

REGIONAL PAVEMENT PROFILE

SEPTEMBER 2020



MONTACHUSETT METROPOLITAN PLANNING ORGANIZATION

Prepared in cooperation with the Massachusetts Department of Transportation and the U.S. Department of Transportation. The views and opinions of the Montachusett Regional Planning Commission expressed herein do not necessarily state or reflect those of the Massachusetts Department of Transportation or the U.S. Department of Transportation.

The Montachusett MPO and the MRPC fully complies with Title VI of the Civil Rights Act of 1964 and related statutes and regulations in all programs and activities. The Montachusett MPO operates without regard to race, color, national origin, English Proficiency, ancestry, creed, income, gender, age and/or disability. Any person who believes him/herself or any specific class of persons, to be subject to discrimination prohibited by Title VI may by him/herself or by representative file a written complaint with the MRPC or the MMPO. Complaints are to be filed no later than 180 days from the date of the alleged discrimination. Please contact Glenn Eaton at 978-345-7376 ext. 310 for more information.

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Additional Information

To request additional information regarding Title VI and related federal and state nondiscrimination obligations, please contact:

Montachusett Metropolitan Planning Organization (MMPO)
and Montachusett Regional Planning Commission (MRPC)

Title VI Coordinator
MRPC
464 Abbott Ave.
Leominster, MA 01453
(978) 345-7376
geaton@mrpc.org

Complaint Filing

To file a complaint alleging a violation of Title VI or related federal nondiscrimination law, contact the Title VI Specialist (above) within 180 days of the alleged discriminatory conduct.

To file a complaint alleging a violation of the state's Public Accommodation Law, contact the Massachusetts Commission Against Discrimination within 300 days of the alleged discriminatory conduct at:

Massachusetts Commission Against Discrimination (MCAD)
One Ashburton Place, 6th Floor
Boston, MA 02109
617-994-6000 ~ TTY: 617-994-6196

Language Assistance

English: If this information is needed in another language, please contact the MRPC Title VI Coordinator at 978-345-7376.

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Massachusetts Department of Transportation (MassDOT) Secretary	Stephanie Pollack
MassDOT Highway Division Administrator	Jonathan L. Gulliver
Montachusett Regional Planning Commission (MRPC) Chairman	Guy Corbosiero
Montachusett Regional Transit Authority (MART) Chairman/City of Leominster	Mayor Dean Mazzearella
Mayor City of Gardner	Mayor Michael J. Nicholson
Mayor City of Fitchburg	Mayor Stephen DiNatale
Winchendon Board of Selectmen <i>Subregion 1</i>	Barbara Anderson
Ashburnham Board of Selectmen <i>Subregion 2</i>	Rosemarie Meissner
Lunenburg Board of Selectmen <i>Subregion 3</i>	Michael-Ray Jeffreys
Lancaster Board of Selectmen <i>Subregion 4</i>	

MPO SUB-SIGNATORY COMMITTEE MEMBERS

David Mohler, Director OTP, MassDOT, for Secretary Stephanie Pollack
Arthur Frost, Project Development Engineer for Administrator Jonathan Gulliver
Glenn Eaton, Executive Director, MRPC, for Chairman Guy Corbosiero
Mohammed H. Khan, Administrator, MART, for Chairman Mayor Mark Hawke

EXOFFICIO MEMBERS

Jeffrey H. McEwen, Administrator	Federal Highway Administration
Peter Butler, Administrator	Federal Transit Administration

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John Telepciak, Vice Chairman	Phillipston
Laura Shifrin, Secretary	Townsend
Alan Pease, Treasurer	Ashby
Roger Hoyt, Asst. Treasurer	Ashburnham

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Nicolas Bosonetto, Vice Chairman	Fitchburg
Tracy Murphy, Secretary	Winchendon

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Linda Parmenter, Administrative/Human Resources Director
Linda Quinlivan, Fiscal Manager
Brad Harris, Transportation Director
George Snow, Principal Transportation Planner
Sheri Bean, Principal Planner
Brian Doherty, Principal Transportation Planner
George Kahale, Transit Director
John Hume, Planning and Development Director
Karen Chapman, Principal Planner
Jonathon Vos, Regional Planner
Jason Stanton, GIS/IT Director
Kayla Kress, GIS Analyst
Holly Ford, Executive Assistant

MONTACHUSETT JOINT TRANSPORTATION COMMITTEE

<u>COMMUNITY</u>	<u>APPOINTED BY SELECTMEN/MAYOR</u>	<u>APPOINTED BY PLANNING BOARD</u>
Ashburnham		Richard Wright
Ashby		Alan Pease
Athol	Dick Kilhart	
Ayer		Mark Archambault
Clinton	Phil Duffy	
Fitchburg	Nicolas Bosonetto	Paula Caron
Gardner	Treavor Beauregard	
Groton		Russell Burke
Harvard		Erin McBee
Hubbardston	Travis Brown	Alice Livdahl
Lancaster		Michael Antonellis
Leominster	David DiGiovanni	Peter Latchis
Lunenburg	Paula Bertram	Matthew Brenner
Petersham	Nancy Allen	
Phillipston	Gordon Robertson	
Royalston	Roland Hamel	
Shirley		Janet Tice
Sterling	Richard Maki	Kirsten Newman
Templeton		Charles Carroll II
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Westminster		Jon Wyman
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EXOFFICIO MEMBERS

Bryan Pounds	Office of Transportation Planning (OTP) and Massachusetts Department of Transportation (MassDOT)
Jeffrey H. McEwen	Federal Highway Administration (FHWA), Administrator
Peter Butler	Federal Transit Administration (FTA), Administrator
	Department of Environmental Protection (DEP)
	MassDOT Highway Division - District 2
Arthur Frost	MassDOT Highway Division - District 3
	Montachusett Regional Planning Commission (MRPC)
Mohammed Khan	Montachusett Regional Transit Authority (MART)

ORGANIZATION MEMBERS

Al Futterman	Nashua River Watershed Association (NRWA)
Tony Salerno	Amalgamated Transit Union #690 (ATU 690)
Richard Liberatore	Fitchburg Airport Commission
	North Central MA Chamber of Commerce
	Fitchburg Council on Aging
Jessica Strunkin	Mass Development
Peter Lowitt	Devens Enterprise Commission (DEC)
Patricia Pistone	Montachusett Opportunity Council, Inc.
	The ARC of Opportunity

As of September 2020

EXECUTIVE SUMMARY

The following is the 2020 annual update of Montachusett Regional Planning Commission's (MRPC) Regional Pavement Profile. During the program year staff updated conditions on federal aid eligible roadways from Massachusetts Department of Transportation (MassDOT) pavement data throughout the region and MRPC pavement surveys in Ayer, Clinton, Groton, Lancaster and Shirley. Among items included in this year's reports is...

- A Full data report on pavement conditions of all Federal Aid Eligible roads in the Montachusett Region
- Town by town breakdowns
- Recommendations to make improvements

INTRODUCTION

The *Pavement Management Program* at MRPC consists of surveying all federal aid eligible roadways in the region for the purpose of collecting, maintaining and evaluating pavement condition data for use in transportation plan and project decision making.

There are approximately 667 miles of federal aid eligible roads in the Montachusett region, of which 159 miles are National Highway System (NHS) roads, and 508 miles are Surface Transportation Program (STP) roads. NHS roadways represent all Interstate roadways such as I-190, and I-495 along with a systematic network of principal arterials such as Route 2 and parts of Routes 12, 140 and 2A; NHS roads are regularly surveyed by MassDOT. STP roadways, which include all other numbered routes as well as all urban arterials, urban collectors and rural arterials, are surveyed mostly by the MRPC, MassDOT also regularly collects data on all numbered routes.

The maps at the end of this section show all federal aid eligible miles in the Montachusett region. All roads shown on these maps are surveyed as part of the Montachusett Regional Pavement Management Program.

PAVEMENT MANAGEMENT AT MRPC

The principal intention of having a pavement management program at MRPC is for the purpose of including the data in our transportation evaluation criteria (TEC). TEC is a data driven process that is used when putting together documents such as the Transportation Improvement Program (TIP), an annual prioritized listing of transportation and transit projects proposed for implementation during future federal fiscal years for the region. In the Montachusett region the pavement management program will help, along with other programs and data, to develop a more accurate prioritization of transportation needs, and to balance those needs with available funding.

