



# MARATHON COUNTY HIGHWAY SYSTEM STUDY

**Final Draft**

**March 2022**

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prepared for:

Marathon County Highway Department

by:

North Central Wisconsin Regional Planning Commission

**FINAL DRAFT**

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This study was prepared at the request and under the supervision of the Marathon County Highway Department and its Highway Commissioner by the North Central Wisconsin Regional Planning Commission (NCWRPC). For more information, contact:

NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION  
210 McCLELLAN STREET, SUITE 210  
WAUSAU, WI 54403



Telephone: 715-849-5510

FAX: 715-849-5110

email: [staff@ncwrpc.org](mailto:staff@ncwrpc.org)

[www.ncwrpc.org](http://www.ncwrpc.org)

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## 1. INTRODUCTION AND PURPOSE

This study stems from the 2018-2022 Marathon County Strategic Plan. The Marathon County Strategic Plan is a 5-year action plan that links the County Comprehensive Plan to annual budgets and work programs. The Strategic Plan prioritizes specific objectives from the Comprehensive Plan and monitors progress in achieving those objectives through annual updates. To address these key priorities, strategies and action steps are identified.

One of the objectives in the current Strategic Plan is ***Maintain infrastructure to support economic growth***. To address this objective, the County has begun long-term infrastructure planning. A major component of the County's infrastructure is its highway network.

Marathon County currently has about 611 miles of roadway comprising the county truck highway system. The County Highway Department maintains this system, including resurfacing and reconstruction, to enhance safe traffic flow, ease congestion, and ensure efficient mobility. These efforts also protect the investment of taxpayers by extending pavement life.

However, the current fiscal climate dictates that Marathon County plan for funding roadways to achieve a financially sustainable transportation network for the County. To assist in this process, the NCWRPC has been asked to develop a long-term sustainability study to guide the decision-making process for future resurfacing and reconstruction projects as well as best practice maintenance work. The study aims to determine the level of investment necessary to sustain a safe, reliable and well-maintained County Highway System.

This Marathon County 2050 Highway System Sustainability Study is a planning tool subject to budget appropriation in each County budgeting cycle. Actual revenues and expenditures must be approved by the Marathon County Board in its annual budget. This study contains the following elements:

- An inventory of all county highways including condition, traffic levels, crashes and other relevant factors.
- An analysis of growth and development information to help determine highway service priorities.
- An analysis of potential future changes to the County Highway System due to anticipated growth or other factors.
- An assessment of necessary maintenance with anticipated expenses accounting for inflation over time.

- A summary of recommended best practices for the timing of necessary maintenance, including crack filling, chip sealing, resurfacing, reconstruction, etc.
- A breakdown of recommended average funding needed to adequately maintain existing roadways.
- Recommendations for highway maintenance planning and programming to facilitate a sustainable highway system.

## **2. LANDSCAPE**

Marathon County is located in north central Wisconsin, and is surrounded by the Counties of Clark, Lincoln, Langlade, Shawano, Portage, Taylor, and Wood. In all, the county encompasses over one million acres, which makes it is the largest county in Wisconsin based on land mass. See Appendix A for a detailed demographic analysis of the County.

The area was settled in the mid-nineteenth century to take advantage of its abundant pine forests. The Wisconsin River, which bisects the County, provided the waterpower necessary to haul and process the lumber. As the forests declined, Marathon County became a center for agriculture, specifically dairy production, and remains the number one ranking dairy producing county in Wisconsin. Today, land use patterns in the County still reflect the original economic base, with farmland, woodland, and water-related resources covering much of the area. While most urban type development continues to concentrate in the Wisconsin River valley, changes in the agricultural economy and growing pressure for widespread residential development is slowly altering the land use pattern in rural areas across the County.

### **Pattern of Development**

Although it is a large county, some general characteristics differentiate various areas of Marathon County. Most of the county has rolling hills and valleys with numerous rivers and streams. Characteristics such as soils, depth of bedrock, marshland and woodland reflect the impact of glaciers on landforms. These natural factors have had a direct impact on the type and pattern of development throughout the County.

Marathon County is crossed by two major road corridors, including I-39/USH 51, a major north-south route, and STH 29, a major east-west route. USH 51 has long been a major transportation corridor following the Wisconsin River, connecting communities in the south with the northwoods. The presence of this road corridor also fostered the growth of the various urban centers along its route. The City of Wausau began at Big Bull Falls on the Wisconsin River in 1848 and was one of several saw mill settlements. The City of Mosinee grew in the 1850s at Little Bull Falls farther south, while Schofield was the site of another mill in 1851 at the point where the Eau Claire River entered the Wisconsin River south of Wausau. The villages of Brokaw (1899) and Rothschild (1909) both developed as paper mill towns and, along with the other communities that lined the Wisconsin River, formed the commercial and industrial heart of Marathon County. Several outlying communities in the County began as saw milling sites, or as station

stops as the railroads were built through the area. Most communities became more focused on agriculture by the beginning of the twentieth century as lumbering declined.

A description of the major types of land cover that dominate the overall County landscape follows:

### Metropolitan Development

The communities along USH 51 have grown toward each other, and today function as a contiguous metropolitan area. Wausau has expanded, mostly to the west into Stettin, along STH 29, and the Village of Weston has grown to the east along STH 29. Formerly rural communities on the edge of Wausau, such as Rib Mountain and the Village of Weston, have rapidly urbanized during the last decade. Both communities have followed standard suburban development patterns, with major commercial and/or industrial growth. Land conversion to residential use has increased at a faster rate than population growth, spurring greater metropolitan expansion.

### Rural Development

STH 29 has had a major impact on outlying communities as well. Road improvements have made it easier for residents to live in rural areas by providing an easy commute to job centers in the Wausau metro area. Thus, convenient access to the urban area has increased demand in many historically rural towns for scattered low-density residential development. Smaller villages in the County continue to function primarily as agricultural service centers, and many have retained viable commercial “Main Street” districts. A few, including Stratford, Spencer, and Athens have developed industrial parks, and others retain traditional industries such as cheese factories or creameries often integrated into the village commercial center. However, most major industrial and commercial activities remain concentrated in communities along the USH 51 and STH 29 corridors around the Wausau metro area.

### Agriculture/Cropland

Marathon County’s farmers utilize almost 440,000 total acres of land, or about 43% of the land base. The majority of cropland area is located in the western half of the County and generally coincides with the soils most suitable for sustaining agriculture. To encourage preservation of prime farmland to maintain farming, the County prepared a Farmland Preservation Plan. The purpose of this plan is to guide and manage growth and development in a manner that will preserve the rural character; protect the agricultural base and natural resources; and contribute to the County’s overall goal of

promoting public safety, health and prosperity within the County. This plan is the primary policy document in directing preservation of agricultural production capacity, farmland preservation, soil and water protection, and future land development while respecting private property rights and individual units of government. A major component of this plan is the designation of an Agricultural Enterprise Areas or AEA. Two such areas are identified, one in the western portion of the County and another in the northeast corner of the County.

### Open Space

Marathon County is rich in land set aside in both county and state-owned park and wildlife land. Marathon County has 18 County parks that encompass 3,100 acres, of which Big Eau Pleine Park is the largest at 1,450 acres. County forestlands also provide as significant amount of public open space. The State of Wisconsin manages two large wildlife areas in the County. The 33,000-acre George W. Mead Wildlife Area, south of the Big Eau Pleine Reservoir along the County's southern border, is a major public open space in the towns of Green Valley and Bergen. The McMillan Marsh Wildlife Area, in the towns of Spencer and McMillan, carves out 4,172 acres along the Little Eau Pleine River. State-owned wildlife properties, as well as Rib Mountain State Park (1,182 acres) contribute large amounts of public open space in the County.

### Woodland

Marathon County was once covered in woodlands. Today, there is about 390,000 acres of wooded lands with the larger segments concentrated in the eastern half and along the northern border of the County. An estimated one-third of County land area is forested; some is in public ownership and some is owned by private land owners and/or companies such as paper mills. Marathon County owns about 30,000 acres of forestland, the majority of which is located in several forest units on the eastern side of the County. Other woodland areas tend to be along rivers and creeks. Much of the woodland throughout the County is in 30-40 acre tracts adjacent to individual farms. Approximately 100,000 acres of private woodlands have been set aside under the Managed Forest Law or Forest Crop Law programs administered by the Wisconsin Department of Natural Resources.

### Marshland

Another significant land cover characteristic in the County is the amount of marshland (sometimes identified as wetlands and vacant/barren land). These areas generally flank the numerous rivers and streams and broaden out in flat, low areas. Because these

areas pose development constraints, they sometimes function as large natural areas essentially protected from development. Major marshland areas runs along the Little Eau Pleine River (George W. Mead Wildlife Area), the McMillan Marsh, Nine-mile Creek and along the glacial moraine that separates the southeast from the rest of Marathon County in the vicinity of the Eau Claire and Plover Rivers.

### **Existing Land Use**

A detailed land use analysis was completed as part of this planning effort using existing County data, airphotos, and other information. Generalized existing land use categories include: Agriculture, Commercial, Industrial, Residential, Governmental, Open lands, Outdoor Recreation, Transportation, and Woodlands. This information was then mapped and various calculations were made to arrive at the generalized land use, see Map 2 and Table 1.

<b>Table 1 - Existing Land Use, Marathon County</b>		
	Acres	Percent
Agriculture	439,346	43.51%
Commercial	5,486	0.54%
Governmental / Institutional	2,438	0.24%
Industrial	6,198	0.61%
Open Lands	57,312	5.68%
Outdoor Recreation	2,313	0.23%
Residential	47,604	4.71%
Transportation	33,016	3.27%
Woodlands	387,718	38.40%
Water	28,331	2.81%
<b>Total Acres</b>	<b>1,009,763</b>	<b>100.00%</b>
<i>Source: Marathon County Land Cover, NCWRPC Modified, 2016</i>		

Agriculture is the dominant land use type in Marathon County, accounting for over 43 percent of the total land area. This is followed by woodlands with 38 percent.

Overall, the amount of land developed with residential, commercial, or industrial land uses is relatively small, combined about six percent of the land area. Of the developed land use types, residential land uses account for the vast majority of acreage, but still only represent about 4.7 percent of the land area in the entire County. While the

Wausau metropolitan area continues to expand, Marathon County remains predominantly rural in character.

### **Future Land Use**

Over the next twenty years there will be changes across the County as the population, households, and employment opportunities increase. According to the projections discussed earlier, over 15,000 new persons will live in Marathon County, over 8,000 new households will reside in the County, and over 12,000 new jobs will be located within the County. Every new housing unit and every new business location will use land, and land will need access provided by the street and highway network. As the backbone of the system that provides the necessary access to land use across the County, the Marathon County Highway System plans a vital role in the development and growth of the County.

Each town, village and city prepares a local comprehensive plan, including the creation of a future land use map. These maps, when joined together, create the County Future Land Use Plan, see Map 3. As part of the County Comprehensive Plan effort, the communities were provided the opportunity to review and update their future land use maps. Some did complete plan updates, including most of the Wausau urban area. However, most of the rural areas of the county have not updated their plans. These plans are critical for long-term planning, especially related to roads. Comprehensive Planning identifies areas of planned growth. Many of these plans are over a decade old and cannot provide a foundation for long-term road planning. The NCWRPC recommends update of these comprehensive plans.

Another major planning effort impacting land use in the County is the Farmland Preservation Plan, which identified farmland preservation areas in each town and established agricultural enterprise areas. Both have impacts on future development. Change in future land use as projected in the County Comprehensive Plan is shown in Table 2.

<b>Table 2 – Projected Future Land Use Change (in acres), Marathon Co.</b>					
	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
Residential	48,822	51,161	53,500	55,839	57,845
Commercial	5,108	5,374	5,640	5,906	6,137
Industrial	6,276	6,541	6,806	7,071	7,295
Agricultural	883,697	880,826	877,955	875,084	872,951
<i>Source: Marathon County Comprehensive Plan 2016</i>					

### 3. COUNTY HIGHWAY SYSTEM

#### Highway Segments

The Marathon County Highway System is one of the largest in the state comprised of 611.28 miles of highway evenly spread across the County. With few exceptions, each community within the County is directly served by the Network. Exceptions include Abbotsford, Elderon and Stratford at the crossroads of major state trunk highways and the City of Schofield which is surrounded by other metro-area communities with County Highway connections. Every rural town within the County is traversed by at least one County Highway.

Tables 3 and 4 show the breakdown of County Highway miles within each incorporated community and rural town within the County. The System is predominantly rural with 92.81 percent of the Network in the towns. This characterization holds even if discounting Rib Mountain which is probably more accurately classified as urban.

<b>Table 3 – Marathon County Highway Miles within Incorporated Areas</b>		
<b>Incorporated Area</b>	<b>Miles</b>	<b>% County System</b>
City of Abbotsford*	0	0.00%
City of Colby*	0.32	0.05%
City of Marshfield*	0.05	0.01%
City of Mosinee	0	0.00%
City of Schofield	0	0.00%
City of Wausau	1.90	0.31%
Village of Athens	0.27	0.04%
Village of Birnamwood*	0	0.00%
Village of Dorchester*	0.05	0.01%
Village of Edgar	1.72	0.28%
Village of Elderon	0	0.00%
Village of Fenwood	1.69	0.28%
Village of Hatley	1.16	0.19%
Village of Kronenwetter	8.41	1.37%
Village of Maine	18.40	3.00%
Marathon City	0.78	0.13%
Village of Rothschild	1.55	0.25%
Village of Spencer	0.39	0.06%
Village of Stratford	0	0.00%
Village of Unity*	0.57	0.09%
Village of Weston	6.93	1.13%
<i>Totals</i>	44.19	7.19%
<i>Source: WisDOT 2021. *Community split between counties.....Totals may not add due to rounding.</i>		

**Table 4 – Marathon County Highway Miles within Unincorporated Towns**

<b>Town</b>	<b>Miles</b>	<b>% County System</b>
Bergen	11.86	1.93%
Berlin	20.32	3.31%
Bern	9.92	1.61%
Bevent	18.57	3.02%
Brighton	11.68	1.90%
Cassel	16.77	2.73%
Cleveland	11.69	1.90%
Day	11.73	1.91%
Easton	19.34	3.15%
Eau Pleine	10.53	1.71%
Elderon	7.68	1.25%
Emmet	11.33	1.84%
Frankfort	13.55	2.21%
Franzen	12.22	1.99%
Green Valley	11.54	1.88%
Guenther	8.62	1.40%
Halsey	15.99	2.60%
Hamburg	20.97	3.41%
Harrison	16.75	2.73%
Hewitt	15.27	2.49%
Holton	11.83	1.93%
Hull	11.59	1.89%
Johnson	10.54	1.72%
Knowlton	11.07	1.80%
Marathon	22.14	3.60%
McMillan	15.11	2.46%
Mosinee	17.92	2.92%
Norrie	20.40	3.32%
Plover	18.35	2.99%
Reid	17.23	2.81%
Rib Falls	15.17	2.47%
Rib Mountain	13.19	2.15%
Rietbrock	14.11	2.30%
Ringle	13.59	2.21%
Spencer	12.07	1.96%
Stettin	12.60	2.05%
Texas	20.93	3.41%
Wausau	14.37	2.34%
Weston	6.20	1.01%
Wien	15.33	2.50%
<i>Totals</i>	570.07	92.81%

*Source: WisDOT 2021. Totals may not add due to rounding.*

Road data and maintenance information is organized in various formats and locations. The County Highway Department maintains improvement and maintenance information for the entire Network. The County's GIS system retains and displays maps and data pertaining to all roads maintained by Marathon County. However, the primary source of detailed road data is the Wisconsin Information System for Local Roads (WISLR) maintained by the Wisconsin Department of Transportation. The NCWRPC compiled the various sources of existing information to create a digital inventory of all Marathon County Highways, refer to Map 4. Minor discrepancies were identified, and the NCWRPC worked with Highway Department Staff to reconcile the data into a current/updated list of highway segments for use in this study, refer to Appendix B.

### Pavement Condition

The Wisconsin Department of Transportation requires counties and local communities to evaluate the condition of pavement on all roads under their jurisdiction every two years. Like most communities in Wisconsin, Marathon County uses the Pavement Surface Evaluation and Rating System or PASER which was developed by the University of Wisconsin Transportation Information Center

PASER uses visual inspection to evaluate pavement surface conditions on a scale from 1 (reconstruction required) to 10 (new construction). Using the PASER system, the County Highway Department assigns a condition rating to each segment of County Highway. The ratings are then submitted to WisDOT via the Internet based Wisconsin Information System for Local Roads or WISLR.

The PASER ratings are useful indicators of the overall condition of pavement surfaces and the experience of the traveling public in using the road, where the pavement lies in its lifecycle and the type of maintenance needed, if any. Figure 1 graphically illustrates these relationships.

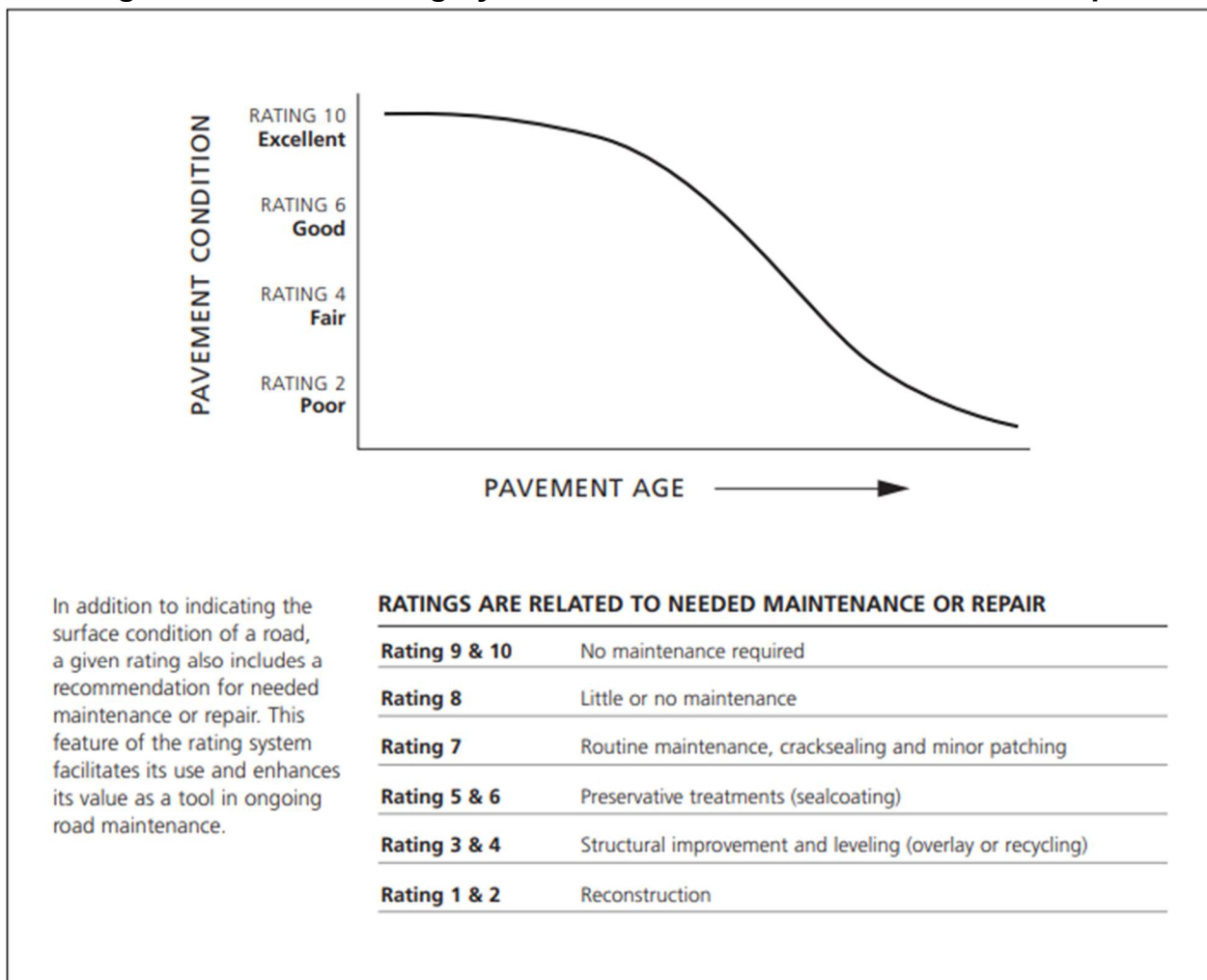
The current policy of the County is to maintain an overall highway pavement rating of 7 on the PASER scale. This policy was established by the Marathon County Board in its County Strategic Plan as an outcome measure under its "Maintain infrastructure to support economic growth" objective.

Current PASER condition ratings for each segment of County Highway are shown in Map 5 with a summary breakdown by rating category in Table 5. The figures represent a system in overall good condition with an average pavement condition rating of 7.14 on the PASER scale. Just over 47% of the System is rated very good or excellent at this time, while another 34% is rated in good condition. Less than 20% of the System is rated fair or below, and in fact none of the County's highway segments are rated less than fair at this time.

Table 5 - Pavement Surface Evaluation and Rating (PASER), Marathon County Highway System				
PASER Surface Rating		Marathon County Highway System		
Rating	Condition	Segments	Miles	% of System
10	Excellent	12	45.8	7.5
9	Excellent	22	78.8	12.9
8	Very Good	46	163.3	26.7
7	Good	23	79.3	13.0
6	Good	42	128.3	21.0
5	Fair	31	101.4	16.6
4	Fair	4	14.4	2.4
3	Poor	0	0	0
2	Very Poor	0	0	0
1	Failed	0	0	0

*Source: Marathon County Highway Dept & NCWRPC 2021.*

**Figure 1 - PASER Rating System Condition-Maintenance Relationships**



*Source: WisDOT 2021.*

## **Bridges**

The Marathon County Highway System includes 116 bridges. Bridges are an integral part of the County Highway System, but their unique maintenance and safety issues require an additional level of management. The Marathon County Highway Department is required by state statute to inspect bridges every other year.

A bridge is defined as a structure that has a clear span of 20 feet or more (measured from abutment face to abutment face). If the span is less than 20 feet, it is considered a culvert even if abutments, decks and railings are present. Bridges are eligible for Federal Bridge Aids, while culverts are not.

The County Highway Department provided NCWRPC with the inventory data for each of the primary bridges on the County Highway System, see Appendix C and Map 5.

### **Bridge Condition**

Following a thorough inspection of a bridge, the deck, superstructure, and substructure are assigned a "sufficiency" rating for each component. The deck is the pavement surface of the bridge on which vehicles travel. The superstructure is comprised of the beams that support the deck. The substructure supports the superstructure. Bridge inspection results and sufficiency ratings are entered into WisDOT's Highways Structure Inventory (HSI) via the Internet. All states including Wisconsin are required to submit an annual report to the FHWA that reviews the condition of its bridges.

Table 6 displays the rating system used by the Marathon County Highway Department. Appendix C contains the current ratings for each bridge under County jurisdiction. The average ratings for decks, superstructures and substructures across all County bridges is 6.23, 6.36 and 6.38 respectively. These ratings indicate an overall Satisfactory condition level. It should be noted that three of the lowest rated bridges are scheduled for replacement in 2022, which will bump up the overall rating.

Table 6 - Marathon County Bridge Rating System		
Rating	Condition	Description
9	Excellent	
8	Very Good	No problems noted.
7	Good	Some minor problems.
6	Satisfactory	Structurally sound with minor deterioration.
5	Fair	Structurally sound with minor section loss, cracking, spalling or scour.
4	Poor	Advanced section loss, cracking, spalling or scour.
3	Serious	Structural components affected with fatigue cracking.
2	Critical	Advanced deterioration of primary structural components with fatigue cracking and scour loss of substructure support. May require closure pending corrective action.
1	"Imminent" Failure	Major deterioration of critical structural components or obvious movement affecting stability. Closed to traffic, but corrective action may be able to put back into light service.
0	Failed	Out of service, beyond corrective action.

*Source: Marathon County Highway Department.*

**Highway Function**

A road network serves dual roles in providing (1) access to property and (2) travel mobility. Access is a fixed requirement, necessary at both ends of any trip. Mobility, along the path of a trip, can be provided at varying levels, usually referred to as "level of service." The basic measures of mobility are operating speed and trip travel time, however, it can incorporate a wide range of elements including riding comfort, freedom from speed changes, etc.

County Trunk Highways are meant to provide a high level of mobility to the traveling public. County Highways have historically provided farm to market routes and connect cities and villages to higher level state highways. Roads providing primary access to commercial and residential areas should be part of the local road system of towns, villages and cities.

Functional classification is a process by which roads are grouped into classes according to the character of service they provide, ranging from a high degree of travel mobility to land access functions. Federal regulations require states to classify roadways in accordance with the Federal Highway Administration's highway functional classification criteria and procedures. The functional classification system can be broken down into

several increasingly detailed layers, however, the primary functional class groups are generally defined as follows:

- **Arterials** serve larger communities and major centers of activity and provide for trip lengths of a moderate to inter-regional nature. Arterials emphasize a high level of mobility for through movement.
- **Collectors** distribute trips between the arterials and the local area and link smaller communities and intra-area traffic generators (schools, churches, employment & service centers). Collectors offer more-or-less balanced service for both mobility and land access.
- **Local Roads** comprise all facilities not part of the higher systems. Local roads provide direct access to adjacent lands and short distance trips within the local area. Local roads offer the lowest level of mobility.

The Marathon County Highway Department periodically reviews the function of the Network in conjunction with WisDOT and adjusts classifications based on changing conditions. Currently, the majority of the County Highway System, see Map 7, is comprised of collectors, however, the Network also contains some arterials as well as "local roads", refer to Figure 2.

**Figure 2 - Functional Classification - Marathon County Highways**



Source: WisDOT 2021.

## **System Traffic Volumes**

On an average annual daily basis, traffic on Marathon County highways approaches 17,300 vehicles per day on Highway X between Weston Avenue and Schofield Avenue and 13,700 vehicles per day on Highway R between Sherman Street and Highway 52 Parkway. Approximately 71% of the system carries 500 or more vehicles per day on average. The heaviest traveled segments of the Marathon County Highway System are displayed in Table 7.

Appendix D contains 2010 and 2019 traffic counts from WisDOT. Although historical traffic count data is not available for all segments, overall, traffic has increased approximately 2.5% on the Marathon County Highway System between 2010 and 2019.

<b>Table 7 - Highest Traffic Count Segments on Marathon County Highway System</b>		
<b>Highway</b>	<b>Location (From-To)</b>	<b>Count</b>
X (X005)	STH 29 - CTH N	17,300
R (R012)	Sherman Street - Highway 52 Parkway	13,700
X (X004)	CTH XX - STH 29	13,000
N (N010)	CTH KK - USH 51	11,100
XX (XX001)	Business 51 - Industrial Park Drive	6,900
XX (XX002)	Industrial Park Drive - Trailwood Lane	6,770
K (K001)	Overlook Drive - CTH WW	6,278
K (K002)	CTH WW - CTH L	5,385
NN (NN002)	CTH O - CTH N	5,200
X (X006)	CTH N - CTH Z	4,400

Source: NCWRPC & Marathon County 2021.

## **Projected Future Traffic Volumes**

As part of the federal planning requirements for urban areas like the Wausau Metro Area, WisDOT maintains an active Travel Demand Model which encompasses all of Marathon County. Based on socioeconomic and land use data, the Travel Demand Model calculates the number of vehicle trips, where these trips are coming from and going to, and then chooses the routes these vehicle trips would likely take on the model's roadway network. The model is created using current base year data and calibrated with actual traffic counts to replicate existing traffic conditions. The model then develops projected traffic based on 2050 population, household, and employment projections.

Appendix D contains the 2050 traffic projections generated by the Travel Demand Model. Overall, traffic is projected to increase by 36% on the Marathon County

Highway System by 2050. The highway segments with the largest projected gains in traffic are shown in Table 8. The most notable increases include Highway XX between Business 51 and Industrial Park Drive where the model anticipates an additional 6,100 vehicles per day by 2050 and Highway N between KK and US 51 where the projected increase of 5,900 vehicles per day would increase traffic to 17,000 vehicles per day by 2050.

Highway	Location (From-To)	2019 AADT	2050 Projected	#Change	%Change
XX (XX001)	Business 51-Industrial Park Dr.	6,900	13,000	6,100	88%
N (N010)	CTH KK-USH 51	11,100	17,000	5,900	53%
N (N009)	CTH O-CTH KK	3,100	6,800	3,700	119%
K (K002)	CTH WW-CTH L	5,300	8,500	3,200	60%
DB (DB001)	County Line-STH 34	1,800	5,000	3,200	178%
J (J004)	STH 29-CTH N	3,400	6,500	3,100	91%
WW (WW001)	CTH K-CTH W	1,900	4,800	2,900	153%
E (E001)	STH 97-CTH C	2,400	5,100	2,700	113%
K (K001)	Overlook Dr-CTH WW	6,200	8,800	2,600	42%

*Source: NCWRPC & WisDOT 2021.*

### **County Highway Crash Analysis**

In 2021, engineers from the firm SRF completed a County Roadway Safety Study for Marathon County. This study analyzed WisDOT crash data from 2015 through 2019 which included 1,852 crashes that occurred on the Marathon County Highway System.

Detailed analysis was conducted to identify the factors that contributed to each crash including location and roadway characteristics. Key findings included:

- 94% of the severe crashes occurred on the rural County Trunk Highway System
- 57% of the severe rural intersection crashes involved a right-angle crash
- 72% of the severe rural non-intersection crashes were lane departure crashes with the majority (79%) being run off the road crashes
- 18.5% of the rural severe non-intersection crashes occurred on a curve, while curves account for less than 4% of the rural roadways

The Study also identified "critical emphasis areas" related to roadway infrastructure for Marathon County Highways. These are defined as types of crashes with the most opportunity for mitigation and reduction of severe crashes. Table 9 shows these

emphasis areas with the associated number of severe crashes and the percentage of total severe crashes. Refer to the full study report for more information and crashes and safety on the Marathon County Highway System.

<b>Emphasis Area</b>	<b># of Severe Crashes</b>	<b>% of Total Severe Crashes</b>
Train-vehicle collisions	0	0%
Lane departure crashes	47	53%
Intersection crashes	24	27%
Work zone crashes	1	1%

*Source: SRF Consulting Group Inc. 2021.*

### **Assessment Of Future County Highway Network**

As part of this study, NCWRPC Staff attempted to anticipate potential new additions or deletions to the County Highway Network over the planning period. The existing Network was reviewed in relation to demographic projections, land use, highway function and impacts of forecasted traffic. To complete this analysis, County Highway Staff were consulted, results from the Travel Demand Model were reviewed, and highway function was evaluated.

The current Marathon County Highway layout was influenced by natural features but has remained relatively stable over time. The Network is fairly evenly spaced to distribute traffic out to all areas of the County providing a solid framework for interconnecting rural areas, urban centers and higher level state highways.

There have only been a few instances of new additions or deletions to the Network within the last 25-year including the creation of Highway R and the transfer of a section of Highway N to Town of Rib Mountain (now Rib Mountain Drive). Most expansions of the County Highway System are for spot capacity and/or safety improvements on existing alignments with an occasional realignment here and there.

There was a plan, developed back in 2000, to create an arterial circulator system around the Wausau Urban Area to facilitate traffic flow and ease congestion on existing major routes and the Interstate. This plan included a number of potential new or expanded County Highway segments. However, support for several of the proposed projects fell through poking holes in the proposed circulation scheme, and the plan never materialized. There does not appear to be support to revisit this type of plan at this time.

