Congestion Management Process (CMP) Plan

Fox Cities (Appleton TMA) Urbanized Area

October 2013

East Central Wisconsin
Regional Planning Commission
ECWRPC
Calumet•Menominee•Outagamie•Shawano•Waupaca•Waushara•Winnebago

Congestion Management Process (CMP) Plan

Fox Cities Urbanized Area

October 2013

Prepared by the

EAST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

Adopted October 25, 2013

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ABSTRACT

TITLE:	Appleton/Fox Cities Congestion Management Process
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SUBJECT:	A Congestion Management Process Plan for the Appleton/Fox Cities Transportation Management Area
DATE:	10/25/2013
PLANNING AGENCY:	East Central Wisconsin Regional Planning Commission
SOURCE OF COPIES:	East Central Wisconsin Regional Planning Commission 400 Ahnaip Street, Suite 100 Menasha, WI 54952 (920) 751-4770 www.eastcentralrpc.org

The Congestion Management Process Plan for the Appleton/Fox Cities was prepared to meet the Transportation Management Area (TMA) requirements of the Moving Ahead for Progress in the 21st Century Act (MAP-21).

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Executive Summary

Introduction

The East Central Wisconsin Regional Planning Commission (ECWRPC) is the Metropolitan Planning Organization (MPO) responsible for comprehensive regional transportation planning within the Fox Cities Urbanized Area. "Transportation planning is based on a continuing, cooperative, and comprehensive ("3-C") planning process designed to foster involvement by all users of the system, such as the business community, community groups, environmental organizations, freight operators, and the general public, through a proactive public participation process conducted by the MPO with cooperation from the Wisconsin Department of Transportation (WisDOT), Federal Highway Administration (FHWA), transit operators and the local municipalities that make up the MPO area".[1] ECWRPC, as the facilitator of the Fox Cities MPO, develops and updates several regional transportation plans required by federal regulations.

According to the 2010 US Census, the Fox Cities urbanized area surpassed 200,000 in population, and gained the designation of a TMA (Transportation Management Area) per Federal Highway Administration guidelines. As a result of surpassing this population threshold, the Fox Cities is required by federal regulation (The Moving Ahead for Progress in the 21st Century Act [MAP-21]) to develop a Congestion Management Process (CMP) plan. The CMP is designed to provide systematic planning solutions to the transportation needs of the Fox Cities. A primary goal of the CMP is to develop a balanced transportation network (i.e. increasing opportunities for walking, bicycling, and public transit, along with automobiles) which can be efficiently integrated within the Fox Cities MPO boundaries. The CMP will also be utilized to coordinate with other required regional transportation documents such as the Transportation Improvement Program (TIP) and the Long-Range Transportation Plan (LRTP).

More specifically, the CMP was created and utilized as a means to inventory traffic congestion across the Fox Cities. In turn, a network-wide strategy was developed to provide for a safe and efficient multimodal transportation system. These network-wide strategies include managing the transit system during high volume times, providing transit users with more transit options to reduce single occupant vehicle (SOV) travel, and the development of transportation system management strategies.[2]

Elements of the CMP

The Federal Highway Administration provides general guidance on the elements that should be included in the CMP; however, implementation of these elements is the responsibility of each MPO. These elements include:

- Developing Regional Objectives
- Defining a CMP Network
- Developing Multimodal Performance Measures
- Collecting Data/Monitor System Performance
- Analyzing Congestion Problems and Needs
- Identifying and Assessing Strategies

[1] http://fcompo.org/ (August 2013)
[2] Congestion Management Process for the Madison Metropolitan Planning Area (2011) (August 2013)

- Programing and Implementing Strategies
- Evaluating Strategy Effectiveness[3]

The CMP plan developed for the Appleton TMA was designed with this framework in mind.

CMP Implementation Strategies

The primary implementation strategies of the CMP were developed through research by ECWRPC staff of existing CMP plans, gathering input from local citizens with a public information meeting and through on-line surveys. Additionally, a system-wide analysis of the local transportation system aided in developing the following implementation strategies for the CMP:

- Examine street network strategies to understand the current conditions and learn about areas which need improvement in regards to more effective congestion management.

- Develop and update computerized Traffic Demand Model (TDM) strategies to model future development scenarios to be better prepared to meet these development trends.

- Focus analysis on existing congestion problem areas such as railroad and bridge crossing locations across the Fox Cities.

- Research potential transportation alternative strategies to integrate within the transportation network.

- Integrate freight strategies for more efficient movement of goods and services throughout the region.

- Incorporate transit strategies that take a complete system wide focus on all types of users and their abilities while also considering all viable modes of transportation for the region.

- Coordinate efforts with local officials to effectively deal with Non-Recurring Incident Strategies (weather events, one-time or temporary events).

- Develop district (land use) strategies to manage the development of land within the planning area with an emphasis to encourage in-fill (re)development of existing land parcels versus creating new land parcels on the urban-suburban fringe.

- Increase usage of Intelligent Transportation Systems (ITS) strategies in the broader transportation network to help transportation users make better, more informed transportation decisions.

- Advocate for policy strategies such as incorporating “complete streets” and smart growth policies where applicable in the broader transportation system.

[3] Congestion Management Process: A Guidebook (August 2013)

Recommendations

There are strong similarities between the objectives outlined in this CMP to that of the TIP and LRTP for the Fox Cities which naturally facilitate its integration into the larger transportation planning process. As part of the CMP, congestion management strategies are identified, assessed, programmed, implemented, and will ultimately be evaluated for the region.

It is also important that there be an agreed upon level of consistency of the goals and objectives between the CMP, TIP, and LRTP. The CMP as a stand-alone document provides guidance in the selection of projects for the rolling 5-year TIPs. The TIPs, consequently impact which projects are initiated in both the short and long term future; which ultimately impacts the status of the LRTP. It is vital that these plans work together to meet the demands of the regional transportation network.

The following is a list of recommendations which will contribute to the coordination of the CMP document with the TIP and LRTP for the Fox Cities:

- Coordinate the annual update cycle of the CMP to occur before or in conjunction with each TIP update cycle; this is important in identifying where CMP goals and objectives can match with potential TIP projects.[4] The CMP can be used to impact the selection of TIP projects through its objectives and goals.

- The 2010 edition of the Fox Cities LRTP identifies the following goal for Transportation:

    - *[T]he Fox Cities Urbanized 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:*
        - *Integrated Planning;*
        - *Maximum system effectiveness for all residents;*
        - *An efficient street and highway system;*
        - *Minimum environmental disruption;*
        - *Compatibility with land use patterns;*
        - *Conservation of energy; and*
        - *Multimodal interaction*

- 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 mentioned above.

    - The CMP vision statement will work: *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 Transportation Management Area.*

[4] Congestion Management Process for the Madison Metropolitan Planning Area (2011) (August 2013)

- Coordinate the CMP plan to match the vision statement, objectives, and goals of the TIP and LRTP especially where all documents may complement each other.

Conclusion

The CMP is a federally mandated requirement for regions that have surpassed 200,000 in population. However, each MPO in charge of developing the CMP for its region has the latitude to create a plan that specifically meets the needs of its regional planning area as long as it is integrated with the TIP and LRTP. The CMP plan presented here should be used as a document that works within the larger context of the above mentioned plans by identifying common goals and objectives and subsequently coordinating these efforts to mitigate congestion.

This report presents an initial inventory of the state of congestion in the Fox Cities region. It develops congestion management objectives and goals and strategies to reduce congestion. First, the CMP systematically examines the state of the regional transportation system by inventorying current conditions and researching industry “best practices” for congestion management. Second, this document puts forth several congestion management strategies that the Fox Cites can implement to minimize traffic issues which are unique to the region. Third, this document outlines an implementation and update process for the CMP. Transportation analysis is by nature heavily data driven; the data sources used in the CMP must be updated frequently in order to provide accurate information. The CMP text within this document specifies data update cycles. It also develops a reasonable plan for integrating the CMP with the TIP and LRTP.

The CMP is an integral plan within the larger suite of planning documents that are intended to develop safe, efficient, and sustainable transportation systems. It is important to reiterate that the CMP should not be considered a rigid plan, but rather, one that is adaptable to meet the needs and demands of the people it serves.

The Fox Cities (Appleton) TMA CMP plan was officially adopted at the Commission’s quarterly meeting held on October 25, 2013. Please refer to signed Resolution 33-13 in **Appendix F.**

CHAPTER 1

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 Fox Cities Urbanized Area, the East Central Wisconsin Regional Planning Commission (ECWRPC) has prepared a CMP for the newly designated Transportation Management Area (TMA) within the region. Figure 1-1 (below) provides context regarding boundaries for ECWRPC's Planning Area as well as for the Fox Cities Metropolitan Planning Area. 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. 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. Improvements include: 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 (please refer to Chapter 4 which describes each of these strategies in greater depth). Transportation efficiency is tracked through a number of performance measures and performance 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]

[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)
[2] http://www.fhwa.dot.gov/map21/mp.cfm (1/30/2013)

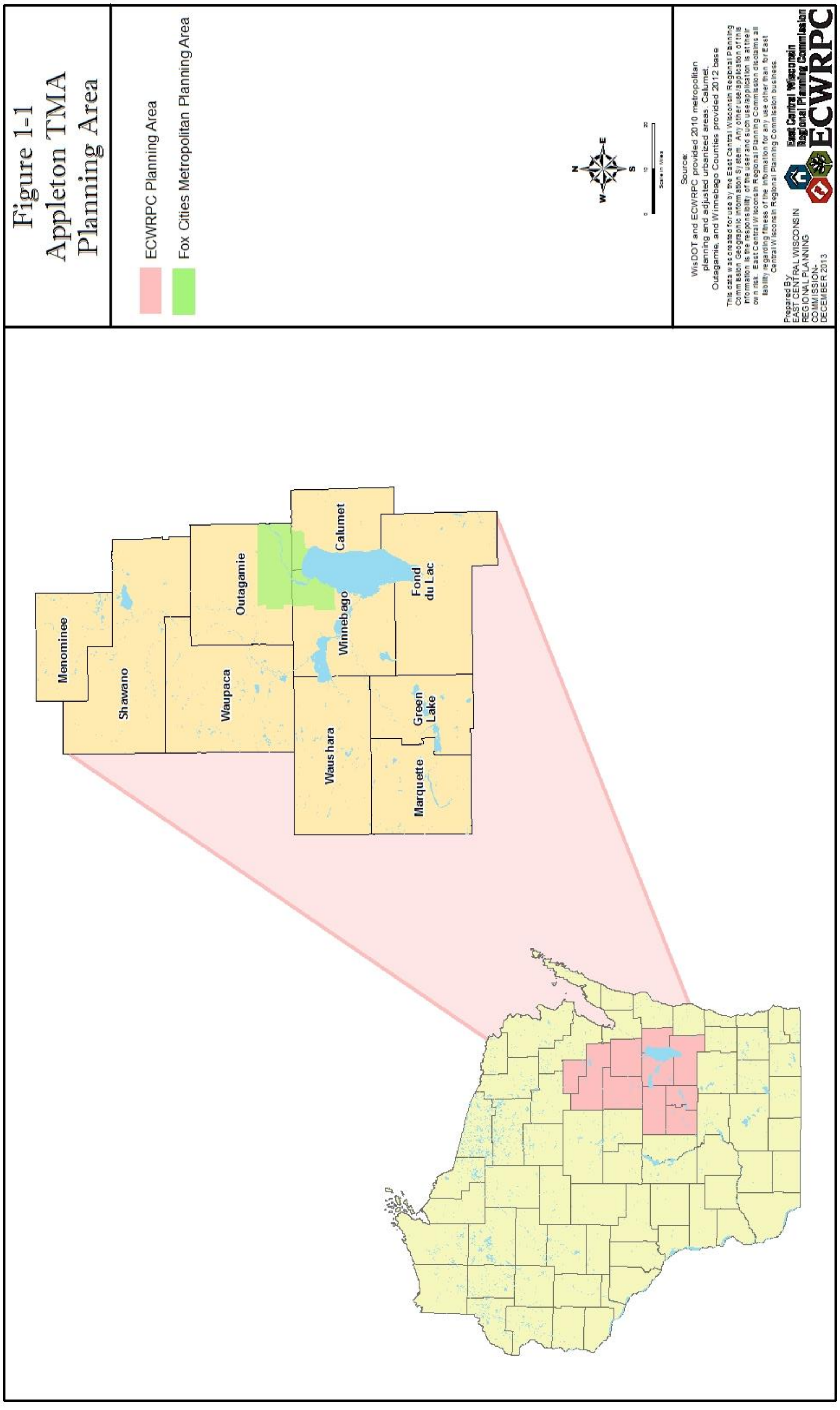
Figure 1-1
Appleton TMA
Planning Area
ECWRPC Planning Area
Fox Cities Metropolitan Planning Area
Menominee
Shawano
Outagamie
Waupaca
Calumet
Winnebago
Fond du Lac
Green Lake
Waushara
Marquette
N
E
S
W
0
10
20
Scale in Miles
Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base
This data was created for use by the East Central Wisconsin Regional Planning Commission Geographic Information System. Any other use/application of this information is the responsibility of the user and such use/application is at their own risk. East Central Wisconsin Regional Planning Commission disclaims all liability regarding fitness of the information for any use other than for East Central Wisconsin Regional Planning Commission business.
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ECWRPC

The primary objectives of the CMP include:

- 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.[3]

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.

What is congestion?

Congestion in reference to transportation relates to an excess of vehicles on a portion of roadway at a particular time resulting in speeds that are slower—sometimes much slower—than normal or "free flow" speeds. Congestion often means stopped or stop-and-go traffic. – *FHWA - Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation*

What is performance-based planning?

Performance-based planning applies measureable 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. – *FHWA - The Performance Based Planning and Programming Newsletter*
Volume 1, Issue 1, January 2013

Planning Process & Structure

The Appleton/Fox Cities (used interchangeably within this document) TMA region 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 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;

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

5. Analyze Congestion Problems and Needs;
6. Identify and Assess Strategies;
7. Program and Implement Strategies; and
8. Evaluate Strategy Effectiveness.[4]

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.

Background Information on the Appleton Transportation Management Area (TMA)

The CMP developed for the Appleton TMA includes the cities of Appleton, Neenah, Menasha, and Kaukauna; the villages of Kimberly, Combined Locks, Harrison, Little Chute, and Sherwood; the towns Buchanan, Grand Chute, Greenville, Harrison, Kaukauna, Menasha, Neenah, Vandenbroek; and the counties of Calumet, Outagamie, and Winnebago. ECWRPC is the Metropolitan Planning Organization (MPO) 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 for the Appleton TMA.

The Appleton TMA governing structure is comprised of a Commission whose membership is based on population. The Commission consists of three committees of which the Transportation Committee (TC) deals with transportation issues. It is comprised of 5 to 6 Commission members. The committee directs and monitors the transportation program element and maintains liaison with two sub-committees; the Transportation Policy Advisory Committees (TPAC) and the Transportation Technical Advisory Committee (TTAC). The TC makes recommendations to the full Commission. The (TPAC) facilitates regional participation and consensus building on transportation-related issues through a continuing, comprehensive, and coordinated planning process. The TPAC is composed of elected officials and board members of local governments and transportation agencies within the East Central Wisconsin Region; plus representatives from FHWA and Wisconsin Department of Transportation (WisDOT). The TPAC serves as an advisory body to the TC and the Commission on transportation related issues. The TTAC also facilitates regional participation and consensus building on transportation-related issues through a continuing, comprehensive, and coordinated planning process. The TTAC is composed of planners, engineers, and operators of local governments and transportation agencies within the East Central Wisconsin Region; plus representatives from the FHWA and WisDOT. The TTAC serves as an advisory body to the TPAC.

The Appleton TMA covers a wide variety of modes of transportation and built environments. **Figure 1-2** displays the Appleton TMA geographic boundaries below.

[4] Ibid. (April 2011)

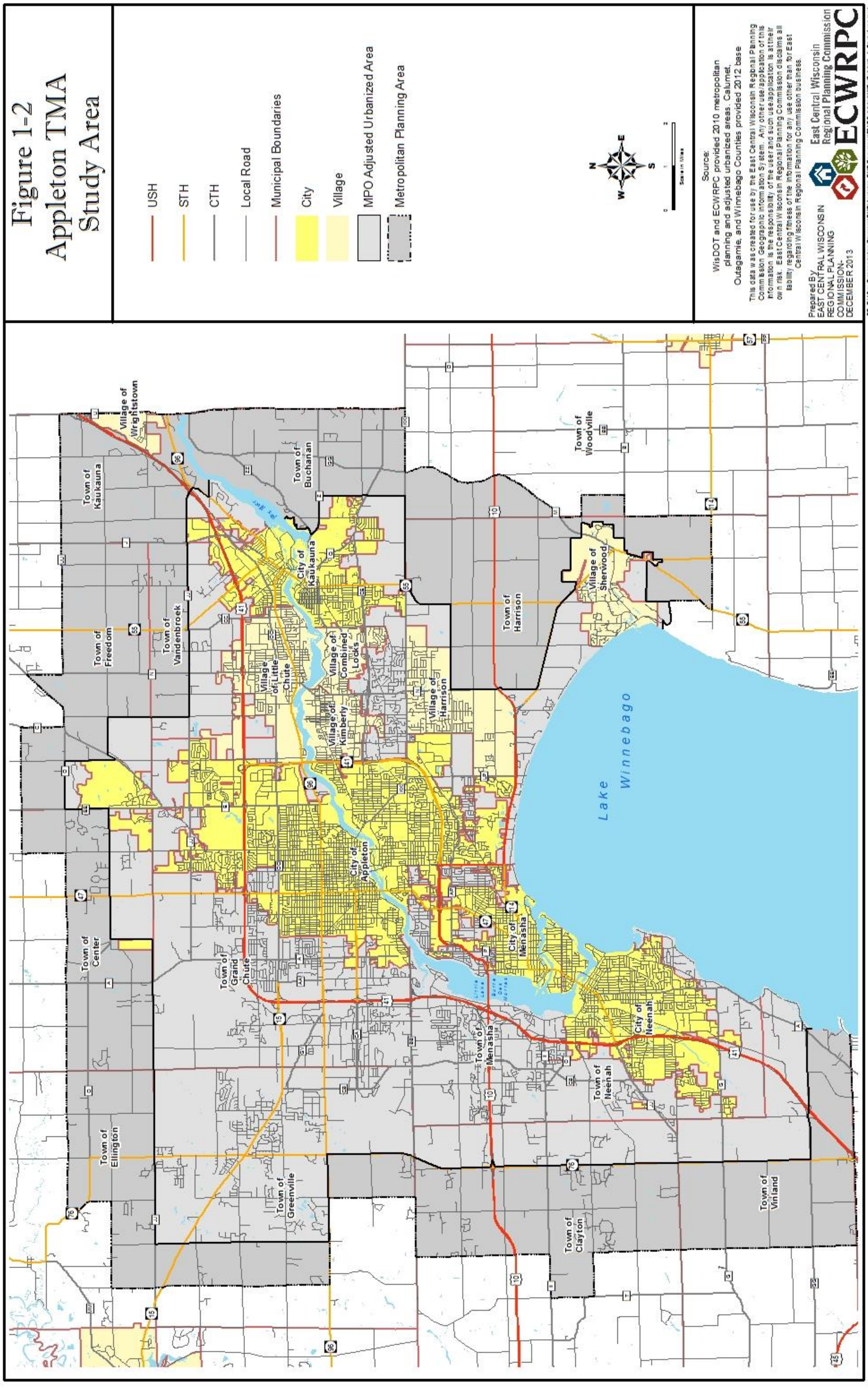
Figure 1-2
Appleton TMA
Study Area
USH
STH
CTH
Local Road
Municipal Boundaries
City
Village
MPO Adjusted Urbanized Area
Metropolitan Planning Area
Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base data.
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DECEMBER 2013
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ECWRPC
Lake Winnebago
City of Appleton
City of Kaukauna
City of Menasha
City of Neenah
Village of Little Chute
Village of Combined Locks
Village of Kimberly
Village of Harrison
Village of Sherwood
Village of Wrightstown
Town of Kaukauna
Town of Buchanan
Town of Woodville
Town of Freedom
Town of Vandenbroek
Town of Harrison
Town of Center
Town of Grand Chute
Town of Menasha
Town of Neenah
Town of Ellington
Town of Greenville
Town of Clayton
Town of Vinland

Public Participation Process

To better define the vision, goals, and objectives of the CMP for the Appleton TMA, area residents were encouraged to participate and provide recommendations and comments through two primary means: (1) direct participation through comments/recommendations at a public information meeting and (2) participation through an on-line survey. A public information meeting was scheduled and held at UW-Fox Valley. Please refer to **Appendix A**, which documents legal notice of the public information meeting. An on-line survey was also created by ECWRPC staff and distributed to area residents to learn about their ideas, concerns, and recommendations in regards to traffic congestion within the Fox Cities. Please refer to **Appendix B** which provides a sample survey that was distributed by ECWRPC staff. Additionally, a detailed survey analysis is included below.

