmont. From Belmont, there is the possibility of connecting to Alewife Station in Cambridge and to the Minuteman Commuter Bikeway and the Linear Park in Somerville. There are also plans to connect the Minuteman to the Charles River path system. West of the study area, the Central Mass. line crosses the Assabet River Rail Trail in Hudson. That trail, already built in Marlborough and Hudson, is slated to continue through Stow and Maynard, ending at the MBTA commuter rail station in South Acton.

The character of the trail would vary. In Framingham, the right-of-way passes through primarily residential areas. Most of the abutters live in single-family dwellings. The trail would abut the Hemenway School and conservation land owned by Sudbury Valley Trustees and the Garden in the Woods. The right-of-way in Sudbury passes primarily through open space, as well as residential and commercial areas.

Depending on the type of surface used, the trail would be expected to attract pedestrians, bicyclists, joggers, wheelchair users, and baby carriages. If a hard surface were used,

skaters would also use the facility. If the trail were not plowed, cross-country skiers would be accommodated as well.

Costs include acquisition, engineering and design, and construction. After construction, the two communities would need to police and maintain the facility.

If both communities agree to proceed, CSX would sell the right-of-way as a railbanked facility. If only one or neither community agrees to purchase the right-of-way, then several scenarios are possible, from a partial trail to selling the right-of-way parcel by parcel.

There would be extensive public review by state, regional, and local officials, and members of the general public in the design stage. It is during this stage that detailed decisions on the trail would be made. A detailed construction cost estimate would be included, although the actual construction cost would not be determined until the project is bid. The lowest responsible bidder would be awarded the construction contract. A preliminary estimate of the construction cost is \$3,300,000.

Introduction

The communities of Sudbury and Framingham requested this study of a potential trail on the South Sudbury Industrial Track. The Boston Region Metropolitan Planning Organization funded the study. The South Sudbury Industrial Track, located between the Central Mass. line in Sudbury and the Fitchburg Secondary line in Framingham, is owned by CSX. No trains have run on the line since 2000.

The term “shared-use path” denotes a path used by bicyclists, pedestrians, joggers, skaters, wheelchair users, etc. A “rail trail” is a category of shared-use path. It denotes a path that is built on a railroad right-of-way. As this is a study of such a facility, the more specific term “rail trail” will be used.

A task force composed of representatives from agencies, organizations, and the two communities met during this study. The agencies and organizations that appointed representatives were the MetroWest Growth Management Committee (MWGMC), the Executive Office of Transportation (EOT), the Metropolitan Area Planning Council (MAPC), and the Department of Conservation and Recreation (DCR). The following individuals served on the task force:

Framingham	Bill Williamson, Christine Long (alternate)
Sudbury	Dick Williamson, Deborah Dineen (alternate)
MWGMC	John Stasik
EOT	Josh Lehman, Todd Fontanella
DCR	Dan Driscoll
MAPC	Scott Walker, Barbara Lucas (alternate)

Other individuals who helped with various aspects of this study included Craig Della Penna of Greenway Solutions; Betsy Goodrich of the Rails to Trails Conservancy; Bryan Taberner of the Town of Framingham; Harvey Bingham and Tom Fortmann of the Friends of the Minuteman Bikeway in Lexington; and George Batchelor, Steve McLaughlin, and Steve Miller of MassHighway.

Input was also received from citizens attending two public meetings in 2005, held on February 2 in Framingham and on February 17 in Sudbury.

Chapter 1 of this report presents background information on the study area, including demographics, travel patterns and services, and bicycle and pedestrian crash data. Chapter 2 provides a brief history of the rail service on the South Sudbury Industrial Track, written by Thomas J. Humphrey of CTPS, and a description of the right-of-way, including details on width, environmental issues, and current uses. Chapter 3 discusses the proposed trail, including modes of travel, street crossings, potential destinations, parking, community impacts, and costs. The final chapter concerns implementation.

Thomas J. Humphrey also wrote Appendix A, a more detailed description of the history of the rail line. Appendix B is an excerpt from the environmental section of the Framingham-Sudbury Rail Trail Task Force Report. Appendix C describes the method employed to estimate users of the proposed trail.

Copies of this report are being sent to state, regional, and local officials, staff members in the study area communities, area libraries, and interested individuals.

1 Existing Conditions

This chapter contains background information on the study area communities of Framingham and Sudbury. Discussed here are demographics, transportation modes used by area residents and workers, transportation infrastructure and services, and bicyclist and pedestrian crash data.

A DEMOGRAPHICS

Table 1 contains demographic information for the towns of Framingham and Sudbury.