In discussions with County Highway Staff, they identified several potential expansion projects on their radar, as follows:

- **Highway O** - This project is an extension of Highway O with a river crossing to connect the north and south sections via Highway NN. This crossing is seen as a potential important metro-area connection to serve the westside industrial park as the urban area continues to push westward.
- **Highway X** - Highway X between Schofield Avenue and State Highway 29 is at its capacity for traffic and the pavement is near end-of-life. The lack of room for expansion will be a challenge for this project. Some alternative solutions may need to be explored.
- **Highway XX** - There have been complaints as well as accidents along Highway XX that indicate it is something that warrants further study.

### Traffic Model Analysis

The model uses a standard called Level of Service (LOS) which measures the performance of the roadway by incorporating not only the roadway design but also by calculating the projected travel delay as traffic moves along the system. This produces an indicator of the quality of traffic service related to speed, density, etc. in an easy-to-understand standard classification system using letters, from "A" (free-flowing traffic) through "F" (forced or breakdown flow).

The model results show all segments of County Highway currently providing a good level of service, either A, B or C, and the projected 2050 scenario reveals no potential deficiencies on the County Network. This indicates the existing County Highway System should continue to operate fairly well at least for the duration of the study period. This is at a macro level. The System will continue to have spot problem areas crop up where conditions evolve to require improvement for safety or traffic flow.

NCWRPC Staff looked at the actual forecasted traffic levels for 2050 from the model. Four highway segments stood out in these figures: two on Highway K and one each on Highways N and XX. The projected volumes on Highway K don't reach a level to warrant 4-lane, and the highway is already scheduled for reconstruction with alignment and safety improvements. Highways XX and N are discussed below:

- **Highway XX** - The section between Business 51 and Industrial Park Drive has a projected 2050 average traffic flow of 13,000 vehicles per day but is already a four-lane facility. However, this segment feeds into the 2-lane section identified by the Highway Department as a potential concern.
- **Highway N** - The segment between Highway KK and US Highway 51 has a projected 2050 average traffic flow of 17,000 vehicles per day but is already a four-lane facility. However, conditions should be monitored as the traffic level grows.

As part of the modeling process, a number of "what-if" scenarios were run through the model. This allows a proposed project to be studied for its potential impact on the roadway network. The only County specific scenario looked at was the County Highway O Bridge. This crossing could serve as an alternative route to USH 51 and STH 29 for drivers accessing residential, business and recreational destinations like the Wausau Industrial Park and Rib Mountain State Park. However, the model did not show a significant amount of traffic drawn to this proposed bridge, and there was little impact on surrounding roadways. This indicates that it is probably too early to consider advancing this project and should be revisited at the next five-year update of the traffic model.

Some of the other modeled proposals showed potential impacts of note on some adjacent County Highways. A proposed Gardner Park Road bridge in the southern part of the metro-area shows a potentially significant increase in traffic on County Highway KK. The proposed Kowalski Interchange with US51/I39 has the potential to significantly reduce traffic on County Highway XX.

### Assessment of Highway Function

Functional Classification is a system used to categorize and describe the function (service level provided) of a roadway within the network, see *Highway Function* earlier in this report and refer to Map 7. Overall, the County Highway System provides a higher level of service connecting the local road network to the arterial system. This is reflected in the vast majority (89%) of County Highways being classified as collectors. However, there is a small percentage (5.3%) of the Network that, for various reasons, doesn't rise to that higher level of service and are classified as "local roads".

Another way to look at the level of service being provided by a roadway is the volume of traffic it carries. There is no established threshold for a minimum volume for a county highway, so the NCWRPC looked at 500 or less vehicles per day and less than 250 vehicles per day, see Map 8. Based on traffic topping out at 13,700 vehicles per day, these seemed like good representations of the bottom end of the scale. Turns out that 500 or less vehicles per day is a significant percentage of the System at nearly 178 miles. Dialing back to less than 250 vehicles per day yields just over 50 miles.

When reviewing the function of the highways geographically, it becomes clear that the County Highway System is predominantly rural in nature. Nearly 93% of the Network lies within the unincorporated, rural towns of the County. Limited County Highways extend very far into incorporated (urban) areas, generally transferring to the local jurisdiction at or near the border. Statistically, most urban areas contain only 0.31% or less of the County Highway System except for a few standout cases, including the Villages of Kronenwetter, Maine and Weston.

To address the question of which, if any, existing highway segments could be appropriately "deleted" from the County Highway System, the NCWRPC reviewed each of the factors just discussed: function, low traffic, and urban versus rural.

Removing the "local" classified segments from the System, in most cases, seems to poke holes in the framework causing gaps in the distribution network. So, the NCWRPC cannot recommend at this time. Similarly, we see even worse gaps being created in trying to drop low traffic (<250 AADT) segments, so this also cannot not be recommended at this time.

While some of the county highway segments do have low traffic volumes, these corridors are vital to rural residents, especially during storms, emergencies or other road closures. Furthermore, agriculture is a significant portion of the county's rural economic vitality and relies on the county road network. Many of the low volume county highways are in sparsely populated municipalities that have a relatively low tax base. The likelihood of these municipalities accepting a jurisdictional transfer of a county highway to their local road network is not high.

The current urban-rural mix and the rural nature of the County Highway System offers an opportunity to rebalance the Network in certain urban areas. One example of this is County Highway X in Weston. A large segment of this Highway has become a primary commercial corridor for the community. Much of the traffic there can likely be attributed to local land access function to those businesses and surrounding residential growth. Similar to Rib Mountain Drive, it might be in all parties best interests for the Village to have full control over the corridor to better manage access and development of the corridor and surrounding properties.

Of course, adding or subtracting highways it is not as easy as flipping a switch, and the NCWRPC recommends a county highway jurisdictional study be undertaken by Marathon County to take a more detailed look at these issues.

### County Highway R Extension

The NCWRPC was asked to look at the need for an extension of County Highway R as a four-lane facility along 28th Avenue to Highways U and K. The original concept for the proposal stems from the 2000 Local Arterial Circulation Plan for the Wausau Metro-Area. In that plan, an expanded 28th Avenue would serve the northwest corner of the Metro-Area and connect to a larger circulation system.

The NCWRPC reviewed the available information related to this proposal and analyzed current conditions to determine its status. Based on this review, the NCWRPC has made the following findings:

- **2000 Local Arterial Circulation Plan:** The plan this proposal stems from is 20 years old and has not been fully implemented. In the late 2000's, plans to begin the loop by constructing the network in the Cedar Creek area did not have support from the local municipalities and work in this area was terminated. A segment of Camp Phillips Road was reconstructed and widened in 2011 as part of the plan and preliminary plans were developed for the reconstruction of 28<sup>th</sup> Avenue extending up to CTH K. Since the time when plans were developed for 28<sup>th</sup> Avenue, conditions have changed, and a number of road projects have altered traffic flow in the Metro-Area relative to the originally proposed circulator system. At a minimum, the plan would have to be updated, however, this is unlikely due to lack of support.
- **Improvements to US51/I39:** One of the main purposes of the circulation plan was to relieve congestion on the freeway system. Improvements to US51/I39 have alleviated congestion related traffic problems on the freeway and associated access ramps.
- **Expansion of 20th Avenue:** 20th Avenue/Westwood Drive was reconstructed as a 4-lane facility only 1/2-mile to the east of the 28th Avenue corridor. This route can/does serve much of the same purpose as the proposed County Highway R extension.
- **Land Acquisition:** Although significant County funding has been invested in right-of-way acquisition in the corridor, a substantial amount of real estate would still need to be purchased.

Based on these findings, the NCWRPC cannot recommend moving forward with the proposed extension of County Highway R. Notwithstanding the lack of support for the Local Circulation Plan, the NCWRPC is not certain it would include this project if developing a local area circulation plan, today. It may not be the best use of limited public resources.

## **Consideration Of Policies Ancillary To The Highway System**

Part of this study was to evaluate policy issues with the potential to impact highway maintenance expenditures. A number of elements were looked at by NCWRPC and Highway Department Staff, with two ultimately being selected for inclusion in the study. The two elements to be discussed include bicycle accommodations and All Season Road designation.

### **Bicycle Accommodations**

The higher traffic volumes and speeds on county highways make bicycling a safety concern. Due to these issues, accommodating bicycles on county highways requires additional infrastructure investment, and that infrastructure brings additional maintenance costs. At the same time, there is growing interest in bicycling nationally as well as on the local level here in Marathon County. There are a number of organized groups for a wide variety of bicycling formats including road biking and touring, mountain biking, racing, adventure cycling, and fat tire. These groups sponsor and promote events that bring visitors and recognition to the area.

### **Bicycle Facilities Planning**

There are two primary plans for bicycle facilities at the County level. The Bicycle Plan for the Wausau Metropolitan Area was updated in 2021. The Bicycle Plan for the Non-Urbanized Area of Marathon County is significantly out of date at this time. Currently, the Marathon County Highway Department and the Parks, Recreation & Forestry Department are coordinating on the development of a new county-wide bicycle plan for the non-urbanized area.

<b>Table 10 - Paved Shoulder Recommendations, County Highways Bicycle Plan for the Wausau Metropolitan Area</b>			
<b>Road</b>	<b>From-To</b>	<b>Miles</b>	<b>Cost Estimate</b>
X	Maple Ridge Rd - Wood Rd	1.8	\$166,000-202,000
X	Maple Ridge Rd - South Rd	2.8	\$258,000-314,000
KK	Shurwood Ln - B	2.1	\$284,000-346,000
X	Z - Northwestern Ave	2.4	\$217,000-264,000
X	Z - Highway 52	1.6	\$147,000-178,000
Z	X - 57th St	1.3	\$120,000-146,000
WW	Hwy 51 SB Ramp - K	1.0	\$91,000-110,000
K	WW - Emery Drive	1.4	\$192,000-233,000
U	Westwood Dr - Sunnyvale Ln	3.5	\$317,000-386,000
WW	W - East St	1.7	\$78,000-95,000

*Source: Wausau MPO 2021.*

These plans address state, County and local facilities with regard to developing a cohesive network of bicycle routes and trails. Table 10 displays the paved shoulder recommendations for routes proposed in the Wausau Metropolitan Area plan. The plan also calls for off-road trails adjacent to County Highway N from Highway KK to the town boundary and adjacent to Highway X from XX to Pleasant Drive. The Highway N project would extend the existing trail along the highway to eventually connect with trails to Nine Mile and Rib Mountain State Park. The Highway Department typically works to facilitate off road facilities by permitting facilities on or across right-of-way when appropriate. However, these facilities are typically constructed and maintained by local municipalities as the majority of the facility users are local residents.

### *The Benefits of Bike Routes and Trails*

The potential benefits of biking are significant and help to justify expenditures required to develop a comprehensive, safe, and attractive bicycle network. The public recognizes the benefits of biking beyond its recreational values on a national, State, regional, and local level. These benefits include the following factors:

- **Transportation:** *General transportation benefits of bicycling include a wider range of transportation choices, reduced congestion, decreased need for parking, and the implementation of safety improvements that benefit all roadway users. Biking is among the most efficient modes of transportation in regards to operation, development of facilities, and maintenance.*
- **Health and Fitness:** *Bicycling is among the best forms of exercise and can therefore effectively enhance the health of individuals and the communities.*
- **Recreation:** *Paths developed for bicycling provide recreation opportunities.*
- **Economic:** *Bicycling translates into tourism. WisDOT has targeted bike touring and trail riding as high potential tourism activities since the 1980s and has recently added mountain biking to that list. The State annually distributes over 50,000 Wisconsin bike maps. Several studies of State trail-related expenditures have been conducted showing expenditures ranging from \$33 to \$49 per person per day.*
- **Social:** *Bicycling stimulates the social interaction of families and community. Paths can help provide a sense of place and a source of community pride.*
- **Quality of Life:** *The extent of bicycling in a community has been described as a gauge of how well it is advancing its citizens' quality of life. Streets that are busy with bicyclists are considered environments that work at a more human scale and foster a heightened sense of place. These benefits are difficult to quantify, but*

*when asked to identify sites that they are most proud of, residents often name spots where bicycling is common, such as a popular bikeway or riverfront project.*

- ***Environmental:*** *Biking consumes no fossil fuels and does not contribute to noise or air pollution. Further, careful development of bike facilities can protect and enhance natural resources.*

Significant overlap exists between these benefits. One benefit can often build upon another. For example, quality of life is an increasingly important factor in attracting and retaining businesses in a community, and bike facilities are important contributors to quality of life. By enhancing the quality of life through the development of multimodal corridors, economic benefits may also be achieved. Another example of potential economic gain for a community would result from the health and fitness benefits of trails. The health improvement due to increased outdoor exercise can help control medical costs over the long term.

#### *Current Marathon County Highway Policy on Shoulder Paving*

The Marathon County Highway Department has a shoulder paving policy established to guide when and where it will pave shoulders on county highways. For typical pavement replacement projects, shoulders will be paved based on traffic volumes, truck percentages and local conditions. Paved shoulder width will be one-foot where projected traffic volumes are under 3,500 ADT but can be expanded to 3-5 feet where local conditions warrant and projected volumes are over 2,500 ADT. Over 3,500 projected ADT, shoulders will typically be paved at three-feet but up to five-feet depending on local conditions.

For typical pavement rehabilitation projects, earthwork and ditch re-grading is not involved; therefore the width of any paved shoulder would be limited to the width of the existing roadbed.

On highways identified in the Bicycle Plan for the Wausau Metropolitan Area, the width of the paved shoulder will typically vary between three and five feet depending on traffic volume, truck percentage and local conditions/land use.

County Highways not included in the Bicycle Plan for the Wausau Metropolitan Area may have paved shoulders constructed with pavement replacement projects if requested by the local community. The request must include justification for the additional infrastructure investment. If approved by the Department, the community is responsible for funding 50% of the cost of the additional work (including material, equipment, labor and administrative costs). The community will also be responsible for 50% cost share of the shoulder paving when the road is re-paved in the future.

### Policy Options and Recommendations

Based on its review of this issue, the NCWRPC makes the following recommendations for consideration regarding bicycle accommodations on the County Highway System:

- Maintain current Marathon County Highway Shoulder Paving Policy.
- Work with the bicycling community within Marathon County to review shoulder rumble strip implementation.
- Work to provide short connections to off-road recreational trails implemented by Marathon County Parks, Recreation and Forestry or local municipalities.
- Consider allocation of funding as needed to be used for direct infrastructure such as shoulder paving or for partial matching to help leverage federal / state grant dollars for bicycle infrastructure.

### All Season Roads

The Marathon County Highway Department is charged with maximizing and protecting taxpayer investment in the County Highway System. Weight restrictions are one way to prolong the life of County Highways.

These types of weight restrictions can be defined as imposed special weight limitations on any such highway or portion thereof which, because of weakness of the roadbed due to deterioration or climatic conditions or other special or temporary condition, would likely be seriously damaged or destroyed in the absence of such special limitations.

The most common type of weight restrictions are seasonal weight limits. These limits are implemented when the frost begins to leave the roadbed. The varying conditions affect the structural strength of the pavements and the base materials under the roadway. This results in roadbed soils being saturated and having less strength to hold up to repeated heavy loads. These highway sections are posted with reduced weight limits. These limits are typically in beginning in March and ending in April or May.

In recognition of the importance of the dairy industry within the County, Marathon County has a permit system in place to allow milk haulers to transport milk from the point of production along posted roadways to the nearest unposted road.

### Current Marathon County Highway Policy on All Season Roads

Individuals, businesses, or municipalities occasionally request the seasonal weight limits be removed from a County Highway, making it an "all season" road. The Marathon County Infrastructure Committee will review each request for all season roads

on an individual case basis. A decision will be made based on an engineering analysis, benefit to the community it serves, cost and reimbursement from the requestor.

### Policy Question and Recommendations

The NCWRPC was asked to consider the potential for converting all of the County Highways to all season status. Approximately 463 of Marathon's 611 highway miles, about 75%, require seasonal weight limits at this time. The segments all vary in the conditions making them subject to weight limitations, and its not only a function of how the road is constructed, but also the surrounding and underlying environmental conditions. All these factors make it difficult to start coming up with specific numbers to quantify conversion. To accurately identify expected costs a major engineering study would be needed. It's likely that such a study would come back with findings that nothing can really, effectively, be done on a significant number of segments based on conditions present.

Generally speaking, to make a road "all-season" requires the rebuild of a solid base with attempts to mitigate underlying factors that compromise that base, and the construction of a heavy-duty road on top of that. Essentially, a full reconstruct with a cost range of \$1.5 to 2 million per mile. With 463 miles of road under seasonal weight limits, it would require approximately \$694,500,000 not accounting for inflation.

Based on its review of this issue, the NCWRPC makes the following recommendations for consideration regarding all season road designation of County Highways:

- Maintain current Marathon County Request for All Season Roads Policy.
- Consider incorporating the Segment Priority Rank Score developed for this study into the evaluation criteria for All Season Road Conversion Project selection.
- Pursue additional/supplemental funding sources such as TEA (Transportation Economic Assistance) grants to fund All Season Road Conversion Projects.

#### **4. HIGHWAY SYSTEM MAINTENANCE AND COST ASSUMPTIONS**

A primary purpose of a highway maintenance program is to maximize the life of the pavement while minimizing the cost of maintaining the roadways. A "life cycle" approach is recommended to optimize pavement life.

A life-cycle approach focuses on extending the life of the pavement across the entire network rather than concentrating expenditures on the poorest rated roads. The money saved from less reconstruction can be used to further extend pavement life on other higher rated roads. Following this approach long-term will result in a gradual decline of miles rated as poor as pavement life increases.

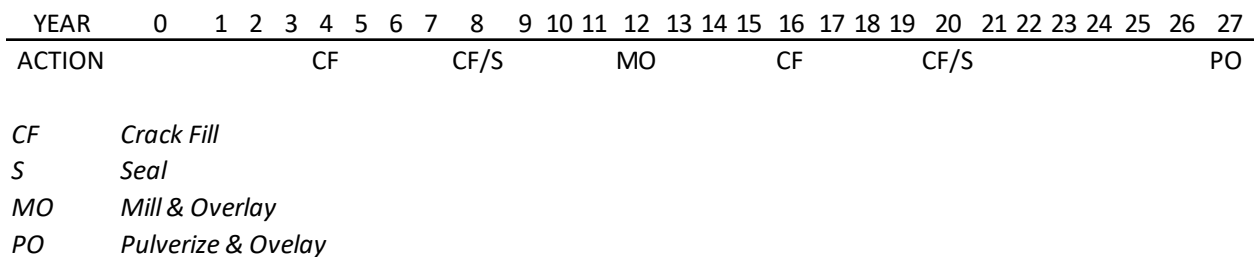
#### **"Best Management" Practices for Extending Pavement Life Cycle**

Best management practices (BMPs) for highways involves the proper and timely scheduling of maintenance techniques. The following maintenance actions are generalized for planning purposes, see Table 11. Figure 3 presents an illustrative life cycle maintenance schedule for a pavement. Actual timing and frequency will depend on the condition of the roadway and cost could fluctuate for various reasons.

See Appendix E for an illustrative highway maintenance plan based on the segment priority system and the life cycle BMP approach discussed here.

<b>Table 11 - Planning Level Pavement Lifecycle Maintenance</b>		
<b>Maintenance Action</b>	<b>Frequency</b>	<b>Cost Per Mile</b>
Crack Filling	3-4 Years	\$4,000
Sealing	7-12 Years	\$18,500
Mill & Overlay	10-15 Years	\$130,000
Pulverize & Overlay	20-30 Years	\$250,000
Reconstruct	When Needed?	\$1,500,000
<i>Source: Washington County, Marathon County &amp; NCWRPC.</i>		

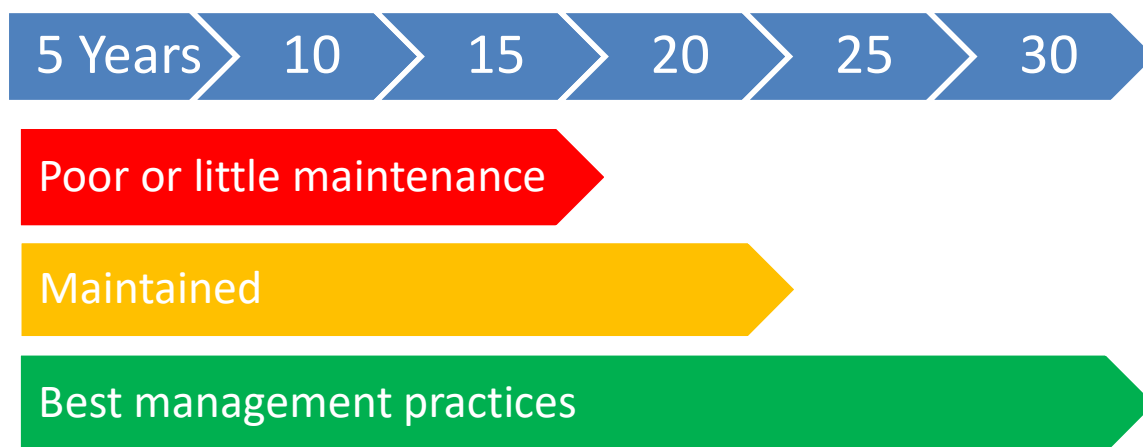
**Figure 3 - Illustrative Pavement Lifecycle**



*Source: Washington County, Marathon County & NCWRPC.*

Preventive maintenance such as crack filling and chip sealing extend the life of pavement by sealing the surface to keep water out. A mill and overlay restores structural integrity and improves drainage, extending the life of the original pavement. Experience shows that at mill and overlay on a 10 to 12 year old pavement can extend the life of the pavement out another 12 to 15 years until a pulverize and overlay is required between the 25 and 30-year mark. Without that mill and overlay, pulverization might be needed at the 20-year mark. This is illustrated in Figure 4.

**Figure 4 - Effect of Maintenance on Pavement Life**



*Source: Ruckert-Mielke Engineers, 2021*

### Crack Filling

Crack filling is the process of cleaning and sealing cracks in pavements. This technique is used to fill longitudinal and transverse cracks that are wider than 1/8 in. The primary purpose of crack filling is to prevent surface water infiltration into the pavement foundation. It is more cost effective to use this technique as a preventative measure when the overall pavement condition is good or better. Sealing cracks in a deteriorated pavement is not cost effective.

To maintain a program of crack filling in accordance with best management practices, Marathon County would need to complete approximately 102 miles per year. At approximately \$4,000 per mile, this equates to about \$408,000 annually.

### Sealing

A seal coat is an application of asphalt emulsion followed immediately with an aggregate cover. Seal coats can waterproof the surface, provide low-severity crack

sealing, and restore surface friction. The primary purpose of seal coating is to protect the roadway from deterioration caused by sun and water. A seal coat provides a waterproof membrane that keeps the pavement from becoming brittle and cracking and also helps keep water from seeping through the pavement and causing problems to the base material.

Fog seals are diluted asphalt emulsions or rejuvenating solutions that are typically applied to new pavements to preserve the integrity of the asphalt binder. Preserving the asphalt binder reduces aggregate loss at the surface of the asphalt and deters cracking of the pavement. The primary purpose of fog seals is to maintain newer pavements and keep them in a good condition state for a longer period of time.

To maintain a program of sealing in accordance with best management practices, Marathon County would need to complete approximately 51 miles per year. At approximately \$18,500 per mile, this equates to about \$943,500 annually.

### Resurfacing

Road resurfacing projects typically consists of milling (grinding) the old asphalt. Milling is necessary when the upper surface layer of pavement has deteriorated considerably. Significant surface pavement distresses and more extensive “thermal” cracking need to be removed with a full width and uniform depth milling process. The new asphalt overlay is typically 2 inches thick but can vary on a project-by-project basis. This process restores the structural capacity and proper drainage and extends the life cycle of the original pavement.

When a pavement has advanced deterioration or is failing, a mill and overlay is not a feasible option. Asphalt pulverizing and relay is a very cost-effective way to essentially "reconstruct" a pavement if no utility repairs or grade modifications are needed. Pulverizing is the process of breaking up the existing pavement and blending it in to the existing base. The new base is re-compacted, graded and made ready for paving. The new asphalt overlay is typically 4 inches thick but can vary on a project-by-project basis.

To maintain a program of pavement replacement in accordance with best management practices, Marathon County would need to complete approximately 24 miles of mill and overlay and 12 miles of pulverize and overlay per year. At approximately \$130,000 per mile for mill and overlay, this equates to about \$3,120,000 annually. At approximately \$250,000 per mile for pulverize and overlay, this equates to about \$3,000,000 annually. Combined resurfacing needs are approximately \$6,120,000 per year.

## Reconstruction

Like most counties, Marathon relies heavily on Pulverize and Relay to renew pavements. Typically, reconstruction is only undertaken when capacity expansion (widen lanes, expand from 2 to 4-lanes) is required, safety issues call for alignment or grade changes, or utilities are involved. In a full reconstruct the existing asphalt and base are completely removed and replaced.

## Bridges

Another component to consider with road improvement and budgeting is bridge improvement. Bridges are typically designed to have a 75-year service life. Appendix C identifies and anticipated replacement year for each bridge based on its construction date and the 75-year life cycle. However, because different bridges will age at different rates due to a variety of factors, bridge conditions are regularly monitored. Bridges are required to undergo regular, detailed engineering inspections. These evaluations determine the structural "sufficiency" of a bridge to support the traffic load it is experiencing. Noticeable change in sufficiency rating will cause a shift in the anticipated replacement schedule with declining bridges being moved up versus bridges holding their own in terms of sufficiency.

A planning level cost estimate factor for bridge replacement of \$400 per square foot of bridge deck area is used. Typically, Marathon County has about three bridge replacements, with two through the federal bridge program and one with fully local funding, scheduled per year depending on project amounts and available funding.

## Marathon County Roadway Safety Plan

In 2021, engineering consultants completed a County Roadway Safety Plan for Marathon County. The stated goal of this plan "... is to reduce fatal and serious injury crashes on County roads by providing Marathon County staff with a list of prioritized locations that have safety issues and guidance on specific safety strategies to implement." The plan focuses on engineering-related roadway concerns and how to improve the infrastructure. High priority projects recommended for implementation are summarized, with cost factors, in Table 12.

Typically, these projects will be implemented in conjunction with major maintenance projects on the affected segment. Funding requirements will fluctuate with size of the safety improvements associated with the segments selected for work in a given year. However, for planning purposes in order to complete the recommended high priority safety projects over the approximately 30-year span of this study, and average annual budget allocation of about \$143,000 would be required.

<b>Table 12 - Summary of High Priority Safety Projects For Marathon County</b>				
<b>Safety Strategy</b>	<b># of Projects</b>	<b>Total Miles</b>	<b>Cost Factor</b>	<b>Total Cost</b>
Clear Zone Maintenance	8	31.8	\$50,000/mi	\$1,590,000
Enhanced Edgeline	33	114.1	\$2,000/mi	\$228,200
Shoulder Rumble Strips	67	52.8	\$5,850/mi	\$308,880
Shoulder Paving & Safety Edge	7	25.6	\$54,000/mi	\$1,382,400
Shoulder Paving (Curves)	33	4.8	\$54,000/mi	\$259,200
Centerline Rumble Strips	3	12.8	\$3,600/mi	\$46,080
Install/Upgrade Chevrons	51	n/a	\$3,960 ea.	\$201,960
Advanced Curve Warning/Speed Advisory	54	n/a	\$1,440 ea.	\$77,760
Upgrade Intersection Signs & Markings	18	n/a	\$2,640 ea.	\$47,520
Reconstruct Intersection to Single "T"	1	n/a	\$150,000 ea.	\$150,000
<b>Total</b>				<b>\$4,292,000</b>

*Source: SRF Consulting Group Inc. 2021*

**Prioritizing Highway Segments for Maintenance**

One of the first steps in establishing a long-term highway maintenance schedule is determining priorities within the system.

Functional class is useful in describing and comparing the general character of service various roadways provide. However, since most of the County's highways are collectors (typically major or minor), this does not provide sufficient distinction between segments in the network to be of use in establishing a priority system.

For purposes of this study, the NCWRPC devised a system to assign a rank, or score, to each highway segment to represent its level of importance, or priority, within the Network. Basically, when assigning limited resources, the segments with the highest priority rank should be addressed before a segment with a lower rank score.

The scoring system has two main components: 1) an average daily traffic rank score and 2) a land activity rank score. See Appendix B for the rank scores of each segment.

The average daily traffic or ADT rank is based on where the segment's traffic count falls within ten 250 ADT increments from less-than-250 to greater-than-2,250, see Map 9. The higher the traffic, the higher the rank. The more traffic a road carries, the more important it is within the system in terms of vehicles / people that use it. In addition, higher traffic causes more wear on the roadway, necessitating a higher level of maintenance.

The land activity rank takes into account the intensity of land use surrounding each segment. Geographic Information Systems (GIS) analysis was used to measure parcel development density utilizing Marathon County land records data and combined that with employment data of the number of persons employed in each parcel, see Map 10. The range of results was then spread into ten groupings based on natural breaks in the data and assigned to highway segments based on proximity. Basically, the higher the density of development and level of employment, the higher the rank. Its a measure of land use activity with emphasis on employment that helps visualize how the Highway System is supporting the County's economic engine.

The two factors, traffic and land use, are then combined into an overall rank score ranging from 1 to 20, see Map 11. The higher the rank score, the higher the priority of the segment.

## 5. REVENUE & GAP ANALYSIS

### Revenue

This section will identify the highway maintenance funding sources currently being utilized by the Marathon County Highway Department. These funding sources include the following:

- Vehicle Registration Fee
- Local Road Improvement Program
- County Tax Levy
- General Transportation Aids (GTA)
- Surface Transportation Program
- Local Bridge Program
- Supplemental Funding

#### Vehicle Registration Fee

Wisconsin law allows local units of government to collect an annual vehicle registration fee in addition to the regular annual registration fee paid to the state. The fee applies to most vehicles kept within the municipality or county. Marathon County instituted a registration fee of \$25 per vehicle in 2017. State law requires that the fees collected shall only be used for transportation purposes. In Marathon County, the registration fees are dedicated to fixing County roadways and bridges. Table 13 shows available registration fee data for Marathon County. The fee generates about \$3 million in funding per year for highway maintenance in the County. Net growth in registrations appears to be relatively low.

<b>Year</b>	<b>Total Registrations</b>	<b>Total Fees</b>
2017	117,388	\$2,934,700
2019	117,798	\$2,944,950

*Source: WisDOT 2021.*

#### Local Road Improvement Program

The WisDOT Local Road Improvement Program (LRIP) assists local governments in improving seriously deteriorating highways, roads, and streets. For counties, the basic program is referred to as County Highway Improvement (CHI) and the additional discretionary program is CHI-Discretionary or CHID which allows counties to apply for additional funds for high-cost road projects. LRIP is a reimbursement program which

pays up to 50% of total eligible costs, with projects awarded every two years on a biennial budget cycle. On average, Marathon County receives about \$250,000 per year. However, LRIP reimbursements range from \$0 to \$660,000 in any given year.

### County Tax Levy

The Department currently relies on approximately \$3.75 million per year of County funds. This allocation has generally remained flat overall as the County has worked to hold the line on budgets.

### General Transportation Aids

General Transportation Aid or GTA enables local governments to receive state aid payments to offset the cost of road maintenance and traffic operations. The funding sources of these aid payments are the fuel taxes and vehicle registration fees collected by the State of Wisconsin. GTA is WisDOT's second largest program. Distribution of GTA funds is based on a six-year costs average.

