

Street System Evaluation & Needs Report

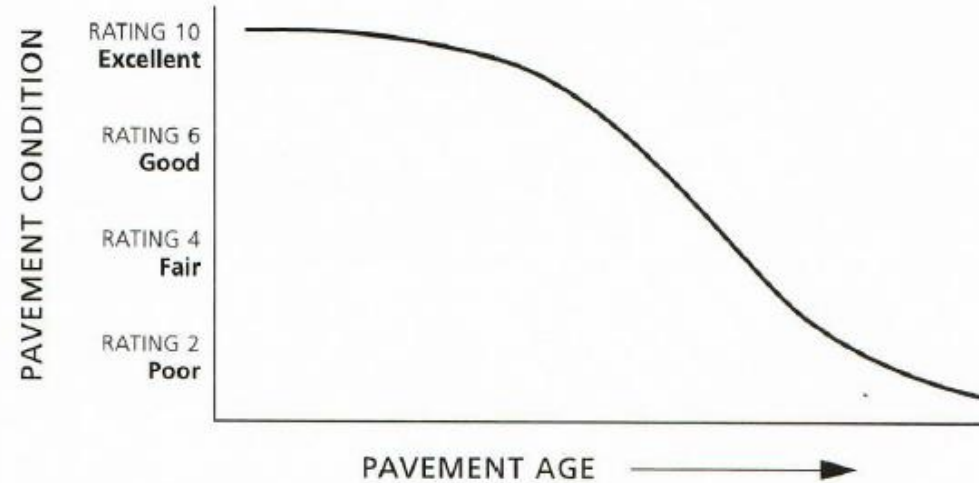
September 11, 2024



PASER Ratings set a universal standard for evaluating roads

- Pavement Surface Evaluation and Rating
- Developed in Wisconsin
- Adopted by Michigan
- Rates road surface ***distress***, not ***ride***, on scale of 1 (poor) to 10 (excellent) for various road compositions – asphalt, concrete, composite - Federal Aid and Non-Federal Aid
- Provides guidelines for appropriate treatment from reconstruction to little or no maintenance (8 and above)

Rating Based Maintenance or Repair



In addition to indicating the surface condition of a road, a given rating also includes a recommendation for needed maintenance or repair. This feature of the rating system facilitates its use and enhances its value as a tool in ongoing road maintenance.

RATINGS ARE RELATED TO NEEDED MAINTENANCE OR REPAIR

Rating 9 & 10	No maintenance required
Rating 8	Little or no maintenance
Rating 7	Routine maintenance, cracksealing and minor patching
Rating 5 & 6	Preservative treatments (sealcoating)
Rating 3 & 4	Structural improvement and leveling (overlay or recycling)
Rating 1 & 2	Reconstruction

Asphalt PASER

Modified for Michigan TAMC Data Collection

◆ Denotes Priority Distress

	Asphalt 10	Asphalt 9	Asphalt 8
Good	New construction (< 1 year old) No defects <u>Recent base improvement</u> <i>Possible Action:</i> <i>Proactive Preventative Maintenance (PPM)</i>	Like new condition (> 1 year old) No defects <u>Recent overlay with or without a crush and shape</u> <i>Possible Action:</i> <i>PPM</i>	◆ Transverse cracks: > 40' apart Cracks: tight (hairline) or sealed Longitudinal cracks: few, on joints <u>Recent seal coat or slurry seal (*see below)</u> <i>Possible Action:</i> <i>Crack seal or PPM</i>
	Asphalt 7	Asphalt 6	Asphalt 5
Fair	◆ Transverse cracks: 10'-40' apart Cracks: open < 1/4" Crack erosion: none or little Surface raveling: none or little Patches: none or few in excellent condition <u>First signs of wear</u> <i>Possible Action:</i> <i>Maintain with crack seal, fog seal</i>	◆ Transverse cracks: < 10' apart ◆ Block cracking: 6'-10' Blocks (large, stable) Cracks open 1/4" - 1/2" Surface raveling: slight Patches: few in good condition Polishing or flushing: slight, moderate <u>Sound structural condition</u> <i>Possible Action:</i> <i>Maintain with sealcoat</i>	◆ Block cracking: 1' - 5' blocks ◆ Longitudinal cracks: first signs, at edge ◆ Secondary cracks: first signs Cracks open > 1/2" Surface raveling: moderate Patching or wedging: good condition Polishing & flushing: extensive, severe <u>Sound structural condition</u> <i>Possible Action:</i> <i>Maintain with sealcoat or thin overlay</i>
	Asphalt 4	Asphalt 3	Asphalt 2
Poor	◆ Block cracking: < 1' blocks ◆ Wheel-path cracking (longitudinal) ◆ Rutting: 1/2" - 1" deep Transverse cracks: slight erosion Longitudinal cracks: slight erosion Surface raveling: severe Patches: fair condition <u>First signs of structural weakening</u> <i>Possible Action:</i> <i>Structural overlay > 2"</i> <i>Underseal</i>	◆ Block cracking: severe (like alligator) ◆ Alligator cracking: initial, < 25% ◆ Rutting: 1" - 2" deep Transverse cracks: extensive erosion Longitudinal cracks: extensive erosion Patches: fair/poor condition Potholes: occasional <i>Possible Action:</i> <i>Structural overlay > 2"</i> <i>Patching & repair prior to an overlay</i> <i>Milling to extend overlay life</i>	◆ Alligator cracks: > 25% ◆ Rutting or distortion: > 2" Cracks: closely spaced, with erosion Patches: extensive, in poor condition Potholes: frequent <i>Possible Action:</i> <i>Reconstruction with base repair</i> <i>Crush and shape</i>
			Asphalt 1
			Like PASER 2 but with visible base and: Surface distress: severe with loss of integrity <i>Possible Action:</i> <i>Reconstruction with base repair</i>