Table 1
Population, Land Area, Population Density,
Employment, and Employed Residents, by Community, 2000

	Population	Land Area (sq. mi.)	Population per Sq. Mi.	# Working in Each Community	# Employed Residents¹
Framingham	66,910	25.1	2,587	44,335	34,909
Sudbury	16,841	24.4	690	7,919	7,944
Total	83,751	49.5	-	52,254	42,853

Source: 2000 U.S. census

Framingham houses almost four times the number of people as Sudbury in about the same land area, translating into a population density in Framingham that is 3.7 times higher than Sudbury's. The difference in the number of persons whose jobs are located in the two towns is even more significant: 5.6 times as many people have jobs located in Framingham (44,335) as in Sudbury (7,919).

Both communities have more residents than workers. In Framingham, the population (66,910) is about 50 percent higher than the number of those working there (44,335). There are over twice as many people residing in Sudbury (16,841) as employed there (7,919).

The last column of Table 1 indicates the number of the community's residents who are employed. This number in Sudbury (7,944) is about the same as the number of people whose jobs are located there (7,919). In Framingham, those working in the town (44,335) outnumber employed Framingham residents (34,909). On balance, then, on an average weekday, about 10,000 more people come into Framingham to work as leave Framingham to go to work.

According to data from the 2000 U.S. census, there are approximately 12,300 residents living within a half-mile of the proposed rail trail. About 85 percent of these residents live in

¹ This is the number of residents who are employed, regardless of where their jobs are located.

Framingham and 15 percent live in Sudbury. The larger number in Framingham is partially due to the fact that most of the right-of-way is in Framingham (3.4 of the 4.8 miles, or about 70 percent). In addition, much of the nearby land in Sudbury is open space or commercial. Adjacent land use in Framingham is primarily residential.

B TRANSPORTATION MODES

Table 2 contains journey-to-work data. As can be seen, of the almost 43,000 resident workers, 33,730 (79 percent) drive alone and 4,235 (10 percent) carpool, for a combined automobile mode share of about 89 percent. Approximately 1,900 residents use some type of transit, while about 1,100 walk or bicycle to work. Almost as many people work at home (1,640) as use transit to get to work.

Table 2
Transportation Modes Used to Get to Work
by Employed Residents, by Community, 2000

	All Workers	Drive Alone	Carpool	Transit*	Bicycle/Walk	Work@Home	Other**
Framingham	34,909	26,995	3,935	1,629	970	1,170	210
Sudbury	7,944	6,735	300	249	135	470	55
Total	42,853	33,730	4,235	1,878	1,105	1,640	265

Source: 2000 U.S. census

*Includes: "bus, streetcar, subway, rail."

**Includes: "taxi, motorcycle, other mode."

The percentage of Framingham resident workers who carpool (11 percent) is almost three times the corresponding percentage for Sudbury (4 percent). While 3 percent of Sudbury residents use transit, 5 percent do so in Framingham, where there are more public transportation alternatives (described in the next section).

Six percent work at home in Sudbury, twice the rate of Framingham residents. Seventy-seven percent of Framingham residents drive to work alone; 85 percent do so in Sudbury. Three percent bicycle and walk in Framingham; 2 percent do so in Sudbury.

The census numbers above are estimates based on a sample questionnaire. Several factors suggest that these data might underestimate the bicycle and perhaps the pedestrian mode share. First, the census data only include workers: all trips by high school and college students are excluded. Second, the census data are collected in early spring, when, according to metropolitan Boston counts,² bicycle volumes are about one quarter of the peak volumes. It is not known what the seasonal variations are for pedestrians.³ Third, the census questionnaire asks for the mode used for the longest part of the trip to work. A trip involving two miles of bicycling to a rail station, five miles by train, and a half-mile walk to the office would be classified as a rail trip.

² CTPS has been collecting bicycle traffic data since 1975. Some of these data are collected at the same locations throughout the year, yielding information on seasonal variations.

³ Most of the historical counts were of bicyclists, not pedestrians.

Table 3 indicates both the number and percentage of resident workers over the age of 16 who bicycle or walk to work. Ninety Framingham residents bicycle to work, while almost 10 times that number walk. In Sudbury, 135 residents walk to work and none bicycle. In light of the caveats above and margins of error, it is likely that more residents bicycle to work than these numbers suggest, especially from late spring through mid-autumn.

