



State Transportation Building  
Ten Park Plaza, Suite 2150  
Boston, MA 02116-3968  
Tel. (617) 973-7100  
Fax (617) 973-8855  
TTY (617) 973-7089  
www.bostonmpo.org

Richard A. Davey  
MassDOT Secretary and CEO  
and MPO Chairman

Karl H. Quackenbush  
Executive Director, MPO Staff

The Boston Region MPO is  
composed of:

Massachusetts Department of  
Transportation

Metropolitan Area Planning Council

Massachusetts Bay Transportation  
Authority Advisory Board

Massachusetts Bay Transportation  
Authority

Massachusetts Port Authority

Regional Transportation Advisory  
Council

City of Boston

City of Beverly

City of Everett

City of Newton

City of Somerville

City of Woburn

Town of Arlington

Town of Bedford

Town of Braintree

Town of Framingham

Town of Lexington

Town of Medway

Town of Norwood

Federal Highway Administration  
(nonvoting)

Federal Transit Administration  
(nonvoting)

## MEMORANDUM

**DATE** March 1, 2012  
**TO** Town of Milton  
**FROM** Mark Abbott, Seth Asante, and Efi Pagitsas  
Boston Region MPO Staff  
**RE** FFY 2011 Safety and Operations Analyses at Selected Boston  
Region MPO Intersections: Neponset Valley Parkway at Brush Hill  
Road and Milton Street in Milton

### INTRODUCTION

This memorandum summarizes safety and operations analyses and proposes improvement strategies for the intersections of Neponset Valley Parkway at Brush Hill Road and Neponset Valley Parkway at Milton Street in Milton. It contains the following sections:

- Intersection Layout and Traffic Control
- Issues and Concerns
- Crash Data Analysis
- Intersection Capacity Analysis
- Preliminary Analysis of Traffic Signal Warrants
- Analysis of Traffic Signal Alternative
- Review of Roundabout Alternative
- Improvement Recommendations and Discussion

The memorandum also includes a collection of technical appendices that contain methods and data applied in the study and detailed reports of the intersection capacity analyses.

### INTERSECTION LAYOUT AND TRAFFIC CONTROL

The two intersections, shown in Figure 1, are owned by the Department of Conservation and Recreation. They are located in the western portion of Milton, near the Hyde Park section of Boston. Neponset Valley Parkway, the major street of the two intersections, is a two-lane roadway running in the northwest-southeast direction between Blue Hill Avenue (Route 138) and Truman Parkway; it is categorized as an urban principal arterial. Brush Hill Road in Milton is a town-owned roadway, classified as an urban collector. It runs north-south in direction, north from Blue Hill Avenue (Route 138) south of the intersections, continuing

past Milton Street, to Truman Parkway. Milton Street is an east-west street that also runs from Blue Hill Avenue, east of the intersections, to Neponset Valley Parkway. It is also town-owned and is an urban collector.

Figure 1 shows the intersection layouts and the area nearby. Traffic operation at the Brush Hill Road and Neponset Valley Parkway intersection is under stop-control, with a stop sign located on the Brush Hill Road approach. Both of the Neponset Valley Parkway approaches are uncontrolled. All of the approaches are one lane that is shared by all movements. The traffic operations at the Neponset Valley Parkway and Milton Street intersection is under yield control, with a yield sign located on the northbound Neponset Valley Parkway approach.

The land use in the vicinity of the intersections is mainly residential and public open space. Milton Health care, a nursing home and rehabilitation hospital, is located on Brush Hill Road, south of the Neponset Valley Parkway intersection.

The two intersections are located within about 400 feet of each other. Both intersections are skewed, and a sharp roadway curve is located between them. This limits the sight distance between the intersections and sometimes causes driver confusion.

There are currently no paved sidewalks along either Brush Hill Road or Neponset Valley Parkway. However, there is a pedestrian path located adjacent to Neponset Valley Parkway on the eastern side of the roadway. This pathway leads to the parking area located adjacent to the Brush Hill Road intersection. In addition to the path along Neponset Valley Parkway, there are numerous recreational trails in the area. The parking area is provided to allow access to these trails.

