



SAFETY

The MRPC is committed to the goal of improving roadway safety in the Montachusett Region. The MRPC has, and will continue to, work with MassDOT and Member Communities to improve roadway safety. The two focus areas below are the approaches to improving safety in the Montachusett Region.

Massachusetts 2018 Strategic Highway Safety Plan Update (SHSP) Focus:

The MRPC is working cooperatively and in coordination with MassDOT to implement the SHSP. The focus area that follows is modelled after the SHSP. See the Appendix for a summary of the SHSP which includes 14 identified Emphasis Areas.

Reducing the number of Fatalities and Incapacitating Injuries is the top priority in the Montachusett Region based on the following:

- In the 2012 – 2016 five-year period, 541 people received an Incapacitating Injury on Montachusett Region roadways for the 2012 – 2016 five-year period, 73 people lost their lives on Montachusett Region roadways for an annual average of 15 Fatalities. Based on the **Safety Needs - Total Fatalities in Member Communities** analysis below, Fatalities have maintained a level annual average of 15 Fatalities which is one above the 2008 – 2012 five-year period annual average of 14 Fatalities.
- an annual average of 108 Incapacitating Injuries. Based on the **Safety Needs - Total Incapacitating Injuries in Member Communities** analysis below, Incapacitating Injuries saw an annual average reduction of -13.6% since the 2008 – 2012 five-year period. The annual average for Incapacitating Injuries dropped from 125 to 108 (-17 Incapacitating Injuries).
- In the 2012 – 2016 five-year period, 67 non-motorized people received either a Fatality or an Incapacitating Injury on Montachusett Region roadways for an annual average of 13



Non-Motorized Fatalities and Incapacitating Injuries. Based on the **Safety Needs - Total Combined Non-Motorized Fatalities and Incapacitating Injuries** analysis below, Non-Motorized Fatalities and Incapacitating Injuries have maintained an annual average of one to two Non-Motorized Fatalities and Incapacitating Injuries above the 2008 – 2012 five-year period annual average of 12 Non-Motorized Fatalities and Incapacitating Injuries.

Below are two links to the SHSP:

2018 SHSP (for low resolution), **2018 SHSP** (for download and/or print)

Montachusett Region All Mode High Crash Locations (HCLs) Focus and Total Crashes Focus:

Reducing the HCLs needs to continue and the Total Crashes needs to be addressed:

- Based on the **Safety Needs - HCLs in Member Communities and Region Total Crashes** analysis below, safety improvement projects have improved safety at former HCLs but reducing the severity and number of crashes at existing and new HCLs needs to occur.
- Between 2012 and 2016, 25,895 crashes occurred on the Region roadways. Based on the **Safety Needs - HCLs in Member Communities and Region Total Crashes** analysis below, total crashes have seen an annual average increase of 655 Total Crashes (15.6%) above the 2008 – 2012 five-year period.

Safety Needs

Total Fatalities

Figure 4-41 below, *Montachusett Region Total Fatalities (5-yr averages)*, graphically represents the number of roadway crash Fatalities that occurred in the region from 2008 – 2016. The number of Fatalities is provided as an annual average based on a five-year rolling average (i.e. years 08-12, 09-13, etc.).



