ROAD SURFACE ASSET MANAGEMENT

Northwest Michigan
(Prosperity Region 2)
2016 Federal-Aid Pavement Ratings

Acknowledgements

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2016 Asset Management Report
Networks Northwest

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I. PROGRAM OVERVIEW

What Is Pavement Asset Management?
Pavement Asset Management is a process for collecting surface condition data about the existing road network and managing pavement conditions based on strategic goals outlined by the MDOT and local road agencies. It is a systematic process of inventory, scenario evaluation, and action that results in selecting the best method for identifying, prioritizing, and implementing road construction projects. Ultimately, asset management is a planning tool that is used by transportation agencies to make the most efficient use of public resources for the purposes of improving road infrastructure in a community.

Michigan's Asset Management Legislation

❖ Act 51 of 1951
   ➢ Creates a fund into which specific transportation taxes are deposited, and prescribes how these revenues are to be distributed and the purposes for which they can be spent.
   ➢ Establishes jurisdictional road networks, sets priorities for the use of transportation revenues, and allows bonded indebtedness for transportation improvements and guarantees repayment of debt.

❖ Act 308 of 1998
   ➢ Requires that an average of 25% of federal highway funds, excluding certain program categories, be allocated to local road agencies.
   ➢ Established a study committee to review transportation funding options, investment priorities, and potential strategies for maximizing returns on transportation investments.

❖ Act 499 of 2002
   ➢ Requires all state road agencies prepare and publish an annual multi-year program based on long-range plans and developed through the use of the asset management process described by the Act.
   ➢ Requires that the Transportation Asset Management Council (TAMC) report to the State Transportation Commission, the Legislature, and the House and Senate committees on transportation by May 2 of each year.

❖ Act 338 of 2006
   ➢ Allows Cities and Villages to transfer funds from major street fund to local street fund based on having an approved asset management plan.

❖ Act 199 of 2007
   ➢ Requires the TAMC, in conjunction with MDOT, counties, and municipalities, to develop and implement a pavement management system for each mile of roadway on the federal-aid eligible highway system in Michigan.

How Is MDOT Using The Asset Management Approach For Transportation Planning?

An asset management system is one framework that provides a process to preserve the utility of infrastructure, and to promote effective stewardship of the community's resources and quality of life. The development of the process is ongoing, and as advances are made in technology, better data and processing capabilities will undoubtedly improve the process and outcomes.

MDOT has incorporated the major elements of asset management into five fundamental components:

1 **PERFORMANCE BASED** – Performance measures and targets based on policy objectives.

2 **QUALITY INFORMATION** – Know what you own and what condition it is in. Make use of analytical tools.

3 **POLICY DRIVEN** – Resource allocation decisions based on well-defined policy goals and objectives. Alternatives are examined.

4 **OPTIONS EVALUATED** – Conduct tradeoff analysis between types of fixes and among various priorities within your program.

5 **CLEAR ACCOUNTABILITY** – Monitor and report results. Feedback loop to influence goals and decisions. Transparent decision making.

The activities associated with these five elements are depicted in Figure 1.

MDOT uses a decision support tool called the Transportation Management System (TMS). TMS has the capability to identify conditions, analyze use patterns, and determine deficiencies of the transportation infrastructure. Ideally, MDOT envisions the TMS as a single, unified management application that uses a logical, relational database.

Figure 1 – MDOT's Transportation Asset Management Model

DATA COLLECTION
- Architecture Project
- Bridge Condition
- Framework
- Global Positioning
- Highway Performance Monitoring System
- Sufficiency/Distress
- Traffic

PERFORMANCE MEASURES AND STANDARDS
- Quality Engineering
- Transportation Management Systems

MANAGEMENT SYSTEMS INTEGRATION
Transportation Management Systems
- Bridge
- Congestion
- Intermodal
- Maintenance
- Pavement
- Public Transportation
- Safety

DEVELOPMENT OF ALTERNATIVES

DECISION-MAKING & PROGRAM DEVELOPMENT
- Architectural Program
- Develop Transportation Programs
- Five-Year Road & Bridge Program
- Program/Project Management Systems

PRIORITIZATION ANALYSIS

IMPLEMENT PLAN
- TRANSPORT
- Field Manager

5-YEAR PROGRAM

MONITORING & REPORTING
- Highway Performance Monitoring System
- Internet/Intranet
- Michigan Transportation Facts and Figures
- National Bridge Inventory
- Newsletters
- Sufficiency

What Role Does Networks Northwest Play In Transportation Asset Management?

In 2003, the TAMC contracted statewide with the 21 regional planning agencies and metropolitan planning organizations to coordinate local pavement conditions assessments for the federal-aid road system in their region as a component of the State's asset management program. Each of these agencies was responsible for working with MDOT to provide training and education to local officials and staff, scheduling and participating in collection efforts with the road agencies and MDOT officials, and analyzing and reporting data. As the regional planning agency for northwest Lower Michigan, Networks Northwest coordinated asset management activities in Antrim, Benzie, Charlevoix, Emmet, Grand Traverse, Kalkaska, Leelanau, Manistee, Missaukee, and Wexford Counties.

II. ELEMENTS OF PAVEMENT MANAGEMENT

A major goal of a road management agency is to ensure that roads are comfortable, safe, and maintained economically. Both environmental impacts, such as weather and aging, and structural impacts, such as traffic load and volume, affect the way a pavement surface deteriorates. Some pavements deteriorate at a faster rate than others. A full scale, comprehensive assessment of road conditions includes collecting and assessing data about the following characteristics: roughness (ride), surface distress (condition), surface skid characteristics, and structure (pavement strength and deflection). Planners can look at pavement data to develop short- and long-range plans that take available resources and budget constraints into account.

At the local government level, some of these assessments are managed informally. MDOT uses a simplified visual surface pavement evaluation system called PASER as one component of its pavement management program.

1. **Inventory**

2. **Rating**

3. **Predict Future Conditions**

4. **Set Goals / Performance Management**

5. **Policy for Selecting Projects**

6. **List of Potential Projects That Meet Criteria / Costs/ Benefits**

7. **Report Results**

III. POLICY FOR SELECTING PROJECTS

Generalized questions to understand the Asset

- *How long will the asset likely last?*
- *What takes away from the life of the asset?*
- *Are there treatments that can restore life to the asset?*
- *Are there options to salvage or rehabilitate part of the asset to retain value?*
- *At what point is replacement necessary?*

Approaches to Managing the Asset

Worst First	*Mix of Fixes
Select worst roads first for treatment	Select roads in good shape for preventative maintenance projects
Focus on rehabilitation and replacement of failed assets	Maximize low cost fixes or preventive treatments
Little or no preventive maintenance on "Good" assets	Replace or rehabilitate the asset as money permits

*Mix of fixes is a long term view and capitalizes on "windows of opportunity." It is the approach likely to work best for pavements because it applies the right fix at the right time in the right place. Extensive preventative maintenance protects what is already in good condition and utilizes rehabilitation only when really needed. With "Mix of fixes", reconstruction is no longer the priority.

Figure 2 – Treatment Types

Fix Type	Cost $ per Lane Mile	Added Life	Cost per Year of Added Life
Crack Seal	$4,000	1 yr.	$4,000
Seal Coat & Crack Seal	$20,000	5-9 yr.	$4,000
Overlay	$100,000	8-12 yr.	$12,500
Crush & Shape	$150,000	14 yr.	$10,700
Reconstruction	$300,000	15 yr.	$20,000

Of the five most common "Mix of fixes", Reconstruction is by far the costliest per mile, however it yields the longest added life to pavement. In contrast, a Crack Seal is the least expensive per lane mile, and yields only 1 year of added life to pavement.

Cost Effectiveness of Treatments

Determining the type of fix and when to fix the pavement based on it's surface condition rating have a significant impact on cost. Each of these examples have the same goal – to extend the life of the pavement to 30 years. *Critical Distress Point (CDP) is the point when pavement distress changes from needing preventive maintenance to needing structural improvement, usually occurring at a 4 PASER rating.

Figure 3 – Cost Effectiveness

In the "Worst First" approach, the section of pavement has a 3 PASER rating (*below the CDP threshold*) after fourteen years, and costs $150,000 to rehabilitate. If untreated sixteen years after the crush and shape, this section of pavement will deteriorate to a 2 PASER value and would likely require total reconstruction at a cost of $300,000.	
In a "Mix of Fixes" approach, the section of pavement has a 6 PASER rating (*well above the CDP threshold*) after ten years and utilizes a sealcoat for a cost of $20,000. This treatment extends the life of the pavement for eight years, at which time a $100,000 overlay treatment is utilized. Total cost for the section of pavement to maintain a 5 PASER value after thirty years is $120,000.	
This particular "Mix of Fixes" approach employs a sealcoat on the section of pavement with a 6 PASER value (*well above the CDP threshold*) after ten years for a cost of $20,000. This treatment is repeated every six years, twice for another $40,000. The total cost for maintaining the section of pavement is $60,000, however, at the end of the thirty years, the pavement would have a 1 PASER rating, requiring total reconstruction at a cost of $300,000.	

IV. ASSET MANAGEMENT ROAD ASSESSMENT TOOLS

The PASER system is a visual evaluation tool to measure and classify road surfaces based on their surface condition and appearance. There are seven different acceptable surface types within the PASER system: Asphalt, Concrete, Composite, Sealcoat, Brick, Gravel, or Unimproved. Each surface type has its own rating criteria based on the unique characteristics of that surface type. For example, when evaluating the condition of Asphalt, the extent of surface defects, surface deformation, cracking, patches, and potholes are visually assessed.

PASER evaluation criteria translate into condition values that are numeric and range from 1 to 10. Generally, ratings of 5-10 are considered "good," while ratings from 1-4 are considered "poor." The rating system is described more specifically in Figure 2 below.

Figure 4 – Pavement Surface Evaluation and Rating System[1]

SURFACE RATING	VISIBLE DISTRESS	GENERAL CONDITION/ TREATMENT MEASURES
10 **Excellent**	None.	New construction.
9 **Excellent**	None.	Recent overlay. Like new.
8 **Very Good**	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). All cracks sealed or tight (open less than ¼").	Recent sealcoat or new cold mix. Little or no maintenance required.
7 **Good**	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open ¼") due to reflection or paving joints. Transverse cracks (open ¼") spaced 10' or more apart, little or slight crack raveling. No patching or very few patches in excellent condition.	First signs of aging. Maintain with routine crack filling.
6 **Good**	Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open ¼" to ½"), some spaced less than 10'. First sign of block cracking. Slight to moderate flushing or polishing. Occasional patching in good condition.	Show signs of aging. Sound structural condition. Could extend life with sealcoat.
5 **Fair**	Moderate to severe raveling (loss of fine and coarse aggregate). Longitudinal and transverse cracks (open ½") show first signs of slight raveling and secondary cracks. First signs of longitudinal cracks near pavement edge. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Some patching or edge wedging in good condition.	Surface aging. Sound structural condition. Needs sealcoat or non-structural overlay (less than 2").

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[1] *Asphalt-PASER Manual – Pavement Surface Evaluation and Rating.* 2002. Wisconsin Transportation Information Center. Madison, WI.

4 **Fair**	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Block cracking (over 50% of surface). Patching in fair condition. Slight rutting or distortions (1/2" to 1" deep).	Significant aging and first signs of need for strengthening. Would benefit from structural overlay (2" or more).
3 **Poor**	Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Severe block cracking. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes.	Needs patching and repair prior to major overlay. Milling and removal of deterioration extends the life of overlay.
2 **Very Poor**	Alligator cracking (over 25% of surface). Severe distortions (over 2" deep). Extensive patching in poor condition. Potholes.	Severe deterioration. Needs reconstruction with extensive base repair. Pulverization of old pavement is effective.
1 **Failed**	Severe distress with extensive loss of surface integrity.	Failed. Needs total reconstruction.

To summarize, ratings of 8-10 require little or no maintenance, aside from routine, day-to-day activities such as street sweeping, drainage clearing, gravel shoulder grading, and sealing cracks to prevent water seepage. The photographs below are examples of roads in the routine maintenance category.

Routine, Little or No Maintenance – Ratings 8-10. Source: Asphalt PASER Manual. Transportation Information Center, University of Wisconsin-Madison.

The picture in the upper left shows a newly constructed road which would be given a rating of 10. The upper right picture shows a recent overlay making this road a rating of 9. The picture to the left would be rated an 8 because a recent slurry seal was applied. Similarly the picture in the bottom right corner had a chip seal put down giving the road surface a rating of 8. The picture in the bottom left corner would also be rated an 8 for its surface which needs almost no maintenance. Notice the widely spaced sealed cracks.

Ratings of 5-7 require capital preventative maintenance. These are roads that are beginning to show the first signs of wear. The roads are still structurally supported, but the surface may be starting to deteriorate. Capital preventative maintenance fixes protect the pavement structure and slow the rate of deterioration, which maintains and improves the functional condition of the road. The photographs below show roads in the capital preventative maintenance category.

Capital or Preventative Maintenance – Ratings 5-7. Source: Asphalt PASER Manual. Transportation Information Center, University of Wisconsin-Madison.

The upper left picture is an example of a surface rated 7. This road has tight longitudinal cracks and sealed transverse cracks that are 10'to 40' apart. The picture in the upper right shows a rating 6 due to it's slight surface raveling and tight cracks that are less than 10' apart. Other surface defects that start to show up in a rating of 6 are moderate flushing (shown middle left) and early signs of block cracking (shown middle right). Examples of surface defect from rating 5 are block cracking with open cracks (shown bottom left) and extensive wedges and patched that are in good condition (shown bottom right).

Ratings of 1-4 require structural improvements such as resurfacing or major reconstruction. The photographs below are examples of roads that need structural improvements.

Structural Improvements – Ratings 1-4. Source: Asphalt PASER Manual. Transportation Information Center, University of Wisconsin-Madison.

The four pictures to the left are all examples of surface defects that could appear in a rating of 4. They include: rutting up to 1", extensive block cracking, patches in good condition, and severe raveling with extreme loss of aggregate. The picture below is an example of rating 3 showing patches in poor condition. Other defects for rating 3 include alligator cracking, rutting 1" to 2", and crack erosion

The pictures below show road surfaces with ratings of 2 and 1. Examples of defects from rating 2 include rutting greater than 2", patches in very poor condition, and extensive alligator cracking. Surface defects for a rating of 1 include: extensive loss of surface, numerous potholes, and severe alligator cracking.

V. Regional Data Collection Process

Networks Northwest participated in rating over 2,700 miles of federal-aid-eligible roads in northwest Michigan. The pavement condition data collection effort involved a three-person team for each county. The team was composed of Networks Northwest staff, a County Road Commission employee, and a representative from the local MDOT transportation service center office. City engineers or managers were invited to participate in the collection and rating effort if a city contained a significant amount of federal-aid roads.

The transportation asset management data collection process is intensive and time-consuming. As with any data collection effort, the data must be gathered, stored, and analyzed effectively and appropriately. Participants typically met at individual County Road Commission office's in the morning on dates previously scheduled. Existing county data was exported from the county's RoadSoft GIS program and imported into the Laptop Data Collector managed by Networks Northwest. After determining an initial data collection route, the data collection team embarked on a "PASER tour" of all federal-aid eligible roads in each County.

The Pavement Surface Evaluation and Rating (PASER) system is a subjective, visual rating process that assigns a value to a road segment based on its condition at the time of the rating. Manuals developed by the Wisconsin Transportation Information Center were used to help determine a road's PASER value. After driving the full length of a road segment the participants determined by consensus the value to be entered into the Laptop Data Collector based on the current road surface condition. Data were collected in the daylight and when the conditions were dry. Data collection began in the spring and was finished by late summer.

After all of the federal-aid-eligible roads were rated in the county, the data was exported out of the Laptop Data Collector and then imported back into the County's RoadSoft program for review. Inventory Logs and Miles Rated Reports were printed out from RoadSoft. Copies of the dataset and reports were delivered to the MDOT Transportation Asset Management Council in Lansing.