Pavement management systems (PMS) can be viewed at both network and project levels. In a network level PMS an entire network is analyzed to determine which maintenance tasks should be funded. In a project level PMS, individual projects are studied to determine to what extent the roadway needs attention. The MRPC's approach reflects some aspects of each of these levels. Pavement data from the entire federal aid network in the Montachusett region is maintained; this data is gathered along with other evaluation criteria and considered when looking at project level programs such as the TIP. Although both levels will be involved and the same data will be collected and analyzed, the MRPC's use of a PMS may differ from a typical municipality's because it will take more of a project level approach as opposed to a municipality's network level approach. While a city or town Department of Public Works plays the role of a road manager, the MRPC's desire is to better understand the transportation system of the region and its needs.

THE ROADWAY SYSTEM

Of the approximately 2,094 miles of roads in the Montachusett region, approximately 508 miles are Surface Transportation Program (STP) eligible roadways and 159 miles are National Highway System (NHS) eligible roadways. This represents 31% of the regions road miles. The remaining 1,427 miles (69%) are state and local aid eligible roads.

They are defined as follows:

National Highway System (NHS) – all interstate roadways and a systematic network of principal arterials spanning the state. In addition, roads connecting the NHS roadways to military bases (known as the Strategic Highway Network) are also considered part of the NHS network. NHS passenger and freight terminals are connected by roadways called NHS connectors.

Surface Transportation Program (STP) – comprised of any functionally classified roadway not part of the NHS network. STP funded roadways include all urban arterials, urban collectors and rural arterials. According to previous funding legislation, rural collectors are STP eligible, but have a limitation on the STP funding amount.

State and Local Aid – includes Chapter 90 and other non-Federal Aid categories. Roadways that fall under this category are comprised of roads functionally classified as local roads.

As stated above, rural collectors are STP eligible but have a funding limitation. The following table provides a breakdown of roads by community by their aid eligibility, NHS, STP or State Aid/Local. The State Aid/Local figures include those rural collector miles that may also be STP eligible

Regional Road Mileage

CENTERLINE MILES					
	NHS	STP	Total Fed-Aid	Local	Total
Ashburnham	0.00	20.33	20.33	77.27	97.61
Ashby	0.00	14.21	14.21	49.89	64.09
Athol	11.53	20.86	32.39	80.69	113.08
Ayer	7.25	9.73	16.98	34.27	51.25
Clinton	4.97	12.58	17.54	35.53	53.07
Fitchburg	18.35	47.36	65.72	136.48	202.20
Gardner	10.98	30.69	41.66	75.19	116.86
Groton	13.11	20.88	33.99	74.46	108.44
Harvard	8.84	10.17	19.01	60.48	79.50
Hubbardston	0.00	21.30	21.30	64.47	85.78
Lancaster	12.10	19.30	31.40	39.92	71.32
Leominster	19.18	42.62	61.80	116.99	178.79
Lunenburg	8.81	25.04	33.85	57.72	91.57
Petersham	0.00	19.61	19.61	59.61	79.21
Phillipston	2.97	8.23	11.20	41.31	52.51
Royalston	0.00	20.99	20.99	51.49	72.49
Shirley	1.05	18.89	19.94	31.72	51.66
Sterling	12.03	31.53	43.56	62.56	106.21
Templeton	5.68	35.09	40.78	58.91	99.69
Townsend	4.05	21.64	25.68	67.78	93.46
Westminster	9.28	33.98	43.26	65.29	108.55
Winchendon	8.92	22.86	31.78	85.01	116.80
TOTAL	159.10	507.89	666.98	1427.04	2094.14

REGIONAL PAVEMENT CONDITIONS

The structural conditions of the majority of the Federal Aid eligible roads are determined by MassDOT and MRPC pavement surveys. The condition is expressed by assigning either a Pavement Serviceability Index (PSI) number from 0 to 5 or a Pavement Condition Index number from 0 – 100 (PCI) to segments along the roadway. PSI (MassDOT method) and PCI (MRPC method) is an overall rating of the pavements condition. Conditions are rated as Excellent, Good, Fair and Poor. The following table shows a general correlation between PSI and PCI, condition, repair strategies and associated cost. This average cost has been determined from consultation with MassDOT and other Regional Planning Agencies throughout the State.

Pavement Condition – Cost Breakdown

PSI	PCI	Condition	Associated Repair	Repair Cost Per. Sq. Yard
0 - 2.29	0 - 64	Poor	Reconstruction	\$45
2.3 - 2.79	65 - 84	Fair	Rehabilitation (Mill/Overlay)	\$18
2.8 - 3.49	85 - 94	Good	Preventative Maintenance	\$8.50
3.5 - 5	95 - 100	Excellent	Routine Maintenance	\$0.75

Utilizing this information, a general condition of the Montachusett Region's federal aid eligible roadway network can be developed. The following lists pavement condition on federal aid eligible roads by town in the region. These federal aid miles are further broken down by local and state jurisdiction. Please note that due to the time frame between data collection and report preparation, conditions of the roadways may change. Additionally, mileage listed in the following charts may not reflect mileage listed on the "Total Fed-Aid Miles" column of the Centerline Miles table as a small percentage of roads not eligible for federal aid are included. Therefore, this information should be viewed in general terms regarding needs and condition.

2020 Pavement Conditions on Fed-Aid Roads by Municipality

Municipality	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
Ashburnham	Excellent	4.67	65766	\$49,325	2.22	31270	\$23,452	Routine Maintenance	6.89	97036	\$72,777
	Good	2.86	40328	\$342,791	5.45	76698	\$651,937	Preventative Maintenance	8.31	117027	\$994,727
	Fair	0.99	14005	\$252,089	1.73	24294	\$437,289	Rehabilitation	2.72	38299	\$689,378
	Poor	0.30	4200	\$188,998	1.83	25795	\$1,160,760	Reconstruction	2.13	29995	\$1,349,758
	Total	8.83		\$833,202	11.23		\$2,273,438	Total	20.05		\$3,106,640
Ashby	Excellent	4.70	66186	\$49,639	0.00	0	\$0	Routine Maintenance	4.70	66186	\$49,639
	Good	2.98	41917	\$356,292	0.00	0	\$0	Preventative Maintenance	2.98	41917	\$356,292
	Fair	3.20	44989	\$809,811	1.05	14801	\$266,410	Rehabilitation	4.25	59790	\$1,076,221
	Poor	0.65	9084	\$408,768	1.47	20661	\$929,766	Reconstruction	2.11	29745	\$1,338,534
	Total	11.52		\$1,624,510	2.52		\$1,196,176	Total	14.04		\$2,820,686
Athol	Excellent	3.20	45065	\$33,799	6.55	92283	\$69,213	Routine Maintenance	9.75	137348	\$103,011
	Good	6.48	91281	\$775,887	3.71	52219	\$443,860	Preventative Maintenance	10.19	143500	\$1,219,747
	Fair	2.26	31798	\$572,367	4.06	57198	\$1,029,572	Rehabilitation	6.32	88997	\$1,601,939
	Poor	0.57	8094	\$364,240	5.82	81989	\$3,689,510	Reconstruction	6.40	90083	\$4,053,749
	Total	12.52		\$1,746,292	20.15		\$5,232,154	Total	32.67		\$6,978,446
Ayer	Excellent	2.12	29868	\$22,401	3.45	48594	\$36,446	Routine Maintenance	5.57	78463	\$58,847
	Good	1.10	15544	\$132,126	2.88	40604	\$345,130	Preventative Maintenance	3.99	56148	\$477,256
	Fair	0.36	5059	\$91,069	1.81	25489	\$458,802	Rehabilitation	2.17	30548	\$549,871
	Poor	0.35	4965	\$223,409	4.12	58053	\$2,612,364	Reconstruction	4.48	63017	\$2,835,773
	Total	3.94		\$469,005	12.27		\$3,452,743	Total	16.21		\$3,921,748