Survey Discussion

The 11 question online survey was sent to 142 email addresses and garnered a response from 59 participants between the dates of July 16, 2013 and August 9, 2013.[5] A survey response rate was calculated (the number of completed surveys divided by the total number of people contacted) and in our case the response rate was 59/142 or about 42%. Comparatively for online surveys, a response rate of about 30% is considered average.[6]

The online survey results helped ECWRPC staff identify ideas as well as areas of concern regarding congestion management within the Appleton TMA. A few trends are worth further discussion. For example, Question 4 of the survey asked respondents, "How high of a priority is congestion in the Fox Cites Area?" (Please use a scale of 1-5, 1 being the highest priority and 5 being the lowest priority.) Almost 80% (survey respondents in groups 1-3) of respondents thought that congestion in the Appleton TMA was a high priority. The full results can be found in the *Survey Questions and Results* section within this chapter.

Additionally, Question 7 asked, "What is your preferred mode of transportation (in summer) to and from your place of employment?" Almost 84% of respondents selected the automobile as their preferred mode of transportation, followed by 12.5% for bicycles, and almost 4% for public transit. Question 11 of the survey asked respondents to provide recommendations on where they would like to see transportation funds spent. Interestingly, almost 30% of the respondents mentioned more funding should go towards public transit and regional public transportation initiatives. More outreach and education should take place by local and regional entities to address this mismatch in mode of transportation and potential for increasing funding to public transportation.

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.

[5] Sent to ECWRPC's Transportation and Regional Connectivity listserv developed through Constant Contact.
[6] http://www.utexas.edu/academic/ctl/assessment/iar/teaching/gather/method/survey-Response.php (July 2013)

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.

1. **What is congestion?**

Eight pictures of different types of congestion were provided (See **Figure 1-3)**. Survey participants were asked to select those pictures that most represented congestion to them. Pictures D and H (both of highway congestion) ranked highest with roughly 85 percent of respondents each. Picture C (a crowded bus stop) and picture F (busy city sidewalk) garnered the least votes. Please see **Figure 1-4** below for the complete set of results.

Figure 1-3. Survey Question #1 Pictures

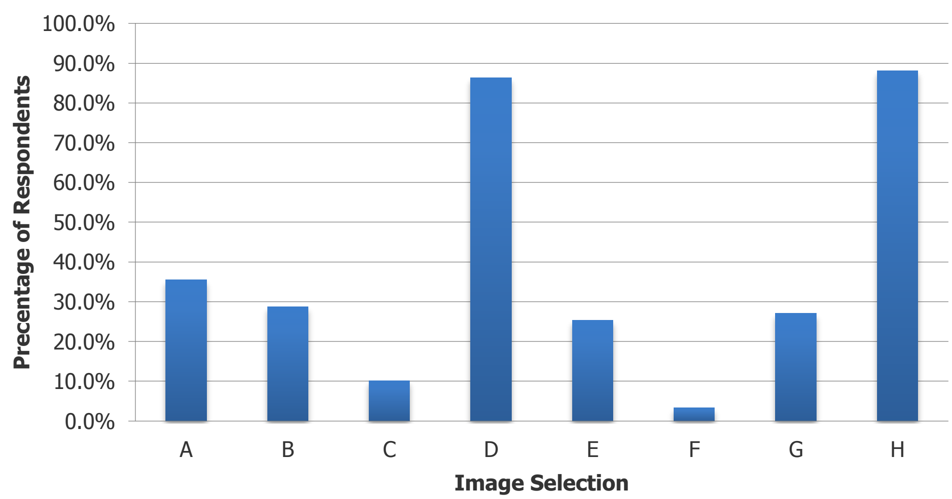
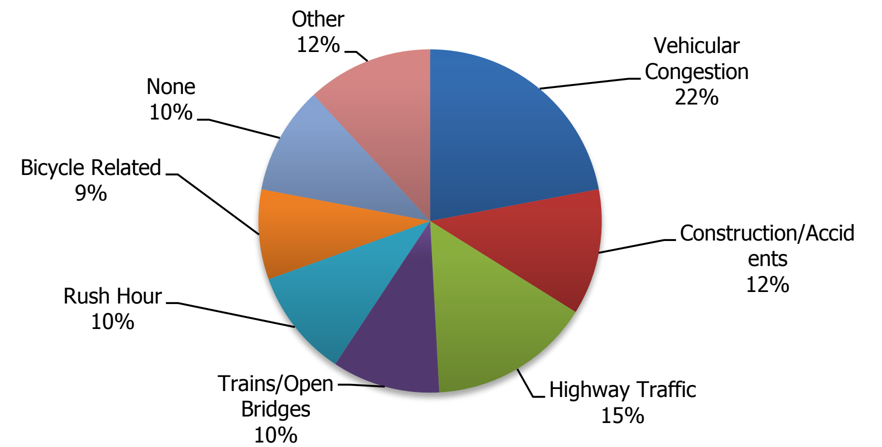


Figure 1-4. Defining Congestion in the Fox Cities

2. What type(s) of congestion are problematic to you on a daily basis?

Figure 1-5 represents congestion concerns of survey participants. Twenty-two percent of respondents stated vehicular congestion as the largest problem; similarly 15 percent of respondents claimed Highway Traffic as their biggest congestion concern. See **Figure 1-5** for a complete breakdown of responses.

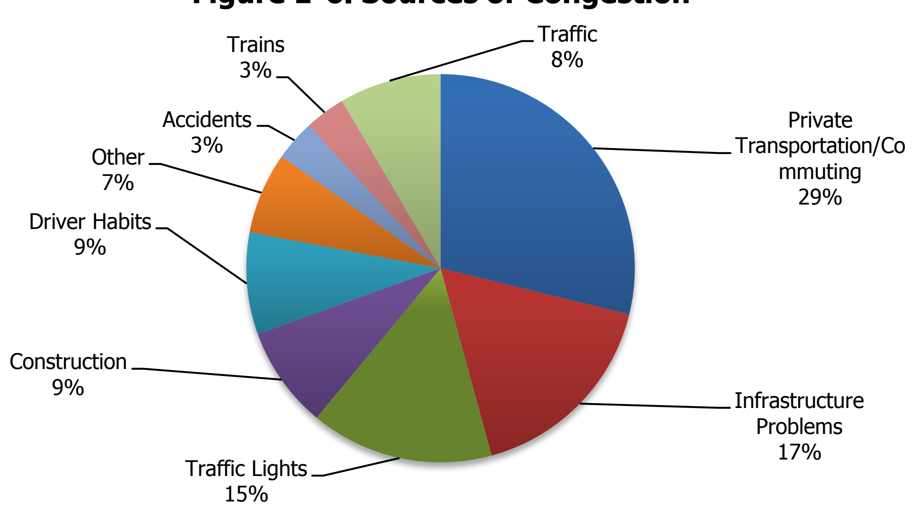
Figure 1-5. Congestion Concerns



3. What do you feel is the source behind congestion in the Fox Cities Area?

When asked about the source of congestion in the Fox Cites Area, 22 percent of respondents stated it was due to private means of transportation (personal automobiles) as well as commuting to and from places of employment. Seventeen percent stated that the largest source was due to infrastructure related problems and 15 percent said traffic signal related problems were the cause. See **Figure 1-6** for a complete listing of responses.

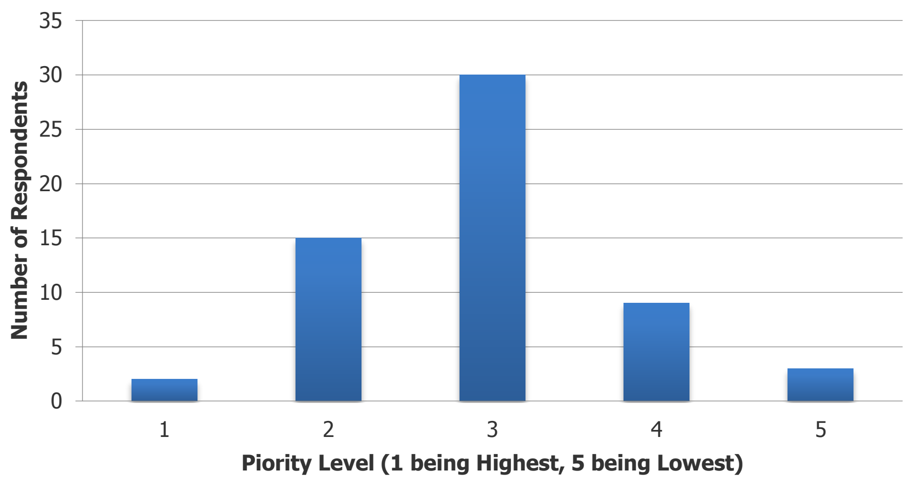
Figure 1-6. Sources of Congestion



4. How high of a priority is congestion in the Fox Cities Area?

Thirty respondents were neutral on prioritizing the congestion problems in the Fox Cities Area. Fifteen people thought congestion was a high priority (rank of 2). See **Figure 1-7** below for a complete list.

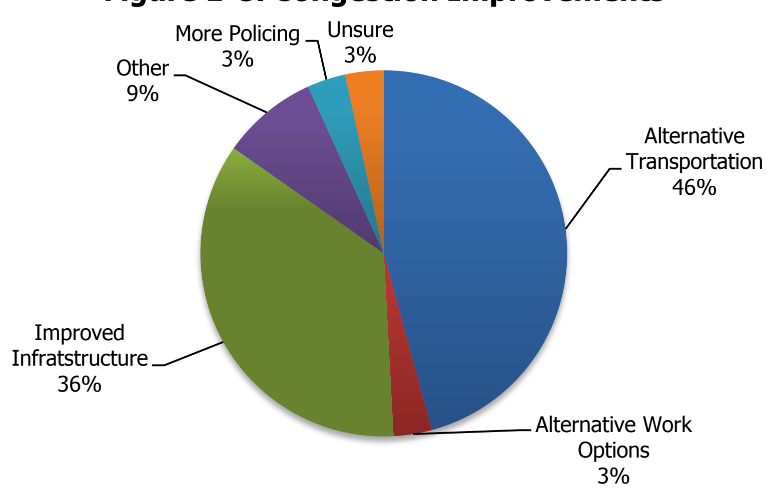
Figure 1-7. Congestion Priority



5. Congestion in the Fox Cities can be improved by:

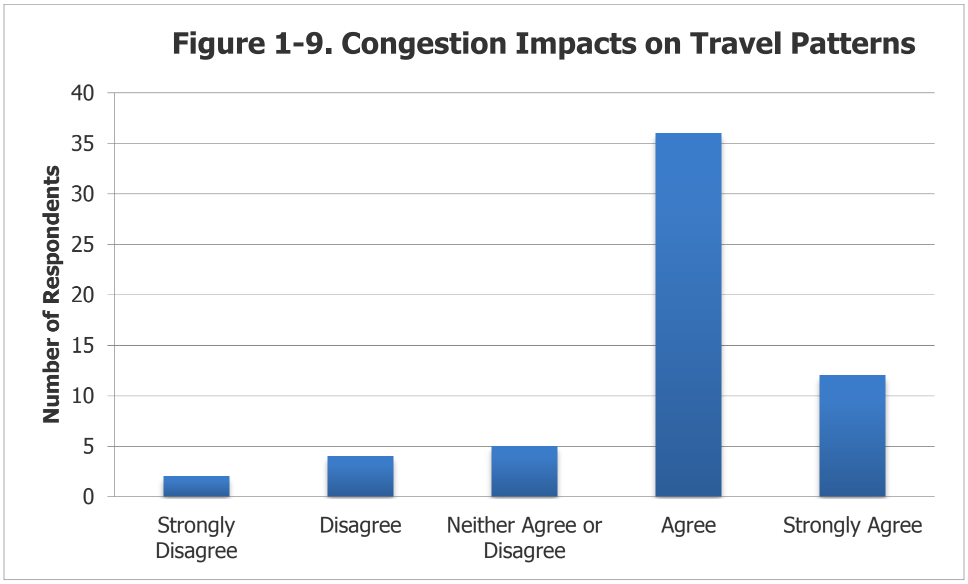
In **Figure 1-8**, 46 percent of respondents agreed that alternative transportation would help improve congestion in the Fox Cities Area. Another 32 percent stated that improving infrastructure would alleviate congestion.

Figure 1-8. Congestion Improvements



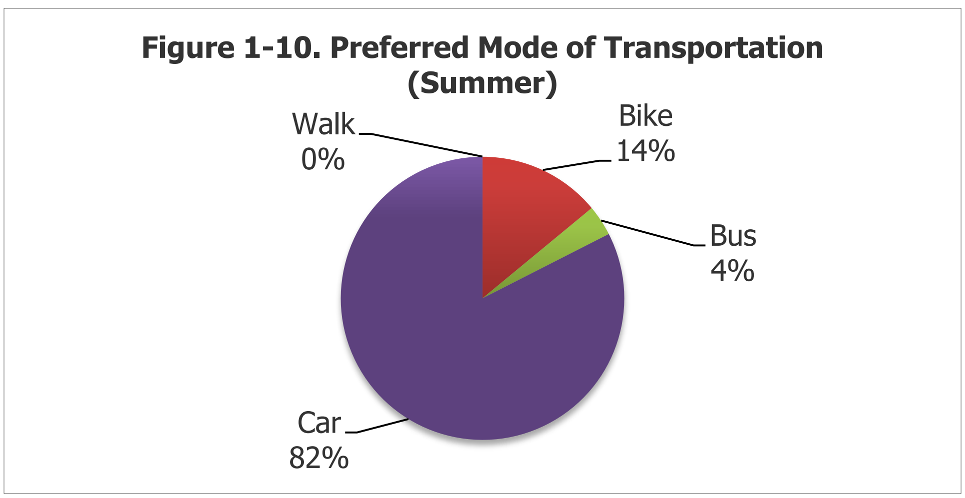
6. Congestion Impacts How I Choose My Travel Patterns:

The majority of survey participants (48) either agreed or strongly agreed that congestion impacts how they choose their travel patterns in the Fox Cities. Please refer to **Figure 1-9.**



7. What is your preferred mode of transportation (in summer) to and from your place of employment?

An overwhelming majority (82 percent) of respondents use their personal automobiles, during the summer, for transportation to and from work.



8. If additional plans and funding were set aside for alternative transportation modes (i.e. sidewalks, bicycle lanes/paths, public transportation) would I use these facilities?

Figure 1-11 shows that 63 percent of survey takers agree that if additional plans and funding were available to improve alternate transportation modes that they would use these facilities.

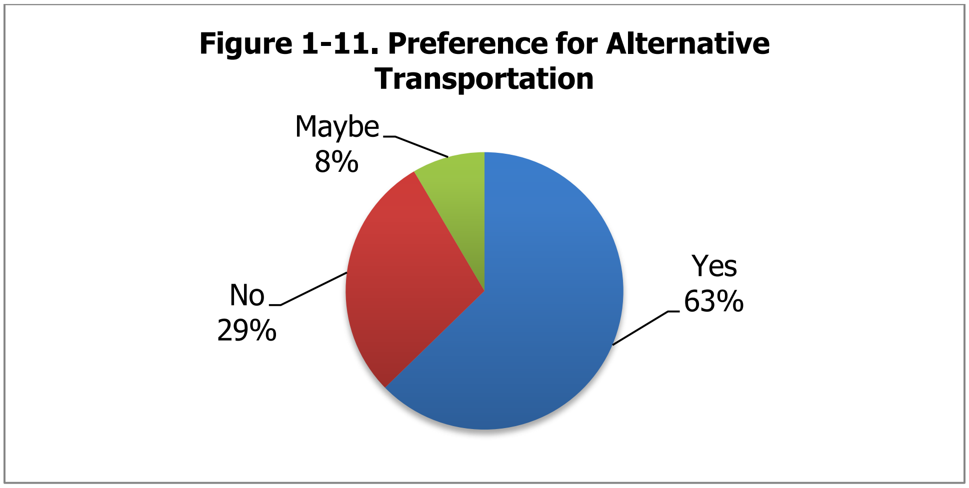


Figure 1-11. Preference for Alternative Transportation

9. What would it take to get you to use public transportation more in your daily routine?

Among the top answers was convenience (37 percent) as well as improving availability to rural/suburban locations. Roughly 14 percent stated that very little would encourage them to utilize public transport more in their daily lives.

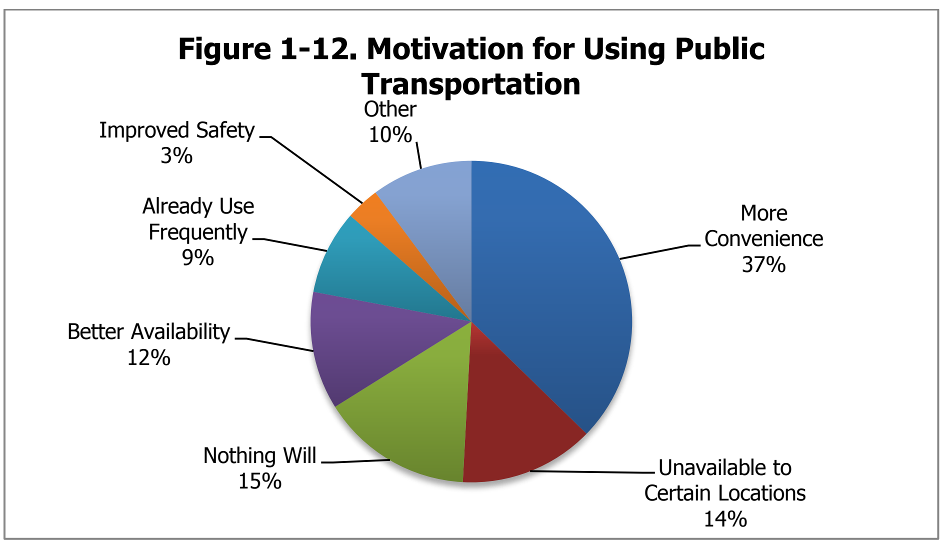
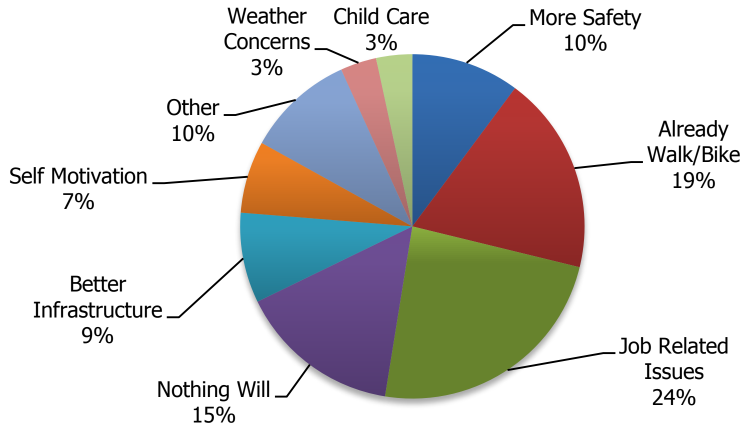


Figure 1-12. Motivation for Using Public Transportation

10. What would it take to get you to bike or walk more in your daily routine?

Figure 1-13 shows 24 percent of respondents stated that shorter distances to work would help encourage more walking and biking. Nineteen percent of survey participants stated that they already walk or bike. However, same as Question 9 above, 15 percent of respondents did not think anything would encourage them to use a bicycle or walk more.