Transportation-related expenditures and revenues incurred by local governments are necessary factors in the calculation process. In Marathon County, GTA is used to offset operational costs but isn't tied to the paving or bridge budgets. GTA funds are used for general maintenance and repairs, shoulder and structure maintenance, roadside facilities and vegetation management, pavement marking and signage, and administration. Annual expenses are subject to project timing issues often beyond the control of the County and can be difficult to maintain. Annual budget, including CIP, allocations by the County Board can also impact averages.

### Surface Transportation Program

The Surface Transportation Program allocates federal funds in urban (STP-U) and rural (STP-R) areas.

STP-R uses a statewide formula ranking process to distribute funding through a formula based 60 percent on a county's proportionate share of statewide rural centerline mileage and 40 percent on its proportionate share of statewide rural registration. STP-Rural funds may only be spent outside urban boundaries. In Wisconsin, county highway commissioners set priorities for STP-R funding within their counties. STP-Rural projects are funded 80 percent federal and 20 percent local. A roadway must be functionally classified as a major collector or higher to qualify for STP-R funding.

Due to the more complex federal project requirements, counties typically "save up" their allocations to fund a large project. In past ten years, Marathon County has had two STP-R projects for \$830,000 in 2014 and \$1.1 million in 2019. These projects are not constructed by County crews.

STP-U uses population as a basis for funding distribution. Urban area designations are federally determined by population density. The Wausau Metro Area is designated through this process, and the Wausau Area Metropolitan Planning Organization (MPO) is responsible for allocating funds to projects. STP-U funds must be spent within the Metropolitan Planning Area (MPA) boundary. MPAs include the census-defined urbanized area plus contiguous areas expected to become urbanized within the 20-year forecast period of the MPO long-range transportation plan.

STP-Urban projects are typically funded at 80 percent federal and 20 percent local, but the MPO can adjust matching to a minimum of 50 percent federal share. Marathon County works with the communities of the Wausau MPO to program projects of regional significance to the metro-area while minimizing conflict with other local project needs. Similar to STP-R, these funds are targeted for larger projects and are contracted rather than being built with County crews due to program complexity. In past ten years, Marathon County has had two STP-U projects for \$1.5 million in 2011 and \$500,000 in 2019.

### Local Bridge Program

Wisconsin uses a statewide ranking process to distribute Local Bridge funding as required in Wisconsin Statute 84.18(5). The formula uses Statewide Bridge Replacement Cost as a basis for distribution of funds. Each county gets a proportional share of the total allocation based on a statewide average cost of replacing those bridges with a sufficiency rating (SR) less than 50. County highway commissioners establish bridge priorities within their county, and projects are funded at a cost share of 80 percent federal or state and 20 percent local. Over the last ten years, Marathon County has received, on average, about \$425,000 per year in local bridge program funding. However, bridge program reimbursements range from \$0 to \$1.4 million in any given year. The County funds its share of the bridge program through Capital Improvements Programming (CIP) separate from pavement maintenance.

### Supplemental Funding

There are less regular / cyclical funding sources that contribute notable amounts to the highway maintenance revenue stream. In Marathon, these include Bureau of Indian Affairs (BIA) and LRIP-Supplemental (formerly MLS, Multi-modal Local Supplemental). LRIP-S began as a one-time stimulus-type program, but due to its high-level of popularity and political posturing, it is shaping up to be an on-going program. Under the original program, Marathon County obtained \$1 million in 2020. With the new program moving forward, it is anticipated that Marathon County could see about \$700,000 every other year. Over the past ten-years, Marathon County has received two separate, "one-time" reimbursements from BIA for about \$500,000 each. Within the next few years,

another reimbursement of \$500,000 is anticipated from BIA. On average, Marathon County receives about \$350,000 per year in supplemental funding. However, supplemental reimbursements are expected to range from \$0 to \$1 million in any given year.

**Gap Analysis**

Previous sections of this study have discussed life-cycle maintenance costs and revenue sources for the Marathon County Highway System. In this section, those factors are combined to identify the funding gap between the anticipated costs of a complete life-cycle maintenance program and the current level of funding available.

Projected expenses are adjusted for inflation and anticipated increases in revenues are accounted for. Some programs, such as LRIP, have remained stagnant and have not grown over time making it difficult to project increases. Table 14 presents a summary of the gap analysis between life-cycle maintenance costs and program revenue through 2050. See Appendix F for detailed breakdowns by category and year.

<b>Table 14 - Summary County Highway Maintenance Cost-Revenue Gap</b>			
<b>Period</b>	<b>Costs*</b>	<b>Funding</b>	<b>Shortfall</b>
2026 - 2030	\$46,575,872	\$38,734,426	(\$7,841,446)
2031 - 2035	\$53,994,201	\$38,998,496	(\$14,995,705)
2036 - 2040	\$62,594,077	\$39,267,219	(\$23,326,859)
2041 - 2045	\$72,563,691	\$39,540,678	(\$33,023,013)
2046 - 2050	\$84,121,206	\$39,818,956	(\$44,302,250)
<b>Totals</b>	<b>\$319,849,047</b>	<b>\$196,359,774</b>	<b>(\$123,489,273)</b>
<i>Detailed breakdown of projections are in Appendix F.</i>			
<i>*Costs adjusted for inflation, include crackfilling, seal coating, pavement replacement &amp; safety improvements.</i>			
<i>**Funding includes registration fees, LRIP, STP, supplemental and county dollars.</i>			

Current spending on highway pavement maintenance is just under \$8 million annually (around \$39 million for a five year period). Funding from external sources like registration fees and grants is currently around \$4 million with another, nearly \$4 million from the general fund. Over the last several years, this level of funding has proven to be optimal for maintaining the highway system in very good condition at that average PASER rating at 7. Shortfalls are avoided through careful project scheduling.

However, as costs continue to rise, shortfalls will become more difficult to avoid, and it will become harder to maintain the system at the current level. By 2026, the gap between funding and costs is anticipated to be just over \$1 million for the year and increasing to \$2 million by 2030. The total gap for the period from 2026 to 2030 is

expected to be about \$7.8 million. As costs continue to increase, the gap will continue to grow each year, approaching \$10 million annually in 2050 (refer to Appendix F). If nothing is done to address the situation, by 2050 the total, overall gap will exceed \$120 million.

A primary concern with these numbers is the fact that, while costs continue to rise with inflation, funding sources have remained relatively static. No inflation factor is built in. Transportation aids, registration fee receipts and general fund allocations have all been flat with limited prognosis for increase.

Options to deal with this widening gap between the increasing cost of maintenance and the available funding include consideration of the following:

- Consider jurisdictional transfer of highway segments to reduce the overall mileage being maintained.
- Accept a lower quality pavement condition rating target than the 7 currently established by the County Board.
- Increase general fund allocation.
- Expand borrowing/other revenues.
- Periodically adjust registration fee to account for inflation.

## **6. RECOMMENDATIONS**

During the course of this study, the NCWRPC identified a number of actions that would facilitate highway maintenance planning and programming. These include the following:

- Consider Utilization of Priority Scoring System to Rank Highway Segments for Maintenance.
- Consider a Highway Functional/Jurisdictional Study.
- Update Local Comprehensive Plans.
- Explore Additional/Alternative Funding Opportunities.
- Consider Implementation of Highway Maintenance Tracking Database.

Each of these recommendations is discussed below:

### **Consider Utilization of Priority Scoring System to Rank Highway Segments**

Because traditional systems such as functional classification do not provide a sufficient breakdown of highway segments aid in ranking potential projects, a unique scoring system was devised as part of this study. This system assigns a rank, or score, to each highway segment to represent its level of importance, or priority, within the Network. Basically, when assigning limited resources, the segments with the highest priority rank should be addressed before a segment with a lower rank score.

The scoring system has two main components: 1) an average daily traffic rank score and 2) a land activity rank score. The more traffic a road carries, the more important it is within the system in terms of vehicles / people that use it. In addition, higher traffic causes more wear on the roadway, necessitating a higher level of maintenance. The land activity rank takes into account the intensity of land use surrounding each highway segment as measured by parcel development density and employment levels. It's an indicator of land use activity with emphasis on employment that helps visualize how the Highway System is supporting the County's economic engine. Basically, the higher the density of development and level of employment, the higher the rank

The two factors, traffic and land use, are then combined into an overall rank score ranging from 1 to 20. The higher the rank score, the higher the priority of the segment. The ranking can be updated and refreshed with new traffic count and/or parcel data. The County may want to consider implementing some form of regular traffic counting program if the ranking system is adopted.

This system could be used to help prioritize/rank construction and maintenance projects. It could also aid in identifying candidates for all-season status, with higher scores reflecting a greater role in supporting the county's economic engine.

### **Consider Implementation of Highway Maintenance Tracking Database**

Create a database that is easy to use and update maintenance work as it happens on each highway segment. This would allow analysis of different paving treatments to monitor performance. Summary reports could be created by highway and/or year to give an overall picture of what is going on with maintenance of the highway network. Related documents could be attached and organized based on segments.

### **Consider a Highway Functional/Jurisdictional Study**

As part of this study, a basic review of function of the Marathon County Highway System was completed. A number of observations were made regarding classification, traffic volume, and character (urban-rural) of the System.

In order to more fully develop these concepts into an actionable plan, a detailed highway functional/jurisdictional plan with traffic count validation is recommended. These types of plans contain recommendations relative to function in terms of location and the number of lanes of each facility, and to which level of government—state, county, or local—should logically be responsible for each of the various facilities comprising the total highway system.

### **Update Local Comprehensive Plans**

Many local comprehensive plans across Marathon County need to be updated. More accurate local plans in terms of anticipated future growth help to inform highway maintenance planning and thereby support the following:

- Sustainability, land use and transportation linkages, and community access.
- Optimized use of existing infrastructure by balancing land use development patterns.
- Enhance linkages to facilitate enhanced economic development.

### **Explore Additional/Alternative Funding Opportunities**

To help address potential funding gaps, alternative funding sources should be explored. There are some current funding programs that have other primary goals outside of roadway maintenance. Some of these include safety, economic development, bicycle

and pedestrian accommodation purposes that can align with County goals in some cases.

Stimulus funding is typically "one-time" in nature, but it can help catch-up or get ahead on maintenance programming. Marathon County should consider prioritizing upcoming high-cost roadway and bridge projects for any future stimulus windfalls.

### Vehicle Registration Fee

In light of constraints on primary funding sources such as levy limits and pressure on the highway trust fund, the ability to increase highway funding even to keep pace with inflation is limited. This is a primary reason behind the enabling of the local vehicle registration fee. In communities with registration fees, the fees currently range from \$10 to \$40. Some communities have incremental increases built in. Marathon County currently has a moderate fee in place at \$25, but this is a static amount with no stepped increase to account for increasing costs and inflation. Phased increases in the vehicle registration fee would be an option for addressing the long-term funding gap for highway maintenance.

### Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP) is a federal reimbursement program that funds highway safety projects at sites that have experienced a high crash history. The overall objective of HSIP is to develop and implement, on a continuing basis, stand-alone safety projects designed to reduce the number and severity of crashes on all streets and highways (state and local). The funding ratio for HSIP funds is 90 percent federal, and usually requires a 10 percent match of state and/or local funds.

### Transportation Economic Assistance

The goal of the Transportation Economic Assistance (TEA) program is to attract and retain businesses in Wisconsin and thus create and increase the number of jobs. Grants of up to \$1 million are available for transportation improvements that are essential for an economic development project. The project cannot be speculative and local communities must assure that the number of jobs anticipated from the proposed project will materialize within three years from the date of the project agreement and remain for another four years. The 50% local match can come from any combination of local, federal, or private funds or in-kind services.

### Transportation Alternatives Program

The Transportation Alternatives Program (TAP) is a federal program that funds bicycle and pedestrian facilities and Safe Routes to School projects. The TAP program is 80/20

cost sharing. This program should be considered where paved shoulders are needed which can double as bicycle accommodations.

### Federal Stimulus Programs

The Covid-19 pandemic has severely challenged the nation, including Marathon County, and sent the world into a spiraling economic crisis. In response the federal government has put out several waves of stimulus to buoy the economy. Early phases of stimulus went into fighting the pandemic and providing relief to individuals, businesses and other entities. Later stages of stimulus expanded to include infrastructure funding with the American Rescue Plan Act (ARPA). State and local governments such as Marathon County are evaluating how to best invest their ARPA allocations. There is also the possibility of unspent funding from previous phases being redirected to infrastructure.

The latest federal stimulus is the Infrastructure Investment and Jobs Act (IIJA). The IIJA is the largest long-term investment in public infrastructure in nearly a century. Through this Act, Wisconsin is expected to receive \$5.5 billion in federal highway formula funding for highways and bridges as well as \$2 billion in new Rural Surface Transportation Grant Program funds for improving and expanding transportation infrastructure in rural areas.

Marathon County should consider prioritizing upcoming high-cost roadway and bridge projects for any stimulus funding the county may receive. This may be an opportunity to fund major projects such as Highway XX and Highway X between Schofield Avenue and State Highway 29. Use of stimulus funding would allow construction of these projects without setting back the overall maintenance schedule.

## **NEXT STEPS**

This Highway System Study has discussed a variety of topics, including demographics, land use, traffic volumes, costs and revenues. Based on the gap analysis, we can see that current funding levels are not going to be adequate long-term as future costs increase dramatically over the next several years. As a result, if nothing changes, the system will decline as maintenance demands exceed available funding.

So, what can the County do? There are three major policy areas that need to be addressed to answer that question: the size of the highway system, the quality of the highway system, and how to fund the highway system. Each of these areas is explored further, below.

Does the County want to retain the highway system at its current size, expand the system or reduce the system?

Considering the increasing costs involved, expansion seems an unlikely option. An increase in county highway miles would require a proportional increase in the amounts of levy and capital improvements funding to maintain the additional miles.

What about a reduction in size? This would entail a process called jurisdictional transfer and requires that both sides agree. If it is determined that jurisdictional transfer is a possible option, then a highway functional/jurisdictional study is recommended to properly inform the transfer process. Function and jurisdiction were evaluated at a very high level for this report. While there appears to be potential for jurisdictional transfer based on urban/rural mix, roadway function and/or traffic levels, a dedicated study is needed to verify these assumptions.

A key question revolves around what the nature of the county highway system should be, particularly in terms of that urban/rural mix. This is critical considering the status of Highway X between Schofield Avenue and State Highway 29. This segment is at capacity, and the pavement is near end of life. This is a complex project and scoping discussions with local/state officials need to begin soon. The jurisdiction question should be resolved in advance, as it would need to be part of those discussions.

Does the County want to maintain the quality of the highway system as perceived by the traveling public at its current level, or should it be made better or is a lower standard acceptable?

The quality of a road surface is expressed in terms of a pavement condition rating. Marathon County uses the PASER system to evaluate and rate its highway pavement surfaces. The PASER system uses a 1 to 10 scale where 1 is a completely failed pavement and 10 is a brand new surface. The current policy of the County is to

maintain an overall average highway pavement rating of 7 on the PASER scale. This policy was established by the Marathon County Board in its County Strategic Plan as an outcome measure under its "Maintain infrastructure to support economic growth" objective.

As illustrated in the gap analysis for this report, utilizing best maintenance practices to maintain the condition of the highway system results in a significant funding shortfall as future costs increase. Considering these increasing costs, elevating the quality standard even one level, to an 8 for example, seems an unlikely option. Maintenance frequencies would need to be increased requiring higher levels of investment in each highway segment over the same time period.

Accepting a lower pavement quality standard, stepping down to a PASER rating of 6, for example, would entail increasing the time between pavement treatments, and would likely result in some segments getting to a "poor" surface condition before being maintained. The quality of the highway system as perceived by the traveling public would decline.

Assuming the County wants to maintain the highway system as it currently exists in terms of size and surface quality, it will need to dedicate more resources. As we can see in the gap analysis, the annual gap between funding and costs will continue to expand and by 2050 will be approaching \$10 million. The Infrastructure Committee and County Board need to begin discussions on how to address the widening gap between the increasing cost of maintenance and the available funding.

Some of these options include:

- Increase levy support through direct general fund allocation and/or increasing capital improvement program funding for highways.
- Expand borrowing/other revenue.
- Periodically adjust registration fee to account for inflation.

Based on increasing costs, the County will need to consider its capacity to increase support of the highway system via the tax levy. However, considering the constrained financial position all Wisconsin municipalities are in as a result of the state imposed levy limits, this may be difficult. Use of federal stimulus funding for highway capital improvement project programming in the near term may be able to ease some of this burden, but it is not a long-term solution.

If other options fall short, borrowing funds should be considered. The cost of borrowing has been very low for an extended period of time. Unfortunately, due to a number of factors, interest rates have recently begun to climb. While this situation is something that needs to be monitored and taken into account when developing a strategic

borrowing plan, economists are not predicting massive rate increases, and the cost of borrowing should remain relatively low.

In addition to federal stimulus funding, other aid programs may provide opportunities for additional funds to help close the gap. The County Highway Department does a good job of leveraging primary road funding sources like LRIP, STP, BIA and other supplemental programs. However, there are a number of smaller programs, such as HSIP, TEA or TAP, that can provide funding for highway projects when they can be aligned with alternative program goals such as safety, economic development and/or bicycle accommodations. See Section 5 of this report for brief overviews of these funding programs.

Adjusting the existing vehicle registration fee is another option that should be considered to help close the projected funding gap. Marathon County currently has a vehicle registration fee of \$25. This is a static amount with no built in increases to account for rising costs. An increase of \$5 in the vehicle registration fee would bring in an additional \$589,000 per year. A \$10 increase would yield nearly \$1.2 million annually, and \$15 would yield about \$1.7 million.

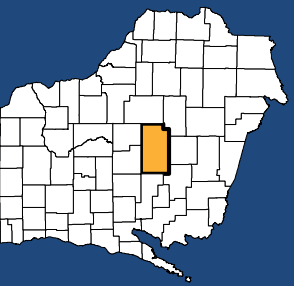
Overall, the County System cannot be maintained long-term with the level of annual funding currently allocated. Costs are climbing, and more funds are needed just to maintain the status quo.

**MAPS**

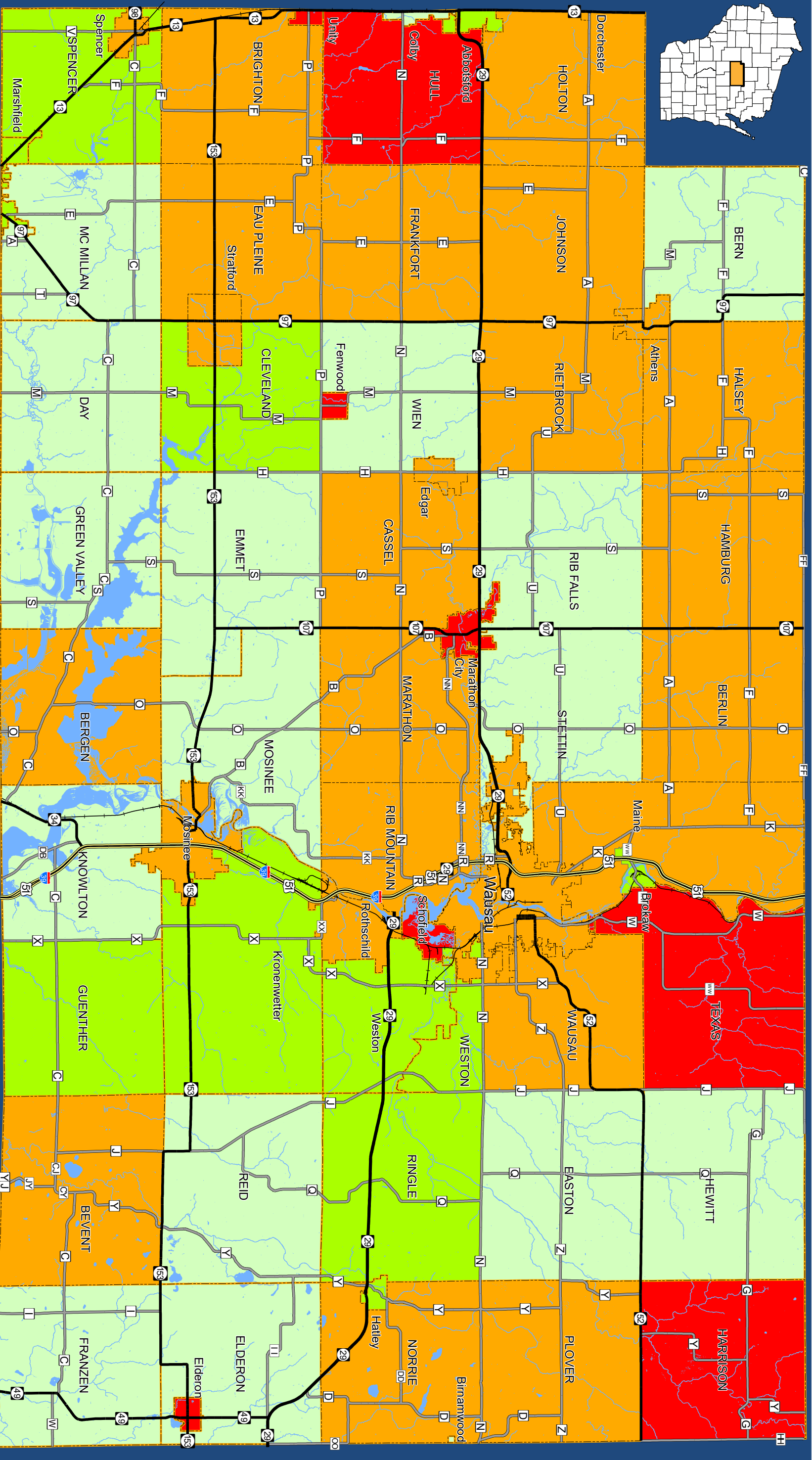
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**MARATHON COUNTY HIGHWAY SYSTEM STUDY**

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Map 1  
**Population Projection**  
**2010 - 2040**  
 Marathon County, Wisconsin



SOURCE: NCWRPC, DOA,  
 Marathon County Geo Services

**Highway System Study**

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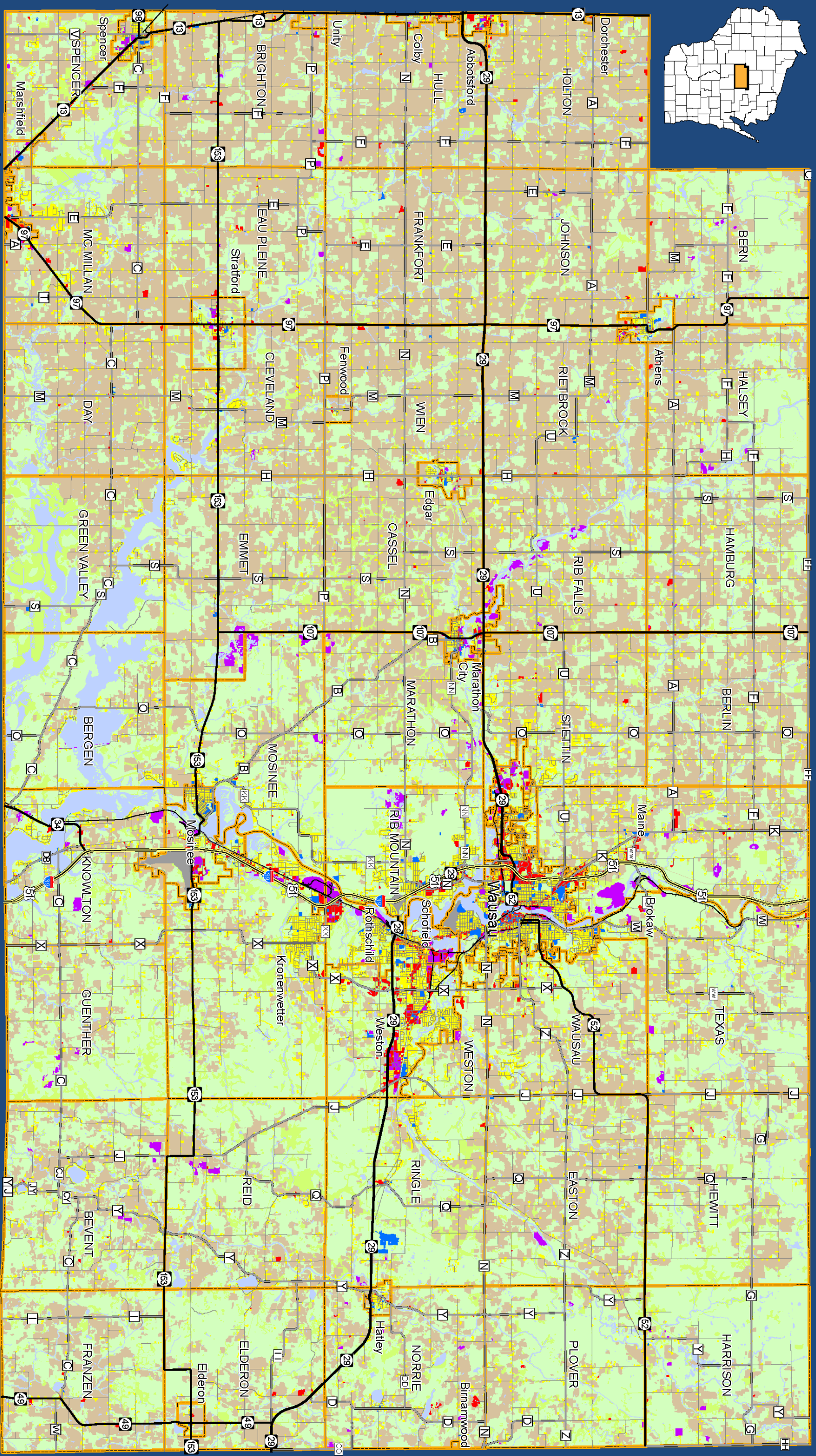


# Generalized Land Use

## Marathon County, Wisconsin

**Legend**

US Highway	Minor Civil Divisions	Agriculture
State Highways	Perennial Streams	Commercial
County Highways	Water	Governmental / Institutional
Local Roads	Railroad	Industrial
		Open Lands
		Woodlands
		Residential
		Transportation



SOURCE: NCWRPC, WIDNR,  
Marathon County Geo Services

# Highway System Study

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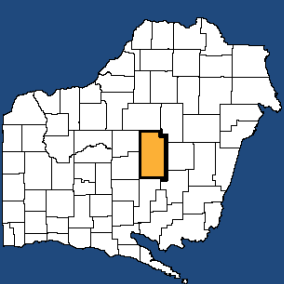
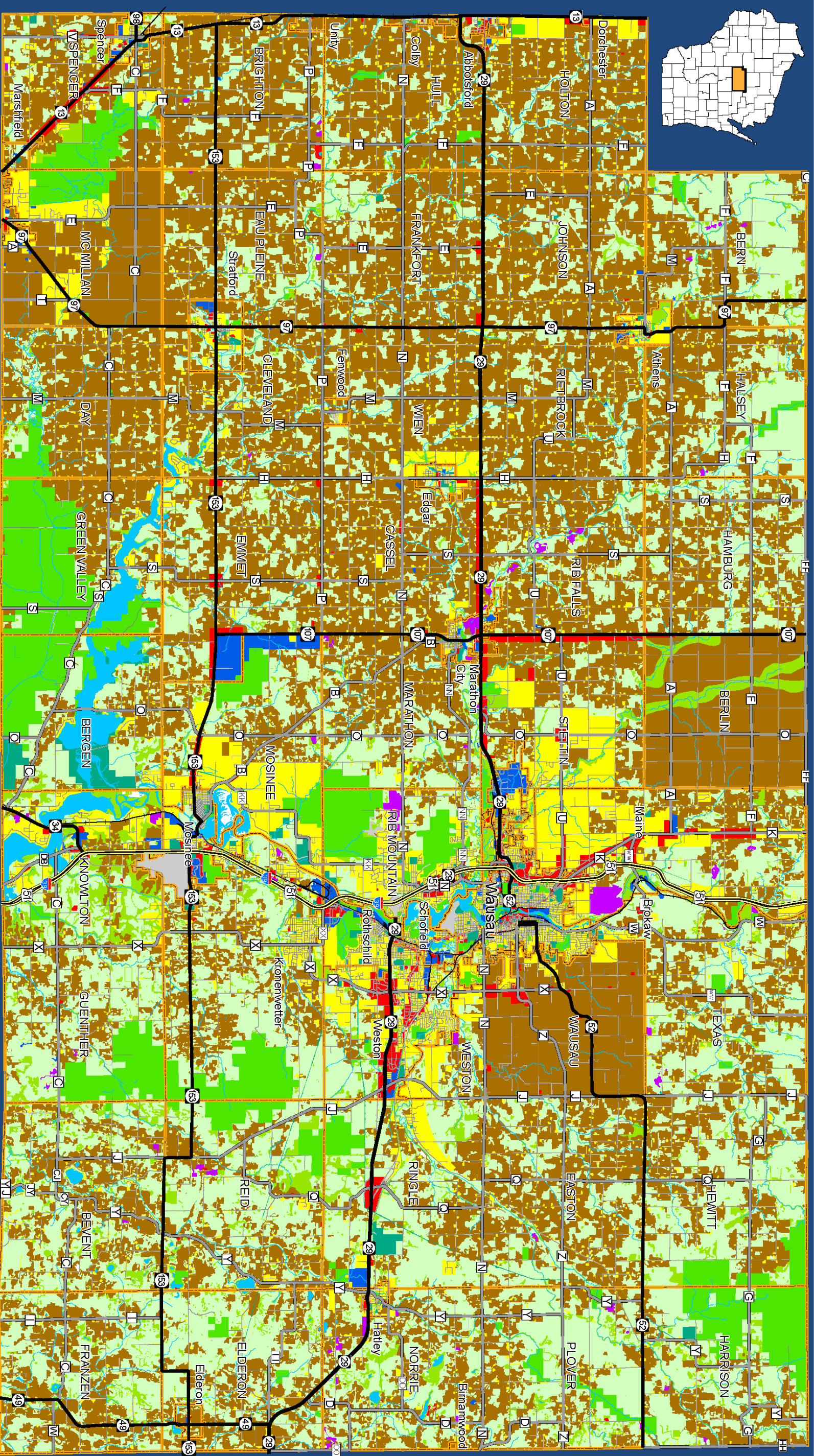


# Future Land Use

## Marathon County, Wisconsin

See local comprehensive plans for most current information

Legend			
	US Highway		GENERALIZED FLU
	State Highways		AGRICULTURE
	County Highways		COMMERCIAL
	Local Roads		FORESTRY
	Railroad		INDUSTRIAL
	Minor Civil Divisions		PUBLIC/QUASI-PUBLIC
	Perennial Streams		QUARRY
	Water		NATURAL AREA
			RECREATION
			RESIDENTIAL
			TRANSPORTATION



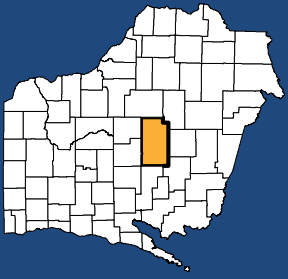
SOURCE: NCWRPC, WIDNR, Marathon County Geo Services

