Congestion Management Plan
Appleton (Fox Cities) Transportation Management Area

Adopted October 29, 2021

Congestion Management Process

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Prepared by the
East Central Wisconsin Regional Planning Commission

ABSTRACT

TITLE:	Appleton (Fox Cities) TMA Congestion Management Process
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The Appleton (Fox Cities) TMA Congestion Management Process analyzes and explains many aspects and impacts of local transportation congestion. Transportation regulatory agencies at the Federal, State, and Regional level set forth specific performance measurements and goals; from infrastructure to safety to air quality, and the programs and initiatives that impact those measurements and goals are described here. As the Metropolitan Planning Organization (MPO) for the Appleton (Fox Cities) Urbanized Area, the East Central Wisconsin Regional Planning Commission (ECWRPC) has prepared this document. A CMP is required for all urbanized areas exceeding 200,000 in population, and the Fox Cities metropolitan area surpassed that mark based on 2010 census data. Local municipalities and transportation agencies are able to use the data in this plan to further develop appropriate strategies to improve livability, mobility, safety and reduce traffic congestion on area roadways.

TABLE OF CONTENTS

MAPS

APPENDICES

INTRODUCTION

CHAPTER 1: INTRODUCTION

A Congestion Management Process (CMP) is a systematic planning document that provides recommendations to improve regional traffic flows by utilizing transportation management strategies. Through data collection and analysis this plan identifies congestion within a region or corridor, and develops appropriate strategies to mitigate the impacts of congestion.[1] As the Metropolitan Planning Organization (MPO) for the Appleton (Fox Cities) Urbanized Area, the East Central Wisconsin Regional Planning Commission (ECWRPC) has prepared a CMP for the designated Transportation Management Area (TMA). **Map 1-1** provides context regarding boundaries for ECWRPC's Planning Area as well as for the Appleton (Fox Cities) Metropolitan Planning Area. A CMP is required for all urbanized areas exceeding 200,000 in population, and the Appleton (Fox Cities) metropolitan area surpassed that mark based on 2010 U.S. Census data. The CMP is being developed in consultation with federal, state and local governments, various agencies and stakeholders in an effort to develop, select, and plan appropriate strategies to improve safety and reduce traffic congestion on area roadways.

A CMP as defined in federal regulation is intended to serve as a systematic process that provides for safe and effective management of local transportation networks. Reduced congestion is achieved by first evaluating the entire transportation system in a holistic sense. Once there is a complete understanding of how all the moving parts works together, then improvements to the system can take place to increase overall efficiencies. Improvement strategies include, but are not limited to:

- street network strategies;
- Travel Demand Model (TDM) strategies;
- railroad and bridge strategies;
- transportation alternative strategies;
- freight strategies;
- transit strategies;
- non-recurring incident strategies;
- district strategies;
- Intelligent Transportation System (ITS) strategies; and
- policy level strategies.

What is a CMP?

A congestion management process (CMP) is a systematic and regionally-accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet state and local needs. The CMP uses an objectives-driven, performance-based approach to planning for congestion management. Through the use of congestion management objectives and performance measures, the CMP provides a mechanism for ensuring that investment decisions are made with a clear focus on desired outcomes.

-Congestion Management Process: A Guidebook, FHWA, April 2011

[1] An Interim Guidebook on the Congestion Management Process in Metropolitan Transportation Planning , U.S. Department of Transportation Federal Highway Administration and Federal Transit Administration (2/6/2008)

Transportation efficiency is tracked through a number of performance measures and performance measures and targets set by the Transportation Management Area (TMA), the State, and the Federal Highway Administration (FHWA).

The CMP was first instated by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which was known as a Congestion Management System (CMS). The CMS required the development of a plan with a focus on system level planning. The CMS planning requirement remained with the implementation of Intermodal Surface Transportation Efficiency Act for the 21st Century (ISTEA-21) until the introduction of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005. SAFETEA-LU changed the CMS to a CMP requirement, which changed the focus from system level planning to dealing with congestion as a broader process. The Moving Ahead for Progress in the 21st Century Act (MAP-21) reauthorized the CMP requirement with a focus on performance-based planning. Performance-based planning includes the establishment of a performance-based approach to transportation decision making and the establishment of performance targets to meet national and state goals.[2] On December 4, 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94) into law—the first federal law in over a decade to provide long-term funding certainty for surface transportation infrastructure planning and investment. The FAST Act authorizes $305 billion over fiscal years 2016 through 2020 for highway, highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs. The FAST Act maintains our focus on safety, keeps intact the established structure of the various highway-related programs we manage, continues efforts to streamline project delivery and, for the first time, provides a dedicated source of federal dollars for freight projects.[3]

The Congestion Management Process (CMP) includes:

- Development of congestion management objectives;
- Establishment of measures of multimodal transportation system performance;
- Collection of data and system performance monitoring to define the extent and duration of congestion and determine the causes of congestion;
- Identification of congestion management strategies;
- Implementation activities, including identification of an implementation schedule and possible funding sources for each strategy; and
- Evaluation of the effectiveness of implemented strategies.[4]

A CMP is required for regions designated as TMAs and must be developed and implemented as part of the metropolitan planning process. Federal regulations do not describe the exact methods from which the TMA must develop the plan; it is the responsibility of the TMA to develop a plan that meets regional demands of the transportation network and work towards implementation.

[2] (https://www.fhwa.dot.gov/fastact/summary.cfm, n.d.)
[3] https://www.fhwa.dot.gov/fastact/summary.cfm (July 2016)
[4] Congestion Management Process: A Guidebook , U.S. Department of Transportation Federal Highway Administration and Federal Transit Administration (April 2011)

What is Congestion?

Congestion means the level at which transportation system performance is unacceptable due to excessive travel times and delays. [5]

What is Performance-Based Planning?

Performance-based planning applies measurable management principles to transportation system policies and investment decisions, providing a link between management and long-range decisions about policies and investments that an agency makes in its transportation system while establishing a level of transparency and objectivity that is critical for development of transportation plans. [6]

PLANNING PROCESS AND STRUCTURE

The Appleton (Fox Cities) (used interchangeably within this document) TMA will be evaluated from several approaches to ensure that the CMP is comprehensive. It is important to study congestion in a broad sense and not confine it solely to vehicular traffic. Congestion in reference to transportation planning involves all modes (i.e. pedestrians, bicyclists, public transportation) and how they each interact with the transportation network.

The Appleton (Fox Cities) TMA will utilize the "8 Actions" in the development of the CMP:

1. Develop Regional Objectives for Congestion Management;
2. Define CMP Network;
3. Develop Multimodal Performance Measures;
4. Collect Data/Monitor System Performance;
5. Analyze Congestion Problems and Needs;
6. Identify and Assess Strategies;
7. Program and Implement Strategies; and
8. Evaluate Strategy Effectiveness.[7]

The "8 Actions" of the CMP planning process are cyclical in nature and should not be thought of as a one-time step-by-step process. The "8 Actions" work together in unison and typically portions of the CMP are updated at different times. The CMP document itself is updated regularly to reflect the demands of both the transportation system and its constituents.

[5] 23 CFR 511.303

[6] *FHWA - The Performance Based Planning and Programming Newsletter Volume 1, Issue 1, January 2013*

[7] Congestion Management Process: A Guidebook , U.S. Department of Transportation Federal Highway Administration and Federal Transit Administration (April 2011)

BACKGROUND INFORMAITON ON THE APPLETON TRANSPORTATION MANAGEMENT AREA

The CMP developed for the Appleton (Fox Cities) TMA includes multiple municipalities but not limited to the cities of Appleton, Neenah, Menasha, and Kaukauna; and the counties of Calumet, Outagamie, and Winnebago. All municipalities are included in Figure 1-1. ECWRPC is the Policy Board for the Appleton (Fox Cities) Metropolitan Planning Organization (MPO) as the designated governing body that works with all jurisdictions, operating agencies, and the public to carry out cooperative, continuing and comprehensive transportation and land use planning.

As the MPO, ECWRPC's Transportation Policy Committee oversees the program activities for the Appleton (Fox Cities) TMA and Oshkosh MPO. ECWRPC's Transportation Policy Committee is also responsible for conducting the federal required transportation planning process. The East Central Wisconsin Regional Planning Commission Board is the policy board for the Appleton (Fox Cities) Transportation Management Area (TMA) and the Oshkosh Metropolitan Planning Organization (MPO). The Technical Advisory Committees (TAC) for both the Appleton (Fox Cities) TMA and the Oshkosh MPO provide recommendations to the Policy Board. East Central staff works in coordination with the technical advisory committees, the Wisconsin Department of Transportation (WisDOT) and the Federal Highway Administration to ensure that the program and projects align with federal compliance.

The Appleton (Fox Cities) TMA covers a wide variety of modes of transportation and built environments. **Map 2** displays the Appleton TMA geographic boundaries below. **Figure 1.1** is a list of the municipalities.

Figure 1-1: Appleton (Fox Cities) TMA Municipalities

City of Appleton City of Neenah City of Menasha City of Kaukauna	Cities
Village of Combined Locks Village of Fox Crossing Village of Greenville Village of Harrison Village of Kimberly Village of Little Chute Village of Sherwood	Villages
Town of Buchanan Town of Center Town of Clayton Town of Freedom Town of Grand Chute Town of Kaukauna Town of Neenah Town of Vinland Town of Vandenbroek	Towns
Calumet County Outagamie County Winnebago County	Counties

PUBLIC PARTICIPATION PROCESS

To better define the vision, goals, and objectives of the CMP for the Appleton (Fox Cities) TMA, area residents were encouraged to participate and provide recommendations and comments through an online survey. This survey was created by ECWRPC staff and distributed to area residents to learn about their ideas, concerns, and recommendations in regard to traffic congestion within the Fox Cities. Additionally, a more detailed survey analysis is included below.

Survey Discussion

The 17-question online survey garnered a response from 76 participants between the dates of May 1, 2021 and June 30, 2021. While the survey response was not overwhelming, the results still provide an idea and snapshot of some general trends that may exist within the region.

The online survey results helped ECWRPC staff identify ideas and areas of concern regarding congestion management within the Appleton (Fox Cities) TMA. A few trends are worth further

discussion. For example, Question 2 of the survey asked respondents "Prior to Covid-19, traffic congestion impacted me on a daily basis (please select one: strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree)." Only 32% of the 76 respondents selected agree, and 3% strongly agree. That means 66% either disagree to varying degrees, or neither agree nor disagree.

Additionally, Question 6 asked "What mode of transportation do you use most often?" A little over 97% selected personal vehicle, while just under 3% selected a bicycle (including e-assist bikes). Other modes of transportation as their primary mode, such as walking, public transit, etc., were not selected in the responses to Question 6, making personal vehicle and bicycle as the two modes of transportation used by respondents. Question 3 asked what the main causes of congestion are that people experience, and over 50% responded that the traffic signals are too long or poorly timed. This corresponds perfectly to the results from Question 5, which asked "what improvements should be made to improve congestion in the Fox Cities?" The top two improvements were to improve traffic signals or signal timing, and to add turn laces or lengthen the turn lanes at intersections. Results from this survey tell us that additional consideration should be taken when looking at intersection improvements for managing congestion. Further results from this survey can be found in the *Survey Questions and Results* section within this chapter.

For additional feedback, a consolidated survey was distributed at the farmers market in Neenah. Twelve surveys were received. While the percentages listed below do not include the 12 surveys, the overall results from this consolidated survey stay on trend with the other 76 responses.

Survey Questions and Results

Below is a list of the survey questions used for the CMP documents along with a brief discussion of the results for each question.

What does the term congestion mean to you?

A. Too many cars on the roadway, B. Travel time to my destination is too long, C. It takes more than one traffic signal cycle to get through intersection, D. There are too many traffic signals to my destination, E. It is difficult to reach my destination, F. My trip is interrupted (i.e. trains, school zones, community events), G. The speed of travelers on my trip is too fast, H. The speed of travelers on my trip is too slow, I. Weather events/storms, J. Crashes/accidents make my trip take longer)

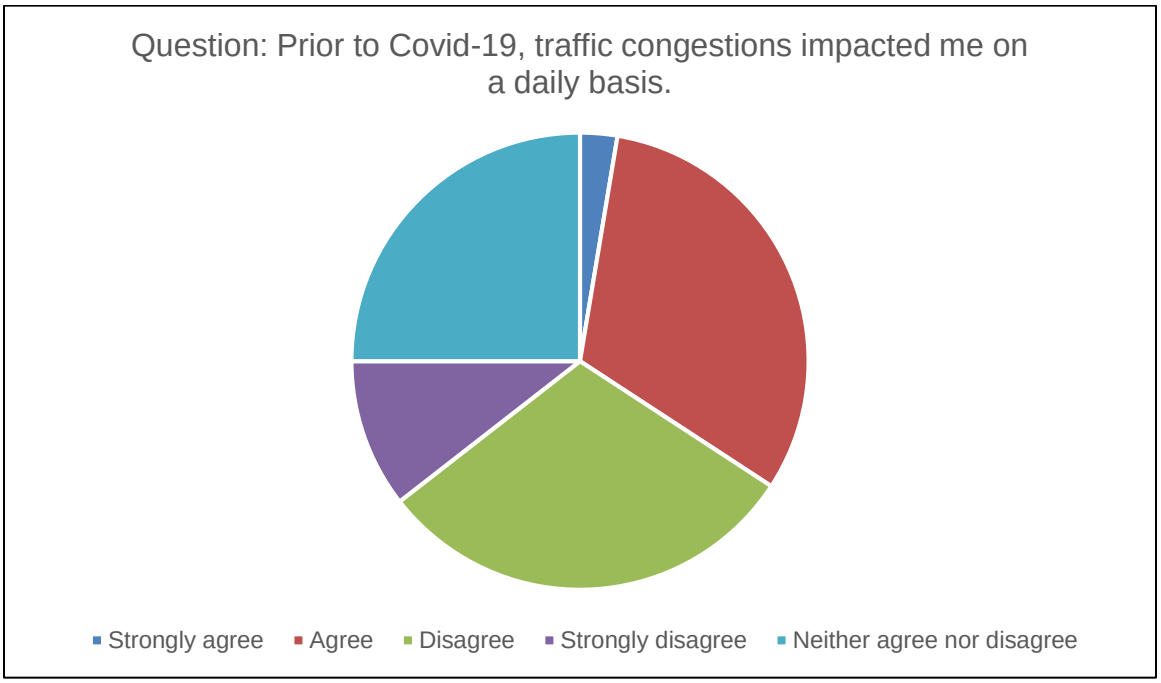
Ten different terms pertaining to congestion were provided. Survey participants were asked to select the top three types that most represented congestion to them. Too many cars on the roadway had the most responses overwhelmingly (80%). Over 50% of respondents also reported that to them, congestion means that it takes more than one traffic signal cycle to get through an intersection. Nearly 43% indicated that congestion means that the travel time to their destination is too long.

Prior to Covid- 19, traffic congestion impacted me on a daily basis (one response).

(1 Strongly Disagree, 2 Disagree, 3 Neither Agree or Disagree, 4 Agree, 5 Strongly Agree)

Figure 1-2 depicts how congestion is impacting people's lives. Thirty-four percent (34%) agree to varying degrees, 25% are neutral, and 41% of respondents are not impacted daily by congestion.

Figure 1-2: Impacts of Congestion on Daily Life, Prior to Covid-19



What are main causes of congestion in the Fox Cities Area?

(1. Turn lanes too short or not enough, B. Traffic signals too long or poorly timed, C. Not enough travel lanes or capacity is limited, D. Lack of alternative roadways, E. Road construction projects, F. Lack of other transportation options, G. School Zones, H. Crashes/accidents, safety issues, I. Train traffic, J. Slow moving trucks and large vehicles, K. Driver Behavior (distracted), L. Other)

For this question, respondents were asked to select up to their top three choices. According to survey responses, the top causes of congestion in the Fox Cities area are as follows: traffic signals are too long or poorly timed (54%); not enough travel lanes or roadway capacity is limited (33%); and road construction projects, lack of other transportation options (e.g. bus, bike lanes, sidewalks), driver behavior (e.g. distracted, slow driver) (29%). The choice of "turn lanes too short or not enough turn lanes" came in close behind with 26%.

What time of day do you experience congestion the most in the Fox Cities?

(Morning, Mid-day, Later Afternoon, Evening/Night, Overnight)

Most respondents (79%) are experiencing the most congestion during the late afternoon from 3:00 PM to 6:59 PM. No one said they experience congestion any time after 7:00 PM (late evening to overnight).

What improvements should be made to improve congestion in the Fox Cities?

(A. Additional travel lanes, B. Additional turn lanes or lengthen turn lanes at intersections, C. Alternative travel routes, D. Improve or expand bus service, E. Add bike lanes, F. Add sidewalks, G. Improve traffic signals, H. Improve railroad crossings, I. Reduce crashes, improve safety, J. More carpooling/Ridesharing options, K. Lower speed limits, L. Raise speed limits, M. Other)

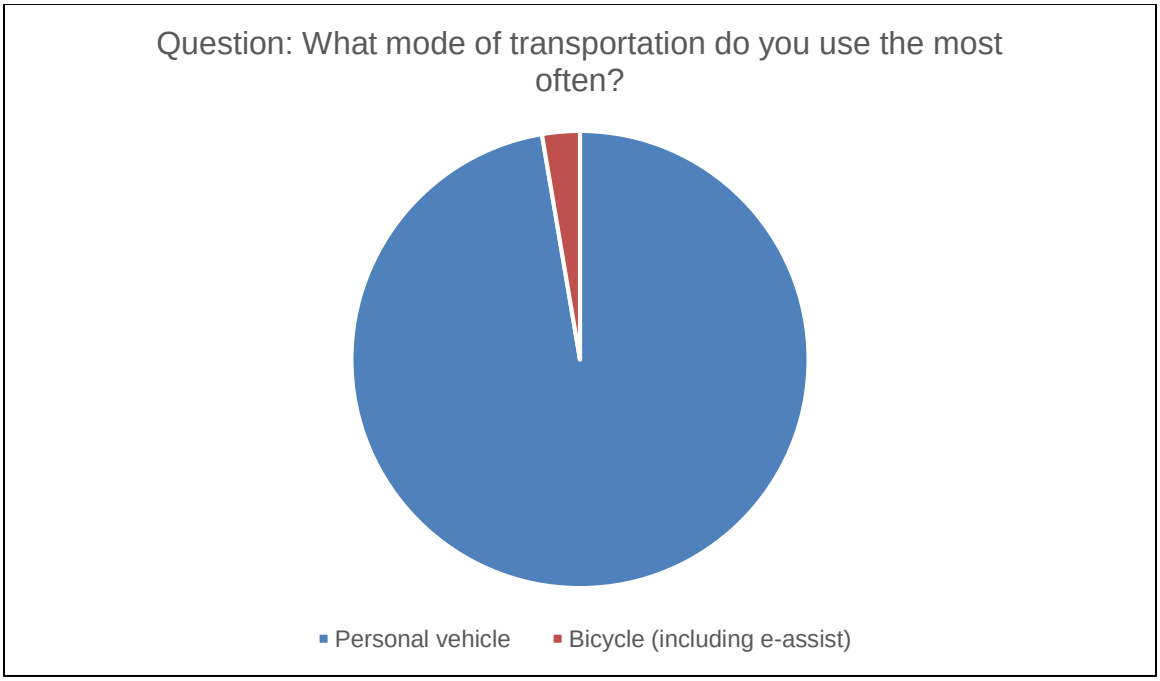
Elaborating on the Survey Discussion section above, respondents were asked to select up to their top three improvements that should be made to improve congestion in the Fox Cities. The top three choices are as follows: improve traffic signals or signal timing, additional turn lanes or lengthen turn lanes at intersections (41%), and additional travel lanes on roadways (35%).

What mode of transportation do you use most often?

(1. Personal vehicle, B. Motorcycle/moped, C. Carpool/rideshare, D. Bicycle/E-bike, E. Walk, F. Public Transit (bus), G. Wheelchair/mobility assist device, H. Other)

An overwhelming majority (97%) of respondents use their personal vehicle for transportation, with a small percentage using bicycles for their main source of transportation.

Figure 1-3: Mode of Transportation Most Frequently Used



How often do you use the following modes of transportation in the Fox Cities?

(A. Personal automobile/truck, B. Motorcycle/moped, C. Carpool/Rideshare, D. Bicycle/E-bike, E. Walk, F. Public transit(bus), G. Wheelchair/mobility assist device, H. Other)

In addition to their main mode of transportation, as answered in the previous question, respondents were asked about their other modes of transportation and frequency of use. This question provided more detailed data, building in Question 6. While the majority of respondents are using their personal vehicle, a decent number of people, 48% and 55% are sometimes bicycling and walking, respectively. In addition, more people are sometimes riding bikes or walking than they are carpooling. Over 50% of respondents selected never carpooling as a mode of transportation.

Do you use or operate an electric vehicle?

Responses from this question indicate that 91% of people are not using an electric vehicle. With the increase in environmental awareness and federal incentives, it is anticipated that this number will increase over time.

Are there any other ideas you would like to share that may help to improve congestion within the Fox Cities??

Thirty-four (34) people included comments with ideas to improve congestion. Many of them share the same sentiments some of which include traffic light timing and improved facilities for alternative modes of transportation. The following are a few comments which encompass the main themes expressed by respondents:

- "Define priority routes and limit access and modify signal timings to give more priority to the main route."
- "Need to address traffic congestion in SE Appleton, especially Calumet St., HWY 441 area."
- "Offer Transit (bus) service in the rural areas. There are a lot of Service stations along highway 41 that can be used for bus stops."
- "Change the traffic lights by CE and 441 or make lanes bigger so a person does not have to wait through 2 Stop and Go lights to take a left onto 441 when going east."
- "More mixed-use development to encourage shorter trips and multiple forms of transportation including biking and walking."
- Cars pass too close to the bike lanes – there should be a barrier like a curb to separate the bike lane from car traffic. I want to bike more but it can feel unsafe, especially when bike lanes suddenly end and then you're mixing with traffic without warning."
- "Make parking at a slightly remote location more feasible."
- "Connect CE/CB trails"

The final questions asked the following questions to collect demographic data:

What is the zip code of your residence?
What is your age?
What is your race?
What is the total gross household income?
What is your gender identity?
Do you consider yourself to be Hispanic or Latinx?
Which of the following best represents your employment status?

Over 90% of the respondents were white. The age of respondents was relatively evenly distributed between the age groups of 25-34, 35-44, 45-54, and 55-64, with a handful of younger and older participants. Over 50% of people who took the survey were women. Over 65% were employed full-time.

VISION, GOALS, & OBJECTIVES

The vision, goals and objectives of the CMP define priorities the region would like to achieve in regard to congestion management. The following vision, goals and objectives lay out the path for the future, including establishing standards for congestion management strategies.

A vision is a dream for the future, a positive, inspired picture of what is attainable for the region. Below is the Appleton (Fox Cities) TMA CMP vision statement accompanied with identified goals and objectives for the CMP to meet the following vision:

Vision: To create an efficient, livable, safe, sustainable, accessible transportation system that increases economic vitality and the quality of life for those who support, depend, or pass through the Appleton (Fox Cities) Transportation Management Area.

GOAL 1 | Safety

To reduce potential conflict points to increase safety of all transportation modes through infrastructure.

OBJECTIVE 1 | Reduce the potential for traffic crashes and provide for safe transportation throughout the region.

OBJECTIVE 2 | Improve and protect surface and groundwater quality and quantity.

OBJECTIVE 3 | Preserve and protect environmentally-sensitive areas and features and promote the linkage of these areas.

OBJECTIVE 4 | Promote urban development which is environmentally sound and compatible with the natural resource base.

GOAL 2 | Mobility

To increase the movement of people and goods from one place to another.

OBJECTIVE 1 | Increase efficiency of the street and highway system to, among other things, prevent delays and increase reliability. Provide a street and highway system which, together with alternative transportation facilities, will meet the short and long-range needs interests and objectives of the region's residents in a cost-effective manner.

OBJECTIVE 2 | Develop a physical and cultural environment which encourages public transportation as a viable alternative mode of transportation.

OBJECTIVE 3 | Create a physical and cultural environment which encourages travel by walking, wheeling, or bicycling by making these modes of transportation safe, convenient, and attractive alternatives to motorized travel through the provision of adequate accommodations, education, and enforcement and more compact land use patterns.

OBJECTIVE 4 | Provide an integrated transportation system that makes best use of the capabilities of individual modes and modal combinations, including rail and trucking facilities, public transportation, bicycle and pedestrian travel, air transportation, and water transportation.

OBJECTIVE 5 | Ensure that appropriate types and levels of freight transportation service are provided to the entire region.

OBJECTIVE 6 | Work with appropriate entities, local airport personnel to provide and maintain a safe air transportation system to serve regional development patterns and to meet travel and freight service demands of the region.

OBJECTIVE 7 | Increase transit efficiency.

OBJECTIVE 8 | Maintain or increase access to transit for all residents in the Fox Cities.

GOAL 3 | Preservation

To make cost-effective resource allocation and program decisions to maximize the service life of the transportation assets.

OBJECTIVE 1 | Utilize Federal, State, and local condition inventories to analyze the condition of the asset.

OBJECTIVE 2 | Minimum Environmental Disruption. Encourage development of a transportation system that minimizes environmental disruption and strives to maintain a quality environment.

OBJECTIVE 3 | Provide a transportation system that recognizes energy supply uncertainties and promotes the conservation of energy resources and the use of alternative energy resources.

OBJECTIVE 4 | Strive to improve or maintain high air quality throughout the Appleton TMA region.

GOAL 4 | Active Living

To promote active living through transportation options to integrate physical activity into your everyday routines, such as walking to the store or biking to work.

OBJECTIVE 1 | To promote equal opportunity for all modes of transportation.

OBJECTIVE 2 | Provide all area residents an opportunity to partake in a wide range of active and passive recreational activities on a year-round basis.

GOAL 5 | Service

To provide transportation services to all people within the Appleton TMA Region and for those passing through.

OBJECTIVE 1 | To provide traffic information on-road and through the phone and web.

OBJECTIVE 2 | Promote economy and equity in the delivery of urban services.

OBJECTIVE 3 | Foster cooperation and coordination in the provision of services where efficiency, equity, and economies of scale can be obtained.

GOAL 6 | Accountability

The obligation of an organization to account for its activities through targets and to disclose the results in a transparent manner.

OBJECTIVE 1 | Maximum System Effectiveness for all Residents. Consider the capabilities of the transportation network and set performance targets.

Map 1-1
Appleton (Fox Cities) Transportation Management Area (TMA) Planning Area

MENOMINEE

SHAWANO

WAUPACA

OUTAGAMIE

WAUSHARA

CALUMET

Lake Winnebago

WINNEBAGO

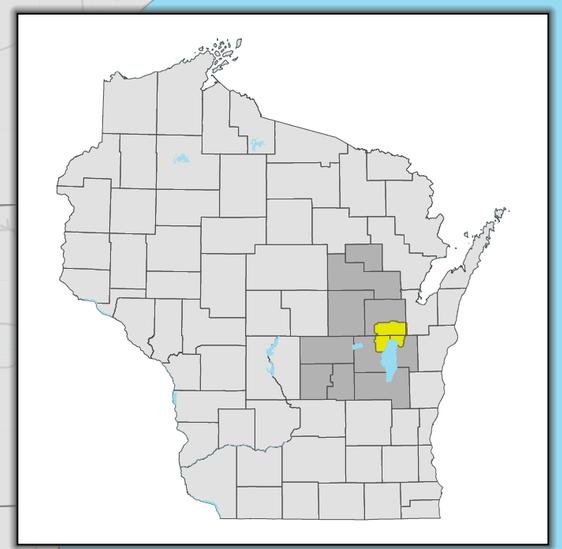
GREEN LAKE

MARQUETTE

FOND DU LAC

41

39



ECWRPC Planning Area

Appleton (Fox Cities) Transportation Management Area

Source:
Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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Scale in Miles

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Shawano • Waupaca • Waushara • Winnebago

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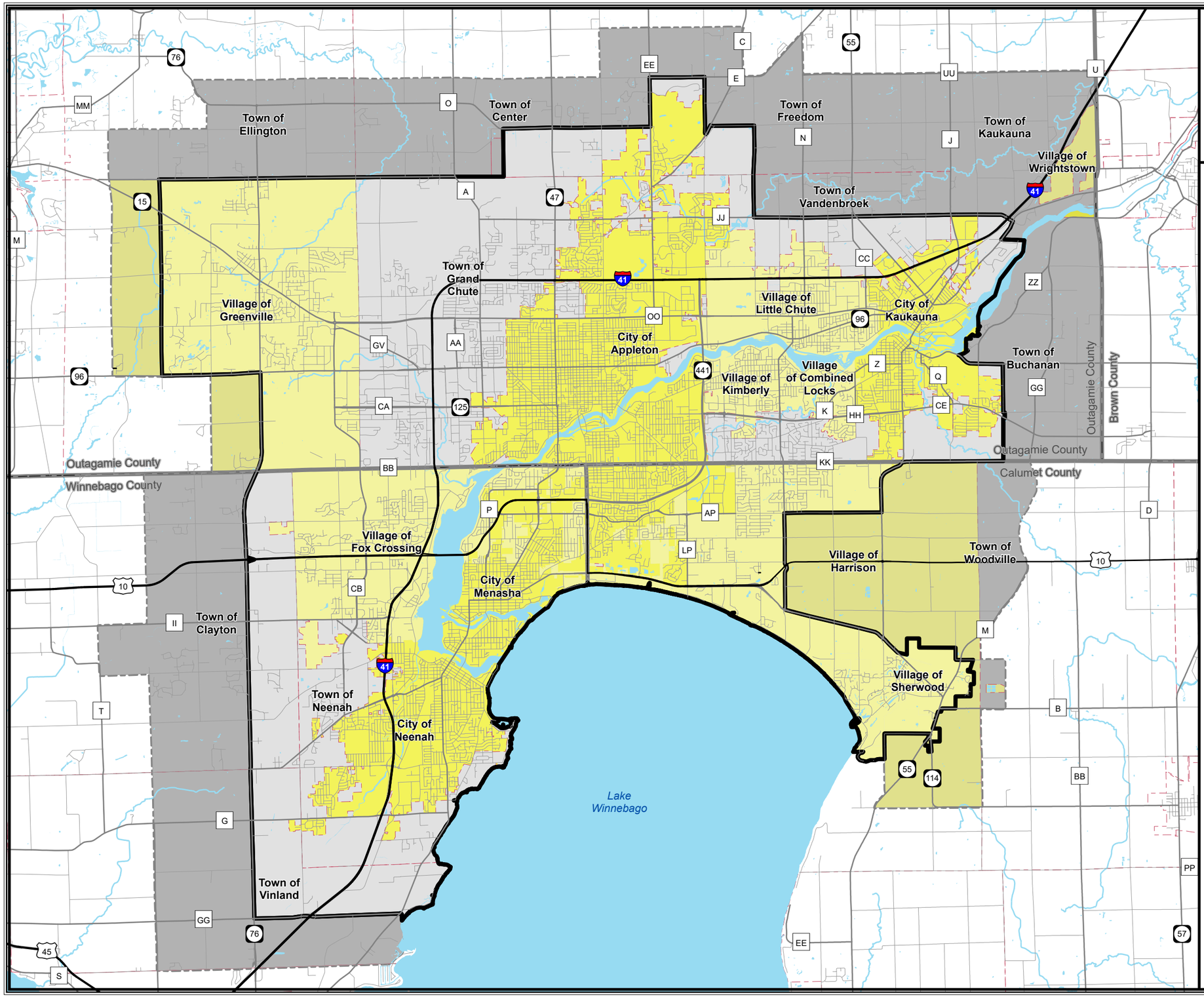
Map 1-2
Appleton (Fox Cities) Transportation Management Area (TMA) Study Area



Freeway (INT)
USH
STH
CTH
Local Road
County Boundary
City
Village
Town
Adjusted Urbanized Area
Transportation Management Area

Source:
Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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EXISTING SYSTEM ANALYSIS

CHAPTER 2: EXISTING SYSTEM ANALYSIS

A well-planned transportation system considers all transportation modes and related facilities. One way to evaluate the system is through measuring current congestion levels. Congestion refers to an excess of vehicles on a portion of roadway at a moment in time resulting in slower than expected speeds. Congestion can be measured from the road network, but factors such as transportation facilities and land use patterns also directly impact congestion levels. Lack of planning and failure to provide for additional transportation options (i.e. public transportation, bicycle paths, etc.) will force the existing road network to struggle with all traffic modes. Understanding land use, especially origins and destinations of trips helps community leaders and planners make sense of congestion related issues and plan for future development. It is important to account for all types of congestion and consider the potential consequences to achieve a well-balanced transportation system that better accommodates the needs of the region. Before viable recommendations can be made, however, it is essential to understand the existing transportation conditions of the Appleton TMA.