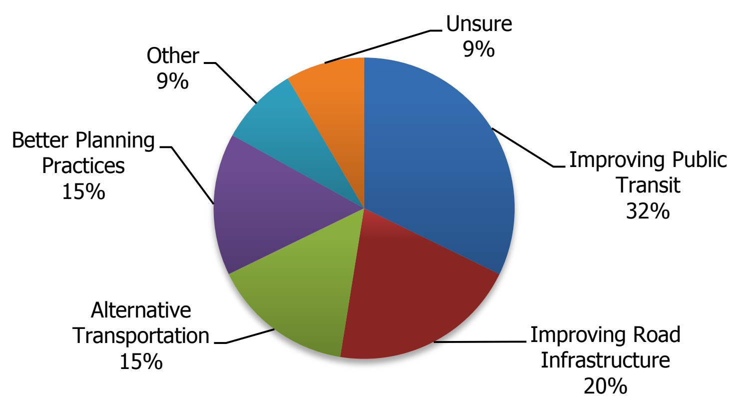
Figure 1-13. Motivation for Using Bicycles



11. To effectively deal with congestion, transportation funding should be spent on:

When asked what transportation funding should be spent on to deal with congestion, 52 percent of respondents agreed that either improving public transit or road infrastructure would help. Fifteen percent said more alternative transportation infrastructure such as sidewalks and bike lanes. An additional 15 percent stated better planning practices would help improve congestion (i.e. road development or roundabouts). See **Figure 1-14** for a complete list of responses.

Figure 1-14. Recommendations to deal with congestion



Vision, Goals, & Objectives

The vision, goals and objectives of the CMP define priorities the region would like to achieve in regards 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 TMA CMP vision statement accompanied with identified goals and objectives for the CMP to meet this 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 Transportation Management Area.

Goal 1: SAFETY – To protect life and property through regulation, management, and technological development of all forms of transportation.

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. 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 citizens 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 foot or bicycle 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: 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.

Goal 3: PRESERVATION – To make cost-effective resource allocation and program decisions to maximize the service life of the transportation assets.

OBJECTIVE 1: To utilized 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.

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CHAPTER 2

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 particular 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 providing for additional transportation options (i.e. public transportation, bicycle paths) will force the existing road network to accommodate all traffic modes. Understanding land use, especially origins and destinations of trips helps one make sense of congestion related issues and plan for future development. It is important to account for all types of congestion and consider their consequences to achieve a well-balanced transportation system that better accommodates the needs of the region. Before feasible recommendations can be made, however, it is essential to have an understanding of 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 plan. Once the initial field data is collected, mitigation of 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, which they define in their 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.

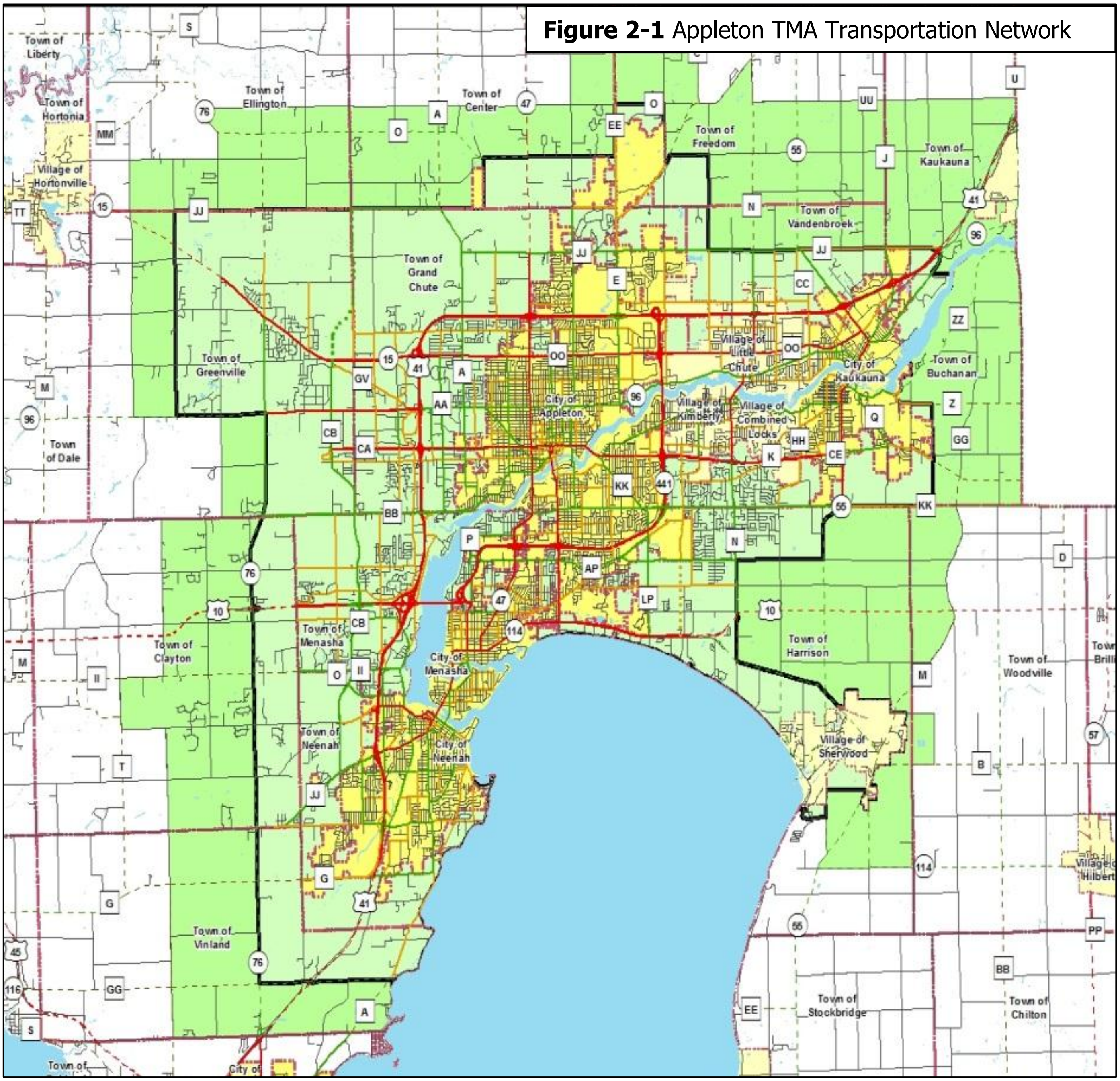
Realistic – The objective can reasonably be accomplished within the limitations of resources and other demands. The objective may require substantial coordination, collaboration, and investment to achieve. Factors such as population growth, economic development, and land use may also have an impact on the feasibility of the objective and should be taken into account. 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 TMA region 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. Figure 2-1 below provides an overview of the Appleton TMA transportation network.

Figure 2-1 Appleton TMA Transportation Network



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 USH 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 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 **Exhibit 2-1** (Appleton TMA Functional Class) at the end of this chapter.

The road network within the Appleton 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 plays. 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 and minor refers to arterials that service the corridor, that link 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.

USH ATR 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 TMA has several ATR sites within their planning area boundary. The ATR locations are listed below in **Table 2-1** below as well documented in **Figure 2-2** on the following page.

Figures 2-3 through 2-6 (below) provide total traffic volume counts for various regional highways in the Appleton 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.

Table 2-1. Appleton TMA ATR Locations

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

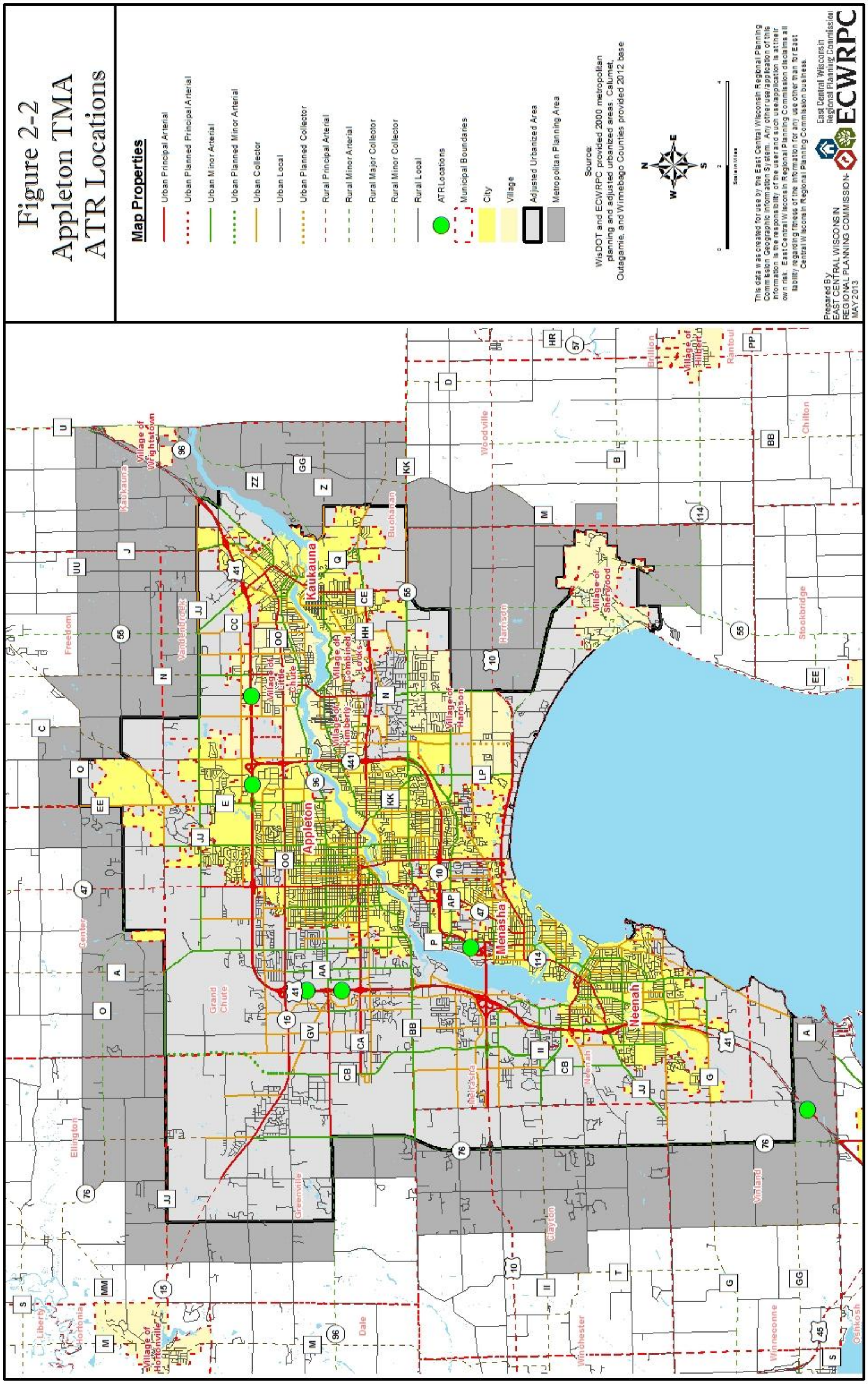


Figure 2-2
Appleton TMA
ATR Locations

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Figure 2-3. ATR Location: 440103 (USH 41 WEST OF CTH N LITTLE CHUTE)

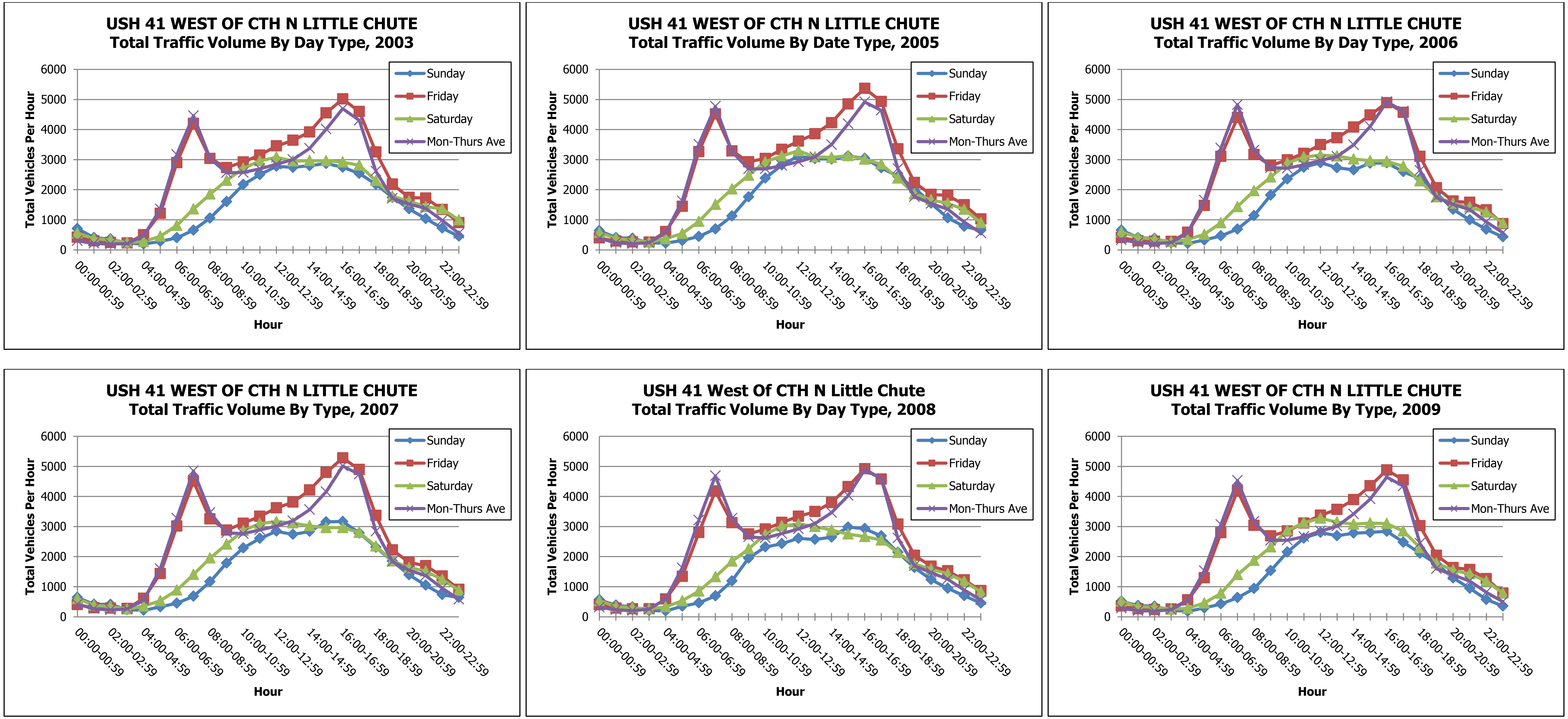


Figure 2-4. ATR Location: 441218 (USH 41 EAST OF CTH E APPLETON)

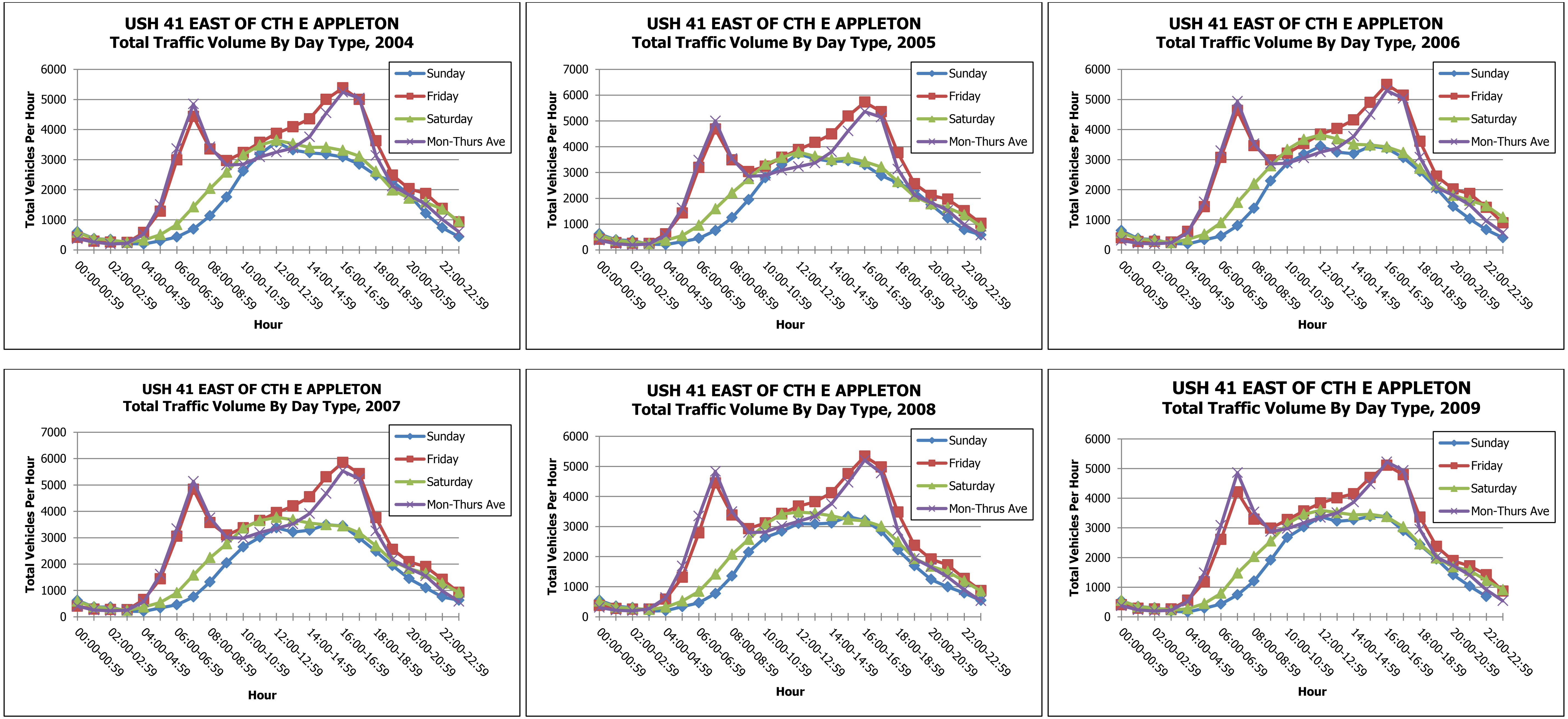


Figure 2-5. ATR Location: 700001 (USH 41 NORTH OF STH 76 - OSHKOSH TNSHP)