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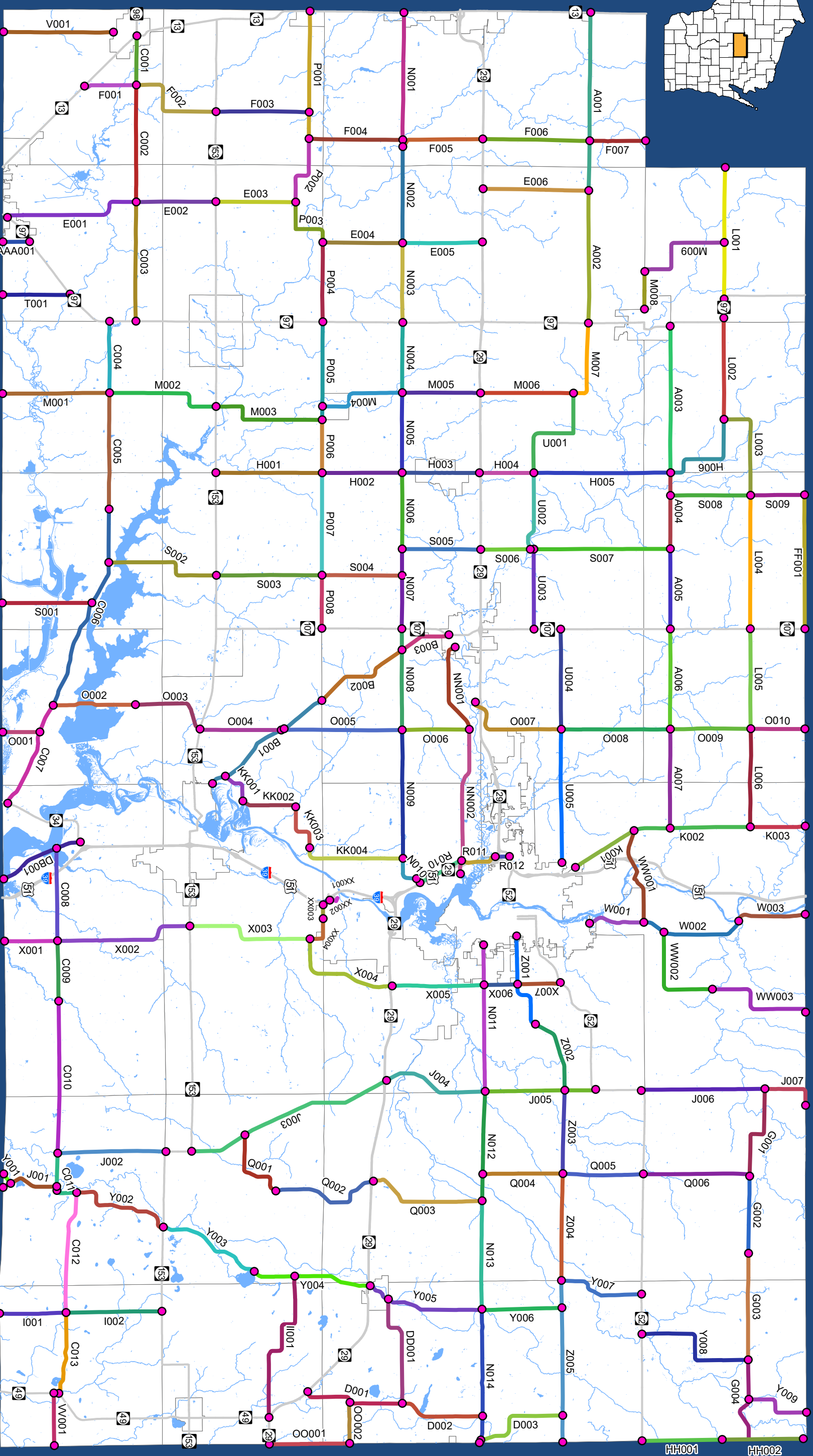
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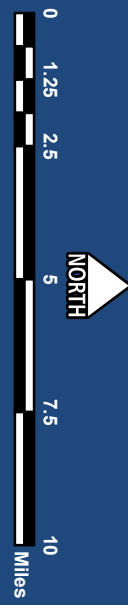
**Legend**

- Other Highways
- Water
- Local County Hwy Segments
- Segment Nodes



# Local Segments

Marathon County, Wisconsin



SOURCE: NCRWPC, DOT,  
Marathon County Geo Services

## Highway System Study

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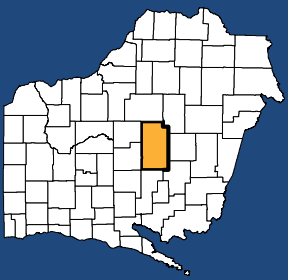
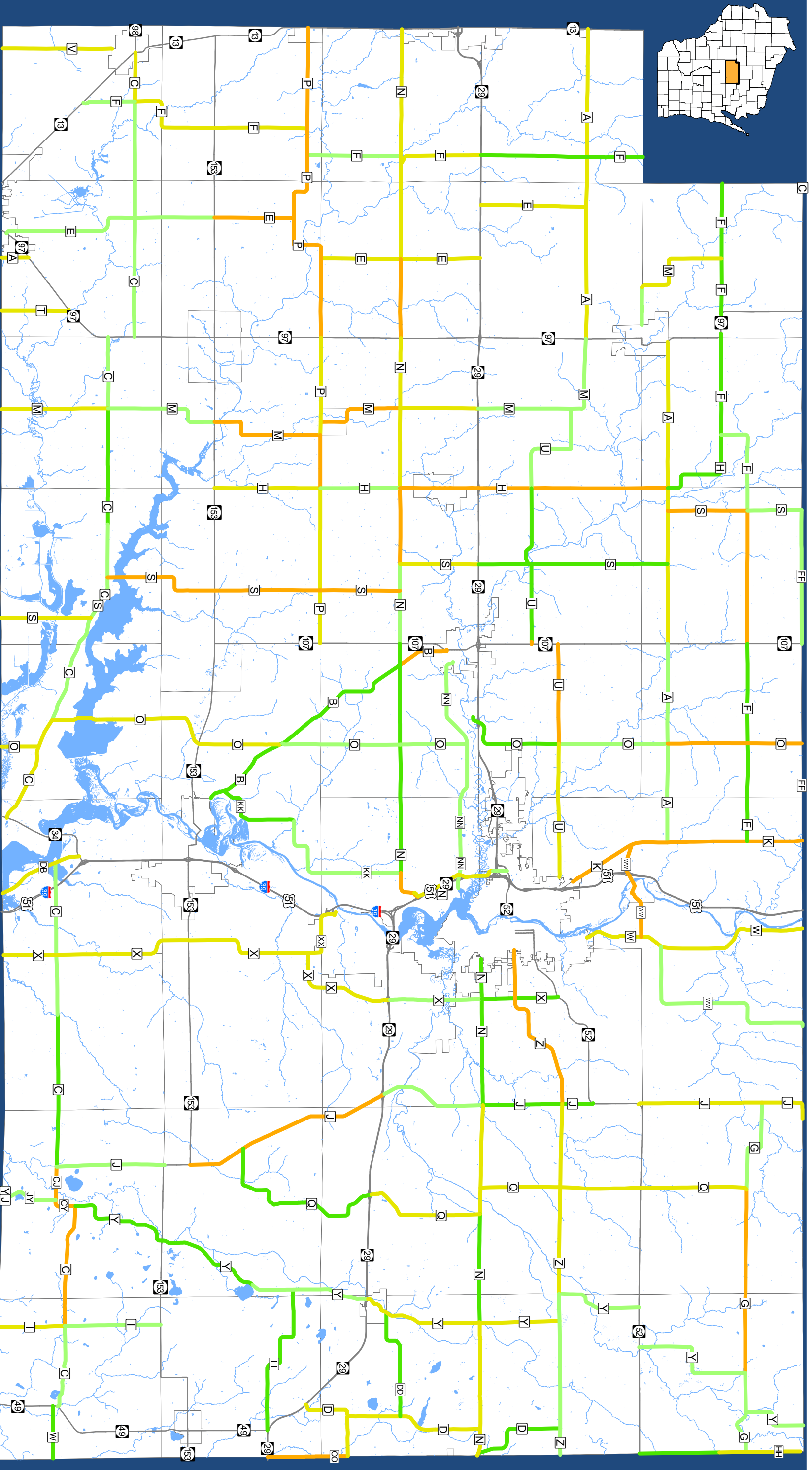




# 2019 PASER Ratings Marathon County, Wisconsin

**Legend**

- US and State Highways
- PASER Rating
  - Poor
  - Fair
  - Good
  - Very Good
  - Excellent
- Water



SOURCE: NCMWRPC, DOT,  
Marathon County Geo Services

## Highway System Study

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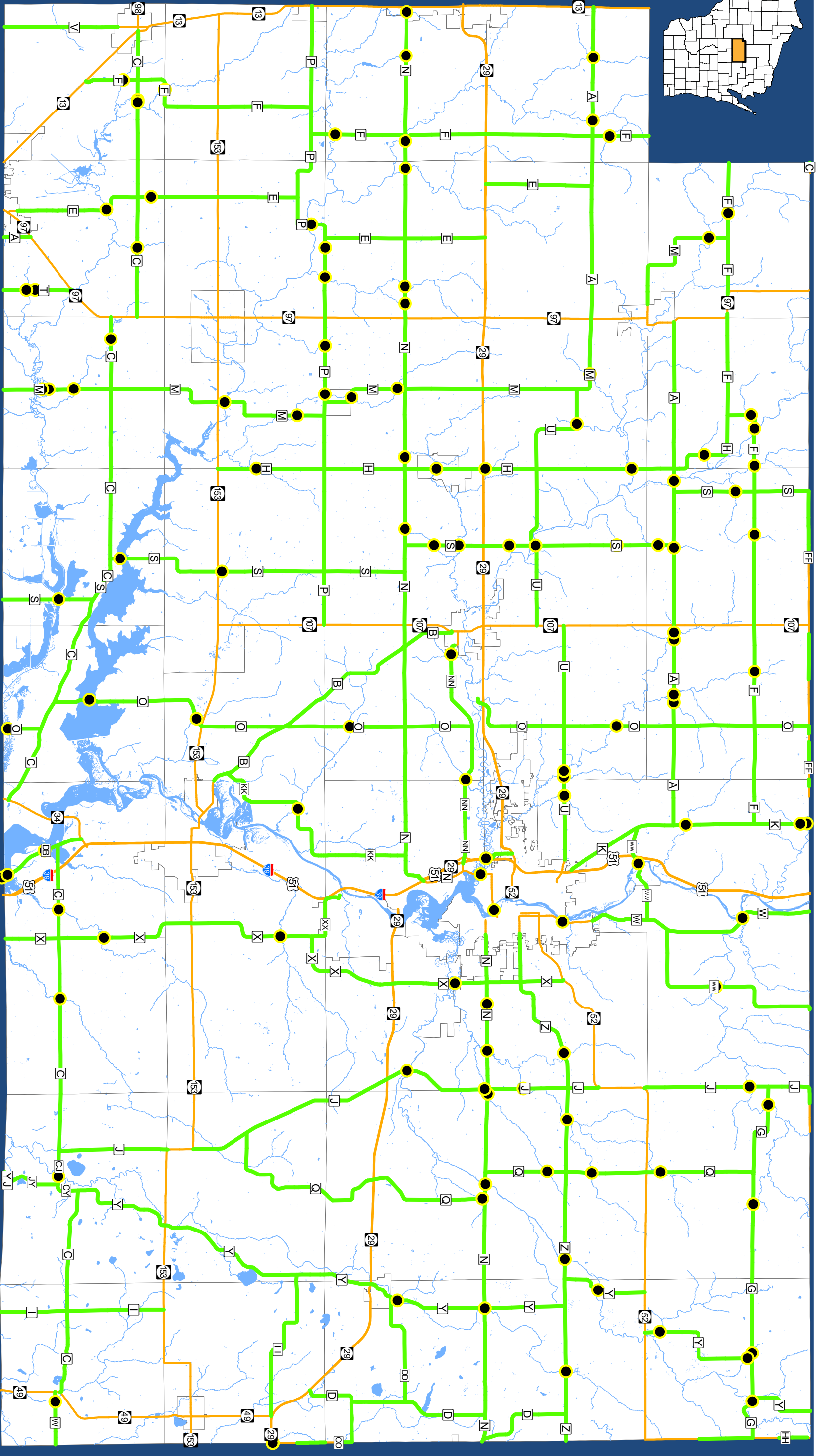
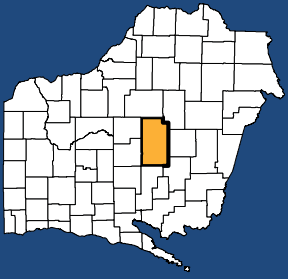


# County Bridges

Marathon County, Wisconsin

**Legend**

- Water
- County Highways
- County Bridges



SOURCE: NCMWRPC, DOT,  
Marathon County Geo Services

## Highway System Study

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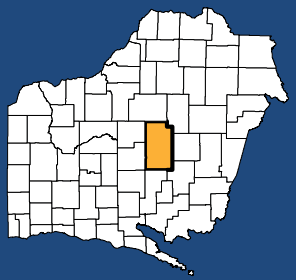
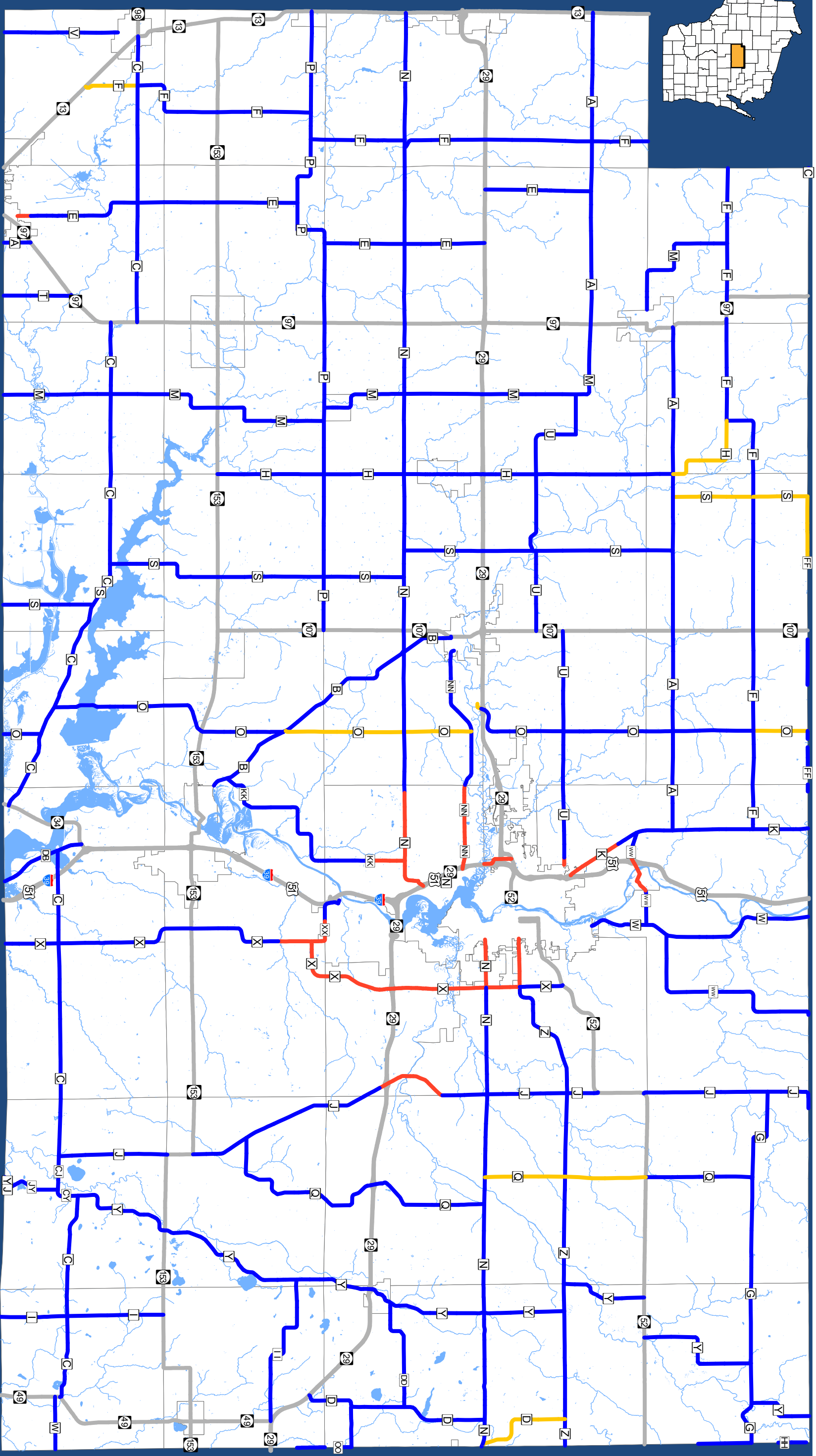


# WISLR Functional Class Group

Marathon County, Wisconsin

**Legend**

- Highways
- WISLR Functional Class Group Data
  - Arterial
  - Collector
  - Local



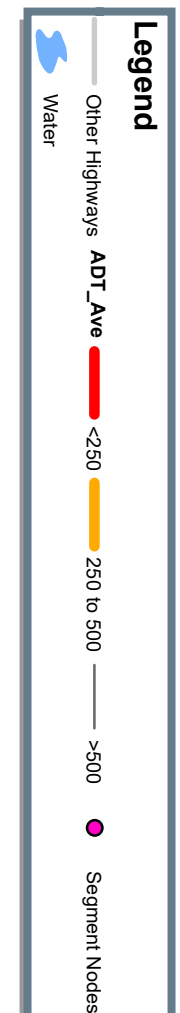
SOURCE: NCMWRPC, DOT,  
Marathon County Geo Services

## Highway System Study

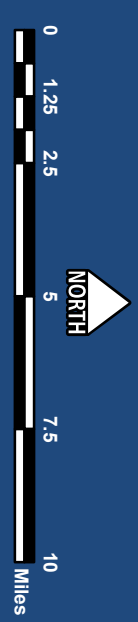
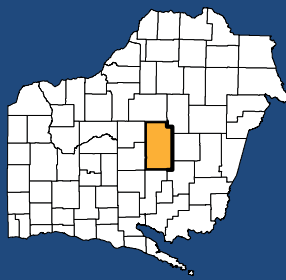
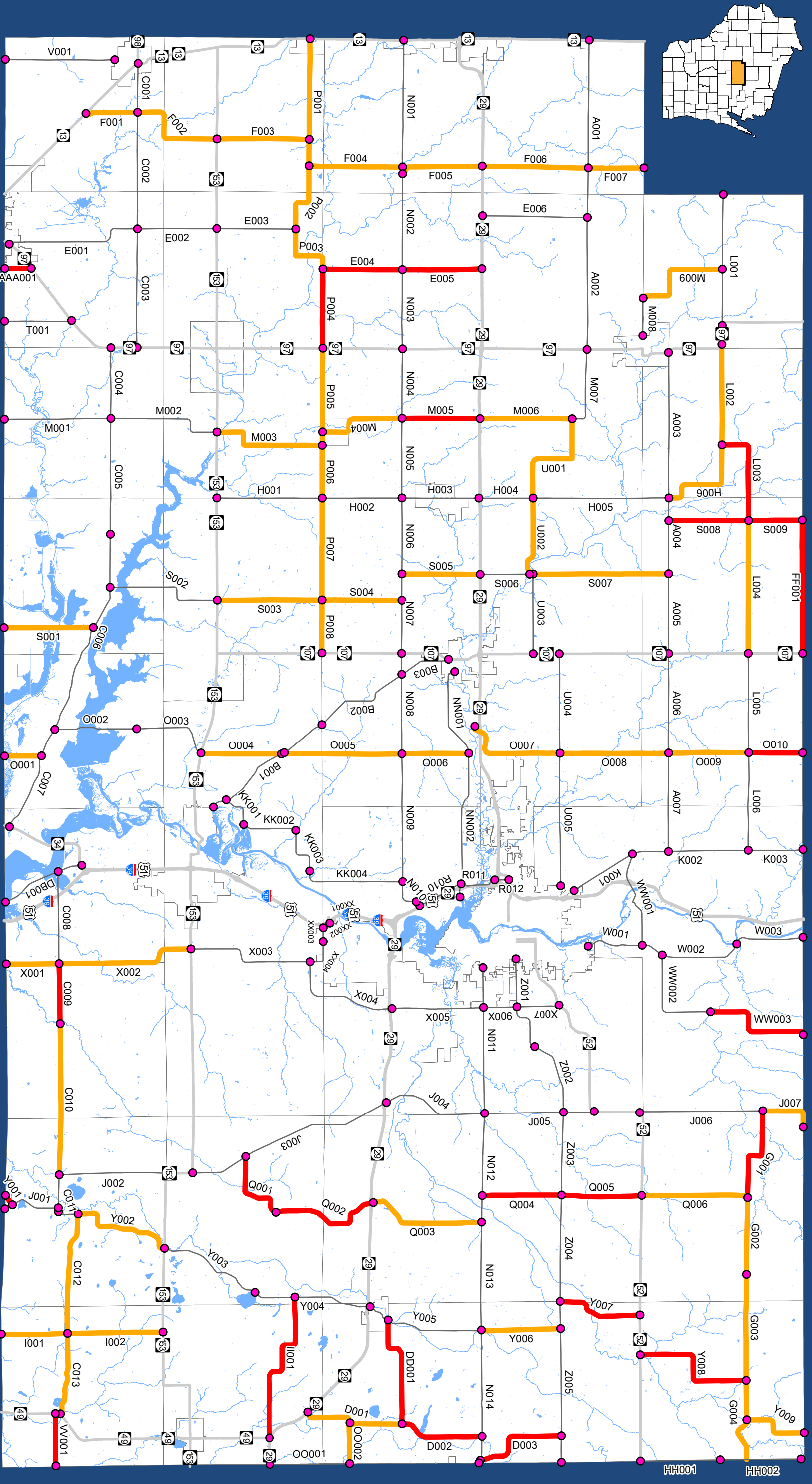
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**Low ADT**  
Marathon County, Wisconsin



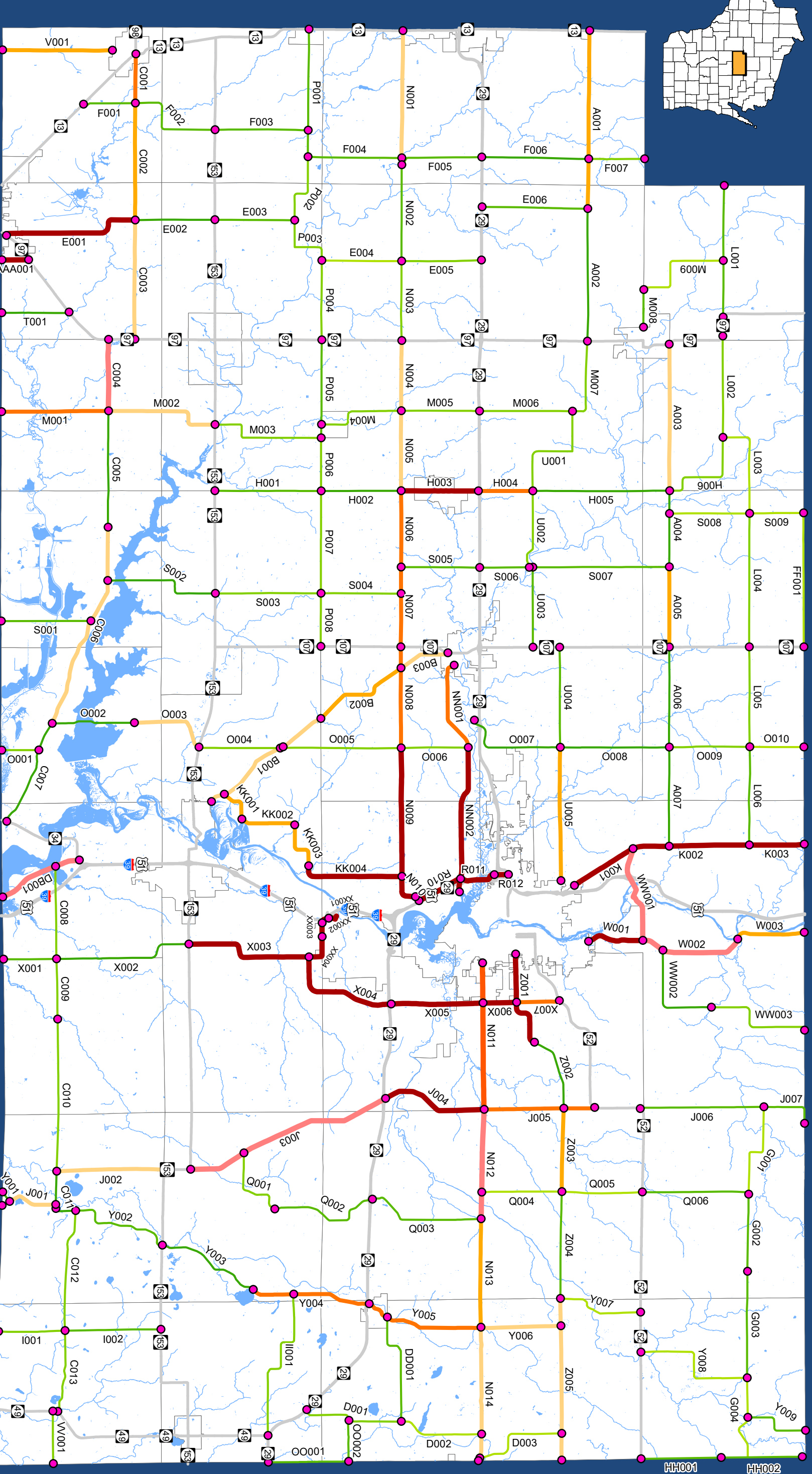
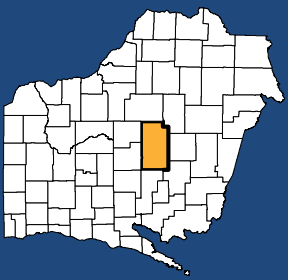
SOURCE: NCRWPC, DOT,  
Marathon County Geo Services

**Highway System Study**

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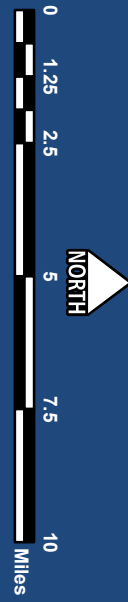




**Legend**

- Other Highways
- Water
- ADT Rank
  - 1 (0 - 249)
  - 2 (250 - 499)
  - 3 (500 - 749)
  - 4 (750 - 999)
  - 5 (1000 - 1249)
  - 6 (1250 - 1499)
  - 7 (1500 - 1749)
  - 8 (1750 - 1999)
  - 9 (2000 - 2249)
  - 10 (>2250)
- Segment Nodes

**ADT Rank**  
Marathon County, Wisconsin  
Map 9



SOURCE: NCRWPC, DOT,  
Marathon County Geo Services

# Highway System Study

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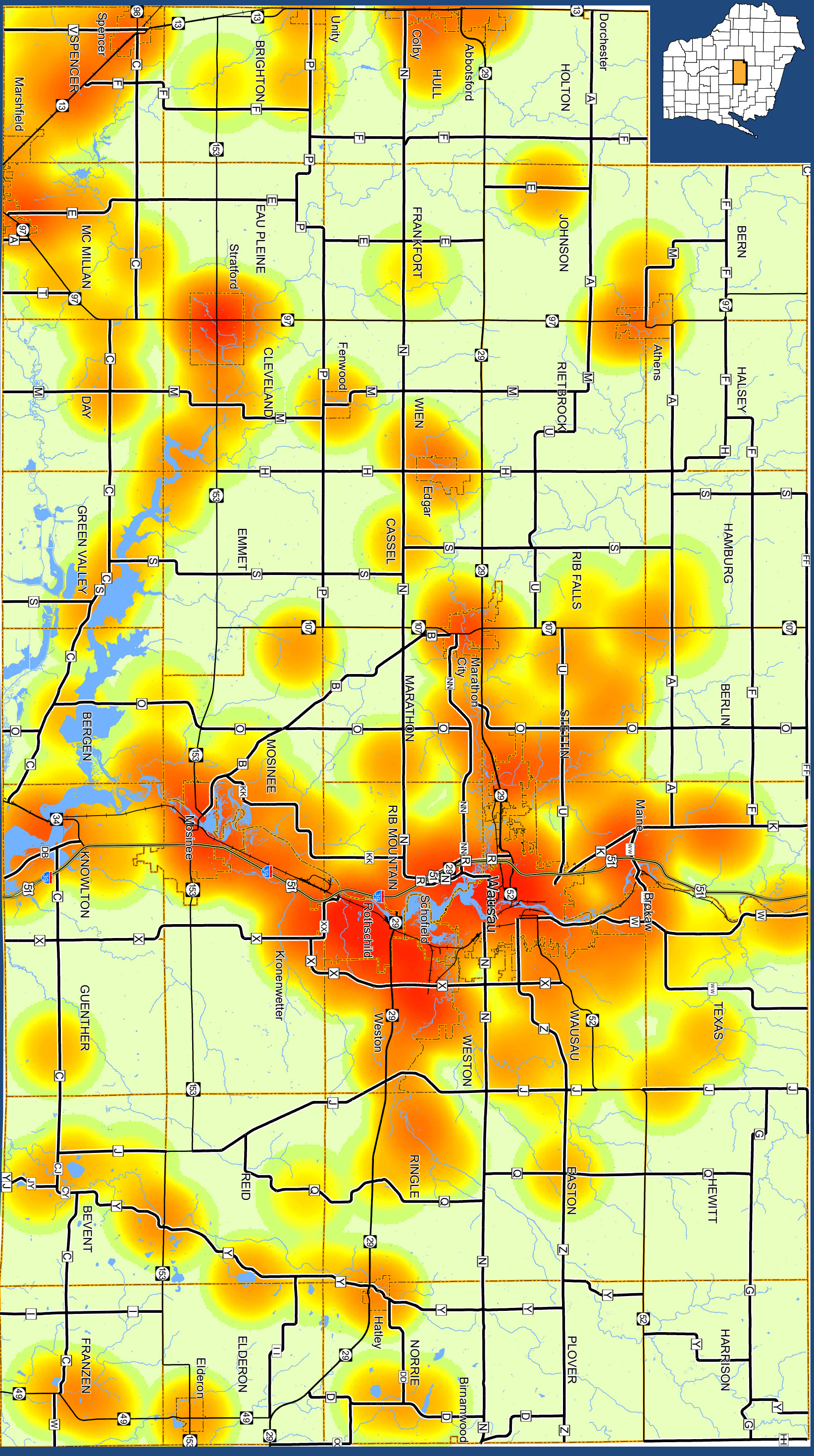
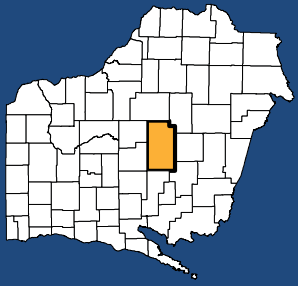


**Legend**

- US Highway
- State Highways
- County Highways
- Railroad
- Minor Civil Divisions
- Water
- Intensity
  - High
  - Low