Table 3
Number and Percentage of Employed Residents Bicycling and Walking to Work,
by Community, 2000

	Bicycling		Walking	
	#	%	#	%
Framingham	90	0.26	880	2.5
Sudbury	0	0.00	135	1.7
Total/Average	90	0.21	1,015	2.4

Source: 2000 U.S. census journey-to-work data

C TRANSPORTATION INFRASTRUCTURE AND SERVICES

This section describes highways and public transportation in the study area. A rail trail may be a catalyst for some to walk or bicycle directly to a destination or it may be used to reach another mode of transportation. Many people, for example, bicycle to the MBTA’s Alewife Station on the Red Line because the Minuteman Commuter Bikeway provides a direct connection.⁴

Highways

The major highway in the study area is the Massachusetts Turnpike (I-90). Other numbered highways in or proximate to the study area are Routes 9, 20, 27, 30, and 126. (See Figure 1.)

Near its southern end in Framingham, the right-of-way crosses over the Turnpike. The closest Turnpike interchange is at Route 9, about 1.5 miles west. Route 9 is located about 200 yards beyond the southern terminus of the right-of-way, as is Route 30. Route 20 crosses the right-of-way in Sudbury, about 50 yards south of the Central Mass. right-of-way. All of these are east–west numbered routes.

As for north–south numbered roadways, the closest are Route 27 (outside of map area) which crosses the right-of-way about a mile north of the study area in Sudbury, and Route 126, which parallels the right-of-way about 1.5 miles east. Collector and local roads provide all other vehicular access.

Six roadways cross the right-of-way at grade. All of them are local roads except Route 20 in Sudbury. Motor-vehicle volumes on these crossings were recorded on Saturday, January 29, 2005, from 11:00 AM to 12:30 PM. Average hourly volumes varied from 2,680 to 250 two-way vehicles. These crossings will be discussed in more detail later in the report.

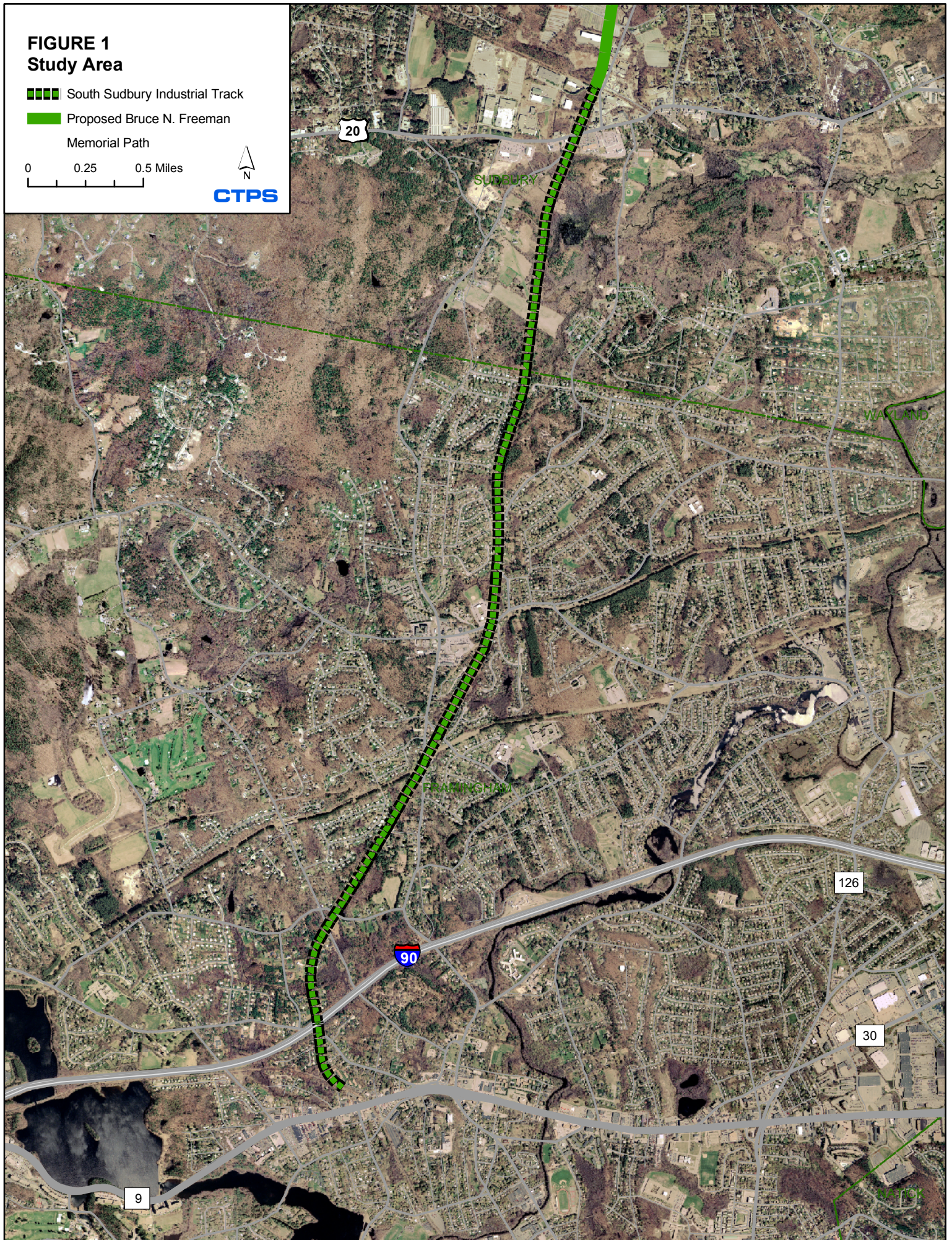
⁴ A weekday count in September 2004 found 175 bicycles parked at Alewife Station.