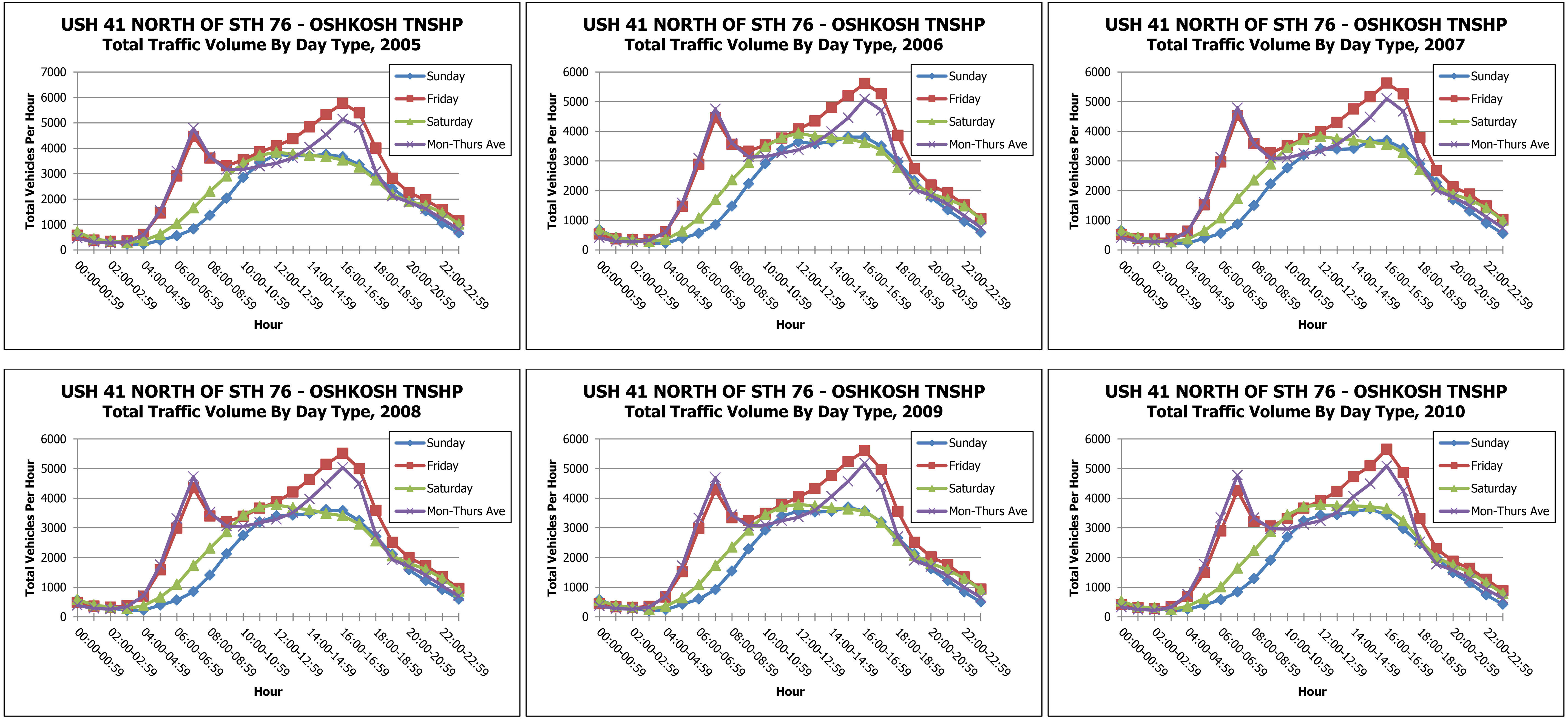
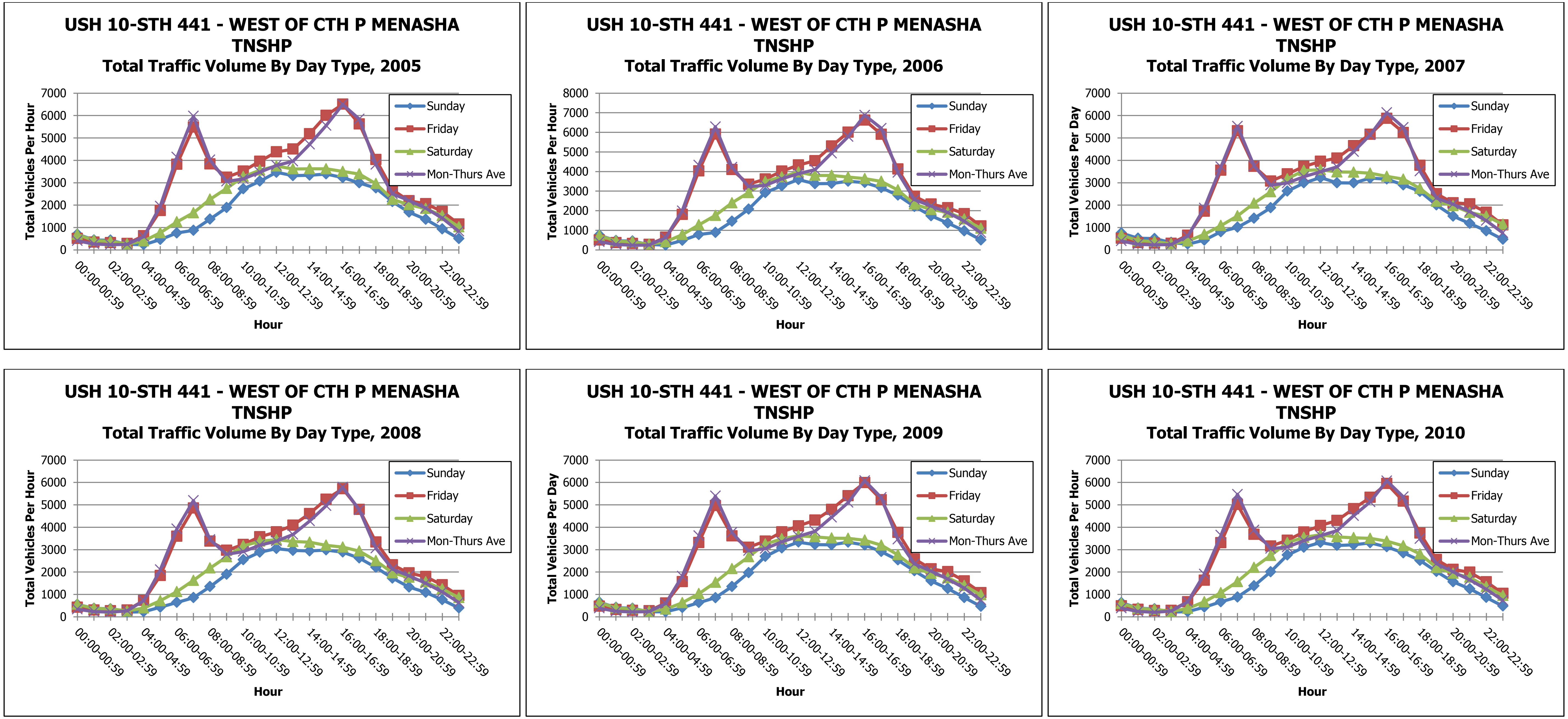


Figure 2-6. ATR Location: 706051 (USH 10-STH 441 - WEST OF CTH P MENASHA TNSHP)



PAVEMENT SURFACE EVALUATION AND RATING SYSTEM

The Pavement Surface Evaluation and Rating System (PASER) 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.

Routine Maintenance

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

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.

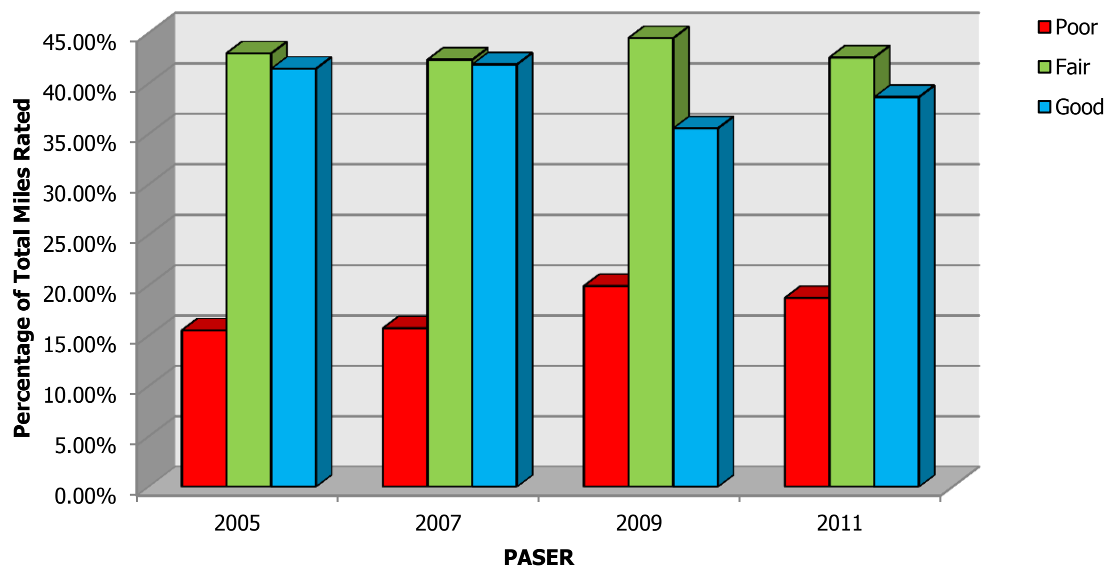
Structural Improvements

Roads with a PASER rating of 1, 2, 3, or 4 or "poor" category are in need of structural improvements such as resurfacing or major reconstruction. Rutting is beginning to take place; Alligator cracking is evident.

Appleton TMA PASER

PASER data is collected by local municipalities every two years for paved and unpaved roads 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 and 2-8 (below)** are illustrations of the Appleton TMA paved and unpaved PASER data from 2005 to 2011. Collecting and comparing PASER data from one year to the next allows the TMA to gauge how the road network changes over time.

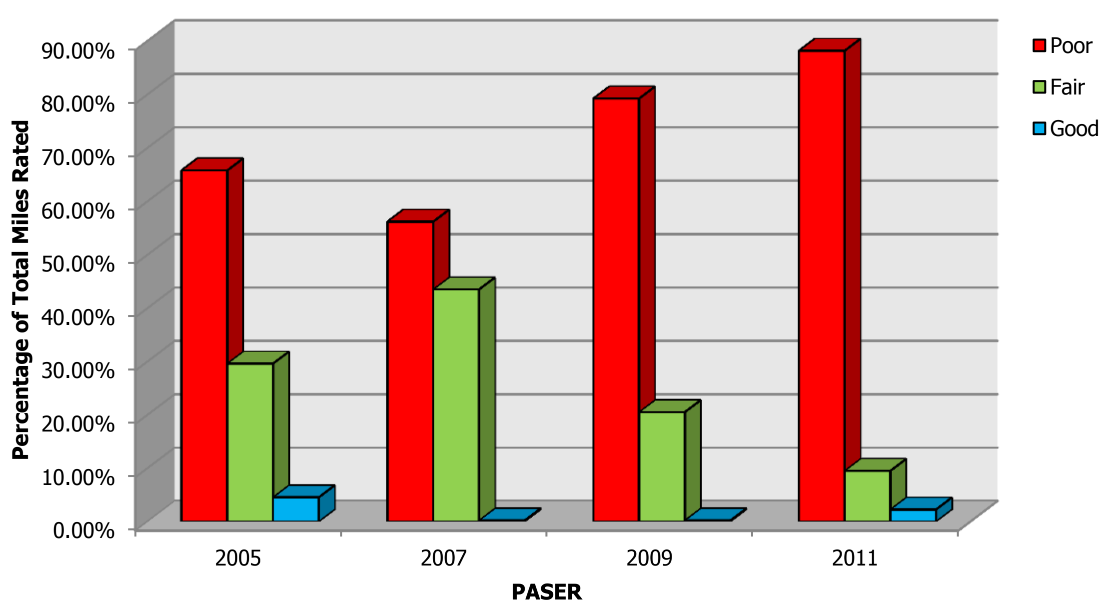
Figure 2-7. Appleton TMA PASER Paved Roads 2005-2011



Paved Roads

Ratings for paved roads in the "poor" category increased by 3.2 percent, ratings in the "fair" category decreased by 0.4 percent and ratings in the "good" category decreased by 2.8 percent. The MPO is experiencing a shift from "good" to "fair" and "poor" roads. The shift is slight, but should be noted.

Figure 2-8. Appleton TMA PASER Unpaved Roads 2005-2011



Unpaved Roads

Ratings for unpaved roads in the "poor" category increased by 22.4 percent; ratings in the "fair" category decreased by 20.1 percent and ratings in the "good" category decreased by 2.3 percent. The TMA is experiencing a shift from "good" to "fair" and "poor" roads. The shift is significant for unpaved roads.

Exhibits 2-2(a-d) at the end of this chapter illustrate PASER paved and unpaved from 2005 to 2011. Ratings 1-4 are identified in the red and represent "poor" roads that require structural improvements. Ratings 5-7 are identified in the green 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.

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 three distinct analysis years, 2010, 2020 and 2035. 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 TMA region's major transportation corridors. The TDM is also useful for forecasting traffic volumes and patterns across the TMA region.

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 is stratified into six letter grades, "A" through "F" with "A" being the best and "F" being the worst.[2] The Northeast TDM's LOS threshold is equivalent to a LOS C. Each roadway

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

segment depending on functionality and its urban or rural location has a specific LOS C or LOS D threshold.

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 TMA region for the analysis by road miles. Note: sufficient roadway miles are not illustrated in the table. **Exhibits 2-3(a-c)** illustrate Appleton TMA existing and future locations of congestion (2010, 2020 and 2035).

Table 2-3. Appleton TMA Congestion Status by Miles

Model Year	**2010**	**2020**	**2035**
Potential	9.38	14.12	35.33
Approaching	32.36	68.34	94.66
Deficient	13.89	23.93	51.06
Severely Deficient	0.00	0.00	1.37

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 TMA region: USH 41, STH 441 and USH 10/STH 10. A timed route was calculated using 2010 traffic compared to 2035 traffic to measure any significant changes. The following is the time route analysis results for the three major corridors.

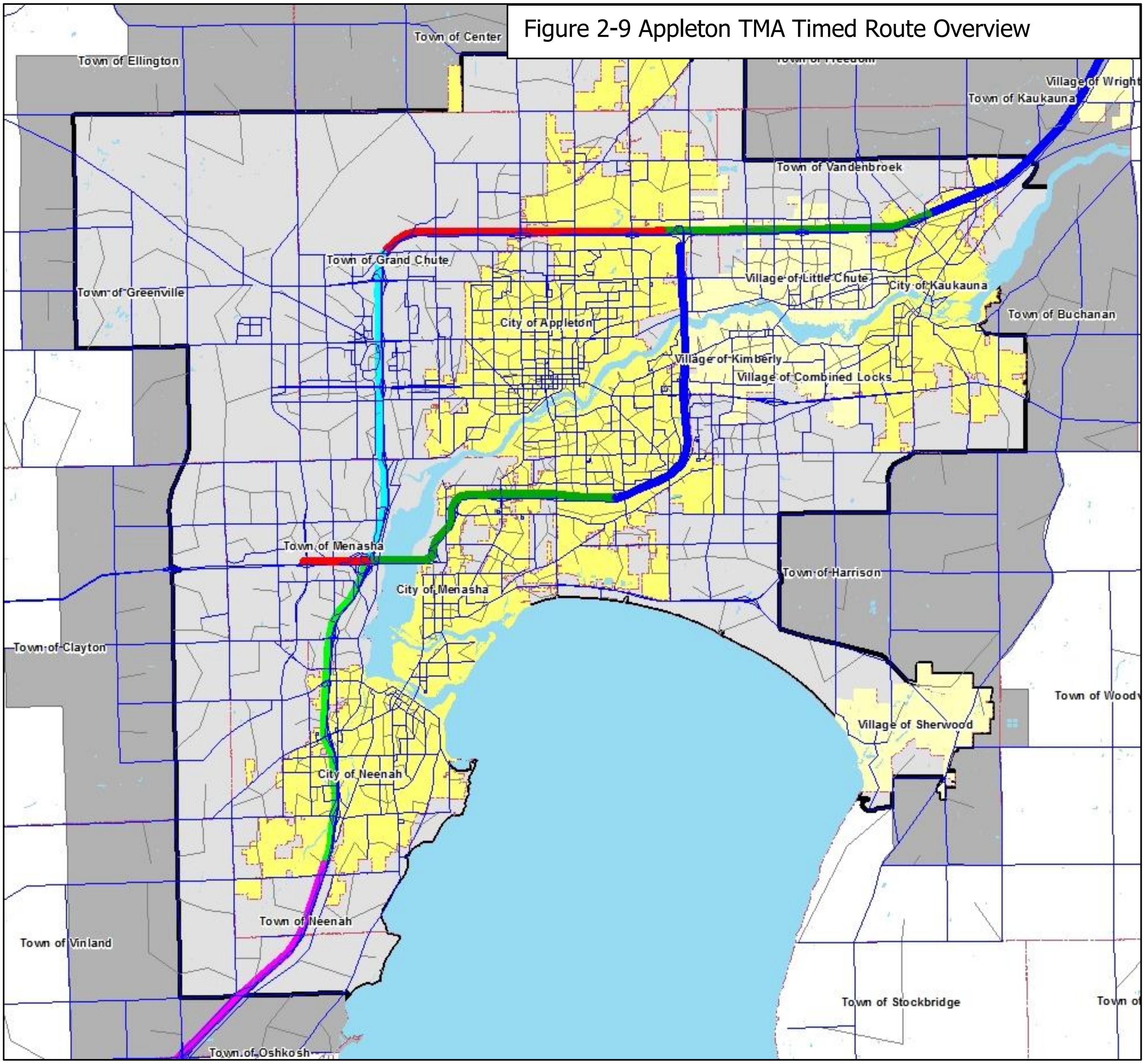


Figure 2-9 Appleton TMA Timed Route Overview

USH 41

The timed route for USH 41 started at CTH U and ended at STH 76. The 2010 model year timed the route at 27 minutes and 53 seconds; the 2035 model year timed the route at 28 minutes and 50 seconds. There was an increase of 1 minute and 37 seconds. The slight increase is to be expected with increased traffic, but does not warrant further investigation.

Please refer to **Exhibit 2-4a 2010 USH 41 Timed Route** and **Exhibit 2-4b 2035 USH 41 Timed Route** at the end of this chapter.

STH 441

The timed route for STH 441 started at USH 41 in northern Appleton and ended at CTH CB. The 2010 model year timed the route at 10 minutes and 52 seconds; the 2035 model year timed the route at 10 minutes and 56 seconds. There was an increase of 4 seconds. The slight increase is to be expected with increased traffic, but does not warrant further investigation. Please refer to **Exhibit 2-5a 2010 STH 441 Timed Route** and **Exhibit 2-5b 2035 STH 441 Timed Route** at the end of this chapter.

Railroad & Bridge Analysis

The Appleton 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, but also presents an opportunity for congestion. Railroad and bridge crossings are bottlenecks and can cause traffic congestion.

CANADIAN NATIONAL

Canadian National (CN) is a Canadian based railway – serving customers across Canada, North America and beyond. CN is one of the major railroad companies operating within Wisconsin. See **Appendix D** for all operating railroad companies within Wisconsin. Rail crossings play a key role in vehicular traffic congestion. Train activity, rail maintenance and accidents cause significant delays in traffic. There are 252 rail crossings within the Appleton TMA planning area boundary. CN's safety matrix for U.S. and Canada Combined are illustrated in **Table 2-4**. In 2012 CN experienced 179 crossing accidents and 63 trespassing accidents. **Table 2-5** shows crossing and trespassing accidents from 2011 to 2012 by county.