# Land Activity

## Marathon County, Wisconsin



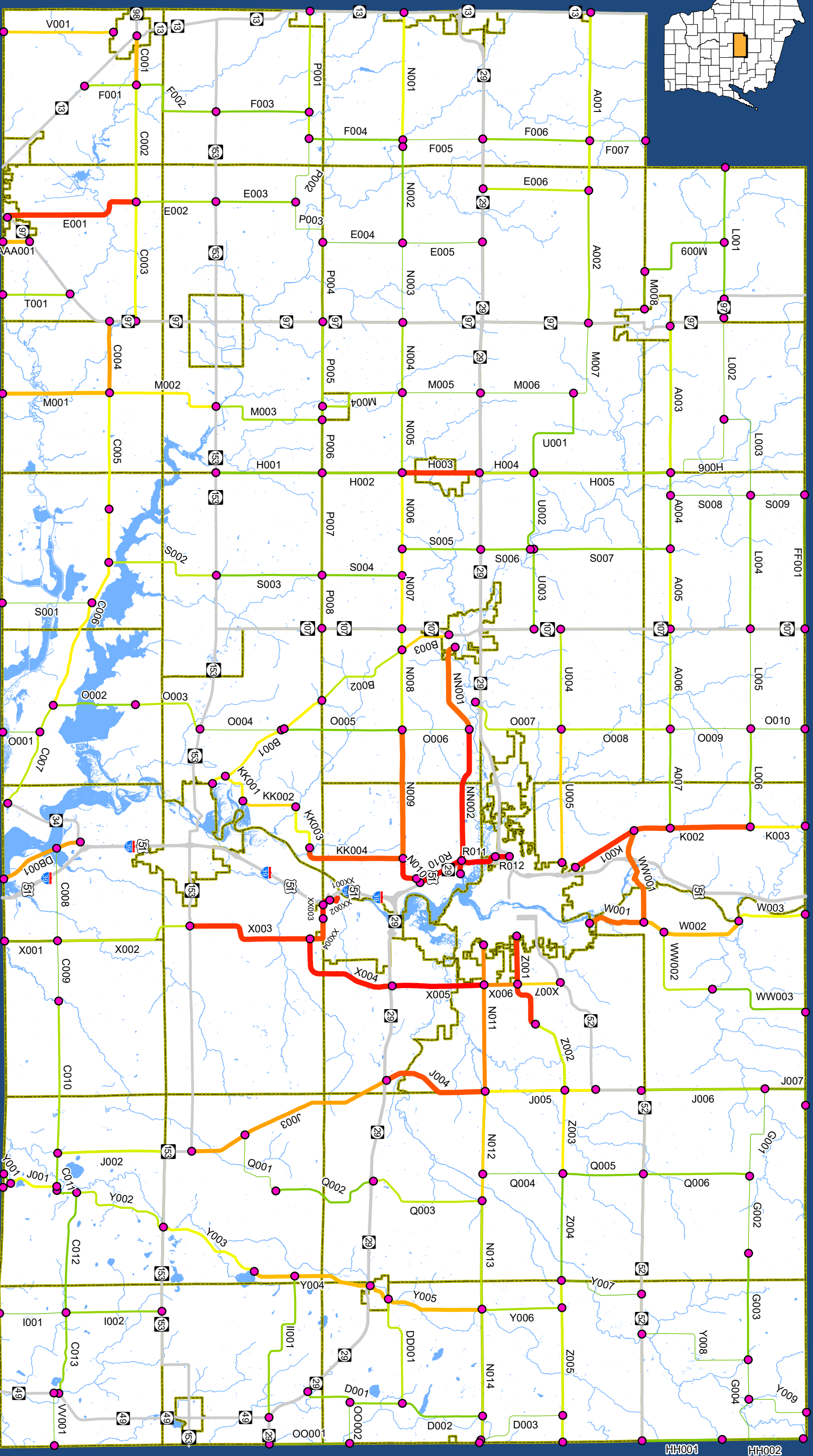
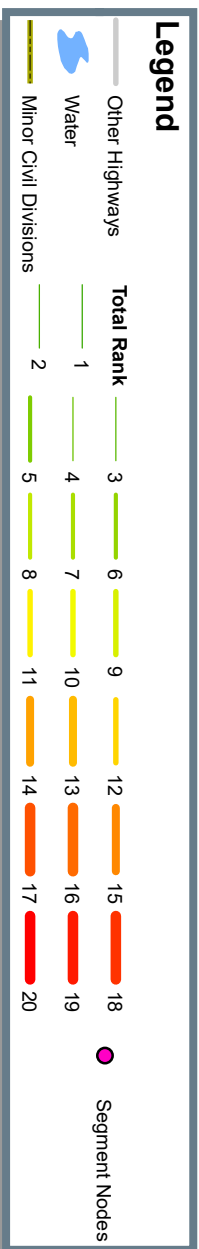
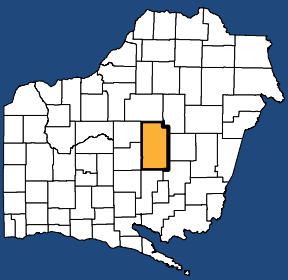
SOURCE: NCRWPC, US Census,  
Marathon County Geo Services

# Highway System Study

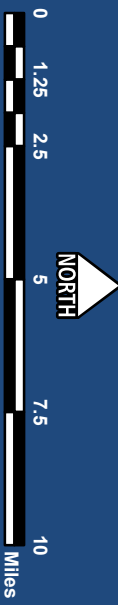
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**Total Rank**  
Marathon County, Wisconsin



SOURCE: NCRWPC, DOT,  
Marathon County Geo Services

# Highway System Study

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## APPENDIX A

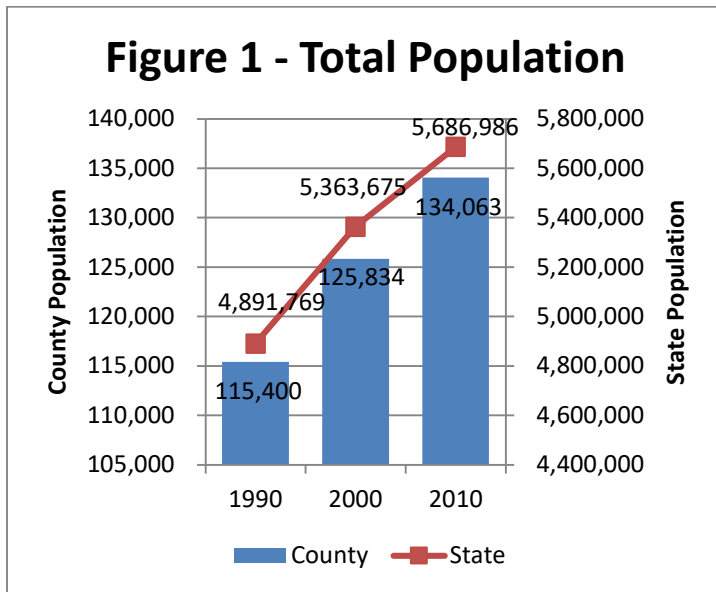
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### DEMOGRAPHICS: POPULATION & EMPLOYEMENT

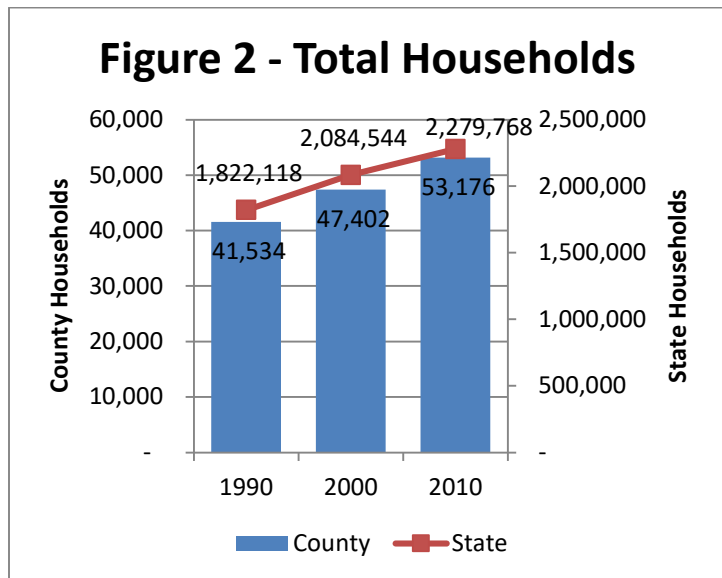
# POPULATION

## Population and Households

Since 2010, the population of Marathon County has increased by 2.4 percent, from 134,063 to 137,237 in 2020. The population of the State of Wisconsin, overall, has increased at about this same rate during this period. While the current growth rate is not as high as in previous decades, the trend of overall population increase has continued. This historical growth trend is illustrated in Figure 1.

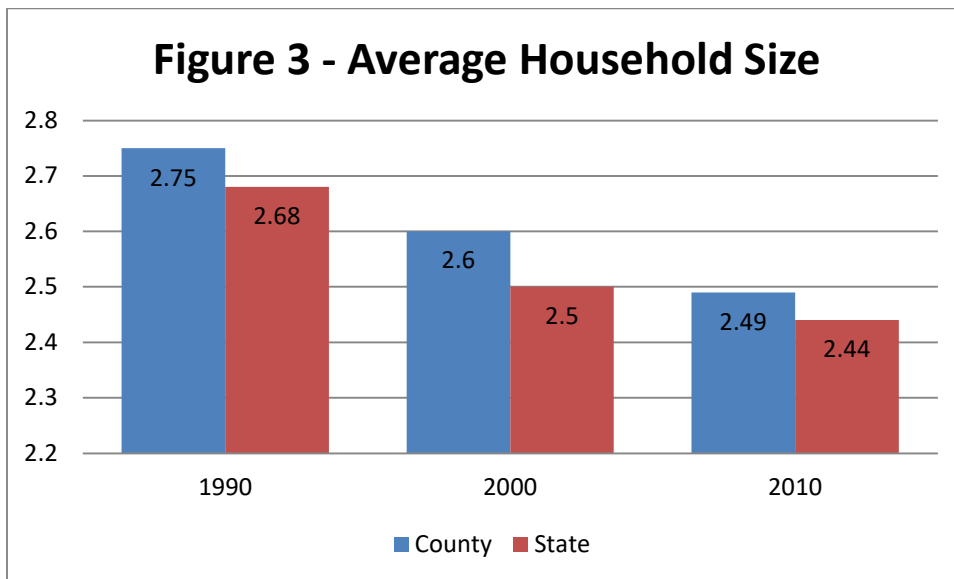


Source: US Census 2010



Source: US Census 2010

Figure 2 shows a similar upward trend in the number of households in Marathon County. This actually represents an increase by 40 percent between 1990 and 2010. This is consistent with the national trend toward more households, with fewer persons per household. More households are comprised of single adults, couples without children, and families with fewer children per household. In Marathon County, the average household declined from 2.75 persons in 1990 to 2.49 in 2010, see Figure 3.



Source: US Census 2010

### **Municipal Populations**

The areas within the County experience change and growth at different rates. Within the County, some areas are growing more than others, and this is one indicator of where County infrastructure needs may be most prevalent. Population figures for the cities and villages are in Table 1, while the towns are shown in Table 2.

In terms of actual numbers of residents added, the central core of the County has dominated. This area includes the Wausau Metro Area and stretches from the Town of Knowlton on the south up through Mosinee and Kronenwetter, Rib Mountain, Rothschild, Weston, Wausau, Stettin and the Village of Maine. Although the City of Wausau actually posted a slight decrease, the Villages of Weston and Kronenwetter led the way by significant margins; netting 778 and 948 people respectively. On either side of this area, the Village of Marathon City and Town of Ringle have each added 60+ residents.

Another area of significant growth is the extreme southwest corner of the County; corresponding to another urban center, the City of Marshfield. Although mostly within neighboring Wood County, The City itself has added 208 residents in Marathon County. The Towns of Spencer and McMillan increased by 59 and 75, respectively.

While most communities in the County experienced positive growth, there were a few, mostly scattered, that did see a population loss. There was one area of note where a cluster of communities all showed decreases. This area was in the far western side of the County and includes the Towns of Brighton, Eau Pleine, Frankfort and Hull, the Villages of Spencer, Unity and Dorchester, and the City of Abbotsford. Although the declines seen with the County were generally minor, the City of Abbotsford led the way with a decrease of 44 people.

**Table 1 – City/Village Population Change, Marathon County**

<b>Incorporated Area</b>	<b>2010 Population</b>	<b>2020 Population</b>	<b>% '10-'20 Population</b>
City of Abbotsford*	694	650	- 6.3%
City of Colby*	498	554	11.2%
City of Marshfield*	900	1,108	23.1%
City of Mosinee	3,988	4,124	3.4%
City of Schofield	2,169	2,201	1.5%
City of Wausau	39,106	38,884	- 0.6%
Village of Athens	1,105	1,116	1.0%
Village of Birnamwood*	16	20	25.0%
Village of Dorchester*	5	4	-20.0%
Village of Edgar	1,479	1,466	- 0.9%
Village of Elderon	179	177	- 1.1%
Village of Fenwood	152	153	0.7%
Village of Hatley	574	637	11.0%
Village of Kronenwetter	7,210	8,158	13.2%
Village of Maine	2,588	2,619	1.2%
Marathon City	1,524	1,588	4.2%
Village of Rothschild	5,269	5,328	1.1%
Village of Spencer	1,925	1,913	- 0.6%
Village of Stratford	1,578	1,610	2.0%
Village of Unity*	204	197	- 3.4%
Village of Weston	14,868	15,646	5.2%

*Source: WDOA 2020. \*Portion within Marathon for split communities.*

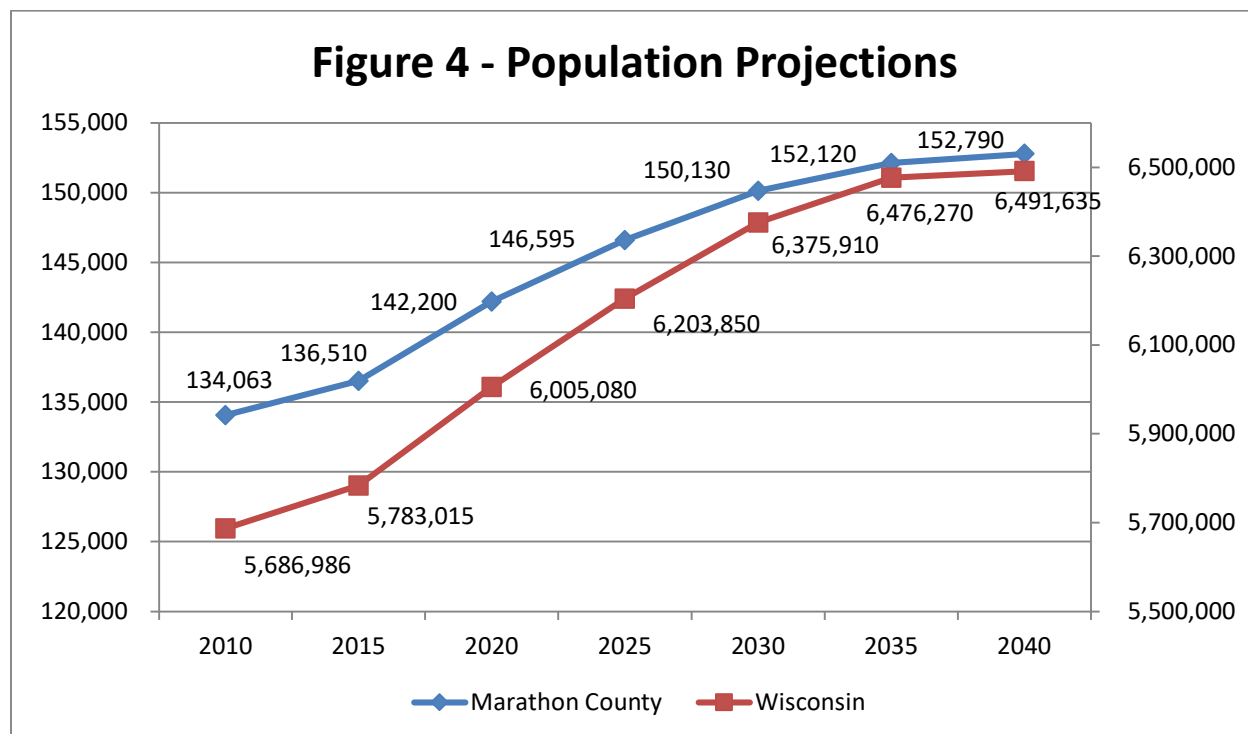
<b>Town</b>	<b>2010 Population</b>	<b>2020 Population</b>	<b>% '10-'20 Population</b>
Bergen	641	635	- 0.9%
Berlin	945	957	1.3%
Bern	591	616	4.2%
Bevent	1,118	1,138	1.8%
Brighton	612	607	- 0.8%
Cassel	911	937	2.9%
Cleveland	1,488	1,524	2.4%
Day	1,085	1,093	0.7%
Easton	1,111	1,150	3.5%
Eau Pleine	773	759	- 1.8%
Elderon	606	619	2.2%
Emmet	931	961	3.2%
Frankfort	670	652	- 2.7%
Franzen	578	590	2.1%
Green Valley	541	557	3.0%
Guenther	341	346	1.5%
Halsey	651	672	3.2%
Hamburg	918	926	0.9%
Harrison	374	382	2.1%
Hewitt	606	637	5.1%
Holton	873	883	1.2%
Hull	750	746	- 0.5%
Johnson	985	990	0.5%
Knowlton	1,910	1,972	3.3%
Marathon	1,048	1,037	- 1.1%
McMillan	1,968	2,043	3.8%
Mosinee	2,174	2,206	1.5%
Norrie	976	994	1.8%
Plover	689	698	1.3%
Reid	1,215	1,242	2.2%
Rib Falls	993	999	0.6%
Rib Mountain	6,825	7,001	2.6%
Rietbrock	981	991	1.0%
Ringle	1,711	1,771	3.5%
Spencer	1,581	1,640	3.7%
Stettin	2,554	2,595	1.6%
Texas	1,615	1,598	- 1.1%
Wausau	2,229	2,364	6.1%
Weston	639	695	8.8%
Wien	825	861	4.4%

*Source: WDOA 2020.*

## Growth Projections

It is necessary, when planning for the future, to have an idea of future population growth. The Wisconsin Department of Administration (WDOA) statistically estimates population and household projections for Wisconsin. WDOA population projections are recognized as Wisconsin's official population projections in accordance with Wisconsin Statute 16.96. Figure 4 shows population projections for Marathon County and Wisconsin completed in 5-year increments by WDOA.

For Marathon County, these projections assume a moderate rate of growth, resulting in a population increase of 18,727 persons, or 14 percent between 2010 and 2040. Wisconsin is also projected to have a similar rate of growth over this time period. Map 1 illustrates what this projected growth looks like across the County. Most of the communities are expected to maintain population growth, although a few will see an overall loss. These include the Towns of Brighton, Harrison, Hull and Texas, the Villages of Elderon, Fenwood, Marathon City, Unity and Schofield. The overall losses will be relatively minor. A number of communities will see significant growth, however, everything will be overshadowed by increases of 2,500 in Kronenwetter and 5,000 in Village of Weston.



Source: WDOA 2013.

Figure 5 shows the projected 2040 population broken down by age cohort. As the large baby boomer generation reaches retirement age by 2040, the pyramid shape of previous decades gives way to a more linear diagram. As the older population continues to constitute a growing share of the population base, this will mean an increasing number of elderly drivers.

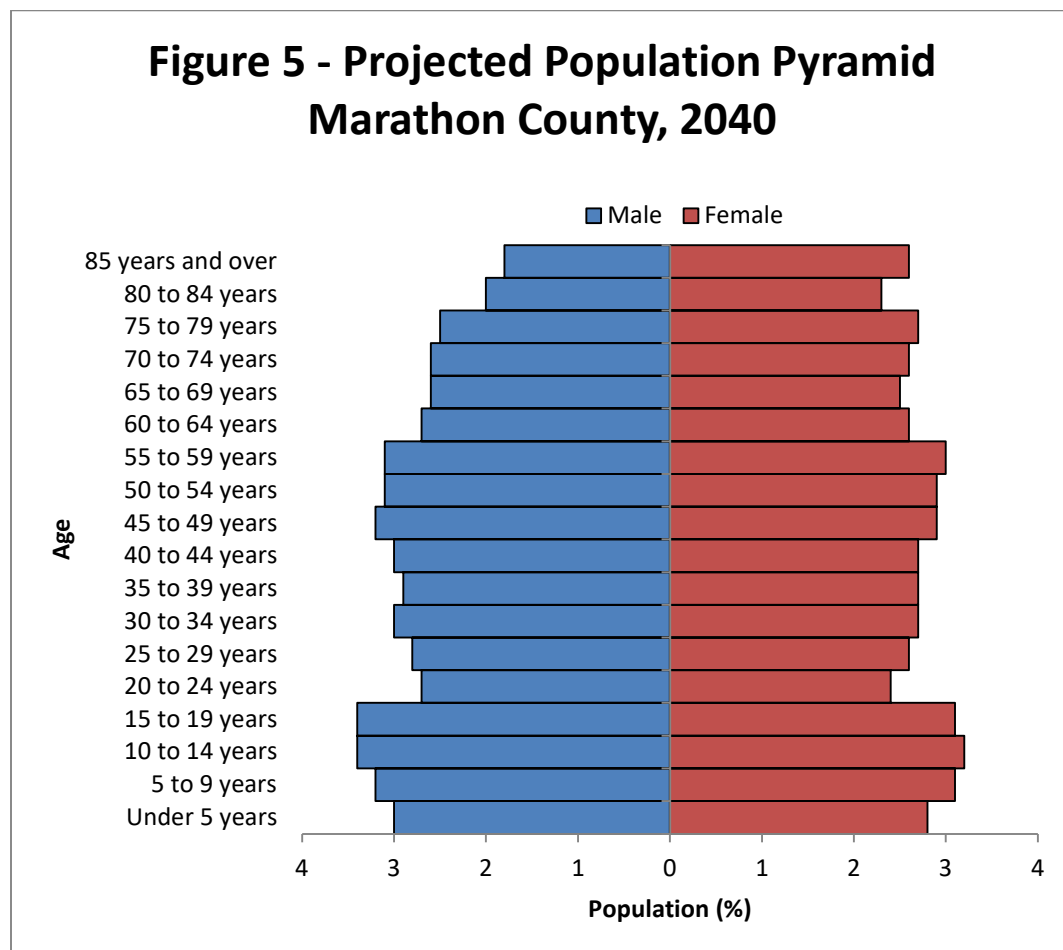
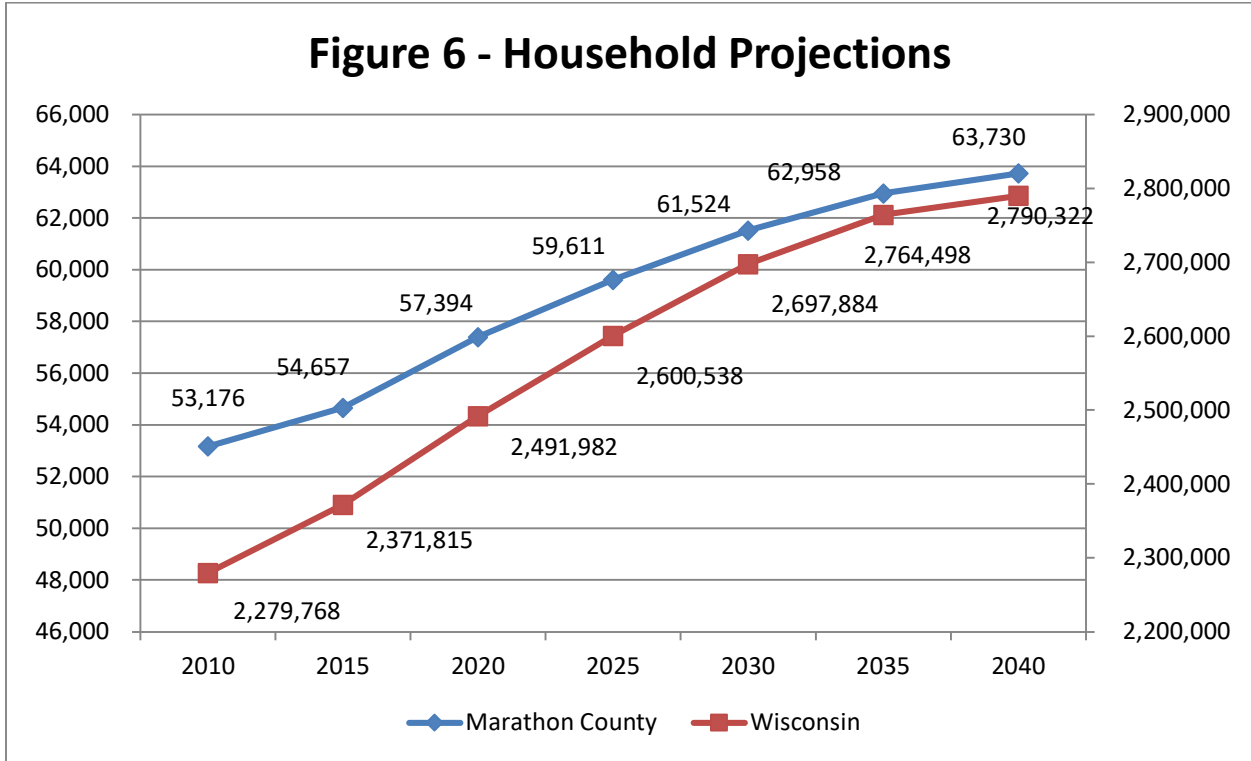


Figure 6 shows the corresponding household projections. Marathon County is projected to increase of over 7,500 households by the year 2040, a 20 percent growth. Wisconsin is projected to have 22 percent growth in households by 2040. The trend toward smaller adult households is reflected in the high rate of growth and is primarily responsible for the fact that the number of households is projected to increase faster than the population.

**Figure 6 - Household Projections**



Source: WDOA 2013.

**EMPLOYMENT**

In 2010, just under 70,000 people were employed in Marathon County. This was a 5.2 percent increase in employment since 2000. The two largest industries are Manufacturing with 24.1 percent of all employment and Educational Services and Health Care with 21.3 percent. Together, these two industries represent half of all employment in Marathon County. Four industries had growth of more than 500 employees between 2000 and 2010: Educational Services and Health Care; Professional, Scientific, and Management, and Administrative Services; Arts, Entertainment, and Recreation, and Accommodation and Food Services; and Manufacturing. Two industries lost more than 500 employees: Retail Trade and Agriculture, Forestry, Fishing, and Mining. Table 3 shows employment by industry in 2000 and 2010.

Industry	2000		2010		2000-2010	
	Employees	%	Employees	%	Net Change	Percent Change
Agriculture, Forestry, Fishing & Mining	2,871	4.3%	2,231	3.2%	-640	-22.3%
Construction	3,925	5.9%	3,891	5.6%	-34	-0.9%
Manufacturing	16,302	24.5%	16,870	24.1%	568	3.5%
Wholesale Trade	2,303	3.5%	2,369	3.4%	66	2.9%
Retail Trade	8,511	12.8%	7,697	11.0%	-814	-9.6%
Transportation, Warehousing & Utilities	3,194	4.8%	3,116	4.5%	-78	-2.4%
Information	983	1.5%	1,026	1.5%	43	4.4%
Finance, Insurance, Real Estate, Rental & Leasing	5,501	8.3%	5,471	7.8%	-30	-0.5%
Professional, Scientific, Management, & Administrative Services	2,896	4.4%	3,865	5.5%	969	33.5%
Educational Services & Health Care	12,446	18.7%	14,895	21.3%	2,449	19.7%
Arts, Entertainment, Recreation, Accommodation & Food Services	3,918	5.9%	4,702	6.7%	784	20.0%
Other Services, except Public Administration	2,497	3.8%	2,454	3.5%	-43	-1.7%
Public Administration	1,203	1.8%	1,393	2.0%	190	15.8%
<b>Civilian Employed Population 16 years &amp; over</b>	<b>66,550</b>	<b>100%</b>	<b>69,980</b>	<b>100%</b>	<b>3,430</b>	<b>5.2%</b>

*Source: US Census 2010.*

In 2010, according to the U.S. Census' American Community Survey, Marathon County had an unemployment rate of 4.7%. The unemployment rate in Wisconsin was 4.6% and in the United States was 5.1%. In Marathon County, the unemployment rate means that approximately 4,856 were unemployed.

According to the Wisconsin Department of Workforce Development's 2013 Marathon County Workforce Profile, the two largest employers in Marathon County, Aspirus Wausau Hospital, Inc. and Greenheck Fan Corporation each have over 1,000 employees. The next eight largest employers have between 500 and 999 employees. Table 4 is a list of the top ten large employers in Marathon County.

<b>Establishment</b>	<b>Service or Product</b>	<b>Number of Employees</b>
Aspirus Wausau Hospital, Inc.	General medical and surgical hospitals	1000 or more
Greenheck Fan Corp.	Industrial / commercial fan / blower mfg	1000 or more
Kolbe & Kolbe Millwork Co Inc.	Wood window / door mfg	500 to 999
Eastbay	Mail-order athletic footwear / apparel	500 to 999
Marathon Cheese	Dairy product merchant wholesalers	500 to 999
DC Everest Area School District	Elementary / secondary schools	500 to 999
North Central Health Care Facilities	Psychiatric & substance abuse hospitals	500 to 999
Northcentral Technical College	Junior colleges	500 to 999
Liberty Mutual Group Inc	Direct property and casualty insurers	500 to 999
Wausau Metals/Milco/Linetec	Metal window / door mfg	500 to 999

*Source: WDWD 2013.*

## **Commuting Patterns**

More people leave Marathon County for work than commute from other counties into Marathon County for work, resulting in a net loss of 1,464 workers, according to 2010 Bureau of Labor Statistics data. Over half of all workers who live in Marathon County and commute outside the County to a job, travel to Wood County, see Table 5.

<b>County</b>	<b>2000</b>			<b>2010</b>		
	<b>Commute</b>			<b>Commute</b>		
	<b>Into</b>	<b>From</b>	<b>Net</b>	<b>Into</b>	<b>From</b>	<b>Net</b>
Wood	3,944	1,449	(2,495)	5,406	1,852	(3,554)
Portage	968	1,408	440	1,823	2,005	182
Lincoln	964	2,826	1,862	1,113	2,682	1,569
Clark	710	1,407	697	1,129	921	(208)
Shawano	391	1,066	675	603	1,150	547
Total	6,977	8,156	1,179	10,074	8,610	(1,464)
Marathon (Work Internal)	57,000			61,483		

*Source: US Census 2010*

Impending retirement of baby boomers will reduce the supply of available workers more quickly than in the past. The County Highway System may play an increasingly important role in bringing more people of primary working age to meet job demands in the future.

### **Employment Location Concentrations**

The Bureau of Labor Statistics defines location quotients (LQs) as ratios that allow an area's share or concentration of employment by industry to be compared to a reference or base area's share. The reference area used here for comparison to Marathon County is the United States. LQs are useful for finding areas that have high concentrations of jobs in certain occupations. If an LQ is equal to 1, then the industry has the same share of its area employment as it does in the reference area. An LQ greater than 1 indicates an industry with a greater share of the local area employment than is the case in the reference area. For example, Manufacturing in Marathon County in 2014 had an LQ of 2.58, which indicates that for every 2.58 people employed in Manufacturing in Marathon County, 1 person is employed in Manufacturing in the United States.

Industries that have a high location quotient (LQ) and employ a large number of people reflect both significant size and importance as businesses that export a product or service and bring new wealth to the region. Industries with high location quotients in Marathon County are shown on Table 6.