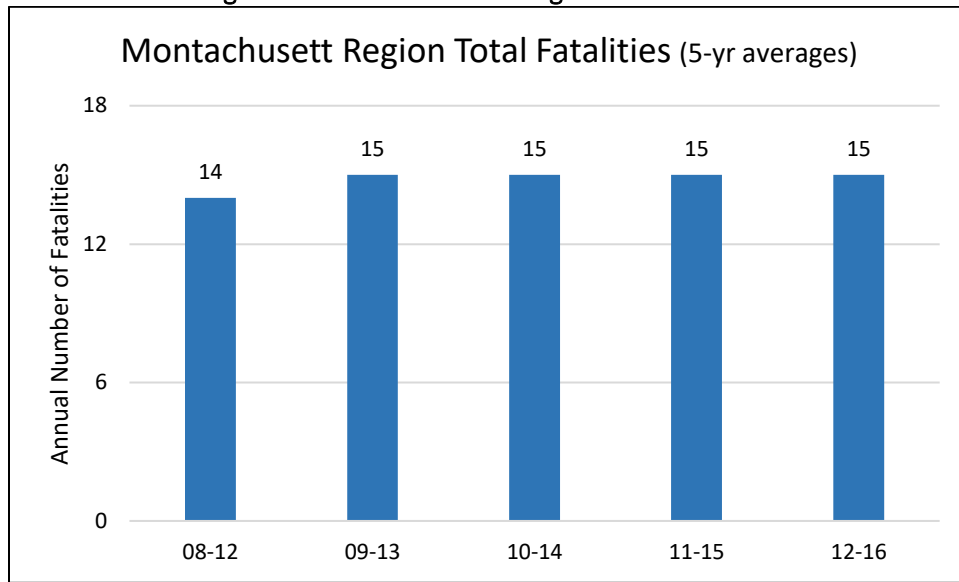
- **Figure 4-41** shows that the annual average number of Fatalities that have occurred remained consistent over the years from 2008 – 2016. Only the 2008 – 2012 five-year period annual average number of Fatalities varied from the 15 Fatalities per year at 14 Fatalities per year.



- On average, Montachusett Region Fatalities represent 4% of the State's total Fatalities.
- To begin to bring down the average number of Fatalities from 15, safety improvement projects need to be considered for development based on the strategies and actions found in the SHSP applicable Emphasis Areas at the locations where Fatalities are occurring in Member Communities.
- Safety project development includes the requirement of conducting a Road Safety Audit (RSA) that will provide safety improvements alternatives before the design is initiated.
- Member Communities may choose to contact the MRPC for the historic locations of Fatalities within their community.
- MRPC will contact Member Communities concerning the historic locations of Fatalities for further study and potential project development.
- Fatality data is updated by MassDOT which will increase or decrease the five-year rolling average. Refer to **Chapter 3: Performance Measures** for further description of **Figure 4-41**.



Figure 4-41: Montachusett Region Total Fatalities



Fatalities Data Source: MassDOT

Total Incapacitating Injuries in Member Communities

The figure *Montachusett Region Total Incapacitating Injuries (5-yr avgs.)* (**Figure 4-42**) below graphically represents the number of roadway crash Incapacitating Injuries that occurred in Member Communities from 2008 – 2016. The number of Incapacitating Injuries is provided as an annual average based on a five-year rolling average.

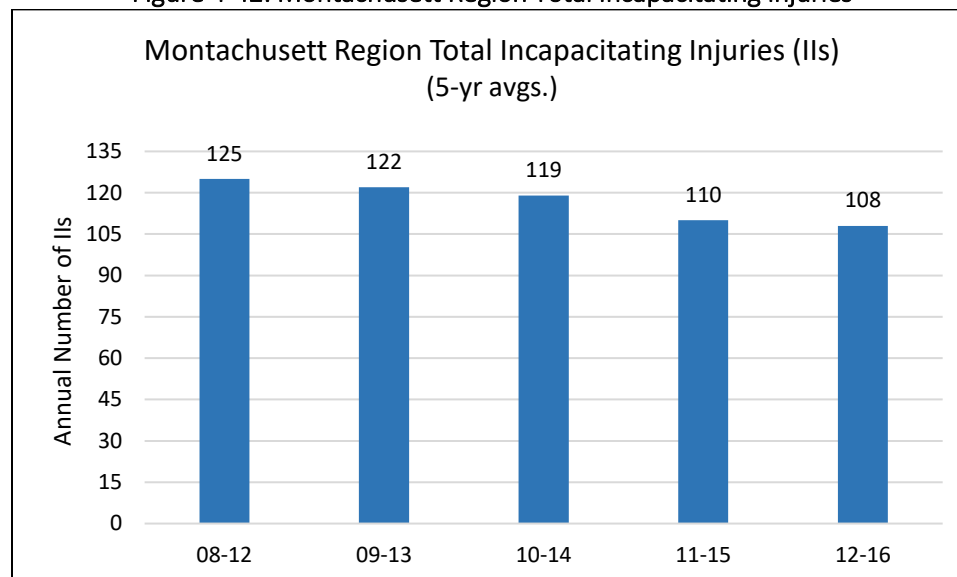
- **Figure 4-42** shows that the annual average number of Incapacitating Injuries that have occurred saw significant reduction since the 2008 – 2012 five-year period (-13.6%, a decrease from 125 to 108 (-17) Incapacitating Injuries.
- On average, Montachusett Region Incapacitating Injuries represent 3.5% of the State's total Incapacitating Injuries.
- To continue to bring down the average number of Incapacitating Injuries from 108, safety improvement projects need to be considered for development based on the strategies and actions found in the SHSP applicable Emphasis Areas at the locations where the Incapacitating Injuries are occurring in Member Communities.