Table 2-4. CN Railroad Safety Matrix U.S. and Canada

Data	**Measure**	**2010**	**2011**	**2012**	**2013 Target**
Crossing accidents	Number	220	211	179	155
Trespassing accidents	Number	88	89	63	50

Source: CN Leadership in Safety report, 2013 – page 18 and 19

FEDERAL RAIL ADMINSTRATION

Table 2-5. Accident Overview by county	**Calumet**		**Outagamie**		**Winnebago**	
	2012	2011	2012	2011	2012	2011
Total Accidents/Incidents	2	1	1	3	3	3
Total Fatalities	0	0	0	0	0	0
Total Nonfatal Conditions	1	1	2	2	1	2
Highway Rail Accidents/Incidents	2	1	1	2	2	1
Total Fatalities	0	0	0	0	0	0
Total Nonfatal Conditions	1	1	2	1	0	0
Number of Crossings	92	92	194	194	182	182
Public Crossings	62	62	137	137	115	115
Private crossings	30	30	57	57	67	67
Crossings with gates	5	5	44	44	51	51
Other Active Crossings	21	21	26	26	22	22
Number Crossings with Passive Warnings	36	36	67	67	42	42

Source: Federal Railroad Administration

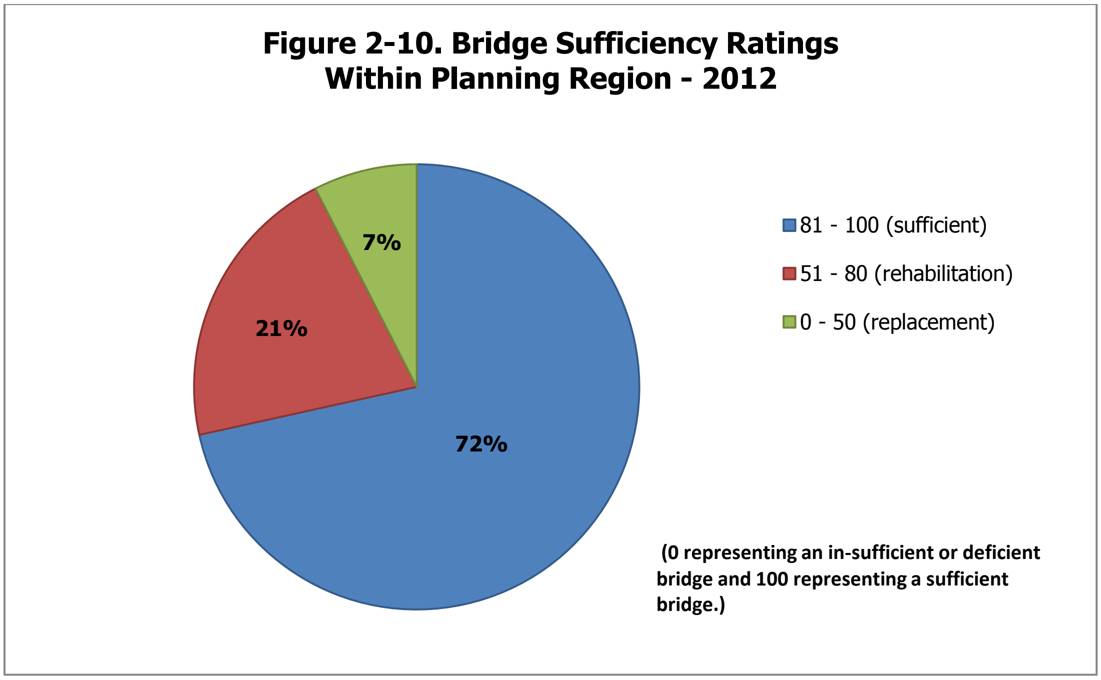
BRIDGES

There are a total of 253 state and local bridges within the Appleton TMA. Bridges are inspected every two years and sometimes more frequently depending on any 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 facets:

- 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
- On 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 bridges with a Sufficiency Rating (SR). A SR takes into account 75 factors reviewed during the inspection. The SR ranges from 0 to 100 with 0 representing an in-sufficient or deficient bridge and 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. **Figure 2-10** illustrates the bridge sufficiency ratings for the Appleton TMA region for 2012.



The Appleton TMA bridge locations are illustrated in **Exhibit 2-6** at the end of this chapter.

Non-Motorized Analysis

Sidewalks, bike lanes, and trails are not only great facilities for recreation, but are necessary to those who utilize the facilities to travel to and from employment and schools. There are 981 miles of sidewalks, 59 miles of bike lanes and sharrows, and approximately 130 miles of paths/trails within the Appleton TMA region. Please refer to **Exhibit 2-7 Sidewalks, bike lanes, and trails** at the end of this chapter.

Bike Facilities

There are a variety of bicycle facilities that can be included in a city's transportation network and it is important to understand the differences between the common terms such as bike lanes, signed shared roadway (bike routes) and multi-use trails (shared use paths). A brief summary is included below as well as pictures to document each type:

- 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."[3] An alternative to the bike lane designation is the **shared lane marking (sharrow),** which is designed to work as a bike lane, without the paint or markings of a bike lane. A sharrow notifies both bicyclists and motorists to share the roadway, but it notifies all transportation users that bicyclists are welcome on a road.

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

- **Signed shared roadway (bike route)** is simply a street/road that has been identified as a preferred bicycle route.[4] 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.

- **Multi-Use Trail** is an off-road facility that is strictly designed for bicyclists and pedestrians. Trails are separate from the road network, but are integrated into the overall transit system to connect neighborhoods to schools, places of employment, and retail districts.[5]

Typical Bike Lane

Typical Sharrow

Typical Bike Route

Typical Multi-Use Path

Pedestrian Facilities

Pedestrian facilities (i.e. sidewalks and multi-use trails) are an integral part of providing the necessary infrastructure for individuals to remain active and thriving citizens. According to the Federal Highway Administration (FHWA), “When sidewalks are not available, pedestrians are forced to share the street with motorists, access to public transportation is restricted, and children might not have safe play areas. Because Federal regulations do not require agencies to build sidewalks, the decision is left to States and local agencies.”[6] Although the FHWA cannot require states and municipalities to build sidewalks, it does provide basic standards for sidewalk dimensions and minimum slop requirements. The typical minimum width of a residential sidewalk is 60 inches (5 feet). For a typical ramp at an intersection or mid-block

[4] http://www.bicyclinginfo.org/engineering/facilities-bikelanes.cfm (August 2013)
[5] http://www.bicyclinginfo.org/engineering/paths-principles.cfm (August 2013)
[6] http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/chap4a.cfm (August 2013)

crossing, they recommend that the curb ramp not exceed 8.33 percent and that the cross slope of the ramp not exceed 2.0 percent.

TRAIL COUNTS

Trestle-Friendship Trail

This award winning trail facility connects the City and Town of Menasha across a 1,600 foot converted railroad trestle. The trail also crosses the Menasha Lock site via a unique pedestrian lift bridge donated by Miron Construction. It is extremely popular and is maintained jointly by the City and Town of Menasha. Downtown City businesses have seen an increase in bicycle traffic since the trail opened.[7]

Trestle Trail - 2008 Janke General

CB Trail

The CB Trail runs along CTH CB connecting CTH BB to CTH JJ. This trail provides a north/south connection providing recreationist and commuters with an invaluable facility and connections to major employers and businesses.

Jacobson Trail

The Jacobson Trail runs along Jacobson Road and connects Irish Road to Clayton Avenue.
The Town of Menasha has counters on the trails year round to track bicycle and pedestrian traffic. **Figures 2-11 to 2-16** depict 2010 annual counts by week and month for the Trestle-Friendship, CB and Jacobson Trails.

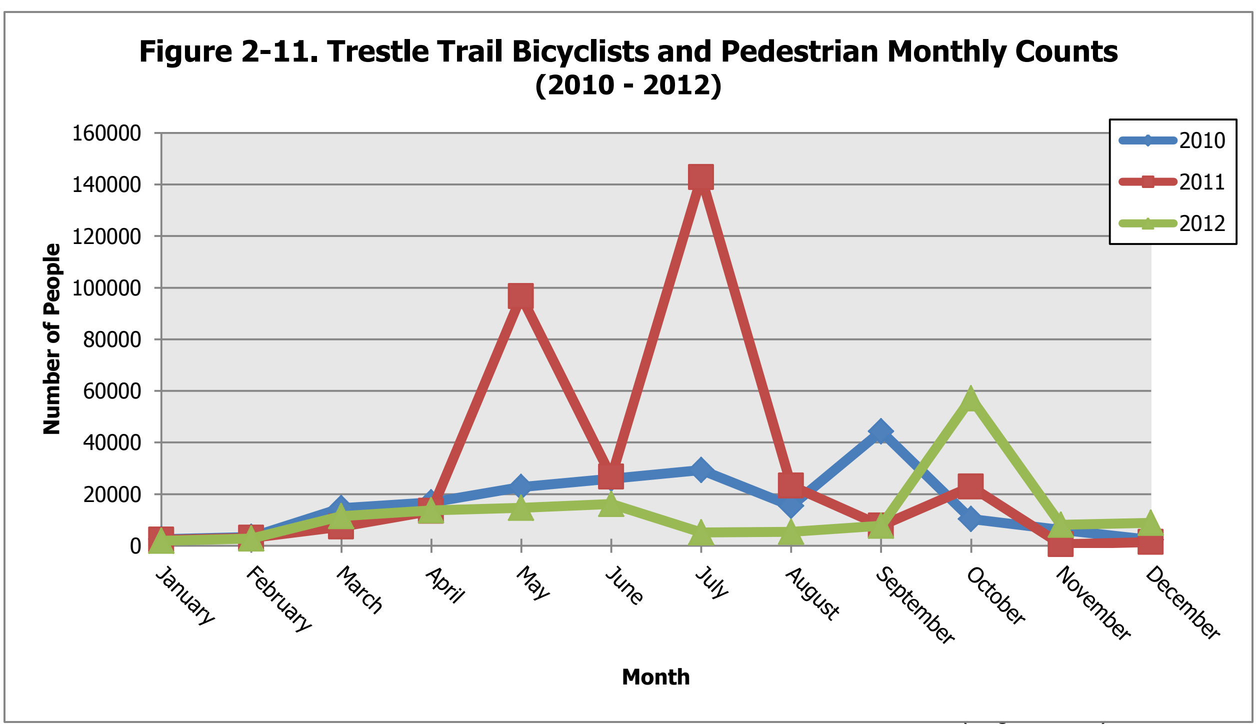


Figure 2-11. Trestle Trail Bicyclists and Pedestrian Monthly Counts (2010 - 2012)

Figure 2-12. Trestle Trail Bicyclists and Pedestrian Annual Counts

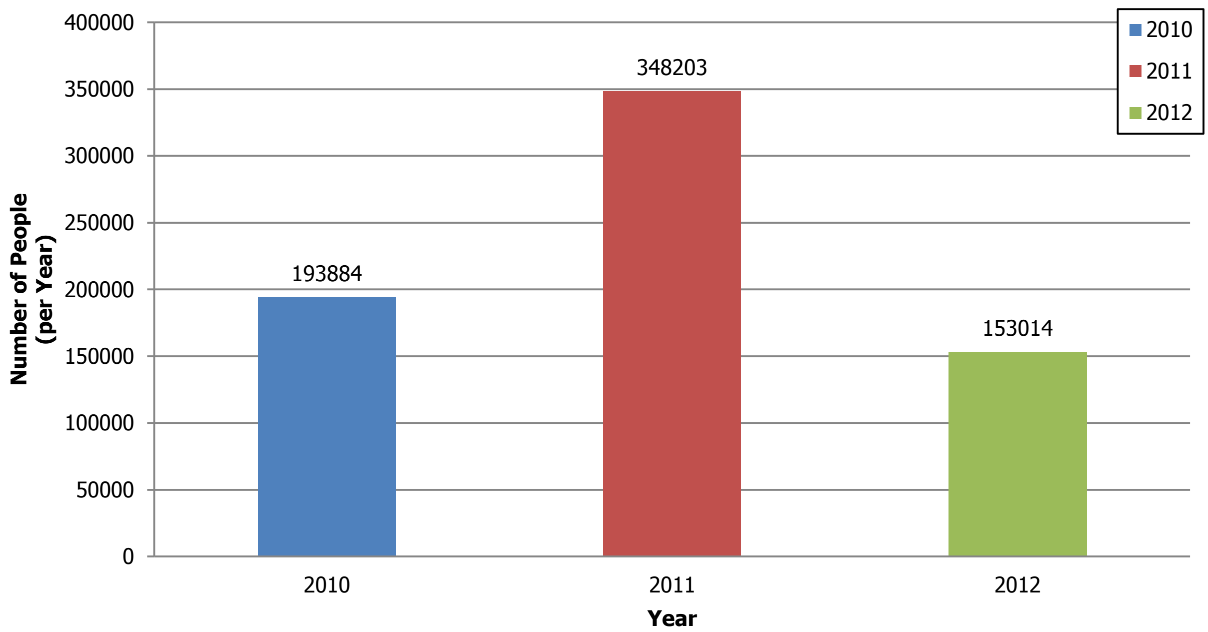


Figure 2-13. Jacobson Trail Bicyclists and Pedestrian Monthly Counts (2010 - 2012)

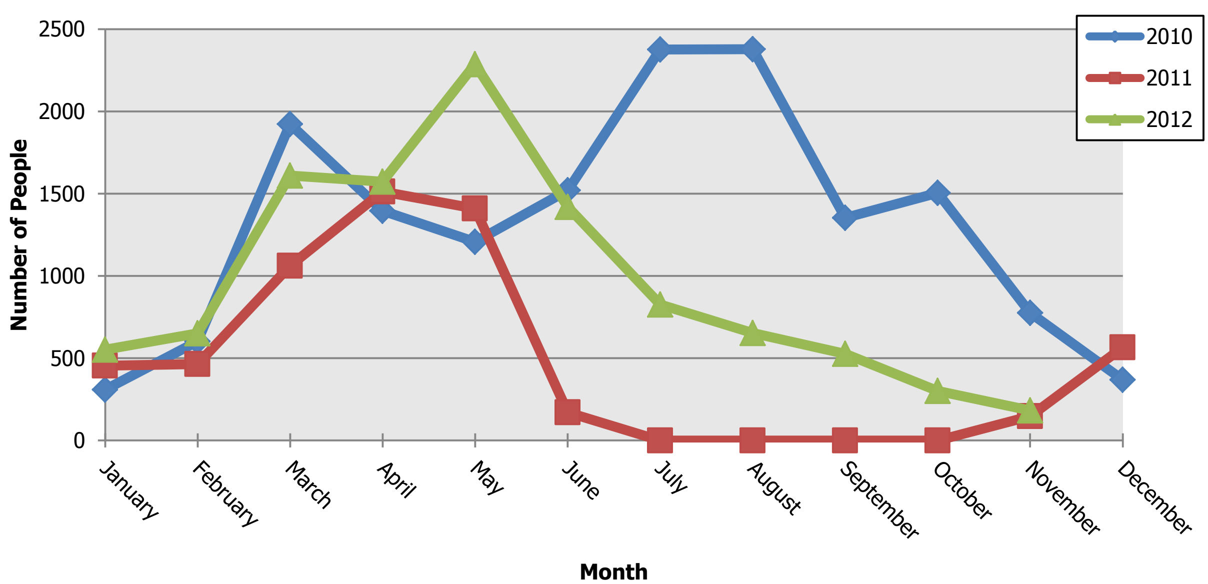


Figure 2-14. Jacobson Trail Bicyclists and Pedestrian Annual Counts

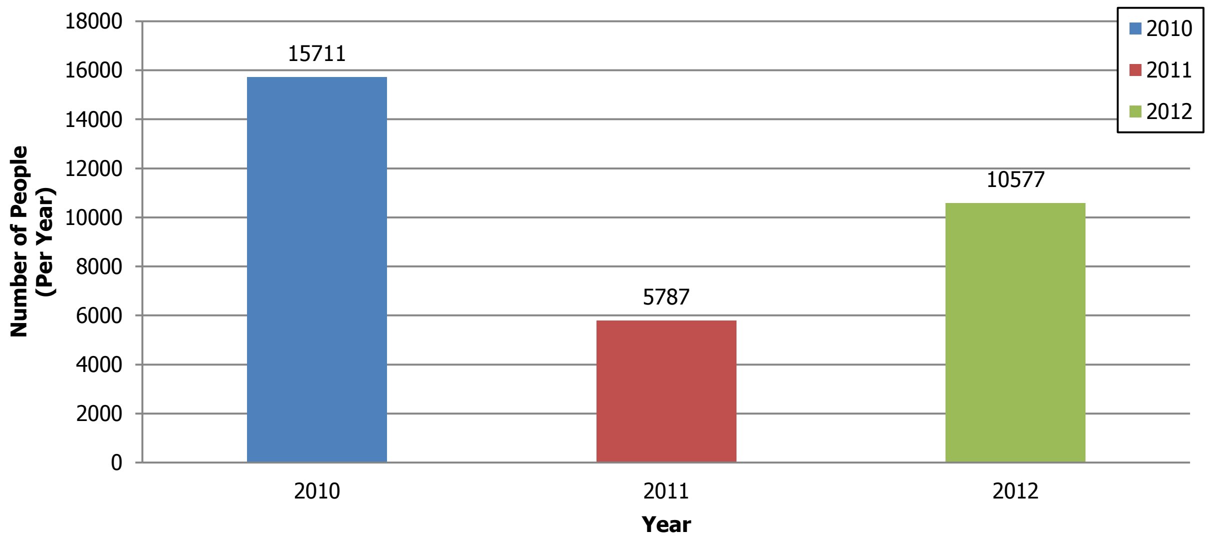
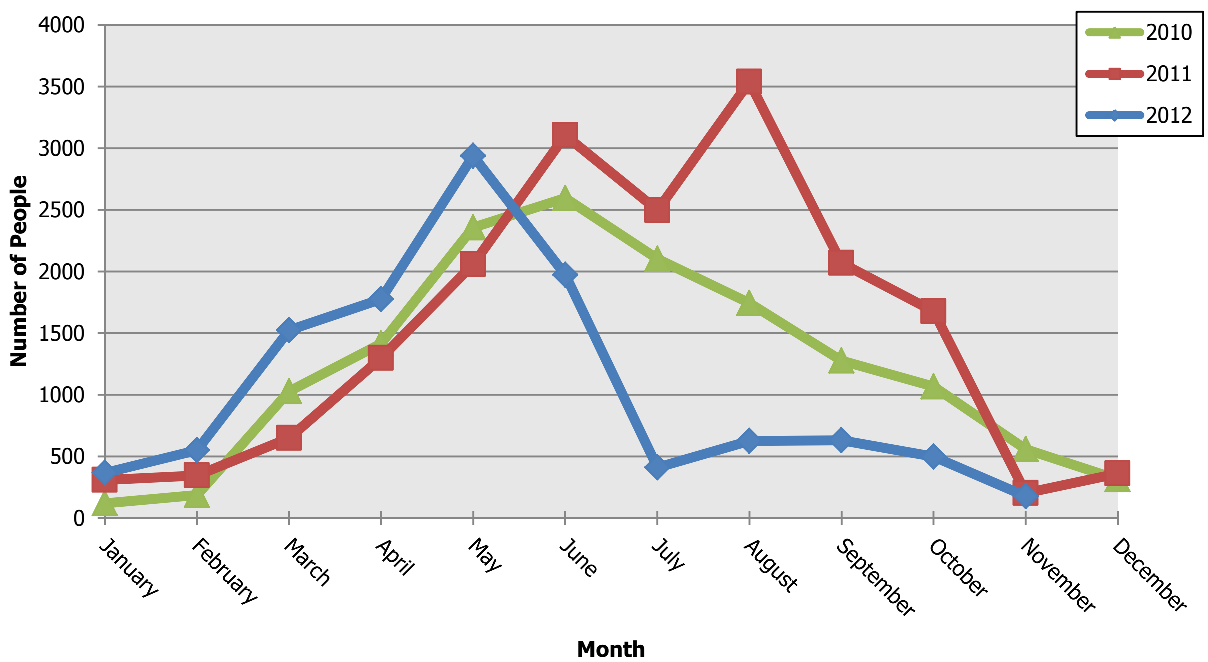


Figure 2-15. CB Friendship Trail Bicyclists and Pedestrian Monthly Counts (2010 - 2012)