GOOD



PASER = 10, 9, 8

Routine Maintenance

- Crackseal
- Minor Patching

FAIR



PASER = 7, 6, 5

Preventive Maintenance

- Crackseal
- Patching
- Surface Treatment
- Concrete Joint Repair

POOR

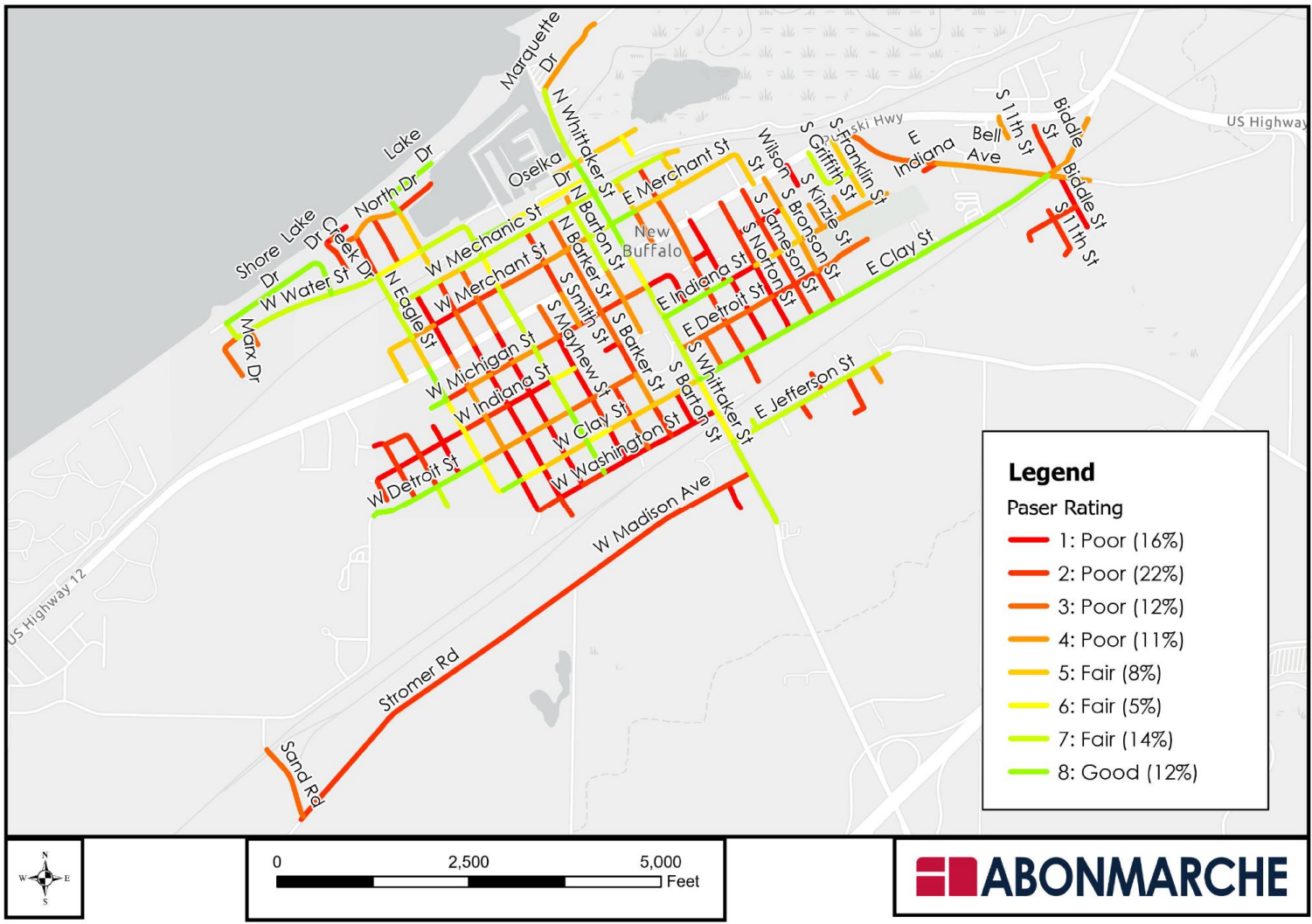


PASER = 4, 3, 2, 1

Rehab/Reconstruct

- Resurface
- Structural Overlay
- Replace Concrete Slab
- Complete Reconstruct

2024 Ratings Summary

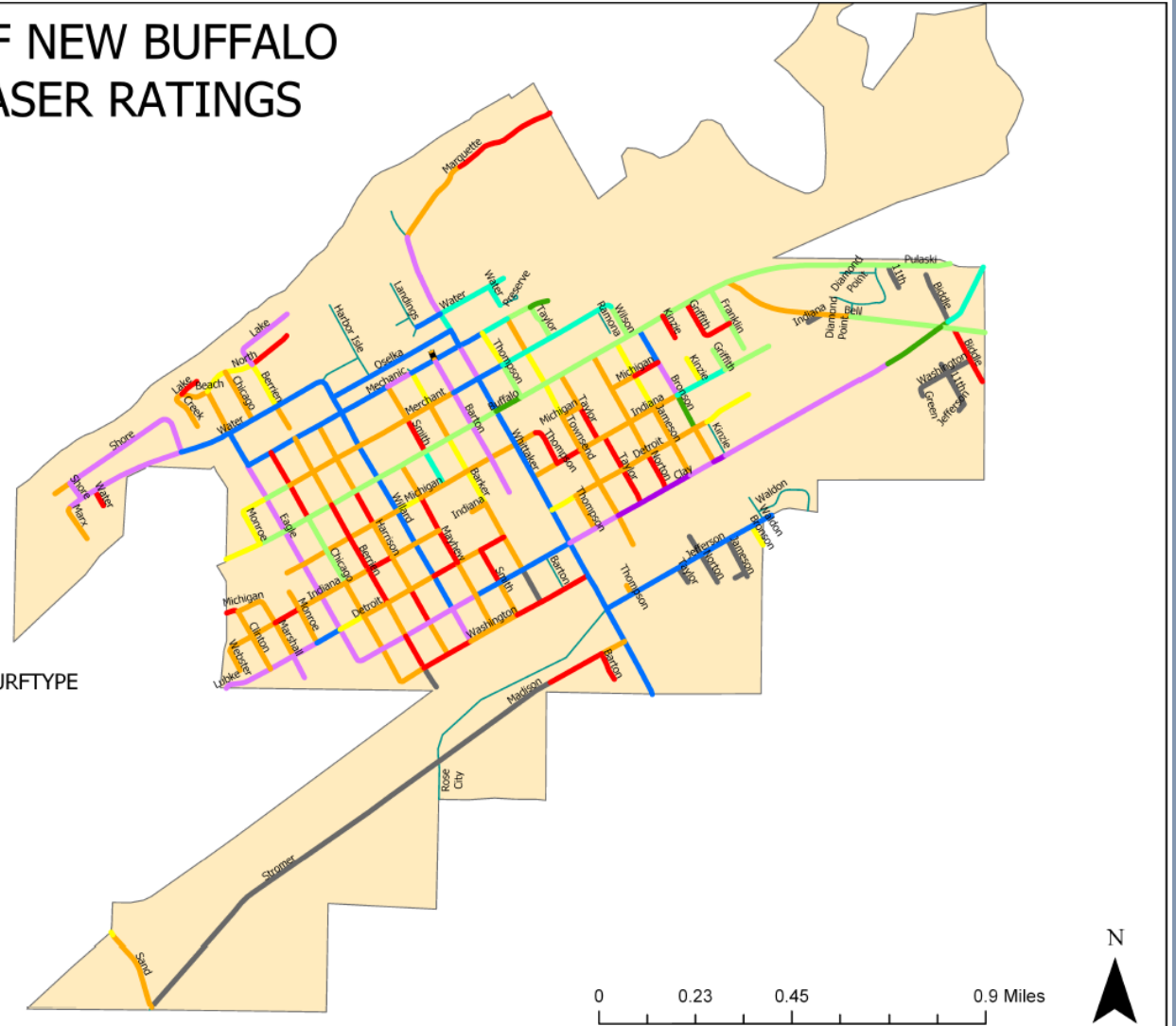


2021 Ratings Summary