- Safety project development includes the requirement of conducting a Road Safety Audit (RSA) that will provide safety improvements alternatives before the design is initiated.
- Member Communities may choose to contact MRPC for the historic locations of Incapacitating Injuries within their community.
- MRPC will contact Member Communities concerning the historic locations of Incapacitating Injuries for further study and potential project development.
- Incapacitating Injury data is updated by MassDOT which will increase or decrease the five-year rolling average. Refer to **Chapter 3: Performance Measures** for further description of **Figure 4-42**.

Figure 4-42: Montachusett Region Total Incapacitating Injuries



Incapacitating Injuries Data Source: MassDOT

Total Combined Non-Motorized Fatalities and Incapacitating Injuries in MMPO Member Communities

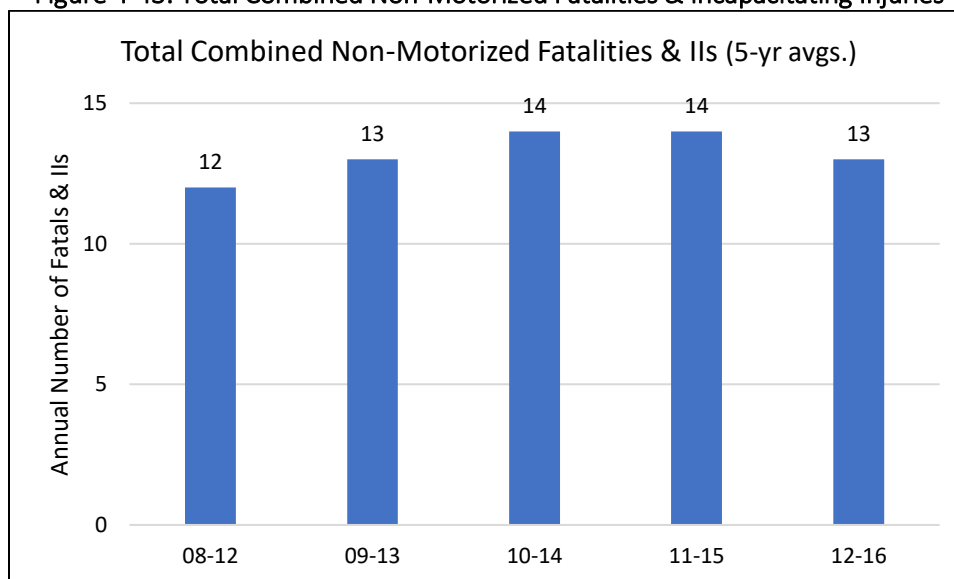
The Montachusett Region figure *Total Combined Non-Motorized Fatalities and Incapacitating Injuries (5-yr avgs.)* (**Figure 4-43**) below graphically represents the number of Non-Motorized Fatalities and Incapacitating Injuries crashes that occurred in the region from 2008 – 2016. The number of Non-Motorized Fatalities and Incapacitating Injuries is provided as an annual average based on a five-year rolling average.