FIGURE 1 Study Area

South Sudbury Industrial Track

Proposed Bruce N. Freeman
Memorial Path

0 0.25 0.5 Miles



Public Transportation

The MBTA, the Framingham LIFT, and three private bus carriers serve the study area.

MBTA Commuter Rail

MBTA service is provided on the Framingham/Worcester commuter rail line. There is one stop in downtown Framingham. The station is about 2.5 miles south of the study area. On weekdays, 21 inbound trains and 20 outbound trains serve Framingham Station; Framingham is the only station on the line served by all 41 trains.⁵ About half of those trips, 10 inbound and 10 outbound, serve Worcester. Of these 20 Worcester trains, 12 (7 inbound and 5 outbound) bypass some of the inner stations in Natick, Wellesley, and Newton.

The MBTA permits the transport of non-folding bicycles on all commuter rail lines during off-peak hours; folding bicycles are allowed on all trains. Inbound, this policy allows regular bicycle access on all trains after the morning peak (on the Framingham/Worcester line, 12 trains; at Framingham Station, the first is the 11:08 AM Framingham inbound departure). Outbound, it is allowed on all trains except during the evening peak; this means bicyclists can board in Boston and interim stations from the start of service in the morning through and including the 2:40 PM South Station departure (9 trains) and the 4 last trains of the day (the 7:15 PM through 11:25 PM South Station departures).

While the same hours apply to bicyclists traveling anywhere on the line, the effect is different for those traveling outbound in the morning. A resident of Framingham, for example, who works near one of the outer stations (Ashland, Southborough, Westborough, Grafton, or Worcester) could board a train to work during the AM peak period and return during the PM peak period because those trips would be in the opposite direction of the main flow of passengers. Likewise a resident of Boston could take a bicycle on board to reach Framingham for work in the morning. The train schedule for these workers, however, is not as convenient as it is for the major flow of passengers.

Town of Framingham

The LIFT Public Transit System, operated by the Town of Framingham, has five routes: #2, #3, #5, #6, and #7. The first two routes are internal to Framingham; the others also serve other communities. Route #5 serves Ashland and Hopkinton. Lift #6 serves Ashland, Holliston, Milford, and Natick. Route #7 serves Southborough and Marlborough. LIFT #9, serving highway Route 9 in Framingham and Natick, began service in August 2006.

Patrons flag down the LIFT buses anywhere along their routes. LIFT #2 and #3 are the only ones to serve the study area directly. They follow the same route, one running clockwise, the other counter-clockwise. They travel along Pleasant Street, Edgell Road, and Water Street. LIFT #5 and LIFT #7 serve Framingham State College, which is located about a quarter-mile south of the South Sudbury Industrial Track.

⁵ As of the April 24, 2006, schedule.

Private Carriers

A Cavalier Coach Company bus makes two stops on Route 20 in Sudbury, at Friendly's and at MacKinnon's Liquors. This service is part of one daily round-trip between Northborough and Boston. The railroad right-of-way crosses Route 20 in Sudbury at Friendly's, providing a direct connection to this service. The same company provides one daily round-trip between Marlborough and Boston, which stops in Framingham at the Route 9 park-and-ride lot near Exit 12 of the Massachusetts Turnpike.⁶ This stop is about 1.5 miles from the right-of-way.

Peter Pan Bus Lines provides two trips from Worcester to Boston in the morning and two back to Worcester in the evening, with five stops in Framingham: Edgewater, Temple Street, Framingham State College, Georgetown/Granada, and the Flutie Pass lot at Shoppers World. There are two more trips, one AM inbound and one PM outbound, between the Flutie Pass lot and Boston. The southern terminus of the right-of-way is within a quarter-mile of the Framingham State College stop.