## **ISSUES AND CONCERNS**

Staff met with Milton officials to discuss their concerns about the intersections. Their main concern was the lack of safety at the Brush Hill Road intersection. Numerous crashes have occurred at both intersections, with a majority occurring at the Brush Hill Road intersection. Another concern is the problem of a number of large trucks encroaching into the opposite lane (oncoming traffic) at this intersection. A review of the recent crash data indicates that the Brush Hill Road intersection has a high number of crashes and a crash rate higher than the average for unsignalized intersections in MassDOT Highway Division District 6 (see the next section for further analyses).

The issues and concerns for this intersection can be summarized as follows:

- Skewed approaches of the intersections
- High number of crashes and high crash rate
- Truck traffic encroaching into the lane of oncoming traffic



BOSTON  
REGION  
MPO

**FIGURE 1**  
**Neponset Valley Parkway/Brush Hill Road/  
Milton Street, Milton**

*Safety and Operations  
Improvements at  
Selected Intersections*

Neponset Valley Pkwy @ Milton Street TMC  
June 7, 2011

AM: 7:00-9:00 PM: 16:00-18:00

File Name : Milton\_Nepons\_Milton\_PM  
Site Code : 06071022  
Start Date : 6/7/2011  
Page No : 3

Pedestrians are by crossing approach  
Bicycles are by movement

Groups Printed- Bicycles and Pedestrians

Start Time	Milton Street From East					Neponset Valley Pkwy From South					Neponset Valley Pkwy From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
16:00	1	0	0	0	1	0	1	0	0	1	2	0	0	0	2	4
16:15	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	2
16:30	0	0	0	0	0	0	1	0	0	1	7	0	0	0	7	8
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	1	0	2	0	2	0	0	2	10	0	0	0	10	14
17:00	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
17:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0	2	2	2	0	1	0	3	5
17:45	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	2
Total	1	0	0	0	1	0	1	0	2	3	5	0	1	0	6	10
Grand Total	2	0	1	0	3	0	3	0	2	5	15	0	1	0	16	24
Apprch %	66.7	0	33.3	0		0	60	0	40		93.8	0	6.2	0		
Total %	8.3	0	4.2	0	12.5	0	12.5	0	8.3	20.8	62.5	0	4.2	0	66.7	

Central Transportation Planning Staff

www.ctps.org

Neponset Valley Pkwy @ Milton Street TMC

June 7, 2011

AM: 7:00-9:00 PM: 16:00-18:00

File Name : Milton\_Nepons\_Milton\_AM

Site Code : 06071021

Start Date : 6/7/2011

Page No : 3

Pedestrians are by crossing approach

Bicycles are by movement

Groups Printed- Bicycles and Pedestrians

Start Time	Milton Street From East					Neponset Valley Pkwy From South					Neponset Valley Pkwy From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	1	0	0	1	0	0	0	3	3	4
07:30	0	0	0	2	2	0	0	0	0	0	2	0	0	17	19	21
07:45	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2
Total	0	0	0	3	3	0	1	0	0	1	2	0	0	21	23	27
08:00	0	0	0	2	2	0	0	0	0	0	1	0	0	0	1	3
08:15	0	0	0	3	3	0	1	0	0	1	1	0	0	0	1	5
08:30	1	0	0	12	13	0	0	0	0	0	0	0	0	0	0	13
08:45	1	0	0	1	2	0	1	0	0	1	0	0	0	0	0	3
Total	2	0	0	18	20	0	2	0	0	2	2	0	0	0	2	24
Grand Total	2	0	0	21	23	0	3	0	0	3	4	0	0	21	25	51
Apprch %	8.7	0	0	91.3		0	100	0	0		16	0	0	84		
Total %	3.9	0	0	41.2	45.1	0	5.9	0	0	5.9	7.8	0	0	41.2	49	