- **Figure 4-43** shows that the annual average number of Non-Motorized Fatalities and Incapacitating Injuries that have occurred ranged from 12 to 14 over the years from 2008 – 2016. The data shows that an upward trend of one to two Non-Motorized Fatalities and Incapacitating Injuries has occurred since 2008 – 2012 five-year period.
- On average, Montachusett Region Non-Motorized Fatalities and Incapacitating Injuries represent 2.6% of the State’s total combined Non-Motorized Fatalities and Incapacitating Injuries.
- To begin to bring down the average number of Non-Motorized Fatalities and Incapacitating Injuries from 13, safety improvement projects need to be considered for development based on the strategies and actions found in the SHSP applicable Emphasis Areas at the locations where Non-Motorized Fatalities and Incapacitating Injuries are occurring throughout the region.
- Safety project development includes the requirement of conducting a Road Safety Audit (RSA) that will provide safety improvements alternatives before the design is initiated.
- Member Communities may choose to contact MRPC for the historic locations of Non-Motorized Fatalities and Incapacitating Injuries within their community.
- MRPC will contact Member Communities concerning the historic locations of Non-Motorized Fatalities and Incapacitating Injuries for further study and potential project development
- Non-Motorized Fatalities and Incapacitating Injury data is updated by MassDOT which will increase or decrease the five-year rolling average. Refer to **Chapter 3: Performance Measures** for further description of **Figure 4-43**.



Figure 4-43: Total Combined Non-Motorized Fatalities & Incapacitating Injuries



Fatals & IIs Data Source: MassDOT

Prioritizing Future Safety Improvement Projects at Fatality Locations

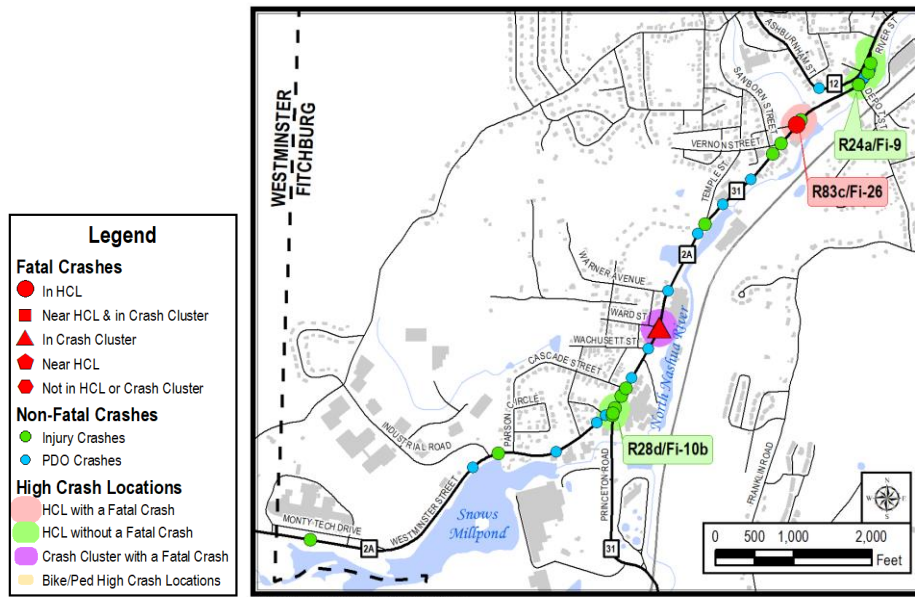
- This prioritization takes into consideration a Fatality's relationship to other crashes.
- A roadway is designated as a Fatal Crash Corridor (FCC) after a Fatality occurs on the segment.
 - The MMPO FCC Table currently contains 42 FCCs
- **Table 4-20** below shows the five FCCs where two or more Fatalities occurred in the region from 2012 – 2014 in the context of their relationship with the number of Injury and Property Damage Only (PDO) crashes that occurred within a one-mile radius of each Fatality.
- **Figure 4-44** below shows the **Route 2A/31, Westminster St** FCC in Fitchburg where three Fatalities occurred.
- Member Communities may choose to contact the MRPC for the FCCs within their community.
- MRPC will contact Member Communities concerning the FCCs for further study and potential project development.
- Fatality data, as with all crash data, is updated by MassDOT.