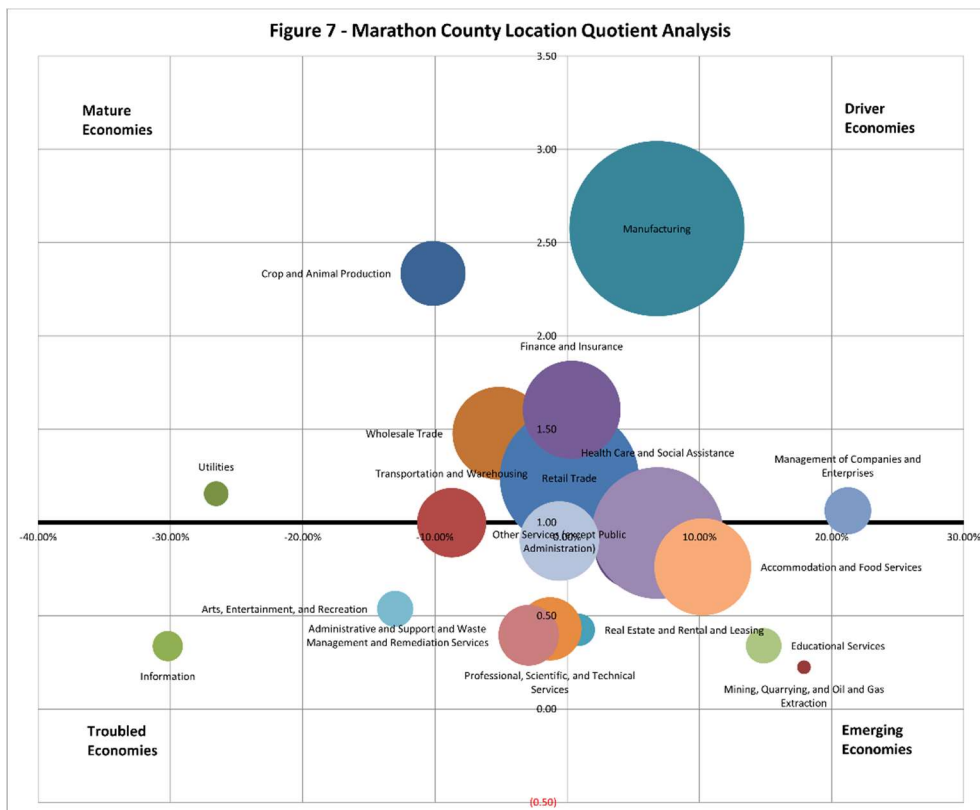
<b>Industry</b>	<b>Location Quotient</b>	<b>Total Employment</b>
NAICS 321 Wood product manufacturing	13.49	2,471
NAICS 322 Paper manufacturing	9.58	2,030
NAICS 112 Animal production and aquaculture	5.16	626
NAICS 327 Nonmetallic mineral product manufacturing	4.57	908
NAICS 333 Machinery manufacturing	4.27	2,282
NAICS 332 Fabricated metal product manufacturing	3.76	2,586
NAICS 524 Insurance carriers and related activities	3.21	3,540
NAICS 424 Merchant wholesalers, nondurable goods	2.23	2,330
NAICS 337 Furniture and related product manufacturing	2.13	409
NAICS 311 Food manufacturing	2.03	1,578
Total	-	18,760

*Source: Bureau of Labor Statistics 2014.*

Location Quotient Projections:

Location quotient projections come from analysis provided by Economic Modeling Specialists International. Location quotient analyses can be visualized in a “bubble graph”. In the Marathon County projections, the vertical axis has the 2014 LQ measurement, while the horizontal axis shows the projected percent change in LQ between 2014 and 2024. Industries are plotted as circles, with the circle size corresponding to their relative size as number of jobs, see Figure 7.

Marathon County is projected to add 5,555 new jobs between 2014 and 2024 due to job growth, an 8 percent increase in jobs. The industries projected to grow the most between 2014 and 2024 are Health Care and Social Assistance (with almost half of total job growth), Accommodation and Food Services, Manufacturing, Construction, and Retail Trade. Extending these projections out to 2035 indicates 12,000 additional jobs with total employment of 88,613.



Source: EMSI 2016.

Industries with high location quotients are those in which the county is strong; these driver industries should be supported and helped to grow. The five industries with the

highest location quotients are Manufacturing (2.58), Crop and Animal (2.34), Finance and Insurance (1.60), Wholesale Trade (1.48), Retail Trade (1.24).

As the Marathon County Location Quotient Analysis chart shows, Manufacturing is the largest industry, and is both strong and advancing. Food and Textiles industries including Dairy Product Manufacturing are a subset of the manufacturing category that is particularly important to Marathon County. The agricultural sector is highly dependent on the County Highway System as it is spread throughout the County. Other Textile Product Mills, Other Food Manufacturing, and Bakeries are all smaller segments, but projected to grow in concentration. As small emerging industries, they should be supported because they have the potential to grow into strong clusters for the County.

Wood and Paper Products industries, are historically very strong in the County, and like agriculture are reliant on the County Highway System. Cement and Concrete Product Manufacturing is a growing segment with a strong concentration. Printing and Related Support Activities is a smaller segment but is an emerging industry with high projected growth that could benefit from additional support.

Metal, machinery, and equipment industries fall into the strong and advancing quadrant because they have positive LQs and projected growth. Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing is the largest of these segments and has the highest concentration. Again, a robust highway system is critical for these metal and machinery industries that depend on the flow of heavy raw materials coming in and heavy finished product shipping out.

### Occupations Projections Analysis

An occupations projections report from EMSI compares 2014 jobs with projected 2024 jobs, see Table 7. Marathon County has projected annual openings of 2,545 jobs. Of these, about 500 are due to growth and about 2,000 are due to turnover due to retirements. All but three occupations are projected to increase in number of jobs between 2014 and 2024. How to attract more people to the region to fill these new positions must be addressed. Quality highways are a potential factor.

The occupations projected to increase the most in number of jobs are Food Preparation and Serving Related Occupations (896 annually), Healthcare Practitioners (813 annually); Office and Administrative Support (728 annually); Healthcare Support Occupations (531 annually); Sales and Related Occupations (421 annually); and Production Occupations (370).

<b>Table 7 – Marathon County Employment Occupation Projections</b>					
<b>Occupations Description</b>	<b>2014 Jobs</b>	<b>2024 Jobs</b>	<b>Projected Openings</b>	<b>2014 - 2024 Net Change</b>	<b>2014 - 2024 % Change</b>
Management	3,843	3,703	1,086	(140)	(4%)
Business and Financial Operations	3,383	3,689	1,155	306	9%
Computer and Mathematical	1,673	1,790	407	117	7%
Architecture and Engineering	1,209	1,257	376	48	4%
Life, Physical, and Social Science	314	355	151	41	13%
Community and Social Service	852	1,009	380	157	18%
Legal	344	364	92	20	6%
Education, Training, and Library	3,234	3,443	926	209	6%
Arts, Design, Entertainment, Sports, and Media	855	862	277	7	1%
Healthcare Practitioners & Technical	3,645	4,458	1,678	813	22%
Healthcare Support	2,322	2,853	1,053	531	23%
Protective Service	969	945	305	(24)	(2%)
Food Preparation & Serving Related	4,590	5,486	2,806	896	20%
Building & Grounds Cleaning and Maintenance	1,977	2,108	613	131	7%
Personal Care and Service	2,291	2,540	804	249	11%
Sales and Related	7,068	7,489	2,705	421	6%
Office and Administrative Support	11,146	11,874	3,647	728	7%
Farming, Fishing, and Forestry	817	873	327	56	7%
Construction and Extraction	3,224	3,412	1,019	188	6%
Installation, Maintenance, & Repair	2,829	3,055	975	226	8%
Production	9,760	10,130	2,897	370	4%
Transportation and Material Moving	5,714	5,948	1,681	234	4%
Military	376	350	85	(26)	(7%)
Unclassified	0	0	0	0	0%
<b>Total</b>	<b>72,436</b>	<b>77,991</b>	<b>25,445</b>	<b>5,555</b>	<b>8%</b>

Source: EMSI 2016.

## **KEY INDUSTRIES**

A description of the key industry sectors and employers in Marathon County follows, organized by industries that are resources based, manufacturing based, and service based. Resource and manufacturing based industries heavily rely on the highway system for the flow of raw materials and finished product while service based industries depend on it for the delivery of goods and services and the supply of tourists.

## **Resource Based Industries**

### **Agricultural Production and Processing**

According to the UW-Extension Economic Impact of Agriculture report for 2014, Marathon County agriculture generates \$2.7 billion in economic activity serving local, domestic and international markets. This is about 19 percent of the county's total economic activity. Every dollar of sales from agriculture products generates an additional \$0.60 of economic activity in other parts of the county's economy. Agriculture provides 11,745 jobs, or 14.7 percent of the county's jobs, and \$821 million in income to workers, or 12.1 percent of total county income. Marathon County's top agriculture commodities in 2012 by dollar value were milk with \$249.8 million, grain with \$78.8 million, and cattle and calves at \$40.1 million.

According to the 2012 USDA Census of Agriculture, Marathon County has 2,266 farms, encompassing over 490,000 acres of farmland. The average farm is 211 acres in size. Marathon County ranks first in Wisconsin in milk production, with nearly 61,000 dairy cows producing over 1.2 billion pounds of milk annually. The County also leads the United States in ginseng production, accounting for over 90 percent of the U.S. crop. Ginseng production brings approximately \$20 million in revenue per year to farmers in Marathon County.

### **Forest Products and Forest Products Processing**

Marathon County has approximately 28,662 acres of county-owned forest, which represents approximately 2.8 percent of all land in the County. County forests are established primarily for timber production and secondarily for recreation. In addition to publicly owned forests, Marathon County has approximately 110,400 acres of private woodland enrolled in the WDNR Managed Forest Law programs.

Many of the strongest industries in Marathon County rely on forest products as a primary or secondary material. WDNR and UW-Extension maintain an online database of the wood using industries in Wisconsin, including firms that manufacture logs and pulpwood into value added products, such as sawmills and pulp mills, as well as firms that manufacture dimensional and reconstituted wood products into value added products, such as furniture manufacturers. According to this database, in 2013 Marathon County had 36 wood using industries, including both primary and secondary users. Examples of a few companies included in the database are Award Hardwood Flooring, Central Wisconsin Lumber, Kolbe & Kolbe, and Wisconsin Box Co.

## **Manufacturing Based Industries**

Nationally, in 2010, manufacturing employment represented 11 percent of all employment and in Wisconsin it represented 18.7 percent. In Marathon County, manufacturing represented 24.1 percent of all employment, the largest industry by employment in the County. Manufacturing is also a high wage sector in Marathon County with a median annual wage of \$45,552 in 2012 according to the Bureau of Labor Statistics' Quarterly Census of Employment and Wages, which is higher than the County's median annual wage for all industries of \$38,619.

Marathon County has a strong and diversified manufacturing base with a concentration in metal working industries, including:

- cutlery
- aluminum extruded products
- fabricated structural metal
- metal doors; sash and trim
- metal stamping; plating and polishing
- powder coating
- automotive
- transportation and construction machinery
- blowers and fans
- industrial machinery
- fabricated wire products
- fabricated pipe and fittings

A number of the manufacturing operations in the County are related to the construction industry, including wood and metal products with commercial and residential applications such as venetian blinds; glass for windows; wood or metal windows, doors, and millwork; and prefabricated homes.

## **Service Based Industries**

### **Health Care**

Over 4,600 people in Marathon County are employed in the health care industry, primarily in nursing homes, clinics and hospitals. Major employers in health care include Aspirus, Ministry Health Care, North Central Health Care, and Marshfield Clinic.

## Finance and Insurance

In 2010, over 5,400 people were employed in Marathon County in the Finance, Insurance, and Real Estate industries, many of them employed by direct property and casualty insurance carriers in Marathon County. Major employers include the Liberty Mutual Group and Wausau Benefits. In addition to the insurance industry, Wausau Financial develops and markets a wide variety of software applications and hardware equipment for the financial industry and other commercial businesses. As a regional center for northcentral Wisconsin, the Wausau metro area includes a concentration of banks and other financial institutions, many of which are located in downtown Wausau.

## Retail

The retail sector is not considered critical to economic development because retail sales are dependent upon those businesses such as manufacturing and insurance carriers that export a product or service and import dollars to the region. The retail sector accounts for 11 percent of total employment in the U.S., in Wisconsin, and in Marathon County. The Wausau metro area serves as a regional center for retail activity. Major retail centers in the metro area are located in downtown Wausau, Rib Mountain, Cedar Creek in Rothschild, and the commercial corridors extending along most highways, particularly Business 51.

## Visitor Industry

The Wisconsin Department of Tourism published a report on the economic impact of expenditures by travelers on Wisconsin in 2015. Visitor spending includes food, shopping, entertainment, lodging, and recreational expenditures by travelers and second-home owners. Marathon County had just over \$232 million in expenditures in 2014. The direct impact of tourism in Marathon County accounted for 4,131 jobs in 2014, providing over \$96 million in resident incomes and over \$28 million in state and local taxes.

A strong tourist industry highlights the unique assets of a community, making the area more attractive to residents and people being recruited by area employers. Marathon County has a broad range of recreational amenities like Rib Mountain State Park and Granite Peak Ski Area, the Mountain-Bay State Trail and the Ice Age National Scenic Trail, the Wausau Whitewater Kayak Park, and water resources such as Lake Wausau, Lake DuBay, and the Big Eau Pleine Reservoir, as well as arts and culture amenities like the Grand Theater and the Leigh Yawkey Woodson Art Museum, both in Wausau.

## **DEVELOPMENT AND REDEVELOPMENT AREAS**

Companies have different needs and preferences for business sites depending upon transportation, utility, and labor force considerations, so it is desirable to have land available for new development or redevelopment throughout the County, rather than concentrated in a few locations. It is also important to recognize that opportunities for new commercial and/or industrial development will likely occur in existing or planned business or industrial parks and through redevelopment of underutilized land.

An adequate supply of well-located business and industrial parks with good transportation access is critical to the economic health of the region. The business and industrial parks must be served with good sewer and water services, as well as energy and telecommunications infrastructure. In order to maintain diverse options to meet site location criteria of different companies such as location, lot size, and transportation access, metropolitan regions typically maintain an inventory of 5 - 8 years of developable land.

Due to the costs of developing land and holding it, developers and communities may choose to invest in infrastructure on a phased basis. Communities identify land with critical highway access and other features well in advance of development in order to create competitive business and industrial park options in their region. Land for business or industrial park purposes can be controlled through planning and zoning, purchasing land or holding options. Local units of government generally control this, although the County may have some influence with regard to County roads and in communities with County zoning.

Two important factors that can influence the amount and location of new commercial and industrial development are the allowable development density and safe, convenient transportation access.

- ***Development Density*** – The amount of land required for individual building sites is regulated by zoning and varies by community. Optimizing the density of development in business and industrial parks helps a community secure the greatest return on its investment in infrastructure, and in the case of municipally owned industrial parks, it also impacts the community's return on investment in land. Industrial site location professionals and private business park developers typically look for an initial building coverage of 20-25 percent because this will generally allow a company to double in size on-site.

- **Access** - Industrial parks are typically located along major transportation corridors often separated from residential areas. One reason for the separation is to avoid land use and transportation conflicts as residential streets are not designed for heavy truck traffic and businesses do not like residential traffic or children playing in areas where they are moving heavy trucks and materials. It is also cost effective to concentrate roads with heavy load limits in industrial parks close to major highways. In addition to accommodating truck traffic, access for employees should be safe and convenient.

### **Wausau Metro Area Business and Industrial Parks**

Half of Marathon County's twelve industrial and/or business parks are located in the Highway 51 Corridor, in Mosinee, Kronenwetter, Brokaw, Wausau, Rothschild, and Weston. No industrial park sites or land currently available in the Wausau metro area has rail access. Lack of rail access can increase transportation costs for a company; increase truck traffic in the community; or cause the company to locate in another area. Currently, the only industrial park in the County with available rail access is located in the Village of Spencer.

### **Rural Community Industrial Parks**

Several rural villages in Marathon County have created industrial parks, including Athens, Colby, Edgar, Maine, Spencer, and Stratford. The average building density is lower in these rural communities compared to development in business and industrial parks in the Wausau metro area. Lower density is common in more rural communities because land costs are lower, and rural communities often have plenty of available land with good highway access. However, such low building densities can create higher infrastructure costs (sewer, water, roads) for each lot.

### **Redevelopment Areas**

Buildings that house manufacturing operations have evolved over the years to meet changing space needs. Manufacturers today typically prefer clear span buildings (no posts) and higher ceilings. Changes in technology, process flow, and warehousing systems make some older industrial buildings obsolete or limit their use to activities such as long-term storage. A decline in productive use of these buildings may lead to building deterioration, creating blight and a decline in tax values. Likewise, these older industrial areas no longer provide significant employment opportunities. In some cases, older industrial properties may have soil or water contamination. Given the high costs associated with property clean up and reuse, market conditions will have a significant

impact on a community's ability to redevelop an area. For example, older buildings located along a commercial corridor experiencing development demand may require less public investment to foster redevelopment than areas that have contaminated soils or limited existing transportation access.

Most opportunities for redevelopment in Marathon County will occur in incorporated cities and villages. Old or obsolete commercial and industrial properties along the Wisconsin River and older highway corridors are the most likely candidates for redevelopment and several municipalities in the Wausau metropolitan area are beginning to redevelop these properties. In areas with water frontage, redevelopment often involves conversion of obsolete industrial uses into mixed commercial, residential, and recreational uses.

### **Downtown Revitalization**

The primary central business district in Marathon County is downtown Wausau, but numerous other downtowns are found within the county. A healthy downtown is characterized by a diverse economic base, good access and parking, a clean, safe and attractive environment, and activity day and night.

Historically downtown Wausau has served as the center for government, finance, lodging, dining, entertainment, legal, retail and most commercial activities. As the region has grown and formats for retail, lodging and other businesses have changed, downtown Wausau, like many older downtown areas has evolved and adapted. In recent years retail shopping centers have developed in other metro area communities, following the shift of population to the south and east along major road corridors.

The City of Wausau has begun to implement a plan to redevelop a section of the downtown east of the river. Several years of planning and working with consulting firms have led to initial construction, including remediating contaminated areas, daylighting a stream, and connecting 1<sup>st</sup> Street through the site. The plans include public access to the river and mixed-use development for housing, restaurants, and other businesses.

**APPENDIX B**

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**COUNTY HIGHWAY SEGMENT DATA**

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OBJECTID	Road	NEW_SEGMENT Descp	ID	GIS_MILES	COMMENTS	Last Maint	Maint Yr	Maint Age	PASER	AADT	Activity Total	ADT Rank	Activity Rank	Total Rank
1	CTH A	STH 13-CTH E	A001	6.668837		P	2010	11	7	1,284	42	6	3	9
2	CTH A	CTH E-STH 97	A002	4.965267		P	2010	11	6	875	39	4	3	7
3	CTH A	STH 97-CTH H	A003	5.485577		P	2011	10	7	1,245	48	5	4	9
4	CTH A	CTH H-CTH S	A004	2.858649		P	2011	10	7	920	20	4	2	6
5	CTH A	CTH S-STH 107	A005	2.991700		P	2011	10	7	1,255	66	6	4	10
6	CTH A	STH 107-CTH O	A006	3.744435		P	2011	10	8	872	50	4	4	8
7	CTH A	CTH O-CTH K	A007	3.709161		P	2011	10	8	932	32	4	2	6
8	CTH AAA	E MCMILLIAN ST-STH 97	AAA001	0.996152	Changed Segm	P	2006	15	6	2,700	36	10	3	13
9	CTH B	Rangeline Road-Ahrens Rd	B001	5.256025	Changed Segm	P	2019	2	10	1,190	167	5	6	11
10	CTH B	Ahrens Rd-CTH N	B002	3.812810	Changed Segm	P	2019	2	10	1,350	26	6	2	8
11	CTH B	CTH N-STH 97	B003	1.965651	Changed Segm	P	1997	24	5	1,012	315	5	7	12
12	CTH C	STH 13-CTH F	C001	1.840545		P	2014	7	7	1,600	227	7	6	13
17	CTH C	CTH F-CTH E	C002	4.372633		P	2014	7	8	1,300	45	6	3	9
18	CTH C	CTH E-STH 97	C003	4.465539		P	2015	6	8	1,100	74	5	5	10
19	CTH C	STH 97-CTH M	C004	2.677741		P	2015	6	8	1,865	140	8	6	14
20	CTH C	CTH M-Youngs Valley Ln	C005	4.352543	Changed Segm	P	2015	6	9	820	151	4	6	10
21	CTH C	Youngs Valley Ln-CTH O	C006	7.844251	Changed Segm	O	2017	4	8	1,012	128	5	6	11
22	CTH C	CTH O-STH 34	C007	4.118146		O	2017	4	7	978	50	4	4	8
23	CTH C	CTH DB-CTH X	C008	3.463741		P	2000	21	8	490	27	2	2	4
24	CTH C	CTH X-Little Eau Claire River	C009	2.255449	Changed Segm	P	2000	21	8	400	17	2	1	3
13	CTH C	Little Eau Claire River-CTH J	C010	5.696970	Changed Segm	P	2017	4	9	400	77	2	5	7
14	CTH C	CTH J-CTH Y	C011	2.180727		P	2000	21	5	773	22	4	2	6
15	CTH C	CTH Y-CTH I	C012	4.580674		P	2000	21	5	360	38	2	3	5
16	CTH C	CTH I-STH 49	C013	3.128027		P	2013	8	8	440	60	2	4	6
25	CTH D	STH 29-CTH DD	D001	3.820071		P	2007	14	7	474	53	2	4	6
26	CTH D	CTH DD-CTH N	D002	3.204888		P	2007	14	7	230	64	1	4	5
27	CTH D	CTH N-CTH Z	D003	3.669577		P	2017	4	10	60	35	1	3	4
28	CTH DB	County Line-STH 34	DB001	3.251737		P	2004	17	7	1,900	140	8	6	14
29	CTH DD	CTH Y-CTH D	DD001	4.267876		C	2017	4	9	692	70	3	5	8
30	CTH E	STH 97-CTH C	E001	5.189699		R	2015	6	8	2,570	466	10	8	18
31	CTH E	CTH C-STH 153	E002	2.982870		O	2015	6	8	750	34	4	3	7
32	CTH E	STH 153-CTH P	E003	2.988851		P	2001	20	5	740	34	3	3	6
33	CTH E	CTH P-CTH N	E004	2.988216		P	1994	27	6	210	14	1	1	2
34	CTH E	CTH N-STH 29	E005	2.987372		P	2010	11	7	250	17	2	1	3
35	CTH E	STH 29-CTH A	E006	3.954857		P	2010	11	7	670	91	3	5	8
36	CTH F	STH 13-CTH C	F001	1.970318		O	2015	6	8	680	55	3	4	7
37	CTH F	CTH C-STH 153	F002	3.887831		P	2005	16	6	680	35	3	3	6
38	CTH F	STH 153-CTH P	F003	3.489906		P	2005	16	6	690	26	3	2	5
39	CTH F	CTH P-CTH N	F004	3.510392		P	2010	11	8	690	25	3	2	5
40	CTH F	CTH N-STH 29	F005	3.140956		P	2005	16	6	540	18	3	1	4
41	CTH F	STH 29-CTH A	F006	3.976541		C	2016	5	9	800	20	4	2	6
42	CTH F	CTH A-County Line Road	F007	2.098195		C	2016	5	9	430	31	2	2	4
43	CTH FF	CTH S-STH 107	FF001	5.017189		C	2020	1	8	115	9	1	1	2
44	CTH G	CTH J-CTH Q	G001	3.729849		P	2012	9	8	140	21	1	2	3
45	CTH G	CTH Q-Sawmill Rd	G002	2.888362	Changed Segm	P	2003	18	5	540	13	3	1	4
46	CTH G	Sawmill Rd-CTH Y south	G003	3.990274	Changed Segm	P	2003	18	5	570	27	3	2	5
47	CTH G	CTH Y-CTH HH	G004	3.198462		P	2012	9	8	190	20	1	2	3

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48 CTH H	STH 153-CTH P	H001	3.975794	P	2005	16	6	654	30	3	2	5
49 CTH H	CTH P-CTH N	H002	2.993260	P	2009	12	8	820	30	4	2	6
50 CTH H	CTH N-STH 29	H003	2.897174	P	2006	15	5	2,250	419	10	8	18
51 CTH H	STH 29-CTH U	H004	2.034687	P	2006	15	5	1,600	16	7	1	8
52 CTH H	CTH U-CTH A	H005	5.122638	P	2006	15	5	890	35	4	3	7
53 CTH H	CTH A-CTH L	H006	3.828624	Changed Segm P	2006	15	9	450	22	2	2	4
54 CTH HH	STH 52-CTH G	HH001	3.021091	C	2016	5	9	555	25	3	2	5
55 CTH HH	County Line-CTH G	HH002	0.000000	Langlade County takes care of this segement			7	650	12	3	1	4
56 CTH I	County Line Rd-CTH C	I001	2.490193	O	2013	8	7	470	12	2	1	3
57 CTH I	CTH C-STH 153	I002	3.591790	P	2013	8	8	560	41	3	3	6
58 CTH II	CTH Y-STH 49	II001	6.071470	P	2018	3	10	330	55	2	4	6
59 CTH J	County Line Road-CTH C	J001	2.183817	P	2013	8	8	1,048	77	5	5	10
60 CTH J	CTH C-STH 153	J002	4.056557	P	2013	8	8	1,100	56	5	4	9
61 CTH J	STH 153-STH 29	J003	7.959917	P	2004	17	5	1,950	151	8	6	14
62 CTH J	STH 29-CTH N	J004	4.006788	P	2015	6	8	3,400	328	10	7	17
63 CTH J	CTH N-STH 52	J005	4.155213	P	2016	5	9	1,550	62	7	4	11
64 CTH J	STH 52-CTH G	J006	4.643601	P	2008	13	6	678	59	3	4	7
65 CTH J	CTH G-County Line Road	J007	2.085869	P	2008	13	6	560	9	3	1	4
66 CTH K	Overlook Dr-CTH WW	K001	2.601479	Changed Segm P	1998	23	5	6,278	563	10	8	18
67 CTH K	CTH WW-CTH L	K002	4.367338	Changed Segm P	1998	23	5	5,385	282	10	7	17
68 CTH K	CTH L-County Line	K003	2.059409	Changed Segm P	1998	23	5	4,000	18	10	1	11
69 CTH KK	CTH B-Half Moon Lake Dr	KK001	1.553009	P	2020	1	10	1,300	94	6	5	11
70 CTH KK	Half Moon Lake Dr-Spring Brook Rd	KK002	1.850818	Changed Segm P	2020	1	10	1,300	150	6	6	12
71 CTH KK	Spring Brook Rd-Collie St	KK003	1.938251	Changed Segm P	2005	16	8	1,300	50	6	4	10
72 CTH KK	Collie St-CTH N	KK004	3.806452	P	2005	16	8	2,850	323	10	7	17
73 CTH L	Lekie Dr-STH 97	L001	4.925389	RENAMED TO C	2019	2	10	566	22	3	2	5
74 CTH L	STH 97-CTH H	L002	3.797253	RENAMED TO C	2019	2	10	450	22	2	2	4
75 CTH L	CTH H-CTH S	L003	3.807785	RENAMED TO C	2019	2	8	155	10	1	1	2
76 CTH L	CTH S-STH 107	L004	4.998378	RENAMED TO C	2020	1	4	390	50	2	4	6
77 CTH L	STH 107-CTH O	L005	3.737831	RENAMED TO C	2020	1	10	390	29	2	2	4
78 CTH L	CTH O-CTH K	L006	3.675787	RENAMED TO P	2019	2	10	680	43	3	3	6
79 CTH M	County Line Road-CTH C	M001	3.999634	P	2009	12	7	1,600	139	7	6	13
80 CTH M	CTH C-STH 153	M002	4.385751	P	2015	6	8	1,100	154	5	6	11
81 CTH M	STH 153-CTH P	M003	4.418014	P	1995	26	5	368	80	2	5	7
82 CTH M	CTH P-CTH N	M004	3.374249	O	2010	11	5	367	89	2	5	7
83 CTH M	CTH N-STH 29	M005	2.913919	P	2005	16	6	340	23	2	2	4
84 CTH M	STH 29-CTH U	M006	3.480636	P	2013	8	8	390	23	2	2	4
85 CTH M	CTH U-STH 97	M007	3.073999	P	2013	8	8	440	28	2	2	4
86 CTH M	Athens West Village Limits-Township Rd	M008	1.610454	Changed Segm P	2006	15	8	510	14	3	1	4
87 CTH M	Township Rd-CTH L	M009	3.933986	Changed Segm P	2006	15	6	240	63	1	4	5
88 CTH N	STH 13-CTH F	N001	5.021010	P	2006	15	6	1,220	101	5	5	10
89 CTH N	CTH F-CTH E	N002	3.603572	P	2006	15	6	540	28	3	2	5
90 CTH N	CTH E-STH 97	N003	2.975921	P	2001	20	5	490	25	2	2	4
91 CTH N	STH 97-CTH M	N004	2.623823	P	2005	16	6	1,000	23	5	2	7
92 CTH N	CTH M-CTH H	N005	2.994148	P	2005	16	6	1,100	24	5	2	7
93 CTH N	CTH H-CTH S	N006	2.855858	O	2007	14	4	1,500	47	7	3	10
94 CTH N	STH S-STH 107	N007	2.988447	O	2016	5	8	1,500	52	7	4	11
95 CTH N	STH 107-CTH O	N008	3.787862	P	2016	5	9	1,700	25	7	2	9