Clinton	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	0.79	11176	\$8,382	2.72	38285	\$28,714	Routine Maintenance	3.51	49461	\$37,096
	Good	0.32	4531	\$38,516	2.65	37244	\$316,570	Preventative Maintenance	2.97	41775	\$355,086
	Fair	0.16	2316	\$41,695	2.64	37198	\$669,563	Rehabilitation	2.81	39514	\$711,258
	Poor	0.16	2193	\$98,679	8.29	116765	\$5,254,409	Reconstruction	8.45	118958	\$5,353,088
	Total	1.44		\$187,272	16.30		\$6,269,256	Total	17.73		\$6,456,528
Fitchburg	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	2.59	36533	\$27,400	9.07	127769	\$95,827	Routine Maintenance	11.67	164303	\$123,227
	Good	3.72	52430	\$445,657	6.26	88211	\$749,792	Preventative Maintenance	9.99	140641	\$1,195,449
	Fair	1.56	21971	\$395,472	6.80	95705	\$1,722,684	Rehabilitation	8.36	117675	\$2,118,157
	Poor	0.72	10123	\$455,533	36.16	509074	\$22,908,349	Reconstruction	36.87	519197	\$23,363,881
	Total	8.60		\$1,324,062	58.29		\$25,476,652	Total	66.89		\$26,800,714
Gardner	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	2.64	37207	\$27,905	9.98	140569	\$105,427	Routine Maintenance	12.63	177776	\$133,332
	Good	4.23	59552	\$506,195	5.08	71550	\$608,175	Preventative Maintenance	9.31	131102	\$1,114,370
	Fair	1.27	17825	\$320,852	6.18	87077	\$1,567,383	Rehabilitation	7.45	104902	\$1,888,235
	Poor	1.20	16887	\$759,916	11.61	163406	\$7,353,281	Reconstruction	12.80	180293	\$8,113,197
	Total	9.34		\$1,614,869	32.86		\$9,634,265	Total	42.19		\$11,249,134
Groton	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	2.20	31004	\$23,253	8.09	113904	\$85,428	Routine Maintenance	10.29	144908	\$108,681
	Good	2.58	36260	\$308,212	11.52	162191	\$1,378,627	Preventative Maintenance	14.09	198452	\$1,686,839
	Fair	0.47	6569	\$118,247	2.83	39793	\$716,278	Rehabilitation	3.29	46363	\$834,525
	Poor	0.21	2914	\$131,108	5.94	83669	\$3,765,111	Reconstruction	6.15	86583	\$3,896,219
	Total	5.45		\$580,820	28.38		\$5,945,444	Total	33.83		\$6,526,264
Harvard	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	3.07	43195	\$32,396	0.80	11205	\$8,404	Routine Maintenance	3.86	54401	\$40,800
	Good	5.40	76042	\$646,361	4.79	67493	\$573,689	Preventative Maintenance	10.19	143535	\$1,220,050
	Fair	0.97	13686	\$246,349	1.75	24631	\$443,355	Rehabilitation	2.72	38317	\$689,704
	Poor	0.34	4756	\$214,005	1.65	23190	\$1,043,558	Reconstruction	1.98	27946	\$1,257,564
	Total	9.78		\$1,139,111	8.99		\$2,069,007	Total	18.76		\$3,208,118
Hubbardston	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	0.01	177	\$133	5.86	82523	\$61,892	Routine Maintenance	5.87	82700	\$62,025
	Good	0.00	0	\$0	0.00	0	\$0	Preventative Maintenance	0.00	0	\$0
	Fair	0.00	0	\$0	1.86	26149	\$470,686	Rehabilitation	1.86	26149	\$470,686
	Poor	0.00	0	\$0	13.34	187860	\$8,453,692	Reconstruction	13.34	187860	\$8,453,692
	Total	0.01		\$133	21.06		\$8,986,271	Total	21.07		\$8,986,404
Lancaster	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	1.94	27376	\$20,532	3.77	53134	\$39,850	Routine Maintenance	5.72	80510	\$60,382
	Good	3.86	54333	\$461,829	4.56	64218	\$545,853	Preventative Maintenance	8.42	118551	\$1,007,682
	Fair	0.40	5667	\$102,005	6.84	96282	\$1,733,073	Rehabilitation	7.24	101949	\$1,835,078
	Poor	0.12	1700	\$76,515	10.27	144537	\$6,504,156	Reconstruction	10.39	146237	\$6,580,671
	Total	6.33		\$660,881	25.44		\$8,822,932	Total	31.76		\$9,483,813

Leominster	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	3.36	47292	\$35,469	6.55	92220	\$69,165	Routine Maintenance	9.91	139512	\$104,634
Lunenburg	Good	6.08	85654	\$728,058	11.26	158576	\$1,347,900	Preventative Maintenance	17.35	244230	\$2,075,957
	Fair	1.60	22561	\$406,095	12.37	174146	\$3,134,627	Rehabilitation	13.97	196707	\$3,540,721
	Poor	0.75	10500	\$472,502	19.69	277229	\$12,475,323	Reconstruction	20.44	287729	\$12,947,825
	Total	11.79		\$1,642,123	49.87		\$17,027,014	Total	61.66		\$18,669,137
	Condition	State			Local			Combined			
Petersham	Excellent	3.59	50546	\$37,910	14.05	197820	\$148,365	Routine Maintenance	17.64	248366	\$186,275
	Good	1.80	25352	\$215,488	6.29	88555	\$752,718	Preventative Maintenance	8.09	113907	\$968,206
	Fair	0.50	6980	\$125,638	1.61	22631	\$407,362	Rehabilitation	2.10	29611	\$533,000
	Poor	0.00		\$0	5.73	80622	\$3,627,982	Reconstruction	5.73	80622	\$3,627,982
	Total	5.89		\$379,036	27.67		\$4,936,428	Total	33.56		\$5,315,464
Phillipston	Condition	State			Local			Combined			
	Excellent	7.52	105951	\$79,464	0.60	8452	\$6,339	Routine Maintenance	8.13	114403	\$85,803
	Good	4.81	67763	\$575,982	2.48	34927	\$296,879	Preventative Maintenance	7.29	102690	\$872,861
	Fair	0.12	1741	\$31,333	2.75	38667	\$696,009	Rehabilitation	2.87	40408	\$727,342
	Poor	0.00	0	\$0	1.19	16731	\$752,893	Reconstruction	1.19	16731	\$752,893
Royalston	Total	12.46		\$686,779	7.02		\$1,752,120	Total	19.48		\$2,438,899
	Condition	State			Local			Combined			
	Excellent	2.24	31513	\$23,635	1.50	21103	\$15,828	Routine Maintenance	3.74	52617	\$39,463
	Good	3.08	43405	\$368,946	0.27	3844	\$32,677	Preventative Maintenance	3.36	47250	\$401,623
	Fair	1.06	14938	\$268,880	0.78	11039	\$198,696	Rehabilitation	1.84	25976	\$467,575
Shirley	Poor	0.01	84	\$3,765	3.28	46186	\$2,078,355	Reconstruction	3.29	46269	\$2,082,120
	Total	6.39		\$665,226	5.84		\$2,325,555	Total	12.22		\$2,990,781
	Condition	State			Local			Combined			
	Excellent	0.00	0	\$0	5.80	81672	\$61,254	Routine Maintenance	5.80	81672	\$61,254
	Good	0.00	0	\$0	5.11	71952	\$611,588	Preventative Maintenance	5.11	71952	\$611,588
Sterling	Fair	0.00	0	\$0	4.49	63186	\$1,137,340	Rehabilitation	4.49	63186	\$1,137,340
	Poor	0.00	0	\$0	5.50	77439	\$3,484,765	Reconstruction	5.50	77439	\$3,484,765
	Total	0.00		\$0	20.90		\$5,294,947	Total	20.90		\$5,294,947
	Condition	State			Local			Combined			
	Excellent	0.40	5584	\$4,188	4.69	66103	\$49,577	Routine Maintenance	5.09	71687	\$53,765
Sterling	Good	2.04	28719	\$244,110	0.94	13235	\$112,496	Preventative Maintenance	2.98	41954	\$356,606
	Fair	0.99	13960	\$251,276	1.44	20314	\$365,652	Rehabilitation	2.43	34274	\$616,928
	Poor	0.11	1507	\$67,805	9.17	129169	\$5,812,613	Reconstruction	9.28	130676	\$5,880,418
	Total	3.53		\$567,378	16.25		\$6,340,338	Total	19.79		\$6,907,716
	Condition	State			Local			Combined			
	Excellent	7.63	107432	\$80,574	4.35	61288	\$45,966	Routine Maintenance	11.98	168720	\$126,540
Sterling	Good	4.14	58354	\$496,010	2.14	30067	\$255,573	Preventative Maintenance	6.28	88421	\$751,582
	Fair	3.96	55799	\$1,004,389	8.80	123921	\$2,230,570	Rehabilitation	12.76	179720	\$3,234,959
	Poor	1.04	14668	\$660,067	8.68	122270	\$5,502,159	Reconstruction	9.73	136938	\$6,162,226
	Total	16.78		\$2,241,040	23.97		\$8,034,268	Total	40.75		\$10,275,308