Roadsoft®
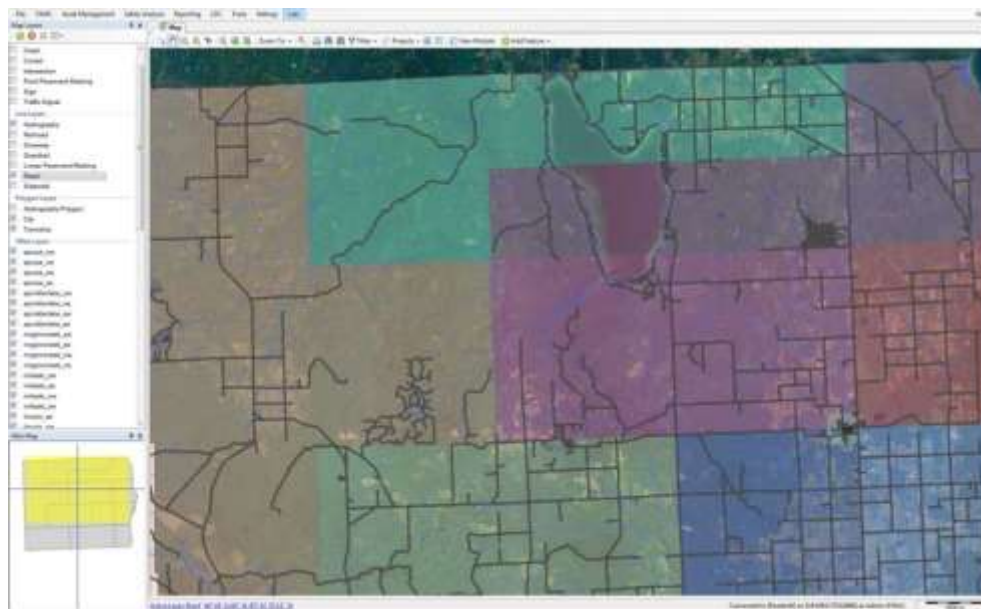
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VI. EXPLORING THE DATA COLLECTION RESULTS
(MAPS ARE INTENDED TO BE VIEWED IN COLOR)

Antrim County

Data was collected on approximately 285 miles of county maintained federal-aid roads in Antrim County on May 24. Staff present for the rating included Burt Thompson, Engineer/Manager, Antrim County Road Commission; Kim Mikula, Gaylord Transportation Service Center, MDOT North Region; and Michael Woods, Networks Northwest.

Map 1 displays the surface ratings for federal-aid roads and State Trunklines in Antrim County. Figure 5 compares PASER values for federal-aid roads in Antrim County to the average regional PASER values. 17% of the federal-aid roads rated in Antrim County received a PASER value of 8-10 (Good). 40% were rated 1-4 (Poor) however, higher than the regional average of 32%. 44% of roads were given a rating of 5-7 (Fair). Figure 6 compares 2015 data to the last four years of data collected.

Map 1 – Antrim County PASER Values
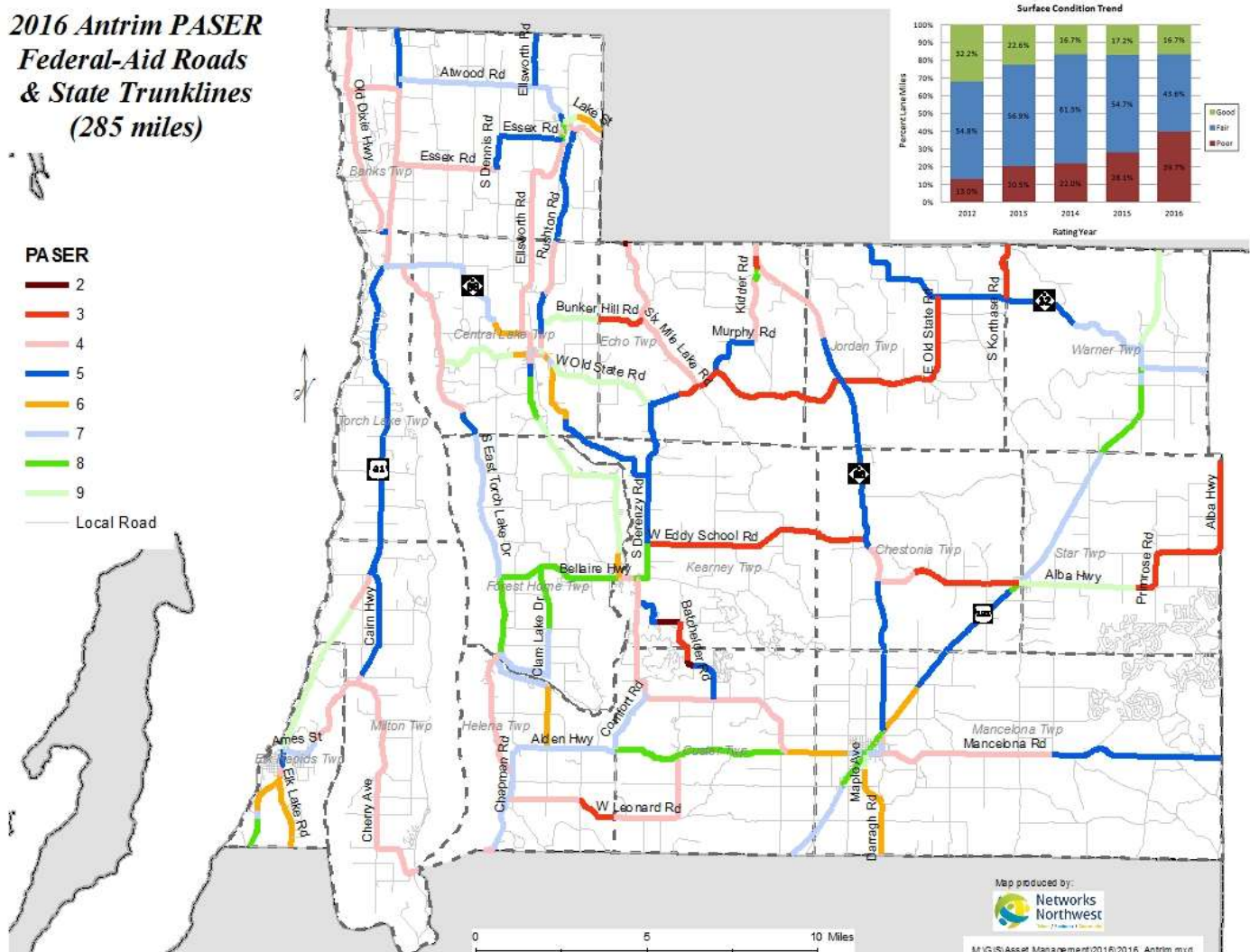
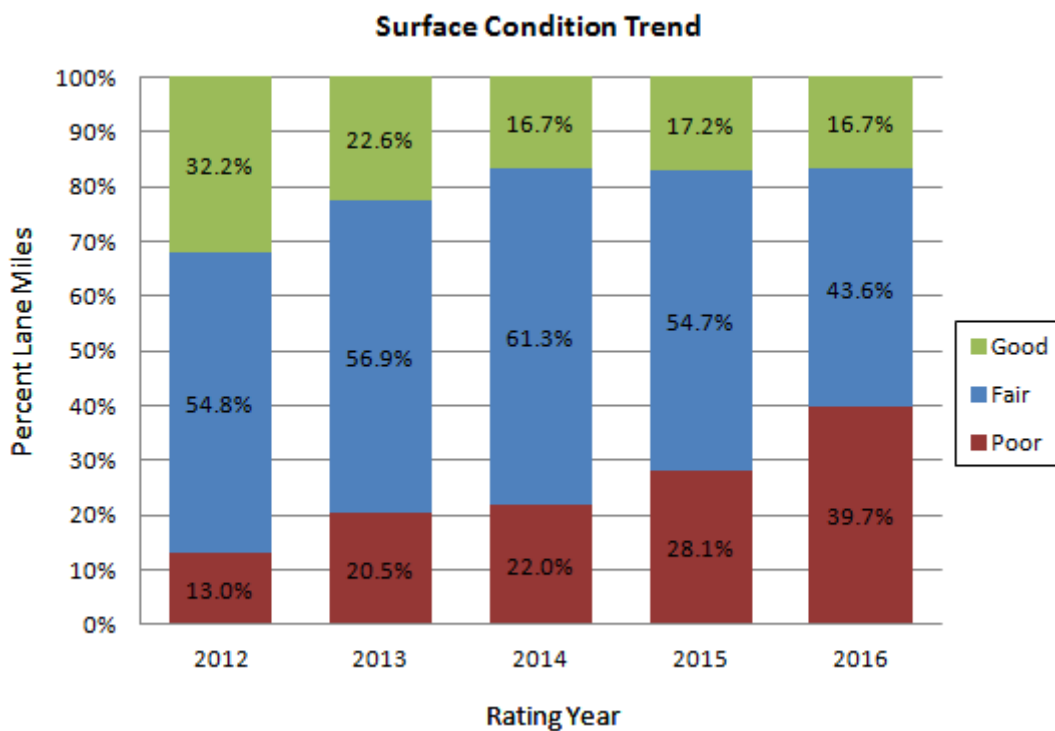Figure 5 – Antrim County Ratings Compared To Region

2016 Antrim County compared to Region
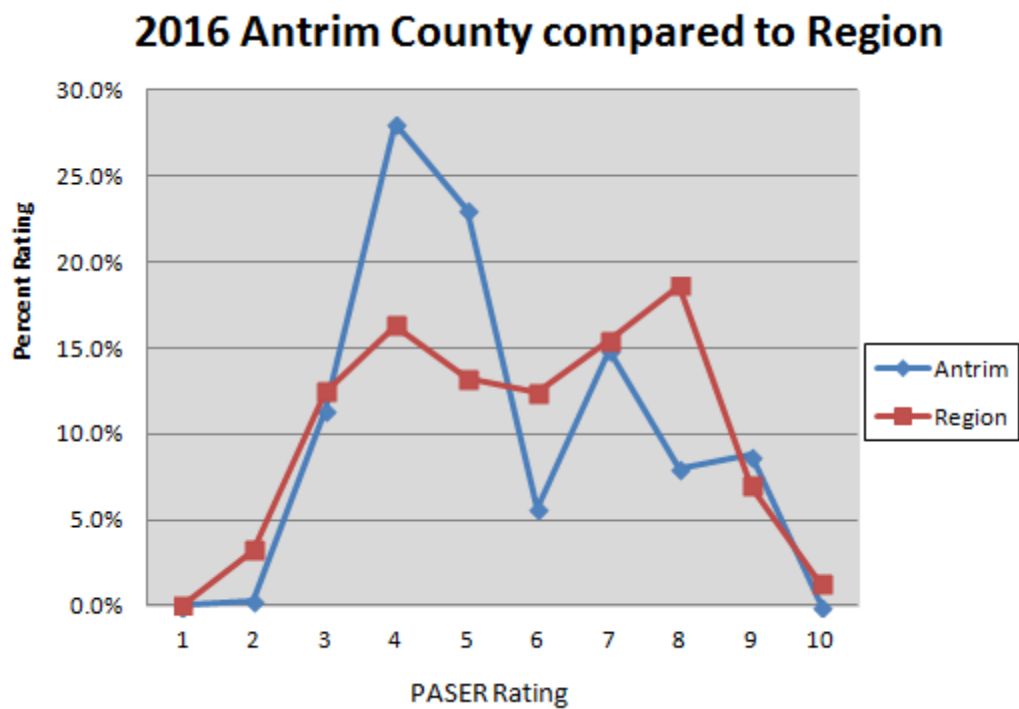
Figure 6 – Antrim County Ratings Comparing Multiple Years of Data

Surface Condition Trend

Benzie County

Data was collected on approximately 227 miles of federal-aid roads in Benzie County on September 8. Staff present for the rating included Scott Fasel, Foreman, Benzie County Road Commission; Jeff Hunt, Traverse City Transportation Service Center, MDOT North Region; and Michael Woods, Networks Northwest.

Map 2 displays the surface ratings for federal-aid roads in Benzie County. As Figure 7 graphically illustrates, the majority of federal-aid roads, approximately 41% were in the 8-10 (Good) rating range and the highest percentage in the region. 20% of roads were rated 1-4 (Poor), which is still the lowest rate compared to the ten county regional average. Figure 8 compares the percentage of ratings gathered in Benzie County from the previous four years of data collection.

Map 2 – Benzie County PASER Values

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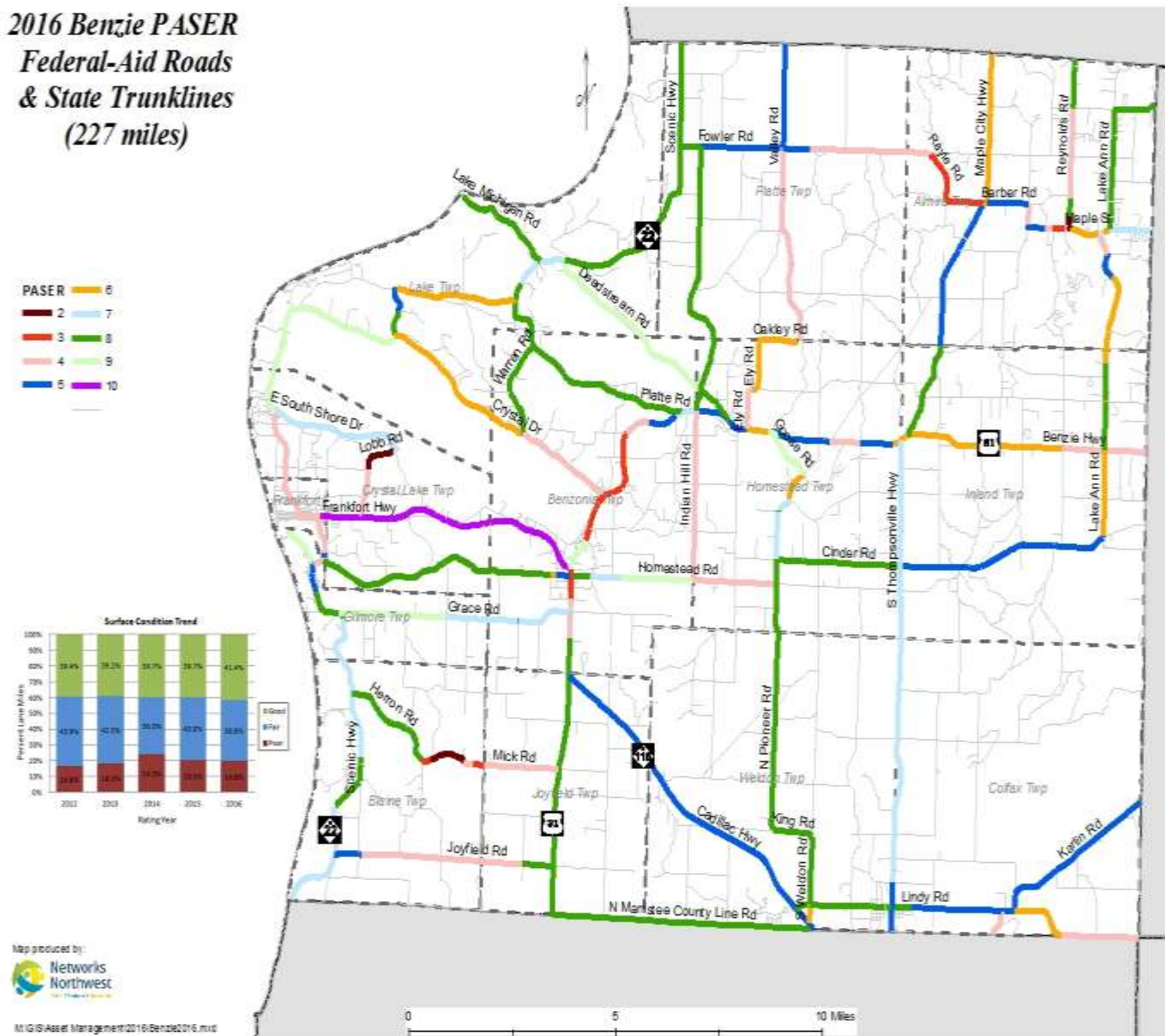
Figure 7 – Benzie County Ratings Compared To Region

2016 Benzie County compared to Region
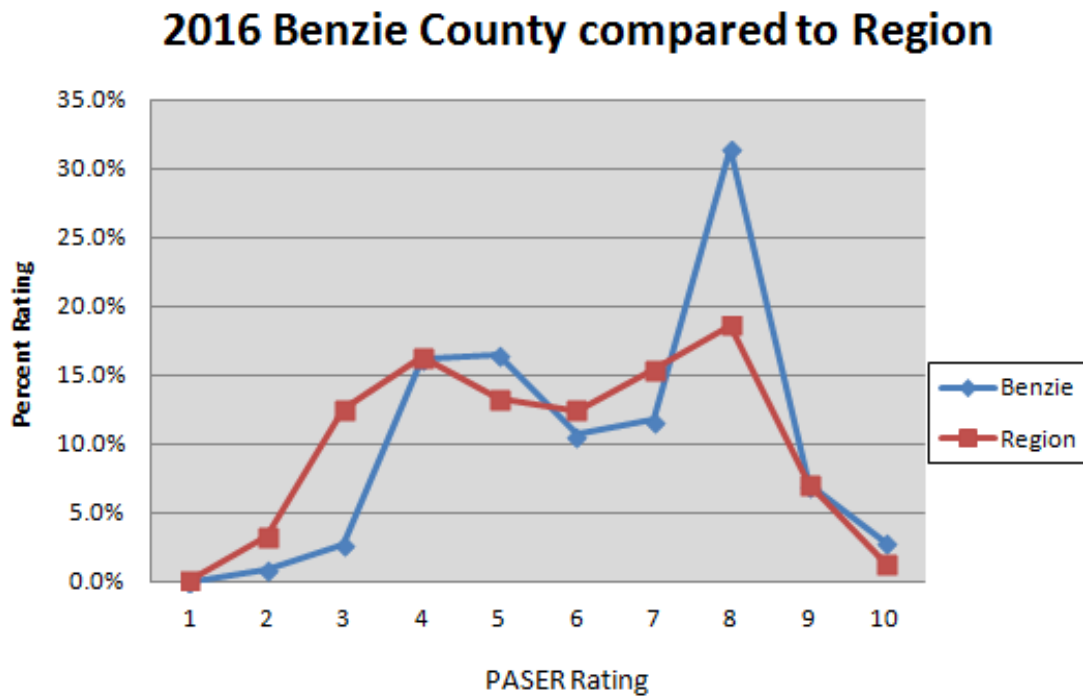
Figure 8 – Benzie County Ratings Comparing Multiple Years of Data