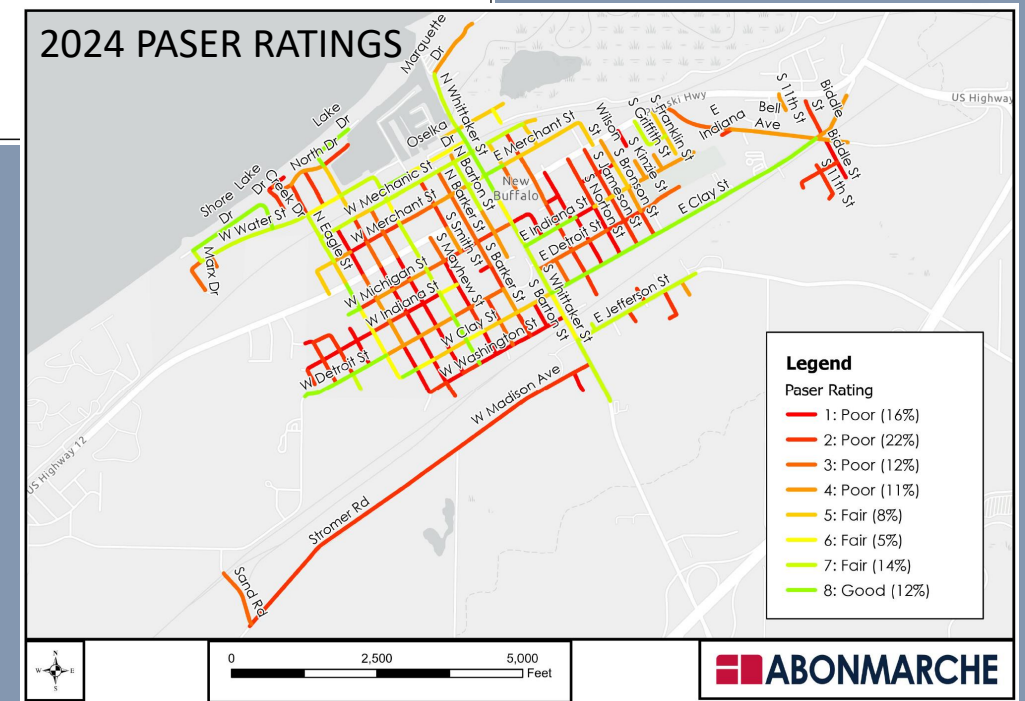
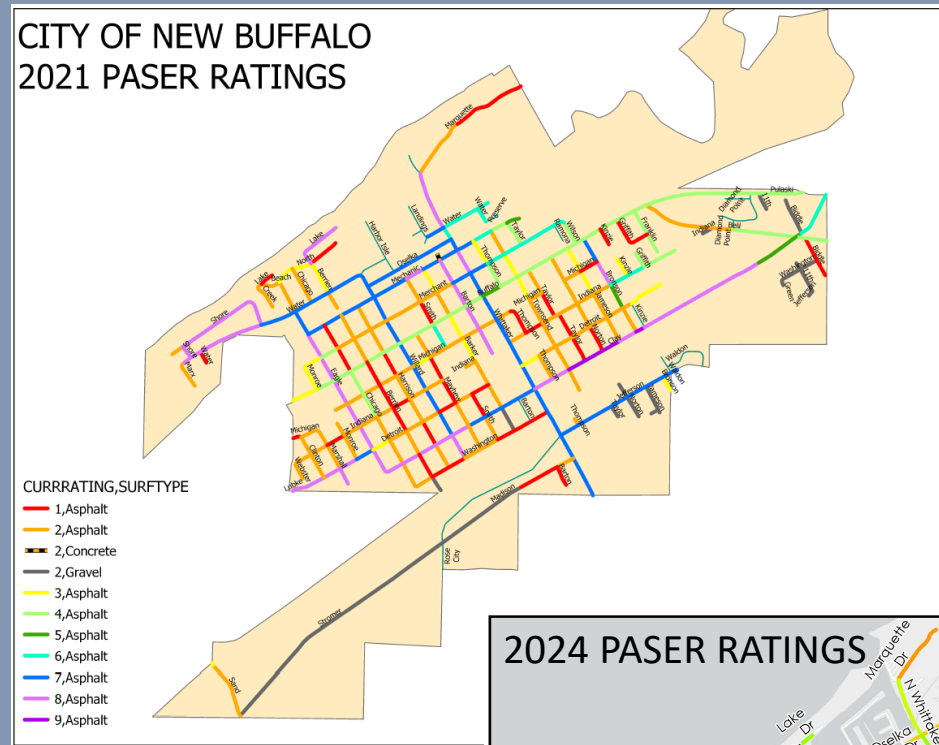
CITY OF NEW BUFFALO 2021 PASER RATINGS

CURRRATING,SURFTYPE

- 1,Asphalt
- 2,Asphalt
- 2,Concrete
- 2,Gravel
- 3,Asphalt
- 4,Asphalt
- 5,Asphalt
- 6,Asphalt
- 7,Asphalt
- 8,Asphalt
- 9,Asphalt



2021 vs 2024 Ratings Summary





- Roadsoft is a roadway asset management system for collecting, storing, and analyzing data associated with transportation infrastructure.
- The system is built on an optimum combination of database engine and GIS mapping tools.
- Roadsoft's development began in 1992 based on input and guidance from local road agencies in Michigan.
- Over 400 road agencies and consultants use Roadsoft to manage their roads, signs, guardrails and other roadway assets
- The software is maintained by a team of software engineers and civil engineers at Michigan Technological University.