Measuring existing traffic conditions to establish a "baseline" of congestion is an essential component of the CMP. Once the initial field data is collected, designing strategies to mitigate traffic congestion can begin. Developing congestion data standards is in part driven by the overarching objectives of the region. The Federal Highway Administration recommends establishing congestion mitigation objectives following their "SMART" guidelines, defined in the FHWA congestion management process guidebook as:

- **Specific** – The objective provides sufficient specificity to guide formulation of viable approaches to achieve the objective without dictating the approach.

- **Measurable** – The objective facilitates quantitative evaluation, saying how many or how much should be accomplished. Tracking progress against the objective enables an assessment of effectiveness of actions.

- **Agreed** – Planners, operators, and relevant planning participants come to a consensus on a common objective. This is most effective when the planning process involves a wide-range of stakeholders to facilitate regional collaboration and coordination.

- **Realistic** – The objective can reasonably be accomplished within the limitations of resources and other demands. The objective may require substantial coordination, collaboration, and investment to achieve. Factors such as population growth, economic development, and land use may also have an impact on the feasibility of the objective and should be considered. Based on data on system performance and analysis, the objective may need to be adjusted to be achievable.
- **Time-bound** – The objective identifies a timeframe within which it will be achieved.[1]

[1] US Department of Transportation Federal Highway Administration Congestion Management Process: A Guidebook (April 2011, page 11) (Accessed July 2013)

The Appleton (Fox Cities) TMA consists of extensive transportation networks including roads, sidewalks, bike lanes, trails, rail lines, bridges, intelligent transportation systems, freight systems, and transit routes. The following chapter evaluates the current transportation system characteristics based on available data and information.

STREET NETWORK ANALYSIS

The existing highway network in the Fox Cities has generally kept pace with the growth in population, employment, and the significant increase in auto trips. The regional population has surpassed 200,000, and with this increase in population, traffic volumes have also increased on the transportation system. To plan for the needs of the transportation system, it is critical to understand the performance of the existing system in relation to all modes of transportation. The system performance can be quantified by traffic count data, transit boarding, and bike and pedestrian count data.

In this chapter, existing traffic congestion is identified for the I-41 and WIS 441 corridors and ramps, selected principal arterials and minor arterials, and freight movement. The level of congestion is based on traffic counts provided by the Wisconsin Department of Transportation and planning capacities that are used in the regional travel demand model (TDM).

A transportation model was also updated with the 2010 U.S. Census data for the Appleton (Fox Cities) TMA. This model functions as a tool in analysis of future scenarios and can be used to test proposed improvements. Another function of the model is to examine the deficiencies in the existing system. The model uses demographic data, such as population, dwelling units, employment, and the number of vehicles to generate traffic volumes on area roads.

Functional Classification

The functional classification process of urban streets and highways organizes routes according to the character of the service provided, ranging from travel mobility to land access. The functional class system network consists of principal arterials, minor arterials and collectors, although only principal arterials and minor arterials were studied as part of the congestion management process. Please refer to **Map 2-1** (Appleton (Fox Cities) TMA Functional Class) at the end of this chapter.

The road network within the Appleton (Fox Cities) TMA region is grouped into functional classes based on its intended service. The entire transportation network works together to move traffic from one place to another. Functional classification defines the flow of traffic through the transportation network by identifying the role a particular road has in the overall network. A transportation system is made up of urban or rural arterials, collectors and local roads. Arterials move high volumes of traffic through the system, while local roads connect to the various land uses. Collectors work to bring traffic from the local roads to the arterials. Arterials are further classified as principal or minor and collectors as major or minor. Principal refers to arterials that service the region like state or interstate highways. Minor refers to arterials that service the

corridor linking cities and large towns. Major refers to collectors that move traffic from larger towns and special generators (schools, business parks, parks) to arterials and minor refers to collectors that move traffic from local roads and small generators to major collectors.

Automatic Traffic Reorder Counts

An Automatic Traffic Recorder (ATR) is a permanent traffic counter that is used to collect traffic volume and vehicle classification data. The Wisconsin Department of Transportation (WisDOT) has ATRs positioned throughout the State of Wisconsin on State and U.S. Highways. The data collected is used to calibrate travel demand models, which are used to forecast future travel demand, and ultimately the future design of the transportation system to better meet the needs of its users. All data is sent to the State Traffic Operations Center (STOC) for analysis.


WisDOT - State Traffic Operations Center

ATR data can also be used by the local jurisdiction to monitor the rate of traffic flow. The Appleton (Fox Cities) TMA has several ATR sites within their planning area boundary. The ATR locations are listed below in **Table 2-1** below as well as documented in **Map 2-2** on the following page.

Figures 2-1 through **2-6** (below) provide total traffic volume counts for various regional highways in the Appleton (Fox Cities) TMA. Data was collected for the time of day and the total number of vehicles travelled on the given road. The traditional morning and afternoon rush hours represent the highest traffic volume times of the area roads. **Figures 2-1, 2-2, 2-4**, and **2-6** show Total Traffic Volume by Type, Mon-Thurs 2018-2020 while **Figures 2-3** and **2-5** show Total Traffic Volume by Type, Sundays 2018-2020.

Table 2-1: Appleton (Fox Cities) TMA ATR Locations

ID	Location Description	Status
440103	I-41 WEST OF CTH N LITTLE CHUTE	Active
440105	I-41 BTWN STH 125 & STH 96 APPLETON	Active/No Annual Average Data
440165	I-41 BTWN STH 96 & STH 15	Active/No Annual Average Data
441218	I-41 EAST OF CTH E APPLETON	Active
700001	I-41 NORTH OF STH 76 - OSHKOSH TNSHP	Active
706051	USH 10-STH 441 - WEST OF CTH P MENASHA TNSHP	Active

Figure 2-1: I-41 WEST OF CTH N LITTLE CHUTE

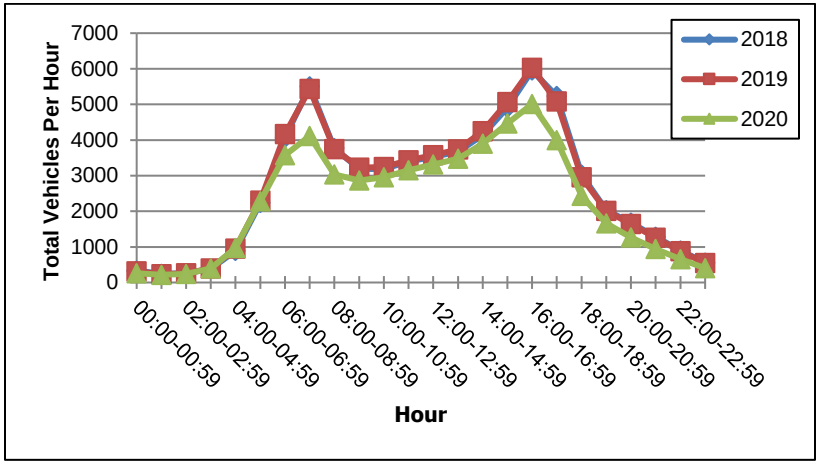


Figure 2-2: I-41 BTWN STH 125 & 96

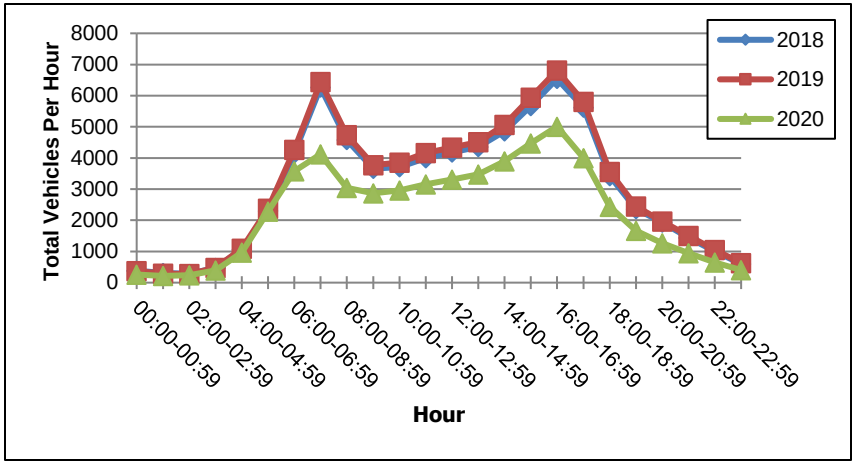


Figure 2-3: I-41 BTWN STH 96 & STH 15

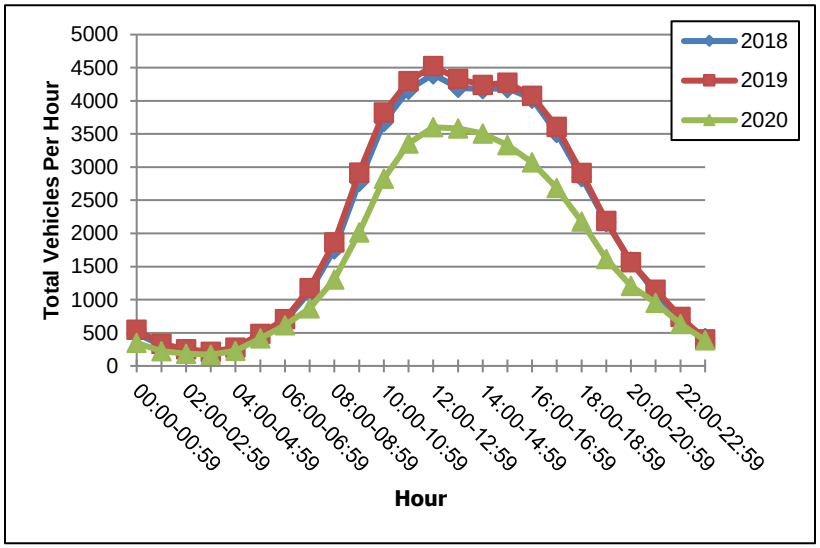


Figure 2-4: I-41 East of CTH E Appleton

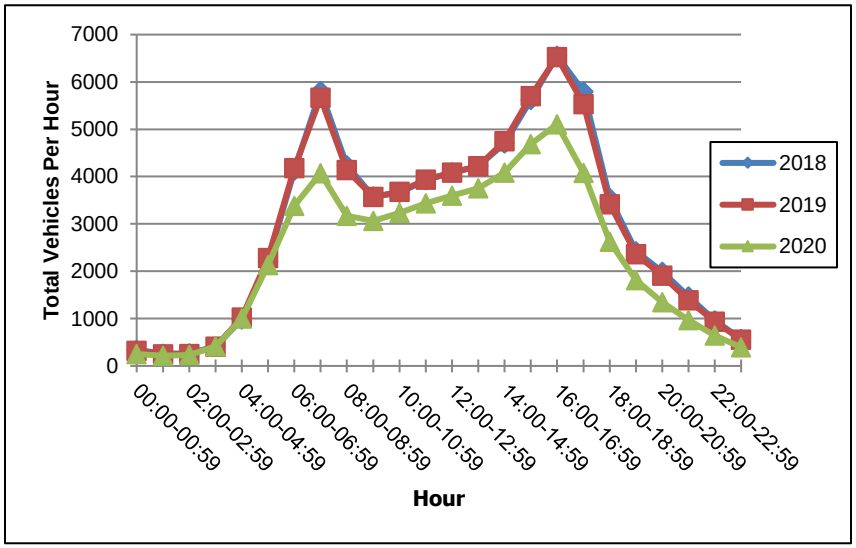


Figure 2-5: I-41 North of STH 76 - Oshkosh TNSHP

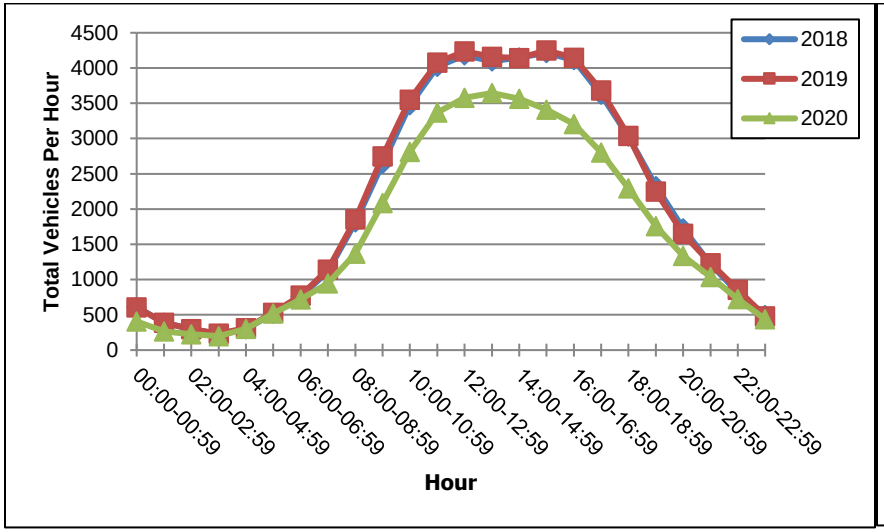
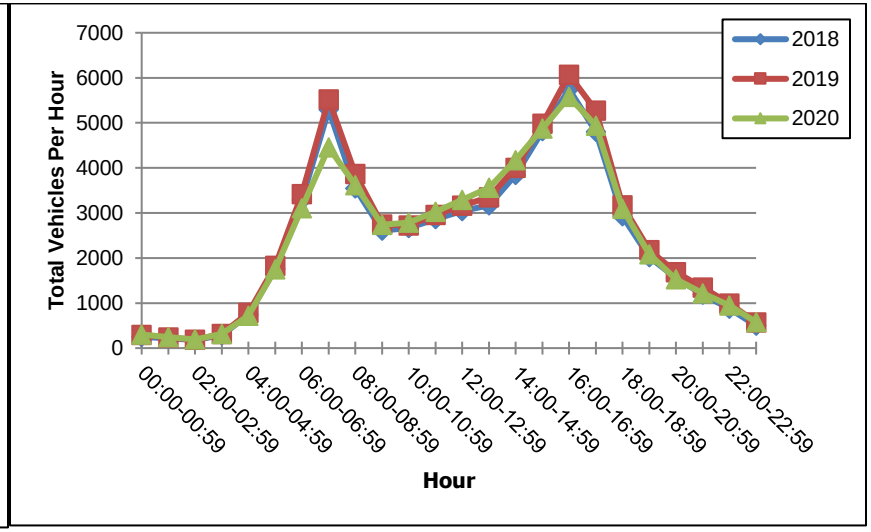


Figure 2-6: USH 10-STH 441 - West of CTH P Menasha TNSHP



Pavement Surface Evaluation and Rating System

The Pavement Surface Evaluation and Rating System (PASER)[2] is a visual survey method used to rate the condition of roads through the condition of various types of pavement distress on a scale of 1-10. PASER uses 10 separate ratings with 1 being the worst pavement condition and 10 being newly constructed pavement. PASER measures the distress of a pavement's surface and is based upon sound engineering principles, on a two-year cycle.

Routine Maintenance (8-10)

Roads with a PASER of 8, 9 and 10 or the "good" category require routine maintenance. Routine Maintenance is the day-to-day, regularly-scheduled activities to prevent wear and tear on the roadway surface. This includes street sweeping, ditch maintenance, gravel shoulder grading, and crack sealing. This category also includes roads that are newly constructed or recently seal-coated and require little or no maintenance.

Capital Preventive Maintenance (5-7)

PASER ratings 5, 6, and 7 or "fair" category require Capital Preventive Maintenance (CPM). CPM is at the heart of asset management; it is the planned set of cost-effective treatments to an existing roadway that retards further deterioration and maintains or improves the functional condition of the system without significantly increasing the structural capacity. The purpose of CPM is to protect pavement structure; slow the rate of deterioration; and/or correct pavement surface deficiencies. Roads in this category still show good structural support but the surface is starting to deteriorate. CPM is intended to address pavement problems before the structural integrity of the pavement has been severely impacted.

Structural Improvements (1-4)

Roads with a PASER rating of 1, 2, 3, or 4 or "poor" category need structural improvements such as resurfacing or major reconstruction. Indicated by rutting beginning to appear; alligator cracking becoming evident.

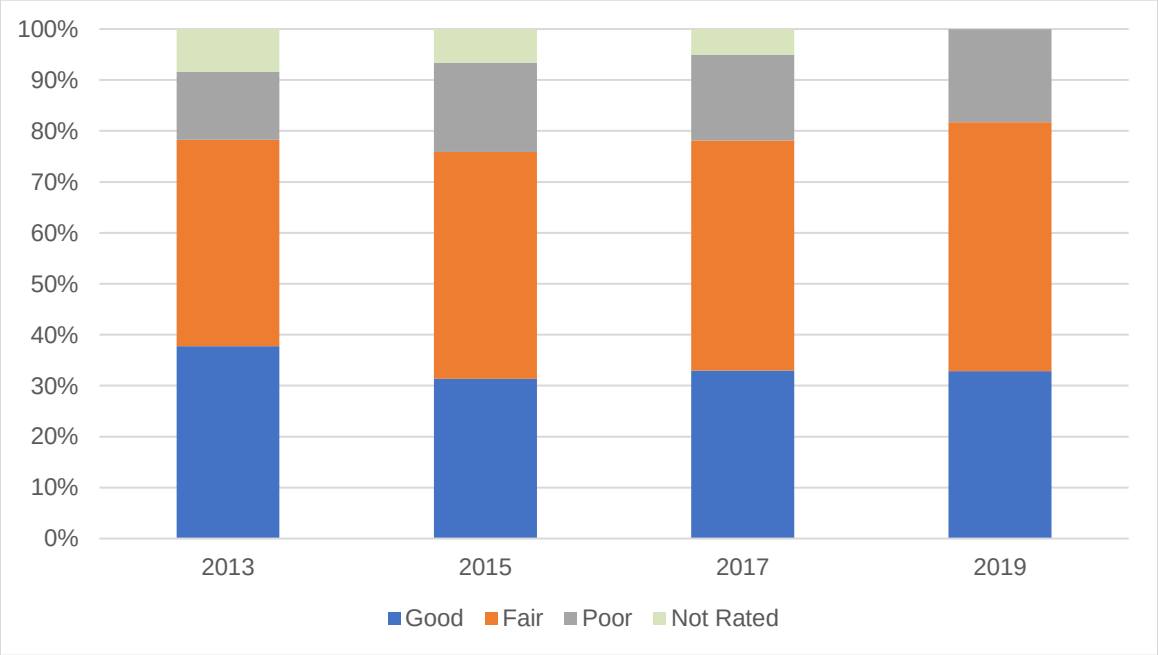
Appleton (Fox Cities) TMA PASER Data PASER Trends

PASER data is collected by local municipalities every two years and submitted to WisDOT, who compiles and inputs the data into the Wisconsin Information System for Local Roads (WISLR) web-based software and database. Figures 2-7 illustrates the Appleton (Fox Cities) TMA PASER data from 2013 to 2019. Collecting and comparing PASER data from one cycle to the next allows the TMA to gauge how the road network changes over time and where resources can be applied to deliver the greatest improvement to the system as a whole.

[2] https://interpro.wisc.edu/tic/?csis-search-options=site-search&s=paser&submit=Search (July 2021)

Map 2-5 at the end of this chapter illustrate PASER pavement rating for 2019. Ratings 1-4 are identified in the grey and represent "poor" roads that require structural improvements. Ratings 5-7 are identified in the orange and represent "fair" roads that require capital preventative maintenance. Finally, the ratings 8-10 are identified in the blue and represent "good" roads that require routine maintenance. The light green in past cycles indicated the percentage of roadway that was unable to be rated at the time.

Figure 2-7: Appleton TMA - Roadway PASER Ratings



PASER Trends

Ratings for paved roads in the "poor" category increased slightly (from 268.0 to 268.6 miles) but went from 16.8% to 18.3% of overall roadways between 2017 and the most recent data available, 2019. Over that same two-year span, ratings in the "fair" category increased to 48.8% (from 45.2%) and ratings in the "good" category decreased ever so slightly from 33% to 32.9%. The MPO is able to rate a higher percentage of roadways than ever before and conditions remained stable over the reporting timeframe.

Travel Demand Model (TDM) Analysis

Travel Demand Models (TDM) are used to evaluate transportation system and predict future traffic demands. The 2013 Northeast Regional TDM covers all of Outagamie, Winnebago, Calumet, Fond du Lac, Sheboygan, Manitowoc, Brown, Kewaunee, Door counties and part of Oconto, Shawano, Waupaca, Dodge, Washington counties and portions of Waupaca County. The model is further broken down into trip generation areas which include the Appleton/Fond du Lac/Oshkosh, Green Bay, Sheboygan/Manitowoc and rural areas. The Northeast TDM uses a

trip based four-step model consisting of trip generation, trip distribution, mode choice, and assignment. The TDM uses socio-economic data, roadway attributes and various parameters to estimate the trip making within and across the model planning area. The model estimates trips by calculating the number and types of trips traveling between transportation analysis zones across the transportation network. The model was run for two distinct analysis years, 2010 and 2045. Within each analysis year, the Northeast TDM estimates traffic movement for four distinct time periods, AM, midday, PM and evening. The TDM is used to analyze the composition of traffic, purpose of travel, peak hour usage, and origin-destination linkages. This allows for explicit analysis of future travel behavior along the Appleton (Fox Cities) TMA's major transportation corridors. The Northeast TDM is also useful for forecasting traffic volumes and patterns across the TMA.

The Northeast TDM is also capable of estimating link-based operational deficiencies for each analysis year. To determine the planning-level operational deficiencies, sufficiency thresholds must be established. WisDOT's *Connections 2030 Plan* establishes a functional hierarchy of the state's corridors and parameters to classify the traffic operations of these particular roadways which can be translated into sufficiency thresholds. The classification system within WisDOT's *Connections 2030 Plan* is based on regional functionality and urban or rural location and is used to determine sufficiency threshold. The sufficiency thresholds are then converted to Level of Service (LOS) thresholds by applying roadway characteristics such as access, signal density, travel lanes and posted speed limit. The LOS thresholds are then compared to the roadway's current traffic counts and forecasted traffic volumes to determine congestion status. LOS is a quantitative measure of quality of service of a transportation facility. The LOS measures are stratified into six letter grades, "A" through "F" with "A" being the best and "F" being the worst.[3] The Northeast TDM's LOS threshold is equivalent to a LOS C. Each roadway segment depending on functionality and its urban or rural location has a specific LOS C or LOS D threshold.

Timed Route Analysis

Time route analysis utilizes the Northeast TDM forecasted traffic to determine travel time from place to place. This analysis was used to measure the time it takes to travel three major corridors within the Appleton (Fox Cities) TMA: Interstate 41, STH 441 and USH 10/STH 114. A timed route was calculated using 2010 traffic compared to 2045 traffic to measure any significant changes. The following is the time route analysis results for the three major corridors.

[3] Facilities Development Manual, Wisconsin Department of Transportation, Chapter 11 Design, Section5 General Design Considerations, Updated 3/4/2013

Interstate 41

The timed route for Interstate 41 (I-41) started at CTH U and ended at STH 76. The 2010 model year timed the free flow route (no congestion) at 26 minutes and 6 seconds, while the peak congested route time was 31 minutes and 24 seconds. The 2045 model year timed the free flow route (no congestion) at 26 minutes and 12 seconds, while the peak congested route time decreased to 31 minutes and 18 seconds. The reason for this decrease in congested travel time despite the increased traffic volumes in 2045, is due to the expected three-lane expansion of I-41 from Northland Ave. to Scheuring Rd. in DePere.

STH 441/ USH 10

The timed route for STH 441/ USH 10 started at I-41 in northern Appleton and ended at CTH CB in Fox Crossing. The 2010 model year timed the free flow route (no congestion) at 11 minutes and 0 seconds, while the peak congested route time was 11 minutes and 24 seconds. The 2045 model year also timed the free flow route (no congestion) at 11 minutes and 0 seconds, while the peak congested route time was 12 minutes and 54 seconds. There was an increase of 1 minute and 30 seconds between the 2010 and 2045 congested times. This increase is to be expected with increased traffic.

Table 2-2 illustrates the LOS alpha to model threshold comparison. The Northeast TDM is centered on LOS C (75 – 90 percent). LOS of A and B (< 75 percent) are considered not congested and LOS of D, E, and F (>90 percent) are considered moderately to extremely congested.

Table 2-2: LOS Alpha/Model Threshold Comparison

LOS (Alpha Value)	LOS Threshold Values
A/B –Not Congested (sufficient)	< 75%
C – Minimal Congestion (approaching)	75% – 90%
D – Moderate Congestion(potential)	90% – 100%
E – Severe Congestion (deficient)	100% – 110%
F – Extreme Congestion (severely deficient)	> 110%

Table 2-3 illustrates congestion levels throughout the Appleton (Fox Cities) TMA for the analysis by road miles. Note: sufficient and approaching roadway miles are not illustrated in the table. **Maps 2-6** and **2-7** illustrate Appleton (Fox Cities) TMA existing and future locations of congestion (2010 and 2045).