Surface Condition Trend
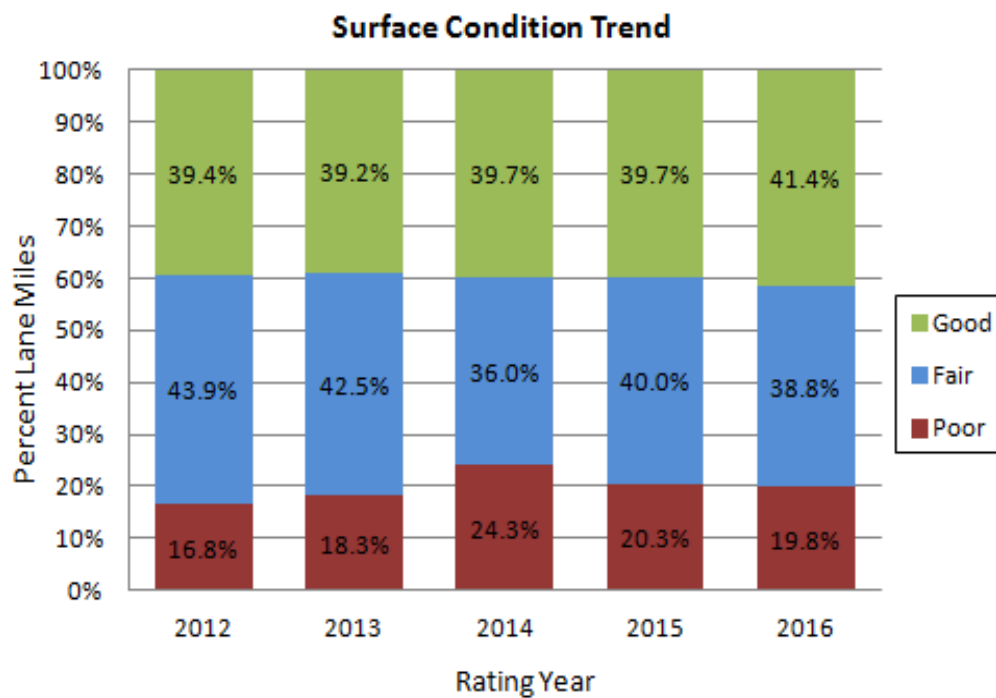
Charlevoix County

Data was collected on approximately 352 miles of federal-aid roads and state trunklines in Charlevoix County on August 11 and 12. Staff present for the rating included Patrick Harmon, Manager, Charlevoix County Road Commission; Kim Mikula, Gaylord Transportation Service Center, MDOT North Region; and Tad Erickson, Networks Northwest.

Map 3 displays the surface ratings for federal-aid roads in Charlevoix County. As Figure 9 graphically illustrates, PASER values of 1-4 (Poor) were given to 32% of federal-aid roads, which is similar to last year's average. PASER values of 8-10 (Good) were given to 32% of roads, similar to last year and significantly higher than the regional average. Figure 10 shows a comparison of the last four years of data collected.

Map 3 – Charlevoix County PASER Values

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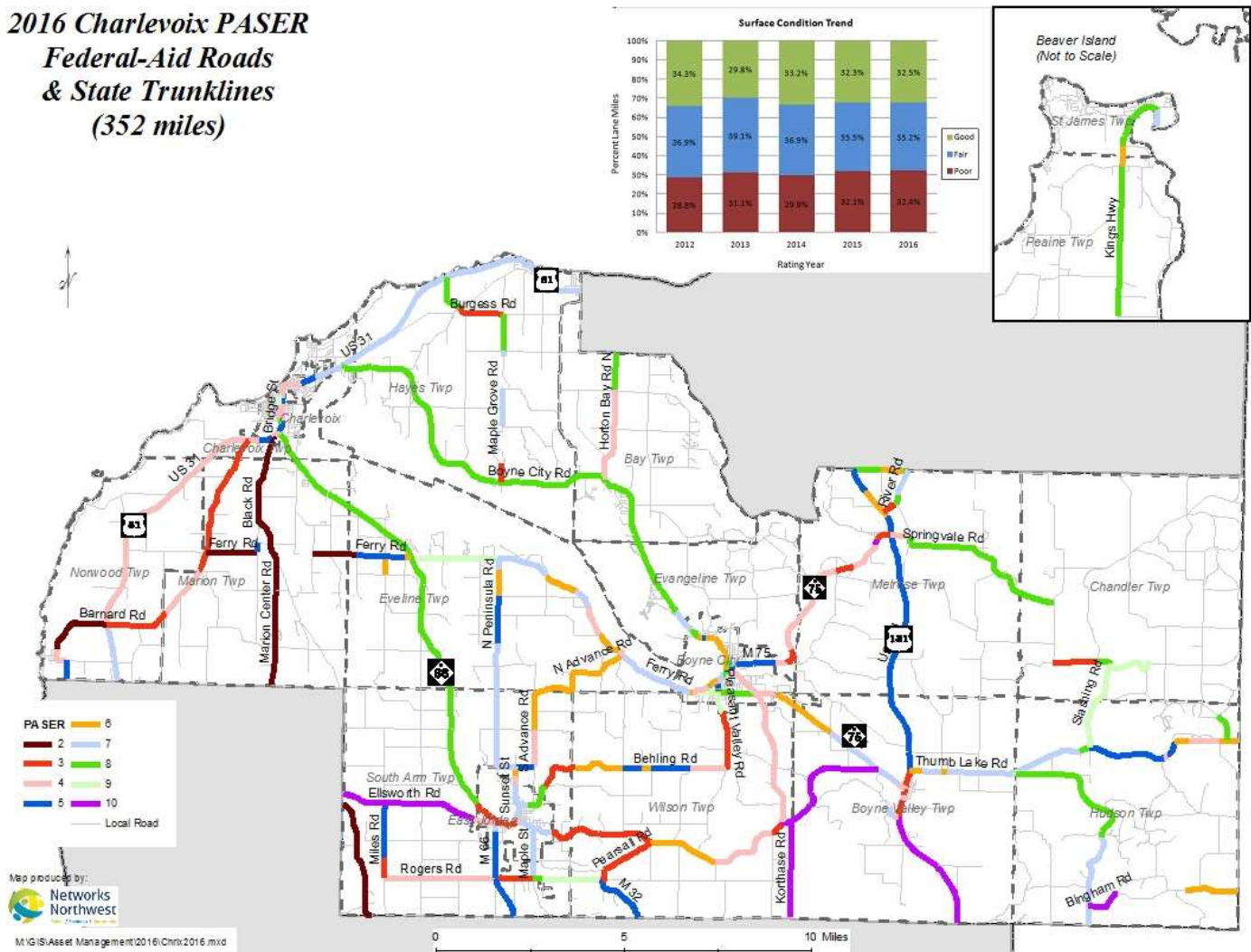
Figure 9 – Charlevoix County Ratings Compared To Region

2016 Charlevoix County compared to Region
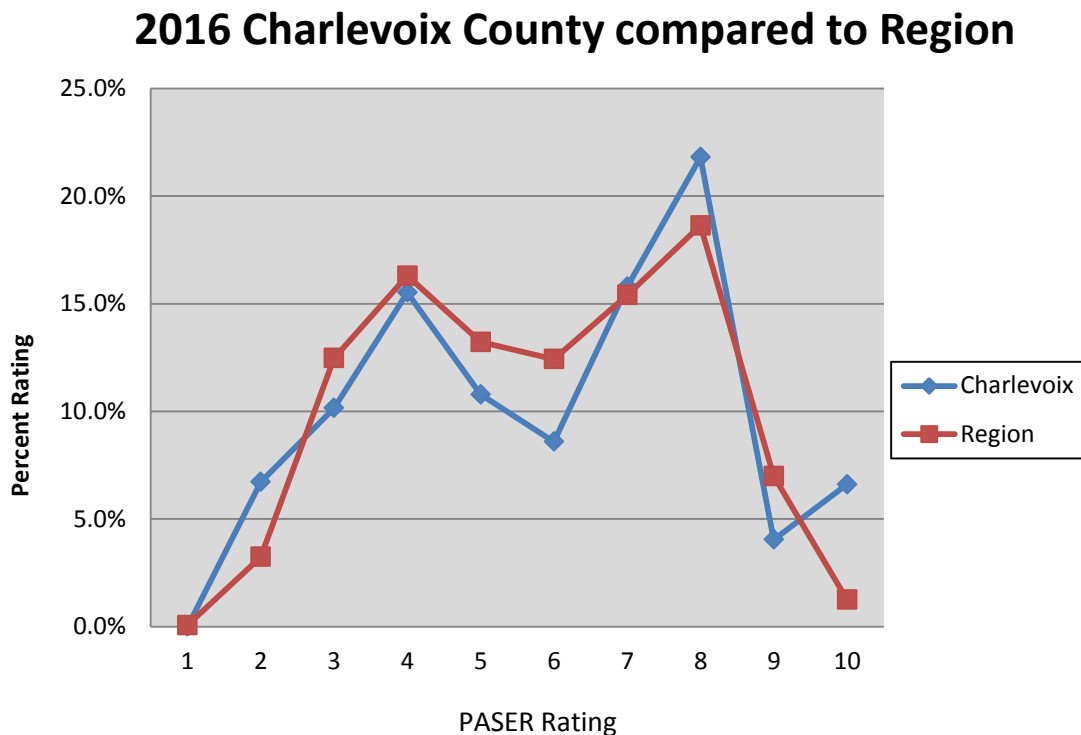
Figure 10 – Charlevoix County Ratings Comparing Multiple Years of Data

Surface Condition Trend
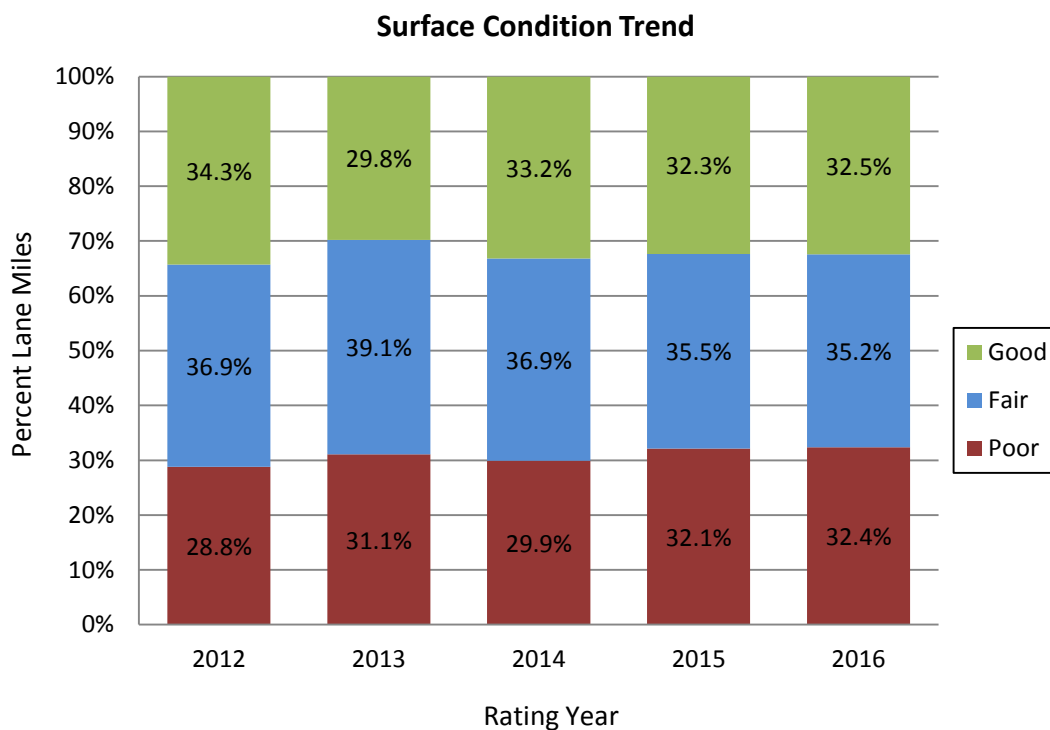
Emmet County

Data was collected on approximately 282 miles of federal-aid roads in Emmet County July 19 – July 20. Staff present for the rating included Shawn Beckman, Operations Engineer, Emmet County Road Commission; Mark Kleikamp, Gaylord Transportation Service Center, MDOT North Region; and Tad Erickson, Regional Planner, Networks Northwest.

Map 4 displays the surface ratings for roads in Emmet County. As Figure 11 illustrates, PASER values of 8-10 (Good) were given to 25% of roads which is double the amount from the previous year. 49% of roads were rated 1-4 (Poor), which is tied for the highest percentage in the region. Figure 12 compares the percentages of PASER values collected in the last four years.
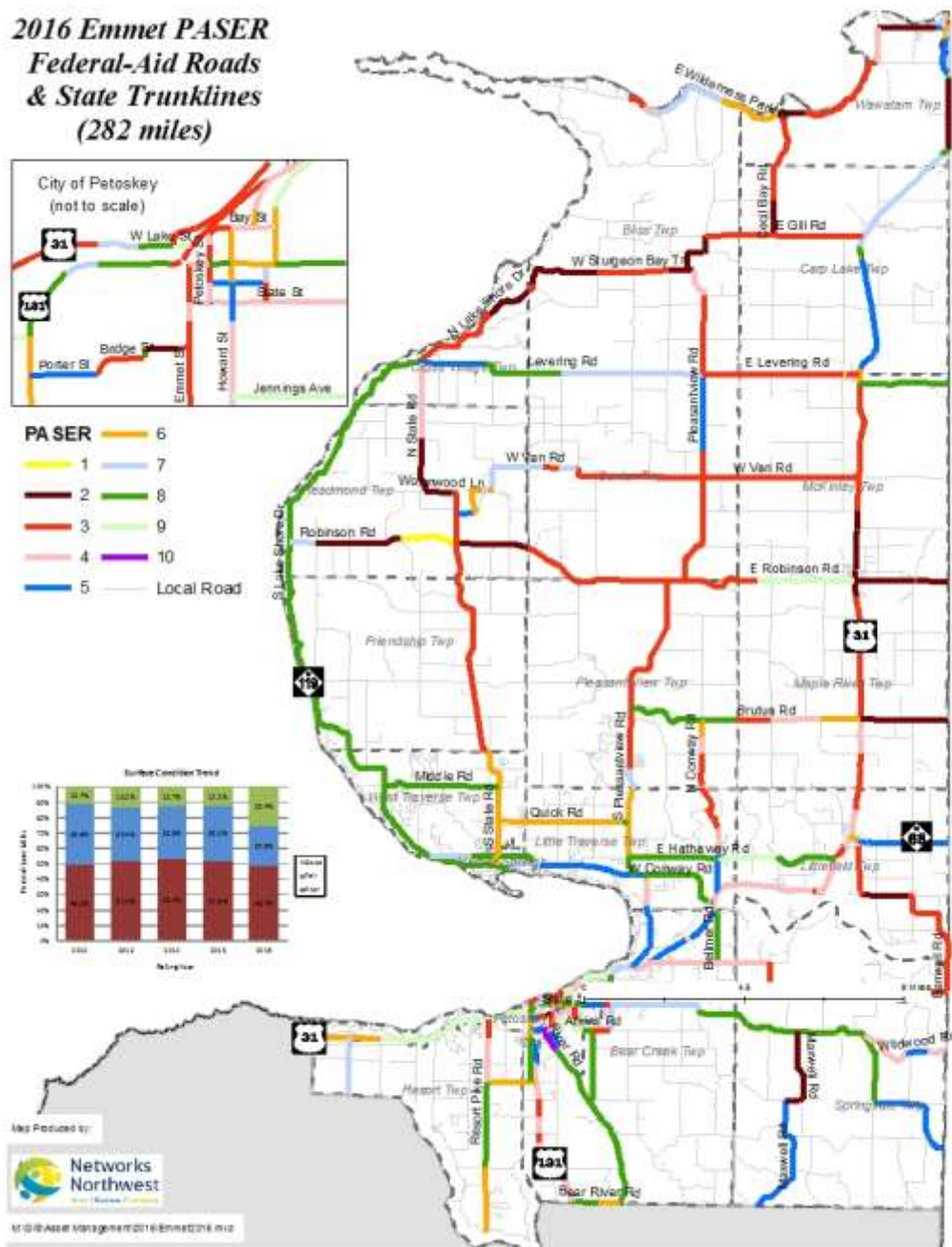
Map 4 – Emmet County PASER Values