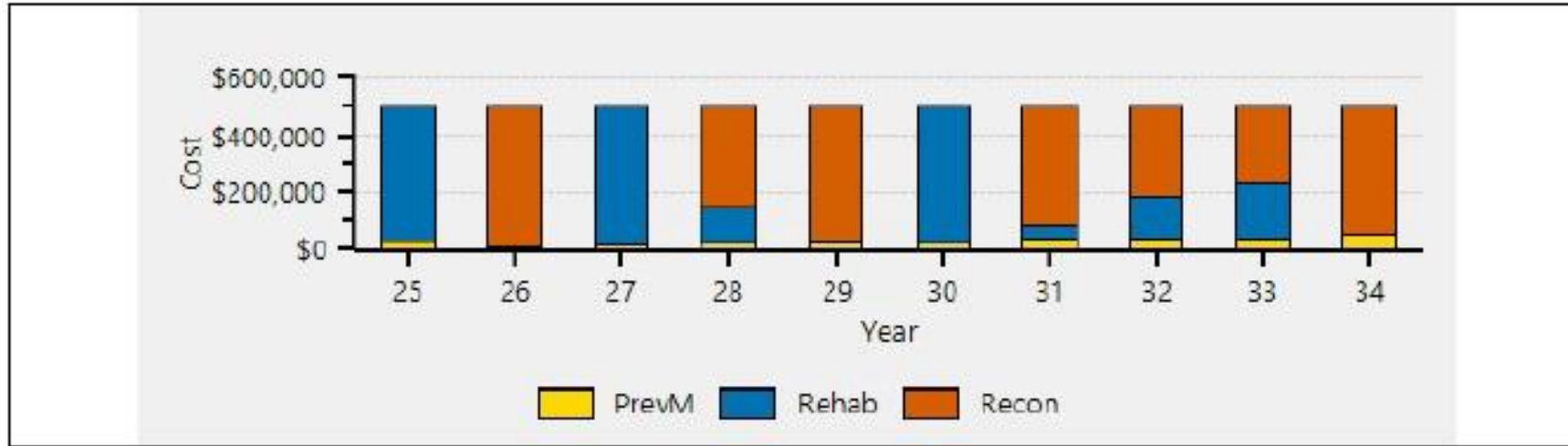
Roadsoft® Evaluation

Roadsoft software was used to develop models of what level of road conditions could be achieved by increasing annual road spending by increments of \$500,000, \$750,000 and \$1,000,000.



Best practices and resulting impacts of spending \$500,000 per year annually on the community's road network.

Cost Distribution



2025 Local Roads - \$500,000 Annual

Maintenance Type	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Prev Maint	\$32,411	\$11,127	\$15,281	\$20,986	\$29,044	\$22,958	\$40,658	\$35,903	\$36,542	\$54,637
Rehab	\$467,589	\$0	\$484,719	\$122,674	\$0	\$477,042	\$42,585	\$147,339	\$195,396	\$0
Recon	\$0	\$488,873	\$0	\$356,340	\$470,956	\$0	\$416,758	\$316,759	\$268,062	\$445,363
Total	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,001	\$500,001	\$500,000	\$500,000

The chart illustrates the distribution of ratings over time. The 'Poor' rating (red) starts at approximately 55% at 'Init' and decreases steadily to about 25% by Year 34. The 'Fair' rating (yellow) is present from 'Init' to Year 28, starting at about 40% and decreasing to near 0% by Year 29. The 'Good' rating (green) starts at approximately 45% at 'Init' and increases steadily to about 75% by Year 34.