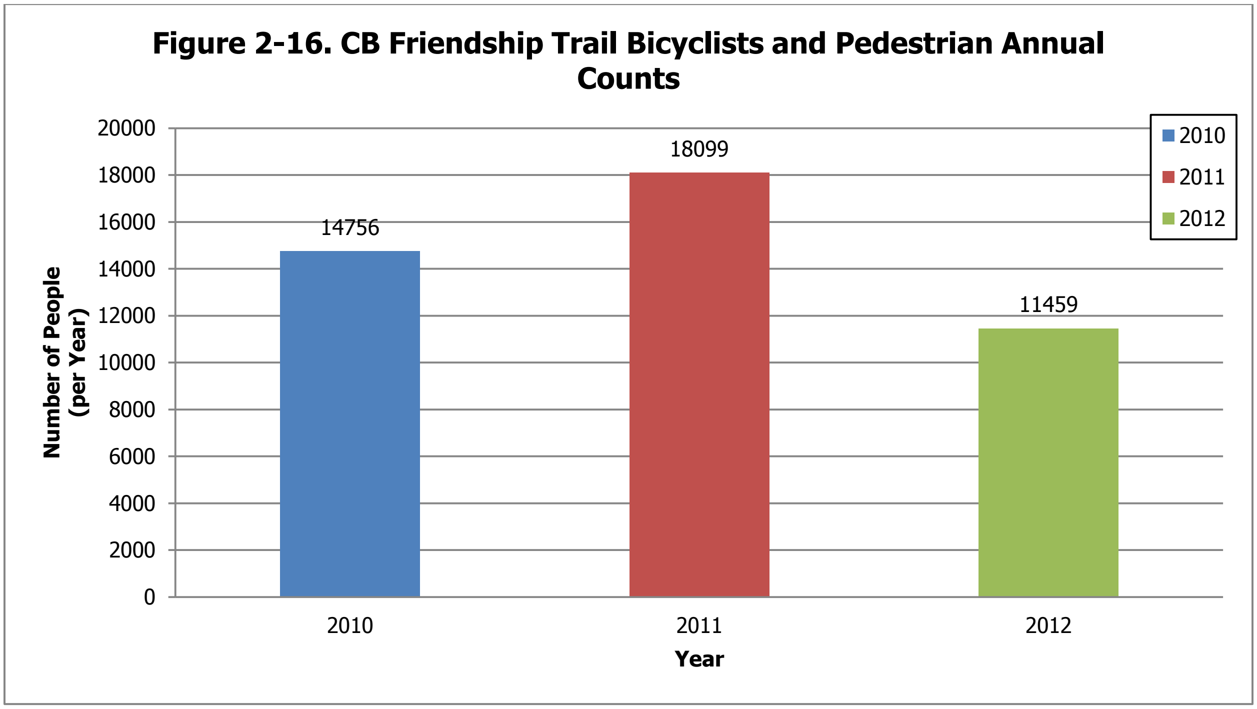


Figure 2-16. CB Friendship Trail Bicyclists and Pedestrian Annual Counts
Number of People (per Year)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
14756
18099
11459
2010
2011
2012
Year
2010
2011
2012

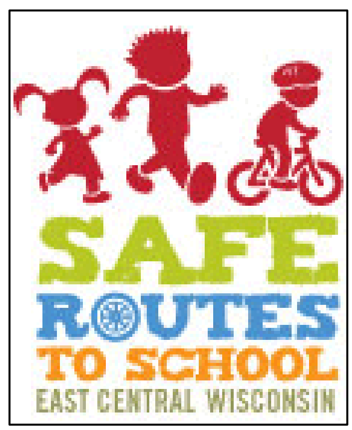
"GET UP AND RIDE"

In 2009, Kimberly-Clark Corporation created an internal Bike Challenge for its 50,000+ employees. The Bike Challenge was a health and wellness initiative that was intended to encourages people to bike for transportation and recreation.

In 2011, with the help of the Bicycle Federation of Wisconsin, the Challenge was successfully piloted in Wisconsin at the state-wide level. The Bike Challenge then called the Get Up & Ride National Bike Challenge, which went national in 2012, had over 30,000 participants riding 12 million miles.[8]

Endomondo, a sports tracking service based in Denmark is contracted to track mileage in two categories: cycling for transportation and cycling for sport. The data collected by Endomondo can be used to measure bicycle participation throughout the Appleton TMA region. In 2012 the data collected could only be broken out by U.S. Census statistical area, but starting in 2013 the data will be further broken down by municipality. This data will allow the Appleton TMA to take an in depth look at participation and origin and destinations within the region.

SAFE ROUTES TO SCHOOLS



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 5-E's: Engineering, Encouragement, Education, Enforcement, 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 funds are limited to children K-8 and to projects located within two miles of a school.[9]

For the purposes of this CMP plan, SRTS is an important component in dealing with traffic congestion in the Appleton 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:

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[8] http://www.endomondo.com/campaign/national/faqs (3/26/2013)
[9] http://www.saferoutespartnership.org/resourcecenter/quick-facts (3/26/2013)

- Within the span of one generation, the percentage of children walking or bicycling to school has dropped precipitously, from approximately 50% in 1969[10] to just 13% in 2009.[11]

- While distance to school is the most commonly reported barrier to walking and bicycling[12], private vehicles still account for half of school trips between 1/4 and 1/2 mile—a distance easily covered on foot or bike.[13]

- 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.[14]

- 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.[15]

East Central Wisconsin Regional SRTS

The East Central Wisconsin Regional SRTS Program focuses on empowering local communities and school districts with the resources and knowledge needed to implement SRTS activities. By working to make it safer and more appealing for students (grades K–8) to walk and bike to school, the Regional SRTS Program is continually making strides to improve childhood health, reduce traffic congestion and pollution, and create more livable communities. The East Central Wisconsin Regional SRTS Program has been funded through Wisconsin Department of Transportation.

Participating schools are required to put together, with the assistance of East Central staff, a local SRTS plan that includes the following: student and parent surveys; bike and walk audits; and school specific recommendations.

Student Surveys

Student surveys tally how students are currently traveling to and from school. Student surveys are conducted one week for 3 days (Tuesday, Wednesday, and Thursday). National Safe

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[10] Transportation Characteristics of School Children, Report no. 4. Washington, DC: Nationwide personal Transportation Study, Federal Highway Administration, July 1972. (August 2013)
[11] 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)
[12] 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/mmwr/preview/mmwrhtml/mm5438a2.htm. (August 2013)
[13] Federal Highway Administration, National Household Travel Survey 2001; NHTS Brief on Travel to School, January 2008. (August 2013)
[14] 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)
[15] 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. http://repositories.cdlib.org/its/tsc/UCB-TSC-RR-2007-1 (August 2013)

Routes to School Forms will be used for student surveys. Student surveys will be distributed in the fall.

Parent Surveys

Parent surveys are used to find out parent's concerns with allowing their child(ren) to walk or bike to school and from school. These can be sent home in take home folders or in registration packets at the beginning of school. National Safe Routes to School Forms will be used for parent surveys. Parent surveys will be distributed in the fall and there is an online form that is available.

Bike and Walk Audits

Task force members will go through a Bike/Walk Audit training where they look at various scenarios and discuss how they would solve them using the 5 E's. Bike/Walk Audits are observations and evaluations of existing walking/biking conditions at and around a school. East Central staff will assist task forces in conducting these audits and providing task forces with maps, a checklist and a comment sheet. Please refer to **Exhibit 2-8 Safe Routes To School** of the participating schools.

Schools Participating in the Regional SRTS Program within the TMA Boundary

- Currently 93 Public & Private K-8 Schools within the TMA
    - 30 Private – 3 Schools (10%) Participating in Regional SRTS Program
    - 63 Public – 35 Schools (56%) Participating in Regional SRTS Program

- 2009 – 9 Schools Participating
- 2010 – 17 Schools Participating
- 2011– 30 Schools Participating
- 2012 – No new schools
- 2013 – 38 Schools Participating (41%)

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 TMA region. 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 **Exhibits 2-9a-c.** which illustrate the existing and future truck traffic volumes (2010, 2020 and 2035) of the Appleton TMA.

Transit Analysis

The Valley Transit System, which is owned and operated by the City of Appleton, provides transit services throughout the Fox Cities urbanized area. Such services include fixed route bus service, paratransit service (Valley Transit II), Connector and Call-A-Ride service. These services are contracted out to municipalities who choose to participate. These municipalities include: the 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. See **Exhibit 2-10** for an overview of the service area and route network.

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

Evaluating service effectiveness allows transit agencies to measure its productivity. An unlinked passenger trip per vehicle revenue mile is used to evaluate service effectiveness; the higher the ratio, the better the performance. 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.[16]

Table 2-6. displays the Appleton Valley Transit's annual vehicle revenue miles, annual unlinked trips and unlinked passenger trips per vehicle revenue mile from 2000 to 2011. Appleton Valley Transit's annual vehicle revenue miles for bus trips have decreased by 6.4 percent from 2000 to 2011, while the Annual unlinked trips have increased by 8.1 percent. The Demand Response annual vehicle revenue miles have increased by 22 percent from 2000 to 2011; the annual unlinked trips also increased by 13.5 percent. **Figure 2-17** illustrates unlinked passenger trips per vehicle revenue mile from 2000 to 2011.

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

Table 2-6. Appleton Valley Transit Profile (2000 - 2011)

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bus	Annual Vehicle Revenue Miles	1,113,736	1,104,570	1,068,205	1,048,441	1,028,209	1,022,107	1,001,914	1,019,340	1,025,222	1,030,036	1,039,564	1,041,986
	Annual Unlinked Trips	1,025,093	1,039,111	1,046,304	980,037	1,008,530	1,030,325	1,009,873	1,041,164	1,060,854	966,548	1,002,931	1,115,235
	Unlinked Passenger Trips per Vehicle Revenue Mile	0.92	0.94	0.98	0.93	0.98	1.01	1.01	1.02	1.03	0.94	0.96	1.07
Demand Response	Annual Vehicle Revenue Miles	698,740	817,345	722,058	732,720	745,278	752,658	727,314	797,647	888,120	945,909	940,026	895,420
	Annual Unlinked Trips	126,117	128,137	119,514	118,044	119,800	125,969	125,526	139,951	163,124	162,410	156,902	145,884
	Unlinked Passenger Trips per Vehicle Revenue Mile	0.18	0.16	0.17	0.16	0.16	0.17	0.17	0.18	0.18	0.17	0.17	0.16

Source: National Transit Database, 2000-2011

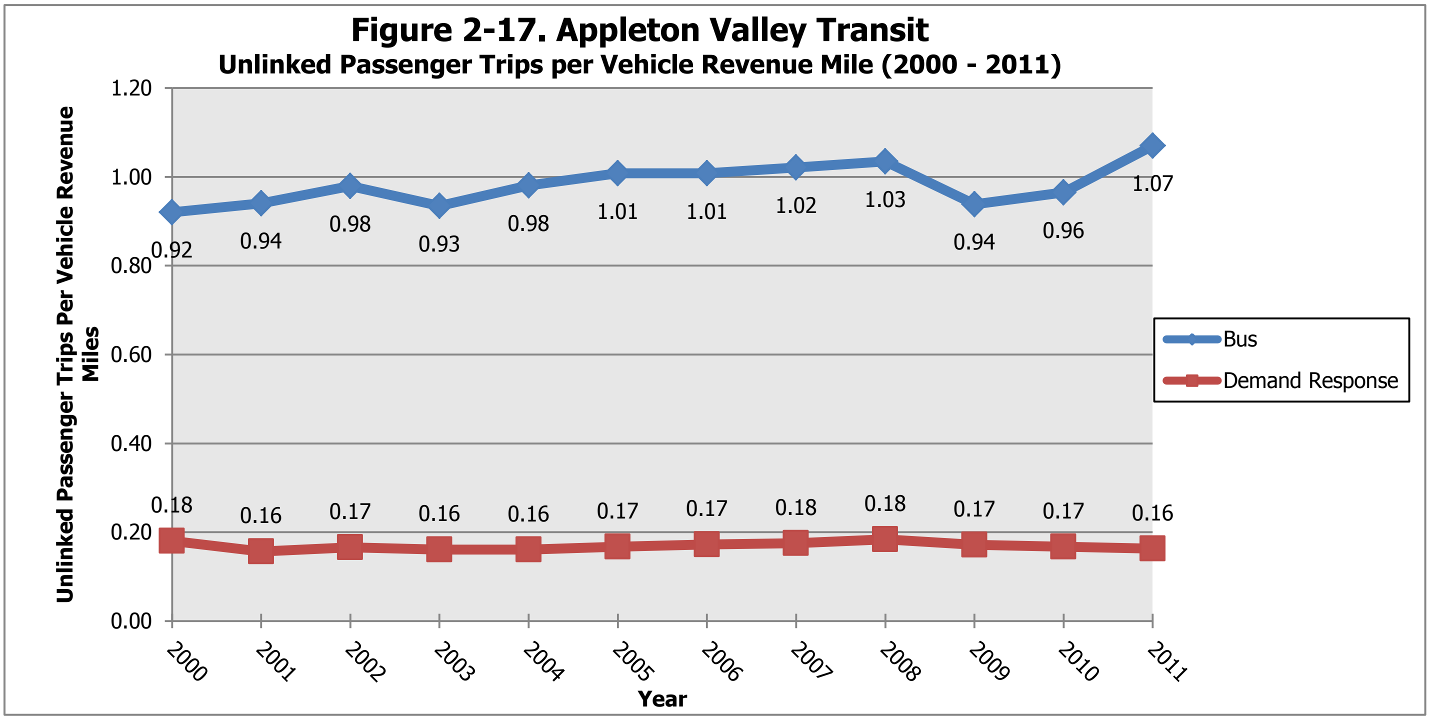
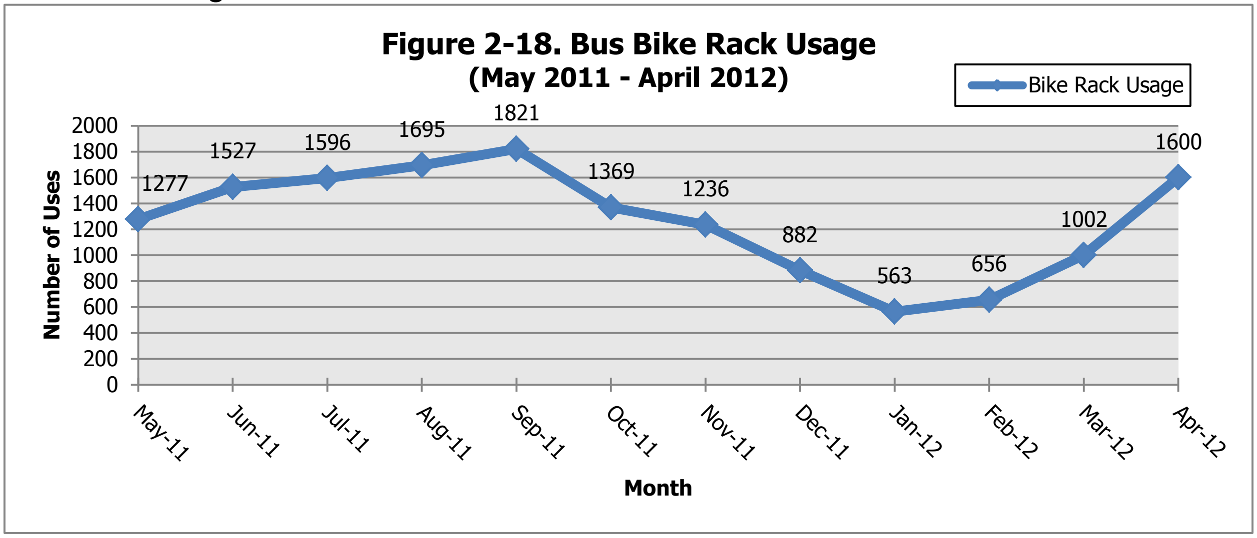
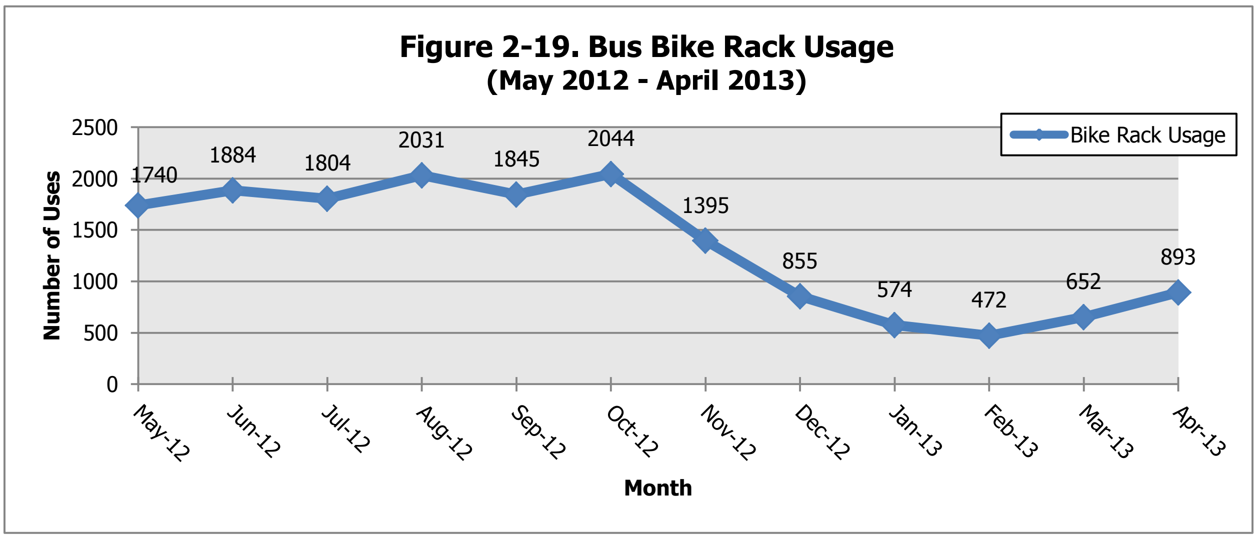


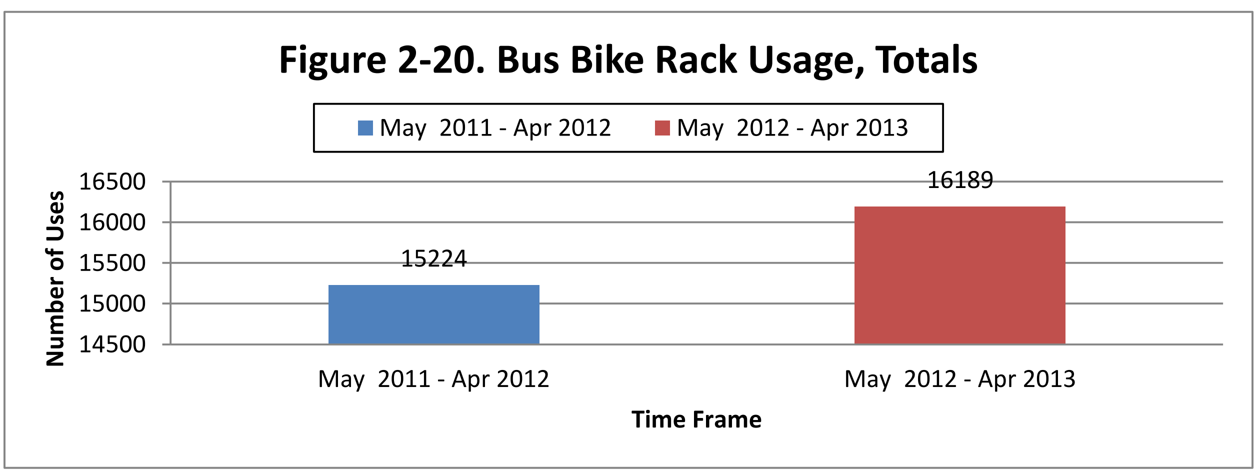
Table 2-7 displays the Appleton Valley Transits peer group's average unlinked passenger trip per vehicle revenue mile from 2000 to 2011, which includes state, regional and national transit agencies. Missing or questionable data has been removed from the analysis. Appleton Valley Transit's Average Annual Unlinked Passenger Trip per Vehicle Revenue Mile (UPTVRM) from 2000 to 2011 falls below the peer group total average and median unlinked passenger trip per vehicle revenue mile.