Table 2-3: Appleton (Fox Cities) TMA Congestion Status by Miles

Year Modeled	2010	2045
Potential	219.3	580.2
Deficient	10.4	48.9
Severely Deficient	10.5	37.5

Means of Transportation to Work

To better understand the makeup of current traffic volumes for the Appleton (Fox Cities) TMA, **Table 2-4** documents percentage of workers that commute alone from Calumet, Outagamie, and Winnebago Counties. The data is from the American Community Survey (ACS), five-year estimates from 2015-2019. Wisconsin counties range from 68 to 86% for workers who commute alone to work.[4]

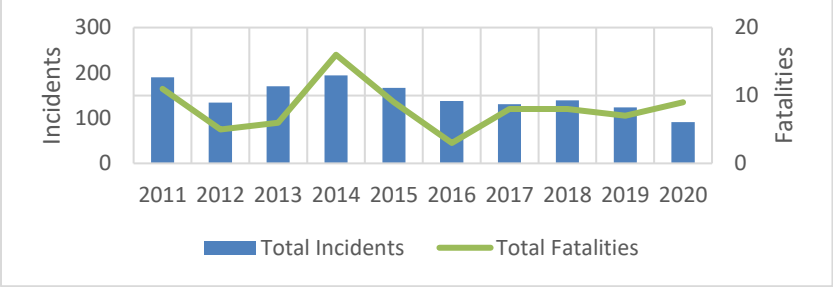
Table 2-4: Commute Mode to Work 2019

	Drove Alone	Carpool/ Vanpool	Public Transit
Calumet	22,523	1,585	779
Outagamie	85,611	5,934	477
Winnebago	72,512	6,954	942
Wisconsin - overall	2,389,929	236,541	50,099

Railroad & Bridge Analysis

The Appleton (Fox Cities) TMA railroad and bridge crossings provide necessary connections over railroad tracks, rivers and other impediments that would otherwise stand in the way of movement of people and goods. Each crossing also presents an opportunity for congestion or conflict with other modes of transportation. **Figures 2-8** through **2-11** show data from the Federal Railroad Administration's Incident Dashboard, illustrating the number of crashes that occurred at rail crossings statewide and for each county within the TMA. **Table 2-5** shows crossing features by county within the TMA. Railroad and bridge crossings can create bottlenecks in the broader transportation system and at times cause traffic congestion, these locations are shown in **Map 2-8.**

Figure 2-8: Wisconsin Statewide Railroad Incidents 2011-2020



[4] http://www.countyhealthrankings.org/app/wisconsin/2013/measure/additional/67/data/asc-3 (May 2021)

Figure 2-11 Calumet County Railroad Incidents 2011-2020

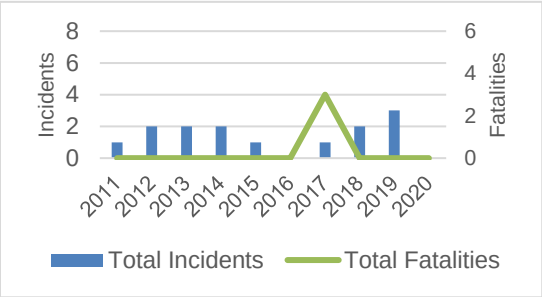


Figure 2-9 Outagamie County Railroad Incidents 2011-2020

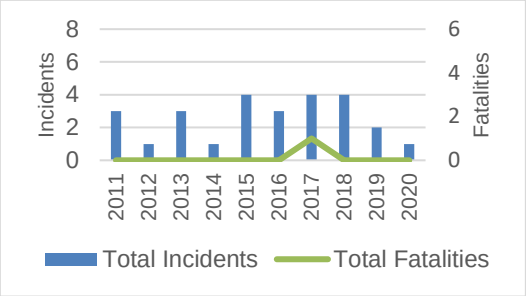


Figure 2-10 Winnebago County Railroad Incidents 2011-2020

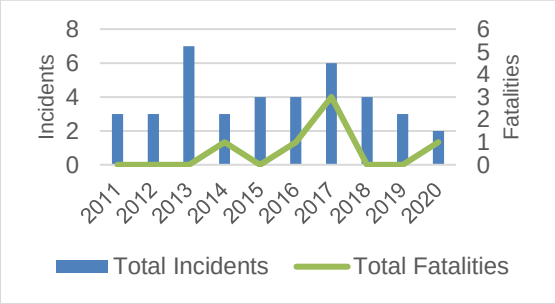


Table 2-5: Railroad Crossing Type by County

	Calumet County	Outagamie County	Winnebago County
Number of Crossings	**96**	**194**	**180**
Public Crossings	**62**	**135**	**112**
Private crossings	**34**	**59**	**68**

Source: ***https://railroads.dot.gov/safety-data***

Bridges

A bridge inventory of the Appleton (Fox Cities) TMA reveals 242 bridges, supporting 3,535,978 crossings per day connecting people to the economy and each other. Bridges are inspected every two years and more frequently when there are known deficiencies. Bridge inspections can range from routine to in-depth, contingent upon the bridge's characteristics and needs. Bridge inspectors are trained to follow FHWA standards and guidelines. Smaller bridges can be inspected on foot, while larger bridges require a "reach all" vehicle with a jointed arm and bucket to provide a detailed analysis.

Inspectors survey the following bridge components:

- The superstructure or beams that support the deck looking for cracks, rust, or any problems with bolts or rivets;
- The substructure units (which support the superstructure);

- Bridge approaches and the deck or surface of the bridge; and
- Bridges over large bodies of water, inspections require divers to check supporting piers.

The information collected from the bridge inspection is used to assign the each bridge a Sufficiency Rating (SR). A SR notes 75 factors reviewed during the inspection. The SR ranges from 0 to 100; 0 representing an in-sufficient or deficient bridge, 100 representing a sufficient bridge. Municipalities are eligible for rehabilitation funding with bridges with a SR of 80 or less and replacement funding with SR of 50 or less. **Map 2-8** illustrates the bridge sufficiency ratings for the Appleton (Fox Cities) TMA for 2020. **Figure 2-12** shows bridge sufficiency by road type and **Figure 2-13** shows the percentage of bridges within the TMA that scored as structurally deficient and are eligible for replacement funding.

Figure 2-12: Bridge Inventory (Appleton TMA)

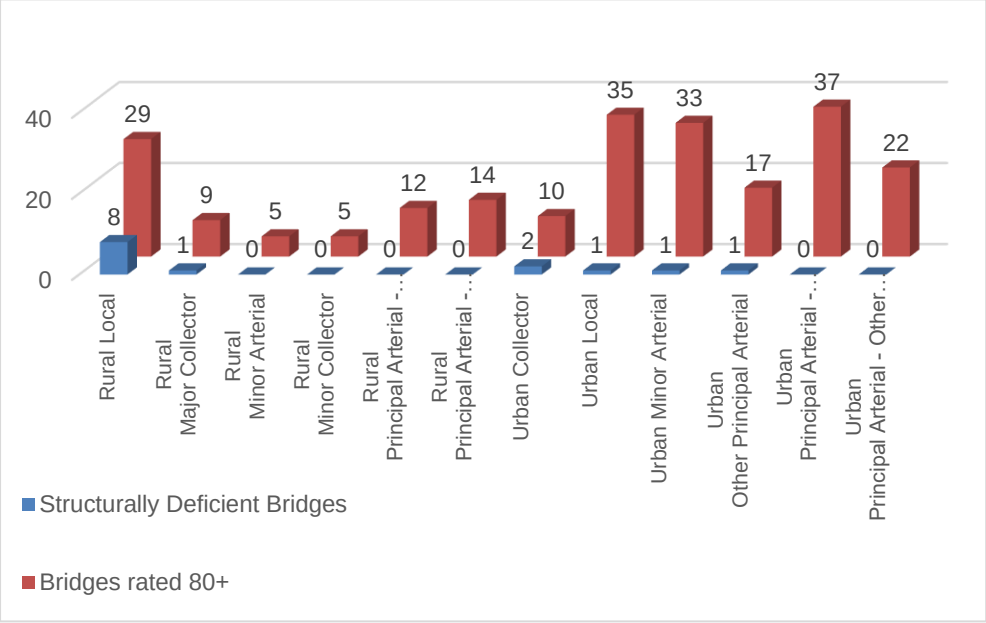
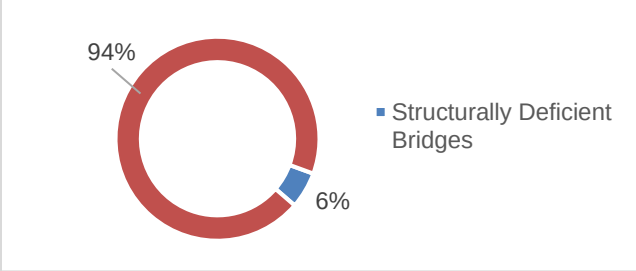


Figure 2-13: Appleton (Fox Cities) TMA Percent of Structurally Deficient Bridges



MULTIMODAL TRANSPORTATION ANALYSIS

Traditionally the automobile has been and is the most used mode of transportation nationally and regionally. However, other modes of transportation (i.e. walking, biking, and public transit) will be considered when planning to meet the needs of area residents going forward. Adopting and incorporating a more comprehensive transportation system will provide more transportation options for area residents and ideally help reduce congestion during peak times.

Sidewalks, bike lanes, and trails are not only great facilities for recreation, but are also a necessary part of the transportation system. There are 544.37 miles of sidewalks, 107.88 miles of bike lanes and sharrows, and approximately 204.33 miles of paved and unpaved trails within the Appleton (Fox Cities) TMA. Please refer to **Map 2-9** at the end of this chapter for locations of sidewalks, bike lanes, and trails. A brief summary of bicycle and pedestrian facilities and accommodations are found below.

Bicycle Facilities

City of Neenah

Shared-Use Path

A shared use path is an off-road facility that is strictly designed for both bicyclists and pedestrians. Trails are separate from the high traffic speeds/volumes of the road network, but are integrated into the overall transit system to connect neighborhoods to schools, places of employment, and retail districts. Typically, widths of these facilities range from 10 – 14 feet.

Village of Fox Crossing

Bike Lane

By definition a bike lane is "a portion of the roadway which has been designated by striping, signing and pavement marking for the preferential or exclusive use by bicyclists."[5] Bicycle lanes are the appropriate and preferred bicycle facility for thoroughfares in both urban and suburban areas. Bicycle lanes are used to facilitate more predictable movements by bicyclists and motorists and encourage them to ride in a position where they are more likely to be seen by motorists.

City of Oshkosh

Signed Shared Roadway (Bike Route)

Signed shared roadway (bike route) is simply a street/road that has been identified as a preferred bicycle route. Bicycles and motorists share the road and there is no permanent designated space for bicycles. Bike routes are often found in residential areas because they have low traffic volumes.

City of Oshkosh

Shared Roadway Marking (Sharrow)

An alternative to the bike lane designation is the sharrow. Since there is an inadequate paved shoulder width, it is not considered a bike accommodation, however, they may be appropriate under certain conditions. A sharrow informs both bicyclists and motorists to share the roadway. It notifies all transportation users that bicyclists are welcome on a road and have the same rights as motorists.

[5] http://www.bicyclinginfo.org/engineering/facilities-bikelanes.cfm (August 2014)

Photo courtesy of Colorado Springs

Paved Shoulder

A rural paved shoulder or a paved shoulder is a way to accommodate bicyclists alongside travel lanes. Paved shoulder width varies according to the adjacent travel lane width, and whether or not a rumble strip is present. Unlike bike lanes, paved shoulders are not travel lanes, so they may be utilized to temporarily store disabled vehicles and parking, unless otherwise prohibited.

Pedestrian Facilities

City of Chilton

Sidewalk

Sidewalks provide pedestrians with space to travel within the public right-of-way that is separated from roadway vehicles. They provide a buffer zone between users and vehicles. Sidewalks should be designed to accommodate pedestrians of all ages and abilities, and also free of encroachments or impediments. Although the FHWA cannot require states and municipalities to build sidewalks, it does provide basic standards for sidewalks. *See also "Shared-Use Paths" in Bicycle Facilities.*

City of Neenah

Crosswalk

Pedestrian roadway crossing facilities should clearly indicate to pedestrians where and when they should cross the street. It is equally important that it is clearly indicated to motorists when people are entering a pedestrian area. There are several tools that can be used to enhance pedestrian safety at street crossings, such as crosswalk markings and signage, curb ramps and extensions, pedestrian signals, and refuge islands.

Village of Greenville

Curb Ramp

Curb ramps cut through a curb (or are built up to it) to provide an accessible route that people can use to enter a crosswalk, cross the street, or access a bus stop (where walkways meet at a curb). Curb ramps must have detectable warnings to alert visually-impaired users that they are leaving the sidewalk and entering onto a street.

In addition to bicycle and pedestrian facilities, additional measures can be taken to mitigate vehicular traffic, slow down speed, and create a safer environment for all roadway users. These measures are commonly referred to traffic calming measures, and examples are provided below.

Traffic Calming

Photo courtesy of Minnesota DOT

Curb Extension

Curb extensions extend from the curb out into the parking lane, which reduces street width, shortens the distance for pedestrians to cross the street, and improves visibility of those entering the street.

City of Appleton

Raised Crossing

A raised crossing is a speed hump that has a flat portion the width of a crosswalk. Raised crossings slow vehicular traffic and encourage motorists to yield to pedestrians.

Photo courtesy of RA Smith

Landscaping

Landscape along a street can provide a separation between motorists and pedestrians, reduce the visual width of the roadways, and can provide for beautification of the street.

Trail Counts

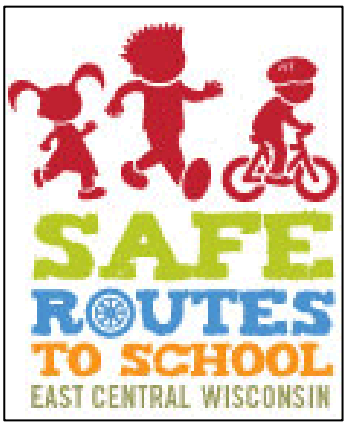
ECWRPC has a bicycle and pedestrian count program, with a number of counter available to be set up in communities throughout the region. All of ECWRPC's counters are currently available to communities on a short-term basis, with counters being set up for typically up to a two-week period of time. The purpose of these counts is to understand the number of people using various facilities, as this data provides valuable information on a facility's use, trends in the use, and can help communities make important decisions on bicycle and pedestrian investments. In addition to bicycle and pedestrian counters, ECWRPC also has MioVision cameras. These cameras, mounted to a pole to provide a bird's-eye view of a particular area of

study, can be utilized for a variety of traffic-related studies. In addition to ECWRPC's counters, some communities in the TMA and MPO have their own counters, which are set up on a permanent basis.

For more information on counts and count locations, please refer to the *Appleton (Fox Cities) TMA and Oshkosh MPO Bicycle and Pedestrian Plan—2021***.** ECWRPC's count locations over the past six years. It should be noted that AADT is based off the short-term counts, and seasonal variation is currently not considered. At the time of this Plan's writing, ECWRPC has contracted with a consultant to assist with data factoring, which will provide ECWRPC with guidance on how to factor in seasonality with the bicycle and pedestrian counts program.

Safe Routes to School

Safe Routes to School (SRTS) is a national and international movement to create safe, convenient and fun opportunities for children to bicycle and walk to and from schools. The goal of the program is to enable and encourage children K-8th grade, including those with disabilities, to walk and bike to school. The SRTS program is based on the principles of the 6-E's: Education, Encouragement, Engagement, Engineering, Equity, and Evaluation. The program facilitates the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution. The program also will play a role in reversing the alarming nationwide trend toward childhood obesity and inactivity.



SRTS is an important component in reducing traffic congestion in the Appleton (Fox Cities) TMA and should be a means to encourage alternative transportation to and from schools where possible. The SRTS National Partnership has researched traffic congestion issues and they note that:

- Within the span of one generation, the percentage of children walking or bicycling to school has dropped precipitously, from approximately 50% in 1969[6] to just 13% in 2009.[7]

- While distance to school is the most commonly reported barrier to walking and bicycling[8], private vehicles still account for half of school trips between 1/4 and 1/2 mile—a distance easily covered on foot or bike.[9]

[6] Transportation Characteristics of School Children, Report no. 4. Washington, DC: Nationwide personal Transportation Study, Federal Highway Administration, July 1972. (August 2013)
[7] McDonald, Noreen, Austin Brown, Lauren Marchetti, and Margo Pedroso. "U.S. School Travel 2009: An Assessment of Trends." American Journal of Preventive Medicine (August 2011) (In press). (August 2013)
[8] U.S. Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report September 30, 2005, "Barriers to Children Walking to or from School, United States 2004." Available at www.cdc.gov/mm wr/preview/mmwrhtml/mm5438a2.htm. (August 2013)
[9] Federal Highway Administration, National Household Travel Survey 2001; NHTS Brief on Travel to School, January 2008. (August 2013)

- In 2009, American families drove 30 billion miles and made 6.5 billion vehicle trips to take their children to and from schools, representing 10-14 percent of traffic on the road during the morning commute.[10]

- A California study showed that schools that received infrastructure improvements through the Safe Routes to School program yielded walking and bicycling increases in the range of 20 to 200 percent.[11]

East Central Wisconsin Regional SRTS

The East Central Wisconsin Regional Safe Routes to School (SRTS) Program started in October of 2009 and celebrated its 10-year anniversary in 2019. The program focuses on empowering local communities and school districts with the resources and knowledge needed to implement SRTS projects and activities. The Regional SRTS program is available to all public or private school (grades K-8) within the East Central Wisconsin Regional Planning Commission's eight-county region including Calumet, Fond du Lac, Menominee, Outagamie, Shawano, Waupaca, Waushara and Winnebago Counties. In 2020, there were 184 schools in 35 school districts participating in the Regional SRTS Program. You can view the participating schools within the Appleton (Fox Cities) TMA on **Map 2-10**.

Five-Year Highlights

In 2015 there were 154 schools participating in the Safe Routes to School Program. In 2020, there are 184 participating schools with 80% of school districts within the region participating. In 2017, Safe Routes to School Staff partnered with Leadership Fox Cities to develop Project RADAR (Reminding All Drivers About Responsibility). This program educates students about the importance of safe driving behaviors in school zones through radar velocity speed guns and classroom curriculum. The Safe Routes to School five-year strategic plan was updated in 2017 and includes program activities and outputs through 2021. To learn more information about this plan you can visit the Safe Routes to School website. In 2019, the Safe Routes to School program launched its first educational campaign, "We Take Time to Brake for Our Kids" to educate the community about safe driving in school zones, taking time to brake for students walking and bicycling and stopping for stopped school busses. The School Recognition program also occurred in 2019, with 88 schools recognized throughout the East Central Region.

[10] McDonald, Noreen, Austin Brown, Lauren Marchetti, and Margo Pedroso. "U.S. School Travel 2009: An Assessment of Trends." American Journal of Preventive Medicine (August 2011) (In press). (August 2013)
[11] Marla R. Orenstein, Nicolas Gutierrez, Thomas M. Rice, Jill F. Cooper, and David R. Ragland, "Safe Routes to School Safety and Mobility Analysis" (April 1, 2007). UC Berkeley Traffic Safety Center. Paper UCB-TSC-RR-2007-1.

Appleton (Fox Cities) TMA - SRTS Program

There are eight school districts within the Appleton (Fox Cities) urbanized area; Appleton Area School District, Freedom Area School District, Hortonville Area School District, Kaukauna Area School District, Kimberly Area School District, Little Chute School District, Menasha Joint School District, and Neenah Joint School District.

While Hilbert School District, Oshkosh School District, Winneconne Community School District and Wrightstown Community School District boundaries are located within the Appleton urbanized area, these school districts do not have schools located within the Appleton urbanized area.

The following seven school districts within the Appleton (Fox Cities) urbanized area have a total of 42 schools participating in the Regional SRTS Program:

- Appleton Area School District
- Hortonville Area School District
- Kaukauna Area School District
- Kimberly Area School District
- Little Chute School District
- Menasha Joint School District
- Neenah Joint School District.

FREIGHT ANALYSIS

Freight, at all jurisdictional levels, is a priority as congestion issues continue to increase in the Appleton area. ECWRPC continues to model single unit and combination truck trips which are an accurate gauge of the majority of freight movement. The model consists of freight routes and terminals throughout the Appleton (Fox Cities) TMA. Existing accessibility to freight-oriented facilities is sufficient. Future considerations of land use and truck route access should be located near freight related and freight dependent facilities.

The majority of freight rail operations are located in the Neenah area and south to the City of Fond du Lac. Rail freight operations are generally not grade separated, but there are select number of crossings which exist that can cause congestion delays.

Passenger and freight air transportation is well served in the area by the Outagamie County Airport. The Outagamie County Airport is a regional facility offering scheduled passenger air service, charter air service and air freight services. The airport's principal impacts on the transportation system are on the highway network which provides access to the facilities. Please refer to **Maps 2-3 and 2-4.** which illustrate the existing and future truck traffic volumes (2010 and 2045) of the Appleton (Fox Cities) TMA.

Transit Analysis

Valley Transit -http://www.appleton.org/

The Appleton Fox Cities Transportation Management Area is served by Valley Transit System, owned and operated by the City of Appleton. Valley Transit provides transit, ADA paratransit, First mile - Last mile, and employment transportation services throughout the Fox Cities urbanized area. Services include 16 fixed routes during the weekdays,15 evening & weekend fixed routes, a variety of seasonal and bus routes, Valley Transit II paratransit service, The Connector service to cover employment rides outside of routes or operating hours. These services are contracted out to municipalities including: Cities of Appleton, Kaukauna, Menasha, and Neenah, the Towns of Buchanan, Grand Chute, and Menasha; the Villages of Kimberly and Little Chute; as well as the counties of Calumet, Outagamie, and Winnebago. Routes, schedules and service details can be found at https://myvalleytransit.com/. See **Map 2-11** for an overview of the service area and route network.

Evaluating service effectiveness allows transit agencies to measure its productivity, and the evaluation criteria are standard across transit agencies. One of those criteria is “unlinked passenger trip per vehicle revenue mile”. Unlinked passenger trip refers to the number of passengers who board public transportation vehicles. A passenger is counted each time he/she boards a vehicle even though he/she may be on the same journey from origin to destination.[12] Vehicle Revenue Mile is each mile the bus travels with fared passengers on board. The National Transit Database tracks this across all transit agencies receiving federal funds. Transit profiles can be found at https://www.transit.dot.gov/ntd/transit-agency-profiles.

[12] people.hofstra.edu/geotrans/eng/glossary.html (May 2013)

Table 2-6 displays the Valley Transit's annual vehicle revenue miles, annual unlinked trips and unlinked passenger trips per vehicle revenue mile from 2014 to 2020. Valley Transit's annual vehicle revenue miles for bus trips saw dramatic declines due to COVID-19 Pandemic Protocols, with ridership mirroring vaccination rates in the area. The Demand Response annual vehicle revenue miles had been increasing prior to the pandemic and continued to play a transportation role with essential workers. **Figure 2-14** illustrates unlinked passenger trips per vehicle revenue miles 2014-2020.

Table 2-6: Valley Transit Appleton Profile

		2014	2015	2016	2017	2018	2019	2020*
Bus	Annual Vehicle Revenue Miles (VRM)	1,056,000	1,084,019	1,062,668	1,059,972	1,035,951	1,030,379	904490
	Annual Unlinked Passenger Trips (UTP)	1,114,709	1,092,988	1,036,081	989,422	1,002,620	961,978	544717
	Bus - UPT per VRM	**1.06**	**1.01**	**0.97**	**0.93**	**0.97**	**0.93**	**0.60**
Demand Response	Annual Vehicle Revenue Miles (VRM)	827,537	827,218	829,191	842,205	839,975	869,799	633317
	Annual Unlinked Passenger Trips (UTP)	156,573	156,892	155,685	157,412	156,906	150,286	84387
	Demand Response - UPT per VRM	**0.19**	**0.19**	**0.19**	**0.19**	**0.19**	**0.17**	**0.13325**

Figure 2-14: Valley Transit Fixed Route Bus UPT/VMR

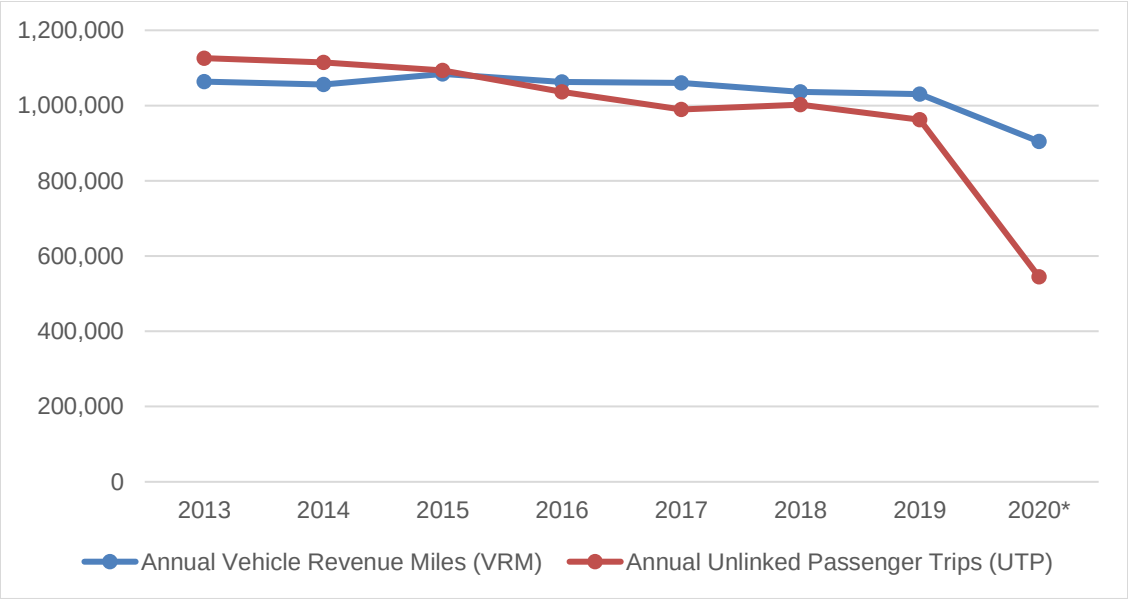


Table 2-7 displays the Appleton - Valley Transit transportation agency peer group average unlinked passenger trip per vehicle revenue mile from 2019, which includes state, regional and national transit agencies. Missing or questionable data has been removed from the analysis. Appleton Valley Transit's Average Annual Unlinked Passenger Trip per Vehicle Revenue Mile (UPTVRM) for fixed route (bus) and for demand-response (DR) from 2019 fall below the peer group median unlinked passenger trip per vehicle revenue mile.

Table 2-7: 2019 Comparable Communities Data

	VRM Bus	UPT Bus	Bus UPTVRM	VRM DR	UPT DR	DR UPTVRM
Beloit	271,334	93,189	0.34	7,759	2,808	0.36
Appleton	**1030379**	**961978**	**0.93**	**869799**	**150286**	**0.17**
Fond du Lac	173,016	164,585	0.95	147,119	29,696	0.20
Janesville	439,808	455,317	1.04	25,249	6,304	0.25
La Crosse	866,971	905,412	1.04	121,746	17,618	0.14
Green Bay	1,200,093	1,292,700	1.08	234,360	31,879	0.14
Eau Claire	704,495	863,647	1.23	396,080	49,920	0.13
Wausau	376,816	468,555	1.24	19,163	4,120	0.21
Sheboygan	537,066	679,263	1.26	161,684	33,314	0.21
Oshkosh	546190	751484	1.38	311,619	67,435	0.22
Region						
Bay City, MI	822,359	442,368	0.54	502,689	67,549	0.13
Muskegon Heights, MI	610,829	461,888	0.76	119,882	18,365	0.15
Battle Creek, MI	413,391	380,845	0.92	113,189	23,927	0.21
Springfield, IL	1,593,123	1,487,090	0.93	442,297	86,085	0.19
Dubuque, IA	450,255	421,693	0.94	307,654	66,625	0.22
Decatur, IL	951,572	1,100,408	1.16	106,391	19,385	0.18
National						
Pittsfield, MA	889,439	497,498	0.56	275,142	27,298	0.10
Jackson, MS	742,612	515,344	0.69	384,952	45,288	0.12
Erie, PA	2,146,678	2,449,829	1.14	881,875	188,894	0.21
Average			**0.80**			**0.14**
Median			**0.95**			**0.19**

Source: National Transit Database, 2021 https://www.transit.dot.gov/ntd

CRASH ANALYSIS

The purpose of a crash analysis is to identify those intersections with the highest total number of crashes and to incorporate crash reduction strategies. In this section, crash data was compiled over a four-year period and separated by specific locations. The data was compiled through WisDOT's Wisconsin Traffic Operations and Safety (TOPS) Laboratory's WisTransPortal Project. WisTransPortal contains a complete database of WisDOT DT4000 Traffic Accident Extract information from 2017 to the present. WisDOT DMV-Traffic Accident Section provides TOPS with updates of the extract files as they become available.[13] Crash data for the Appleton (Fox Cities) TMA was downloaded from the Crash Data Retrieval Facility, Version 2.0.7, for July 13, 2021, and compiled into overall yearly trends and analyzed by regional locations. **Map 2-12** and **Map 2-13** at the end of this chapter show the crash densities and high-risk crash areas within the Appleton (Fox Cities) TMA.