Table 4-20: Fatal Crash Corridors with Two or More Fatalities

COMMUNITIES	FATAL CRASH CORRIDORS	Fatal	Injury	PDO	Total Corridor Crashes
Ayer	Route 2A & Washington Street	2	18	57	77
Fitchburg	Route 2A/31, Westminster St (Fig 4 below)	3	20	70	93
Fitchburg & Ashby	Route 31, Fitchburg/Ashby	3	19	92	114
Lunenburg & Leominster	Route 13, Electric Ave / Main Street	2	35	121	158
Westminster	Route 2A, State Road West	2	4	6	12
TOTAL CRASHES					454
Total Crashes by Severity		12	96	346	
Percentage of Total Crashes by Severity		2.6%	21.1%	76.2%	

Figure 4-44: Route 2A/31, Westminster St, Fitchburg FCC





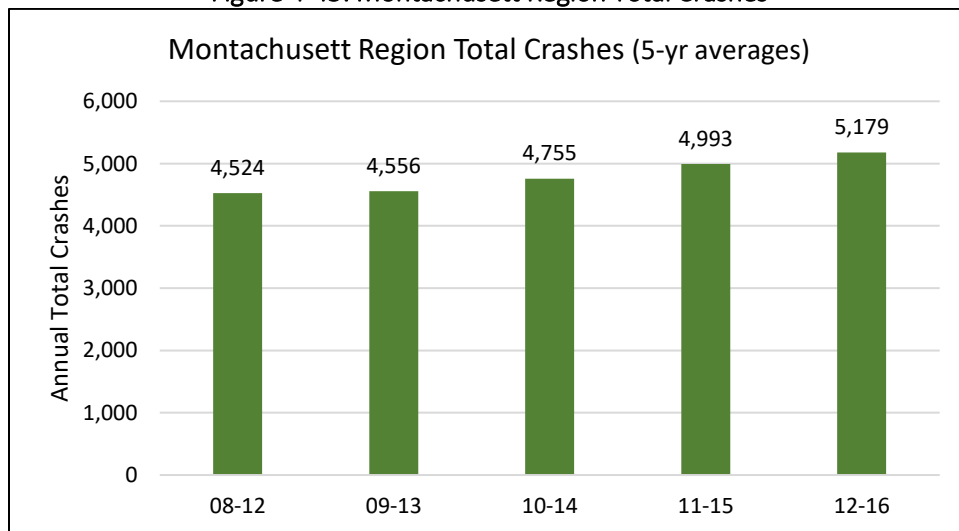
HCLs in Montachusett Member Communities and Region Total Crashes

Montachusett Region Total Crashes

The figure *Montachusett Region Total Crash Totals (5-yr averages)* (**Figure 4-45**) below graphically represents the number of total crashes that occurred on the roadways in Member Communities from 2008 – 2016. The number of crashes is provided as an annual average based on a five-year rolling average.

- **Figure 4-45** shows that the annual average number of Total Crashes that have occurred in the Montachusett Region ranged from 4,524 in 2008 – 2012 five-year period to 5,179 in 2012 – 2016 five-year period which is an annual average increase of 655 in Total Crashes (+14.5%).
- To reduce Total Crashes, safety improvement projects need to be considered for development based on the strategies and actions found in the SHSP applicable Emphasis Areas on corridors and at specific locations in Member Communities.
- Total Crash data is updated by MassDOT which will increase or decrease the five-year rolling average.

Figure 4-45: Montachusett Region Total Crashes



Total Crashes Data Source: MassDOT



HCLs in Montachusett Member Communities

As of April, 2019, MassDOT 2016 HCL information is not available. The most current available MassDOT HCL information is for 2015. The analysis below is based on the 2015 HCL information.