Year	Poor (%)	Fair (%)	Good (%)
Init	55	40	45
25	48	12	40
26	45	15	40
27	45	5	50
28	42	5	53
29	45	0	55
30	38	0	62
31	35	0	65
32	32	0	68
33	28	0	72
34	25	0	75

Initial Values

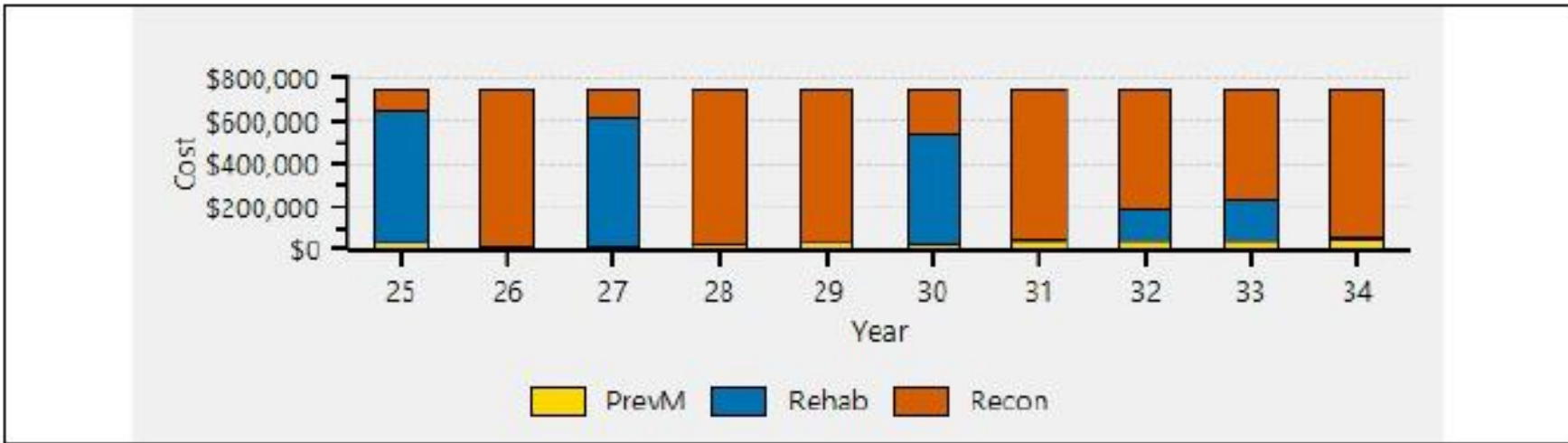
Lane Miles	%	Rating	2025		2026		2027		2028		2029		2030		2031		2032		2033		2034	
0.000	0.0	Good	16.817	38.2	17.474	39.6	21.639	49.1	23.113	52.4	23.691	53.7	27.441	62.3	28.249	64.1	29.698	67.4	31.397	71.2	31.868	72.3
19.130	43.4	Fair	6.574	14.9	6.574	14.9	2.498	5.7	2.498	5.7	1.406	3.2	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.0
24.954	56.6	Poor	20.692	46.9	20.035	45.5	19.946	45.3	18.472	41.9	18.985	43.1	16.640	37.8	15.832	35.9	14.384	32.6	12.685	28.8	12.213	27.7
44.084	100.0	Total																				



Roadsoft® Evaluation

Best practices and resulting impacts of spending \$750,000 per year annually on the community's road network.