Figure 2-15: Appleton (Fox Cities) TMA Vehicle Crashes by County

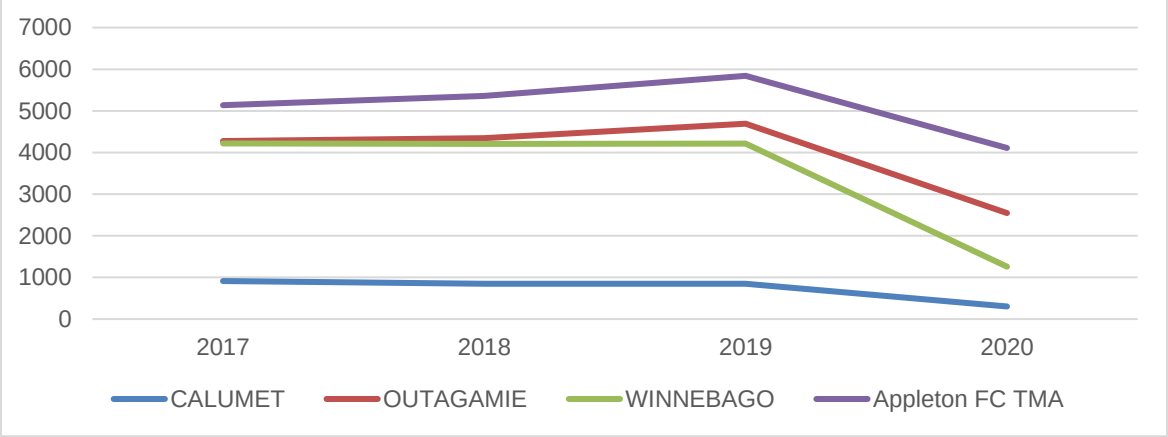
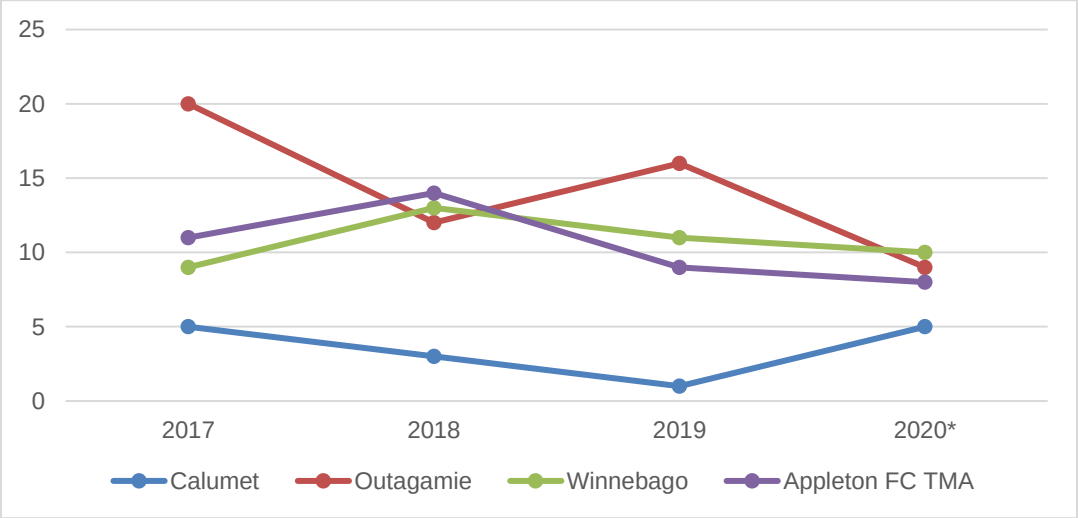


Figure 2-16: Appleton (Fox Cities) TMA Vehicle Crash Fatalities by County



[13] http://transportal.cee.wisc.edu/ (5/8/2013)

Figure 2-17: Appleton (Fox Cities TMA Bicycle & Pedestrian Crashes

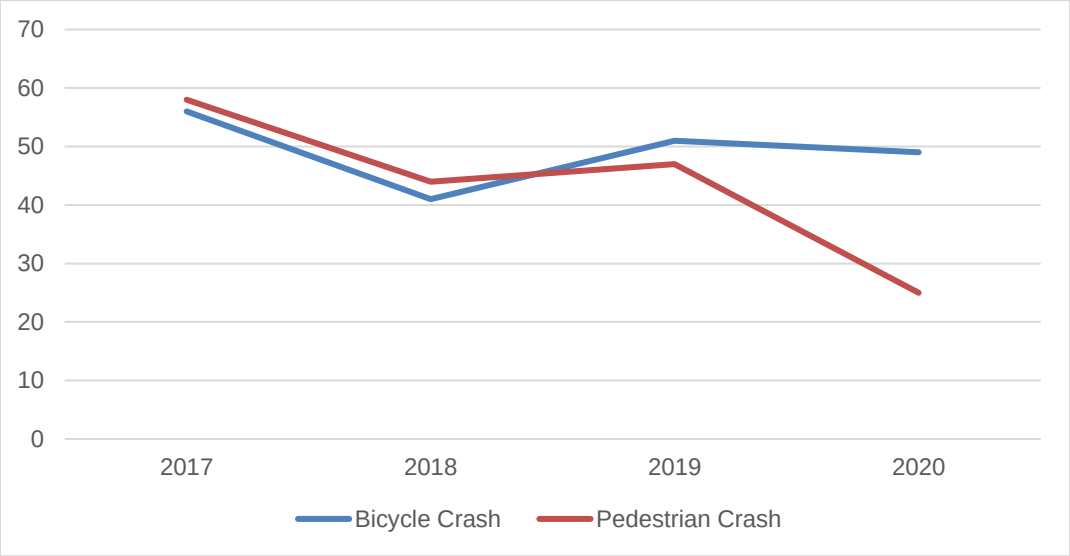
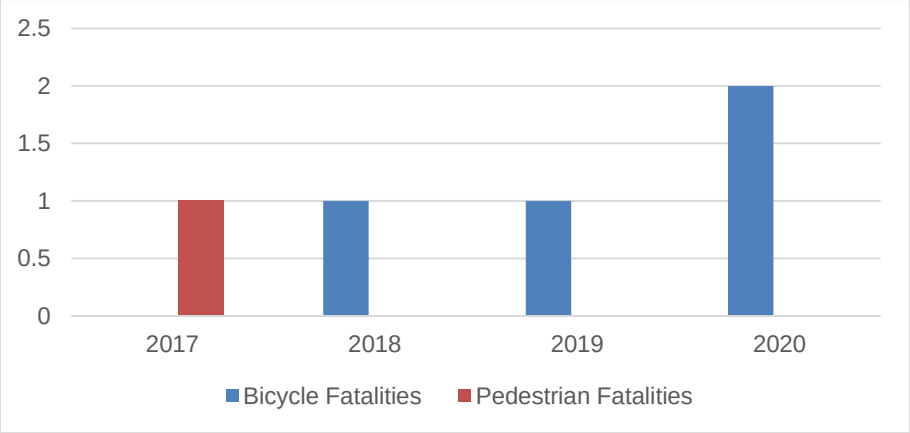


Figure 2-18: Appleton (Fox Cities) TMA Bicycle & Pedestrian Crash Fatalities



Non-Recurring Incident Analysis

Weather, Crashes, Construction, and Special Events

Weather, crashes, construction and special events can lead to changes in driver behavior that directly impact traffic flow. Due to reduced visibility, drivers will usually lower their speeds and increase their headways when precipitation, bright sunlight on the horizon, fog, or smoke are present. Wet, snowy, or icy roadway surface conditions will also lead to the same effect even after precipitation has ended.[14]

[14] http://www.ops.fhwa.dot.gov/congestion_report/chapter2.htm (March 2013)

AIR QUALITY ANALYSIS

Air quality is the measured condition (health and safety) of the breathable air in the environment. It is monitored by the Wisconsin Department of Natural Resources (WDNR) through monitoring stations state-wide. There is one monitoring station (Thrivent Campus) within the Appleton (Fox Cities) TMA, which is located in Appleton at 4432 North Meade Street and measures Particulate Matter (PM) and Ground Ozone (GO). Vehicle emissions contribute to both PM and GO pollution.

PM, also known as particle pollution, is a complex mixture of tiny particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles.

The size of particles is directly linked to their potential for causing health problems. The Environmental Protection Agency (EPA) is concerned with particles that are 10 micrometers in diameter or smaller because these particles can pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. EPA groups particle pollution into two categories:

- PM10: inhalable particles, with diameters that are generally 10 micrometers and smaller; and
- PM2.5: fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller. The average human hair is about 70 micrometers in diameter – making it 30 times larger than the largest fine particle.[15]

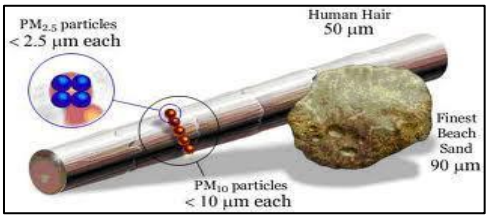


Image courtesy of
http://www.energyjustice.net

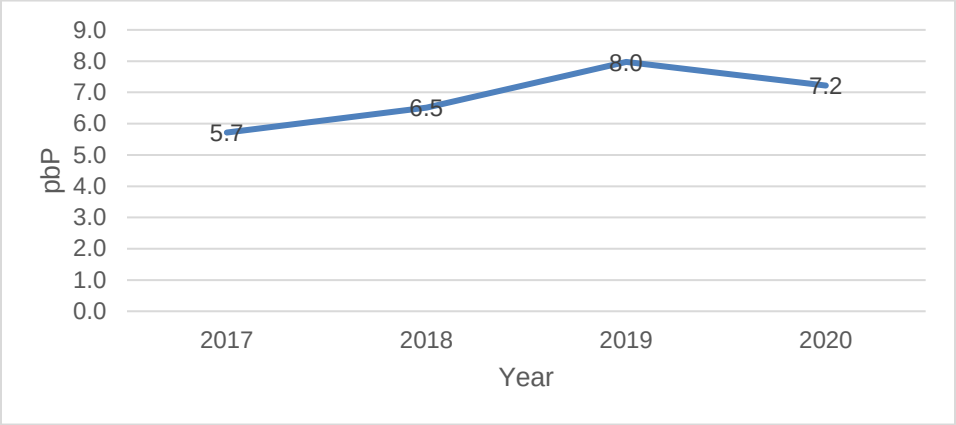
The Thrivent Campus station takes daily samples of "Fine particles," 2.5 micrometers in diameter or smaller or PM2.5. PM2.5 is measured in micrograms (one-millionth of a gram) per cubic meter air (µg/m3). On December 7, 2020, after carefully reviewing the most recent available scientific evidence and technical information, and consulting with the Agency's independent scientific advisors, EPA announced it will retain, without revision, the existing primary (health-based) and secondary (welfare-based) National Ambient Air Quality Standards (NAAQS) for particulate matter.

Currently, the EPA has primary and secondary standards for PM2.5 (annual average standards with levels of 12.0 µg/m3 and 15.0 µg/m3, respectively; 24-hour standards with 98th percentile forms and levels of 35 µg/m3) and PM10 (24-hour standards with one-expected exceedance

[15] https://www.epa.gov/pm-pollution/particulate-matter-pm-basics (April 2021)

forms and levels of 150 µg/m3).[16] **Figures 2-19** and **Figure 2-20** display the daily average of PM2.5 sample in Appleton from 2017 to 2020 and 2014 to 2016.

Figure 2-19: Appleton (Fox Cities) TMA Annual 24-hr Average PM2.5



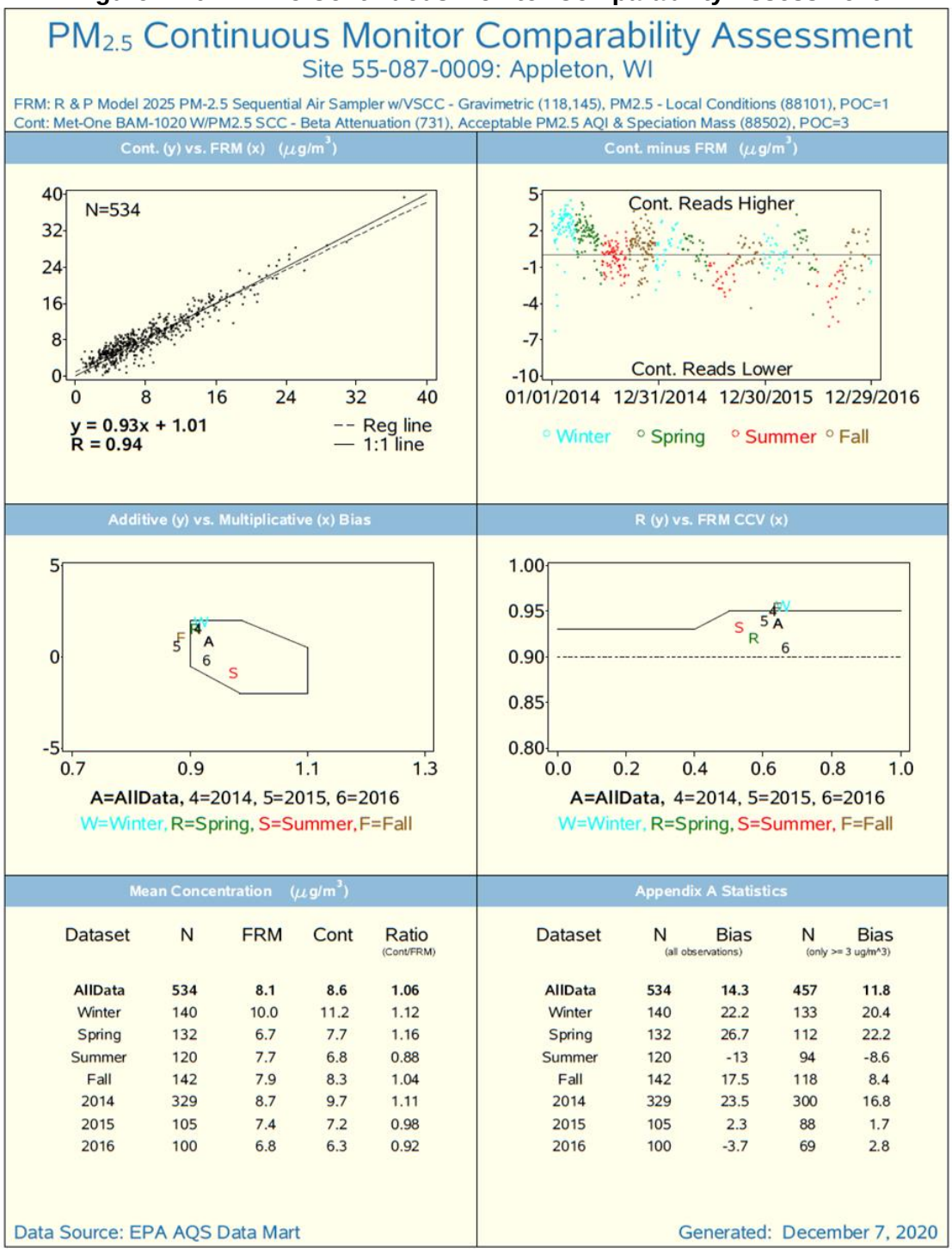
Ozone is found in two regions of the Earth's atmosphere – at ground level and in the upper regions of the atmosphere. Both types of ozone have the same chemical composition (O3). While upper atmospheric ozone protects the earth from the sun's harmful rays, ground level ozone is the main component of smog.

Tropospheric, or GO, is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC). GO is likely to reach unhealthy levels on hot sunny days in urban environments. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are some of the major sources of NOx and VOC.[17]

The Appleton AAL station takes hourly samples from April to October of GO. GO is measured in parts per billion (ppb). On March 12, 2008 - The Environmental Protection Agency significantly strengthened its national ambient air quality standards (NAAQS) for ground-level ozone, the primary component of smog. These changes will improve both public health protection and the protection of sensitive trees and plants.[18] The GO standard is at 0.075 parts per million (ppm).

[16] https://www.epa.gov/pm-pollution/national-ambient-air-quality-standards-naaqs-pm (4/21/2021)
[17] http://www.epa.gov/glo/basic.html (3/13/2013)
[18] http://www.epa.gov/airquality/ozonepollution/actions.html#stand (5/10/2013)

Figure 2-20: PM 2.5 Continuous Monitor Comparability Assessment



Ground Ozone compared to ATR Counts

Vehicle emissions contribute to both PM2.5 and GO, but the sample schedule for GO makes it ideal for comparing to ATR count data.

Figure 2-21 displays ground ozone sample data to the closest ATR count location.
Figure 2-22 displays particulate matter 2.5 micrometers or smaller sample data.

Figure 2-21: Appleton Ozone, Type: Average

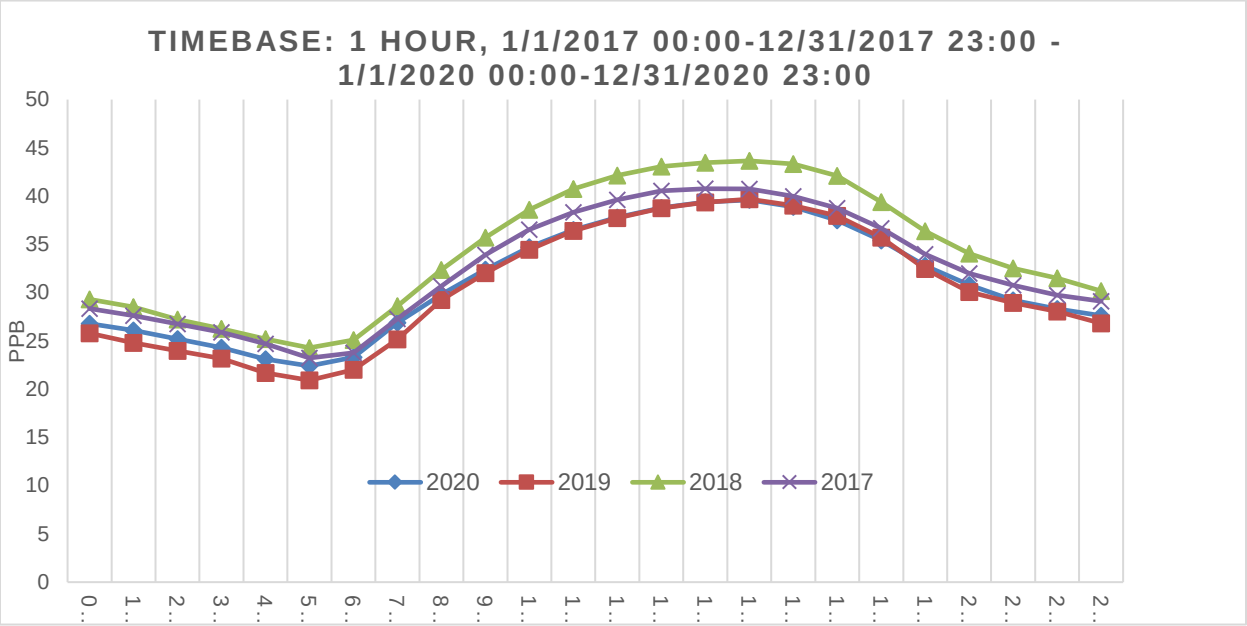
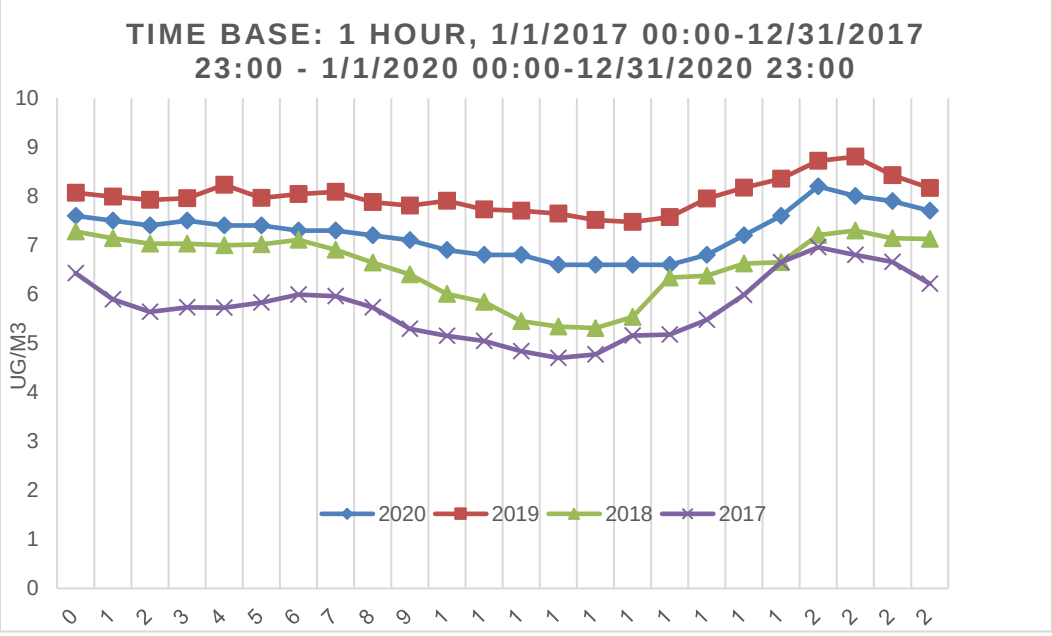


Figure 2-22: Appleton PM2.5 Type: Average



INTELLIGENT TRANSPORTATION SYSTEM ANALYSIS

In May of 2008, WisDOT released a Traffic Operations Infrastructure Plan (TOIP) that developed a methodology and tool to evaluate operational projects and integrated operations into the planning process. The TOIP focuses on major corridors throughout Wisconsin and prioritizes them based on a score that was calculated from ten criteria that covered mobility, safety and environmental conditions. The Fox Valley Corridor (Milwaukee to Green Bay) was one of the major corridors identified in the plan. The Fox Valley Corridor includes the Milwaukee-Waukesha, Appleton-Oshkosh-Fond-du-Lac, and Green Bay Regions as well as I-41 from Milwaukee to Green Bay, and US 45 between Milwaukee and Fond du Lac. The Corridor experiences significant regional traffic, high peaking on weekends (Friday afternoon and evening and Sunday afternoon), significant event traffic, and weather disturbances occur during the winter months. Recommendations for the Fox Valley Corridor include signal upgrades and increased surveillance, detection, incident management, traffic flow management, and traveler information through traffic operations devices (cameras, traffic detectors and dynamic message signs).[19]

Intelligent Transportation System (ITS) Update

WisDOT has created the Wisconsin State Traffic Operations Center (STOC) which handles traffic management for the state of Wisconsin. The physical Operations Center is located in Southeastern Wisconsin in the City of Milwaukee. The STOC is staffed 24 hours per day, 7 days per week and communicates regularly with sheriff, fire, police, and Wisconsin State Patrol, as well as media outlets and construction project managers.

From the operations center, it is possible to use various traffic management tools, such as: closed circuit television units, ramp meters, dynamic message signs (DMS), highway advisory radio (HAR), Traffic Incident Management Enhancement (TIME), roadway sensors and other tools. It is designed to improve the safety and efficiency of the freeway system by reducing incidents and relieving traffic congestion.

Wisconsin also has the www.511WI.gov website to give travelers detailed information about current travel conditions and times in urban regions.

The Fox Valley Corridor has seen several updates since the release of the TOIP in 2008. A complete ITS system has been deployed in Winnebago County along I-41 including closed circuit television cameras, ramp closure gates, type lll barricades, dynamic message signs, portable changeable message signs, traffic detection sensors, and crash investigation sites. A

[19] WisDOT Traffic Operations Infrastructure Plan, May 2008 (Accessed May 2013)

majority of the system installed is wireless technology and has been converted to fiber cable. The traffic detection sensors are capable of collecting speed and volume data, which is sent to the STOC in Milwaukee where travel times can be calculated and instantaneously updated on the dynamic message signs. If the detectors are sensing a slow down on the highway, the travel times on the dynamic message signs will be adjusted. The STOC can also utilize the cameras to identify causes to traffic delays and add detailed messages to warn drivers on the dynamic message signs.

I-41 in Outagamie County has not seen the upgrades like Winnebago County because State Statutes prohibit WisDOT from spending more than 10% of a construction project estimate on ITS devices. Also, WisDOT is not able to install ITS devices in an area where there isn't a highway project. There needs to be a construction project to warrant the installation of ITS. At this point there is a gap between Winnebago and Brown County along I-41. There are a few upcoming construction projects scheduled for I-41 and WIS 441 that may present the opportunity for the installation of ITS devices. A list of recent projects includes:

- WIS 441 (CTH CB – US 10) → Completed-2020
- I-41 (Breezewood Lane – Prospect Avenue) → Completed-2020
- I-41 (CTH J – Scheuring Road) → Completed-2017

Population Density Analysis

Population density within the Appleton (Fox Cities) TMA is measured by people per square mile. The average population density for the Appleton (Fox Cities) TMA is approximately 3,246 people per square mile, with the lowest census block registering a population density of about 29 people per square mile and the highest census block registering a population density of about 14,293 people per square mile. As expected, the general population density patterns observed in **Map 2-14,** show that the cities and villages of the Appleton (Fox Cities) TMA are more densely populated, while the towns and surrounding rural areas are less densely populated.

The population density analysis is helpful for decision-makers because it is a means of identifying clusters of population within the Fox Cities region. More importantly, it helps determine how and where essential public services and programs should be administered by municipalities. Public transit is one example that is well served by population density analysis. Transit routes can be designed more efficiently to be located at strategic pick up and drop off locations near residences, schools and employment areas.

Additionally, population density analysis can be a guide in recognizing potential future trends in regional population shifts. Viewed over longer time scales, population density analysis will assist decision-makers see trends in where people are living to be near amenities, employment districts, school districts, or transit options among other variables. Public services and programs can use this analysis to be more effective and responsive to the needs of its residents.

Population Growth Rate Analysis

Map 2-15 at the end of the chapter shows the population growth rate from 2014 to 2019 for the Appleton (Fox Cities) TMA. The map compares the five-year average population in 2010-2014 to the five-year average population in 2014-2019, which provides a picture of migration patterns in recent years. The growth rate shows population from the more urbanized areas such as the City of Appleton, Neenah, Menasha, Kaukauna and the Villages of Little Chute, Kimberly, Harrison, Combined Locks, and Sherwood have been moving outward toward the towns and rural areas. Please refer to **Map 2-15 (2014-2019 Population Change by Block Group).** The infrastructure (i.e. sewer service, school districts, road and bicycle improvements) of the outlying areas must be taken into consideration if the growth rate patterns of the Appleton (Fox Cities) TMA remain consistent in the coming decades. In the near-term future (10-15 years), however, the movement of people to the outlying regions of the TMA necessitates the development of infrastructure improvements. These investments in local infrastructure will hopefully create safer environments, develop more transportation options (bike lanes/paths), and improve the overall quality of life for all residents as these migration patterns continue.

Connectivity Analysis

Connectivity, in reference to transportation refers to the relationship between paths and opportunities, or more specifically, links and nodes. A link can represent streets, bike lanes, sidewalks or trails and a node represents origins and destinations (places). The degree of connectivity describes how isolated and accessible an area is. Areas with high connectivity have low isolation and high accessibility; areas with low connectivity have high isolation and low accessibility. It is important to note that connectivity is a measure of accessibility without regard to distance.

Street Network

The term “street connectivity” suggests a system of streets with multiple routes and connections serving the same origins and destinations. Connectivity not only relates to the number of intersections along a street segment, but how an entire area is connected by the transportation system. A well-designed, highly-connected network helps reduce the volume of traffic and traffic delays on major streets (arterials and major collectors), and ultimately improves livability in communities by providing parallel routes and alternative route choices. By increasing the number of street connections or local street intersections in communities, bicycle and pedestrian travel also is enhanced. A well-planned, connected network of collector roadways allows a transit system to operate more efficiently.[20]

[20] Street Connectivity Zoning and Subdivision Model Ordinance, Prepared by Division of Planning Kentucky Transportation Cabinet March 2009 (April 2013)

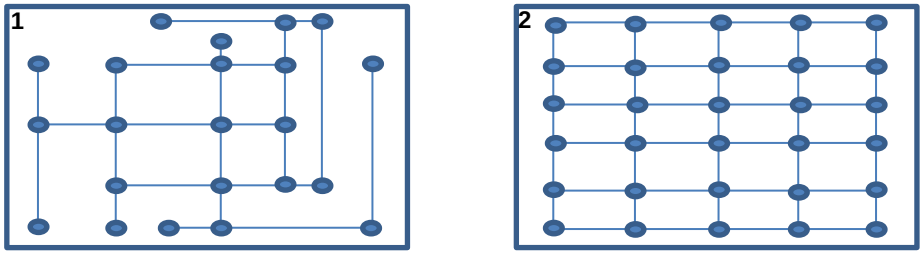
Street Network Connectivity Index

The street network connectivity index is calculated the same as a Beta index. A Beta index measures the level of connectivity by a graph and is expressed by the relationship between the number of links divided by the number of nodes. Simple networks have Beta value of less than one. A connected network with one cycle has a value of 1. More complex networks have a value greater than 1. In a network with a fixed number of nodes, the higher the number of links, the higher the number of paths possible in the network. Complex networks have a high value of Beta.[21] The higher the value of Beta or connectivity index, the more connected the road network. A connectivity index of 1.40 is a reasonable standard to ensure a connected roadway network; however, there are some cities that require a smaller value, sometimes as low as 1.20.[22]

Appleton (Fox Cities) TMA Street Network Connectivity Index

The Appleton (Fox Cities) TMA street network was constructed into links and nodes by municipality. Links were defined as any street segment connecting one or more nodes. Nodes were defined as intersections, dead ends or cul-de-sacs. For each municipality the total number of links was divided by the total number of nodes to obtain a ratio or a connectivity index. For an example please refer to **Figure 2-23 (**below) to help describe the connectivity index for the Appleton (Fox Cities) TMA. **Map 2-16** at the end of the chapter shows the Appleton (Fox Cities) TMA results.

Figure 2-23. Street Connectivity Example



Calculations:

Network 1: 27 links divide by 22 nodes equals a ratio of 1.23

Network 2: 49 links divide by 30 nodes equals a ratio of 1.63

[21] http://people.hofstra.edu/geotrans/eng/methods/betaindex.html (April 2013)
[22] Street Connectivity Zoning and Subdivision Model Ordinance, Prepared by Division of Planning Kentucky Transportation Cabinet March 2009 (April 2013)

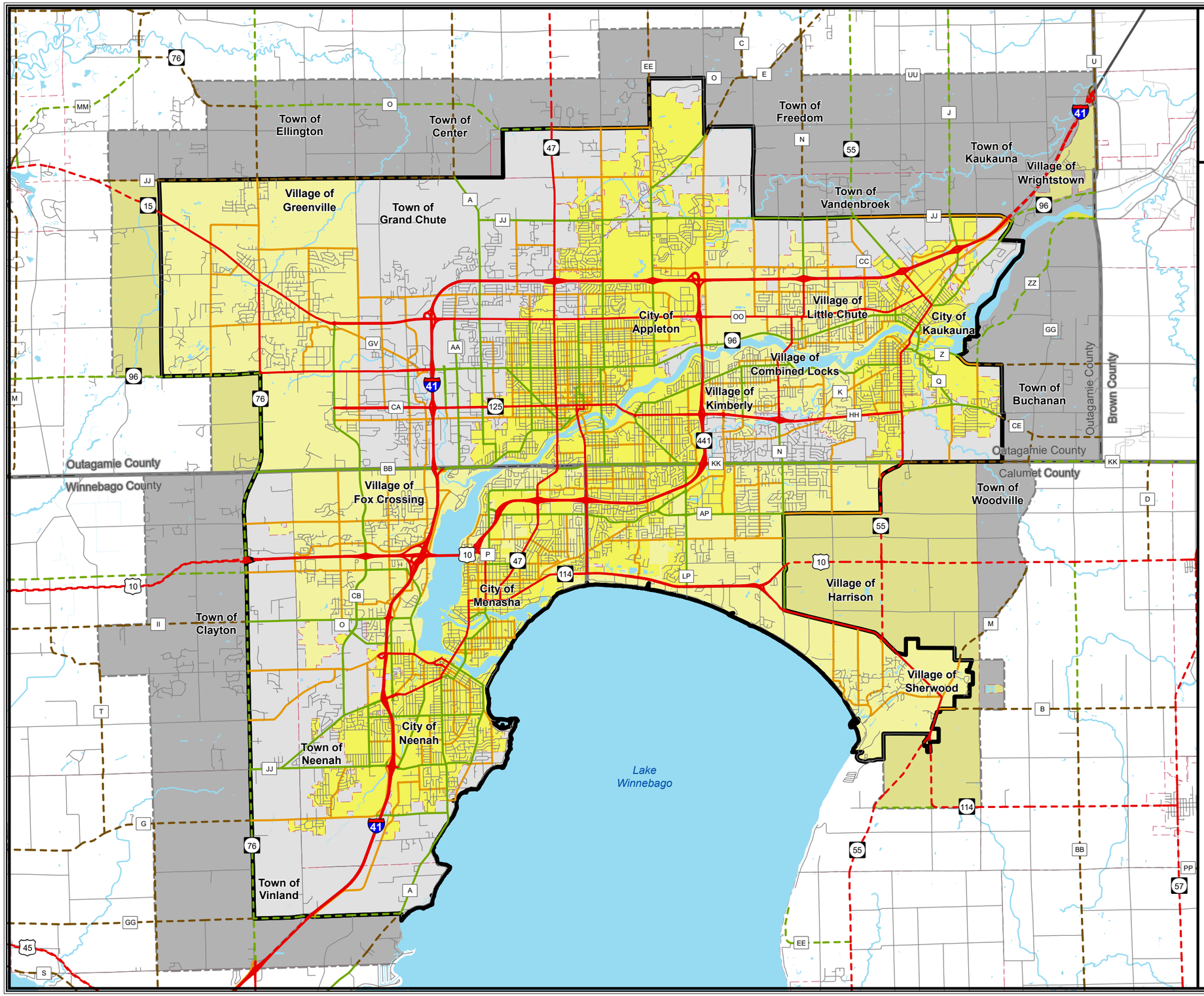
Accessibility Analysis

Accessibility refers to the ease of reaching goods, services, activities and destinations, which together are called opportunities.[23] To increase accessibility is to increase one's access to destinations or opportunities. One measurement of accessibility is to measure intersection density. The higher the intersection density translates to higher accessibility.