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Figure 11 – Emmet County Ratings Compared to Region

2016 Emmet County compared to Region
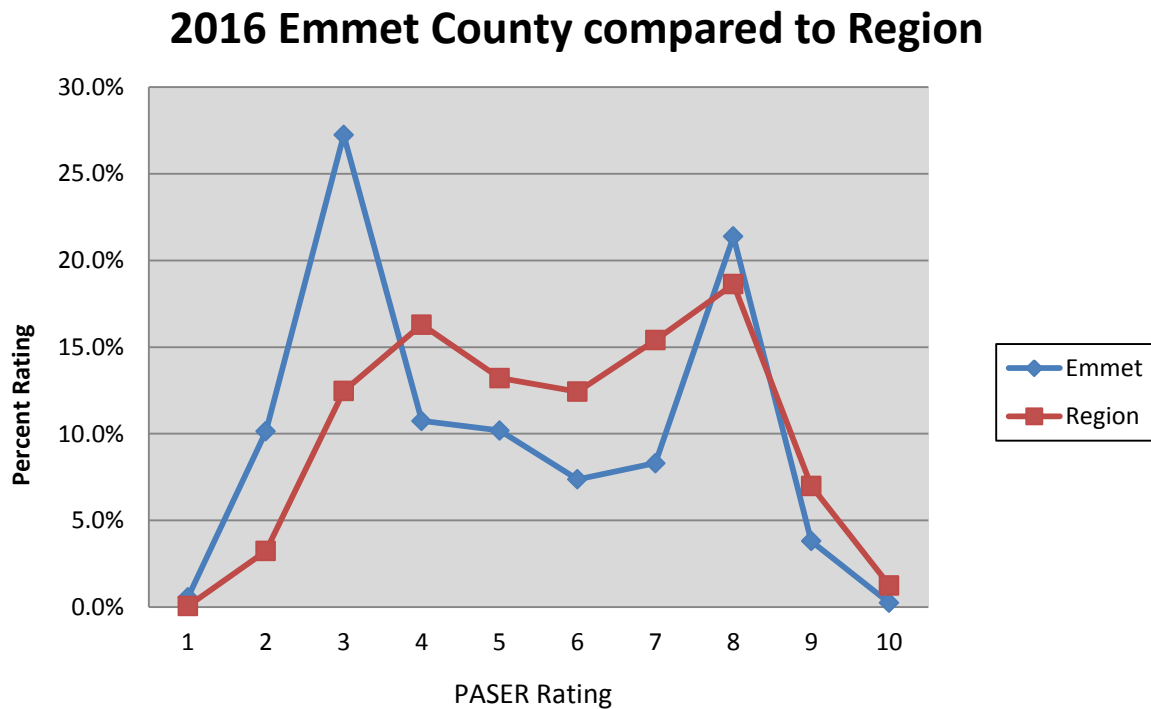
Figure 12 – Emmet County Ratings Comparing Multiple Years of Data

Surface Condition Trend
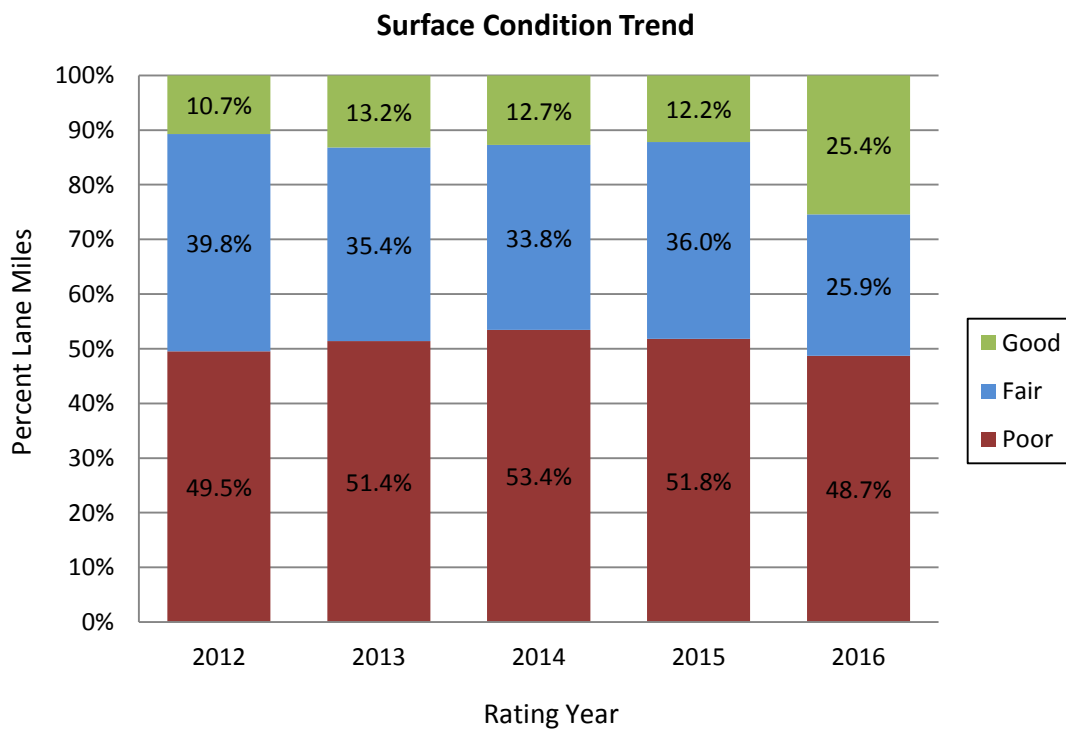
Grand Traverse County

Data was collected on approximately 352 miles of roads in Grand Traverse County from June 7 - 8. Staff present included Garth Greenan, Grand Traverse County Road Commission (for county roads only); John Travis, DPW, City of Traverse City (for City roads only); Jeff Hunt, Traverse City Transportation Service Center, MDOT North Region; and Michael Woods, Regional Planner, Networks Northwest.

Map 5 displays the surface ratings for Grand Traverse County's roads. As Figure 13 illustrates, 42% of federal-aid roads in Grand Traverse County were rated 5-7 (Fair), slightly down from the previous year. 23% of federal-aid roads were rated 1-4 (Poor), and is almost 10 points lower than the regional average of 32%. 35% of federal-aid roads were rated 8-10 (Good), up significantly from the previous year. Figure 14 shows a comparison of the percentages of ratings from the last four years of data collection.
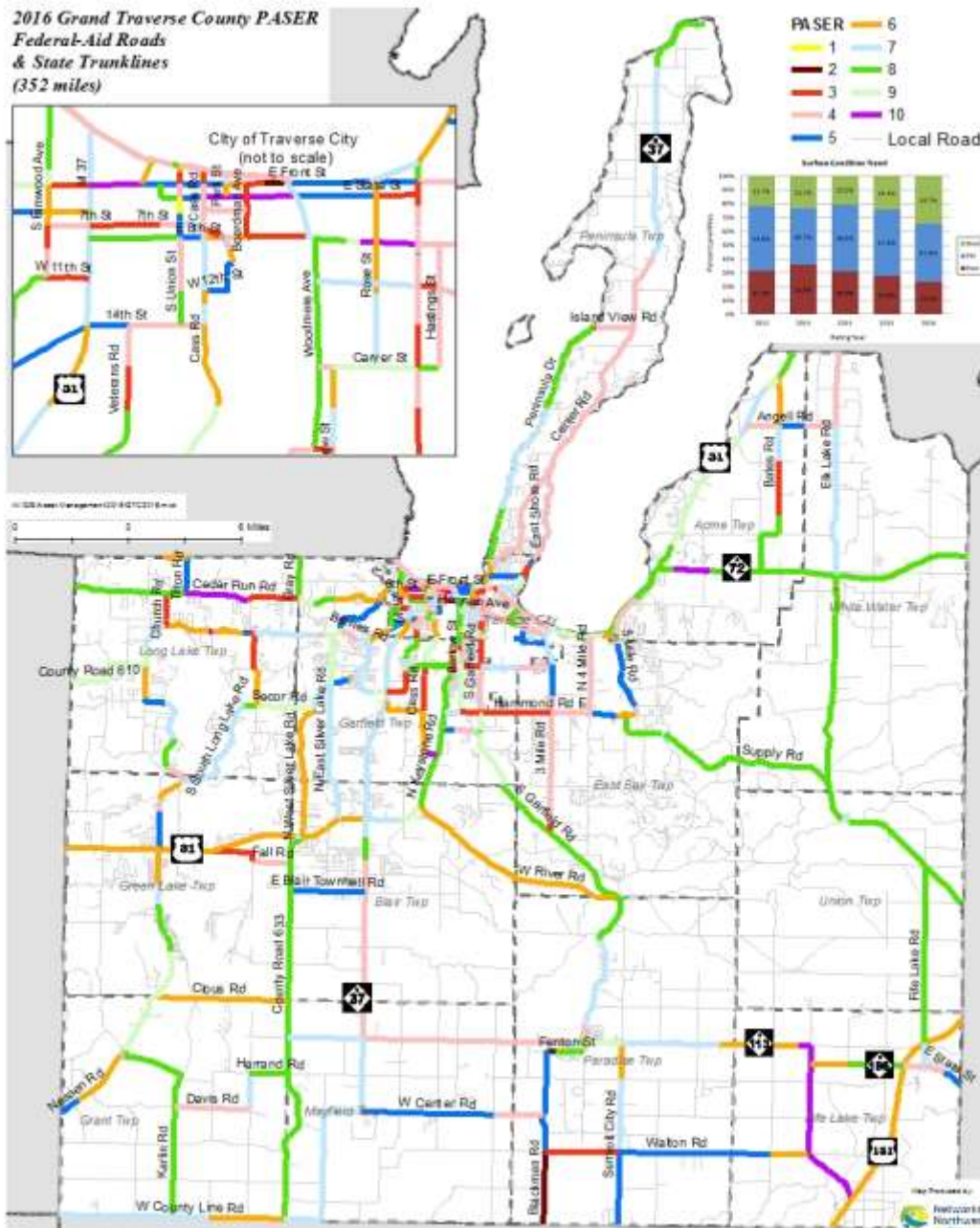
Map 5 – Grand Traverse County PASER Values

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Figure 13 – Grand Traverse County Ratings Compared To Region

2016 Grand Traverse County compared to Region
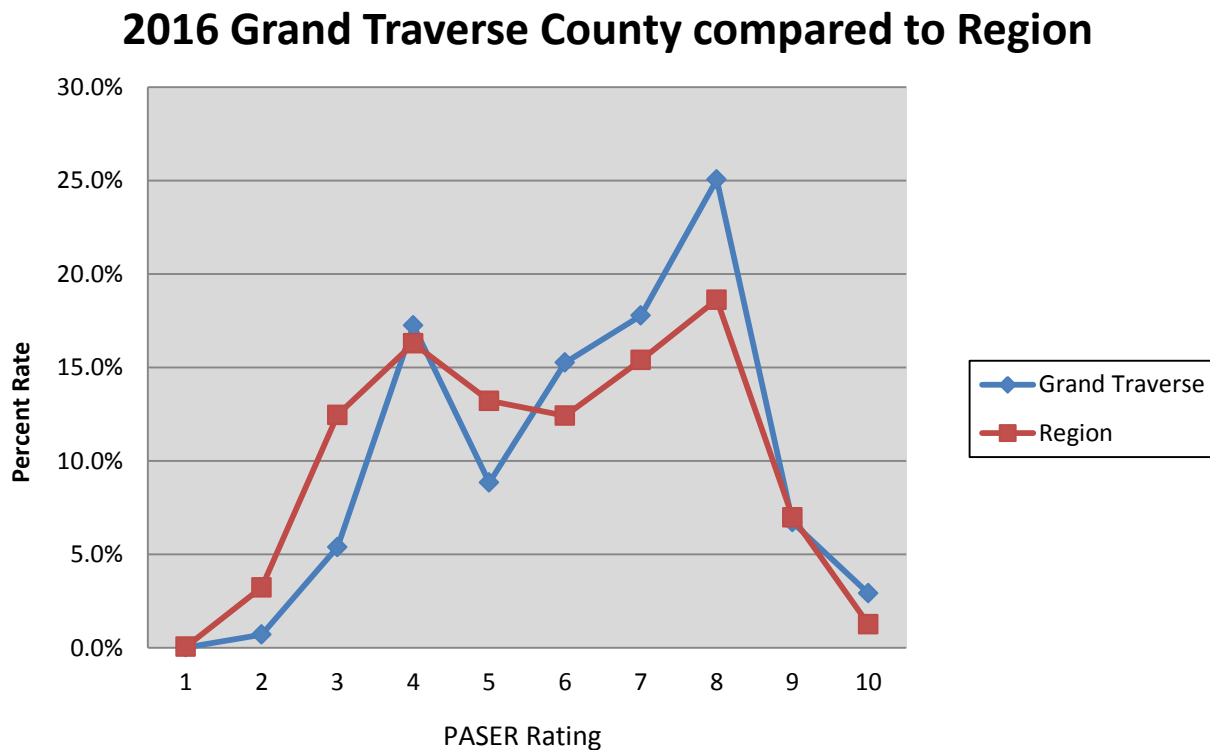
Figure 14 – Grand Traverse County Ratings Comparing Multiple Years of Data

Surface Condition Trend
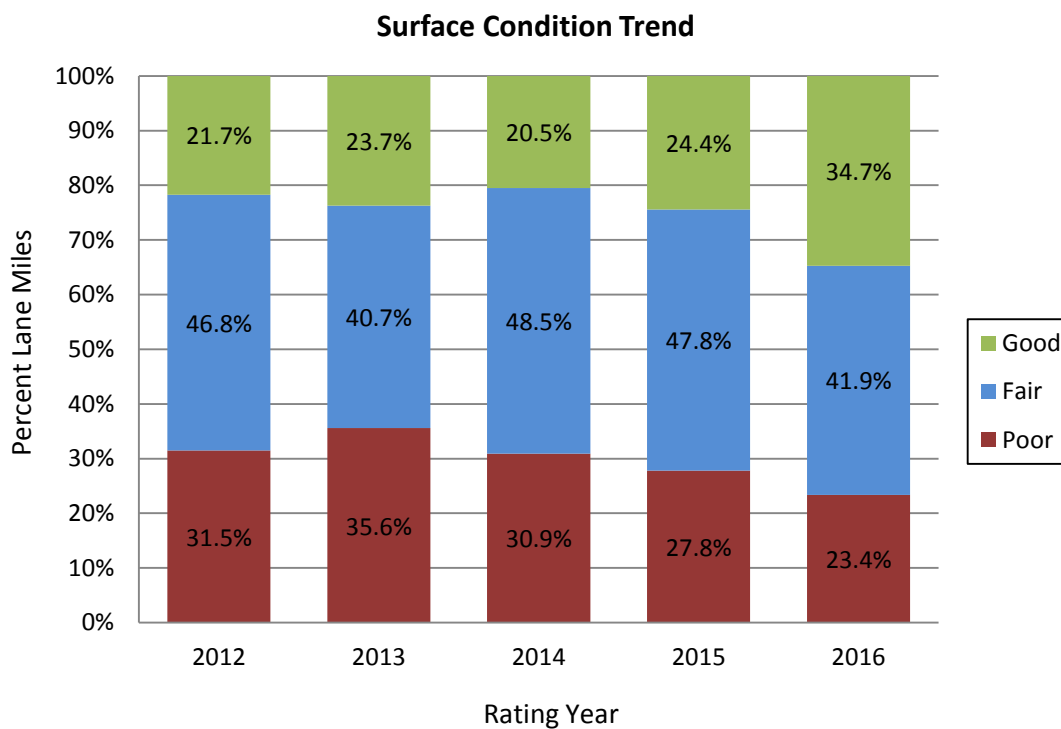
Kalkaska County

Data was collected on approximately 240 miles of roads in Kalkaska County on June 15. Staff present for the rating included John Rogers, Kalkaska County Road Commission; Paul Affholder, Traverse City Transportation Service Center, MDOT North Region; and Tad Erickson, Regional Planner, Networks Northwest.

Map 6 displays the surface ratings for roads in Kalkaska County. Figure 15 illustrates that 39% of federal-aid roads were rated 5-7 (Fair), identical to the previous year. 12% of roads were rated 8-10 (Good), which is consistent with the previous year (see Figure 16). The remaining 49% of federal-aid roads were rated 1-4 (Poor), which is tied for the highest regional average.