Central Transportation Planning Staff

www.ctps.org

Neponset Valley Pkwy @ Brush Hill Road TMC

June 7, 2011

AM: 7:00-9:00 PM: 16:00-18:00

File Name : Milton\_Nepons\_BrushHill\_PM

Site Code : 06071012

Start Date : 6/7/2011

Page No : 3

Pedestrians are by crossing approach  
Bicycles are by movement

Groups Printed- Bicycles and Pedestrians

Start Time	Neponset/Brush Hill From North					Nepsonset From East					Brush Hill Road From South					Int. Total
	Right (to parking)	Thru	Left	Peds	App. Total	Right	Thru (to parking)	Left	Peds	App. Total	Right	Thru	Left (to parking)	Peds	App. Total	
16:00	0	2	2	0	4	1	0	0	0	1	0	0	0	0	0	5
16:15	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
16:30	1	7	0	0	8	0	0	0	0	0	0	0	0	1	1	9
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	11	2	0	14	1	0	0	0	1	0	0	0	1	1	16
17:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
17:30	0	3	0	0	3	0	0	0	3	3	0	0	0	0	0	6
17:45	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Total	0	6	0	0	6	0	0	0	3	3	0	3	0	0	3	12
Grand Total	1	17	2	0	20	1	0	0	3	4	0	3	0	1	4	28
Apprch %	5	85	10	0		25	0	0	75		0	75	0	25		
Total %	3.6	60.7	7.1	0	71.4	3.6	0	0	10.7	14.3	0	10.7	0	3.6	14.3	

Neponset Valley Pkwy @ Brush Hill Road TMC  
June 7, 2011

AM: 7:00-9:00 PM: 16:00-18:00

File Name : milton\_nepons\_brushhill\_am  
Site Code : 06071011  
Start Date : 6/7/2011  
Page No : 3

Pedestrians are by crossing approach  
Bicycles are by movement

Groups Printed- Bicycles and Pedestrians

Start Time	Neponset/Brush Hill From North					Neponset From East					Brush Hill Road From South					Int. Total	
	Right (to parking)	Thru	Left	Peds	App. Total	Right	Thru (to parking)	Left	Peds	App. Total	Right	Thru	Left (to parking)	Peds	App. Total		
07:00	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	2
07:15	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1	2
07:30	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	1	3
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	3	5	0	0	0	0	0	0	2	0	0	2	7	
08:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	2
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	4	
Grand Total	0	3	1	3	7	0	0	0	0	0	0	4	0	0	4	11	
Apprch %	0	42.9	14.3	42.9		0	0	0	0	0	0	100	0	0			
Total %	0	27.3	9.1	27.3	63.6	0	0	0	0	0	0	36.4	0	0	36.4		

Central Transportation Planning Staff

www.ctps.org

Brush Hill Road @ Milton Street TMC

June 7, 2011

AM: 7:00-9:00 PM: 16:00-18:00

File Name : Milton\_BrushHill\_Milton\_PM

Site Code : 06071102

Start Date : 6/7/2011

Page No : 3

Pedestrians are by crossing approach  
Bicycles are by movement

Groups Printed- Bicycles and Pedestrians

Start Time	Brush Hill Road From North					Milton Street From East					Brush Hill Road From South					Milton Street From West					Int. Total	
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total		
16:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
17:45	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	0	0	1	3
Total	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	2	3	5	
Grand Total	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	0	1	0	2	3	7	
Apprch %	0	0	0	0		0	100	0	0		0	0	100	0		0	33.3	0	66.7			
Total %	0	0	0	0		0	28.6	0	0	28.6	0	0	28.6	0	28.6	0	14.3	0	28.6	42.9		



Central Transportation Planning Staff

www.ctps.org

Brush Hill Road @ Milton Street TMC

June 7, 2011

AM: 7:00-9:00 PM: 16:00-18:00

File Name : Milton\_BrushHill\_Milton\_AM

Site Code : 06071101

Start Date : 6/7/2011

Page No : 3

Pedestrians are by crossing approach

Bicycles are by movement

Groups Printed- Bicycles and Pedestrians

Start Time	Brush Hill Road From North					Milton Street From East					Brush Hill Road From South					Milton Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1	2
07:30	0	0	0	1	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	1	0	1	0	1	2	1	0	0	0	1	0	0	0	1	1	5
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	0	0	0	0	2
Grand Total	0	0	0	1	1	0	2	0	1	3	1	0	0	1	2	0	0	0	1	1	7
Apprch %	0	0	0	100		0	66.7	0	33.3		50	0	0	50		0	0	0	100		
Total %	0	0	0	14.3	14.3	0	28.6	0	14.3	42.9	14.3	0	0	14.3	28.6	0	0	0	14.3	14.3	