Geographic Information System (GIS) analysis was used to gain an understanding of spatial patterns throughout the Appleton (Fox Cities) TMA. The street network was geo-processed to determine the exact number of intersections within the Appleton (Fox Cities) TMA. An intersection in this case, is a junction point with more than two connecting streets. Junction points with two or less connecting streets have been omitted in this analysis. The calculated intersection points were sub-divided out by census blocks and the number of intersections per acre was calculated. **Map 2-17** at the end of this chapter illustrates the intersections per acre throughout the Appleton (Fox Cities) TMA region.

[23] Evaluating Accessibility for Transportation Planning Measuring People's Ability to Reach Desired Goods and Activities, September10 2012 - Todd Litman, Victoria Transport Policy Institute (April 2013)

Map 2-1
Appleton (Fox Cities) Transportation Management Area (TMA) Functional Class



- Urban Principal Arterial
- Urban Minor Arterial
- Urban Local
- Urban Collector
- Rural Principal Arterial
- Rural Minor Arterial
- Rural Major Collector
- Rural Minor Collector
- Rural Local
- County Boundary
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

N W E S

0 0.5 1 2
Scale in Miles

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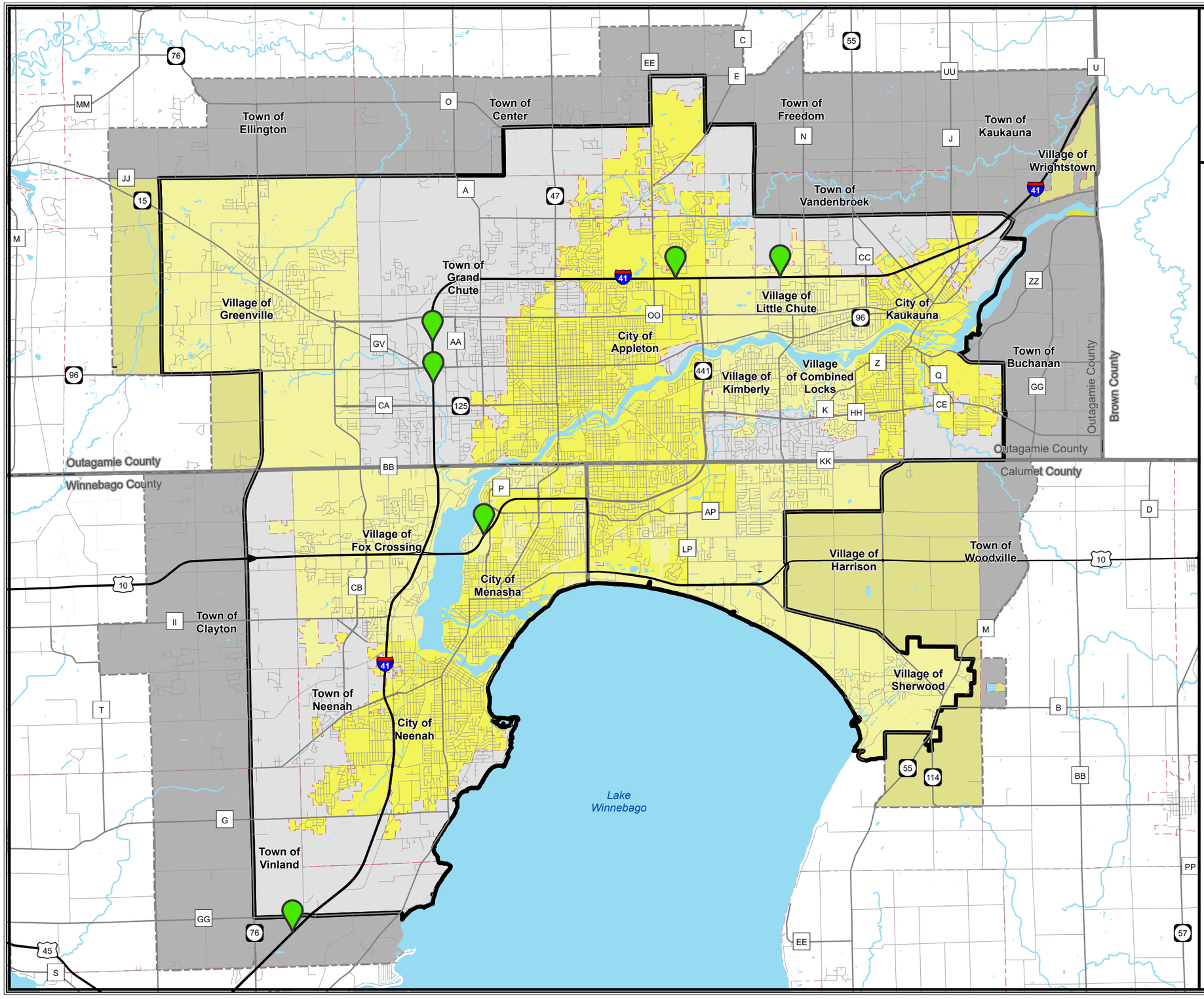
Map 2-2
Appleton (Fox Cities) Transportation Management Area (TMA) Automated Traffic Recorder Locations (ATR)



ATR Location

Freeway (INT)

USH

STH

CTH

Local Road

County Boundary

Adjusted Urbanized Area

Transportation Management Area

Source:
ATR locations provided by ECWRPC, 2021. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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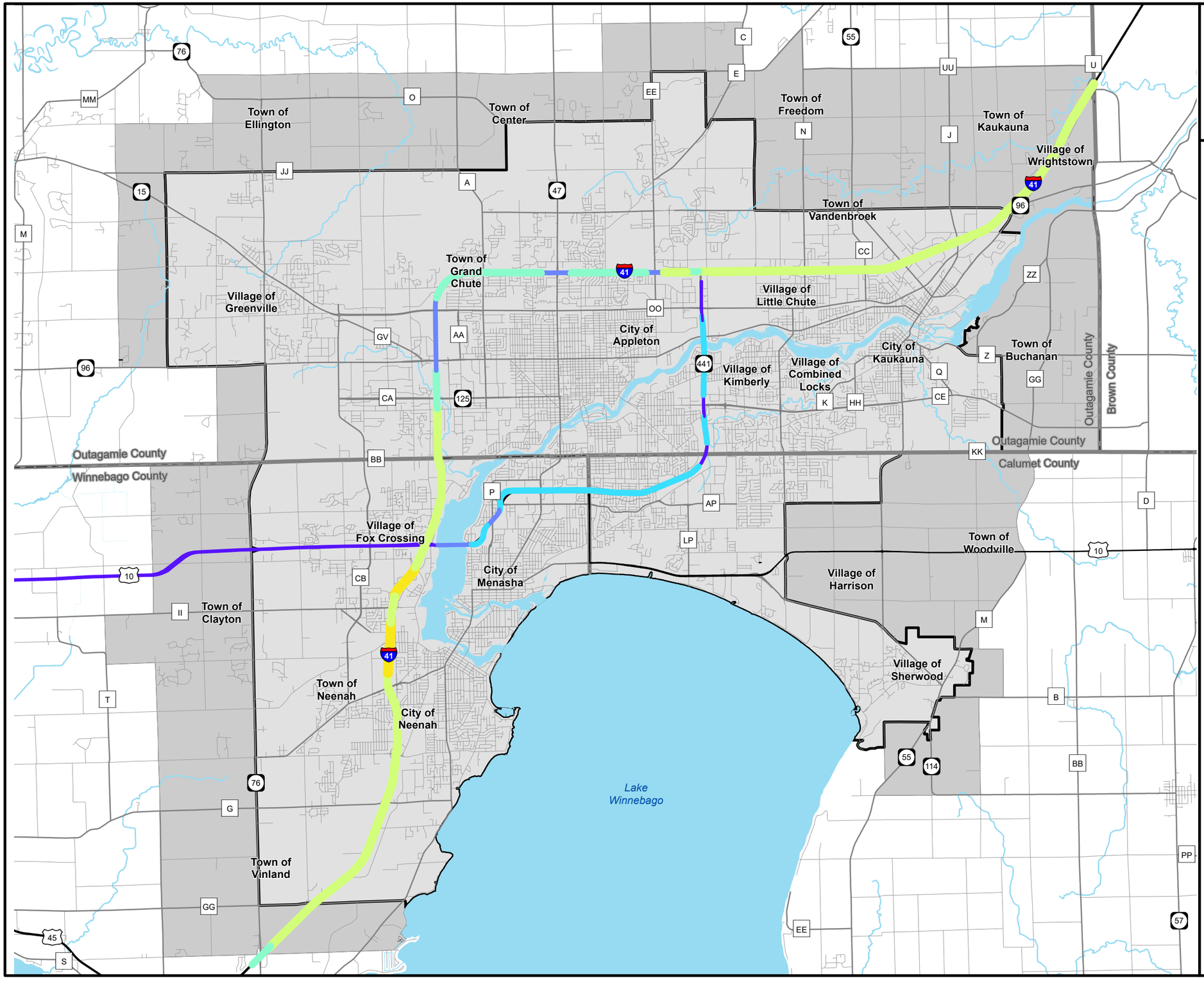
Map 2-3
Appleton (Fox Cities) Transportation Management Area (TMA) Truck Volume 2010



2010 Truck Volume
- Less than 3500 Trucks
- 3500.1 - 5500
- 5500.1 - 7500
- 7500.1 - 9500
- 9500.1 - 12500
- 12500.1 - 15500
- 15500.1 - 18500
- More than 18500 Trucks
- County Boundary
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Truck volume data provided by ECWRPC, 2021. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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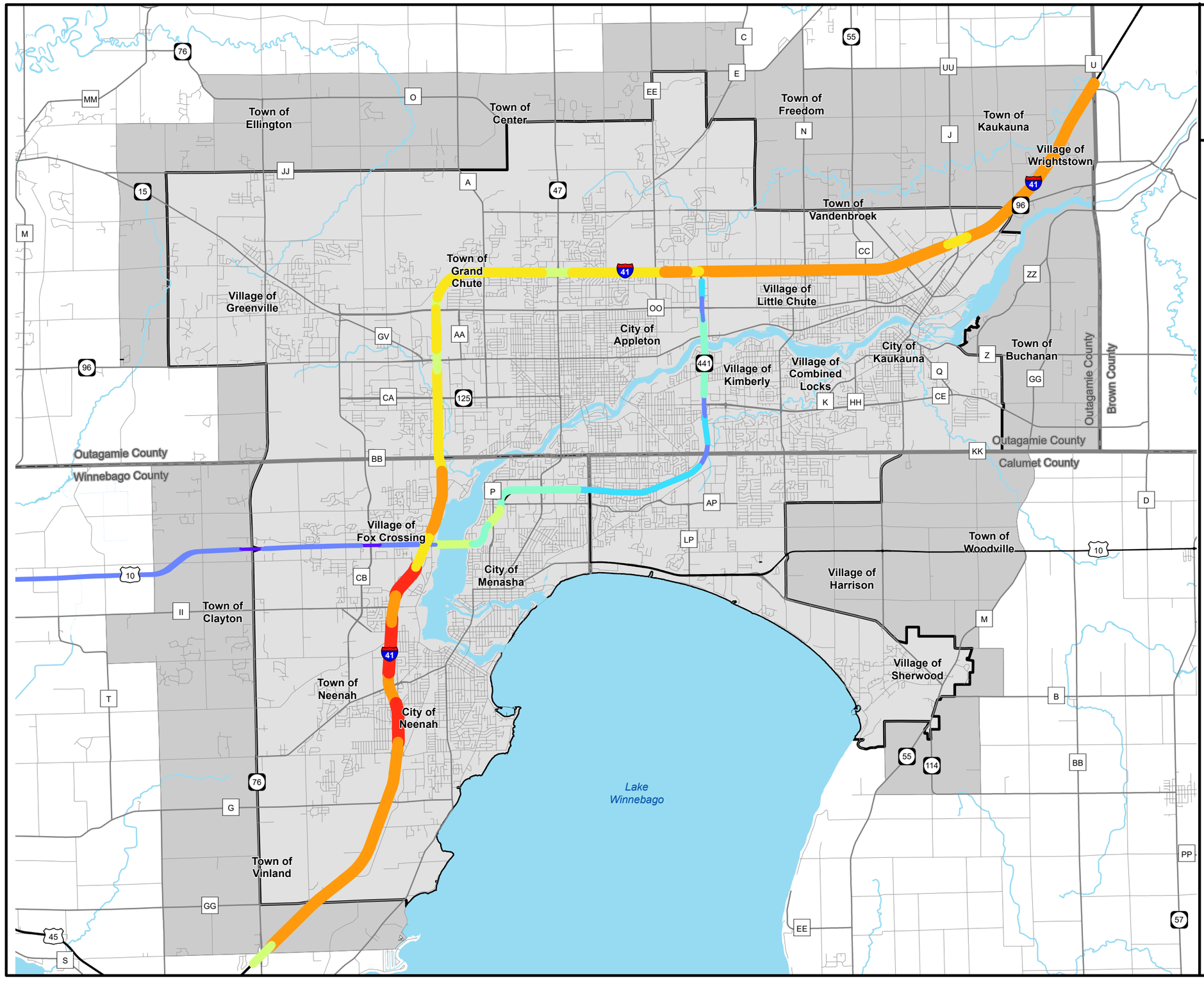
Map 2-4
Appleton (Fox Cities) Transportation Management Area (TMA) Truck Volume 2045



2010 Truck Volume

- Less than 3500 Trucks
- 3500.1 - 5500
- 5500.1 - 7500
- 7500.1 - 9500
- 9500.1 - 12500
- 12500.1 - 15500
- 15500.1 - 18500
- More than 18500 Trucks
- County Boundary
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Truck volume data provided by ECWRPC, 2021. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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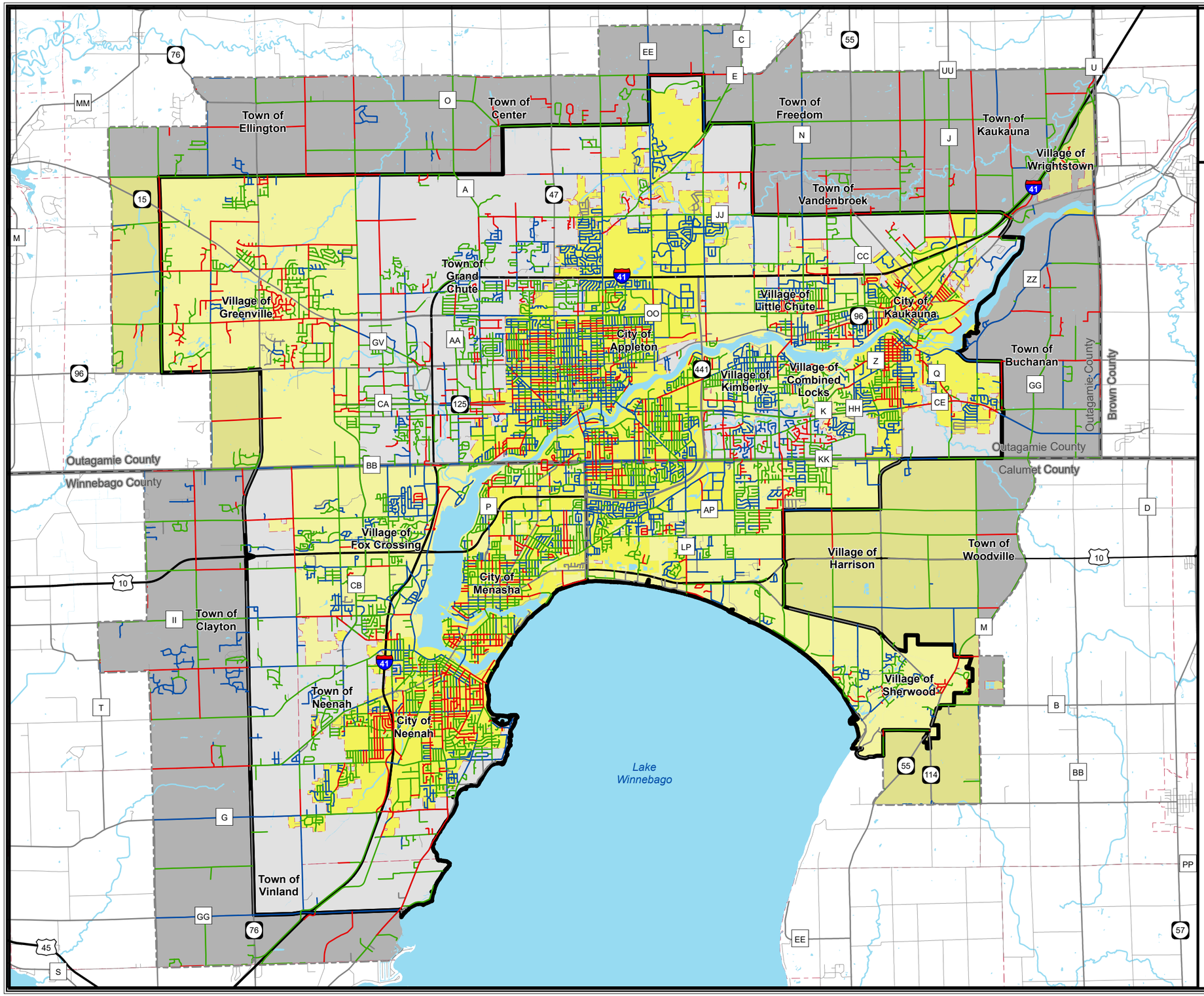
Map 2-5
Appleton (Fox Cities) Transportation Management Area (TMA)
PASER 2019



Pavement Rating
- Poor
- Fair
- Good
- Not Rated
- County Boundary
- Adjusted Urbanized Area
- Transportation Management Area

Source:
PASER data provided by WisDOT/University of Wisconsin-Madison Transportation Information Center, 2019. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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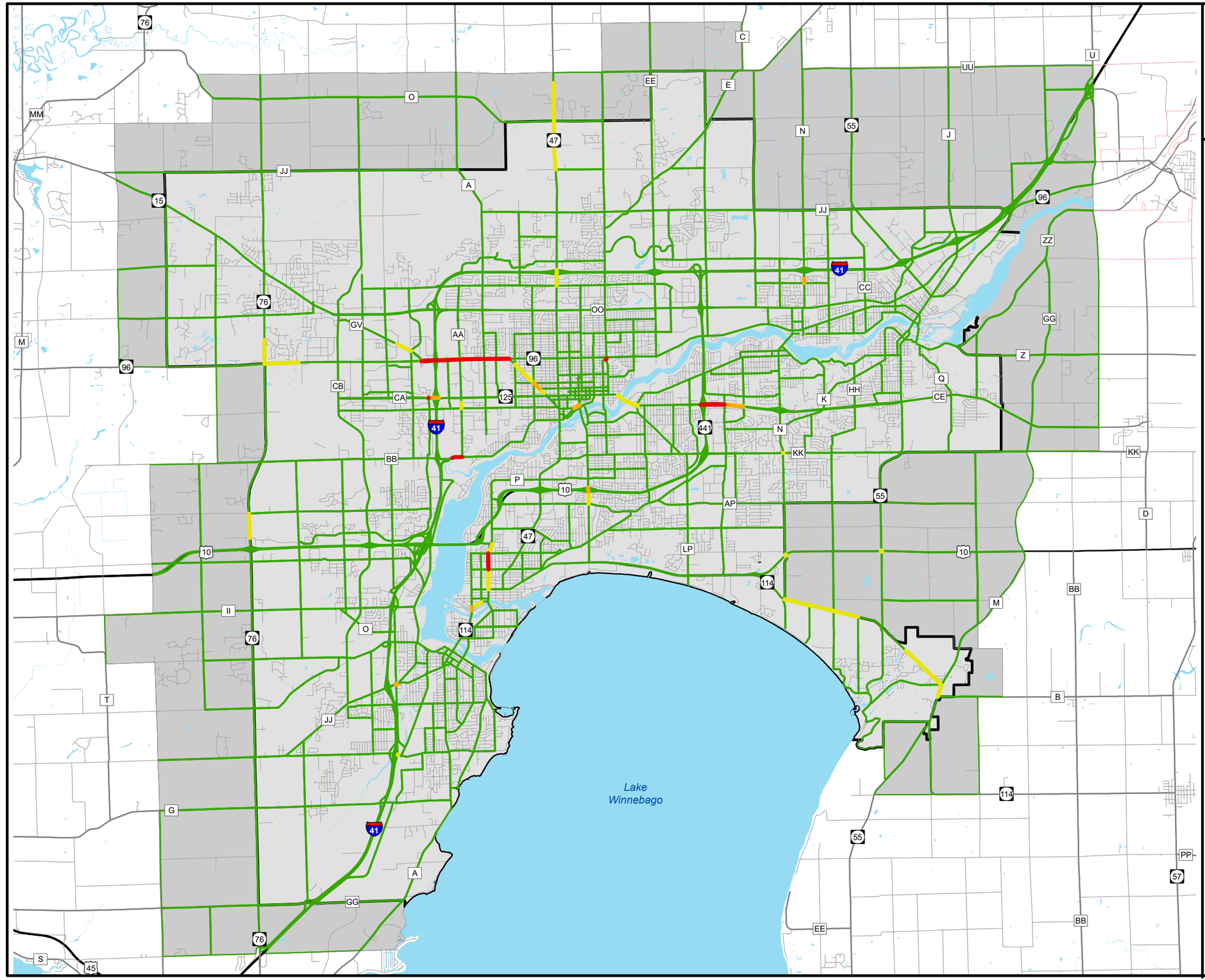
Map 2-6
Appleton (Fox Cities) Transportation Management Area (TMA) 2010 Deficiencies Status



2010 Congestion

- Approaching
- Potential
- Deficient
- Severely Deficient
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Population data provided by ACS, 2015-2019. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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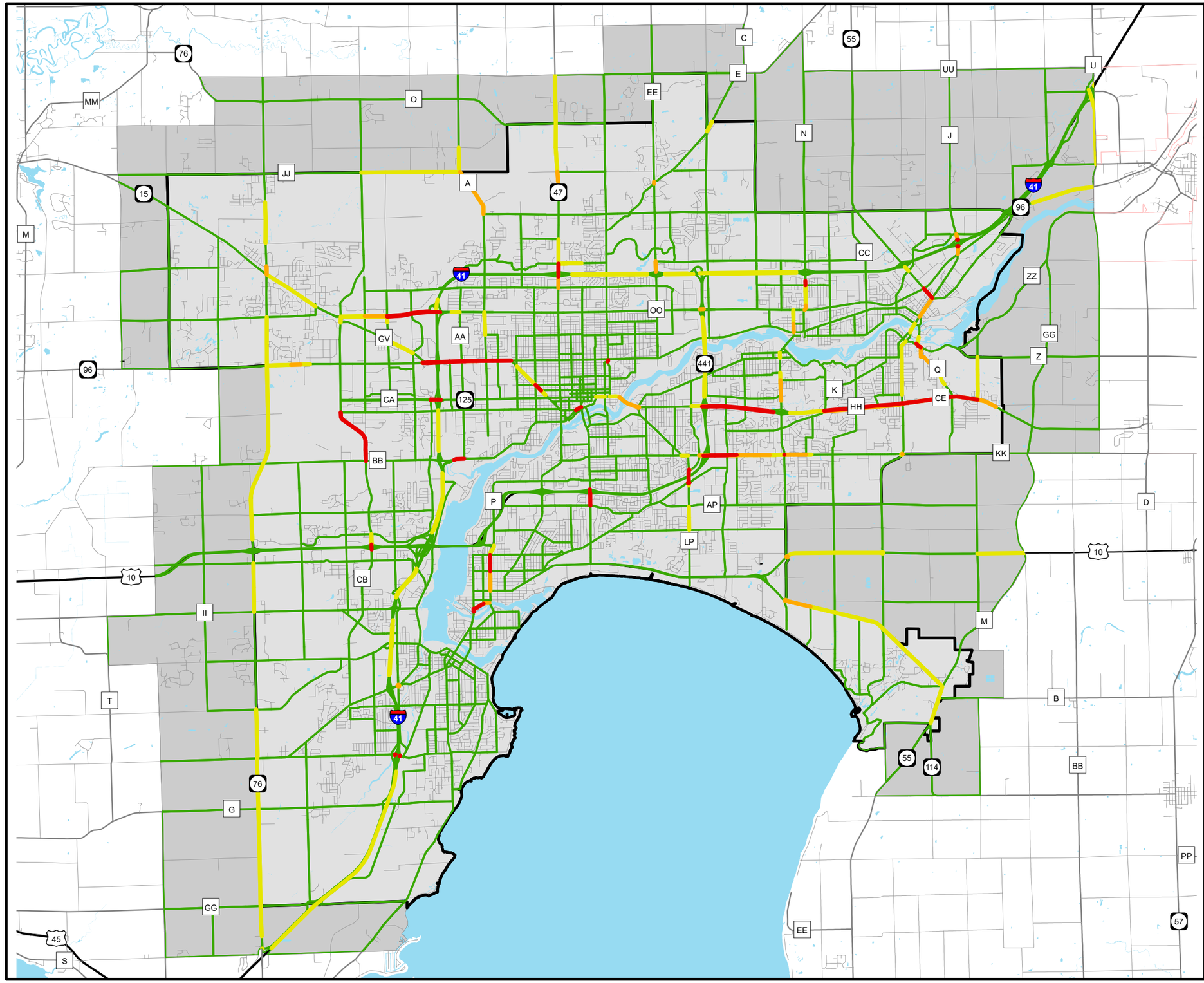
Map 2-7
Appleton (Fox Cities) Transportation Management Area (TMA)
2045 Deficiencies Status



2045 Congestion

- Approaching
- Potential
- Deficient
- Severely Deficient
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Population data provided by ACS, 2015-2019. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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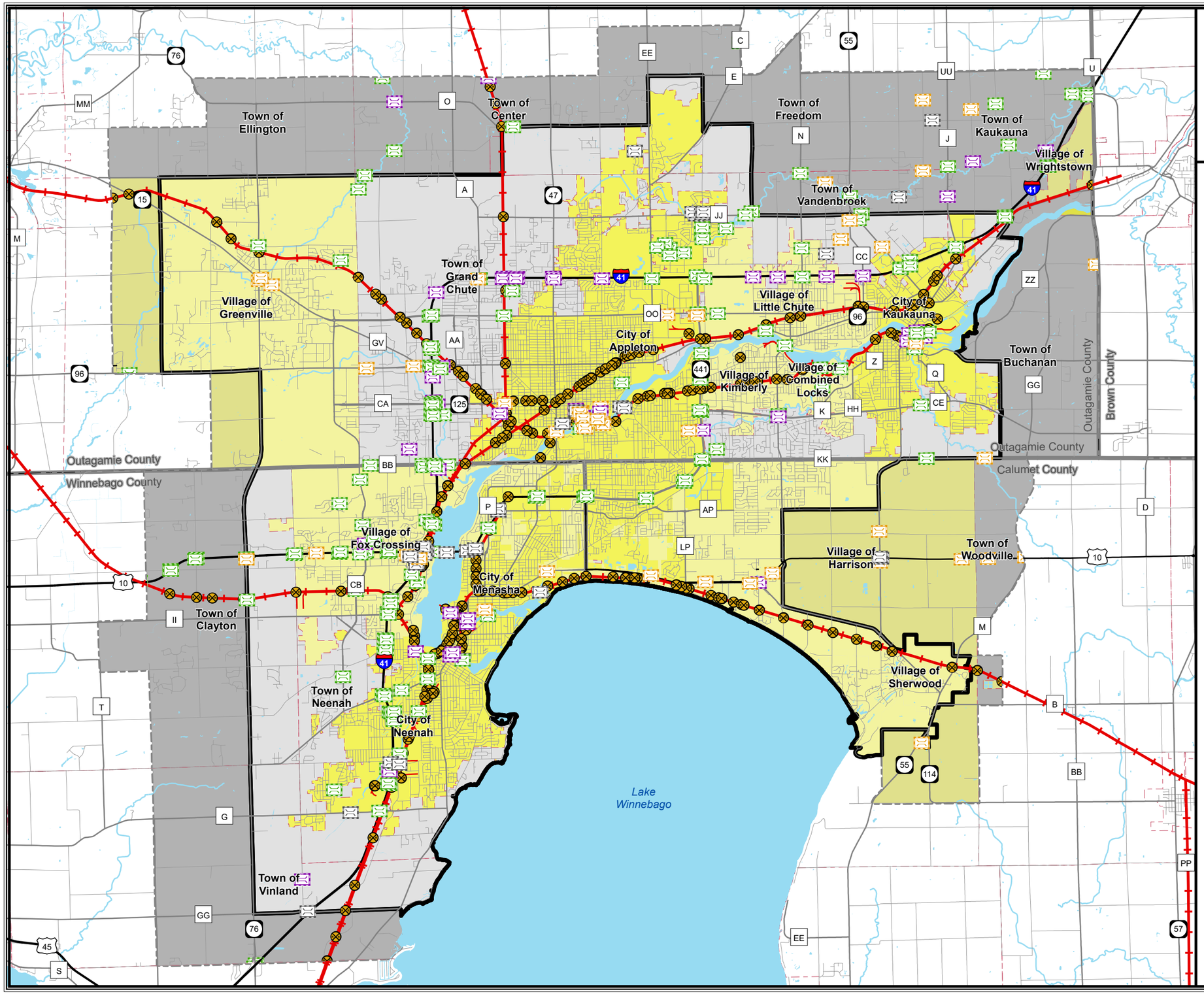
Map 2-8
Appleton (Fox Cities) Transportation Management Area (TMA)
Rail & Bridge Crossings