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96	CTH N	CTH O-CTH KK	N009	4.805578	P	2016	5	9	3,100	121	10	6	16
97	CTH N	CTH KK-USH 51	N010	1.373297	N	2005	16	5	11,100	1089	10	9	19
98	CTH N	Skyline Lane-CTH J	N011	5.479740	P	2019	2	10	2,020	167	9	6	15
99	CTH N	CTH J-CTH Q	N012	4.101520	C	2008	13	6	1,800	57	8	4	12
100	CTH N	CTH Q-CTH Y south	N013	4.054914	Changed Segm O	2017	4	9	1,300	27	6	2	8
101	CTH N	CTH Y-County Line	N014	5.029634	O	2017	4	7	1,240	35	5	3	8
102		USH 51-Cloverland Lane	N090	0.000000	This is under municipal jurisdictions, we just have as place holders for keeping old informati					1259		0	0
103		Cloverland Lane-Robin Lane	N091	0.000000	This is under municipal jurisdictions, we just have as place holders for keeping old informati					1362		0	0
104		Robin Lane-CTH NN	N092	0.000000	This is under municipal jurisdictions, we just have as place holders for keeping old informati					423		0	0
105		CTH NN-City Wausau	N093	0.000000	This is under municipal jurisdictions, we just have as place holders for keeping old informati					351		0	0
106	CTH NN	4th Street-CTH O	NN001	3.514511	P	2009	12	8	1,600	949	7	9	16
107	CTH NN	CTH O-CTH N	NN002	5.492581	Changed Segm P	2009	12	8	5,200	890	10	9	19
108	CTH O	County Line-CTH C	O001	1.389075	P	2000	21	6	350	4	2	1	3
109	CTH O	CTH C-Saturn Rd	O002	3.099124	Changed Segm P	2005	16	6	900	31	4	2	6
110	CTH O	Saturn Rd-STH 153	O003	3.043705	Changed Segm P	2005	16	6	1,050	34	5	3	8
111	CTH O	STH 153-CTH B	O004	3.046025	P	2008	13	6	450	30	2	2	4
112	CTH O	CTH B-CTH N	O005	4.432394	P	2009	12	8	290	37	2	3	5
113	CTH O	CTH N-CTH NN	O006	2.517423	P	2008	13	8	290	20	2	2	4
114	CTH O	STH 29-CTH U	O007	3.629277	O	2018	3	9	967	53	4	4	8
115	CTH O	CTH U-CTH A	O008	4.086611	P	2011	10	8	940	60	4	4	8
116	CTH O	CTH A-CTH L	O009	3.011965	Changed Segm P	1998	23	5	450	30	2	2	4
117	CTH O	CTH L-CTH FF	O010	2.022681	Changed Segm P	2002	19	5	70	20	1	2	3
118	CTH OO	STH 29-CTH OO heads west	O0001	1.500000	Split 50/50 with Shawano County			5	586	8	3	1	4
119	CTH OO	County Line-CTH D	O0002	1.538002	O	2007	14	6	586	5	3	1	4
120	CTH P	STH 13-CTH F	P001	4.777402	P	2001	20	5	650	88	3	5	8
121	CTH P	CTH F-CTH E	P002	2.788397	P	2001	20	4	410	22	2	2	4
122	CTH P	CTH E-CTH E	P003	2.465066	P	2001	20	5	390	27	2	2	4
123	CTH P	CTH E-STH 97	P004	2.975240	P	2001	20	5	320	20	2	2	4
124	CTH P	STH 97-CTH M	P005	3.663881	P	2005	16	7	504	52	3	4	7
125	CTH P	CTH M-CTH H	P006	1.985799	P	2001	20	5	450	17	2	1	3
126	CTH P	CTH H-CTH S	P007	3.830927	P	2005	16	6	420	27	2	2	4
127	CTH P	CTH S-STH 107	P008	1.991927	P	2009	12	7	430	29	2	2	4
128	CTH Q	CTH J-Plover River Rd	Q001	2.955829	Changed Segm C	2017	4	9	400	26	2	2	4
129	CTH Q	Plover River Rd-STH 29	Q002	4.256231	Changed Segm C	2017	4	9	710	32	3	2	5
130	CTH Q	STH 29-CTH N	Q003	4.471538	C	2017	4	7	714	71	3	5	8
131	CTH Q	CTH N-CTH Z	Q004	2.995693	P	2007	14	7	150	28	1	2	3
132	CTH Q	CTH Z-STH 52	Q005	3.019439	P	2007	14	7	170	60	1	4	5
133	CTH Q	STH 52-CTH G	Q006	4.018334	P	2003	18	6	690	46	3	3	6
134	CTH R	CTH N - CTH NN	R010	1.937497	N	2005	16	6	2,600	1865	10	10	20
135	CTH R	CTH NN - Sherman Street	R011	1.394227	N	2005	16	6	4,200	1909	10	10	20
136	CTH R	Sherman Street - 52 Parkway	R012	0.503374	N	2010	11	8	13,700	1247	10	10	20
139	CTH S	County Line-CTH C	S001	3.359433	P	2009	12	6	560	0	3	1	4
140	CTH S	CTH C-STH 153	S002	4.433959	P	1997	24	5	870	68	4	4	8
141	CTH S	STH 153-CTH P	S003	3.957474	P	2000	21	5	270	45	2	3	5
142	CTH S	CTH P-CTH N	S004	2.999256	P	2000	21	5	380	40	2	3	5
143	CTH S	CTH N-STH 29	S005	2.937908	P	2005	16	7	560	46	3	3	6
144	CTH S	STH 29-CTH U	S006	1.977813	P	2018	3	9	620	33	3	3	6
145	CTH S	CTH U-CTH A	S007	5.108653	C	2018	3	9	630	42	3	3	6

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146	CTH S	CTH A-CTH L	S008	3.001267	Changed Segm P	2002	19	5	210	26	1	2	3
147	CTH S	CTH L-CTH FF	S009	2.024351	Changed Segm P	2014	7	8	150	13	1	1	2
148	CTH T	County Line-STH 97	T001	2.532064	P	2002	19	6	760	42	4	3	7
149	CTH U	CTH M-CTH H	U001	4.398089	P	2014	7	8	390	42	2	3	5
150	CTH U	CTH H-STH S	U002	2.962660	C	2018	3	9	320	37	2	3	5
151	CTH U	STH S-STH 107	U003	2.907582	C	2018	3	9	710	42	3	3	6
152	CTH U	STH 107-CTH O	U004	3.833125	P	2001	20	5	530	100	3	5	8
153	CTH U	CTH O-Overlook Dr	U005	4.990371	P	2004	17	6	1,259	207	6	6	12
154	CTH V	County Line-Spencer Village Limits	V001	4.112023	Changed Segm O	2014	7	6	1,300	121	6	6	12
155	CTH W	STH 49-County Line	VV001	1.970005	P	2018	3	10	270	26	2	2	4
156	CTH W	Evergreen Road-CTH WW	W001	2.135540	O	2003	18	6	2,620	161	10	6	16
157	CTH W	CTH WW-Trappe River	W002	3.917079	O	2003	18	6	1,900	70	8	5	13
158	CTH W	Trappe River-County Line	W003	2.631561	O	2003	18	6	1,300	53	6	4	10
159	CTH WW	CTH K-CTH W	WW001	3.715578	P	2008	13	4	1,790	453	8	8	16
160	CTH WW	CTH W-Trappe River	WW002	3.883411	P	2012	9	8	848	66	4	4	8
161	CTH WW	Trappe River-County Line	WW003	4.206000	P	2012	9	8	375	42	2	3	5
162	CTH X	County Line-CTH C	X001	1.980833	P	2000	21	6	520	16	3	1	4
163	CTH X	CTH C-STH 153	X002	5.255293	P	2008	13	6	870	49	4	4	8
164	CTH X	STH 153-CTH XX	X003	4.823682	P	2008	13	6	2,825	641	10	8	18
165	CTH X	CTH XX-STH 29	X004	4.330341	P	2008	13	6	7,500	731	10	9	19
166	CTH X	STH 29-CTH N	X005	3.441169	R	2011	10	8	9,400	1372	10	10	20
167	CTH X	CTH N-CTH Z	X006	1.257206	P	2016	5	9	4,400	96	10	5	15
168	CTH X	CTH Z-STH 52	X007	1.612822	P	2015	6	9	1,700	90	7	5	12
169	CTH XX	Business 51-Industrial Park Dr.	XX001	0.376323	R	2010	11	6	6,900	638	10	8	18
170	CTH XX	Industrial Park Dr.-Trailwood Ln.	XX002	0.340928	N	2003	18	6	6,770	852	10	9	19
171	CTH XX	Trailwood Ln.-Tesch Ln.	XX003	0.503280	P	2010	11	6	4,100	749	10	9	19
172	CTH XX	Tesch Ln.-CTH X	XX004	1.229670	P	2008	13	6	4,000	334	10	7	17
173	CTH Y	County Line-CTH J	Y001	0.437815	Changed Segm P	2013	8	8	924	10	4	1	5
174	CTH Y	CTH C-STH 153	Y002	4.040881	O	2018	3	9	730	80	3	5	8
175	CTH Y	STH 153-North Shore Dr	Y003	4.029510	Changed Segm P	2014	7	9	798	132	4	6	10
176	CTH Y	North Shore Dr-STH 29	Y004	4.483014	P	2014	7	8	1,520	170	7	6	13
177	CTH Y	STH 29-CTH N	Y005	4.500290	P	2007	14	7	1,580	192	7	6	13
178	CTH Y	CTH N-CTH Z	Y006	3.001854	P	2007	14	7	1,100	19	5	2	7
179	CTH Y	CTH Z-STH 52	Y007	3.249408	P	2020	1	8	230	22	1	2	3
180	CTH Y	STH 52-CTH G	Y008	4.884434	P	2012	9	8	170	41	1	3	4
181	CTH Y	CTH G-County Line	Y009	2.560957	P	2012	9	8	730	13	3	1	4
182	CTH Z	14th St-Pond Crest Rd	Z001	3.720485	County says 4. P	2003	18	5	3,400	420	10	8	18
183	CTH Z	Pond Crest Rd-CTH J	Z002	2.945080	County says at P	2003	18	5	870	71	4	5	9
184	CTH Z	CTH J-CTH Q	Z003	3.116787	Changed Segm P	2003	18	6	1,300	72	6	5	11
185	CTH Z	CTH Q-CTH Y	Z004	4.002493	P	2003	18	6	572	26	3	2	5
186	CTH Z	CTH Y-County Line	Z005	6.045647	O	2020	1	8	1,000	50	5	4	9

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**APPENDIX C**

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**COUNTY BRIDGE INVENTORY DATA**

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Structure Id	Location	Route	Feature	Yr		Deck Area	Deck Rating	Sup Str Rating	Sub Str Rating	Age	(Est. Yr Replace*)	Est. Replace Cost (2021 \$)
				Build								
P370256	T/CASSEL	S	SCOTCH CREEK	1928	2066	7	7	7	6	93	Pending	\$ 826,400
P370379	T/SPENCER	C	W BR LT EAU PLEINE RIVER	1930	953	7	7	7	6	91	Pending	\$ 381,200
P370299	T/FRANKFORT	P	FOREMAN CREEK	1932	1227	7	7	7	6	89	Pending	\$ 490,800
P370307	T/WIEN	P	ROCK CREEK	1932	984	6	6	6	5	89	Pending	\$ 393,600
P370158	T/HALSEY	H	WILLOW CREEK	1938	990	5	5	5	6	83	2023	\$ 396,000
P370915	T/RIB FALLS	S	BR BIG RIB RIVER	1938	996	6	5	5	5	83	Pending	\$ 398,400
P370932	T/WIEN	M	FENWOOD CREEK	1938	1458	6	5	5	5	83	Pending	\$ 583,200
P370380	T/SPENCER	C	E BR LT EAU PLEINE RIVER	1941	1525	7	7	7	6	80	Pending	\$ 610,000
B370741	T/KNOWLTON	DB	LAKE DU BAY	1942	3814	7	7	7	6	79	Pending	\$ 1,525,600
P370095	T/WIEN	N	BR SCOTCH CREEK	1945	840	7	6	6	7	76	Pending	\$ 336,000
P370187	T/RIETBROCK	M	DREWEK CREEK	1945	1072	7	7	7	7	76	Pending	\$ 428,800
B370021	V/MAINE	K	S BR COUNTY LINE CREEK	1955	2648	4	4	4	5	66	2022	\$ 1,059,200
B370022	V/MAINE	K	N BR COUNTY LINE CREEK	1955	2665	4	4	4	6	66	2022	\$ 1,066,000
B370027	T/BERLIN	A	LITTLE RIB RIVER	1957	2951	4	4	4	4	64	2022	\$ 1,180,400
B370016	T/BEVENT	C	PLOVER RIVER	1954	1987	5	5	5	4	67	2024	\$ 794,800
B370047	T/BERGEN	O	LITTLE EAU PLEINE RIVER	1959	4762	5	6	6	4	62	2024	\$ 1,904,800
P370163	T/BERN	L	BLACK CREEK	1958	1035	5	5	5	3	63	2024	\$ 414,000
B370038	T/BERLIN	L	LITTLE RIB RIVER	1957	1246	4	4	4	5	64	2025	\$ 498,400
B370092	T/HOLTON	F	E BR BIG EAU PLEINE RIVER	1962	2106	4	4	4	6	59	2025	\$ 842,400
P370246	T/MARATHON	O	FOUR MILE CREEK	1950	806	6	6	6	6	71	2025	\$ 322,400
B370028	T/STETTIN	U	LITTLE RIB RIVER	1957	3007	4	4	4	7	64	2026	\$ 1,202,800
B370012	T/FRANKFORT	N	HAMAN CREEK	1952	2411	5	5	5	5	69	2027	\$ 964,400
B370014	T/RIB FALLS	S	BIG RIB RIVER	1954	8545	7	8	8	5	67	2029	\$ 3,418,000
B370023	T/WESTON	J	EAU CLAIRE RIVER	1955	4915	6	6	6	5	66	2030	\$ 1,966,000
B370025	T/HAMBURG	A	BIG RIB RIVER	1956	5005	6	5	5	6	65	2031	\$ 2,002,000
P370257	T/CASSEL	S	SODA CREEK	1956	1034	5	6	6	6	65	2031	\$ 413,600
B370026	T/EASTON	N	EAU CLAIRE RIVER	1957	6240	7	8	8	6	64	2032	\$ 2,496,000
B370042	T/MCMILLAN	T	MCGIVERN CREEK	1957	756	6	6	6	6	64	2032	\$ 302,400
B370044	T/EAU PLEINE	P	BIG EAU PLEINE RIVER	1958	5286	5	5	5	6	63	2033	\$ 2,114,400
B370045	T/WESTON	N	BIG SANDY CREEK	1959	2189	6	6	6	6	62	2034	\$ 875,600
B370049	V/FENWOOD	P	FENWOOD CREEK	1959	1270	6	6	6	5	62	2034	\$ 508,000
B370085	T/CLEVELAND	H	ROCKY RUN	1960	1581	4	4	4	4	61	2035	\$ 632,400
B370083	T/HULL	N	BIG EAU PLEINE RIVER	1961	5457	5	6	6	6	60	2036	\$ 2,182,800
B370086	T/DAY	M	LITTLE EAU PLEINE RIVER	1961	931	5	5	5	5	60	2036	\$ 372,400
B370088	T/HAMBURG	L	GRASS CREEK	1961	798	6	6	6	5	60	2036	\$ 319,200

Structure Id	Location	Route	Feature	Yr		Deck Area	Deck Rating	Sup Str Rating	Sub Str Rating	Age	(Est. Yr Replace*)	Est. Replace Cost (2021 \$)
				Build								
B370090	T/TEXAS	WW	TRAPPE RIVER	1961		5801	7	7	6	60	2036	\$ 2,320,400
B370062	T/Franzen	VV	LITTLE WOLF RIVER	1962		1026	6	6	5	59	2037	\$ 410,400
B370080	T/WESTON	N	BR BIG SANDY CREEK	1962		1960	N	N	N	59	2037	\$ 784,000
B370094	T/EASTON	Z	BIG SANDY CREEK	1962		3180	7	5	6	59	2037	\$ 1,272,000
B370095	T/HOLTON	A	W BR EAU PLEINE RIVER	1962		1752	5	5	6	59	2037	\$ 700,800
B370093	T/GREEN VALLEY	S	LITTLE EAU PLEINE RIVER	1964		4926	6	6	7	57	2039	\$ 1,970,400
B370102	T/TEXAS	J	TRAPPE RIVER	1964		2778	4	4	6	57	2039	\$ 1,111,200
B370103	T/HEWITT	G	TRAPPE RIVER	1964		3046	7	7	6	57	2039	\$ 1,218,400
P370230	T/PLOVER	Z	PLOVER RIVER	1965		752	6	6	6	56	2040	\$ 300,800
P370226	T/EASTON	Q	E BR BIG SANDY CREEK	1967		733	5	5	6	54	2042	\$ 293,200
B370237	T/DAY	C	WILD CREEK	1968		1513	N	N	N	53	2043	\$ 605,200
P370382	T/SPENCER	F	BR LITTLE EAU PLEINE R	1968		958	6	6	6	53	2043	\$ 383,200
B370135	T/RIETBROCK	H	BLACK CREEK	1969		4391	5	5	6	52	2044	\$ 1,756,400
B370137	T/KNOWLTON	C	JOHNSON CREEK	1969		2237	4	5	6	52	2044	\$ 894,800
B370138	T/GUENTHER	C	LITTLE EAU CLAIRE RIVER	1969		2347	4	7	6	52	2044	\$ 938,800
B370139	T/KNOWLTON	X	JOHNSON CREEK	1969		2145	4	5	6	52	2044	\$ 858,000
P370931	T/MARATHON	NN	PINE CREEK	1969		1056	N	N	N	52	2044	\$ 422,400
B370151	T/STETTIN	O	LITTLE RIB RIVER	1970		6896	5	7	5	51	2045	\$ 2,758,400
P370151	T/HAMBURG	S	MID BR EINERT CREEK	1970		1026	N	N	N	51	2045	\$ 410,400
P370165	T/BERN	M	BLACK CREEK	1972		1333	7	7	6	49	2047	\$ 533,200
P370963	T/EASTON	Q	LITTLE SANDY CREEK	1972		621	6	6	6	49	2047	\$ 248,400
P370290	T/HULL	F	DILL CREEK	1973		2400	7	8	7	48	2048	\$ 960,000
B370171	T/CLEVELAND	M	BIG EAU PLEINE RIVER	1975		15344	4	6	5	46	2050	\$ 6,137,600
P370325	T/MOSINEE	KK	FOUR MILE CREEK	1975		1605	7	7	5	46	2050	\$ 642,000
B370173	T/BRIGHTON	F	LITTLE EAU PLEINE RIVER	1976		3467	5	5	6	45	2051	\$ 1,386,800
P370327	V/KRONENWETTER	X	BULL JUNIOR CREEK	1976		1392	8	8	5	45	2051	\$ 556,800
B370175	T/EASTON	J	BIG SANDY CREEK	1979		3657	4	4	7	42	2054	\$ 1,462,800
P370967	T/EAU PLEINE	P	BR BIG EAU PLEINE RIVER	1980		1175	N	N	N	41	2055	\$ 470,000
B370210	T/BERLIN	A	W FK LITTLE RIB RIVER	1985		2188	6	6	6	36	2060	\$ 875,200
B370211	T/BERLIN	A	BR W FK LITTLE RIB RIVER	1985		1203	N	N	N	36	2060	\$ 481,200
B370222	T/CASSEL	N	SODA CREEK	1986		1508	6	6	7	35	2061	\$ 603,200
B370227	C/COLBY	N	ELM BROOK	1986		1827	N	N	N	35	2061	\$ 730,800
B370233	T/HAMBURG	A	EINERT CREEK	1986		2224	N	N	N	35	2061	\$ 889,600
B370132	T/DAY	M	WILD CREEK	1990		2383	7	7	7	31	2065	\$ 953,200
B370245	T/HEWITT	Q	BIG SANDY CREEK	1991		780	N	N	N	30	2066	\$ 312,000

Structure Id	Location	Route	Feature	Yr		Deck Area	Deck Rating	Sup Str Rating	Sub Str Rating	Age	(Est. Yr Replace*)	Est. Replace Cost (2021 \$)
				Built	Yr							
B370253	T/TEXAS	W	TRAPPE RIVER	1992	1992	5406	6	7	7	29	2067	\$ 2,162,400
B370251	T/EMMET	S	BR FREEMAN CREEK	1993	1993	1273	5	5	8	28	2068	\$ 509,200
B370250	T/GREEN VALLEY	S	BIG EAU PLEINE RESERVOIR	1996	1996	8704	7	7	7	25	2071	\$ 3,481,600
B370283	T/RIB FALLS	H	TRIB TO PET BROOK	1997	1997	4702	N	N	N	24	2072	\$ 1,880,800
B370302	T/FRANKFORT	N	BR HAMAN CREEK	1998	1998	1219	6	6	7	23	2073	\$ 487,600
B370309	T/WESTON	J	LITTLE SANDY CREEK	1998	1998	1143	7	7	7	23	2073	\$ 457,200
B370298	T/BERGEN	O	BIG EAU PLEINE RESERVOIR	1999	1999	8558	7	7	7	22	2074	\$ 3,423,200
B370299	T/RIETBROCK	U	BR BLACK CREEK	2000	2000	1272	7	7	8	21	2075	\$ 508,800
B370310	V/EDGAR	H	SCOTCH CREEK	2000	2000	4716	6	6	7	21	2075	\$ 1,886,400
B370311	T/FRANKFORT	N	RANDALL CREEK	2000	2000	3884	7	7	6	21	2075	\$ 1,553,600
B370333	T/RIB FALLS	S	TR. BIG RIB RIVER	2002	2002	2169	7	8	8	19	2077	\$ 867,600
B370231	V/MAINE	U	OTTO CREEK	2003	2003	2295	7	8	7	18	2078	\$ 918,000
B370324	T/EAU PLEINE	P	HAMANN CREEK	2003	2003	3402	6	7	7	18	2078	\$ 1,360,800
B370326	T/HARRISON	Y	SKULEN POND CREEK	2003	2003	1390	6	6	7	18	2078	\$ 556,000
B370389	T/MCMILLAN	C	LITTLE EAU PLEIN RIVER	2003	2003	1296	7	7	7	18	2078	\$ 518,400
B370335	T/RIB MOUNTAIN	N	BIG RIB RIVER	2004	2004	110407	7	6	7	17	2079	\$ 44,162,800
B370373	C/WAUSAU	R	BIG RIB RIVER	2005	2005	35236	7	7	7	16	2080	\$ 14,094,400
B370381	V/ROTHSCHILD		CEDAR CREEK	2005	2005	10287	7	7	7	16	2080	\$ 4,114,800
B370386	T/MCMILLAN	T	SCHEURER CREEK	2005	2005	1770	7	7	7	16	2080	\$ 708,000
B370393	T/MCMILLAN	E	LITTLE EAU PLEINE RIVER	2005	2005	4767	7	7	7	16	2080	\$ 1,906,800
B370391	T/HOLTON	A	E BR BIG EAU PLEINE RIVER	2006	2006	1680	7	7	7	15	2081	\$ 672,000
B370398	T/STETTIN	U	BR LITTLE RIB RIVER	2007	2007	1674	7	7	7	14	2082	\$ 669,600
B370403	T/HULL	N	WINDING CREEK	2007	2007	1314	7	7	7	14	2082	\$ 525,600
B370405	T/HARRISON	G	EAU CLAIRE RIVER	2007	2007	4371	7	7	7	14	2082	\$ 1,748,400
B370401	T/HAMBURG	S	GRASS CREEK	2008	2008	1712	7	7	8	13	2083	\$ 684,800
B370404	T/NORRIE	N	PLOVER RIVER	2008	2008	1818	7	7	7	13	2083	\$ 727,200
B370394	V/ROTHSCHILD	Trail	Wisconsin River	2009	2009	6946	7	8	7	12	2084	\$ 2,778,400
B370406	T/HARRISON	G	BR EAU CLAIRE RIVER	2009	2009	1056	7	7	8	12	2084	\$ 422,400
B370415	T/HALSEY	L	STONEY CREEK	2009	2009	1511	7	7	7	12	2084	\$ 604,400
B370419	T/HALSEY	L	McGinnis Creek	2009	2009	1576	7	7	7	12	2084	\$ 630,400
B370416	T/BERLIN	A	BR LITTLE RIB RIVER	2010	2010	1919	7	7	7	11	2085	\$ 767,600
B370295	V/WESTON	X	EAU CLAIRE RIVER	2011	2011	18574	7	7	7	10	2086	\$ 7,429,600
B370426	T/HALSEY	L	BIG RIB RIVER	2011	2011	3916	7	7	6	10	2086	\$ 1,566,400
B370425	V/MAINE	K	SILVER CREEK	2012	2012	4530	7	8	7	9	2087	\$ 1,812,000
B370433	T/DAY	M	LITTLE EAU PLEINE R	2012	2012	5391	7	7	7	9	2087	\$ 2,156,400

Structure Id	Location	Route	Feature	Yr Built	Deck		Sup Str		Sub Str		(Est. Yr Replace*)	Est. Replace Cost (2021 \$)
					Area	Rating	Rating	Rating	Rating	Age		
B370434	T/WAUSAU	Z	PRAHL CREEK	2012	1697	7	7	7	7	9	2087	\$ 678,800
B370435	T/HARRISON	Y	BR EAU CLAIRE RIVER	2015	991	7	7	7	8	6	2090	\$ 396,400
B370442	T/PLOVER	Y	EAU CLAIRE RIVER	2015	3568	7	7	7	6	6	2090	\$ 1,427,200
B370447	T/MOSINEE	O	HOG CREEK	2016	1843	9	9	9	9	5	2091	\$ 737,200
B370449	T/WIEN	M	FENWOOD CREEK	2017	1394	7	7	7	8	4	2092	\$ 557,600
B370452	T/EASTON	N	LITTLE SANDY CREEK	2018	1655	8	8	8	8	3	2093	\$ 662,000
B370450	T/EASTON	Z	EAU CLAIRE RIVER	2019	6256	8	8	8	8	2	2094	\$ 2,502,400
B370453	T/RINGLE	Q	MOLE BROOK	2019	1316	8	8	8	8	2	2094	\$ 526,400
B370446	T/CLEVELAND	M	FENWOOD CREEK	2020	2941	8	8	8	9	1	2095	\$ 1,176,400
B370454	T/NORRIE	Y	PLOVER RIVER	2020	1845	7	8	8	8	1	2095	\$ 738,000
B370456	T/HEWITT	G	BR TRAPPE RIVER	2020	1381	8	8	8	9	1	2095	\$ 552,400

\*Est. based on age - actual replacement subject to ratings.

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**WISDOT TRAFFIC COUNTS AND PROJECTIONS**

Seg_ID	Count Location	AAADT 2010	AAADT 2019	AAADT Diff	% Difference	Model 2050	Projected Change	% Change
A001	CTH A EAST OF STH 13 HOLTON TNSHP	790	1500	710	90%	3300	1800	120%
A002	CTH A WEST OF STH 97 JOHNSON TNSHP	750	970	220	29%	1500	530	55%
A003	CTH A EAST OF STH 97 HALSEY TNSHP	1100	1700	600	55%	570	-1130	-66%
A004	CTH A BTWN CTH S NORTH & CTH S SOUTH HAMBURG TNSHP	1000	1200	200	20%	820	-380	-32%
A005	CTH A WEST OF STH 107 HAMBURG TNSHP	1200	1300	100	8%	680	-620	-48%
A006	CTH A EAST OF STH 107 BERLIN TNSHP	960	1000	40	4%	1200	200	20%
A007	CTH A WEST OF CTH K MAINE TNSHP	1000	1400	400	40%	1900	500	36%
B001	CTH B 1.5 MI NW OF CTH O MARATHON TNSHP	1100	1000	-100	-9%	930	-70	-7%
B003	CTH B NORTH OF CTH N MARATHON TNSHP	960	840	-120	-13%	1500	660	79%
C001	CTH C EAST OF STH 13 PACIFIC & FRONT STS SPENCER	1700	1600	-100	-6%	6000	4400	275%
C002	CTH C BTWN CTH E & CTH F MC MILLAN TNSHP	1400	1300	-100	-7%	1900	600	46%
C003	CTH C WEST OF STH 97 MC MILLAN TNSHP	860	1100	240	28%	1300	200	18%
C004	CTH C EAST OF STH 97 DAY TNSHP	2500	2600	100	4%	4800	2200	85%
C005	CTH C EAST OF CTH M DAY TNSHP	1600	1100	-500	-31%	1600	500	45%
C006	CTH C BTWN CTH S NORTH & CTH S SOUTH GREEN VALLEY TNSHP	1300	1100	-200	-15%	1800	700	64%
C007	CTH C BTWN CTH O NORTH & CTH O SOUTH BERGEN TNSHP	1600	1100	-500	-31%	1900	800	73%
C008	CTH C EAST OF CTH DB KNOWLTON TNSHP	530	490	-40	-8%	1600	1110	227%
C010	CTH C 2.25 MI WEST OF CTH J GUENTHER TNSHP	420	400	-20	-5%	940	540	135%
C011	CTH C BTWN CTH J NORTH & CTH J SOUTH BEVEN TNSHP	770	770	0	0%	1600	830	108%
C012	CTH C 1.5 MI EAST OF CTH Y BEVENT TNSHP	340	360	20	6%	1000	640	178%
C013	CTH C WEST OF STH 49 FRANZEN TNSHP	360	440	80	22%	2600	2160	491%
D001	CTH D NORTH OF CTH OO NORRIE TNSHP	450	500	50	11%	1100	600	120%
D002	CTH D SOUTH OF CTH N NORRIE TNSHP	290	330	40	14%	410	80	24%
DB001	CTH DB BTWN SEAGULL DR & CTH C KNOWLTON TNSHP	1800	1800	0	0%	5000	3200	178%
DD001	CTH DD WEST OF CTH D NORRIE TNSHP	380	530	150	39%	690	160	30%
E001	CTH E BTWN MANN ST & DAVIS LN MARSHFIELD TNSHP	1900	2400	500	26%	5100	2700	113%
E002	CTH E SOUTH OF STH 153 EAU PLEINE TNSHP	1200	1100	-100	-8%	340	-760	-69%
E003	CTH E NORTH OF STH 153 EAU PLEINE TNSHP	640	780	140	22%	400	-380	-49%
E004	CTH E 0.5 MI N OF CTH P FRANKFORT TNSHP	230	210	-20	-9%	100	-110	-52%
E005	CTH E SOUTH OF STH 29 JOHNSON TNSHP	230	250	20	9%	780	530	212%
E006	CTH E NORTH OF STH 29 JOHNSON TNSHP	580	670	90	16%	1200	530	79%
F002	CTH F NORTH OF CTH C SPENCER TNSHP	360	680	320	89%	530	-150	-22%

F003	CTH F NORTH OF STH 153 BRIGHTON TNSHP	610	610	0	0%	690	80	13%
F004	CTH F 0.5 MI NORTH OF CTH P BRIGHTON TNSHP	620	690	70	11%	100	-590	-86%
F005	CTH F SOUTH OF STH 29 HULL TNSHP	440	540	100	23%	770	230	43%
F006	CTH F NORTH OF STH 29 HOLTON TNSHP	620	1200	580	94%	1600	400	33%
G001	CTH G BTWN CTH J & CTH Q HEWITT TNSHP	140	140	0	0%	90	-50	-36%
G002	CTH G EAST OF CTH Q HEWITT TNSHP	490	540	50	10%	360	-180	-33%
G004	CTH G BTWN CTH Y & CTH HH HARRISON TNSHP	180	190	10	6%	680	490	258%
H001	CTH H NORTH OF STH 153 EMMET TNSHP	640	790	150	23%	820	30	4%
H002	CTH H SOUTH OF CTH N CASSEL TNSHP	1400	1100	-300	-21%	2000	900	82%
H003	CTH H SOUTH OF STH 29 RIETBROCK TNSHP	3500	3400	-100	-3%	4800	1400	41%
H004	CTH H NORTH OF STH 29 RIETROCK TNSHP	1100	1600	500	45%	1000	-600	-38%
H005	CTH H SOUTH OF CTH A HALSEY TNSHP	920	800	-120	-13%	360	-440	-55%
HH001	CTH HH NORTH OF STH 52 HARRISON TNSHP	460	460	0	0%	840	380	83%
HH002	CTH HH 2.0 MI S OF CTH G HARRISON TNSHP	590	810	220	37%	840	30	4%
I001	CTH I SOUTH OF CTH C FRANZEN TNSHP	480	470	-10	-2%	470	0	0%
I002	CTH I SOUTH OF STH 153 FRANZEN TNSHP	460	560	100	22%	1300	740	132%
II001	CTH II EAST OF CTH Y ELDERON TNSHP	230	260	30	13%	610	350	135%
J001	CTH J SOUTH OF CTH C BEVENT TNSHP	1100	1100	0	0%	1600	500	45%
J002	CTH J SOUTH OF SOUTH OF STH 153 BEVENT TNSHP	910	1100	190	21%	950	-150	-14%
J003	CTH J SOUTH OF STH 29 WESTON TNSHP	1900	1900	0	0%	2800	900	47%
J004	FULLER NORTH OF SCHOFIELD WESTON	3900	3400	-500	-13%	6500	3100	91%
J005	CTH J BTWN CTH N & CTH Z EASTON TNSHP	1400	1600	200	14%	1200	-400	-25%
J006	CTH J NORTH OF STH 52 TEXAS TNSHP	860	760	-100	-12%	1100	340	45%
K001	CTH K NORTH OF DECATOR DR WAUSAU	5900	6200	300	5%	8800	2600	42%
K002	CTH K NORTH OF CTH WW MAINE TNSHP	6200	5300	-900	-15%	8500	3200	60%
K003	CTH K NORTH OF CTH F MAINE TNSHP	4500	4600	100	2%	6600	2000	43%
KK002	CTH KK 2.0 MI NORTH OF CTH B MOSINEE TNSHP	1100	1300	200	18%	1400	100	8%
KK004	CTH KK BTWN FOX GLOVE & GOLDENROD RDS WAUSAU	2400	2700	300	13%	3100	400	15%
L001	CTH F WEST OF STH 97 BERN TNSHP	440	510	70	16%	530	20	4%
L002	CTH F EAST OF STH 97 HALSEY TNSHP	460	450	-10	-2%	530	80	18%
L005	CTH F EAST OF STH 107 BERLIN TNSHP	620	390	-230	-37%	890	500	128%
L006	CTH F WEST OF CTH K MAINE TNSHP	970	680	-290	-30%	1500	820	121%
M001	CTH M SOUTH OF CTH C DAY TNSHP	1600	1600	0	0%	2500	900	56%
M002	CTH M SOUTH OF STH 153 CLEVELAND TNSHP	1100	1100	0	0%	1900	800	73%