Map 6 – Kalkaska County PASER Values

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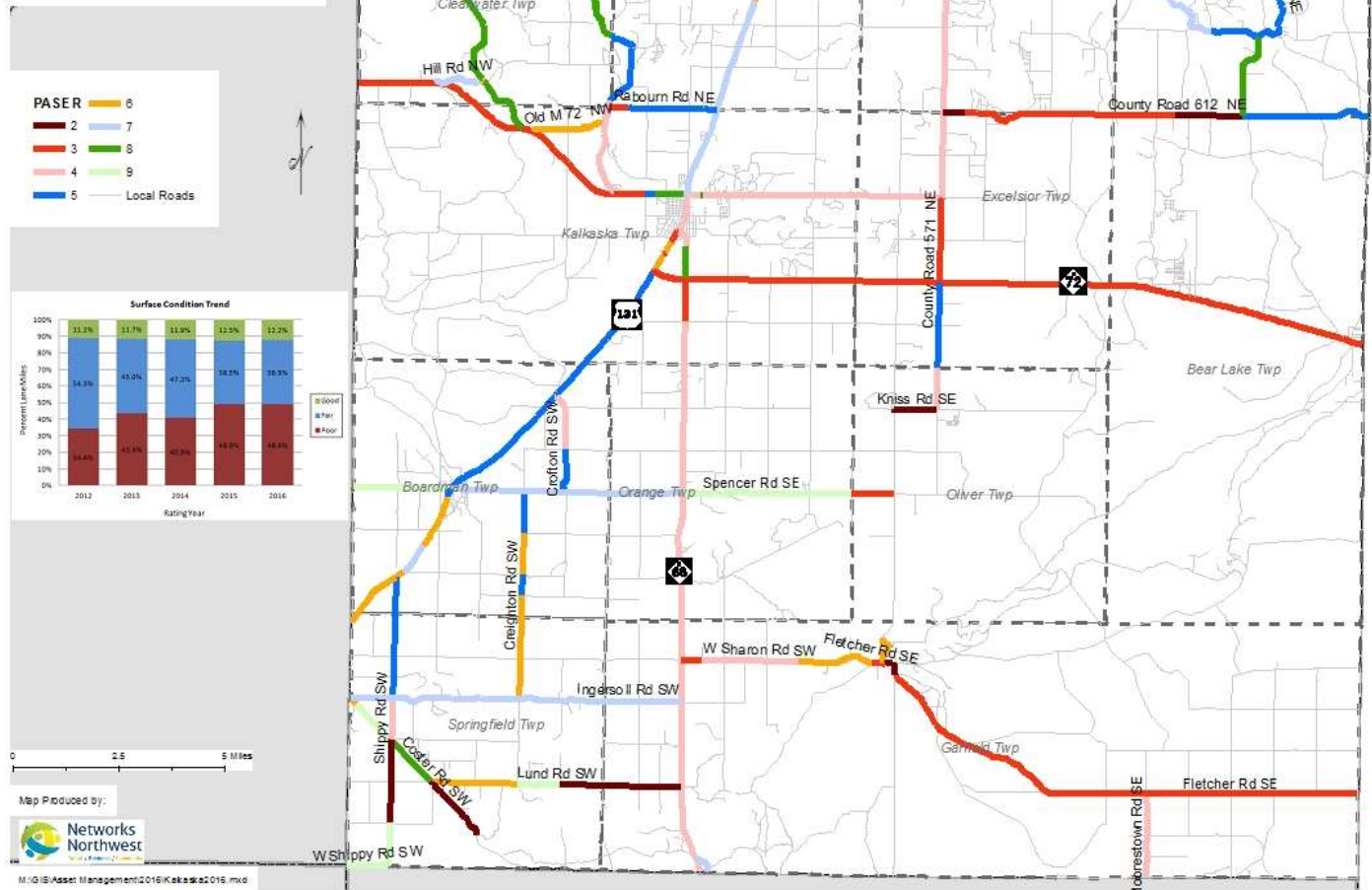
Figure 15 – Kalkaska County Ratings Compared To Region

2016 Kalkaska County compared to Region
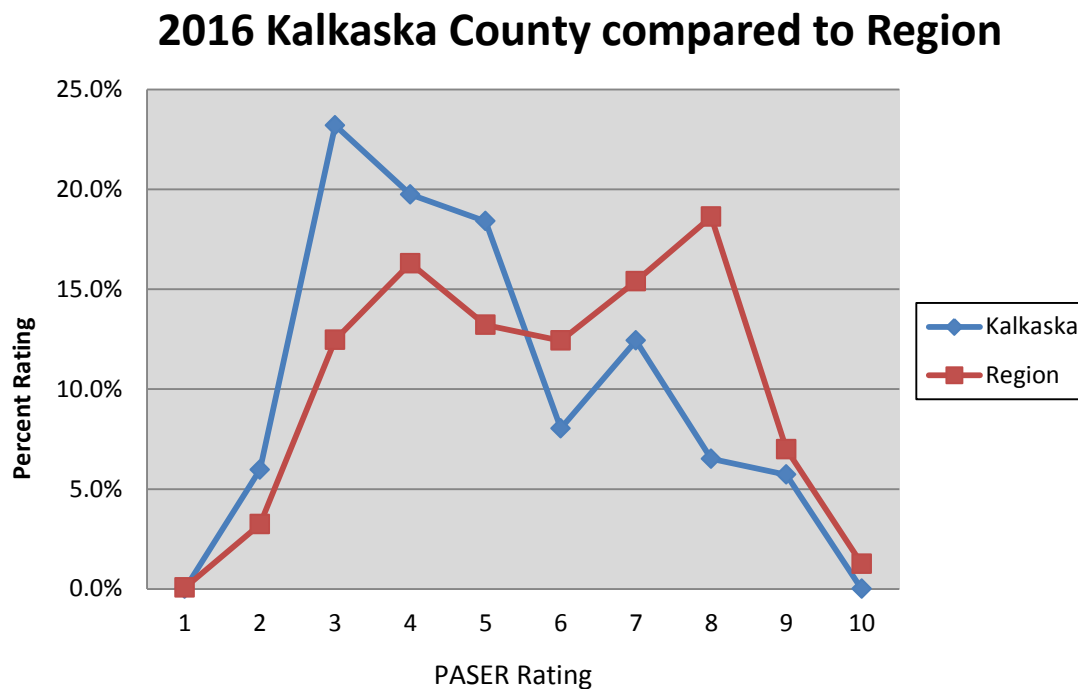
Figure 16 – Kalkaska County Ratings Comparing Multiple Years of Data

Surface Condition Trend
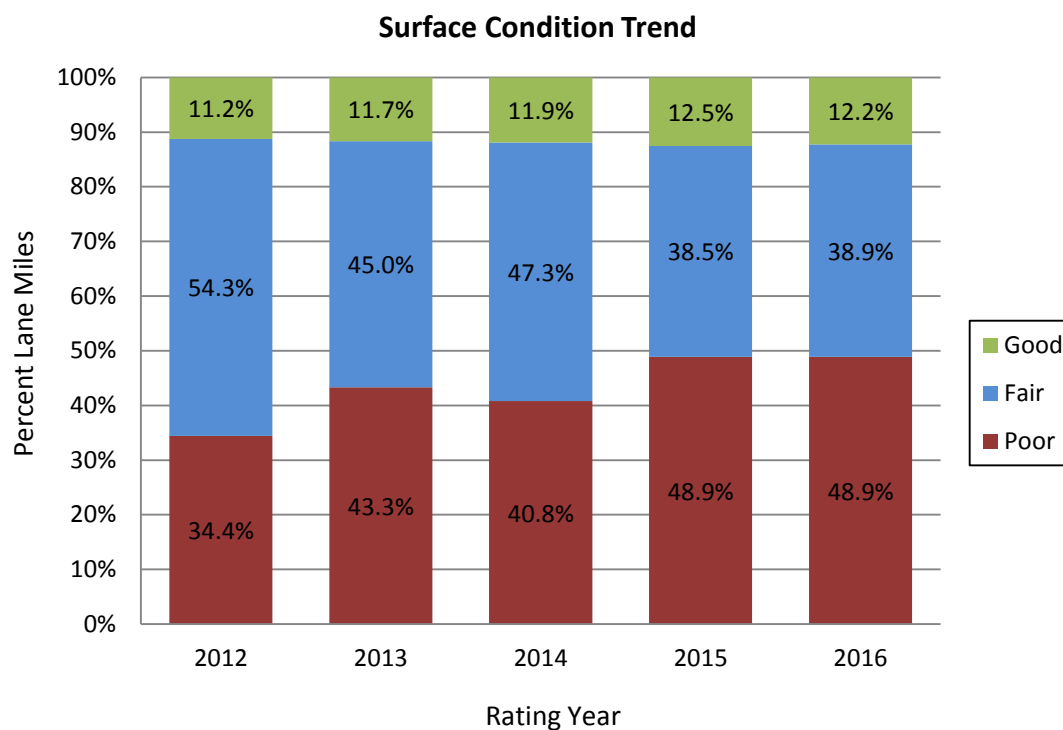
Leelanau County

Data was collected on approximately 243 miles of primary and federal-aid roads in Leelanau County on June 25 and 28. Staff present for the rating included Jim Johnson, Engineer, Leelanau County Road Commission; Paul Affholder, MDOT Traverse City Transportation Service Center; and Michael Woods, Networks Northwest.

Map 7 displays the surface ratings for federal-aid roads in Leelanau County. Figure 17 illustrates that the percentage of roads rated 8-10 (Good) was 25%,an increase, and 54% of the roads were rated 5-7 (Fair), a slight decrease from the previous year. PASER values of 1-4 (Poor) were given to 21% of federal-aid roads, which is similar to the previous year. Figure 18 shows a comparison of the percentage of ratings from the last four years of data collection.
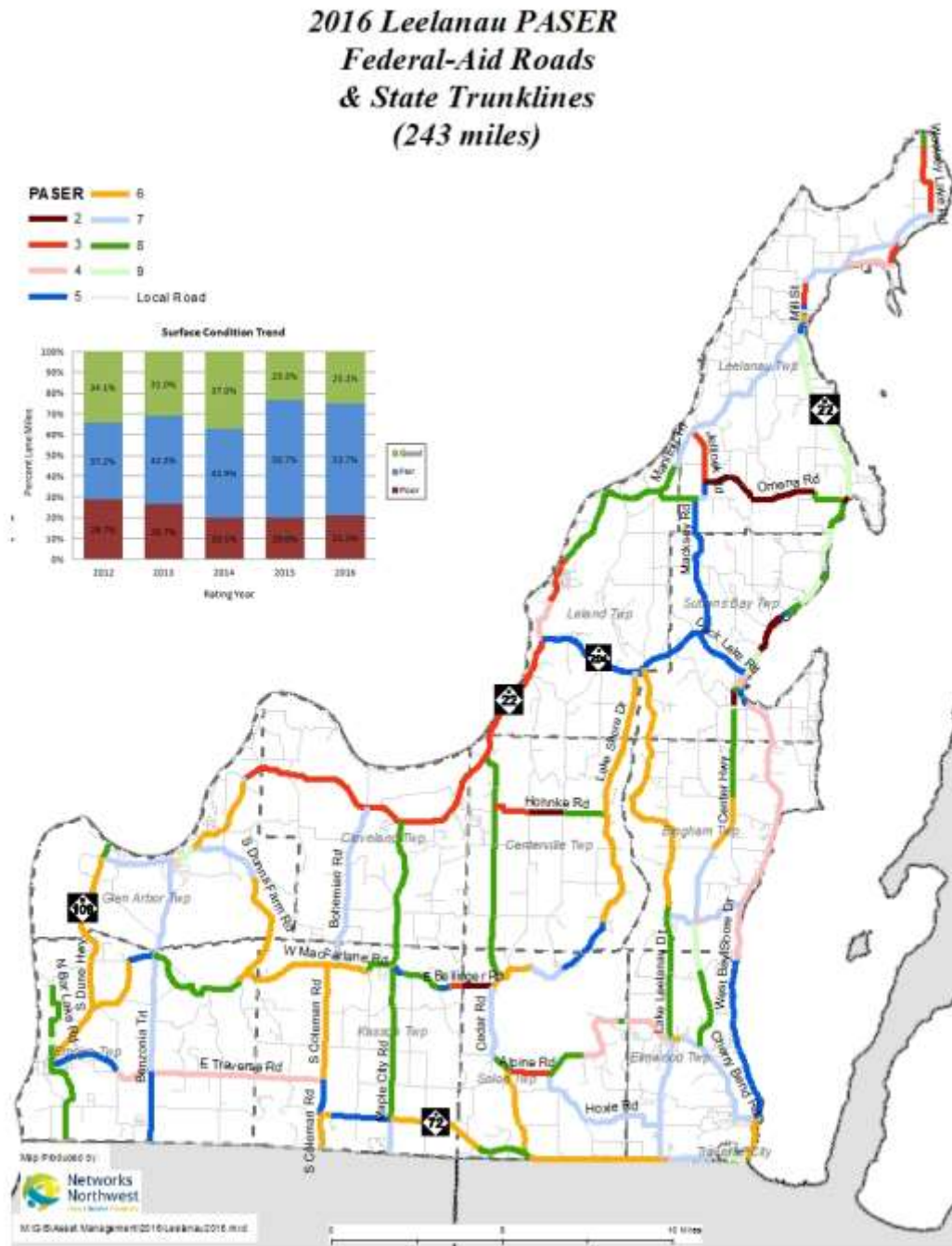
Map 7 – Leelanau County PASER Values

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Figure 17 – Leelanau County Ratings Compared To Region

2016 Leelanau County compared to Region
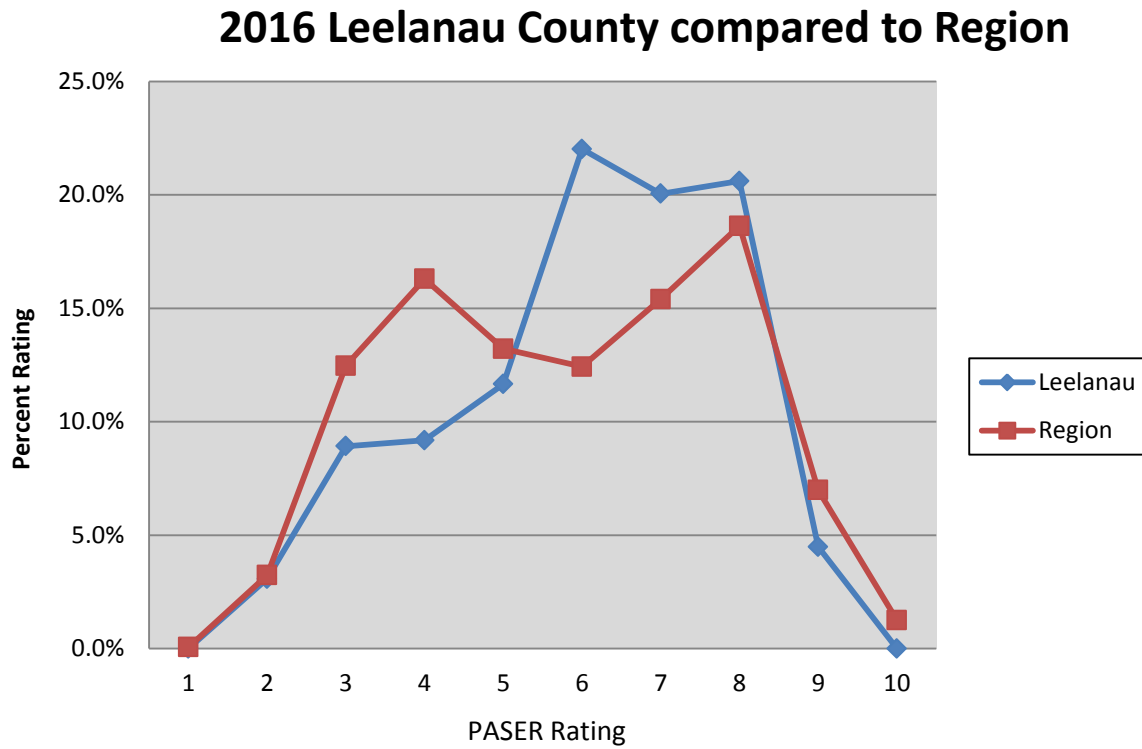
Figure 18 – Leelanau County Ratings Comparing Multiple Years of Data
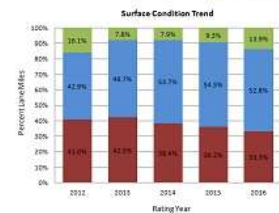
Surface Condition Trend
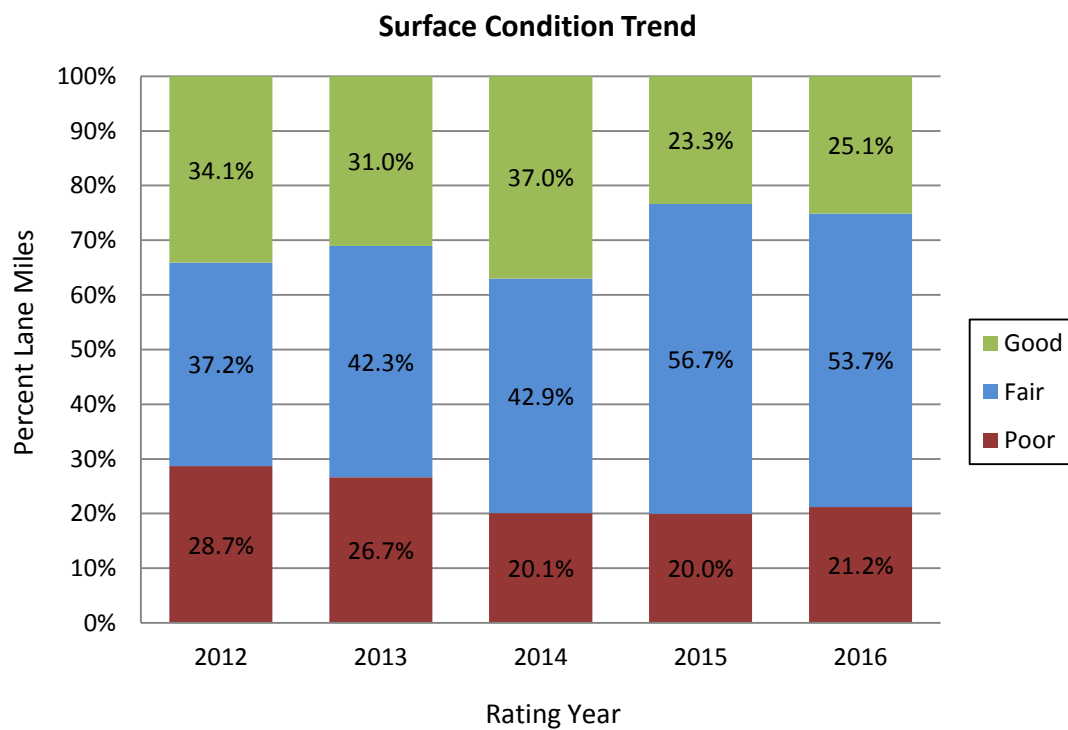
Manistee County

Data was collected on approximately 309 miles of federal-aid roads in Manistee County on July 12 and 13. Staff present for the rating included Greg Hejl, Manistee County Road Commission; Paul Affholder, Traverse City Transportation Service Center, MDOT North Region; Brandon Prince, (City of Manistee only) and Tad Erickson, Networks Northwest.