- Railroad Crossing

Bridge Status

- Sufficient
- Replacement Funding Eligible
- Rehabilitation Funding Eligible
- Not Eligible
- Railroad
- County Boundary
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Bridge data provided by WisDOT, 2020. Railroad data provided by WisDOT, 2017. Base data provided by Regional Counties, 2021. MPO/ Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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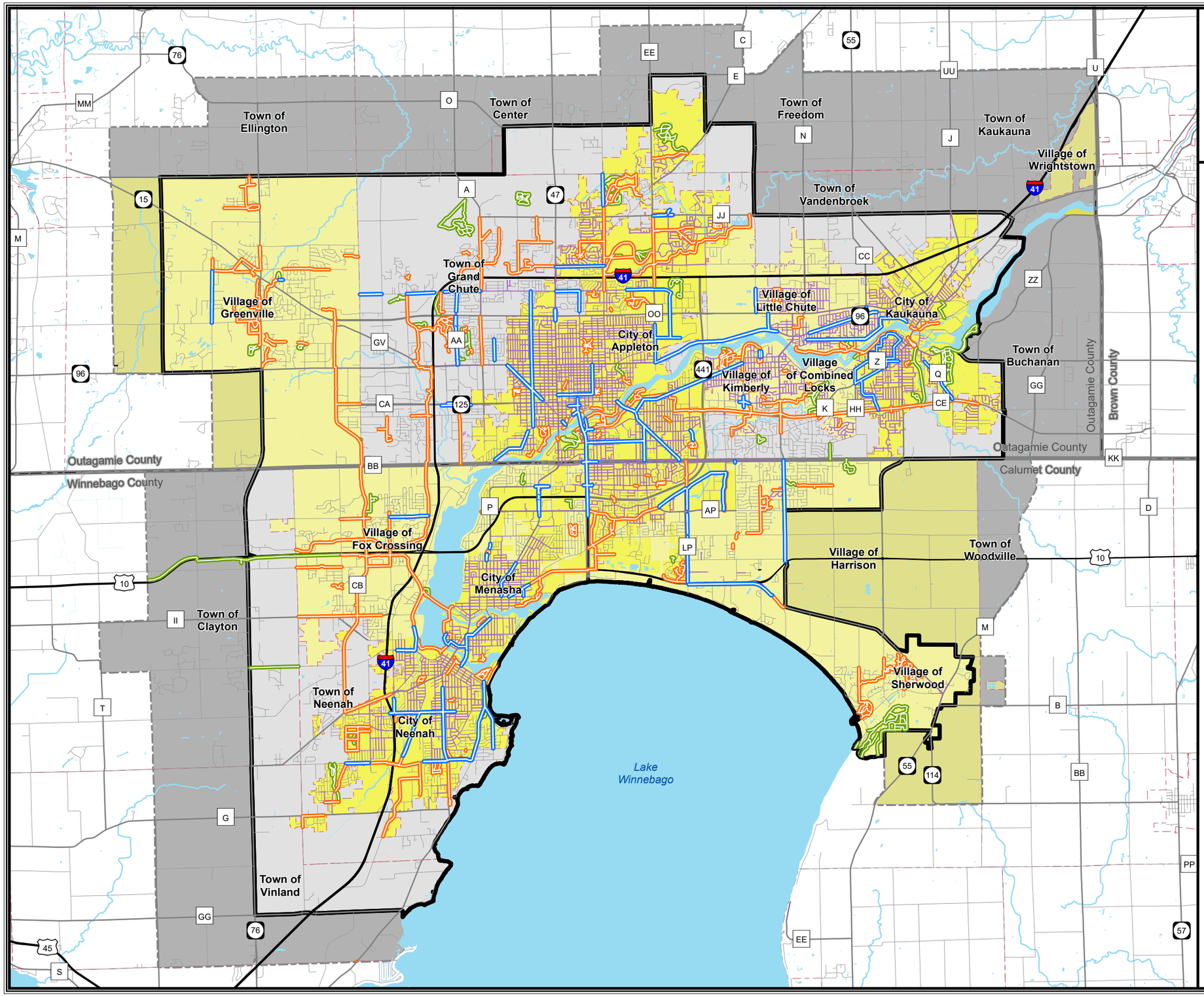
Map 2-9
Appleton (Fox Cities) Transportation Management Area (TMA) Multimodal Facilities



- Bike Lane
- Off Road Paved
- Off Road Unpaved
- Sidewalk
- County Boundary
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Bicycle and pedestrian network provided by ECWRPC, 2021. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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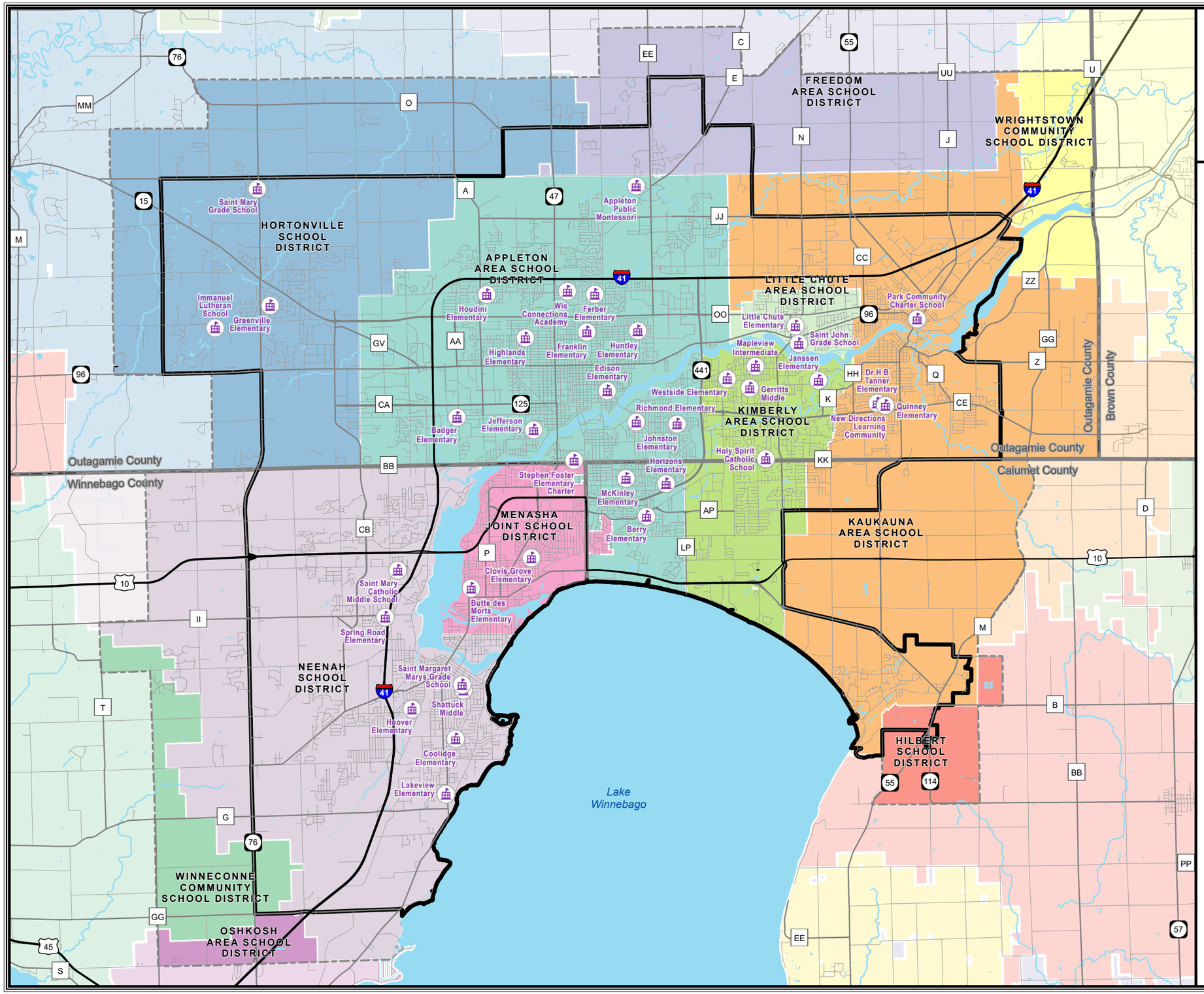
Map 2-10
Appleton (Fox Cities) Transportation Management Area (TMA)
Safe Routes to School



Participating School in Regional Safe Routes to School Program

Adjusted Urbanized Area

Transportation Management Area

Source:
SRTS data provided by ECWRPC, 2021. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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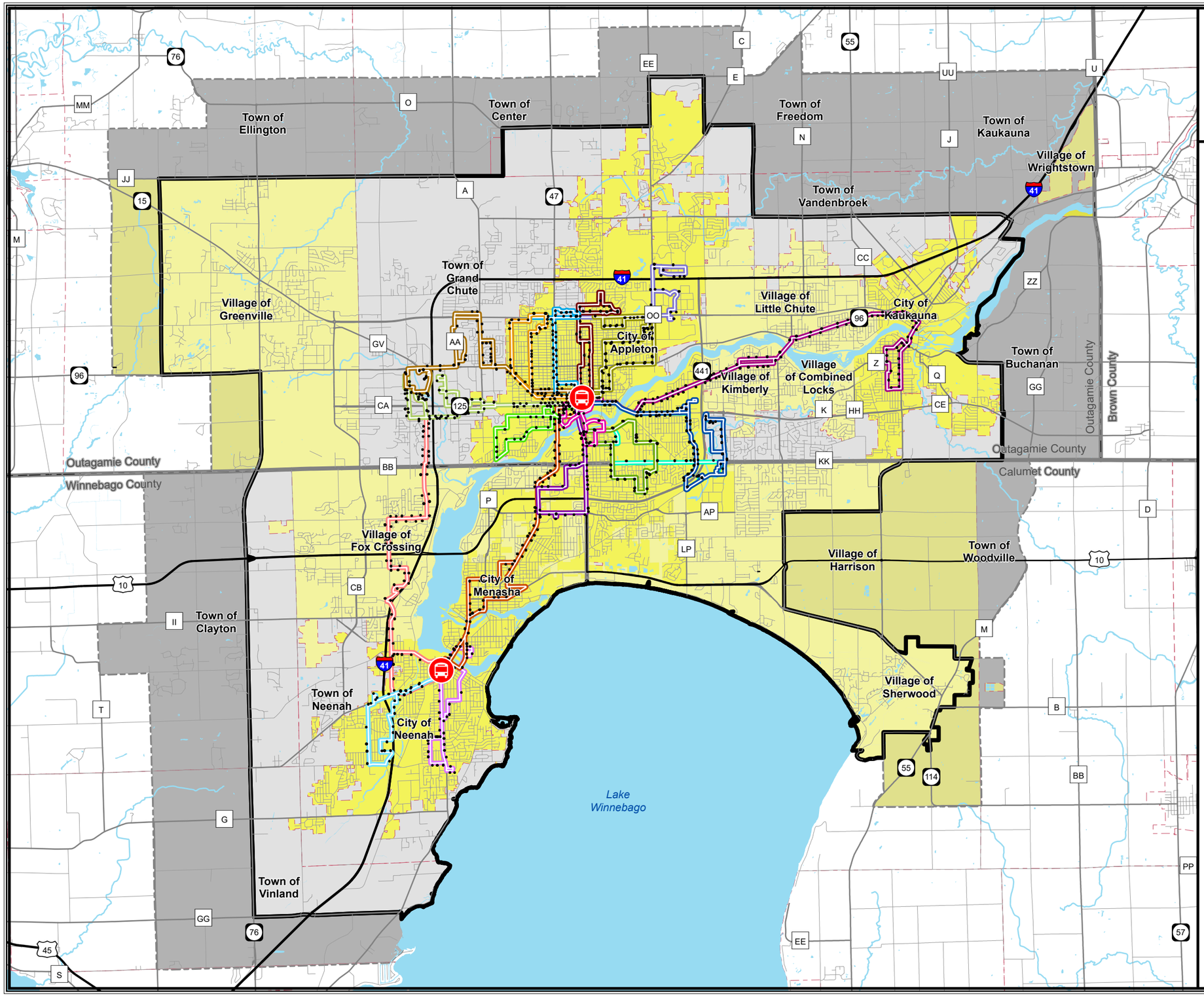
Map 2-11
Appleton (Fox Cities) Transportation Management Area (TMA)
Valley Transit Routes



- Transit Stop
- Transit Center
- Route 1
- Route 2
- Route 3
- Route 4
- Route 5
- Route 6
- Route 8
- Route 9
- Route 11
- Route 12
- Route 15
- Route 16
- Route 19
- Route 20
- Route 30
- Route 31
- Route 32
- Route 41
- County Boundary
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Bus routes provided by Valley Transit, 2021. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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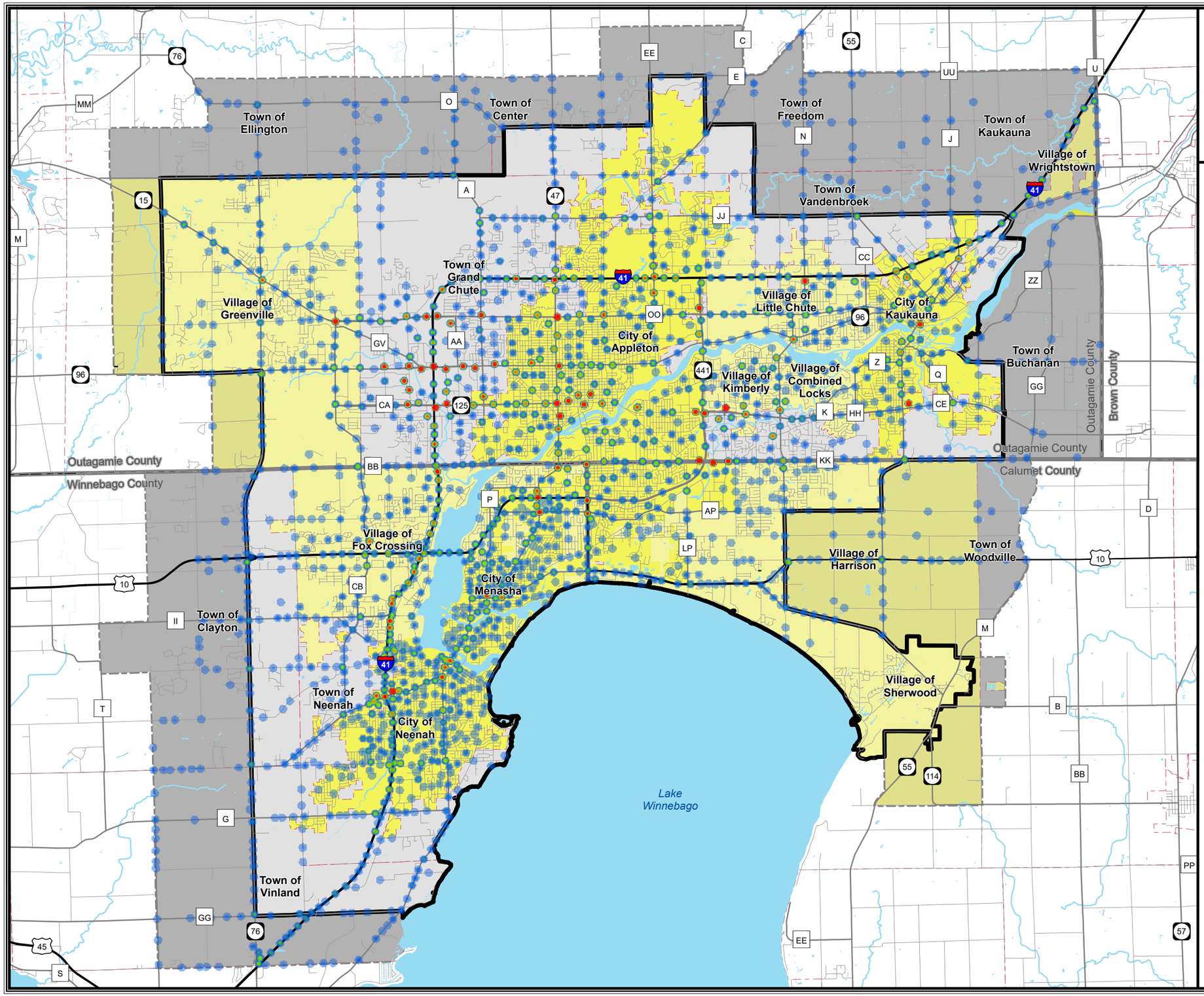
Map 2-12
Appleton (Fox Cities) Transportation Management Area (TMA)
Crash Locations
2017 to 2020



Low Crash Density

High Crash Density

County Boundary

Adjusted Urbanized Area

Transportation Management Area

Source:
Crash data from Wisconsin Traffic Operations and Safety Laboratory (TOPS), 2017 - 2020. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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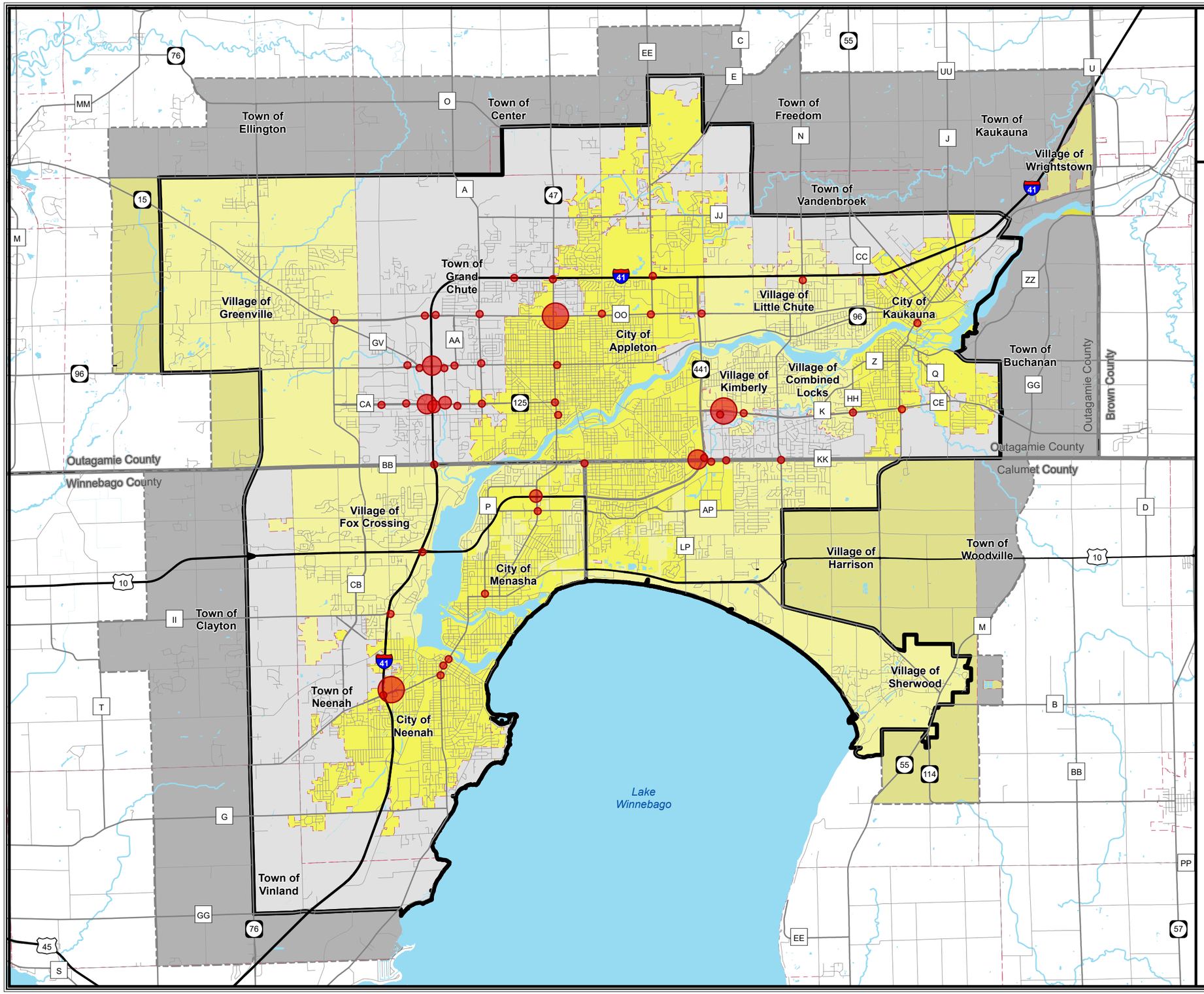
Map 2-13
Appleton (Fox Cities) Transportation Management Area (TMA)
High Risk Crash Areas
2017 to 2020



Number of Crashes
- 50 - 100
- 101 - 150
- 151 - 200
- 201 - 266

Adjusted Urbanized Area

Transportation Management Area

Source:
Crash data from Wisconsin Traffic Operations and Safety Laboratory (TOPS), 2017 - 2020. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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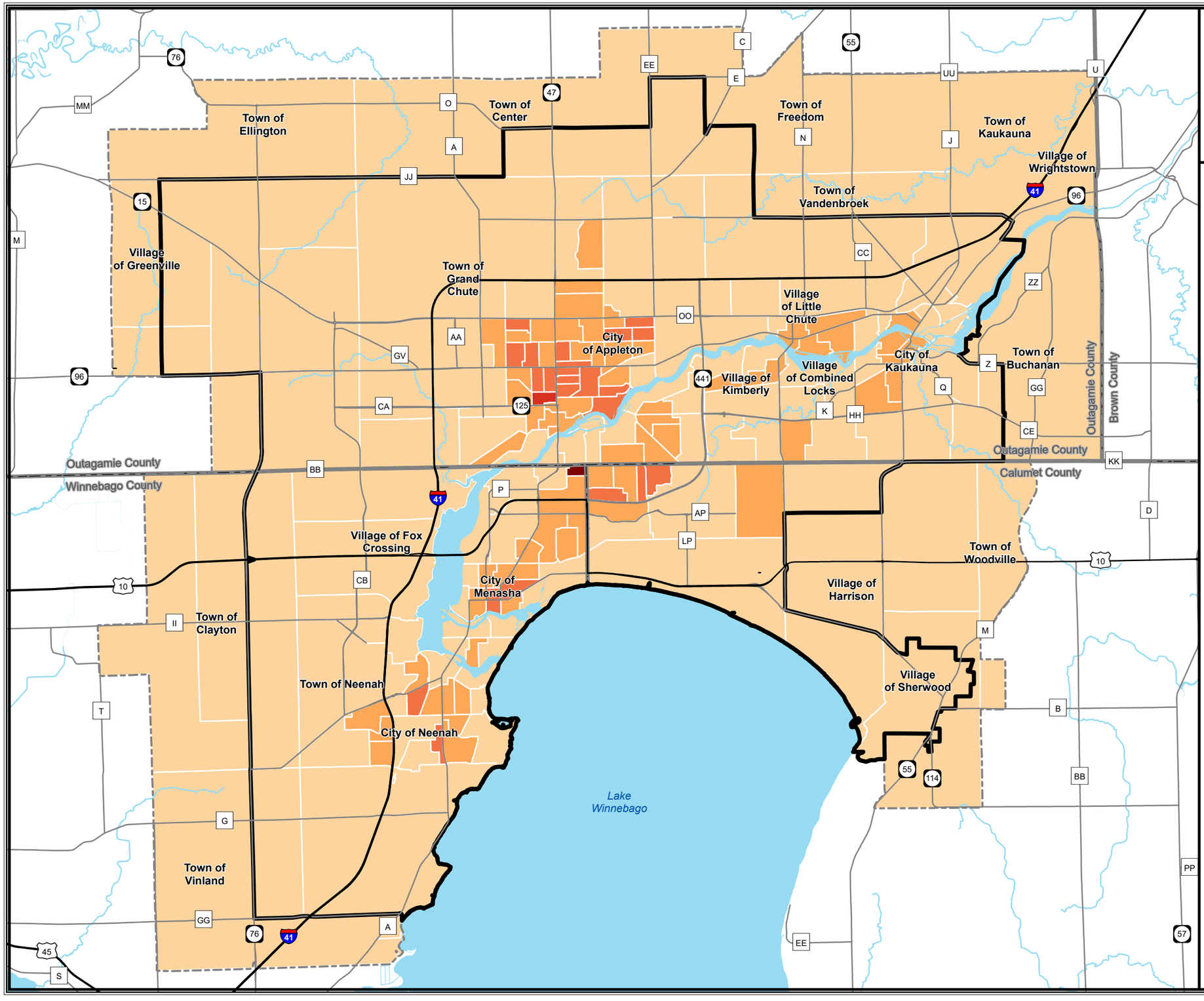
Map 2-14
Appleton (Fox Cities) Transportation Management Area (TMA) 2019 Population Density by Block Groups



Source:
Population data provided by ACS, 2015-2019. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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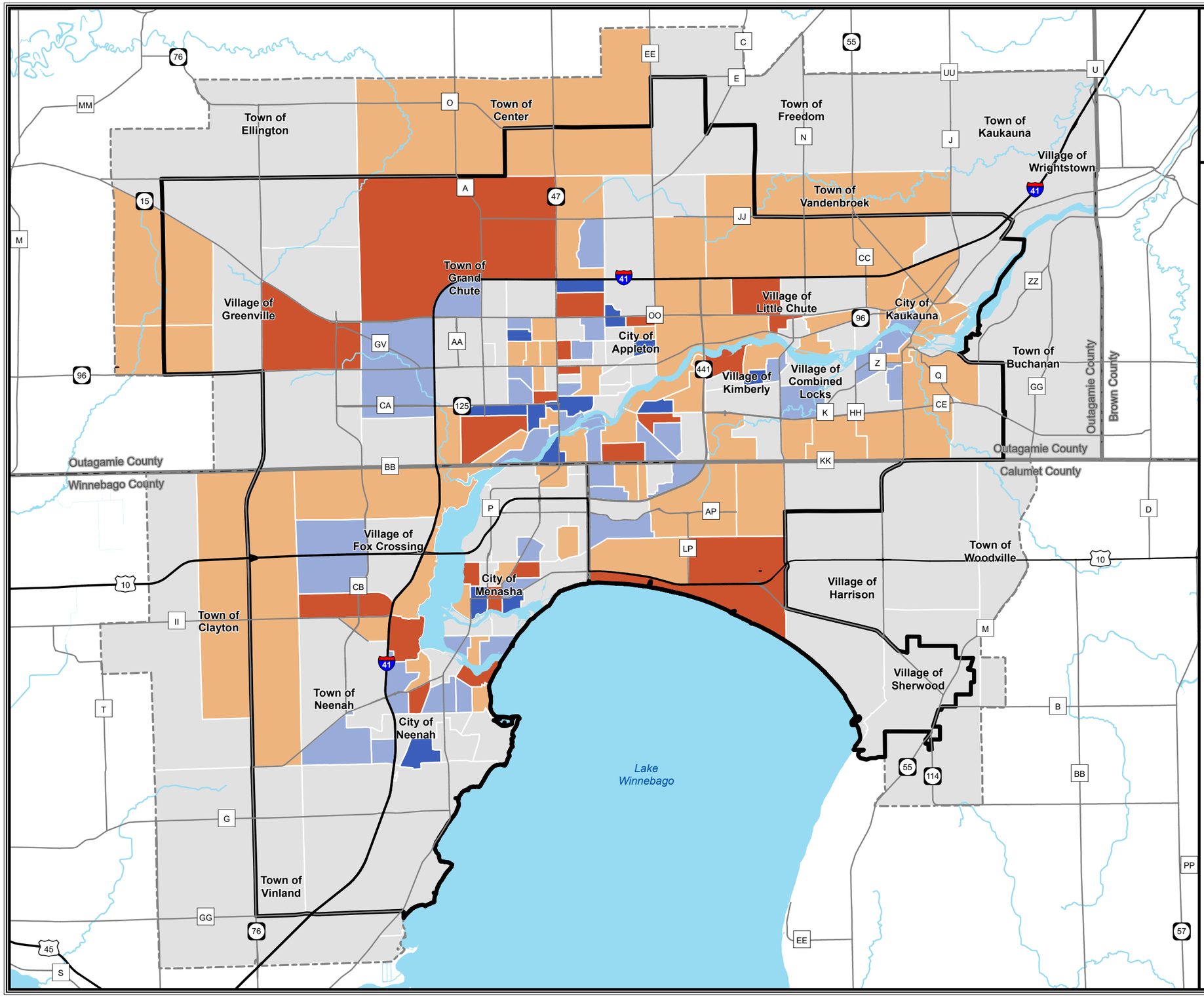
Map 2-15
Appleton (Fox Cities) Transportation Management Area (TMA) 2014 to 2019 Population Change by Block Group