Table 2-7. Valley Transit Peer Group Analysis		
Unlinked Passenger Trips per Vehicle Revenue Mile, 2000-2011		
Agency	**Average**	
State	**Bus**	**Demand Response**
Appleton Valley Transit	**0.98**	**0.17**
Beloit	0.91	0.26
Eau Claire	1.51	0.15
Fond du Lac	0.82	0.25
Green Bay	1.20	0.15
Janesville	1.06	0.28
La Crosse	1.42	0.17
Oshkosh	1.67	0.23
Sheboygan	0.84	0.27
Wausau	1.44	0.19
Region		
Battle Creek, Michigan	1.20	0.20
Bay City, Michigan	0.69	0.15
Decatur, Illinois	1.17	0.37
Dubuque, Iowa	1.52	0.31
Muskegon Heights, Michigan	1.14	0.13
Springfield, Illinois	1.28	0.19
National		
Erie, Pennsylvania	1.74	0.19
Jackson, Tennessee	0.91	0.19
Pittsfield, Massachusetts	0.61	0.20
Average	**1.16**	**0.21**
Median	**1.17**	**0.19**
Source: National Transit Database, 2000-2011		

Bike Rack Usage







District Analysis

Another way to understand and analyze congestion is to study current land use districts. The Appleton TMA region is divided into districts based on the developed land use. The developed districts include residential, commercial, industrial, rural, mixed and airport. Each district has unique congestion related issues and requires a deeper analysis of their functions and goals to be able to recommend congestion reduction strategies. This is a generalization of the land use within the TMA region and should only be used for regional analysis. The following is a description of the developed districts and a brief discussion of their unique congestion issues. The developed district map can be found in **Exhibit 2-11.**

Residential

The residential developed district primarily consists of housing, which can be further divided to single-family, multi-family, group quarters and mobile homes. These areas are also known as "neighborhoods". "Neighborhoods" are social communities where there are more face to face interactions; they are personal settings and situations where residents seek to realize common values, socialize youth, and maintain effective social control.[17] The transportation network within the residential district consists of local roads that bring traffic from the dwellings to the collectors (major and minor), which connect to the arterials (principal and minor) and then to the end destination. Destinations refer to the desired end of the trip or shop, office, school, theater or restaurant. Local roads consist of residential streets that support slower traffic and provide transportation for all modes. Congestion in this area is usually due construction and peak traffic delays. Peak hour traffic takes place in the morning when residents are traveling to work and school and in the afternoon when residents are returning home.

Commercial

The commercial developed district refers to the areas of the community in which the primary land use is related to commercial activities such as: shops, offices, theaters and restaurants. The transportation network within the commercial developed district consists of major and minor collectors and principal and minor arterials. Minor collectors function to bring traffic from the local roads to the major collectors. The major collectors move traffic to the principal and minor arterials. Principal arterials service the region through state and interstate highways. Minor arterials link towns to the cities. Congestion in this area is related to peak hour traffic, primary destination location, and lack of parking.

Industrial

Industrial land use includes factories, light manufacturing, research and development labs, offices, distributors and warehouses. The industrial developed district is typically connected to the transportation network through principal and minor arterials to provide quick and easy access to the region and beyond. Congestion in the industrial developed district is primarily due to heavy truck traffic.

[17] Schuck, Amie and Dennis Rosenbuam 2006 "Promoting Safe and Healthy Neighborhoods: What Research Tells Us about Intervention." The Aspen Institute (Accessed May 2013)

Rural

Rural areas within the Appleton TMA region primarily consist of agriculture and scattered housing and commercial. Typically the rural developed district is supported by major and minor collectors. Congestion in the rural developed district is limited unless a major collector is used by heavy trucks.

Mixed

The mixed developed district consists of commercial, residential and rural developed districts. Typically these areas are found on the fringe of the commercial and residential developed districts. All functional classes are intermingled throughout this developed district. Congestion issues arise when the commercial and residential district move out into the rural developed district, where the transportation network is not equipped to handle the increased demand. Eventually the transportation network designed for the rural district either has to be redeveloped or retrofitted to meet the new demands of the constituents.

Airport

The airport developed district consists of a half a mile buffer around the Outagamie County Airport. The buffer includes all surrounding streets that interact with the airport. It is important to recognize that airport traffic affects the surrounding communities. The surrounding streets around the airport act as a gateway to the neighboring communities and thus need to be inviting. Congestion issues arise from traffic coming to and from the airport.

Good Congestion

Congestion can positively impact a region. Congestion signals economic growth and prosperity. Congestion in a downtown area slows traffic down allowing drivers to survey the local businesses rather than to pass without noticing. It's stated in "Rethinking Traffic Congestion" by Brian D. Taylor that "traffic congestion is evidence of social and economic vitality; empty streets and roads are signs of failure." He also states that "our current focus on transportation networks is misplaced and ignores the effects of congestion on individuals and firms." Congestion, when managed properly, can be used as a means to promote local goods and services. For example, congestion may encourage motorists to get out of their vehicles and use alternative modes of transportation.

Non-Recurring Incident Analysis

WEATHER, ACCIDENTS, CONSTRUCTION & SPECIAL EVENTS

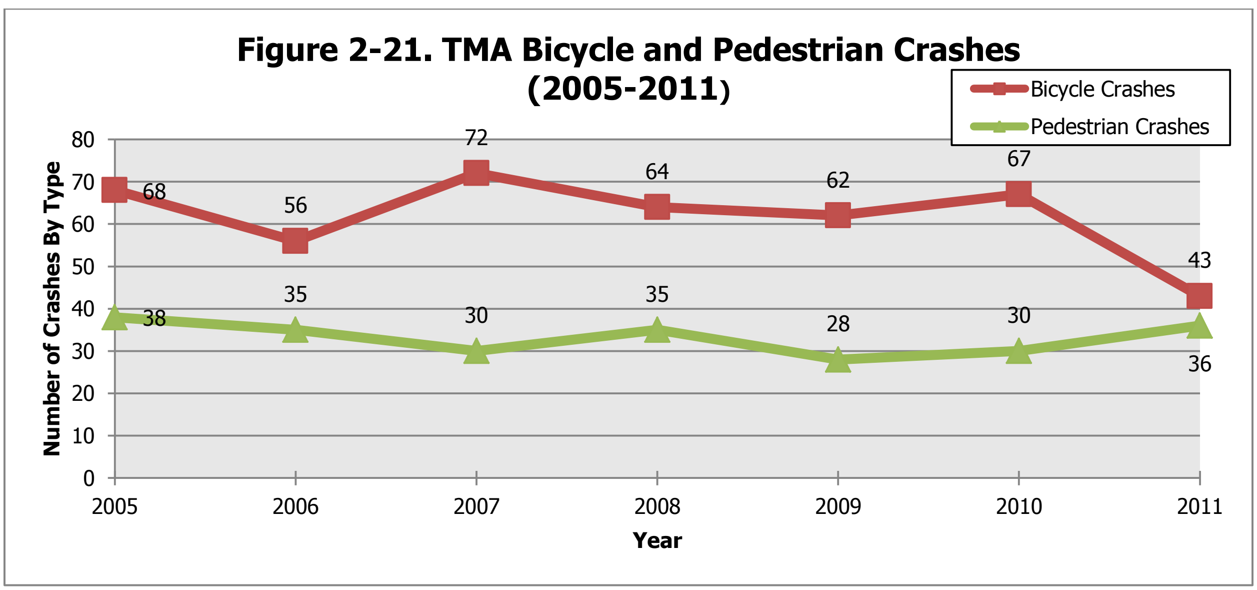
Weather, accidents, construction and special events can lead to changes in driver behavior that directly impact traffic flow.

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.[18]

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 seven year period and separated by specific locations. Crash analysis of specific intersections can be found in **Appendix C**. The data was compiled through WisDOT's Wisconsin Traffic Operations and Safety (TOPS) Laboratory's WisTransPortal Project. WisTransPortal contains a complete database of WisDOT MV4000 Traffic Accident Extract information from 1994 to the present. WisDOT DMV-Traffic Accident Section provides TOPS with updates of the extract files as they become available.[19] Crash data for the Appleton TMA region was downloaded from the Crash Data Retrieval Facility, Version 1.1.19, for February 24, 2013, and compiled into overall yearly trends and analyzed by regional locations. **Exhibit 2-12** at the end of this chapter shows the high risk crash areas within the Appleton TMA.

Crash Data, 2005-2011 Overview



[18] http://www.ops.fhwa.dot.gov/congestion_report/chapter2.htm (3/21/2013)
[19] http://transportal.cee.wisc.edu/ (5/8/2013)

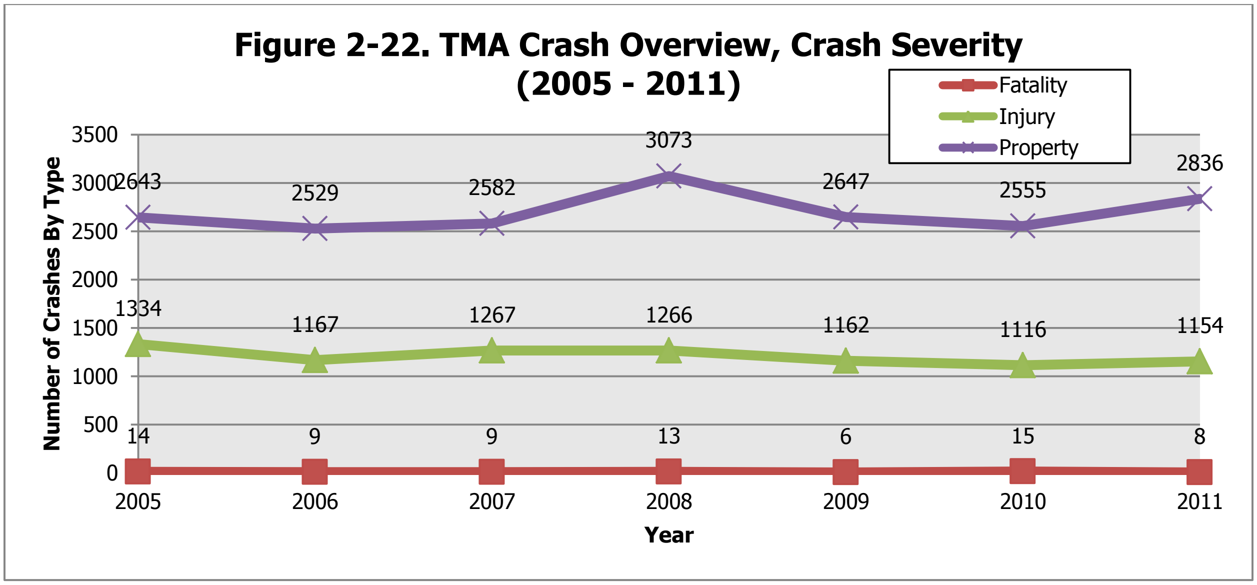


Figure 2-22. TMA Crash Overview, Crash Severity (2005 - 2011)

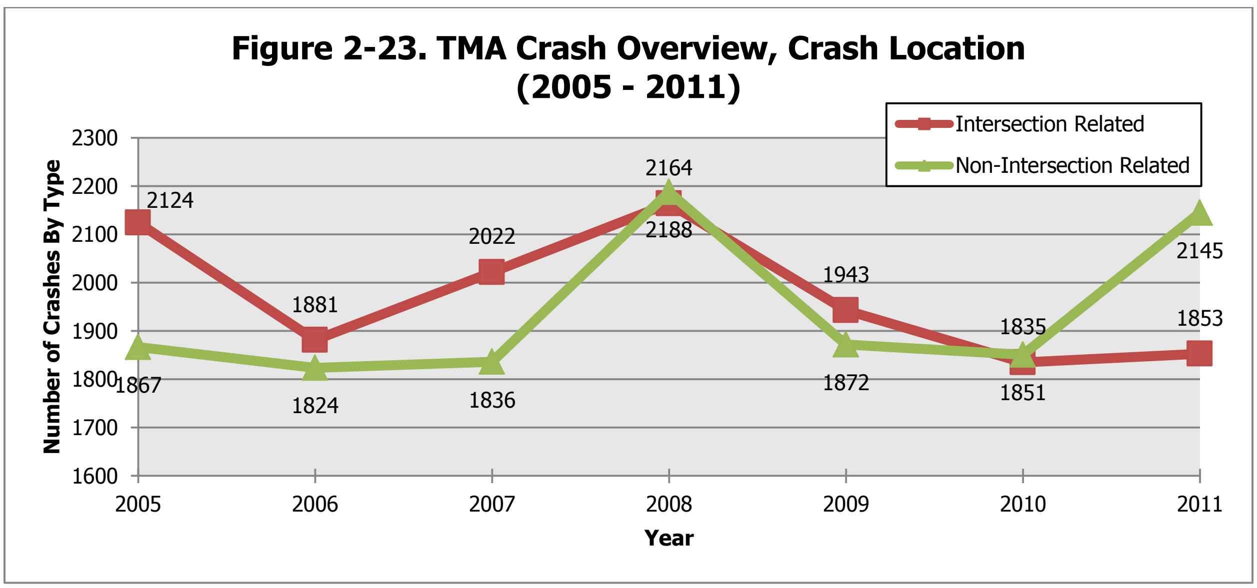


Figure 2-23. TMA Crash Overview, Crash Location (2005 - 2011)

Air Quality Analysis

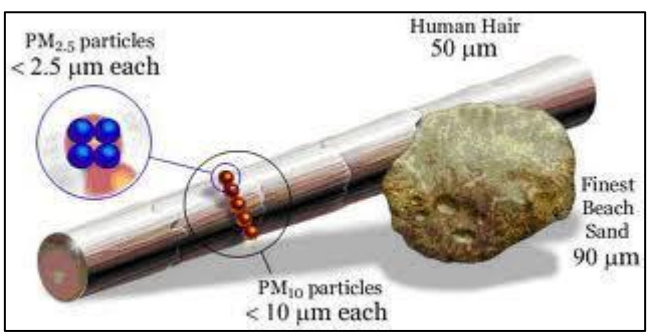
Air quality is the measured condition (health and safety) of the breathable air in the environment. It is monitored by the Wisconsin Department of Natural Resources (WDNR) through monitoring stations state-wide. There is one monitoring station (Appleton AAL) within the Appleton TMA region, which is located 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:

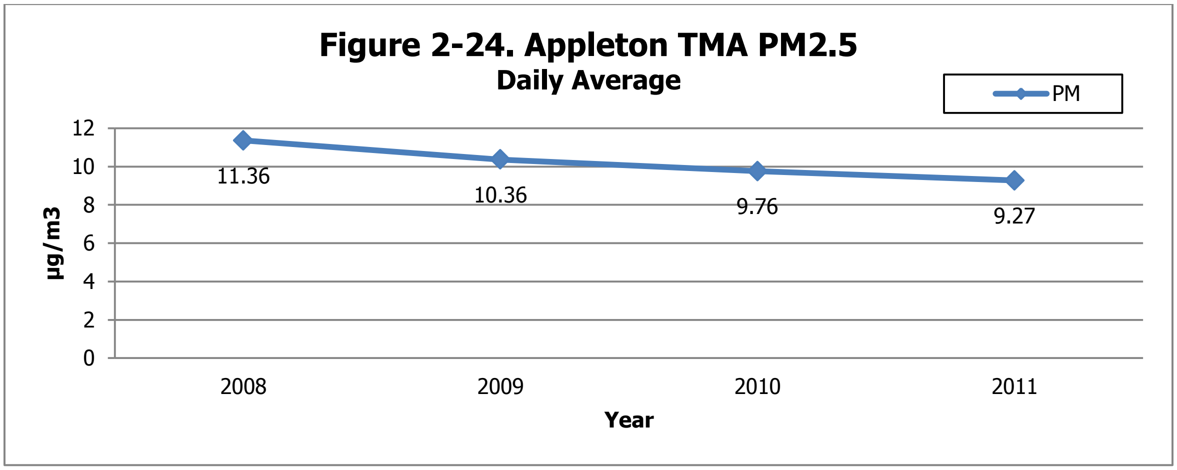
- "Inhalable coarse particles," such as those found near roadways and dusty industries, are larger than 2.5 micrometers and smaller than 10 micrometers in diameter.
- "Fine particles," such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air.[20]

The Appleton AAL 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 14, 2012 - The U.S. Environmental Protection Agency took important steps to protect the health of Americans from particle pollution by strengthening the annual health National Ambient Air Quality Standard for fine particles (PM2.5) to 12.0 micrograms per cubic meter (µg/m3).[21] **Figure 2-24** displays the daily average of PM2.5 sample in Appleton from 2008 to 2011.



http://www.energyjustice.net

[20] http://www.epa.gov/pm/ (3/8/2013)
[21] http://www.epa.gov/pm/actions.html (3/8/2013)



Additionally, **Table 2-8** displays the average daily fine particulate matter (PM2.5) of the three counties (Calumet, Outagamie, and Winnebago) that are part of the Appleton TMA. The data was aggregated over a 5-year period from 2003 to 2008. It demonstrates that the Appleton TMA counties are slightly better than the state average of 10.1 PM2.5 but slightly above the national benchmark of 8.8 PM2.5 during this time period.

Table 2-8. Average Daily Fine Particulate Matter (PM2.5) by Appleton TMA Counties, 2003 - 2008

Place	Average Daily Fine Particulate Matter (PM2.5)
Calumet	9.3
Outagamie	9.4
Winnebago	9.5
Wisconsin	10.1
National Benchmark	8.8

Source: County Health Rankings and Roadmaps, 2003-2008

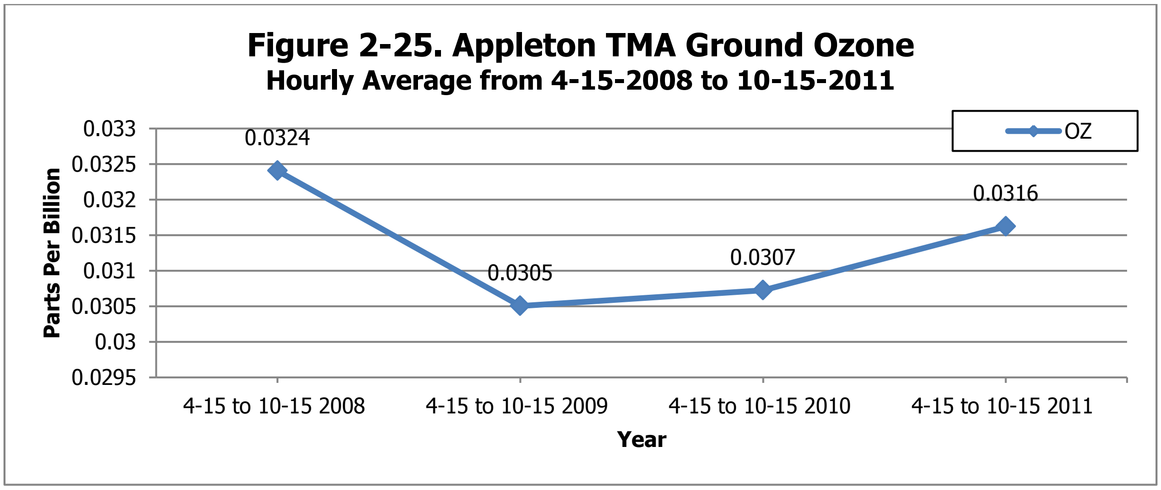
Ozone is found in two regions of the Earth's atmosphere – at ground level and in the upper regions of the atmosphere. Both types of ozone have the same chemical composition (O3). While upper atmospheric ozone protects the earth from the sun's harmful rays, ground level ozone is the main component of 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.[22]

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

[22] http://www.epa.gov/glo/basic.html (3/13/2013)

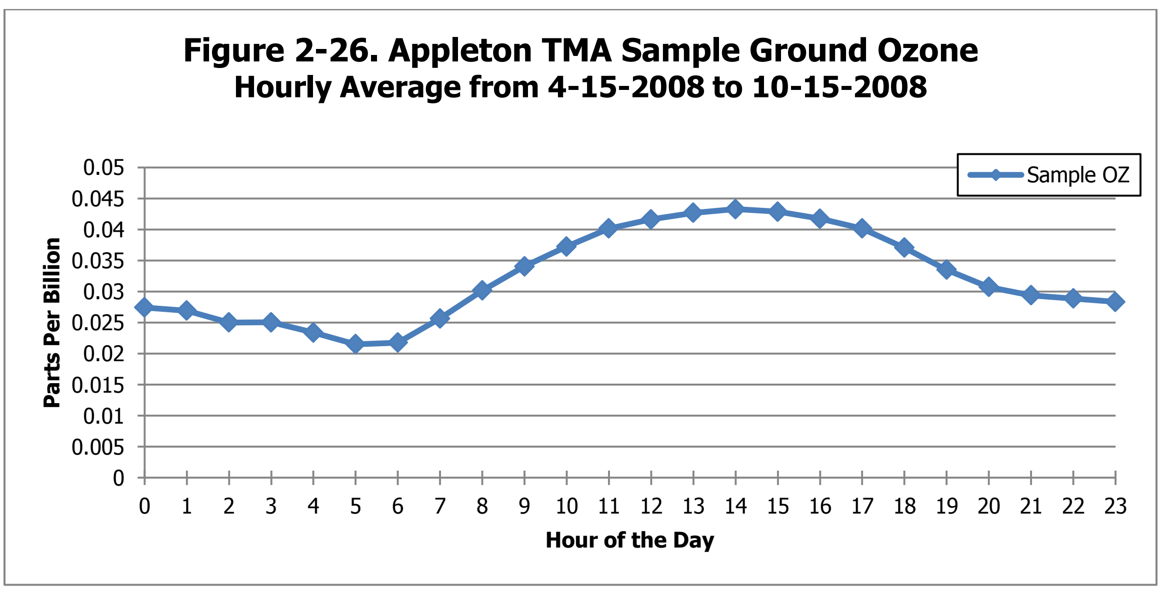
protection and the protection of sensitive trees and plants.[23] The GO standard is at 0.075 parts per million (ppm). **Figure 2-25** displays the average hourly GO samples from 2008 to 2011.