Templeton	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	2.73	38489	\$28,867	6.16	86765	\$65,074	Routine Maintenance	8.90	125254	\$93,941
	Good	8.53	120129	\$1,021,097	2.40	33759	\$286,953	Preventative Maintenance	10.93	153888	\$1,308,050
	Fair	5.29	74422	\$1,339,587	2.34	32883	\$591,899	Rehabilitation	7.62	107305	\$1,931,487
	Poor	1.24	17419	\$783,842	11.74	165358	\$7,441,124	Reconstruction	12.98	182777	\$8,224,966
	Total	17.79		\$3,173,393	22.64		\$8,385,050	Total	40.43		\$11,558,443
Townsend	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	1.22	17203	\$12,902	2.08	29218	\$21,914	Routine Maintenance	3.30	46421	\$34,816
	Good	2.59	36533	\$310,527	6.26	88130	\$749,102	Preventative Maintenance	8.85	124662	\$1,059,629
	Fair	1.42	19991	\$359,840	2.94	41441	\$745,931	Rehabilitation	4.36	61432	\$1,105,771
	Poor	1.29	18172	\$817,742	7.61	107101	\$4,819,525	Reconstruction	8.90	125273	\$5,637,267
	Total	6.53		\$1,501,012	18.88		\$6,336,471	Total	25.41		\$7,837,483
Westminster	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	5.31	74713	\$56,035	5.35	75346	\$56,509	Routine Maintenance	10.66	150058	\$112,544
	Good	8.03	113081	\$961,186	6.15	86601	\$736,110	Preventative Maintenance	14.18	199682	\$1,697,296
	Fair	2.14	30078	\$541,397	2.94	41399	\$745,188	Rehabilitation	5.08	71477	\$1,286,585
	Poor	0.40	5702	\$256,604	12.64	178010	\$8,010,461	Reconstruction	13.05	183713	\$8,267,065
	Total	15.88		\$1,815,222	27.08		\$9,548,269	Total	42.96		\$11,363,491
Winchendon	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	5.40	76097	\$57,073	3.80	53487	\$40,115	Routine Maintenance	9.20	129584	\$97,188
	Good	3.10	43612	\$370,698	1.55	21850	\$185,725	Preventative Maintenance	4.65	65462	\$556,423
	Fair	1.64	23121	\$416,176	5.16	72645	\$1,307,603	Rehabilitation	6.80	95765	\$1,723,779
	Poor	1.14	15987	\$719,425	9.00	126767	\$5,704,502	Reconstruction	10.14	142754	\$6,423,927
	Total	11.28		\$1,563,372	19.51		\$7,237,945	Total	30.79		\$8,801,316

REGIONWIDE	Condition	State			Local			Combined			
		Miles	Sq. Yards	Cost	Miles	Sq. Yards	Cost	Repair Category	Miles	Sq. Yards	Total
	Excellent	67.36	948374.83	\$711,281	107.46	1513011.45	\$1,134,759	Routine Maintenance	174.81	2461386	\$1,846,040
	Good	77.76	1094819.61	\$9,305,967	91.76	1291923.90	\$10,981,353	Preventative Maintenance	169.51	2386744	\$20,287,320
	Fair	30.36	427475.85	\$7,694,565	83.16	1170887.40	\$21,075,973	Rehabilitation	113.52	1598363	\$28,770,538
	Poor	10.58	148953.85	\$6,702,923	194.74	2741881.31	\$123,384,659	Reconstruction	205.31	2890835	\$130,087,582
	Total	186.05		\$24,414,736	477.11		\$156,576,744	Total	663.16		\$180,991,480

CHARTING CHANGES IN THE NETWORK

In comparing current regionwide network conditions to those from 2017, it would appear that the overall condition of federal aid eligible roads has shifted over the years. As highlighted at the conclusion of this report, MRPC has stated a Goal in its 2016 Regional Transportation Plan to 'Improve System Preservation and Maintenance of All Modes'. To monitor progress of that Goal, a Performance Measure was set to 'Increase the percent of categorized "good" to "excellent" federal aid eligible roadway miles within the region over a 10-year period'. The 2020 condition change chart below would indicate that this performance measure is currently being met. These conditions will continue to be monitored and reported on, on an annual basis.

2020 and 2017 Regionwide Percentage Comparisons

2020	Condition	State		Local		Combined	
		Miles	%	Miles	%	Miles	%
	Excellent	67.36	36%	107.46	23%	174.82	26%
	Good	77.76	42%	91.76	19%	169.52	26%
	Fair	30.36	16%	83.16	17%	113.52	17%
	Poor	10.58	6%	194.74	41%	205.32	31%
	Total	186.06		477.12		663.18	

2017	Condition	State		Local		Combined	
		Miles	%	Miles	%	Miles	%
	Excellent	80.24	42%	75.06	16%	155.30	23%
	Good	52.72	27%	93.84	19%	146.56	22%
	Fair	32.36	17%	155.03	32%	187.39	28%
	Poor	27.11	14%	158.84	33%	185.95	28%
	Total	192.43		482.77		675.20	

2020 Condition Percentage Change

2020	Condition	State	Local	Combined
		% Change	% Change	% Change
	Excellent	-5%	7%	3%
	Good	14%	0%	4%
	Fair	0%	-15%	-11%
	Poor	-8%	8%	3%

FUNDING PROJECTS REGIONWIDE

The difference in condition between local and state jurisdiction federal aid roads may mainly be a combination of two factors, the first being that federal aid roads that are state jurisdiction are typically a higher Functional Classification than those that are local jurisdiction, giving them higher importance when prioritizing projects for funding. The second factor being the State funding available to Municipalities for roadway maintenance (Chapter 90) lagging behind the rising price of such maintenance. Below is a chart showing the Chapter 90 allocations each community in the region received from 2016 to 2020 along with the roadway mileage that that money must maintain.