2014 to 2019 Population Change

- -47% to -25%
- -24.9% to -10%
- -9.9% to 10%
- 10.1% to 25%
- 25.1% to 75%
- County Boundary
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Population data provided by ACS, 2010-2014 and 2015-2019. Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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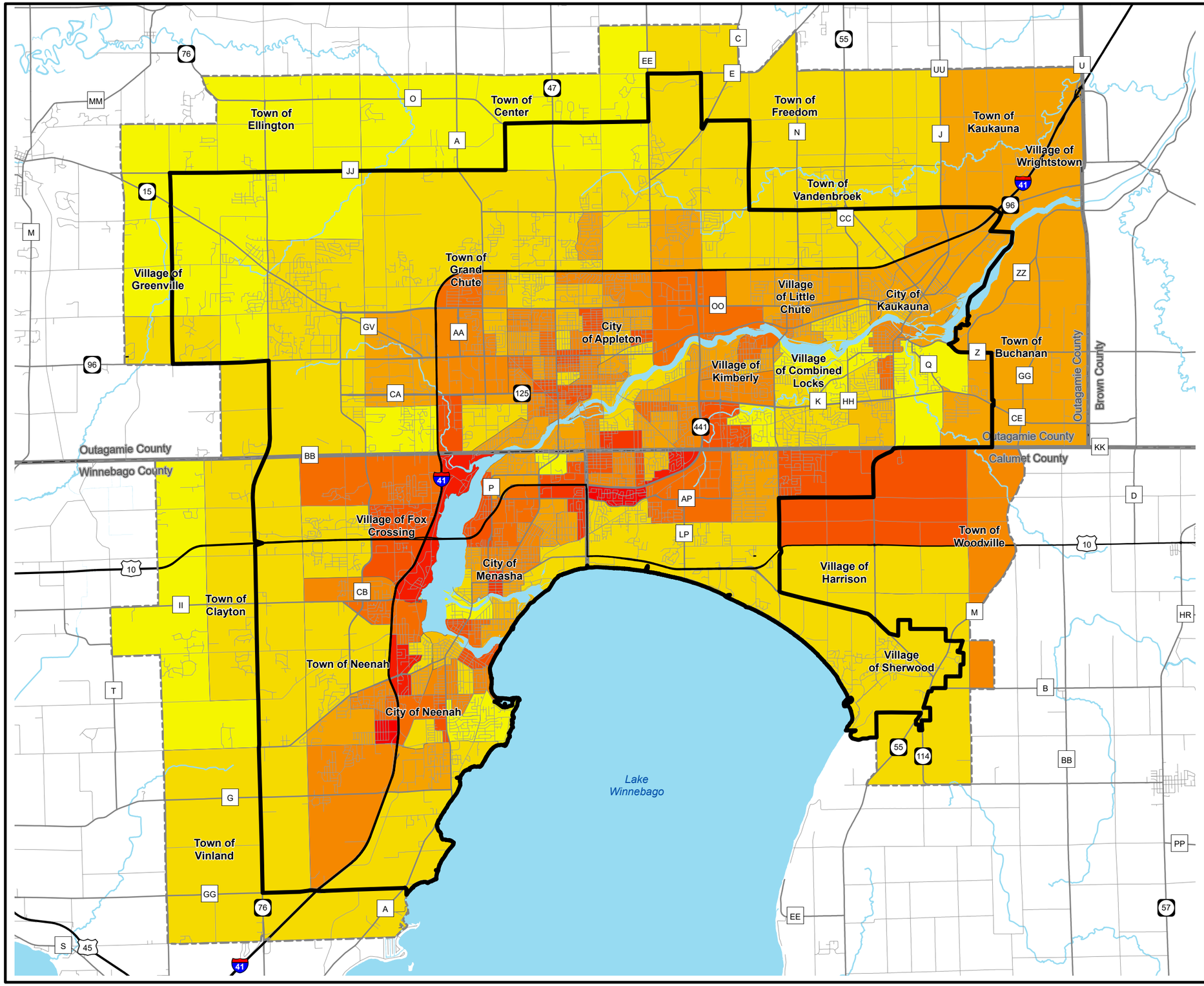
Map 2-16
Appleton (Fox Cities) Transportation Management Area (TMA) Connectivity Index



Connectivity Index
- 1.150001 - 1.33
- 1.330001 - 1.48
- 1.480001 - 1.58
- 1.580001 - 1.71
- 1.710001 - 1.84
- 1.840001 - 2.00
- 2.000001 - 2.23
- 2.230001 - 2.47
- 2.470001 - 2.89
- 2.890001 - 4.00
- Adjusted Urbanized Area
- Transportation Management Area
- County Boundary

Source:
Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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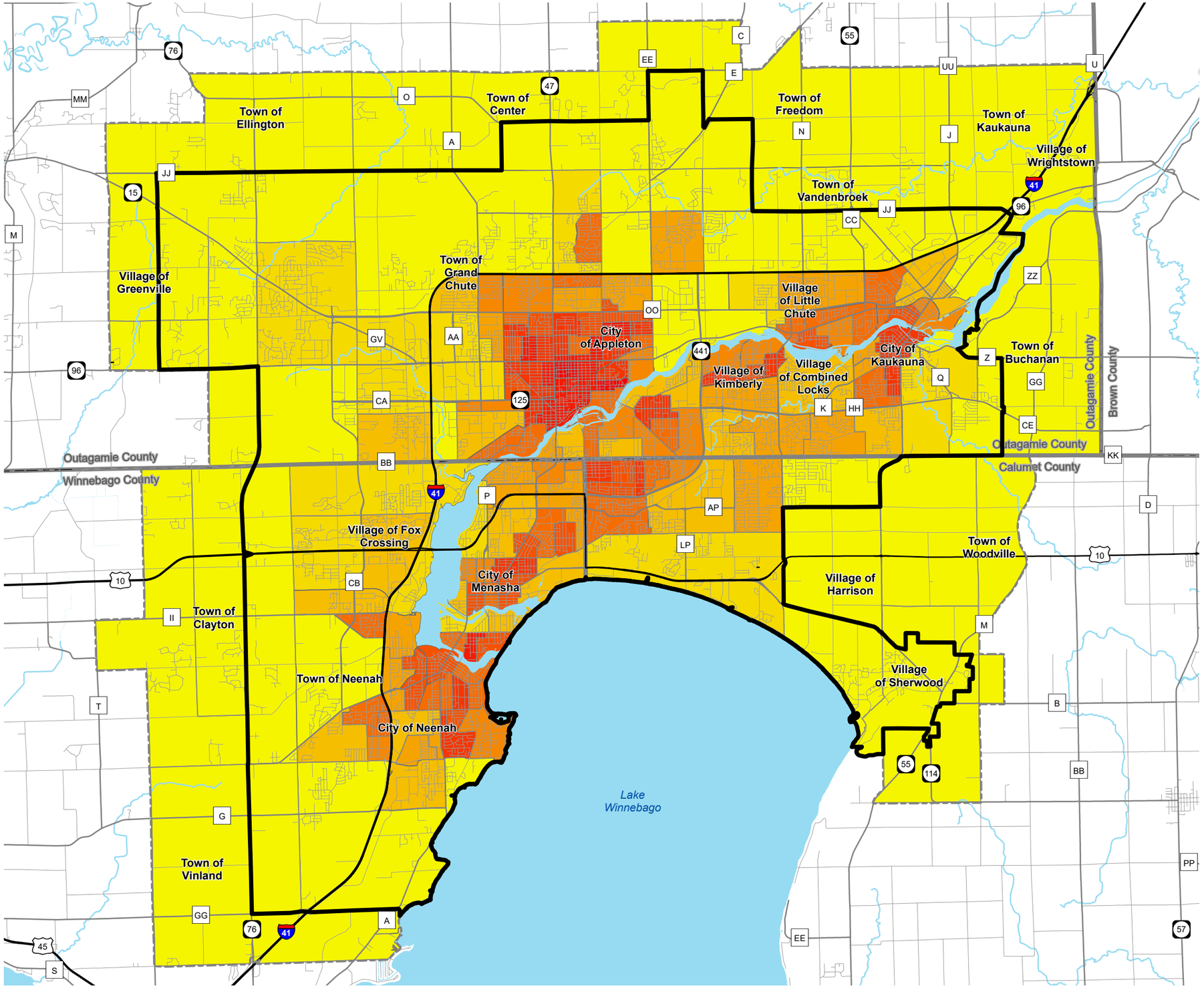
Map 2-17
Appleton (Fox Cities) Transportation Management Area (TMA) Accessibility Analysis



Intersections Per Acre

- 0.004259 - 0.029287
- 0.029288 - 0.058376
- 0.058377 - 0.080954
- 0.080955 - 0.105717
- 0.105718 - 0.133452
- 0.133453 - 0.169391
- 0.169392 - 0.207274
- 0.207275 - 0.267013
- 0.267014 - 0.350466
- 0.350467 - 0.466994
- County Boundary
- Adjusted Urbanized Area
- Transportation Management Area

Source:
Base data provided by Regional Counties, 2021. MPO/Adjusted Urbanized Area provided by WisDOT/ECWRPC, 2010.

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PERFORMANCE MEASURES & TARGETS

CHAPTER 3: PERFORMANCE MEASURES & TARGETS

Performance measurements are a powerful set of tools for building accountability of the CMP. They also provide a means of identifying priorities by creating a roadmap to address them. More specifically, these priorities recognize, assess, and communicate the importance of congestion within the region. Performance measures allow the Appleton (Fox Cities) Transportation Management Area (TMA) to adequately gauge the system performance in order to identify congestion related problems and communicate this information to the public and effectively engage residents of the Appleton (Fox Cities) TMA.

This chapter provides a summary of current conditions within the Appleton (Fox Cities) TMA by measuring congestion trends, travel time reliability and alternative facility use. Performance measures use statistical evidence to determine current congestion conditions and assist the TMA advance their identified vision, goals and objectives within the larger Congestion Management Plan. It is important to note that performance measures can adapt or change over time to better reflect the needs of the Appleton (Fox Cities) TMA.

According to Federal regulation, the CMP must include *"appropriate performance measures to assess the extent of congestion and support the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods. Since levels of acceptable system performance may vary among local communities, performance measures should be tailored to the specific needs of the area and established cooperatively by the State(s), affected MPO(s), and local officials in consultation with the operators of major modes of transportation in the coverage area."*[1] Performance measures should be created for assessing and monitoring both local level (individual projects) and regional (system wide) transportation networks.

PERFORMANCE MEASURES

State Performance Measures

The Wisconsin Department of Transportation (WisDOT) created a performance improvement program centered on the five core goals of: Mobility, Accountability, Preservation, Safety and Service (MAPSS). The MAPSS Performance Improvement Program guides the DOT in achieving their mission "to provide leadership in the development and operation of a safe and efficient transportation system." Establishing goals and measuring results is essential to running a successful and efficient organization as well as meeting public expectations. WisDOT publishes a quarterly report of progress published in February, May, August, and November. The performance measures used help the DOT assess the consistency of the MAPSS Program with their organization's goals, objectives, and vision. A scorecard was developed to provide a snapshot of the state of Wisconsin's transportation system.

[1] US Department of Transportation Federal Highway Administration Congestion Management Process: A Guidebook (23 CFR 450.320 (c) 2) (July 2013)

WisDOT's performance measures and targets were consulted in the development of the CMP plan for the Appleton (Fox Cities) TMA.

Appleton (Fox Cities) TMA Performance Measures & Targets

The Appleton (Fox Cities) TMA performance measures and targets were developed to give readers an efficient way to determine the TMA's status toward achieving its vision, goals and objectives. Each performance measure is followed by an indicator whether or not that performance measure variable is above, below, holding/static, or unavailable, according to the most recent data, compared to the performance target.

DATA ANALYSIS SHARING

The performance measures and targets discussed within this chapter will be made available to the general public primarily through the Appleton (Fox Cities) TMA and Oshkosh MPO website (www.ecwrpc.org) and on the ECWRPC Transportation Hub (https://transportation-ecwrpc.opendata.arcgis.com/). These performance measures and targets will be displayed as a stand-alone item and incorporated directly into the text of the CMP document. ECWRPC staff will update the performance measures according to the specified update cycles (please refer to the above tables for specific time periods).

In addition, the Congestion Management Process will be incorporated in the development of future versions of the Long-range Transportation Plan and Transportation Improvement Plan for the Appleton (Fox Cities) Transportation Management Area by calling upon the performance measures explicitly described with this chapter and concepts presented throughout the document. Specifically, the performance measures and targets within the CMP will assist ECWRPC staff in the development of appropriate actions and recommendations/policies for the Appleton (Fox Cities) Transportation Management Area on behalf of the Long-Range Transportation Plan and Transportation Improvement Plan. The Congestion Management Process will also be utilized by the Appleton (Fox Cities) Transportation Management Area Technical Policy Advisory Committees and Policy Board for decision-making purposes. More broadly, the data gathered will be useful to other area municipalities when making transportation-related decisions.

Table 3-1: Federal Transportation Performance Measure

Group	Federal Performance Measures	Agency	Target	Condition	Goal Met
Safety	Number of Fatalities / Traffic Fatalities	Fed/State	< 584.7	566	Y
Safety	Fatalities per 100 million VMT	Fed	< 0.919 per 100 million VMT	0.85	Y
Safety	Number of Serious Injuries / Serious Traffic Injuries	Fed	< 2,995.5	2938	N
Safety	Rate of Serious Injuries (per 100 million VMT)	Fed/State	< 4.712 per 100 million VMT	4.43	Y
Safety	Number of Non-motorized fatalities and # of Non-motorized serious injuries combined	Fed	< 358.5	368	N
Infrastructure	Interstate Pavement in Good Condition	Fed	> 45% (4 year target)	68%	Y
Infrastructure	Interstate Pavement in Poor Condition	Fed	< 5% (4 year target)	3% (US Interstates)	Y
Infrastructure	Non-Interstate NHS Pavement in Good Condition	Fed	≥ 20% (4 year target)	37%	Y
Infrastructure	Non-Interstate NHS Pavement in Poor Condition	Fed	≤ 12% (4 year target)	3%	Y
Infrastructure	National Highway System (NHS) Bridges in Good Condition	Fed	≥ 50% (4 year target)	53%	Y
Infrastructure	National Highway System (NHS) Bridges in Poor Condition	Fed	≤ 3% (4 year target)	3%	Holding
System Performance	Interstate Highway Reliable Person - Miles Traveled	Fed	90.0% (4 year target)	95%	Y
System Performance	Non-Interstate NHS Reliable Person - Miles Traveled	Fed	86.0% (4 year target)	91%	Y
System Performance	Freight Reliablility Measure: Truck Travel Time Reliability (TTR) Index	Fed	1.60 (4 year target)	1.25	N
System Performance	% Interstate System mileage uncongested - Average truck speed > 50 mph (uncongested)	Fed	Increase over previous, National Average 53%	66%	Y

Sources: https://wisconsindot.gov/Documents/about-wisdot/performance/mapss/scorecard.pdf , https://tripnet.org/wp-content/uploads/2021/06/TRIP_Interstate_Report_Appendix_June_2021.pdf , https://www.fhwa.dot.gov/tpm/reporting/state/reliability.cfm?state=Wisconsin

Table 3-2: State (WisDOT) Transportation Performance Measures

Group	State of Wisconsin Performance Measure	Agency	Target	Current Condition	Goal Met
MAPSS - Safety	Traffic Crashes	State	Annual target is 129,207	114,697 (2020) 57,761 (through June '21)	N
MAPSS - Safety	Safety Belt Use - % vehicle occupants wearing a seat belt	State	92%	89.20%	N
MAPSS - Mobility	Delay (Hours of Vehicle Delay)	State	Reduce delays from previous year	7,676,333 hrs (trending downward)	Y
MAPSS - Mobility	Reliability (Planning Time Index)	State	Improve on reliability from previous year	1.16 PTI (Planning Trip Index)	Y
MAPSS - Mobility	Transit Availability - Increase % of Wisconsites Served by Transit	State	Current Goal: 55%	53 % of Wisconsites Served by Transit	Holding
MAPSS - Mobility	Bicycling Conditions on Rural Highways - % rural highway miles with favorable bicycling conditions	State	Goal: 100% (where not prohibited)	State hwys: 57.9%; County roads: 92.1%	Holding
MAPSS - Mobility	Incident Response - % incidents cleared within a specific timeframe	State	Interm: 90%, Major 80%	Intermed incidents: 89%; Major incidents 87.4%	Y
MAPSS - Mobility	Winter Response - % bare-wet within a specific time after storm	State	Current Goal: 70%	74% for 24-hr roads	N
MAPSS - Accountability	Transportation Facilities Economic Assistance and Development Grants (TEA Grants)	State	Capital investment dollars achieved per grant dollar awarded (Current Goal: $50)	$74.47	Holding
MAPSS - Accountability	Timely Scheduling of Contracts - % highway prog funding scheduled during the 1ST 6 mnth of fiscal year	State	54%	42.50%	N
MAPSS - Accountability	On-Time Performance - % highway projects completed on-time	State	100%	90%	N
MAPSS - Accountability	On-Budget Performance - Final highway project cost as % of original contract amount	State	103%	102%	Y
MAPSS - Accountability	Surplus Property Management - $ value of surplus land sold	State	$2.75 mil	$3.01 mil	Y
MAPSS - Preservation	Program Effectiveness - % Scheduled improvements compared to modeled roadway needs	State	Location: 80; Scope: 65; Time: 65	Location: 90; Scope: 88; Time: 67	Holding
MAPSS - Preservation	State Highway Pavement Condition (Backbone) - % state highway pavement rated fair or above	State	90%	99%	Holding
MAPSS - Preservation	State Highway Pavement Condition (Non-Backbone) - % state highway pavement rated fair or above	State	80%	80%	Holding
MAPSS - Preservation	State Bridge Condition - % state bridges rated fair or above	State	95%	97.70%	Y
MAPSS - Preservation	State-Owned Rail Line Condition - % state-owned rail line meeting FRA Class 2 Standard (>10 mph)	State	95%	74.70%	Holding
MAPSS - Preservation	Airport Pavement Condition - % core airport pavement area rated fair or above for each functional type	State	RWY 90, TXWY 85, Apron 80	RWY 89.0; TXWY 84.0; Apron 77.0	N
MAPSS - Preservation	State Highway Roadside Maintenance Grade point average for the maintenance condition of state highways	State	3	2.55	N
MAPSS - Preservation	Material Recycling- % newly produced materials replaced with recycled materials	State	10%	13.33%	N
MAPSS - Service	DMV Wait Times - % DMV service center customers served within 20 minutes	State	80%	95%	N
MAPSS - Service	DMV Electronic Services - Number of self-serve electronic transactions	State	225,661	705,757	Y
MAPSS - Service	DMV Driver License - Available tests % estimated demand Road Test Scheduling	State	90%	100%	Holding
MAPSS - Service	DMV Phone Service- % DMV phone calls answered within three minutes	State	80%	46.90%	N
MAPSS - Service	DMV Email Service- % DMV emails answered within 24 hours	State	80%	70.10%	N

Source: WisDOT MAPSS https://wisconsindot.gov/Documents/about-wisdot/performance/mapss/scorecard.pdf

Table 3-3: ECWRPC Regional Performance Measures

Group	Performance Measure	Agency	Target	Current Condition	Goal Met
CMP - Infrastructure	PASER Paved (Structurally Deficient, PASER 1-4)	ECWRPC	Decrease from previous year (18.7% roads deficient)	2019 : 18.3% roads deficient	Y
CMP - Infrastructure	Bridge Sufficiency Rating (SR)	ECWRPC	Decrease percentage of bridges below 80+ SR, 28% (2012)	5.7% below 80+ SR	Y
CMP - Mode Share	% of Workers Who Commute Alone to Work	ECWRPC	Decrease from previous data Calumet 87%, Outgamie 81%, Winnebago 82% (2018)	Calumet 86%, Outagamie 80%, Winnebago 82% (2019)	Y
CMP - Transit	Bus - Average Annual Unlinked Passenger Trips per Vehicle Revenue Mile	ECWRPC	Increase Ridership; Decrease From Previous Year 0.93 (2019)	0.6 (2020*)	Y
CMP - Transit	Demand Response - Average Annual Unlinked Passenger Trips per Vehicle Revenue Mile	ECWRPC	Increase Efficiency; Increase From Previous Year 0.17 (2019)	.13 (2020*)	Y
CMP - Transit	Whole System On-time Performance - Fixed Route	ECWRPC	Increase Over Previous Year 90% (2019)	95% (2020)	Y
CMP - Rail	Highway Railroad Crossing crashes	ECWRPC	Decrease from previous data Calumet 3, Outgamie 2, Winnebago 3 (2019)	Calumet 0, Outgamie 1, Winnebago 2 (2020)	Y
CMP - Rail	Highway Railroad Crossing fatalities	ECWRPC	Decrease from previous data Calumet 0, Outagamie 0, Winnebago 0 (2019)	Calumet 0, Outgamie 0, Winnebago 1 (2020)	Y
CMP - Air Quality	Particulate Matter (PM) 2.5 micrometer diameter or less	ECWRPC	Decrease averages from previous data, 8.0 micrograms/cubic meter of air (2019) National benchmark 8.0	Calumet 8.4, Outgamie 6.7, Winnebago 8.5, average 7.2 (2020)	Y
CMP - Air Quality	Ground Ozone (GO) - parts per billion	ECWRPC	Decrease from previous data, 0.037 (2019), Remain below EPA standard 0.075	0.033 appb (2020)	Y
CMP - Safety	Annual vehicle crashes Appleton Fox Cities TMA	ECWRPC	Decrease from previous data, 5,841 (2019)	4,109 (2020)	Y
CMP - Safety	Annual bicycle crashes Appleton Fox Cities TMA	ECWRPC	Decrease from previous data, 51 (2019)	49 (2020)	Y
CMP - Safety	Annual pedestrian crashes Appleton Fox Cities TMA	ECWRPC	Decrease from previous data, 47 (2019)	25 (2020)	Y
CMP - Safety	Annual crashes with fatalities Appleton Fox Cities TMA	ECWRPC	Decrease from previous data, 9 (2019)	8 (2020)	Y
CMP - Northeast WI TDM	Congestion Status by Miles Appleton Fox Cities TMA	ECWRPC	Accurately record potentially congested road miles, 219.3 (2010 model)	580.2 (2045 model)	Y
CMP - Northeast WI TDM	Congestion Status by Miles Appleton Fox Cities TMA	ECWRPC	Accurately record deficient/severely deficient road miles, 20.9 (2010 model)	86.4 (2045 model)	Y

Sources: WISLR https://wisconsindot.gov/Pages/doing-bus/local-gov/wislr/default.aspx, WisDOT Bureau of Structures https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/strct/inv-forms.aspx, American Community Survey (ACS) https://www.census.gov/programs-surveys/acs, National Transit Database https://www.transit.dot.gov/ntd/transit-agency-profiles, Federal Railroad Administration https://railroads.dot.gov/safety-data, WisDNR https://dnr.wisconsin.gov/topic/AirQuality/Particles.html, ECWRPC Transportation Hub https://transportation-ecwrpc.opendata.arcgis.com/ ,Northeast Wisconsin Travel Demand Model

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CONGESTION MANAGEMENT STRATEGIES

CHAPTER 4: CONGESTION MANAGEMENT STRATEGIES

Congestion management strategies are designed to reduce vehicular traffic congestion through the promotion of alternative modes of transportation. Strategies can range from education and creation of policy to the design and development of physical infrastructure improvements. Federal regulation states that the CMP must include: *"Identification and evaluation of the anticipated performance and expected benefits of appropriate congestion management strategies that will contribute to the more effective use and improved safety of existing and future transportation systems based on the established performance measures. The following categories of strategies, or combinations of strategies, are some examples of what should be appropriately considered for each [region]:*

(i) Demand management measures, including growth management and congestion pricing;

(ii) Traffic operational improvements;

(iii) Public transportation improvements;

(iv) ITS [Intelligent Transportation Systems] technologies as related to the regional ITS architecture; and

(v) Where necessary, additional system capacity."[1]

The primary objective is to reduce overall congestion to create an efficient, livable, safe, sustainable, and accessible transportation system that increases economic vitality and quality of life for residents. Strategies can range from low costs for policy and education reforms to high costs for facility expansion and physical changes to the transportation system. The following paragraphs explain several congestion management strategies denoted by facility type. Each strategy is defined and developed to show how it will reduce congestion and improve the overall transportation system.

STREET NETWORK STRATEGIES

The street network consists of highways, roads and streets and is classified by the services it provides. Congestion on the street network is not expected to decrease in the next 20 years, and it is critical to promote transportation diversification. The following strategies incorporate a comprehensive approach to improve the overall efficiency of a street network. These strategies fulfill various goals of the CMP, outlined in Chapter 1. The symbols next to each strategy display which goal that strategy furthers.

[1] US Department of Transportation Federal Highway Administration Congestion Management Process: A Guidebook (23 CFR 450.320 (c) 4) (July 2013)

Safety Mobility Preservation Active Living Service Accountability

Encouragement and Education

Education of Bicycle and Pedestrian Opportunities: To work with public and private entities to educate the general public on the proper usage of bicycle and pedestrian facilities. Promotion of the bicycle facilities within the Appleton (Fox Cities) TMA to encourage residents to utilize bicycle and pedestrian facilities as a mode of transportation to and from work and for short trips (i.e. the grocery store).

Safe Routes to School Programs: Engages and empowers schools and communities to foster healthy lifestyles through environmental changes and safe walking and bicycling. In 2009, American families drove 30 billion miles and made 6.5 billion vehicle trips to take their children to and from schools, representing 10-14 percent of traffic on the road during the morning commute.[2] Increased traffic results in increased exposure to traffic pollution for children. Children exposed to traffic pollution are more likely to have asthma, permanent lung deficits, and a higher risk of heart and lung problems as adults.[3] In addition, the reduced vehicle travel and could save $2.19 million in environment-related costs savings over the next 10 years, offsetting the cost of implementing a SRTS program.[4]

Walking School Bus Program: The walking school bus program is run through the SRTS Program, and is a group of children who walk to school with adult supervision. The walking school bus concept was developed to enable children to walk to school safely in a group, even when traffic and crime is a concern.[5]

[2] http://www.saferoutespartnership.org/resourcecenter/quick-facts (July 2013)
[3] http://www.saferoutespartnership.org/sites/default/files/pdf/What-is-SRST-factsheet-REVISED-06-14-11-w-footnotes.pdf
[4] https://choicesproject.org/wp-content/uploads/2021/05/CHOICES_LCP_WI_SRTS_IssueBrief_2021_05_05.pdf
[5] https://www.pednet.org/project/walking-school-bus/ (July 2013)

Parking Management

Downtown Parking Program – To create a program that utilizes pricing to influence demand for parking or to discourage parking. For example, the City of Appleton established a "Park and Ride" program for Octoberfest. The City of Appleton sets up temporary park and ride locations outside of the Octoberfest grounds where participants can park their vehicles, ride a bus, and have direct transportation to the festivities.

Park and Ride Lots – There are several park and ride lots in and surrounding the Appleton (Fox Cities) TMA. Lots can be found at https://wisconsindot.gov/Pages/travel/road/parknride/default.aspx. Parking is free and many have overnight parking in designated spaces, secure bike racks, shelters, and lighting. Many of these park and ride lots are also served by public transit.

On-Street Parking Restrictions – There are several on-street parking restrictions that can assist with traffic congestion including alternate side of the street parking (odd-even), time restrictions on parking duration, ride share parking, peak period restriction (indicates a time period and location where parking is not allowed, typically during the commute hours, such as 7 a.m. - 9 a.m. and 4 p.m. - 6 p.m.) and short-term parking/time restrictions. Routine enforcement can also improve traffic flow.

Location-Specific Parking Ordinances – Parking can be limited at specific locations that have other amenities that may reduce the need for on-site parking such as transit, and pedestrian oriented development.

Capacity Improvements

Improvements include adding more lanes, eliminating at-grade intersections, and constructing new roadways. Expansion should only be considered if there are no other viable options.

Maximizing total width of roadways. Take advantage of excess width of roadways with additional lanes (lanes reserved for carpool lanes, mass transit, and bicycle lanes).

Access Management

- Minimize driveways and other entry points.
- Implement frontage roads; use frontage roads to direct local traffic to major intersections.
- Build shared driveways where feasible and practical.
- Left Turn Restrictions; Curb Cut and Driveway Restrictions - Turning vehicles can impede traffic flow.
- Convert traditional intersections to roundabouts where feasible and practical.
- Reduce the number of conflict points between motorized and non-motorized transit and pedestrians.

Preservation

- **PASER** – Help local municipality collect road data and rate their roads using PASER; Provide asset management guidance when needed.
- **IRR** – Compile and inform State officials of their IRR conditions.

TRAVEL DEMAND MODEL STRATEGIES

Travel Demand Models (TDM) are frequently updated to best represent "on-the-ground" conditions within the computer models. Several data variables/sources are used to accurately calibrate the TDM. The list below represents typical data used in the model calibration process:

Alternative Work Hours – Incorporate alternative work hour trips into the model to account for workers that arrive and leave work outside of the traditional commute period.

Telecommuting - Incorporate workers that telecommute to work. This involves employees working at home or at a regional telecommuting center.

Ridesharing - This is arranged or encouraged through employers, the MPO and WisDOT. Area employers participating in the rideshare program include: **Calumet County:** None; **Outagamie County:** Appleton Paper, Fox Valley Technical School, Pierce Manufacturing, Plexus Corporation, Thrivent Financial for Lutherans, Voith Paper Inc., West Business Services; **Winnebago County:** Eaton Corporation, Kimberly Clark, Oshkosh Corporation, Pierce Manufacturing, Plexus Corporation, University of Wisconsin-Fox Valley, and University of Wisconsin-Oshkosh.[6]

Model Calibration – Incorporate "actual timed routes" to calibrate the model.

Bicycle and Pedestrian Facilities – Incorporate a bicycle and pedestrian component to the travel demand model.

RAILROAD & BRIDGE STRATEGIES

Railroad crossings and bridges provide the necessary access points to connect the transportation network over such impediments such as railroad tracks, waterways, roadways, and other manmade and natural features. Accidents, construction or maintenance at either a railroad or bridge crossing can cause substantial temporary delays in traffic. The following are examples of recommendations of how to mitigate congestion at these access points:

[6] http://www.dot.wisconsin.gov/travel/commuter/contacts.htm (July 2013)

Railroads

Rail crossing closings – Work with Canadian National and other railroad companies and local municipalities to identify rail crossings for closure.

Emergency Management – Work with local municipalities and the railroad companies to ensure there are adequate options in place for rerouting traffic if an accident occurs at a railroad crossing.

Bridges

Sufficiency Ratings – Work with State and local municipalities to confirm bridges are being inspected on a regular basis. Those bridges that receive a "rehabilitation" or a "replace" rating are documented and appropriately addressed going forward. Work with Highway Commissioners to prioritize high-risk bridges.