Map 8 displays the surface ratings for federal-aid roads in Manistee County. Figure 19 illustrates 53% of roads were rated 5-7 (Fair), similar to the previous year. Additionally, close to 33% of roads were rated 1-4 (Poor); which is similar to the regional average of 33%. PASER values of 8-10 (Good) were given to 14% of roads in the County, which is an improvement from the previous year. Figure 20 compares the PASER values collected in the last four years.

Map 8 – Manistee County PASER Values

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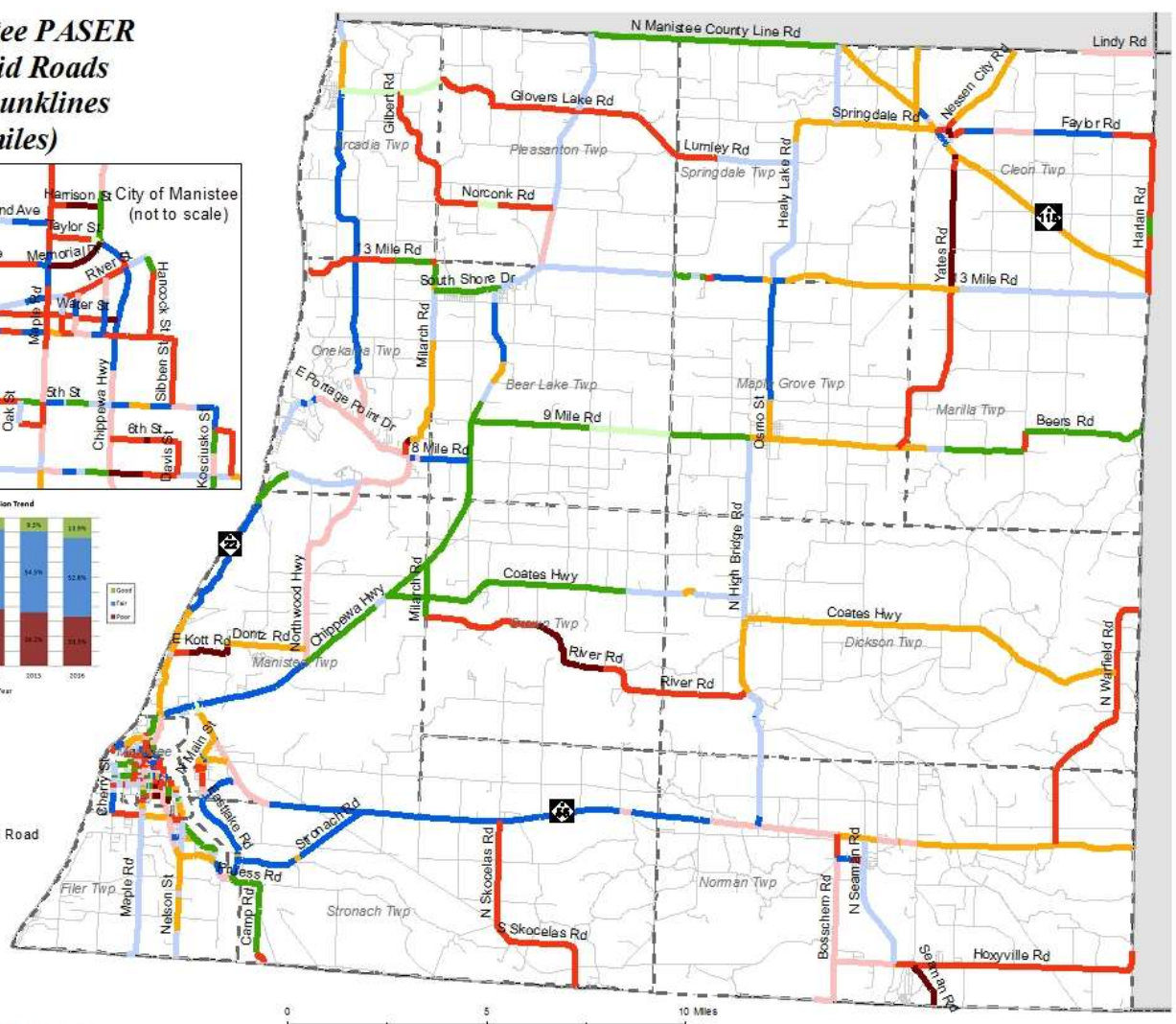
Figure 19 – Manistee County Ratings Compared To Region

2016 Manistee County compared to Region
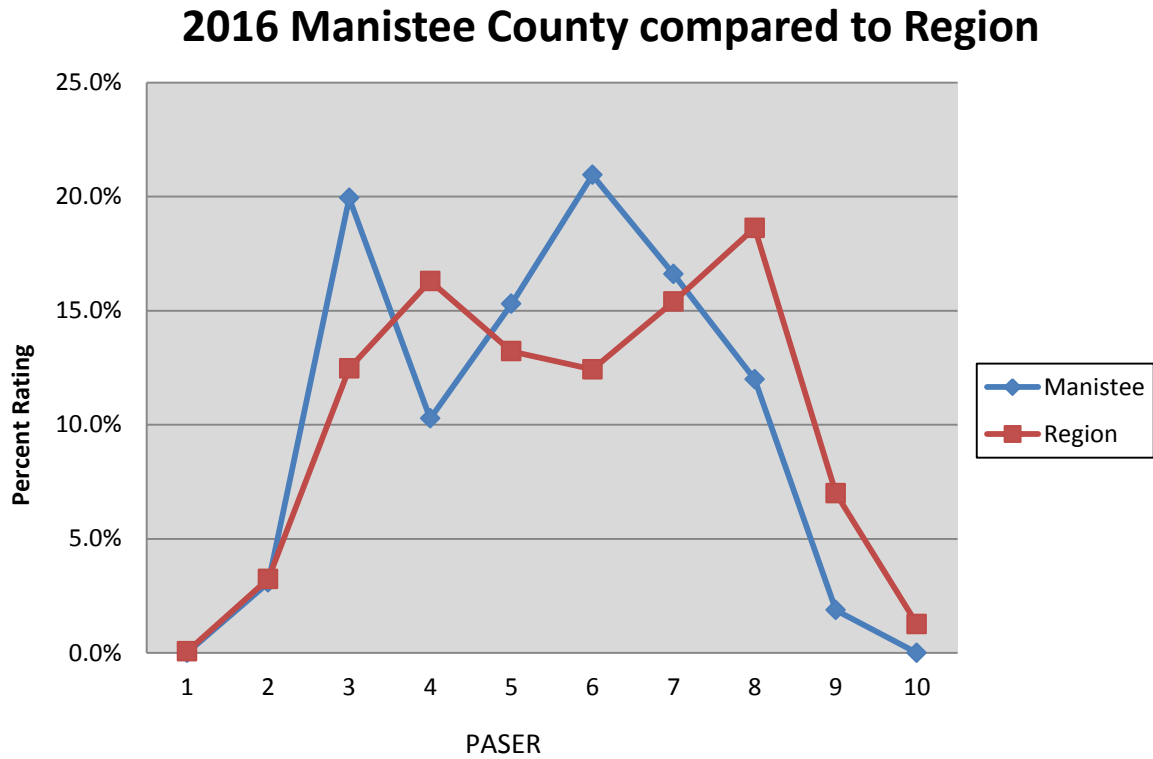
Figure 20 – Manistee County Ratings Comparing Multiple Years of Data

Surface Condition Trend
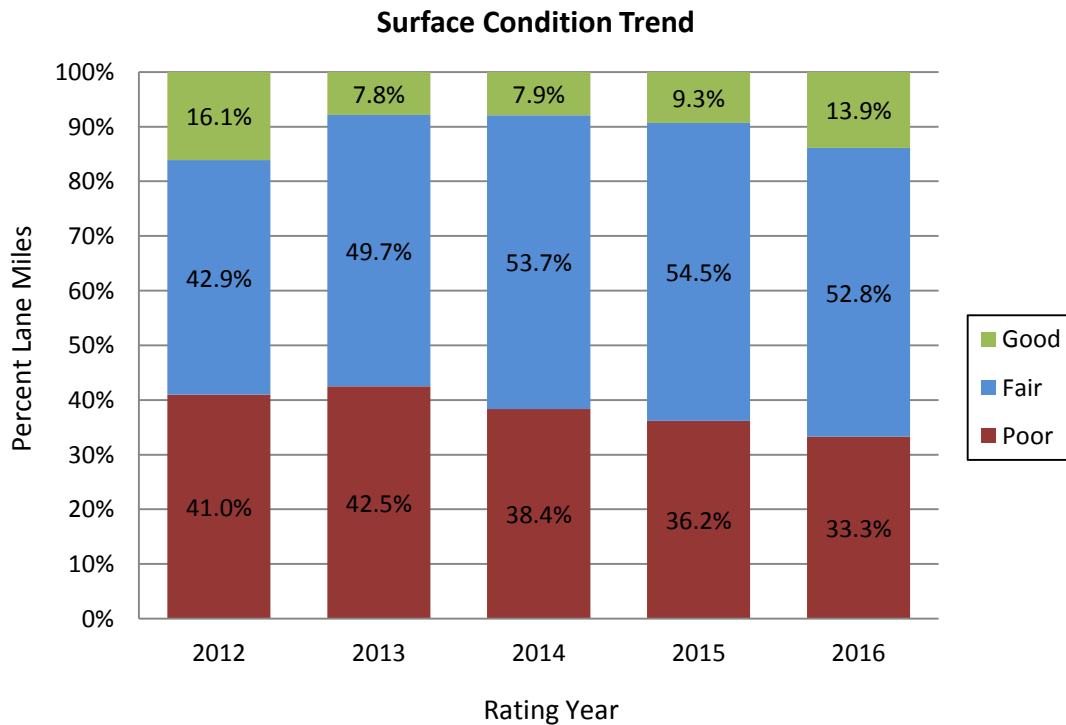
Missaukee County

Data was collected on approximately 222 miles of federal-aid roads in Missaukee County on August 24. Staff present for the rating included Sue Kutzbach, Missaukee County Road Commission; Paul Affholder, Traverse Transportation Service Center, MDOT North Region; and Tad Erickson, Networks Northwest.

Map 9 displays the surface ratings for roads in Missaukee County. As Figure 21 illustrates, 43% of roads were given PASER values of 5-7 (Fair), which is higher than the regional average of 41%. PASER values of 8-10 (Good) were given to 25% of federal-aid roads, a slight decrease from the previous year. 33% of roads were rated in the 1-4 (Poor) rating range, which is the lowest in five years. Figure 22 illustrates a comparison of the last four years of data collected.

Map 9 – Missaukee County PASER Values

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Figure 21 – Missaukee County Ratings Compared To Region

2016 Missaukee County compared to Region
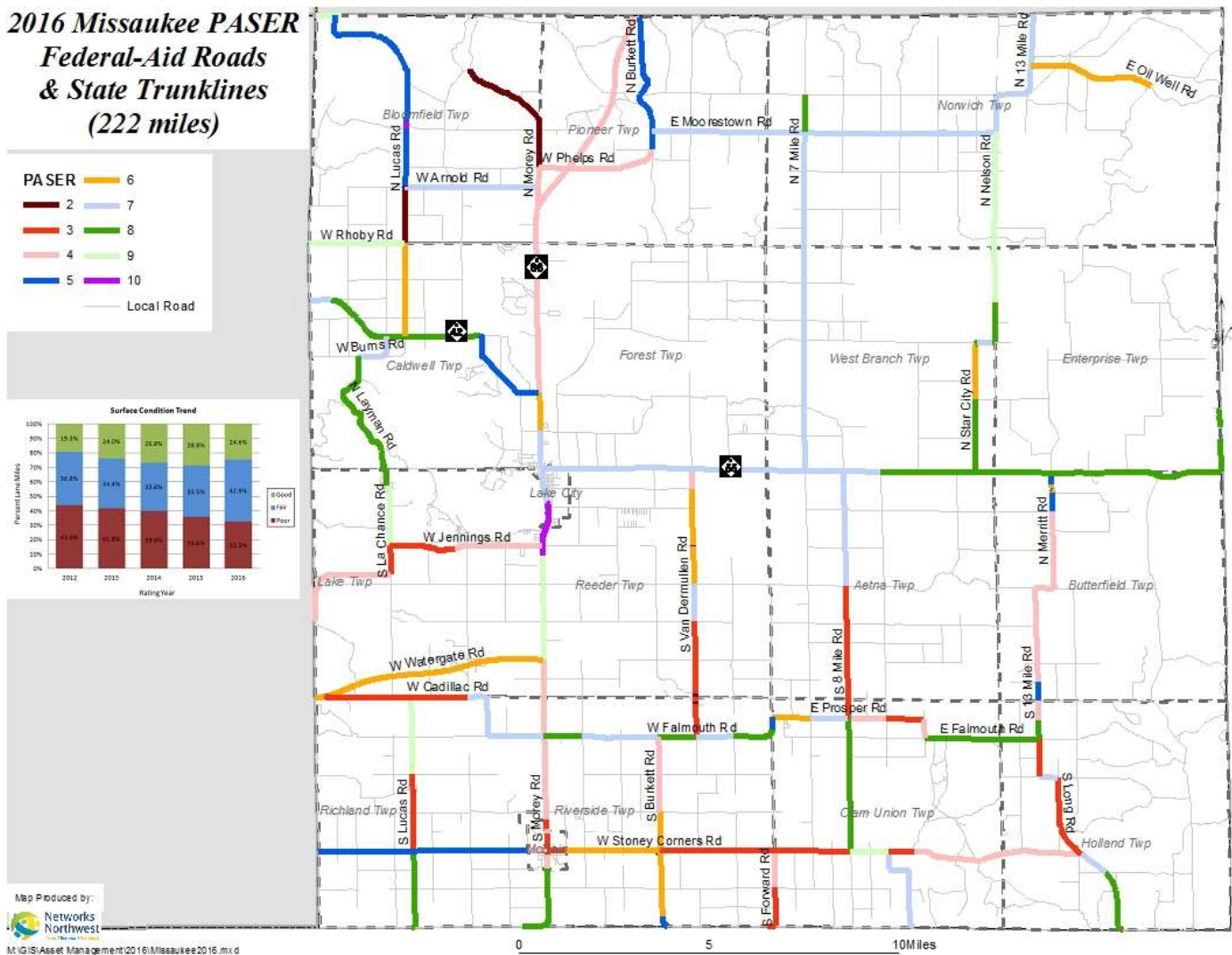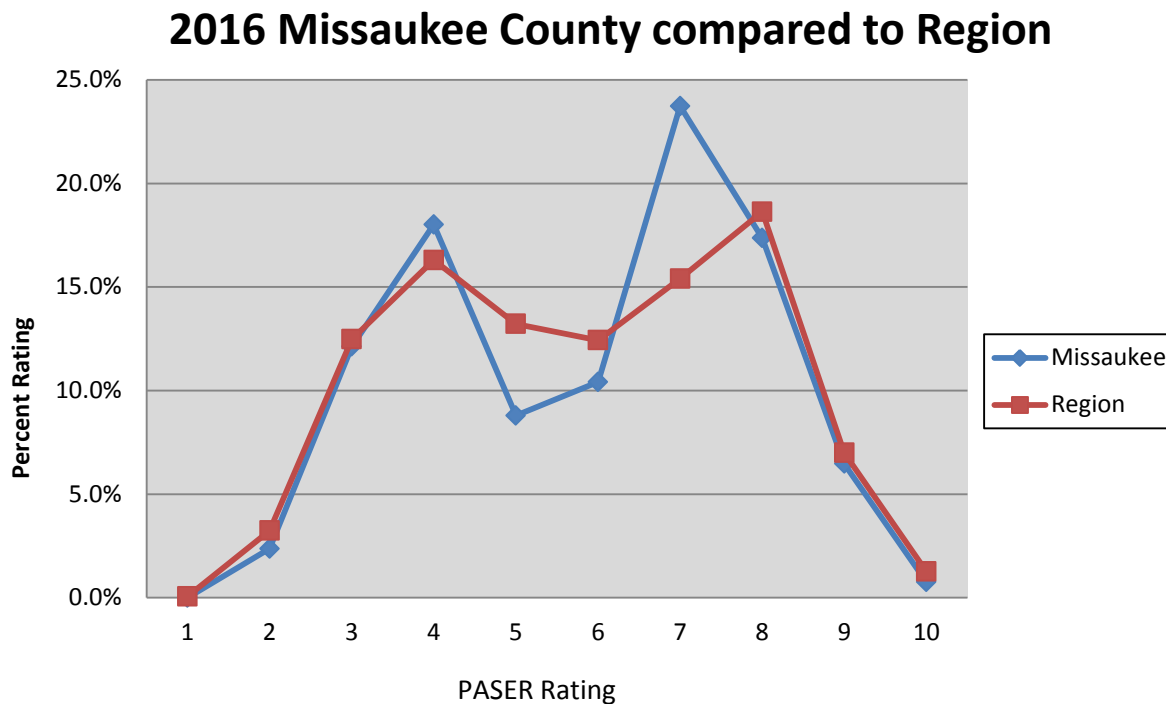