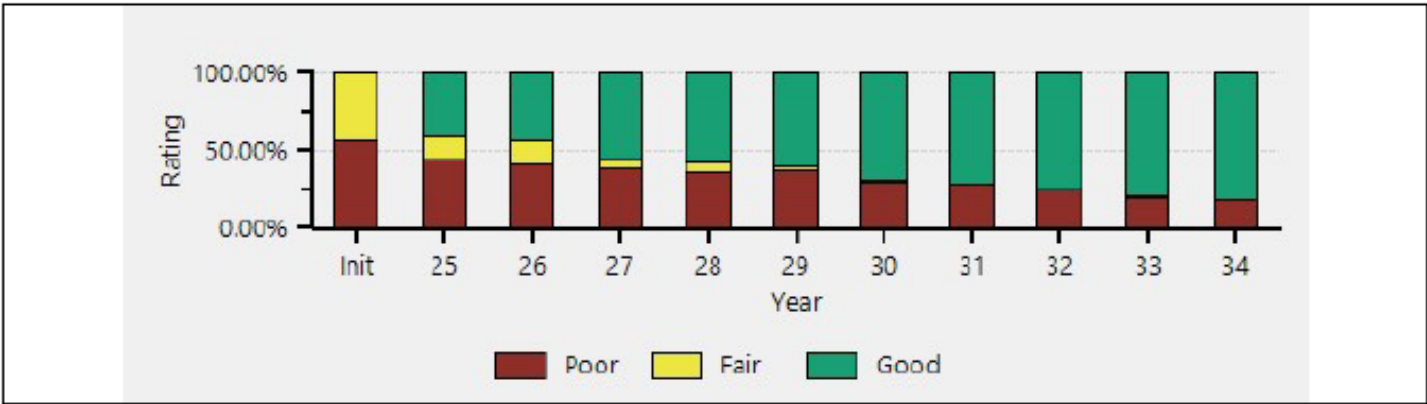
Cost Distribution



2025 Local Roads - \$750,000 Annual

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Rating Distribution



2025 Local Roads - \$750,000 Annual

Initial Values

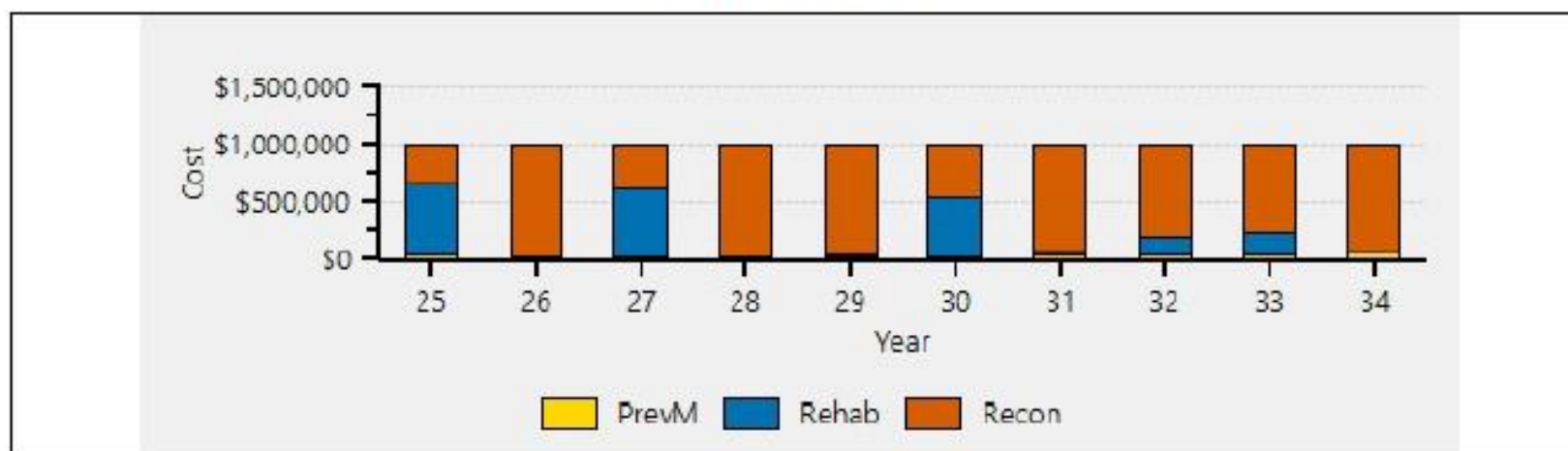
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Roadsoft® Evaluation

Best practices and resulting impacts of spending \$1,000,000 per year annually on the community's road network.

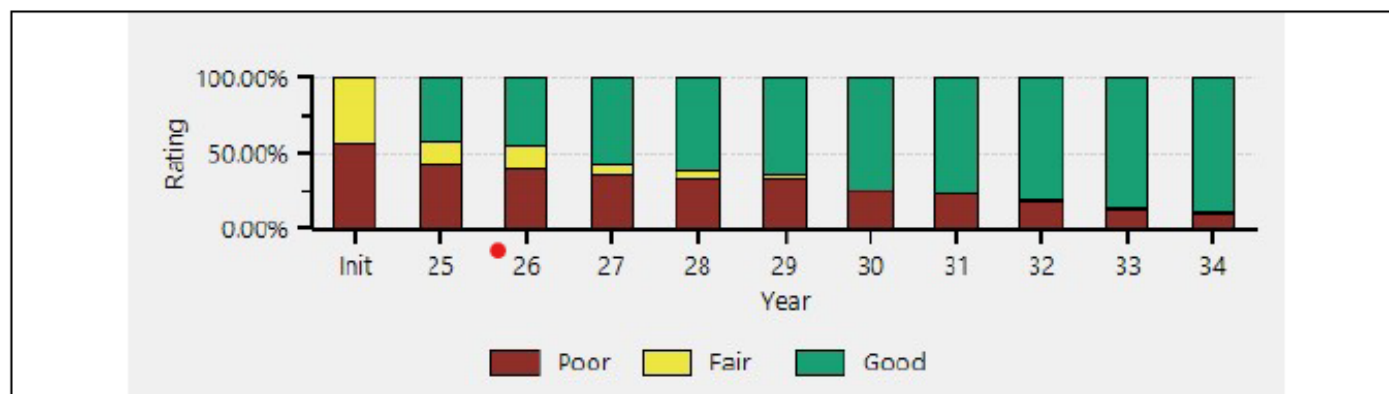
Cost Distribution



2025 Local Roads - \$1,000,000 Annual

Maintenance Type	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Prev Maint	\$32,411	\$11,127	\$15,281	\$20,986	\$32,920	\$25,753	\$48,212	\$39,230	\$43,955	\$64,259
Rehab	\$613,919	\$0	\$603,820	\$0	\$0	\$518,386	\$0	\$147,339	\$195,396	\$0
Recon	\$353,670	\$988,873	\$380,899	\$979,014	\$967,080	\$455,861	\$951,788	\$813,432	\$760,649	\$935,741
Total	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,001	\$1,000,000	\$1,000,000