Chapter 90 Apportionment

CHAPTER 90 FUNDS							
	Local Jurisdiction Miles (Fed Aid and Non- Fed Aid eligible)	FY 2016 Ch. 90 Apportion ment	FY 2017 Ch. 90 Apportion ment	FY 2018 Ch. 90 Apportion ment	FY 2019 Ch. 90 Apportion ment	FY 2020 Ch. 90 Apportion ment	% Change (2016 - 2020)
Ashburnham	74	\$346,340	\$345,504	\$343,472	\$343,284	\$341,939	-1.29%
Ashby	52	\$230,201	\$229,619	\$226,417	\$225,760	\$225,811	-1.94%
Athol	96	\$499,325	\$500,196	\$502,804	\$508,214	\$507,704	1.65%
Ayer	35	\$239,164	\$242,879	\$244,654	\$243,513	\$242,505	1.38%
Clinton	47	\$331,397	\$329,236	\$327,069	\$325,436	\$325,749	-1.73%
Fitchburg	179	\$1,122,369	\$1,127,480	\$1,122,926	\$1,120,288	\$1,119,259	-0.28%
Gardner	93	\$604,325	\$604,221	\$600,789	\$599,292	\$615,579	1.83%
Groton	100	\$505,608	\$505,008	\$504,132	\$502,295	\$501,734	-0.77%
Harvard	64	\$347,705	\$346,663	\$347,438	\$349,551	\$350,767	0.87%
Hubbardston	83	\$361,498	\$360,591	\$355,944	\$356,673	\$355,135	-1.79%
Lancaster	59	\$311,414	\$310,688	\$311,911	\$311,633	\$327,042	4.78%
Leominster	150	\$1,082,285	\$1,084,741	\$1,085,399	\$1,119,490	\$1,127,677	4.03%
Lunenburg	83	\$419,626	\$419,625	\$415,877	\$415,087	\$414,649	-1.20%
Petersham	62	\$255,951	\$255,744	\$252,089	\$251,354	\$250,869	-2.03%
Phillipston	45	\$189,823	\$189,594	\$186,873	\$189,780	\$189,271	-0.29%
Royalston	70	\$284,882	\$284,356	\$283,409	\$282,680	\$281,623	-1.16%
Shirley	44	\$253,904	\$253,372	\$252,029	\$252,036	\$252,072	-0.73%
Sterling	68	\$417,596	\$416,765	\$413,796	\$411,575	\$410,022	-1.85%
Templeton	87	\$338,351	\$335,950	\$333,245	\$333,029	\$335,718	-0.78%
Townsend	86	\$424,556	\$423,919	\$414,296	\$416,674	\$415,776	-2.11%
Westminster	91	\$419,830	\$418,675	\$414,252	\$410,852	\$419,901	0.02%
Winchendon	85	\$447,484	\$447,566	\$443,871	\$450,917	\$458,158	2.33%
TOTAL	1753	\$9,433,634	\$9,432,392	\$9,382,692	\$9,419,413	\$9,468,960	0.37%

Chapter 90 has been level funded at \$200,000,000 Statewide since 2016. The State calculates how much funding communities receive in Chapter 90 through a formula which considers **population** within the community, **employment** within the community, and the number of community **accepted roadway mileage** within the community. The region as a whole has received slightly more money in 2020 Chapter 90 funds than in 2016 (0.37%). However, some communities such as Townsend (-2.11%) have seen a decrease during that period. One action a community can take to ensure proper Chapter 90 funding is reporting all accepted roads to MassDOT. If your community has not updated its accepted road information in a while, or has roads which have been recently accepted by the town but not submitted to MassDOT, it is probable that you are not receiving as much as you should in Chapter 90 funds. Many communities in the region have not updated their accepted roads with MassDOT in years, or in some cases decades. It is recommended that communities regularly update accepted roads by following the process found here: <https://www.mass.gov/how-to/submit-road-inventory-updates> . MRPC is willing to assist communities in this process if requested.

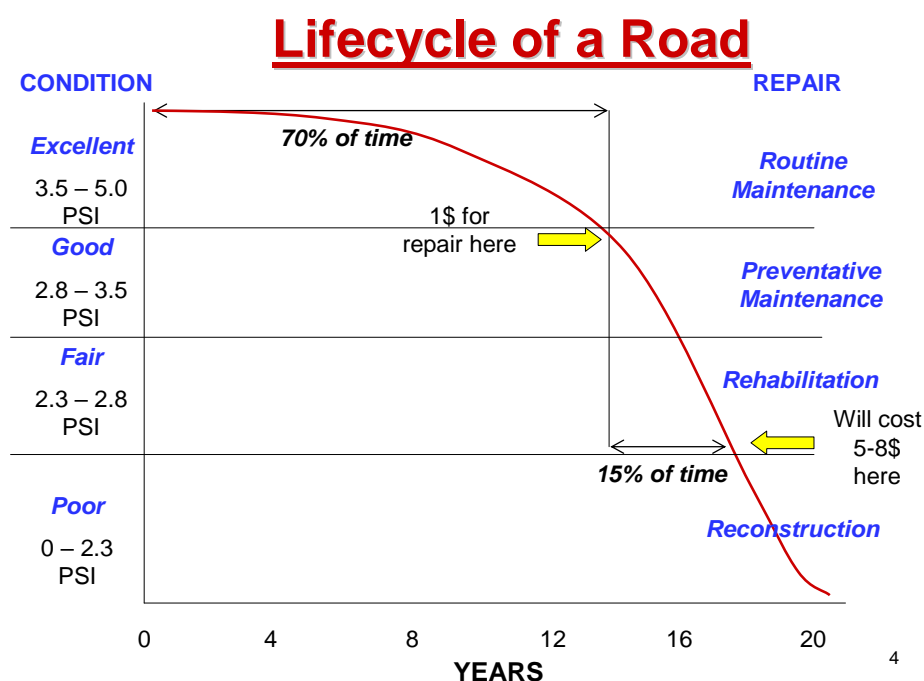
Pavements are often the single largest expense in any municipal road maintenance budget. Chapter 90 allocations often do not provide sufficient funding to maintain local roads at the current condition let alone make major improvements. Due to inadequate funding, it is recommended that communities routinely target funding for local jurisdiction federal aid eligible roadways through the Transportation Improvement Program (TIP). It is also encouraged that a Pavement Management Plan be implemented by communities to keep track of maintenance needs and schedules to contribute to a cost-effective approach to maintaining roadways.

CONCLUSION AND PAVEMENT PERFORMANCE MEASURES IN THE MONTACHUSETT REGION

The transportation system in the Montachusett region largely consists of roads and bridges. Maintaining these assets are a challenge, however, we must understand the importance of a properly functioning and safe system. Maintaining a state of good repair is a main priority and in our best interest in order to stretch our investments to the greatest benefits. Ultimately, it is recommended that communities in the region utilize the principals of pavement management to maintain and improve upon their roads.

The figure below displays the concept of lifecycle cost. A pavements lifecycle is the time between reconstruction periods. Lifecycle cost is the total cost spent on maintenance and repairs for a particular pavement section during its lifecycle. One of the main focuses of pavement management is to keep lifecycle cost low to stretch the dollar in what is commonly an ever-decreasing maintenance budget.

Pavement Lifecycle



Due to the rising cost of improvements and the declining funds for preserving existing infrastructure it is challenging to make improvements to the pavement network. Building a historical and measurable database of conditions in the Montachusett region allows for a snapshot of overall conditions which will allow us to determine how the network changes over time.

Below are applicable Goals, Objectives and Performance Measures, originally stated in the 2016 Regional Transportation Plan, which are related to the region's pavements.