There is a very good reason to continue seeking safety improvement projects at HCLs. There has been significant safety improvement at several former HCLs after projects have been completed. Two of the most notable are no longer listed in the most current MMPO Region HCL Table:

- Central Street (Route 12) at Willard Street intersection, Leominster
- Lunenburg Road (Route 70) at Old Union Turnpike, Lancaster

Future Safety Improvement Projects at HCLs:

- **Table 4-21** below shows that as of the end of 2015, a total of 105 HCLs occurred in Member Communities.
- The HCLs were distributed among 12 Member Communities.
- 82% (86 of 105) of the HCLs occurred in three Member Communities (Fitchburg, Gardner, Leominster).

Table 4-21: HCLs Per Member Communities

COMMUNITIES (Com)	# of HCLs Per Com
ASHBY	1
FITCHBURG	39
GARDNER	12
GROTON	1
HARVARD	1
LANCASTER	7
LEOMINSTER	35
LEOMINSTER & FITCHBURG (City Line)	1
LUNENBURG	1
SHIRLEY	1
STERLING	4
TOWNSEND	1
WINCHENDON	1
MMPO REGION TOTAL:	105



- **Table 4-22** below is a list of the top 18 HCLs (of 105 HCLs) in the region.
- An HCL needed a combination of at least eight Injury crashes and 31 Property Damage Only crashes to be included in **Table 4-22**.
- 67% (12 of 18) occurred in two Member Communities (Fitchburg and Leominster).
- 17 HCLs were forwarded from 2014 while one HCL was added to the Table.
- In 2015-
 - one HCL coincided with a Bike HCL
 - one HCL coincided with a Ped HCL
- Road Safety Audits have been completed at Six HCLs
- Projects have either been initiated or completed at seven HCLs
- To continue to improve safety at HCLs, safety improvement projects need to be considered for development based on the strategies and actions found in the SHSP applicable Emphasis Areas.
- Safety project development includes the requirement of conducting a Road Safety Audit (RSA) that will provide safety improvements alternatives before the design is initiated.
- Member Communities may choose to contact the MRPC for the HCLs within their community.
- MRPC will contact Member Communities concerning the HCLs for further study and potential project development.
- HCL data is updated by MassDOT which may add locations as HCLs, or previous year HCLs may be eliminated.



Table 4-22: Top 18 HCLs in Member Communities

COMMUNITIES	LOCATION NAME	2014 TABLE	BIKE HCL 2015	PED HCL 2015	Top 200 2015	Top 200 2016*	RSA Completed	Project Initiated or Completed
FITCHBURG	WATER STREET (SR12 NB) at WANOOSNOC ROAD	•			•	•		
	BOULDER DRIVE at MAIN STREET (SR2A EB)	•		•			•	•
	SOUTH STREET at WANOOSNOC ROAD	•			•		•	
	WHALON STREET at PIERCE AVENUE	•			•			
	WATER STREET (SR12 NB) at BIRCH STREET	•						
	FRANKLIN ROAD at OAK HILL ROAD	NO					•	•
GARDNER	PEARSON BOULEVARD at UNION SQUARE	•			•			
	TIMPANY BOULEVARD (SR68 NB)	•						
HARVARD	AYER ROAD (SR110 EB) at CONCORD TURNPIKE (SR2 EB)	•						•
LANCASTER	ROUTE 2 (SR2 EB) at JACKSON ROAD	•						•
LEOMINSTER	ROUTE 2 (SR2 EB) at RAMP-RT 12 NB TO RT 2 WB	•						
	NORTH MAIN STREET (SR12 NB)	•			•			
	MAIN STREET (SR13 NB) at NASHUA STREET	•	•		•		•	•
	NORTH MAIN STREET (SR12 NB) at HAMILTON STREET	•					•	•
	ROUTE 2 (SR2 EB) at MEAD STREET	•						
	ROUTE 2 (SR2 EB) at MERRIAM AVENUE	•						
SHIRLEY	TOWNSEND ROAD at GROTON ROAD (SR225 EB)	•						
STERLING	LEOMINSTER ROAD (SR12 NB) at CHOCKSETT ROAD^	•					•	•