Rating Distribution



2025 Local Roads - \$1,000,000 Annual

Initial Values																						
Lane Miles	%	Rating	2025		2026		2027		2028		2029		2030		2031		2032		2033		2034	
0.000	0.0	Good	18.640	42.3	19.968	45.3	25.653	58.2	26.893	61.0	28.082	63.7	32.703	74.2	33.806	76.7	35.813	81.2	38.051	86.3	39.044	88.6
19.130	43.4	Fair	6.574	14.9	6.574	14.9	2.498	5.7	2.498	5.7	1.406	3.2	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.0
24.954	56.6	Poor	18.869	42.8	17.540	39.8	15.932	36.1	14.692	33.3	14.595	33.1	11.381	25.8	10.278	23.3	8.271	18.8	6.034	13.7	5.042	11.4
44.084	100.0	Total																				

The PASER ratings and Roadsoft analysis gives the City the ability to create an asset management plan for the community's road system. The plan serves as "a process to strategically manage our transportation system in a cost-effective and efficient manner" with six major elements.

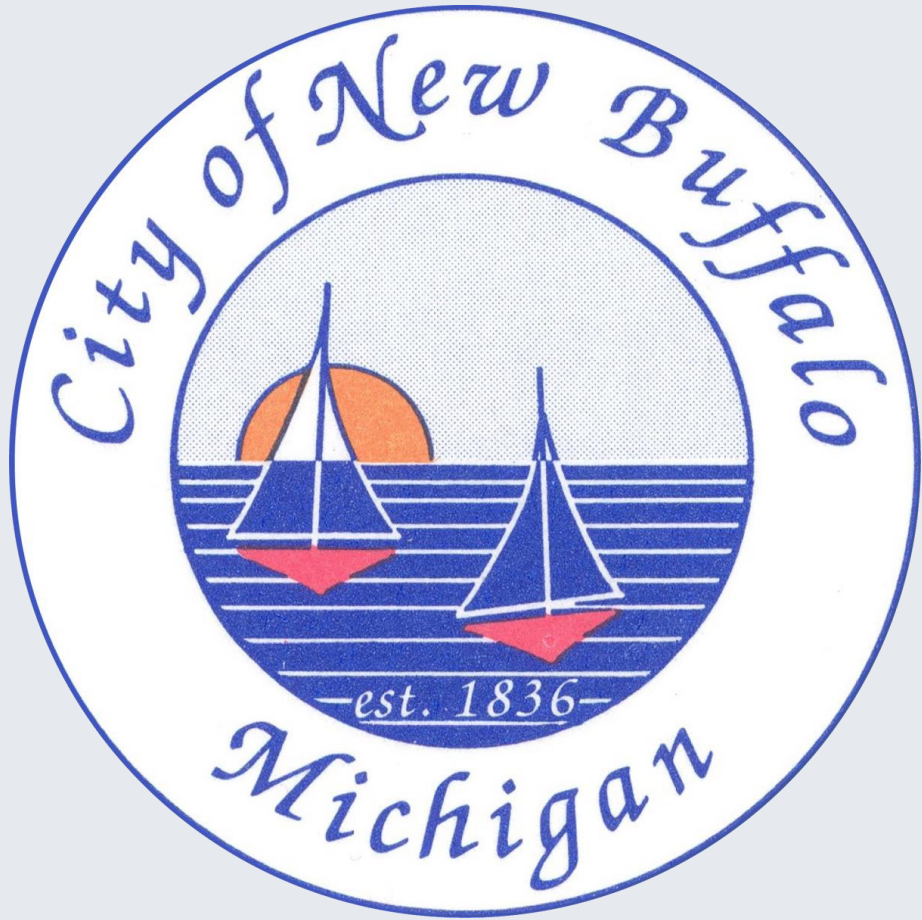


Importance of Asset Management for Roads

1. Roads are one of the major financial community assets and provide numerous benefits.
2. The problem is that road infrastructure is often not seen as financial asset for society and the economy, largely due to the lack of awareness of its value.
3. The consequence of not fully valuing these assets is similar to increasing our debt - everyone becomes poorer.

Road Asset Management Plans offers a solution...

- Establish a complete inventory of all road network with all its elements
- Provide a clear picture of the current condition/performance of the road network
- Estimate the value of the asset
- Predict future demand of traffic and service needs
- Estimate maintenance needs and costs
- Prioritize objectives related to the desired quality and performance of the road network
- Set up funding scenarios for the regular and timely maintenance and upgrade of the road asset



Questions & Discussion