Figure 22 – Missaukee County Rating Comparing Multiple Years of Data

Surface Condition Trend
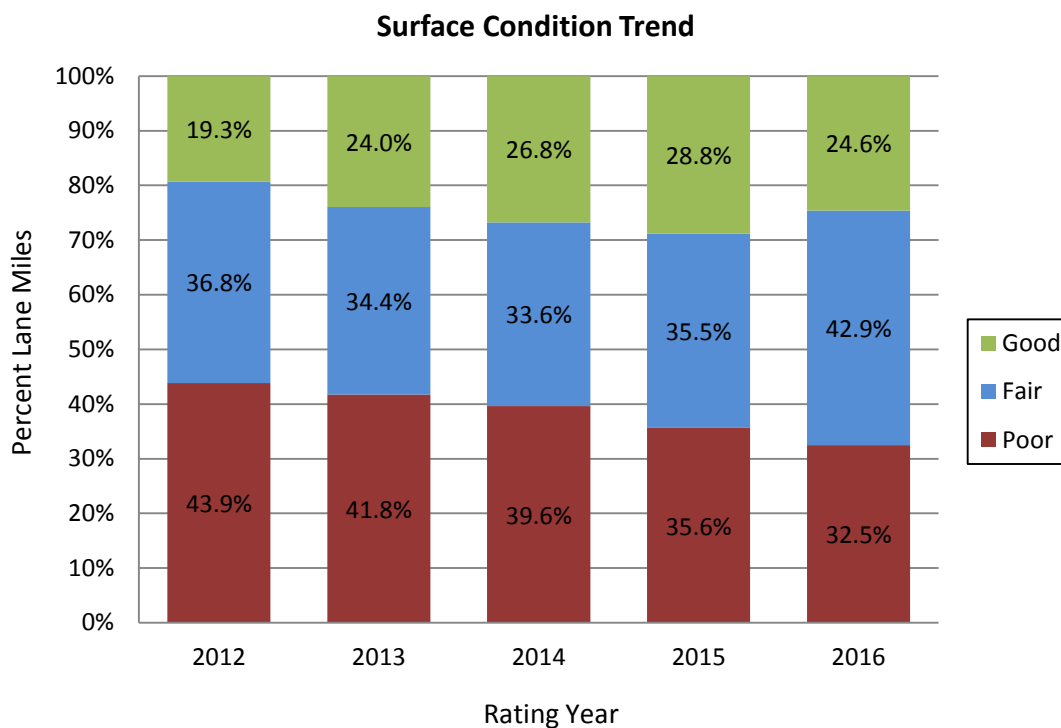
Wexford County

Data was collected on approximately 354 miles of federal-aid roads in Wexford County during September 13 and 19. Staff present for the rating included Karl Hanson, Engineer, Wexford County Road Commission; Bruce DeWitt, Engineer, City of Cadillac (Cadillac only) Paul Affholder, Traverse Transportation Service Center, MDOT North Region; and Tad Erickson, Networks Northwest.

Map 10 displays the surface ratings for roads in Wexford County. As Figure 23 illustrates, 39% of roads were rated 8-10 (Good), which is a 26% improvement over the last five years. PASER values of 5-7 (Fair) were given to 37% of federal-aid roads and the remaining 24% were given ratings of 1-4 (Poor), which is a slight improvement from the previous year. Figure 24 compares the ratings gathered from the last four years of data collection.

Map 10 – Wexford County PASER Values
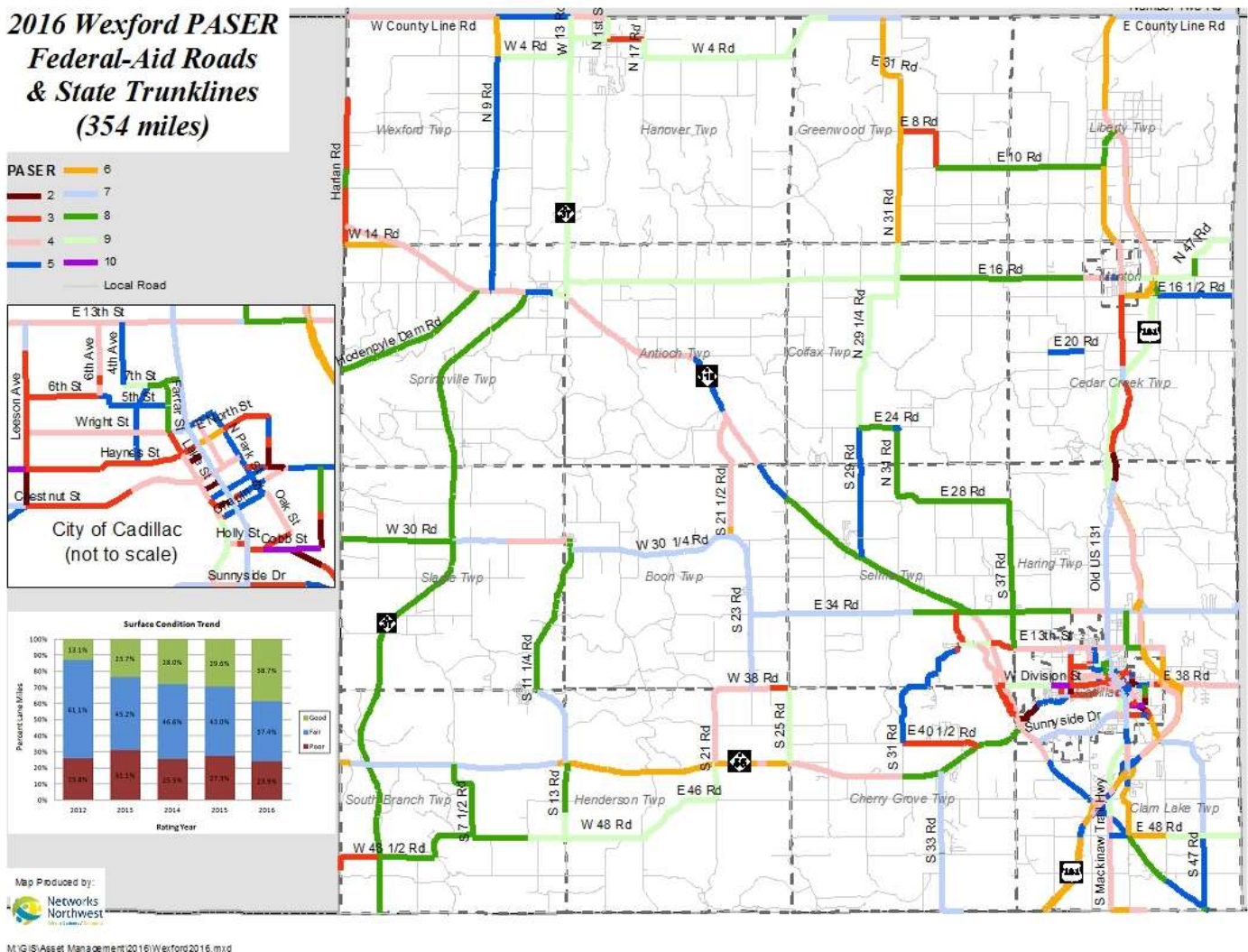
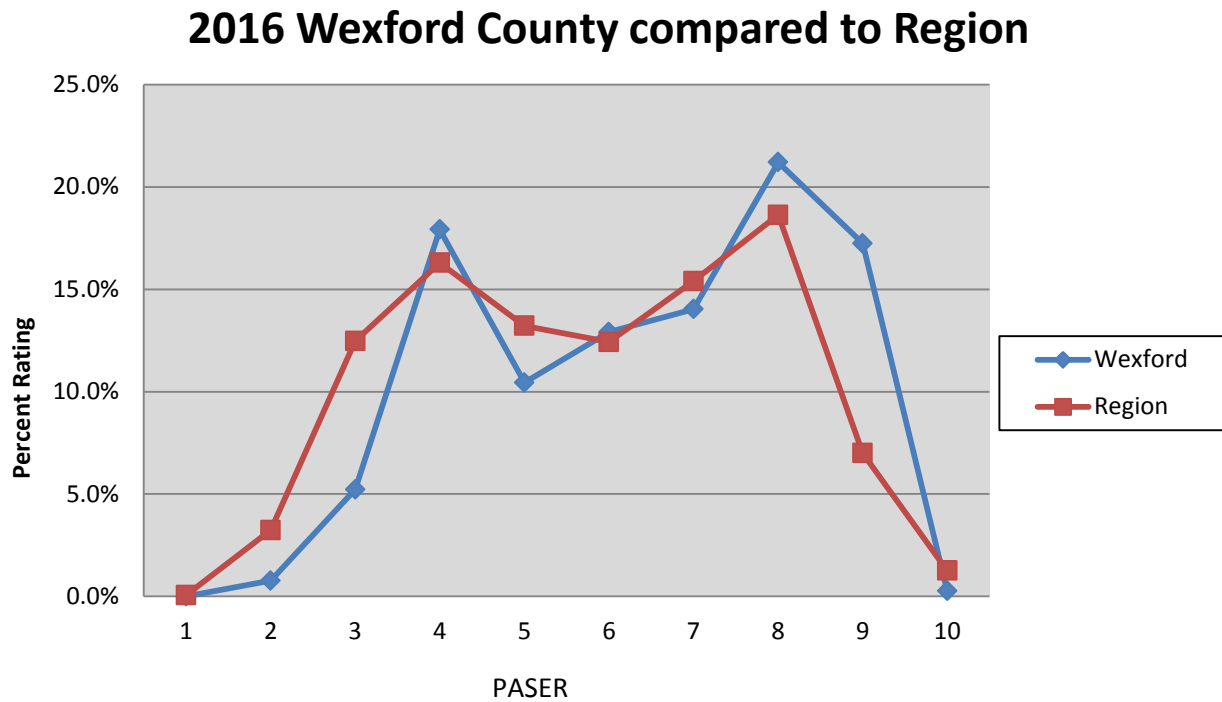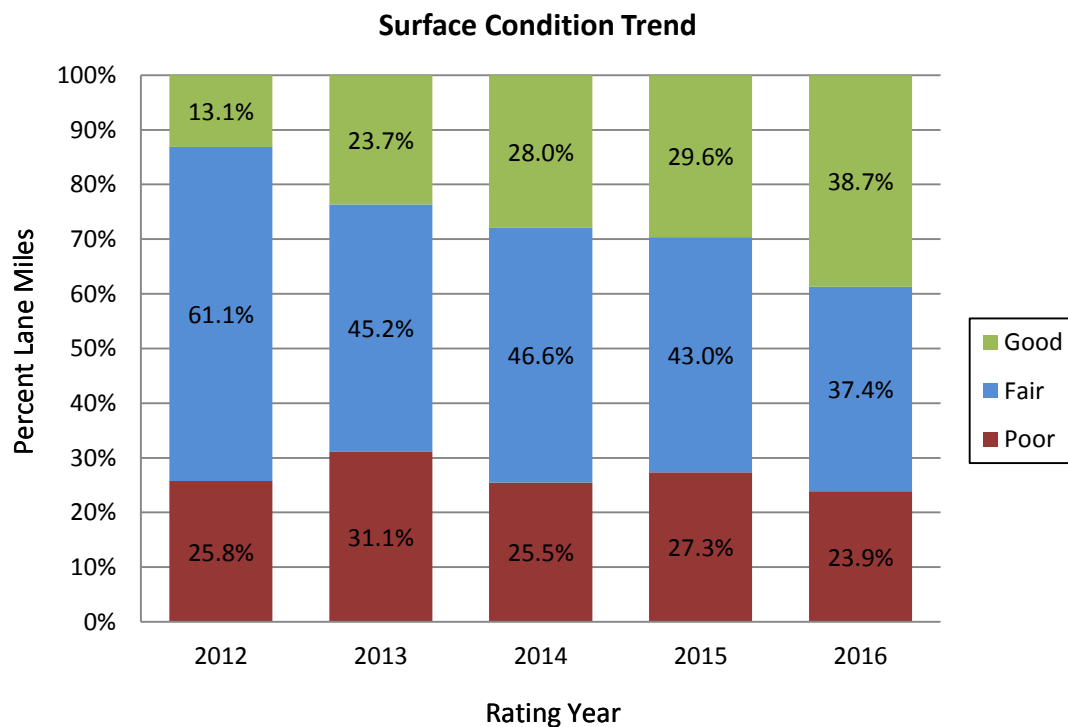Figure 23 – Wexford County Ratings Compared To Region

2016 Wexford County compared to Region

Figure 24 – Wexford County Ratings Comparing Multiple Years of Data

Surface Condition Trend

Regional Summary

Figure 25 below shows the percentage of ratings throughout the region for each year of the program. In 2016, regionally, 68% of federal-aid roads were rated 5-10 (Good or Fair) as opposed to 32% of roads rated 1-4, (Poor). Counties with the highest percentage of federal-aid PASER values in the 5-10 rating range include Benzie (80%), Leelanau (79%) and Grand Traverse (77%). Counties with the highest percentage of federal-aid PASER values in the 1-4 rating range include Emmet and Kalkaska (49%) and Antrim at (40%).

Map 11 displays the surface ratings for the entire region separated into the three rating quality categories: 1-4 (Poor); 5-7 (Fair); and 8-10 (Good) and Figure 26 breaks down federal-aid eligible roads by ownership. 29% of State-owned roads are rated 1-4 (Poor) (needing structural improvement) while 33% of County-owned and 41% of City/Village-owned roads are rated as Poor.

Map 12 shows how the surface conditions have changed since 2015. It is normal for a road that has not undergone an improvement to deteriorate over time. Therefore, a road that did not receive any treatment may have dropped down at least one PASER value between 2015 and 2016. However, if a road received treatment then it's PASER value would have increased. An example would be a road segment that had an overlay. This would take a road that might have been a 5 or 6 and make it an 8 or 9 depending on the type of overlay. This was the eleventh year that PASER values were collected region-wide in northwest Lower Michigan.