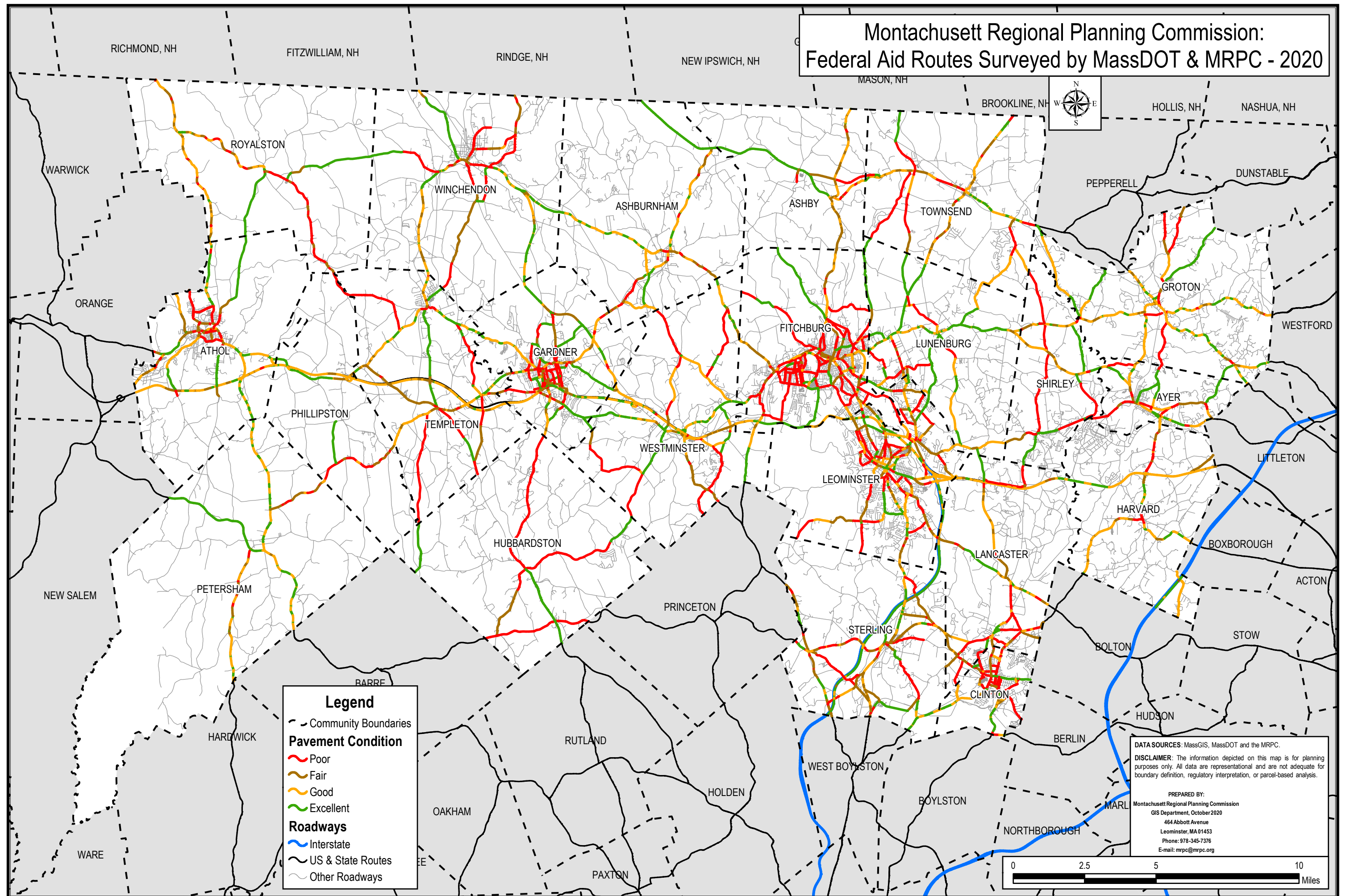
Goal 4 – Improve System Preservation and Maintenance of All Modes

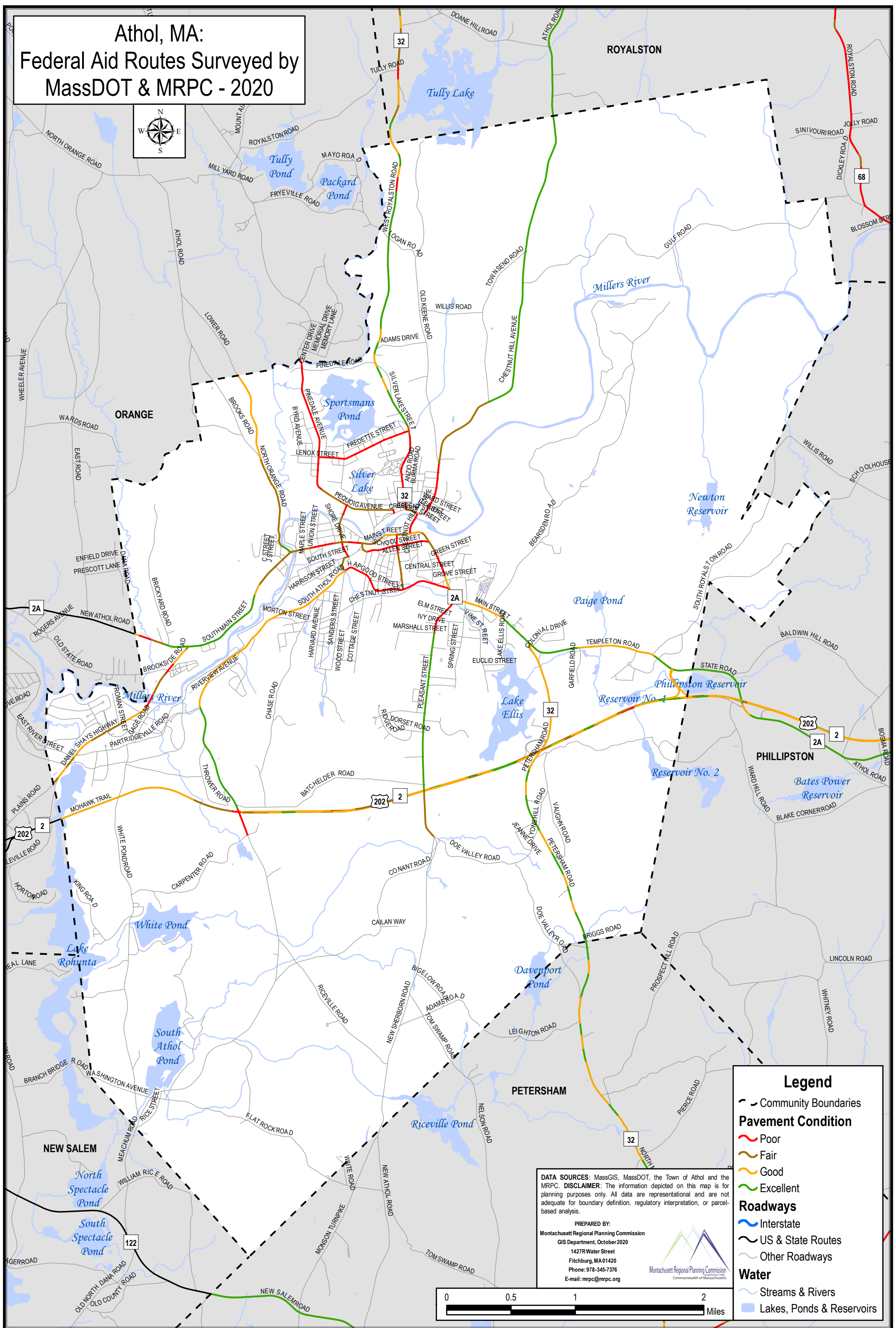
Objectives

- Seek to encourage and prioritize preservation projects within communities in order to maintain a state of good repair for all modes.
- Continue to monitor, and revise as needed, the Transportation Evaluation Criteria (TEC) to encourage those projects that help to maintain a state of good repair.
- Seek to encourage additional funds for maintenance as well as the development of a potential federal/state funded preservation program.
- Encourage communities with viable preservation projects to seek funding and implementation through and in collaboration with the Transportation Improvement Program (TIP) process.