D CRASH DATA

The data discussed here include crashes that have occurred between motor vehicles and either bicyclists or pedestrians. There are two primary reasons to include these data in this study. The first is to determine whether there are high-crash locations that are close to the right-of-way. The second is to provide an overview of crashes in the community for elected officials, municipal staff, and members of the public.

MassHighway obtained these data from the Massachusetts Registry of Motor Vehicles (RMV) and provided them to CTPS. The RMV data are based on police reports. The years 1995 through 2001 are used. The seven-year span allows a broad view of what has occurred. The year 2001 is the most recent that has bicycle and pedestrian crash data available. The data are limited in two important ways. First, many incidents are not reported, especially bicyclists' falls that do not involve impact with a motor vehicle. Second, for many of the reported crashes, information is incomplete and/or imprecise, especially regarding location. In Framingham, enough information was provided to map 65 percent of the pedestrian and 73 percent of the bicyclist crashes. In Sudbury, there was enough information to map 44 percent of the pedestrian and 46 percent of the bicyclist crashes.

Table 4 shows the number of bicyclist and pedestrian crashes by community and the rates per thousand residents. There were 142 bicyclist crashes in Framingham and 24 in Sudbury for the seven-year period. With respect to population, the bicyclist crash rate per resident in Framingham was 50 percent higher than in Sudbury. There were 333 pedestrian crashes in Framingham and 29 in Sudbury. The pedestrian crash rate per resident in Framingham was almost three times that of Sudbury.

⁶ This Marlborough service began in the fall of 2006, replacing service formerly provided by Gulbankian Bus Lines, which went out of business in June 2006. The Gulbankian service provided two runs, not one, and originated in Hudson, not Marlborough.

Table 4
Number of Bicycle and Pedestrian Crashes,
by Community, Boston Region MPO, and Statewide, per 1,000 Residents,
1995–2001 Inclusive

	2000 Population	Bicycle Crashes	Bicycle Crashes per 1,000	Pedestrian Crashes	Pedestrian Crashes per 1,000	Fatalities	
						Bicycle	Pedestrian
Framingham	66,910	142	2.1	333	5.0	0	1
Sudbury	16,841	24	1.4	29	1.7	0	0
Total/Average	83,751	166	2.0	362	4.3	0	1
Boston Region MPO	3,078,989	5,462	1.8	11,844	3.8	24	265
Massachusetts	6,346,483	10,882	1.7	21,274	3.4	47	541

Sources: 2000 U.S. census (population); MA Registry of Motor Vehicles (crashes)

Also included in the table are corresponding data for the Boston Region MPO area (101 communities) and the commonwealth (351 communities). Both the regional and statewide bicyclist and pedestrian crash rates per capita are higher than the Sudbury rates, lower than Framingham’s, and slightly lower than the average of both communities combined.

There is not enough information to determine why certain communities have higher rates of crashes than others do. Possible explanations are higher motor-vehicle volumes and/or higher levels of walking and bicycling. As noted earlier in this chapter, the census data suggest that there is more bicycling and walking in Framingham than in Sudbury.⁷ Factors pertaining to specific locations might include excessive speed; disregard of traffic controls by motorists, bicyclists, or pedestrians; lack of space for pedestrians and bicyclists; and poor sight distance.

The crashes were mapped to see if there were concentrations in specific areas (see Figure 2). The reader is reminded that 33 percent of the Framingham crashes and 55 percent of the Sudbury crashes are not shown on the map because of insufficient location information in the accident reports.

The only at-grade crossing of the right-of-way where crashes occurred is Route 20 in Sudbury. There were two crashes involving pedestrians and one involving a bicyclist. This area of Route 20 is commercially developed, with significant traffic volumes and many turning movements. There were three crashes involving pedestrians at the intersection of Edgell Road with Water Street and Edmands Road (1,000 feet west of the right-of-way) in Framingham. In addition to the crashes at the two intersections, there were also four bicyclist crashes and one pedestrian crash at other points along the Edgell Road/Nobscot Road/Route 20 corridor.

⁷ “Exposure rates,” which take volumes into account and indicate the number of crashes per given level of traffic, have not been determined in this study. These measures could help highlight areas that have particularly high numbers of crashes due to factors other than high volumes of traffic.

FIGURE 2
Crashes 1995-2001*

- Involving pedestrian
- ▲ Involving bicycle
- South Sudbury Industrial Track
- Proposed Bruce N. Freeman Memorial Path

* Multiple crashes at a location are indicated by a number in the circle or triangle.

0 0.25 0.5 Miles