Figure 25 – Regional Ratings Comparing Multiple Years of Data
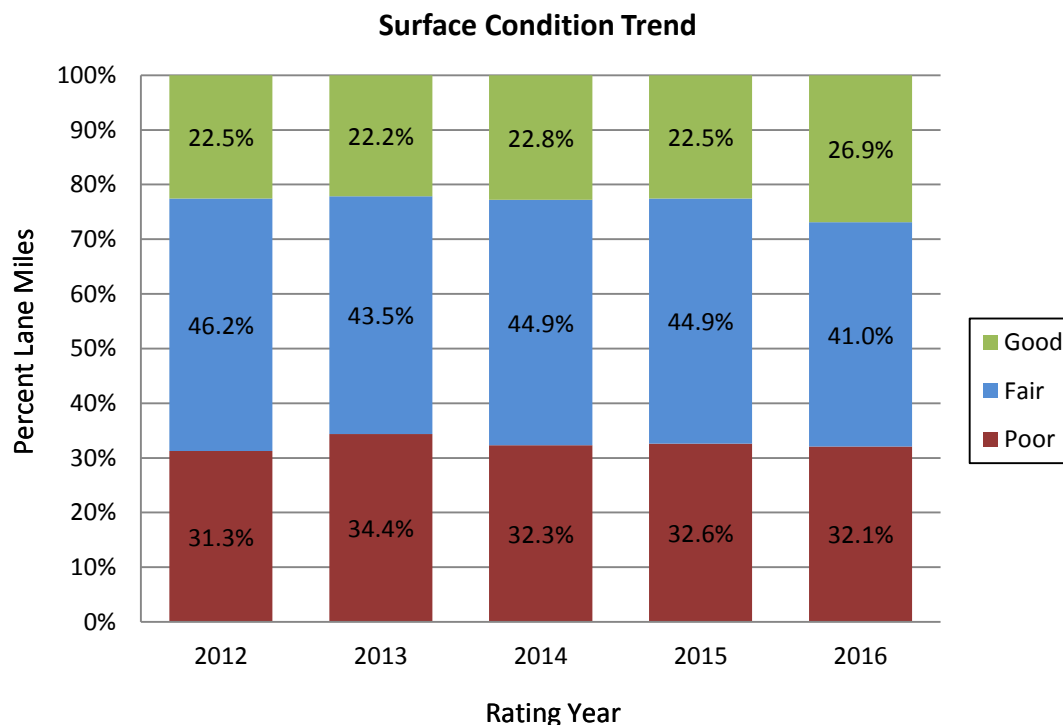
Figure 26 – Regional Ratings Comparing Road ownership

Map 11 – NETWORKS NORTHWEST Regional PASER Value
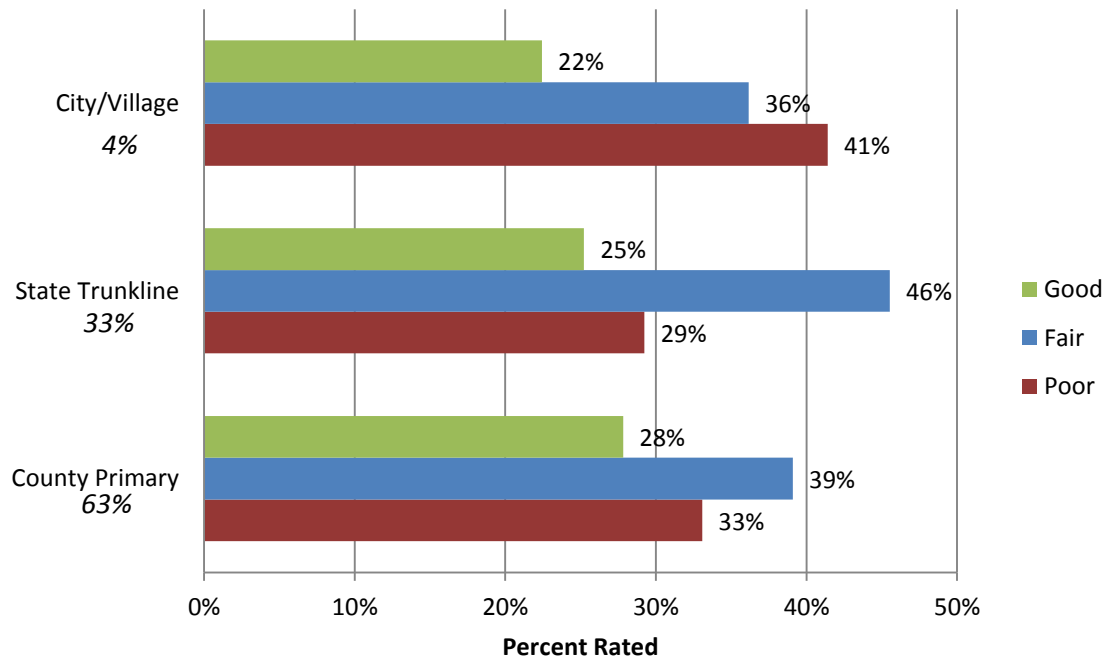
2016 PASER
Northwest Region

Category

— Poor (32%)

— Fair (41%)

— Good (27%)

☐ County

Map produced by:

Networks Northwest

0   10   20 Miles

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EMMET

CHARLEVOIX

ANTRIM

LELANAU

KALKASKA

BENZIE

GRAND TRAVERSE

MANISTEE

WEXFORD

MISSAUKEE

2016 Asset Management Report
Networks Northwest

Map 12 – Change in Surface Rating
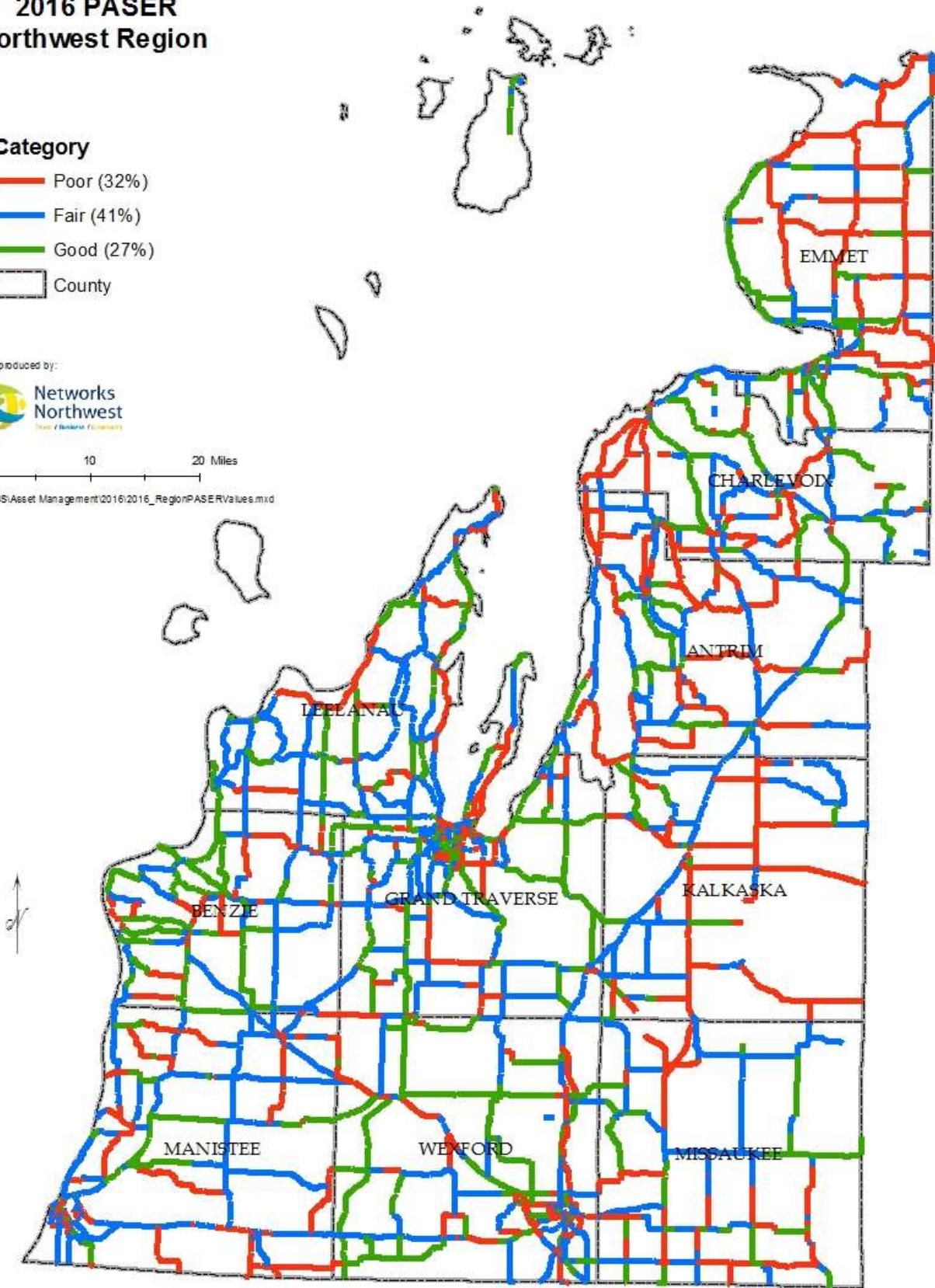
2016 Change in Surface Condition
Northwest Region

Change

— Decrease 28%
— No Change 59%
— Improve 13%
☐ County

Map produced by:

Networks
Northwest

0   10   20 Miles

M:\GIS\Asset Management\2016\2016_RegionPASERChange.mxd

EMMET

CHARLEVOIX

ANTRIM

LEELANAU

GRAND TRAVERSE

KALKASKA

BENZIE

MANISTEE   WEXFORD   MISSAUKEE

36
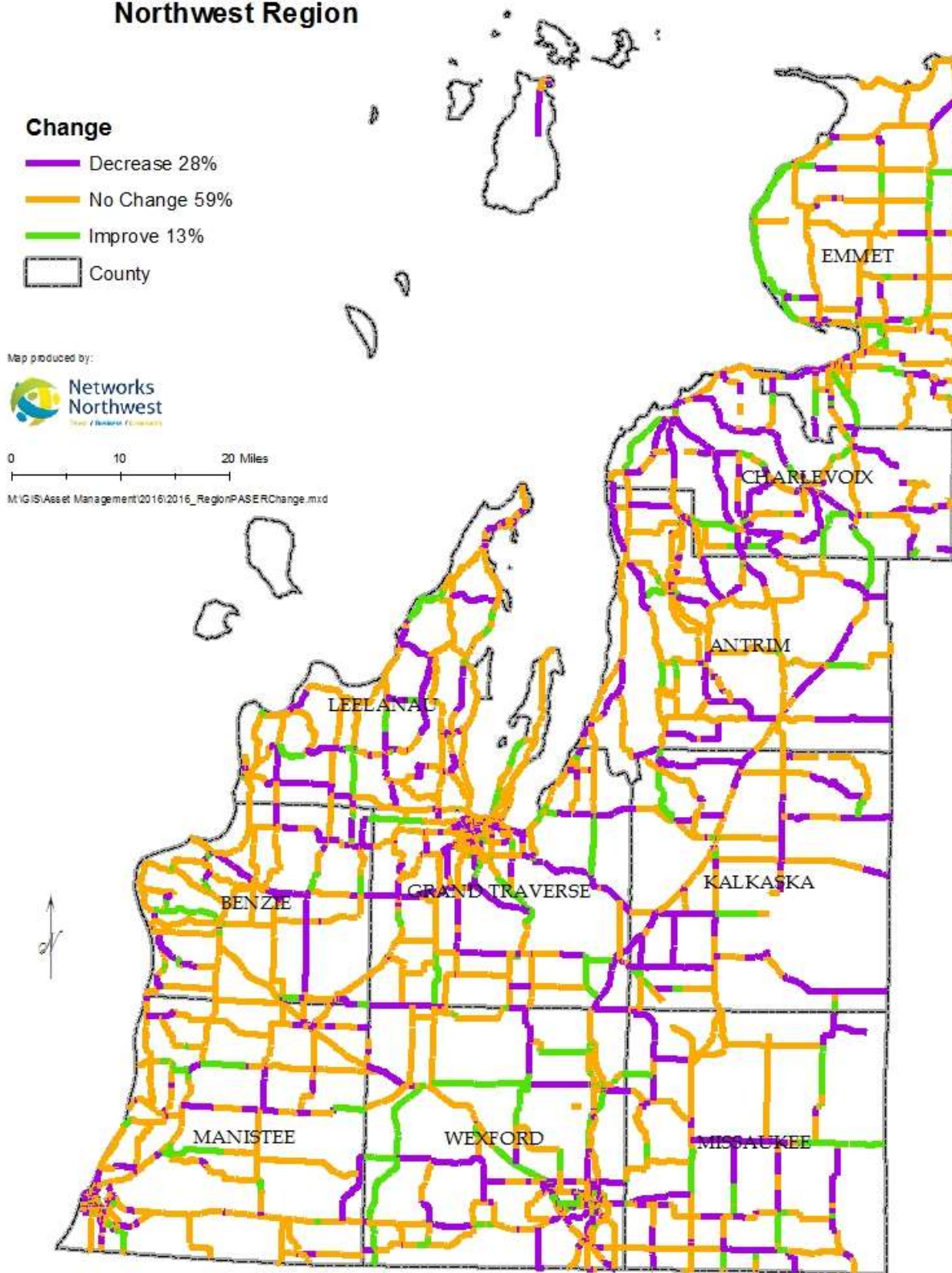
VII. Data Use & Application

MDOT will use this pavement assessment data for their transportation asset management program. Local units of government are encouraged to use this data to develop their own strategic and departmental plans or asset management strategy as well. Combining the data provided in this report with local sewer and water information, or data about other utilities, can provide a comprehensive perspective of public infrastructure and can lead to an increase in effective and coordinated management.

To access digital files related to the data presented in this report, contact the Networks Northwest or your local Road Commission office.

VIII. More Information About Transportation Asset Management

Additional Resources

Michigan Transportation Facts and Figures. MDOT, December 1999

Reaching Public Goals: Managing Government for Results. National Performance Review, October 1996.

Governing Performance and Results Act of 1993. US Congress, 1993.

Executive Order 12893: principles for Federal Infrastructure Investments. President William J. Clinton, White House, January 26, 1994.

Concepts Statement No. 2, Service Efforts and Accomplishments Reporting. Governmental Accounting Standards Board, April 1994.

MCL 247.651g

Statement No. 34, "Overview." Governmental Accounting Standards Board, no date given in document.

Asset Management Primer. US Department of Transportation, December 1999.

New Rules for Reporting Infrastructure Information To Be Enacted For State & Local Governments. Governmental Accounting Standards Board Newsletter, April 19, 1999.

Michigan Department of Transportation 1997 Business Plan. MDOT, 1997; Revised 1999.

Measuring and Improving Infrastructure Performance. National Research Council, 1995.

Serving The American Public: Best Practices In Performance Measurement. National Performance Review, June 1997.

21st Century Asset Management: Executive Summary. Center for Infrastructure and Transportation Studies, Rensselaer Polytechnic Institute, October 1997.

Pay Now Or Pay Later: Controlling Cost Of Ownership Through The Service Life Of Public Buildings. National Research Council, 1991.

Life Cycle Cost Analysis in Pavement Design. US Department of Transportation/ Federal Highway Administration, September 1998.

Contact Information

For further information on the Michigan Department of Transportation's Asset Management Program, please contact the appropriate person listed below or contact MDOT by phone at (517) 373-2240 or send an email to assetmgt@mdot.state.mi.us

For information about data or the data collection process for northwest Lower Michigan, please contact the Networks Northwest by phone at (231) 929-5000 or email Michael P. Woods at michaelwoods@networksnorthwest.org This report is also available on NETWORKS NORTHWEST's website free of charge at www.nwm.org

MDOT Web Site
www.michigan.gov/mdot
Then click on "Projects and Programs"
Then click on "Asset Management"

Asset Management Process

General Information
    William Tansil   (517) 335-2639   tansil@michigan.gov

Asset Management Council
    Roger Belknap   (517) 373-2220   BelknapR@michigan.gov

Development of Strategic Plans

State Long Range Plan/
Transportation Policy Plan

    Polly Kent   (517) 373-9193   kentp@michigan.gov

Data Collection

Michigan Geographic Framework
    Rob Surber   (517) 373-7970   surberr@michigan.gov

Global Positioning/Geographic Information Systems
    Gil Chesbro   (517) 335-2963   chesbrog@michigan.gov

Traffic Data
    Dave Schade   (517) 335-2914   schaded@michigan.gov

Contact Information (continued)

<u>Use of Management Systems</u>

Transportation Management System
    Ron Vibbert   (517) 373-9561   vibbertr@michigan.gov

Bridge Management System
    Bob Kelley   (517) 322-1398   kelleyr@michigan.gov

Pavement Management System
    Pat Schafer   (517) 322-1766   schaferpa@michigan.gov

Public Transportation Management System
    Kathy Urda   (517) 335-2575   urdak@mcihigan.gov

Safety Management System
    Bob Rios   (517) 335-1187   riosb@michigan.gov

Congestion Management System
Intermodal Management System
    Gary Endres   (517) 335-4583   endresg@michigan.gov

<u>Alternative Analysis Procedures</u>

Road Quality Forecasting System
Prioritization Process
    Craig Newell   (517) 373-9074   newellc@michigan.gov