M003	CTH M 2.0 MI NORTH OF STH 153 CLEVELAND TNSHP	610	280	-330	-54%	1200	920	329%
M004	CTH M BTWN CTH N & VILLAGE OF FENWOOD CLEVELAND TNSHP	270	310	40	15%	580	270	87%
M005	CTH M SOUTH OF STH 29 WIEN TNSHP	280	340	60	21%	890	550	162%
M006	CTH M NORTH OF STH 29 RIETROCK TNSHP	340	390	50	15%	430	40	10%
M007	CTH M EAST OF STH 97 RIETBROCK TNSHP	460	440	-20	-4%	1000	560	127%
M009	CTH M SOUTH OF CTH F BERN TNSHP	230	240	10	4%	490	250	104%
N001	CTH N EAST OF STH 13 HULL TNSHP	1200	1300	100	8%	1300	0	0%
N002	CTH N EAST OF CTH F FRANKFORT TNSHP	670	540	-130	-19%	80	-460	-85%
N003	CTH N WEST OF STH 97 FRANKFORT TNSHP	730	490	-240	-33%	360	-130	-27%
N004	CTH N EAST OF STH 97 WIEN TNSHP	1300	1000	-300	-23%	610	-390	-39%
N005	CTH N EAST OF CTH M WIEN TNSHP	1500	1100	-400	-27%	960	-140	-13%
N006	CTH N BTWN CTH H & CTH S CASSEL TNSHP	2200	1500	-700	-32%	840	-660	-44%
N007	CTH N WEST OF STH 107 CASSEL TNSHP	2100	1600	-500	-24%	1600	0	0%
N008	CTH N EAST OF CTH B MARATHON TNSHP	2400	1700	-700	-29%	1600	-100	-6%
N009	CTH N WEST OF CTH KK WAUSAU	4000	3100	-900	-23%	6800	3700	119%
N010	CTH N BTWN PARK & JONQUIL RDS RIB MT	11300	11100	-200	-2%	17000	5900	53%
N011	CTH N WEST OF LESTER ST WAUSAU TNSHP	1800	1700	-100	-6%	2200	500	29%
N012	CTH N BTWN CTH J & CTH Q RINGLE TNSHP	1600	1800	200	13%	1700	-100	-6%
N013	CTH N BTWN CTH Y & CTH Q RINGLE TNSHP	1000	1300	300	30%	720	-580	-45%
N014	CTH N EAST OF CTH Y PLOVER TNSHP	1000	1100	100	10%	1100	0	0%
NN002	CTH NN BTWN PARTRIDGE & RAVEN AVES WAUSAU	5200	5200	0	0%	6700	1500	29%
O001	CTH O SOUTH OF CTH C BERGEN TNSHP	410	350	-60	-15%	350	0	0%
O002	CTH O 2.0 MI SOUTH OF MOON RD BERGEN TNSHP	920	900	-20	-2%	620	-280	-31%
O003	CTH O SOUTH OF STH 153 MOSINEE TNSHP	1300	1200	-100	-8%	490	-710	-59%
O004	CTH O NORTH OF STH 153 MOSINEE TNSHP	530	450	-80	-15%	350	-100	-22%
O007	CTH O NORTH OF STH 29 STETTIN TNSHP	650	1000	350	54%	1700	700	70%
O008	CTH O 1.5 MI NORTH OF CTH U SETTIN TNSHP	1200	1200	0	0%	1200	0	0%
O009	CTH O NORTH OF CTH A BERLIN TNSHP	540	630	90	17%	780	150	24%
O0002	CTH OO EAST OF CTH D NORRIE TNSHP	340	320	-20	-6%	580	260	81%
P001	CTH P WEST OF CTH F BRIGHTON TNSHP	220	650	430	195%	270	-380	-58%
P002	CTH P WEST OF CTH E SOUTH EAU PLAINE TNSHP	550	410	-140	-25%	280	-130	-32%
P003	CTH P BTWN CTH E NORTH & CTH E SOUTH EAU PLAINE TNSHP	400	390	-10	-3%	110	-280	-72%
P004	CTH P WEST OF STH 97 FRANKFORT TNSHP	290	320	30	10%	330	10	3%
P005	CTH P EAST OF STH 97 WIEN TNSHP	560	500	-60	-11%	640	140	28%

P006	CTH P BTWN CTH M & CTH H CLEVELAND	630	450	-180	-29%	800	350	78%
P007	CTH P 0.5 MI WEST OF CTH S CASSEL TNSHP	430	420	-10	-2%	110	-310	-74%
P008	CTH P WEST OF STH 107 CASSEL TNSHP	490	430	-60	-12%	120	-310	-72%
Q002	CTH Q SOUTH OF STH 29 RINGLE TNSHP	690	710	20	3%	1900	1190	168%
Q003	CTH Q NORTH OF RINGLE RD RINGLE TNSHP	560	650	90	16%	800	150	23%
Q006	CTH Q NORTH OF STH 52 HEWITT TNSHP	580	690	110	19%	400	-290	-42%
R010	CTH R HUMMING BIRD SOUTH OF ORIOLE LN WAUSAU	2400	2600	200	8%	2200	-400	-15%
S001	CTH S SOUTH OF CTH C GREEN VALLEY TNSHP	570	560	-10	-2%	1000	440	79%
S002	CTH S SOUTH OF STH 153 EMMET TNSHP	830	870	40	5%	660	-210	-24%
S003	CTH S NORTH OF STH 153 EMMET TNSHP	270	270	0	0%	230	-40	-15%
S004	CTH S BTWN CTH N & CTH P CASSEL TNSHP	400	380	-20	-5%	780	400	105%
S005	CTH S SOUTH OF STH 29 RIB FALLS TNSHP	730	560	-170	-23%	260	-300	-54%
S006	CTH S NORTH OF STH 29 RIB FALLS TNSHP	700	620	-80	-11%	1400	780	126%
S007	CTH S 1.5 MI NORTH OF CTH U STETTIN TNSHP	440	630	190	43%	970	340	54%
T001	CTH T SOUTH OF STH 97 MC MILLAN TNSHP	780	760	-20	-3%	760	0	0%
U001	CTH U 0.75 MI WEST OF CTH H RIETBROCK TNSHP	350	390	40	11%	350	-40	-10%
U002	CTH U BTWN CTH S & CTH H RIB FALLS TNSHP	340	320	-20	-6%	170	-150	-47%
U003	CTH U WEST OF STH 107 RIB FALLS TNSHP	660	710	50	8%	310	-400	-56%
U004	CTH U EAST OF STH 107 STETTIN TNSHP	720	530	-190	-26%	980	450	85%
U005	CTH U 1.75 MI WEST OF USH 51 MAIN TNSHP	2800	2800	0	0%	3400	600	21%
V001	CTH V WEST OF WOOD-MARATHON CO LINE SPENCER TNSHP	1000	1300	300	30%	1900	600	46%
VV001	CTH VV EAST OF STH 49 FRANZEN TNSHP	240	270	30	13%	270	0	0%
W001	CTH W 0.5 MI SOUTH OF CTH WW TEXAS TNSHP	3000	2600	-400	-13%	2700	100	4%
W002	CTH W NORTH OF CTH WW TEXAS TNSHP	1800	1900	100	6%	3200	1300	68%
WW001	CTH WW WEST OF CTH W MAINE TNSHP	2400	1900	-500	-21%	4800	2900	153%
WW002	CTH WW BTWN TOWN HALL & GREEN VALLEY RDS TEXAS TNSHP	810	730	-80	-10%	1500	770	105%
WW003	CTH WW BTWN FAWN & RIVER HILLS RDS TEXAS TNSHP	420	400	-20	-5%	1500	1100	275%
X001	CTH X SOUTH OF CTH C KNOWLTON TNSHP	600	520	-80	-13%	730	210	40%
X002	CTH X SOUTH OF STH 153 KRONENWETTER TNSHP	960	870	-90	-9%	670	-200	-23%
X003	CTH X BTWN WOOD & FOREST RDS KRONWETTER TNSHP	2300	2800	500	22%	4400	1600	57%
X004	CTH X BTWN SHOREY & HOWLAND AVES WAUSAU	2300	7500	5200	226%	5700	-1800	-24%
X005	CTH X CAMP PHILLIPS RD NORTH OF CTH SS ROSS AVE SCHOFIELD	9300	9400	100	1%	7500	-1900	-20%
X006	CTH X BTWN CTH N & MCINTOSH ST WAUSAU TNSHP	4400	4400	0	0%	5800	1400	32%
X007	CTH X SOUTH OF STH 52 WAUSAU	1600	1700	100	6%	1900	200	12%

XX001	CTH XX SOUTHEAST OF BUS USH 51	6800	6900	100	1%	13000	6100	88%
XX003	CTH XX BTWN TOWER RD & TESCH LN ROTHSCHILD	4700	4100	-600	-13%	5400	1300	32%
XX004	CTH XX EAST OF RAINBOW DR ROTHSCHILD	3500	4000	500	14%	4900	900	23%
Y002	CTH Y SOUTH OF STH 153 BEVENT TNSHP	710	730	20	3%	1100	370	51%
Y003	CTH Y NORTH OF STH 153 REID TNSHP	760	790	30	4%	580	-210	-27%
Y004	CTH Y SOUTH OF STH 29 RINGLE TNSHP	1700	1800	100	6%	2000	200	11%
Y005	CTH Y SOUTH OF CTH N NORRIE TNSHP	850	1200	350	41%	2200	1000	83%
Y006	CTH Y NORTH OF CTH N PLOVER TNSHP	690	1100	410	59%	1100	0	0%
Y007	CTH Y SOUTH OF STH 52 PLOVER TNSHP	210	230	20	10%	460	230	100%
Y008	CTH Y NORTH OF STH 52 HARRISON TNSHP	140	170	30	21%	50	-120	-71%
Z001	CTH Z WEST OF CTH X WAUSAU TNSHP	3800	3400	-400	-11%	3800	400	12%
Z002	CTH Z WEST OF CTH J WAUSAU TNSHP	1000	870	-130	-13%	1700	830	95%
Z004	CTH Z 1.5 MI EAST OF CTH Q EASTON TNSHP	790	600	-190	-24%	1000	400	67%
Z005	CTH Z EAST OF CTH Y SOUTH PLOVER TNSHP	890	1000	110	12%	1700	700	70%

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**ILLUSTRATIVE 2050 HIGHWAY CAPITAL MAINTENANCE SCHEDULE**

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		Thin Asphalt Overlay	AO	5	\$60.0	7.49	\$62.0	0	\$64.0	0	\$66.0	13.09	\$68.0	12.37	\$70.0	67.92	\$75.0	82.9	\$87.0	91.06	\$101.0	76.31	\$117.0	36	\$136.0		
		Mill and Overlay 24' x 2"	MO	8.26	\$105.0	6.58	\$108.0	17.23	\$111.0	0	\$114.0	4.54	\$117.0	0	\$121.0	55.63	\$130.0	48.61	\$151.0	32.06	\$175.0	41.28	\$203.0	112.61	\$136.0		
		Pulverize and Relay 24'	P24	6.23	\$220.0	12.57	\$227.0	10.97	\$234.0	3.74	\$241.0	0	\$248.0	8.73	\$255.0	19.94	\$275.0	14.79	\$319.0	0	\$370.0	5.11	\$429.0	11.02	\$497.0		
		Pulverize and Relay 28'	P28	1.47	\$260.0	3.86	\$268.0	0	\$276.0	0	\$284.0	4.38	\$293.0	0	\$302.0	1.99	\$325.0	4.44	\$377.0	17.35	\$437.0	11.62	\$507.0	0.52	\$588.0		
		Pulverize and Relay 32'	P32	0	\$300.0	0	\$309.0	4.71	\$318.0	10.93	\$328.0	8.97	\$338.0	1.93	\$348.0	2.45	\$375.0	3.34	\$435.0	1.36	\$504.0	1.33	\$584.0	5.43	\$677.0		
		Cold In-Place Recycle and Overlay 24'	R24	17.93	\$170.0	2.47	\$175.0	0	\$180.0	0	\$185.0	8.75	\$191.0	19.42	\$197.0	46.06	\$212.0	18.81	\$246.0	14.97	\$285.0	17.98	\$330.0	23.01	\$383.0		
		Cold In-Place Recycle and Overlay 28'	R28	0	\$200.0	0	\$206.0	0	\$212.0	0	\$218.0	0	\$225.0	3.01	\$232.0	17.53	\$250.0	7.78	\$290.0	22.02	\$336.0	21.78	\$390.0	6.23	\$452.0		
		Reconstruct	REC	0	\$1,000.0	0	\$1,030.0	0	\$1,061.0	4.42	\$1,093.0	0	\$1,126.0	0	\$1,160.0	0	\$1,249.0	4	\$1,448.0	1.93	\$1,679.0	0	\$1,946.0	0	\$2,256.0		
Total Annual Miles				38.89		32.97		32.91		19.09		39.73		45.46		211.52		184.67		180.75		175.41		194.82			
Total Annual Cost (in Thousands \$)					\$5,968.2		\$5,495.1		\$5,977.3		\$9,317.4		\$7,407.8		\$8,287.8		\$33,522.1		\$35,072.7		\$37,980.6		\$40,596.0		\$41,298.6		
Road	Segment	Length	Local ID	CONSTRUCTION ACTIVITY	YEAR	2020	2020 Cost	2021	2021 Cost	2022	2022 Cost	2023	2023 Cost	2024	2024 Cost	2025	2025 Cost	2026-2030	2026-2030 Cost	2031-2035	2031-2035 Cost	2036-2040	2036-2040 Cost	2041-2045	2041-2045 Cost	2046-2050	2046-2050 Cost
CTH N	STH 97-CTH M	2.62	N004	P	2005		0		0		0		0		0		0	MO	340.6		0		0	P28	1328.34		0
CTH N	CTH M-CTH H	3	N005	P	2005		0		0		0		0		0		0	MO	390		0		0	P28	1521		0
CTH N	CTH H-STH S	2.26	N006	O	2007	MO	237.3		0		0		0		0		0		R24	555.96		0				0	0
CTH N	STH S-STH 107	2.98	N007	O	2016	P24	655.6		0		0		0		0		0		AO	259.26		0				0	0
CTH N	STH 107-CTH O	3.78	N008	P	2016		0		0		0		0		0		0		MO	570.78		0				0	0
CTH N	CTH O-CTH KK	4.7	N009	P	2016		0		0		0		0		0		0		MO	709.7		0				0	0
CTH N	CTH KK-USH 51	1.33	N010	N	2005		0		0		0		P32	449.54		0				0		0	P32	776.72		0	0
CTH N	Skyline Lane-CTH J	5.48	N011	P	2019		0		0		0		0		0		0		AO	476.76		0			MO	745.28	0
CTH N	CTH J-CTH Q	3.1	N012	CIR	2016		0		MO	344.1		0		0		0						R28	1041.6		0	0	0
CTH N	CTH Q-CTH Y	5.05	N013	CIR	2016		0		0		0		0		0		0			AO	510.05		0		MO	686.8	0
CTH N	CTH Y-County Line	5.03	N014	O	2017		0		0		0		0		0		0		MO	759.53		0			R24	1926.49	0
CTH N	USH 51-Cloverland Lane		N090				0		0		0		0		0		0					0				0	0
CTH N	Cloverland Lane-Robin Lane		N091				0		0		0		0		0		0					0				0	0
CTH N	Robin Lane-Lake Street		N092				0		0		0		0		0		0					0				0	0
CTH N	City Wausau-Skyline Lane		N093				0		0		0		0		0		0					0				0	0
CTH NN	4th Street-CTH O	3.52	NN001	P	2009		0		0		0		0		0		0		R28	880		0				0	0
CTH NN	CTH O-USH 51	5.1	NN002	P	2009		0		0		0		0		0		0		R28	1275		0				0	0
CTH O	County Line-CTH C	1.39	O001	P	2000		0		0		0		0		P24	354.45		0		AO	140.39		0			0	0
CTH O	CTH C-Hickory Rd	3.1	O002	P	2005		0		0		0		0		R24	610.7		0		AO	313.1		0			0	0
CTH O	Hickory Rd-STH 153	3.03	O003	P	2005		0		0		0		0		R24	596.91		0		AO	306.03		0			0	0
CTH O	STH 153-CTH B	3.03	O004	P	2008		0		0		0		0		0		0		R24	745.38		0		AO	412.08		0
CTH O	CTH B-CTH N	4.42	O005	P	2009		0		0		0		0		0		0		R24	1087.32		0		AO	601.12		0
CTH O	CTH N-CTH NN	2.52	O006	P	2008		0		0		0		0		0		0		R24	619.92		0		AO	342.72		0
CTH O	STH 29-CTH U	3.69	O007	O	2018		0		0		0		0		0		0		R28	1070.1		0		AO	501.84		0
CTH O	CTH U-CTH A	4.09	O008	P	2011		0		0		0		0		0		0		R28	1186.1		0		AO	556.24		0
CTH O	CTH A-CTH F	3	O009	O	2020	AO	180		0		0		0		0		0		P24	957		0		R24	1149		0
CTH O	CTH F-CTH FF	2	O010	O	2020	AO	120		0		0		0		0		0		P24	638		0		R24	766		0
CTH OO	STH 29-Hemlock Rd	2.01	OO001	O	2007		0		0		0		MO	235.17		0			R24	572.85		0				0	0
CTH OO	Hemlock Rd-CTH D	2.53	OO002	O	2007		0		0		0		MO	296.01		0			R24	721.05		0				0	0
CTH P	STH 13-CTH F	4.79	P001	P	2021		P24	1087.33		0		0		0		0		0		AO	483.79		0			0	0
CTH P	CTH F-CTH E	2.79	P002	P	2021		0	P24	633.33		0		0		0		0			AO	281.79		0			0	0
CTH P	CTH E-CTH E	2.47	P003	CIR	2021		0	R24	432.25		0		0		0		0			AO	249.47		0			0	0
CTH P	CTH E-STH 97	3	P004	P	2021		0	P24	681		0		0		0		0			AO	303		0			0	0
CTH P	STH 97-CTH M	3.66	P005	O	2021		0	AO	226.92		0		0		0		0			R24	1043.1		0			0	0
CTH P	CTH M-CTH H	1.99	P006	P	2021		0	P24	451.73		0		0		0		0			AO	200.99		0			0	0
CTH P	CTH H-CTH S	3.83	P007	O	2021		0	AO	237.46		0		0		0		0			MO	670.25		0			0	0
CTH P	CTH S-STH 107	2	P008	P	2009		0		0		0		0		AO	140		0			MO	350		0		0	0
CTH Q	CTH J-Budleski Dr	3.75	Q001	CIR	2017		0		0		0		0		0		0		AO	326.25		0		MO	761.25		0
CTH Q	Budleski Dr-STH 29	3.33	Q002	CIR	2017		0		0		0		0		0		0		AO	289.71		0		MO	675.99		0
CTH Q	STH 29-CTH N	4.3	Q003	P	2008		0		0		0		0		0		0		AO	322.5		0		R28	1677		0
CTH Q	CTH N-CTH Z	2.99	Q004	P	2007		0		0		0		0		0		0		AO	224.25		0		R24	986.7		0
CTH Q	CTH Z-STH 52	3.02	Q005	P	2007		0		0		0		0		0		0		AO	226.5		0		R24	996.6		0
CTH Q	STH 52-CTH G	4.01	Q006	P	2003		0		P24	938.34		0		0		0		0			AO	405.01		0	R24	1535.83	0
CTH R	CTH N - CTH NN	1.93	R010	N	2005		0		0		0		0		P32	671.64		0		REC	3240.47		0			0	0
CTH R	CTH NN - Sherman Street	1.36	R011	N	2005		0		0		0		0		R28	315.52		0			P32	685.44		0		0	0
CTH R	Sherman Street - 52 Park	0.52	R012	N	2010		0		0		0		0		0		0		P28	196.04		0			P28	305.76	0
CTH R	52 Parkway - Bridge Street	0.59	R013				0		0		0		0		0		0					0				0	0
CTH R	Bridge Street - CTH U	1.38	R014				0		0		0		0		0		0					0				0	0
CTH S	County Line-CTH C	3.35	S001	P	2009		0		0		0		0		AO	234.5		0		MO	586.25		0			0	0
CTH S	CTH C-STH 153	4.44	S002	P	1997		0		0		0		0		P24	1132.2		0		AO	448.44		0			0	0
CTH S	STH 153-CTH P	3.96	S003	P	2000		0		0		0		0		R24	780.12		0		AO	399.96		0			0	0
CTH S	CTH P-CTH N	3	S004	P	2000		0		0		0		0		R24	591		0		AO	303		0			0	0
CTH S	CTH N-STH 29	2.95	S005	P	2005		0		0		0		0		R24	581.15		0		AO	297.95		0			0	0
CTH S	STH 29-CTH U	1.85	S006	P	2018		0		0		0		0		0		0		AO	160.95		0		MO	251.6		0
CTH S																											

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Thin Asphalt Overlay	AO	5	\$60.0	7.49	\$62.0	0	\$64.0	0	\$66.0	13.09	\$68.0	12.37	\$70.0	67.92	\$75.0	82.9	\$87.0	91.06	\$101.0	76.31	\$117.0	36	\$136.0	
Mill and Overlay 24' x 2"	MO	8.26	\$105.0	6.58	\$108.0	17.23	\$111.0	0	\$114.0	4.54	\$117.0	0	\$121.0	55.63	\$130.0	48.61	\$151.0	32.06	\$175.0	41.28	\$203.0	112.61	\$136.0	
Pulverize and Relay 24'	P24	6.23	\$220.0	12.57	\$227.0	10.97	\$234.0	3.74	\$241.0	0	\$248.0	8.73	\$255.0	19.94	\$275.0	14.79	\$319.0	0	\$370.0	5.11	\$429.0	11.02	\$497.0	
Pulverize and Relay 28'	P28	1.47	\$260.0	3.86	\$268.0	0	\$276.0	0	\$284.0	4.38	\$293.0	0	\$302.0	1.99	\$325.0	4.44	\$377.0	17.35	\$437.0	11.62	\$507.0	0.52	\$588.0	
Pulverize and Relay 32'	P32	0	\$300.0	0	\$309.0	4.71	\$318.0	10.93	\$328.0	8.97	\$338.0	1.93	\$348.0	2.45	\$375.0	3.34	\$435.0	1.36	\$504.0	1.33	\$584.0	5.43	\$677.0	
Cold In-Place Recycle and Overlay 24'	R24	17.93	\$170.0	2.47	\$175.0	0	\$180.0	0	\$185.0	8.75	\$191.0	19.42	\$197.0	46.06	\$212.0	18.81	\$246.0	14.97	\$285.0	17.98	\$330.0	23.01	\$383.0	
Cold In-Place Recycle and Overlay 28'	R28	0	\$200.0	0	\$206.0	0	\$212.0	0	\$218.0	0	\$225.0	3.01	\$232.0	17.53	\$250.0	7.78	\$290.0	22.02	\$336.0	21.78	\$390.0	6.23	\$452.0	
Reconstruct	REC	0	\$1,000.0	0	\$1,030.0	0	\$1,061.0	4.42	\$1,093.0	0	\$1,126.0	0	\$1,160.0	0	\$1,249.0	4	\$1,448.0	1.93	\$1,679.0	0	\$1,946.0	0	\$2,256.0	
Total Annual Miles		38.89		32.97		32.91		19.09		39.73		45.46		211.52		184.67		180.75		175.41		194.82		
Total Annual Cost (in Thousands \$)			\$5,968.2		\$5,495.1		\$5,977.3		\$9,317.4		\$7,407.8		\$8,287.8		\$33,522.1		\$35,072.7		\$37,980.6		\$40,596.0		\$41,298.6	
			2020	2020 Cost	2021	2021 Cost	2022	2022 Cost	2023	2023 Cost	2024	2024 Cost	2025	2025 Cost	2026-2030	2026-2030 Cost	2031-2035	2031-2035 Cost	2036-2040	2036-2040 Cost	2041-2045	2041-2045 Cost	2046-2050	2046-2050 Cost
Road	Segment	Length	Local ID	CONSTRUCTION ACTIVITY	YEAR																			
CTH Z	CTH J-CTH Q	3.12	Z003	P	2003		MO	346.32		0		0		0		0		0		0		0		0
CTH Z	CTH Q-CTH Y	4	Z004	O	2017			0		0		0		0		0		0		0		0		0
CTH Z	CTH Y-County Line	6	Z005	O	2020	MO		630		0		0		0		0		0		0		0		0

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**DETAIL COUNTY HIGHWAY MAINTENANCE COST-REVENUE GAP ANALYSIS**

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2050 County Highway Network Future Maintenance Costs - Projection Detail																
Year	Seal			Safety			Total Costs - 2021 Dollars	Costs Adjusted For Inflation	Registration					County		Surplus or Shortfall
	Crack Fill Costs	Coating Costs	Pavement Replacement Costs	Improve Costs	Fee Funding	LRIP Funding			STP Funding	Supplemental Funding	Total External Funding	County Funding Needed*	Funding Expenditure**			
2023	\$ 408,000	\$ 943,500	\$ 6,300,000	\$ 143,000	\$ 7,994,500	\$ 8,028,335	\$ 2,944,950	\$ 250,000	\$ 400,000	\$ 350,000	\$ 3,944,950	\$ 4,083,385	\$ 3,750,000	\$ (333,385)		
2024	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 8,269,185	\$ 2,955,257	\$ 250,000	\$ 400,000	\$ 350,000	\$ 3,955,257	\$ 4,313,928	\$ 3,750,000	\$ (563,928)		
2025	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 8,517,261	\$ 2,965,601	\$ 250,000	\$ 400,000	\$ 350,000	\$ 3,965,601	\$ 4,551,660	\$ 3,750,000	\$ (801,660)		
2026	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 8,772,778	\$ 2,975,980	\$ 250,000	\$ 400,000	\$ 350,000	\$ 3,975,980	\$ 4,796,798	\$ 3,750,000	\$ (1,046,798)		
2027	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 9,035,962	\$ 2,986,396	\$ 250,000	\$ 400,000	\$ 350,000	\$ 3,986,396	\$ 5,049,566	\$ 3,750,000	\$ (1,299,566)		
2028	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 9,307,041	\$ 2,996,849	\$ 250,000	\$ 400,000	\$ 350,000	\$ 3,996,849	\$ 5,310,192	\$ 3,750,000	\$ (1,560,192)		
2029	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 9,586,252	\$ 3,007,338	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,007,338	\$ 5,578,914	\$ 3,750,000	\$ (1,828,914)		
2030	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 9,873,839	\$ 3,017,863	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,017,863	\$ 5,855,976	\$ 3,750,000	\$ (2,105,976)		
2031	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 10,170,055	\$ 3,028,426	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,028,426	\$ 6,141,629	\$ 3,750,000	\$ (2,391,629)		
2032	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 10,475,156	\$ 3,039,025	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,039,025	\$ 6,436,131	\$ 3,750,000	\$ (2,686,131)		
2033	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 10,789,411	\$ 3,049,662	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,049,662	\$ 6,739,749	\$ 3,750,000	\$ (2,989,749)		
2034	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 11,113,093	\$ 3,060,336	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,060,336	\$ 7,052,758	\$ 3,750,000	\$ (3,302,758)		
2035	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 11,446,486	\$ 3,071,047	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,071,047	\$ 7,375,439	\$ 3,750,000	\$ (3,625,439)		
2036	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 11,789,881	\$ 3,081,796	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,081,796	\$ 7,708,085	\$ 3,750,000	\$ (3,958,085)		
2037	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 12,143,577	\$ 3,092,582	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,092,582	\$ 8,050,995	\$ 3,750,000	\$ (4,300,995)		
2038	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 12,507,884	\$ 3,103,406	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,103,406	\$ 8,404,478	\$ 3,750,000	\$ (4,654,478)		
2039	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 12,883,121	\$ 3,114,268	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,114,268	\$ 8,768,853	\$ 3,750,000	\$ (5,018,853)		
2040	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 13,269,614	\$ 3,125,168	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,125,168	\$ 9,144,447	\$ 3,750,000	\$ (5,394,447)		
2041	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 13,667,703	\$ 3,136,106	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,136,106	\$ 9,531,597	\$ 3,750,000	\$ (5,781,597)		
2042	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 14,077,734	\$ 3,147,082	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,147,082	\$ 9,930,652	\$ 3,750,000	\$ (6,180,652)		
2043	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 14,500,066	\$ 3,158,097	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,158,097	\$ 10,341,969	\$ 3,750,000	\$ (6,591,969)		
2044	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 14,935,068	\$ 3,169,150	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,169,150	\$ 10,765,918	\$ 3,750,000	\$ (7,015,918)		
2045	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 15,383,120	\$ 3,180,242	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,180,242	\$ 11,202,878	\$ 3,750,000	\$ (7,452,878)		
2046	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 15,844,614	\$ 3,191,373	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,191,373	\$ 11,653,240	\$ 3,750,000	\$ (7,903,240)		
2047	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 16,319,952	\$ 3,202,543	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,202,543	\$ 12,117,409	\$ 3,750,000	\$ (8,367,409)		
2048	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 16,809,551	\$ 3,213,752	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,213,752	\$ 12,595,799	\$ 3,750,000	\$ (8,845,799)		
2049	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 17,313,837	\$ 3,225,000	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,225,000	\$ 13,088,837	\$ 3,750,000	\$ (9,338,837)		
2050	\$ 408,000	\$ 943,500	\$ 6,500,000	\$ 143,000	\$ 7,994,500	\$ 17,833,252	\$ 3,236,288	\$ 250,000	\$ 400,000	\$ 350,000	\$ 4,236,288	\$ 13,596,965	\$ 3,750,000	\$ (9,846,965)		

\*Costs Adjusted For Inflation minus Total External Funding.

\*\*Includes maintenance funds from both 278 and 279 accounts.