Emergency Management – Work with local municipalities to guarantee there are adequate options for rerouting traffic if an accident occurs at a bridge.

MULTI-MODAL TRANSPORTATION STRATEGIES

Transportation Alternative Strategies provide the public with viable options to vehicular transportation. These strategies not only provide transportation alternatives to those individuals who do not own a vehicle, but they also provide individuals with opportunities to incorporate regular exercise through bicycling and walking. With the rapid increase in obesity rates across the nation, transportation alternatives are one way to slow this epidemic. Listed below are examples of effective transportation alternative programs:

Bicycle and Pedestrian Safety Education Programs

Partner with local organizations, like the Wisconsin Bike Fed, to offer Smart Cycling and other bicycle and pedestrian safety trainings to community members.

Work with the Safe Routes to School Program as outlined above in this chapter.

Bicycle and Pedestrian Facility Improvements

Improve the safety of bicyclists and pedestrians by working with local communities to implement facility enhancements discussed in the *Safe Transportation for Every Pedestrian (STEP) Action Plan* developed by ECWRPC, in ECWRPC's *Appleton (Fox Cities) TMA and Oshkosh MPO Bicycle and Pedestrian Plan*, and in other complementary documents and plans. Enhancements could include features such as Rapid flashing beacons, bump-outs/curb extensions, and marked crosswalks.

FREIGHT STRATEGIES

The Appleton (Fox Cities) TMA and surrounding region depend on freight transportation for economic development. It is important to limit traffic congestion as much as possible to allow for the efficient movement of goods throughout the region. Freight movement is primarily conducted through truck or by rail. Goals for freight strategies include:

Work with the freight community to identify freight related congestion issues to better meet their needs.

Coordinate freight efforts with the Rail and Bridge Strategies previously mentioned in this chapter.

Future/Long-term freight strategies:

- Identify congested highway interchanges and work with transportation officials to design ramps to accommodate increased freight volumes and identify safety concerns for merging truck traffic onto and off of these interchanges.
- Strategies to mitigate interchange safety/merging issues: increase networking opportunities with the freight community/members to understand their concerns, work with the freight community to pinpoint problem interchanges, and increase regular dialogue between the freight community, transportation officials and WisDOT to improve upon the existing transportation system.

TRANSIT STRATEGIES

Public transit not only reduces vehicular traffic, but provides an important service in the broader transportation system. Transit impacts the lives of every resident in varying degrees, especially the elderly, youth, children at risk, low-income individuals, and residents without access to a reliable vehicle. Transit ridership has steadily increased in recent decades and has become an important instrument in reducing overall congestion. Transit Strategies include implementation of the following:

Service

- Increase bus route coverage and frequencies to meet the demands of riders.
- Implement transit stops at area Park-and-Ride lots to reduce auto traffic in the city centers.
- Identify alternative funding strategies to benefit both transit users and transit agencies
- Make transit more convenient and attractive to increase ridership.

Enhance transit stops and ensure transit stops are connected to the bicycle and pedestrian network.

Education

- Encourage/increase use of public transit services.
- Integrate educational/promotional campaigns to inform residents of the benefits (economic, environmental, etc.) of utilizing transit services.

NON-RECURRING INCIDENT STRATEGIES

Non-recurring incidents in regards to congestion management refer to one time or occasional events which have the potential to cause traffic delays. Non-recurring incidents include such delays that are experienced by seasonal weather patterns, civic/sporting/recreational events, or construction and accident traffic delays. These types of incidents are difficult to mitigate because of their sporadic occurrences. An effective way to counter non-recurring incidents is to create a well-balanced transportation system that can adapt to changing situations. Non-recurring incident strategies include:

Intersection Improvements

- Build over/underpasses to increase user safety and decrease congestion conflicts.
- Add turn lanes with adequate space.
- Install safe, highly visible crosswalks.

Geometric Design Improvements

Widen street widths (where applicable) or incorporate a “road diet” to accommodate for bicyclists/pedestrians.

Add turn lanes at intersections.

Improve transportation system users’ sight lines.

Install auxiliary lanes to improve merging and diverging of traffic at busy locations.

INTELLIGENT TRANSPORTATION SYSTEM (ITS) STRATEGIES

An Intelligent Transportation System (ITS) is designed to collect traffic data and communicate traffic conditions to drivers in real-time so they can make informed transportation decisions. The technology is designed to create a more effective and efficient transportation system. Recommendations of the ITS include:

Traffic Signal Coordination and Timing – This strategy improves traffic flow and reduces emissions by minimizing stops on arterial streets.

Freeway Incident Detection and Management Systems – This approach is an effective way to alleviate non-recurring congestion.

Highway Information Systems - These systems provide travelers with real-time information that can be used to make trip and route choice decisions.

Advanced Traveler Information Systems – This method provides an extensive amount of data to travelers, such as real-time speed estimates on the web or over wireless devices, and transit vehicle schedule progress.

POLICIES

Additional policy-level strategies that organizations and agencies within the Appleton (Fox Cities) TMA could consider include:

- **Complete Streets Policy** – Work with municipalities in the development of complete streets policies at the local level to ensure transportation alternatives are available to reduce the amount of vehicle trips traveled. This policy considers all potential transit users such as pedestrians, bicyclists, mass transit, and automobiles into the (re)design of streets.

- **Alternative Work Schedule (AWS)** – An agency may implement an AWS instead of a traditional fixed work schedules (e.g., 8 hours per day, 40 hours per week). Within rules established by the agency, AWS can enable employees to work schedules that help the employee balance work, family, or other personal responsibilities. There are two categories of AWS: flexible work schedules (FWS) and compressed work schedules (CWS). FWS consist of workdays, core hours and flexible hours. Core hours are the designated period of the day when all employees must be at work. Flexible hours are the part of the workday when employees may (within limits or "bands") choose their time of arrival and departure. Within limits set by their agencies, FWS can enable employees to select and alter their work schedules to better fit personal needs and help balance work, personal, and family responsibilities. Types of FWS include flexitour, gliding, variable day, variable week, and maxiflex schedules.[7]

- **Compressed Work Week** – Employees work full-time in nonstandard days/hours (four 10-hour days per week or 80 hours in a two-week period worked over nine days instead of ten).

- **Work from home or telecommute –** Work from home or telecommute options offer employees the opportunity to work outside of the office. During the Covid-19 pandemic, many employers temporarily closed their offices and asked employees work from home to protect the health of the employees. At the time of this document's writing, some employers were continuing to allow employees work from home. The long-term trends and impacts are still unknown; however, many employers have discovered that it is feasible to allow a work-from-home model.

[7] http://www.opm.gov/policy-data-oversight/pay-leave/work-schedules/fact-sheets/alternative-flexible-work-schedules/ (5/29/2013)

IMPLEMENTATION & EVALUATION PROCESS

CHAPTER 5: IMPLEMENTATION & EVALUATION PROCESS

Implementation of the plan is often the most difficult part of the planning process. It is important to define an implementation process to ensure the plan's vision, goals and objectives are carried through to completion. A Congestion Management Plan (CMP) is constructed around quality data and effective data analysis and it can quickly become outdated without regular updates. The data sourcing and maintenance table within this chapter lists all data collected as part of the planning process, provides a description of the data, its source and expected update cycles.

Federal regulations require that the CMP incorporate an: *"Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy (or combination of strategies) proposed for implementation."* [1] CMP projects can typically be categorized into three tiers of implementation. These three tiers (from largest to smallest scale) generally include system/regional, corridor, and project level scales. Having a scaled work process in place should ultimately make the entire CMP implementation process more manageable, flexible and robust.[2] The sections below outline the implementation and update processes for the Appleton (Fox Cities) CMP.

IMPLEMENTATION & EVALUATION

The current version of the Congestion Management Plan (CMP) for the Appleton (Fox Cities) Transportation Management Area (TMA) will be a stand-alone document which will be integrated into the larger array of required transportation documents. For example, a plan guides the development of the Transportation Improvement Program (TIP). A Transportation Improvement Plan is a staged multi-year program that tracks projects that are awarded state or federal funds and upcoming projects that may be eligible for state and federal funds on capital and operating projects within the Appleton (Fox Cities) TMA. The Transportation Improvement Plan will implement both short- and long-range transportation projects which, when applicable, will use the objectives and goals established in the Congestion Management Plan to guide how candidate projects are chosen. Additionally, Transportation Improvement Plans are developed within a five-year timeframe, with annual revision periods. In turn, Transportation Improvement Plans are subsequently integrated into the Long-Range Transportation Plans (LRTP) of a region, which have a twenty plus year planning horizon.

[1] US Department of Transportation Federal Highway Administration Congestion Management Process: A Guidebook (23 CFR 450.320 (c) 5) (August 2013)
[2] US Department of Transportation Federal Highway Administration Congestion Management Process: A Guidebook (August 2013)

The CMP will be utilized in short- and long-range transportation project selection through the TIP and LRTP. The TIP evaluates short range projects based on criteria that include:

- plan consistency;
- preservation of existing systems;
- capacity needs;
- safety;
- multimodality; and
- Congestion Management Plan.

Projects are scored on a set number of points for each category, resulting in a project ranking and recommendation list for the Transportation Improvement Plan. The CMP evaluation of a project is in line with the goals and congestion reduction strategies. The LRTP will incorporate the CMP goals and congestion reduction strategies into the plan's overall vision, goals and objects. Any long-range projects in the LRTP must align with the plan's vision, goals and objectives, and will ultimately align with the CMP goals and congestion reduction strategies.

The following recommendations and strategies have been integrated into and align with the Long-Range Transportation Plan and Transportation Improvement Program.

Recommendations

- Create an inventory of transportation related projects and allocated funds within the TMA. The inventory will help planners and officials see what projects are planned and more importantly identify where deficiencies may exist to mitigate congestion.

- Develop a before and after data collection analysis of all congestion mitigation projects to evaluate the effectiveness of the goals and objectives set forth by the CMP; designate appropriate staff, time, and budget to coordinate these efforts.

- Establish a reasonable schedule of data sources and updating procedures which will be used in the CMP analysis (Please refer to the Data and Maintenance Section of this chapter).

- Institute measures to better coordinate efforts to deal with non-reoccurring traffic incidents (i.e. traffic accidents, large sporting events/venues, civic events, etc.); it is important to coordinate with police, fire, rescue, event coordinators, and other groups to communicate expectations and goals of parking enforcement and potential towing of vehicles.

- Update the CMP before or in conjunction with the rolling TIP updates to more effectively align the goals and objectives of the plans between both documents.

- Apply the CMP as a tool that facilitates coordination of decision-makers and policies on a regional level rather than only on a project-by-project basis.

- Utilize examples of regional transportation projects/case studies to directly compare before and after conditions as well as introduce the capabilities to measure the benefits/costs. Benefits to the case study approach include:

    - Development of a simple research process because case studies are created and monitored locally.

    - Reduction of time and resources spent as data and analysis of projects can be completed by staff rather than outsourcing to third parties.

    - Creation of tangible projects that can demonstrate positive CMP strategies in action.

    - Integration of the CMP with the larger process of the TIP and the Long-Range Transportation plans.

Evaluation of Implemented Strategies

ECWRPC will continue to monitor the effectiveness of the CMP through a State of the System report that will be published every two years. The first publication of the State of the System is anticipated to be available in 2022. As new federal transportation bills are adopted, the CMP will be revised to comply with any new federal legislation.

An annual action plan for the LRTP, the Appleton (Fox Cities) TMA and Oshkosh MPO Bicycle and Pedestrian Plan, and the CMP will be coordinated in conjunction with the annual TIP update cycle.

DATA SOURCING AND MAINTENANCE

The Data Sourcing and Maintenance table below outlines the procedures for the data collection of performance measures used for congestion management. Information on performance measures can be found in Chapter 3.

Motorized Transportation Network Data			
Data	**Description**	**Source**	**Update Cycle**
US Highways ATR Counts	Automatic Traffic Recorders (ATR) are permanent traffic counters that are used to collect traffic volume and vehicle classification data.	WisDOT	Every Year
WisDOT Rideshare Program	Not Active for several years. Service provided locally by Make the Ride Happen and Winnebago Catch a Ride	WisDOT	Every Year
Railroad and Bridge Analysis	The Appleton (Fox Cities) TMA has several railroad and bridge crossings which provide necessary connections over railroad tracks, rivers and other impediments facilitating the movement of people and goods in the region. These crossings also present opportunities for congestion. Railroad and bridge crossings are natural "bottleneck" areas.	Canadian National/Federal Rail Administration/WisDOT	Every Year
Transit Unlinked Passenger Trips per Vehicle Revenue Mile	Unlinked Passenger Trips per Vehicle Revenue Mile	National Transit Database/Federal Transit Administration	Every Year
Crashes	The purpose of a crash analysis is to identify those intersections with the highest total number of crashes and to identify crash reduction strategies.	WisDOT: WisTransPortal Project	Every Year
% of Workers Who Commute Alone to Work	A ratio of workers who commute alone to total workers of a Calumet, Outagamie, and Winnebago counties	County Health Rankings and Roadmaps	Every Year
Street Network	The complete street network that includes arterials, collectors and local streets.	WisDOT/Local Municipalities	Every 5 Years
Appleton (Fox Cities) TMA Congestion Status by Miles	Travel Demand Models (TDM) are capable of estimating link-based operational deficiencies for each analysis year. Congestion status is determined by utilizing Level of Service (LOS) thresholds and comparing them to the roadway's current traffic counts and forecasted traffic volumes.	ECWRPC	Every 5 Years
TDM Results	TDMs are used to evaluate transportation system and predict future traffic demands. The 2013 Northeast Regional TDM covers all of Outagamie, Winnebago, Calumet, Fond du Lac, Sheboygan, Manitowoc, Brown, Kewaunee, Door Counties and part of Oconto, Shawano, Dodge and Washington Counties.	ECWRPC	Every 5 Years
Total Vehicle Volumes	Total vehicle volumes are calculated by the Northeast TDM.	ECWRPC	Every 5 Years
Freight Volumes	Total vehicle volumes are calculated by the Northeast TDM.	ECWRPC	Every 5 Years
Intelligent Transportation System (ITS)	In May 2008, WisDOT released a Traffic Operations Infrastructure Plan (TOIP) that developed a methodology and tool to evaluate operational projects and integrate operations into the planning process. The TOIP focuses on major corridors throughout Wisconsin and prioritizes them based on a score that was calculated from ten criteria covering mobility, safety and environmental conditions.	WisDOT	Every 5 Years

Non-Motorized Transportation Network Data			
Data	**Description**	**Source**	**Update Cycle**
Bicycle and Pedestrian Counts	Bicycle and pedestrian counts compiled by local municipalities and ECWRPC.	Local Municipalities/ECWRPC	Ongoing
SRTS (Safe Routes to School (SRTS))	Records the number of schools participating in SRTS Program.	ECWRPC	Every Year
Walking School Bus Program	Program documents the number of routes, volunteers, students and number of miles walked by students. Number of trips redirected from driving to walking.	ECWRPC	Every Year
Bike Lanes/Bicycle Facilities	Total bike lanes and sharrows miles within the Appleton (Fox Cities) TMA.	Local Municipalities	Every Year
Trail Miles	Total trail miles within the Appleton (Fox Cities) TMA.	Local Municipalities	Every Year
Sidewalks	Total sidewalk miles within the Appleton (Fox Cities) TMA.	Local Municipalities	Every Year

Air Quality Performance Measurements & Targets			
Data	**Description**	**Source**	**Update Cycle**
Air Quality	Air quality is the state (healthiness and safety) of the air in the environment; it is the measured condition of the air relative to our needs.	DNR Air monitoring	Every Year
Particulate Matter – 2.5 micrometers; data collected at the county level	PM is made up of acids, organic chemicals, metals, and soil or dust particles. The annual average of PM2.5 micrograms per cubic meter of air is calculated for this analysis.	County Health Rankings and Roadmaps, ACS (5-year estimates)	Every Year

Additional Performance Measures & Targets			
Data	**Description**	**Source**	**Update Cycle**
Non-Recurring Incident Analysis	Weather, accidents, construction and special events can lead to changes in driver behavior, affecting traffic flow.	WisDOT	Every Year
Connectivity	Connectivity, in reference to transportation refers to the relationship between paths and opportunities or links and nodes. A link represents streets, bike lanes, sidewalks or trails; a node represents origins and destinations (points). The degree off connectedness describes how isolated and accessible an area is. Areas with high connectivity have low isolation and high accessibility; areas with low connectivity have high isolation and low accessibility. Connectivity is a measure of accessibility without regard to distance.	ECWRPC	Every 5 Years
Accessibility	Accessibility refers to the ease of reaching goods, services, activities and destinations, which together are called opportunities.[3] To increase accessibility is to increase one's access to destinations or opportunities. One measure of accessibility is through intersection density. The higher the intersection density, the more accessible the area.	ECWRPC	Every 5 Years
Population Density and Growth	The population growth rate from 2000 to 2010 for the Fox Cities TMA region provides a picture of migration patterns within the last ten years. The growth rate shows population from the more urbanized areas like the City of Appleton, Neenah, Menasha, Kaukauna and the Villages of Little Chute, Kimberly and Combined Locks have expanded.	US Census	Every 10 Years
Equity	Examining bicycle and pedestrian facilities and access to transit as they relate to destinations and community demographics can yield important information on how our multimodal facilities are serving the community as a whole.	ECWRPC (from local municipality data and American Community Survey data)	Every 5 Years

[3] Evaluating Accessibility for Transportation Planning Measuring People's Ability To Reach Desired Goods and Activities, September 10, 2012 - Todd Litman, Victoria Transport Policy Institute (March 2013)

LONG RANGE TRANSPORTATION PLAN COORDINATION

The Congestion Management Process (CMP) must, at a minimum, be updated often enough to provide relevant, recent information as an input to each Long-Range Transportation Plan (LRTP) update. In order to establish a standardized CMP review, many MPOs have chosen to link the CMP updates to either the LRTP or Transportation Improvement Plan (TIP) development cycle. The CMP may also operate on an independent update schedule and provide input to both the LRTP and the TIP. The Appleton (Fox Cities) CMP follows the latter update schedule. The update schedule is not permanent and staff has the flexibility to include the CMP as part of the TIP and LRTP in future updates of the CMP.

Both the CMP and the LRTP are data-driven planning efforts that rely on an understanding of current conditions of the transportation system to make projections about future demands. Because the CMP identifies areas with significant congestion, it provides an opportunity to consider detailed data on the operation of individual road segments and corridors. Although this finer level of data and analysis may establish a more robust understanding of the existing conditions, projections of future congested areas still rely upon travel demand models and system-level analysis. The CMP, in general, may also be a useful tool in calibration/validation of the travel demand model (TDM).

The strong similarities between the activities, goals, and objectives in the CMP, the LRTP, the bicycle and pedestrian plan, and TIP facilitate the integration of the CMP into the larger transportation planning process. The development of regional objectives within the CMP responds to the goals and vision for the region established in the TIP and the LRTP. As part of the CMP, congestion management strategies are identified, assessed, programmed, implemented, and ultimately evaluated. These activities occur for most types of improvement strategies in the transportation planning process.

As mentioned earlier in this chapter, it is also important that there is an agreed upon level of consistency of the goals and objectives between the CMP, TIP, and LRTP. The CMP will be consulted for the selection of Surface Transportation Block Grant and Transportation Alternative Program recipients. The TIPs, consequently impact which projects are initiated in both the short- and long-term future; which have a ripple effect on the LRTP. It is vital that these plans work together to meet the demands of the regional transportation network. Furthermore, as also discussed earlier in this chapter, ECWRPC will create an annual action plan for the LRTP, CMP, and bicycle and pedestrian plan in coordination with the annual TIP update.

More specifically, the following list of recommendations will help better coordinate the Appleton CMP document into the TIP and LRTP:

- Reference the CMP to occur before each TIP update cycle; this is important in identifying where CMP goals and objectives can coordinate with TIP projects.
- The 2020 edition of the Appleton (Fox Cities) TMA LRTP identifies the following goal for Transportation:

- *In 2050, the Appleton (Fox Cities) Transportation Management Area will have a safe, efficient, and effective transportation network which provides options for the mobility needs of all people, goods, and services, while maximizing available resources, such as land, energy, finances, etc.*

- The plan continues: *To obtain this goal, the following issue categories have been identified:*

    1. Integrated planning. Integrate the transportation program with other functional elements of comprehensive planning in recognition of the fact that the primary objective of a transportation system is to connect centers of activity.

    2. Maximum system effectiveness for all residents. Consider the capabilities and transportation preferences of all users and determine the relative effectiveness of various system alternatives.

    3. An efficient transportation system. Provide an integrated transportation system that will meet short- and long-range needs and maximize the capabilities of all transportation modes including street and highway, rail and trucking facilities, public transportation, bicycle and pedestrian travel and air transportation.

    4. Safety. Provide a safe transportation system throughout the region.

    5. Minimal environmental disruption. Develop a transportation system that minimizes environmental disruption and maintains environmental quality.

    6. Compatibility with land use patterns. Develop a transportation system compatible with existing and future land use patterns.

    7. Conservation of energy. Provide a transportation system that promotes the conservation of energy resources.

    8. Performance Measures. Develop and monitor relevant data sets to track the overall efficiency of the transportation system.

    9. Environmental Justice. Ensure that access to transportation systems and the transportation planning process is available to all individuals, regardless of race or socioeconomic status.

    10. Coordination at all levels. Coordination with local and state planning documents and programs.

11. Complete Streets Policies. Continue to implement the Appleton (Fox Cities) TMA and Oshkosh MPO Complete Streets policy to ensure consistent design and operation of the entire roadway with all users in mind, including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities.

12. Sustainable and Livable Communities. Foster the development of livable communities— places where coordinated transportation, housing, and commercial development give people access to affordable and environmentally sustainable transportation.

The following text is the vision statement from Chapter 1 of this document. It is important to note its similarity to the goals of the Long-Range Transportation Plan. The CMP vision statement reads: *To create an efficient, livable, safe, sustainable, accessible transportation system that increases economic vitality and the quality of life for those who support, depend or otherwise pass through the Appleton (Fox Cities) Transportation Management Area.* This vision statement should be used to coordinate efforts of the LRTP goal mentioned above.

CONCLUSION

Congestion management is an issue faced by many urban areas. Through a federally-mandated CMP, regions take a comprehensive look at ways to mitigate congestion, increase roadway safety for all users, improve system performance, and provide a framework for transportation planning. The CMP plan should be used as a document that works within the larger context of the TIP and LRTP by identifying common goals and objectives. The CMP is an integral plan within the larger suite of planning documents that are intended to develop safe, efficient, and sustainable transportation systems. Finally, the CMP should not be considered a rigid plan, but rather, one that is adaptable to meet the demands of the communities in the Appleton (Fox Cities) TMA.

APPENDIX A

COMMISSION RESOLUTION

RESOLUTION NO. 28-21

APPROVAL OF THE APPLETON (FOX CITIES) TRANSPORTATION MANAGEMENT AREA CONGESTION MANAGEMENT PROCESS PLAN

WHEREAS, the East Central Wisconsin Regional Planning Commission has been designated by the Governor as the Metropolitan Planning Organization (MPO) for the purpose of carrying out cooperative, comprehensive and continuing urban transportation planning in the Appleton (Fox Cities) Transportation Management Area; and

WHEREAS, the Fixing America's Surface Transportation Act (FAST Act) (P.L. 114-94) and prior federal law requires that MPO areas exceeding 200,000 in population develop and adopt a Congestion Management Process (CMP); and

WHEREAS, the FAST Act requires that the CMP include the following elements:

- Development of congestion management objectives;
- Establishment of measures of multimodal transportation system performance;
- Collection of data and system performance monitoring to define the extent and duration of congestion and determine the causes of congestion;
- Identification of congestion management strategies;
- Implementation activities, including identification of an implementation schedule and possible funding sources for each strategy; and
- Evaluation of the effectiveness of implemented strategies; and
- Assess capital investment and other strategies that reduce the vulnerability of the existing transportation infrastructure to natural disasters; and
- Consideration of the role intercity buses play in reducing congestion, pollution, and energy consumption; and

WHEREAS, all required public participation procedures have been followed; now therefore

BE IT RESOLVED BY THE EAST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION:

Section 1: That the Commission, as the designated MPO, approve the 2021 *Appleton (Fox Cities) Transportation Management Area Congestion Management Process Plan*.

Effective Date: October 29, 2021
Prepared for: Transportation Committee
Prepared By: Matt Halada, Principal Transportation Planner

Jeff Nooyen
Jeff Nooyen (Nov 2, 2021 08:14 CDT)

Jeff Nooyen, Chair – Outagamie Co.

APPENDIX B

LEGAL NOTICE

POST-CRESCENT media
A GANNETT COMPANY

STATE OF WISCONSIN
BROWN COUNTY

EAST CENTRAL WI PLANNING COMM

400 AHNAIP ST STE 100

MENASHA WI 549523388

I, being duly sworn, doth depose and say I am an authorized representative of the Appleton Post Crescent, a newspaper published at Appleton, Wisconsin and that an advertisement of which the annexed is a true copy, taken from said paper, which was published therein on:

Account Number: GWM-N5251
Order Number: 0004896668
Total Ad Cost: $44.03
Published Dates: 09/05/2021

Legal Clerk

State of Wisconsin
County of Brown
Subscribed and sworn to before on September 7, 2021

Notary Public State of Wisconsin, County of Brown

5.15.23

My Commission Expires

# of Affidavits: 1
This is not an invoice

NANCY HEYRMAN
Notary Public
State of Wisconsin

NOTICE OF OPPORTUNITY TO REVIEW THE FOX CITIES TRANSPORTATION MANAGEMENT AREA CONGESTION MANAGEMENT PROCESS PLAN

As the Transportation Management Area (TMA) for Appleton (Fox Cities), East Central Wisconsin Regional Planning Commission has prepared a draft Congestion Management Process Plan (CMP) update. A CMP is required for all urbanized areas exceeding 200,000 in population, and the Appleton (Fox Cities) meets that criterion. This CMP is being updated in consultation with federal, state and local governments, various agencies and stakeholders in an effort to develop, select, and plan appropriate strategies to improve safety and reduce traffic congestion on area roadways now and in the future.

The CMP as defined in federal regulation is intended to serve as a systematic process that provides for safe and effective management of local transportation networks. This update will provide the necessary information in the interim of the major update that will take place when the 2020 decennial U.S. Census is released. The Appleton (Fox Cities) TMA CMP can be found online at: https://www.ecwrpc.org/programs/fox-cities-and-oshkosh-mpo/congestion-management-process/

A 30-day public review and comment period for the bicycle and pedestrian update will commence on Sunday, September 5 and end on Monday, October 5, 2021. Please contact East Central Wisconsin Regional Planning Commission at (920)751-4770 with any questions and forward any comments to the Commission at 400 Ahnaip Street, Suite 100, Menasha, WI 54952-3311 or to mhalada@ecwrpc.org.

Run: September 5, 2021 WNAXLP

EAST CENTRAL WI PLANNING COMM

GANNETT WI MEDIA
435 EAST WALNUT ST.
PO BOX 23430
GREEN BAY, WI 54305-3430

APPENDIX C

TRANSPORTATION COMMITTEE RESOLUTION

PROPOSED RESOLUTION NO. 28-21

APPROVAL OF THE APPLETON (FOX CITIES) TRANSPORTATION MANAGEMENT AREA CONGESTION MANAGEMENT PROCESS PLAN

WHEREAS, the East Central Wisconsin Regional Planning Commission has been designated by the Governor as the Metropolitan Planning Organization (MPO) for the purpose of carrying out cooperative, comprehensive and continuing urban transportation planning in the Appleton (Fox Cities) Transportation Management Area; and

WHEREAS, the Fixing America's Surface Transportation Act (FAST Act) (P.L. 114-94) and prior federal law requires that MPO areas exceeding 200,000 in population develop and adopt a Congestion Management Process (CMP); and

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- Development of congestion management objectives;
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- Implementation activities, including identification of an implementation schedule and possible funding sources for each strategy; and
- Evaluation of the effectiveness of implemented strategies; and
- Assess capital investment and other strategies that reduce the vulnerability of the existing transportation infrastructure to natural disasters; and
- Consideration of the role intercity buses play in reducing congestion, pollution, and energy consumption; and

WHEREAS, all required public participation procedures have been followed; now therefore

BE IT RESOLVED BY THE EAST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION:

Section 1: That the Commission, as the designated MPO, approve the 2021 *Appleton (Fox Cities) Transportation Management Area Congestion Management Process Plan.*

Effective Date: October 29, 2021
Prepared for: Transportation Committee
Prepared By: Matt Halada, Principal Transportation Planner

PROPOSED RESOLUTION N0. 28-21

Kara J Homan
Kara J Homan (Oct 28, 2021 09:41 CDT)
Kara Homan, Chair

Steve Gueths
Steve Gueths (Nov 1, 2021 11:03 CDT)
Steve Gueths

Kay Miller
Kay Miller (Oct 21, 2021 14:17 CDT)
Kay Miller

John G Zorn
John G Zorn (Oct 21, 2021 18:54 CDT)
John Zorn (Alt. Martin Farrell)

David Vickman for
David Vickman for (Oct 21, 2021 14:14 CDT)
Ron McDonald

Jeff Nooyen
Jeff Nooyen (Oct 21, 2021 14:17 CDT)
Jeff Nooyen

Robt Keller
Robert Keller (Oct 21, 2021 16:52 CDT)
Robert Keller, Vice Chair

TOM KAUTZA
TOM KAUTZA (Oct 21, 2021 18:50 CDT)
Tom Kautza

Dick Koeppeh
Dick Koeppeh (Oct 22, 2021 11:09 CDT)
Dick Koeppen

JILL MICHAELSON
JILL MICHAELSON (Oct 21, 2021 14:29 CDT)
Jill Michaelson

Donna Kalata

EAST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

Jeff Nooyen, Chair
Alice Connors, Vice-Chair
Melissa Kraemer Badtke, Secretary-Treasurer

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Kay Miller
Allen Buechel
Charles Hornung

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Lee Hammen
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Michael Thomas
Nadine Miller

SHAWANO COUNTY

Thomas Kautza
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