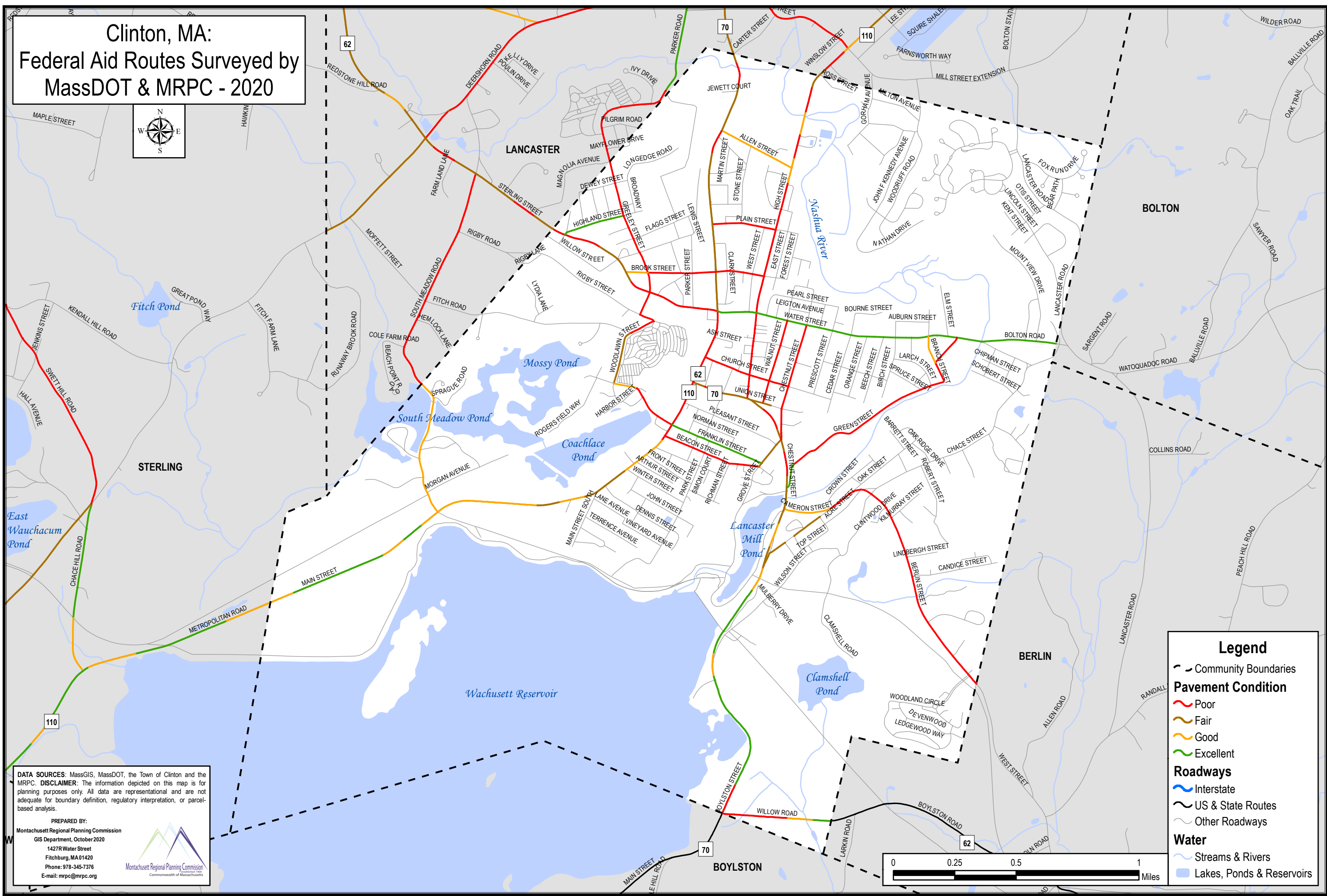
Performance Measures – Goal 4	
1	Continue pavement management data collection and analysis efforts on an annual basis through a rotating 4-year schedule of federal aid eligible roadways.
2	Increase the percentage of categorized “Good” to “Excellent” federal aid eligible roadway miles within the region over a 10-year period.

Montachusett Regional Planning Commission:
Federal Aid Routes Surveyed by MassDOT & MRPC - 2020






Clinton, MA:
Federal Aid Routes Surveyed by
MassDOT & MRPC - 2020



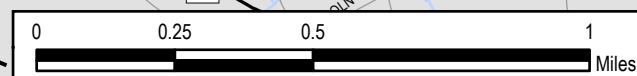
DATA SOURCES: MassGIS, MassDOT, the Town of Clinton and the MRPC. **DISCLAIMER:** The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.

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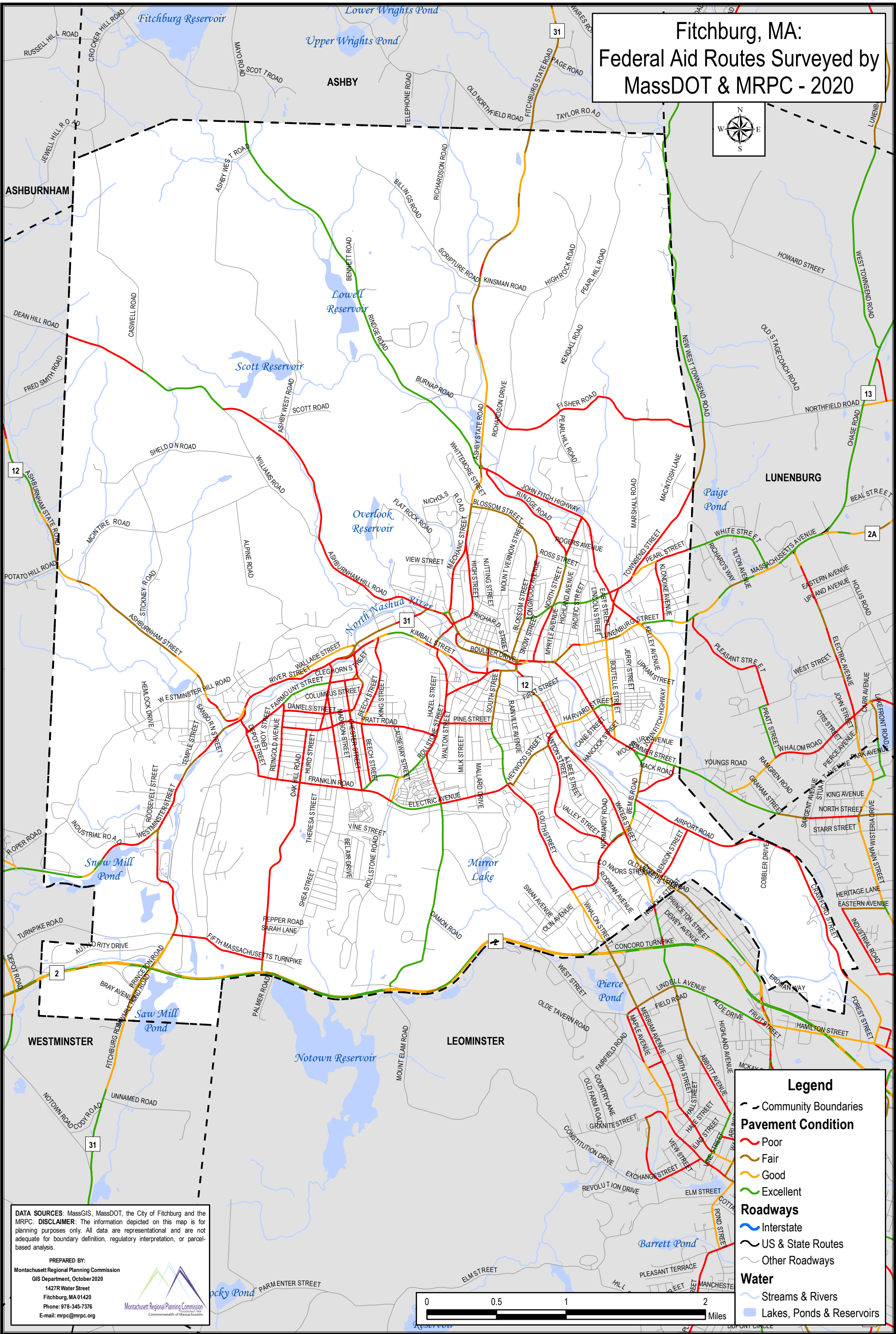


Legend

- Community Boundaries
- Pavement Condition**
 - Poor
 - Fair
 - Good
 - Excellent
- Roadways**
 - Interstate
 - US & State Routes
 - Other Roadways
- Water**
 - Streams & Rivers
 - Lakes, Ponds & Reservoirs




Fitchburg, MA:
Federal Aid Routes Surveyed by
MassDOT & MRPC - 2020



DATA SOURCES: MassGIS, MassDOT, the City of Fitchburg and the MRPC. **DISCLAIMER:** The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.