*Top 200 statewide (MassDOT). MassDOT changed the HCL methodology for 2016

^roundabout project recently completed and will need to be evaluated in the future

- **Table 4-23** below includes 12 HCLs (of the remaining 87 HCLs) that coincided with the remaining Bike HCLs or Ped HCLs in Member Communities.
- The Athol location was an HCL prior to, but not in, 2015. However, the location coincided with a Bike HCL and a Ped HCL in 2015.
- To improve safety at HCLs or a location with a Bike HCL and/or a Ped HCL, safety improvement projects need to be considered for development based on the strategies and actions found in the SHSP applicable Emphasis Areas.
- Safety project development includes the requirement of conducting a Road Safety Audit (RSA) that will provide safety improvements alternatives before the design is initiated.
- Member Communities may choose to contact the MRPC for the HCLs/Bike HCL/Ped HCL within their community.



- MRPC will contact Member Communities concerning the HCLs/Bike HLC/Ped HCL for further study and potential project development.
- HCL/Bike HLC/Ped HCL data is updated by MassDOT which may add locations as HCLs/Bike HLC/Ped HCL, or previous year HCLs/Bike HLC/Ped may be eliminated.

Table 4-23: HCLs with Coinciding Bike and/or Ped HCL in 2015

COMMUNITIES	LOCATION NAME	2014 TABLE	BIKE HCL 2015	PED HCL 2015	RSA Completed	Project Initiated or Completed
ATHOL	MAIN STREET (SR 2A EB) at EXCHANGE STREET	•	•	•	<input type="checkbox"/>	<input type="checkbox"/>
FITCHBURG	MAIN STREET (SR2A EB)	•		•	<input type="checkbox"/>	<input type="checkbox"/>
	MAIN STREET at MILL STREET	•		•		
	MAIN STREET at WATER STREET	•		•	•	•
	MAIN STREET at CUSHING STREET	•		•		
GARDNER	MAIN STREET (SR68 NB) at WILLOW STREET	•		•	<input type="checkbox"/>	<input type="checkbox"/>
	MAIN STREET (SR68 NB) at TIMPANY BOULEVARD (SR68	•		•	•	•
	TIMPANY BOULEVARD (SR68 SB)	•		•		
LEOMINSTER	WEST STREET at PARK STREET	•		•		
	MAIN STREET (SR12 NB) at MONUMENT SQUARE (SR12	•		•		<input type="checkbox"/>
	MAIN STREET (SR13 NB) at PROSPECT STREET	•	•		•	•
	MAIN STREET (SR13 NB) at RIVER STREET	•	•		•	•
	MECHANIC STREET at WATER STREET	•		•	•	•

*not an HCL in 2015

Safety Trends

Even as the regional population and number of vehicles on the roadways continues to increase, total fatality crashes have not increased. Incapacitating injury crashes decreased significantly but non-motorized crashes increased slightly and total overall crashes continue to rise. It has been proven that the safety projects have resulted in a reduction of crashes and the projects mentioned above are now no longer listed on the high crash listing. It is because of this that serious crash locations will continue to be a focus of the safety planning efforts for the MRPC.



Safety Recommendations

Future Safety Improvement Projects at Fatality Locations

- **Table 4-24** below shows five Fatal Crash Corridors (FCCs) where two or more Fatalities occurred in Member Communities from 2012 – 2014.
- The MRPC maintains an FCC Table that currently contains 42 FCCs.
- No RSAs or Projects have been undertaken at FCCs.
- Member Communities may choose to contact the MRPC for the FCCs within their community.
- MRPC staff will contact Member Communities concerning the FCCs for further study and potential project development.