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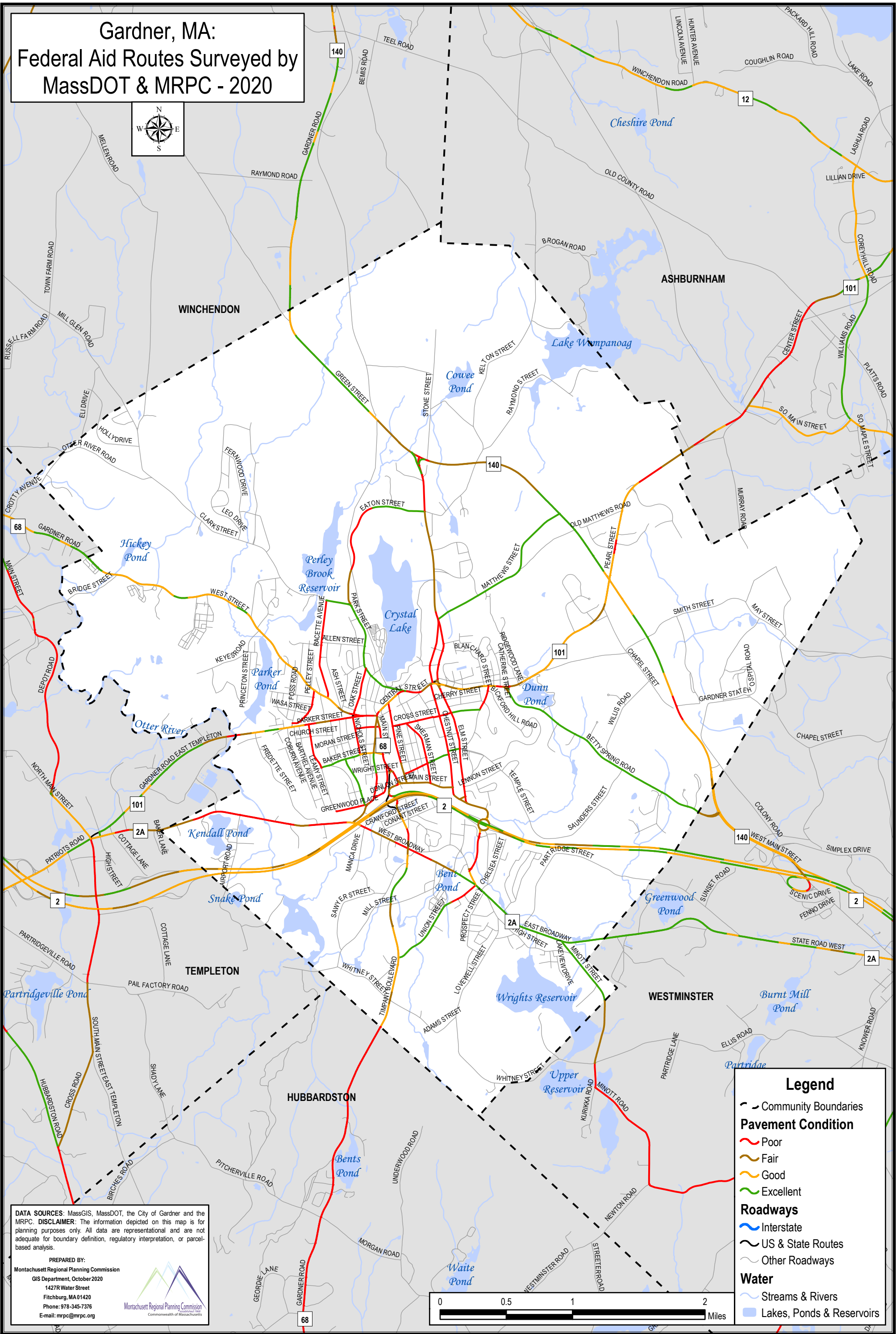


Legend

- Community Boundaries
- Pavement Condition**
 - Poor
 - Fair
 - Good
 - Excellent
- Roadways**
 - Interstate
 - US & State Routes
 - Other Roadways
- Water**
 - Streams & Rivers
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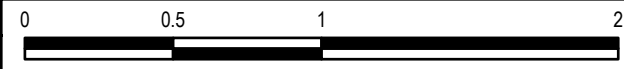


Gardner, MA: Federal Aid Routes Surveyed by MassDOT & MRPC - 2020



DATA SOURCES: MassGIS, MassDOT, the City of Gardner and the MRPC. **DISCLAIMER:** The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.

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- ### Legend
- Community Boundaries
 - Pavement Condition**
 - Poor
 - Fair
 - Good
 - Excellent
 - Roadways**
 - Interstate
 - US & State Routes
 - Other Roadways
 - Water**
 - Streams & Rivers
 - Lakes, Ponds & Reservoirs

Leominster, MA: Federal Aid Routes Surveyed by MassDOT & MRPC - 2020



Legend

Community Boundaries

Pavement Condition

Poor

Fair

Good

Excellent

Roadways

Interstate

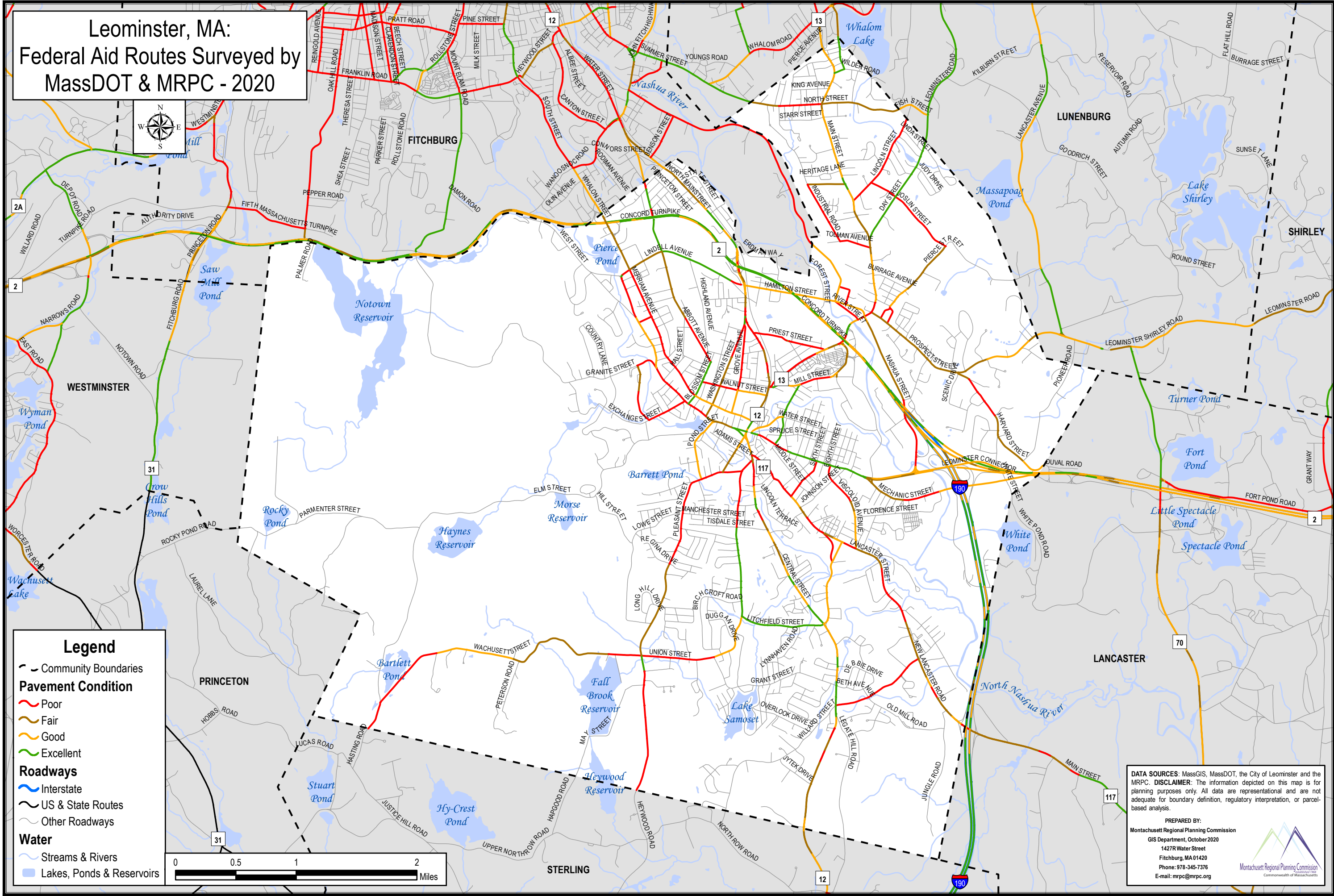
US & State Routes

Other Roadways

Water

Streams & Rivers

Lakes, Ponds & Reservoirs



DATA SOURCES: MassGIS, MassDOT, the City of Leominster and the MRPC. **DISCLAIMER:** The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.

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