Table 4-24: Fatal Crash Corridors with Two or More Fatalities

COMMUNITIES	FATAL CRASH CORRIDORS	Fatal	Injury	PDO	Total Corridor Crashes	RSA Completed	Project Initiated or Completed
Ayer	Route 2A & Washington Street	2	18	57	77		
Fitchburg	Route 2A Westminster Street	3	20	70	93		
Fitchburg &	Route 31, Fitchburg/Ashby (south)	3	19	92	114		
L & L*	Rt 13 Electric Ave Main Street	2	35	121	158		
Westminster	Route 2A State Road West	2	4	6	12		
<i>TOTAL CRASHES</i>					454		
<i>Total Crashes by Severity</i>		12	96	346			
<i>Percentage Total Crashes by Severity</i>		2.6%	21.1%	76.2%			

*Lunenburg & Leominster

Future Safety Improvement Projects at High Crash Locations (HCLs):

- **Table 4-25** below is a list of the top 13 HCLs in Member Communities without a Project.
- An RSA has been completed at one HCL.
- **Table 4-26** below is a list of the seven HCLs (of the remaining 87 HCLs) that coincided with the remaining Bike HCLs or Ped HCLs in Member Communities without a Project. No Project has been undertaken at the Athol HCL where coinciding Bike and Ped HCLs occurred.



- The MRPC maintains an HCL Table that currently contains 105 HCLs.
- To continue to improve safety at HCLs, safety improvement projects need to be considered for development based on the strategies and actions found in the SHSP applicable Emphasis Areas.
- Safety project development includes the requirement of conducting a Road Safety Audit (RSA) that will provide safety improvements alternatives before the design is initiated.
- Member Communities may choose to contact the MRPC for the HCLs within their community.
- MRPC staff will contact Member Communities concerning the HCLs for further study and potential project development.

See the **Financial Analysis** chapter for the estimated cost of the projects listed in the FCC Table and the HCC Table.

Table 4-25: Top 13 HCLs in MMPO Member Communities

COMMUNITIES	LOCATION NAME	2014 TABLE	BIKE HCL 2015	PED HCL 2015	Top 200 2015	Top 200 2016*	RSA Completed
FITCHBURG	WATER STREET (SR12 NB) at WANOOSNOC ROAD	•			•	•	
	BOULDER DRIVE at MAIN STREET (SR2A EB)	•		•			□
	SOUTH STREET at WANOOSNOC ROAD	•			•		•
	WHALON STREET at PIERCE AVENUE	•			•		
	WATER STREET (SR12 NB) at BIRCH STREET	•					
	<i>FRANKLIN ROAD at OAK HILL ROAD</i>	<i>NO</i>					□
GARDNER	PEARSON BOULEVARD at UNION SQUARE	•			•		
	TIMPANY BOULEVARD (SR68 NB)	•					
LEOMINSTER	ROUTE 2 (SR2 EB) at RAMP-RT 12 NB TO RT 2 WB	•					
	NORTH MAIN STREET (SR12 NB)	•			•		
	ROUTE 2 (SR2 EB) at MEAD STREET	•					
	ROUTE 2 (SR2 EB) at MERRIAM AVENUE	•					
SHIRLEY	TOWNSEND ROAD at GROTON ROAD (SR225 EB)	•					

*Top 200 statewide (MassDOT). MassDOT changed the HCL methodology for 2016



Table 4-26: HCLs with Coinciding Bike and/or Ped HCL in 2015

COMMUNITIES	LOCATION NAME	2014 TABLE	BIKE HCL 2015	PED HCL 2015	RSA Completed
ATHOL	MAIN STREET (SR 2A EB) at EXCHANGE STREET*	•	•	•	<input type="checkbox"/>
FITCHBURG	MAIN STREET (SR2A EB)	•		•	<input type="checkbox"/>
	MAIN STREET at MILL STREET	•		•	
	MAIN STREET at CUSHING STREET	•		•	
GARDNER	MAIN STREET (SR68 NB) at WILLOW STREET	•		•	<input type="checkbox"/>
	TIMPANY BOULEVARD (SR68 SB)	•		•	
LEOMINSTER	WEST STREET at PARK STREET	•		•	
	MAIN STREET (SR12 NB) at MONUMENT SQUARE (SR12 NB)	•		•	

*not a HCL in 2015