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.

Figures 2-26 through 2-31 display ground ozone sample data to the closest ATR count location.



[23] http://www.epa.gov/airquality/ozonepollution/actions.html#stand (5/10/2013)

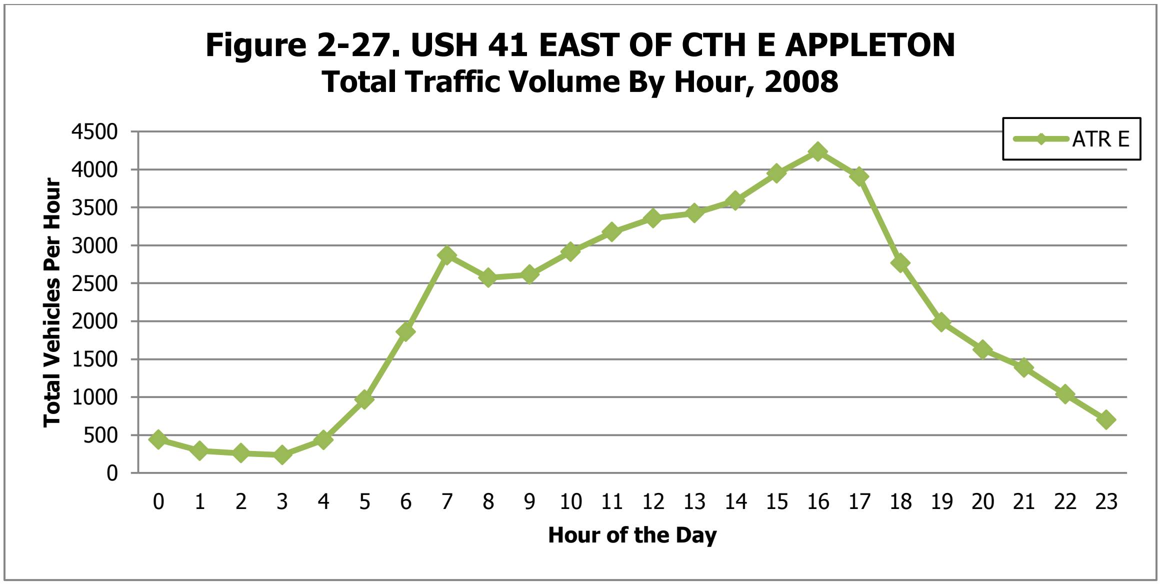


Figure 2-27. USH 41 EAST OF CTH E APPLETON
Total Traffic Volume By Hour, 2008
ATR E
Total Vehicles Per Hour
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour of the Day

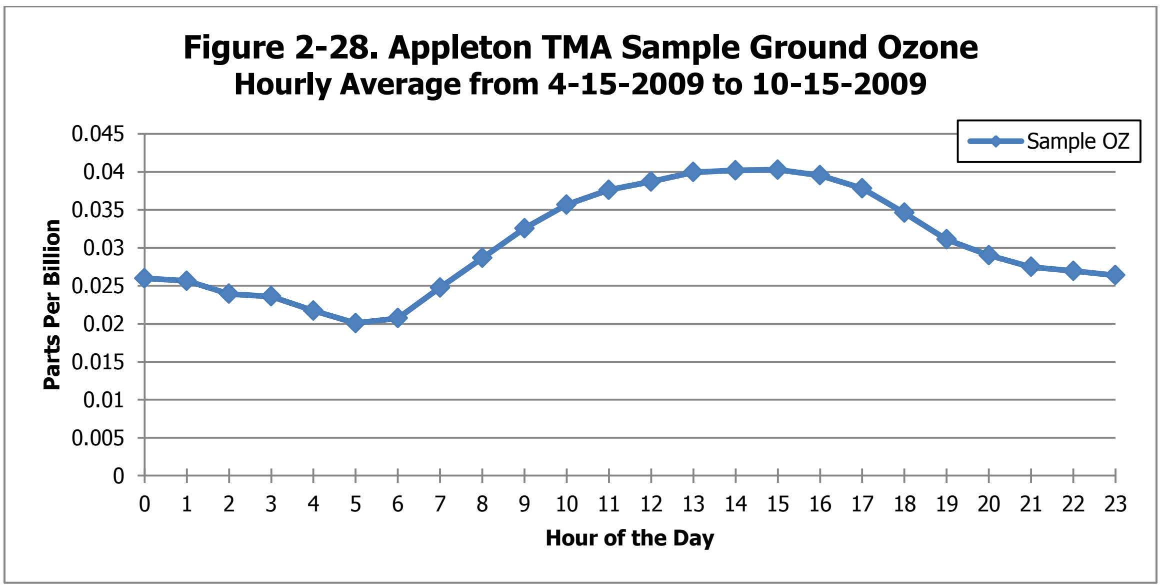


Figure 2-28. Appleton TMA Sample Ground Ozone
Hourly Average from 4-15-2009 to 10-15-2009
Sample OZ
Parts Per Billion
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour of the Day

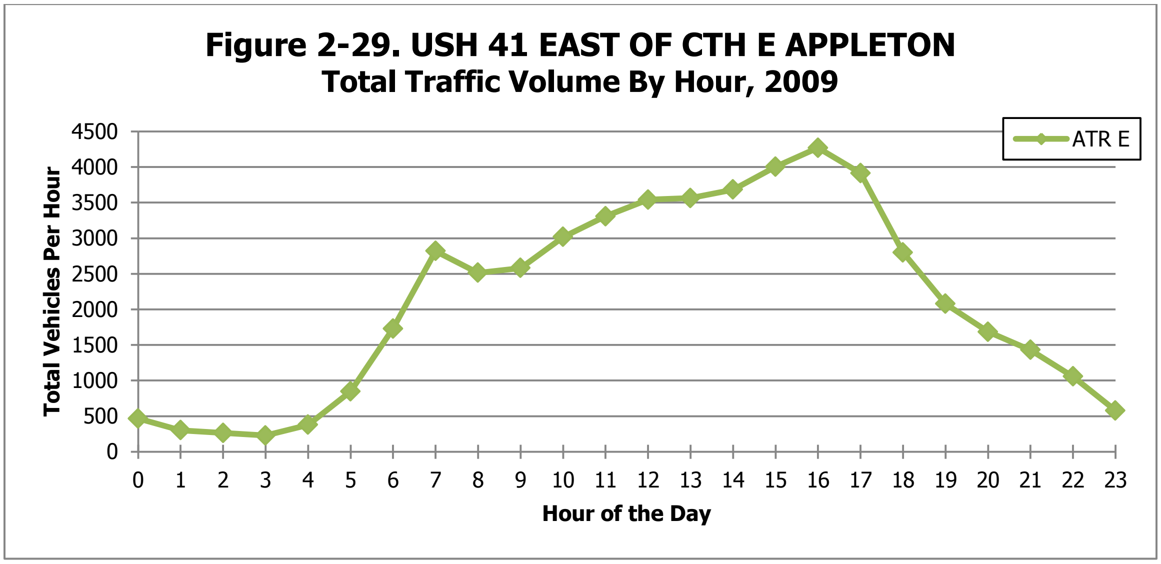


Figure 2-29. USH 41 EAST OF CTH E APPLETON
Total Traffic Volume By Hour, 2009
ATR E
Total Vehicles Per Hour
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour of the Day

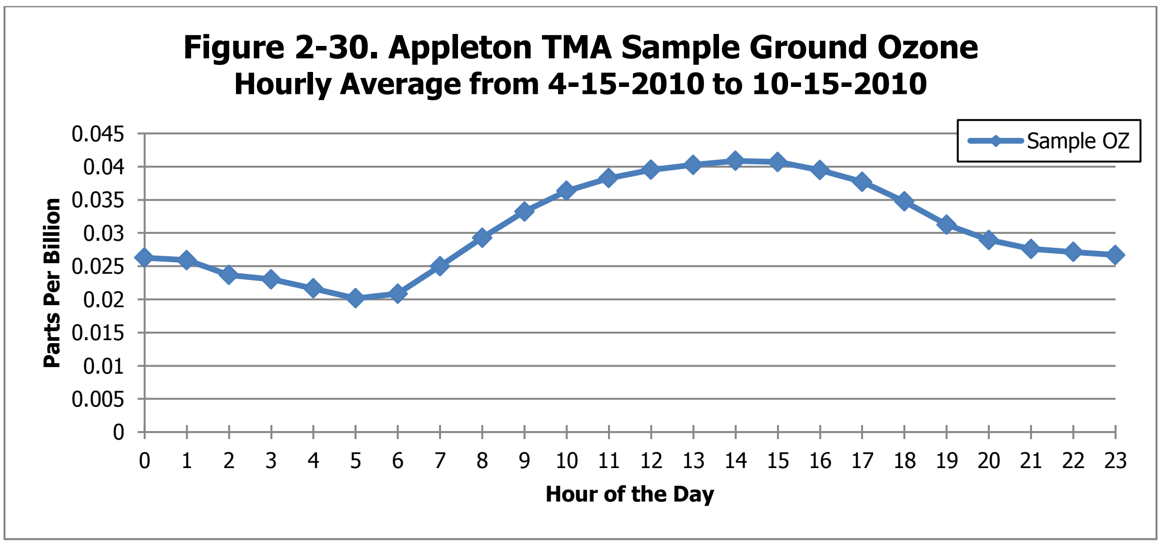
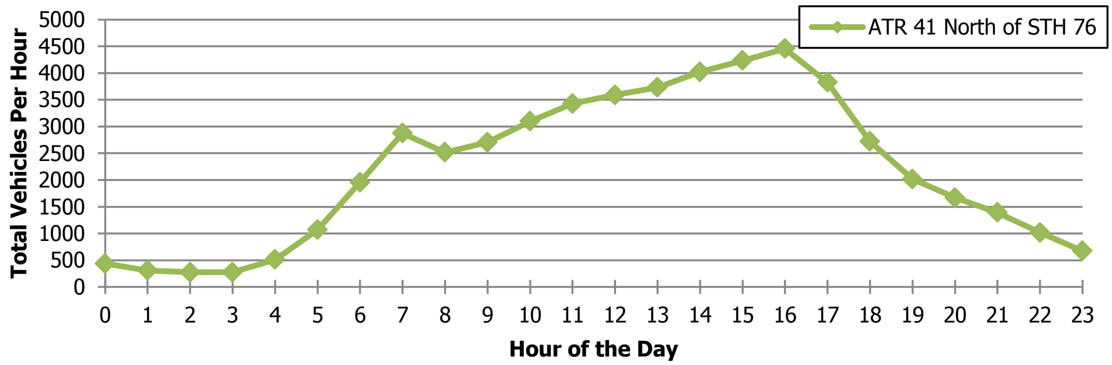


Figure 2-30. Appleton TMA Sample Ground Ozone
Hourly Average from 4-15-2010 to 10-15-2010
Sample OZ
Parts Per Billion
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour of the Day

Figure 2-31. USH 41 NORTH OF STH 76 - OSHKOSH TNSHP
Total Traffic Volume By Day Type, 2010



In conjunction with analyzing current traffic volumes for the Appleton TMA, **Table 2-9** 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 2007-2011. Wisconsin counties range from 68 to 86% for workers who commute alone to work.[24]

Table 2-9. Percentage of Workers who Commute Alone to Work, 2007-2011

Place	# Drive Alone	# Workers	% Drive Alone*
Calumet	21,188	25,132	84
Outagamie	76,638	91,935	83
Winnebago	69,250	82,813	84
*overall in Wisconsin: 80%			
Source: County Health Rankings and Roadmaps, ACS (2007-2011)			

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 US 41 from Milwaukee to Green Bay, and US 45 between

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

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).[25]

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, variable message signs (VMS), highway advisory radio (HAR), 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 USH 41 including closed circuit television cameras, ramp closure gates, type III barricades, dynamic message signs, portable changeable message signs, traffic detection sensors, and crash investigation sites. See **Appendix E** for the Winnebago County ITS Map. A majority of the system installed is wireless technology, which will be converted to fiber cable by the end of July, 2013. 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.

USH 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 USH 41. There are a few upcoming construction projects scheduled for USH 41 and WIS 441 that may present the opportunity for the installation of ITS devices. A list of potential projects includes:

WIS 441 (CTH CB – US 10) □ 2016-2020
US 41 (Breezewood Lane – Prospect Avenue) □ 2016-2020
US 41 (CTH J – Scheuring Road) □ 2017

*Projects are subject to change based on funding and other limiting factors.

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

Population Density Analysis

Population density within the Appleton TMA region is measured by people per square mile. The average population density for the Appleton TMA is approximately 3,448 people per square mile, with the lowest census block registering a population density of about 30 people per square mile and the highest census block registering a population density of about 12,180 people per square mile. Please refer to **Figure 2-32. 2010 Population Density** on the following page. As expected, the general population density patterns observed in **Figure 2-32** shows that the cities and villages of the Appleton 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

The population growth rate from 2000 to 2010 for the Appleton TMA region provides a picture of migration patterns of the last ten 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 **Figure 2-33 (2000-2010 Population Growth Rate)**. 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 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.

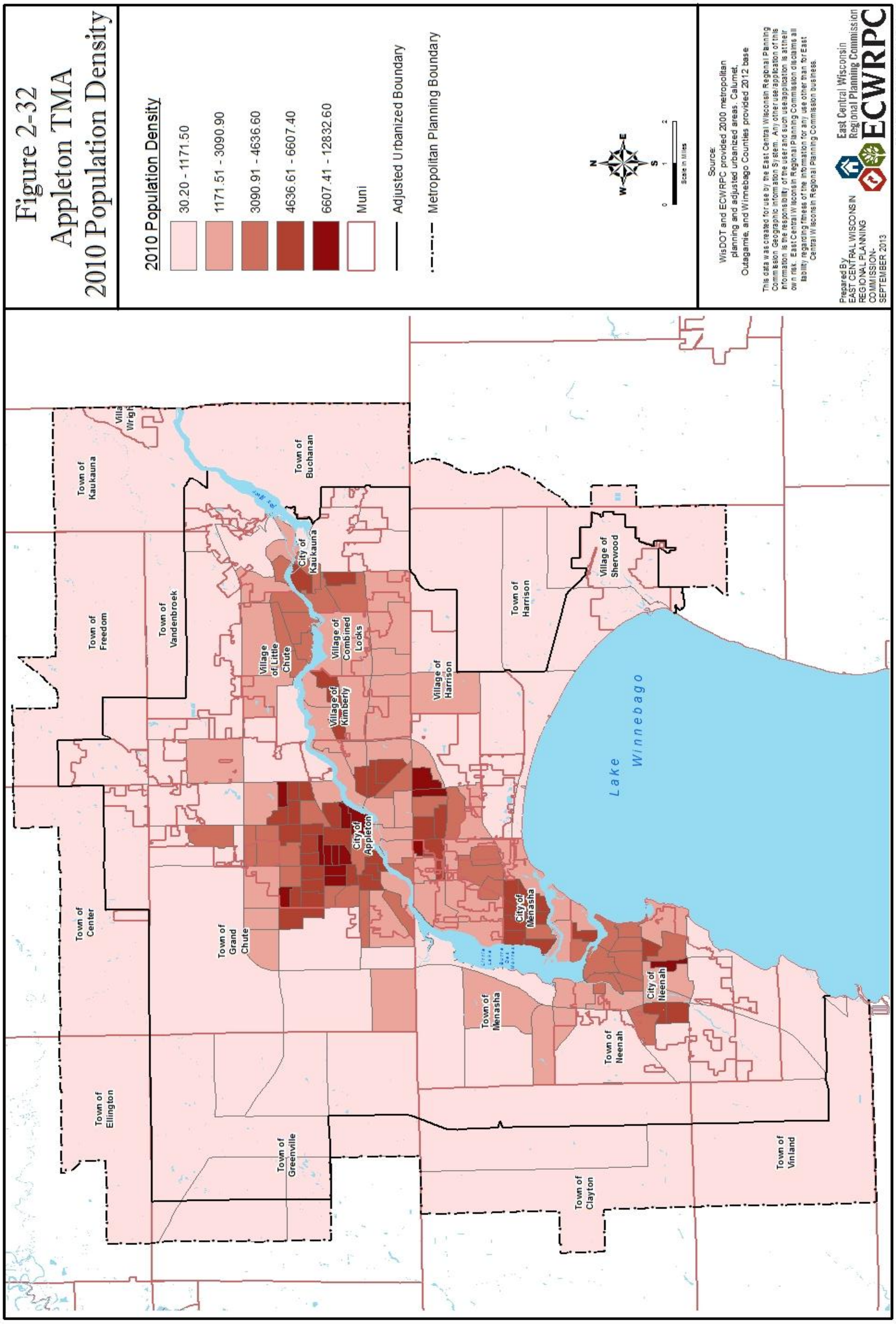


Figure 2-32
Appleton TMA
2010 Population Density
2010 Population Density
30.20 - 1171.50
1171.51 - 3090.90
3090.91 - 4636.60
4636.61 - 6607.40
6607.41 - 12832.60
Muni
Adjusted Urbanized Boundary
Metropolitan Planning Boundary
N
S
E
W
0
1
2
Scale in Miles
Source:
WisDOT and ECWRPC provided 2000 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base
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Town of Kaukauna
Town of Buchanan
Town of Freedom
Town of Vandenbroek
City of Kaukauna
Village of Little Chute
Village of Combined Locks
Village of Kimberly
Village of Harrison
Town of Harrison
Village of Sherwood
Lake Winnebago
Town of Center
Town of Grand Chute
City of Appleton
City of Menasha
City of Neenah
Town of Menasha
Town of Neenah
Town of Ellington
Town of Greenville
Town of Clayton
Town of Vinland
Little Lake Butte des Morts

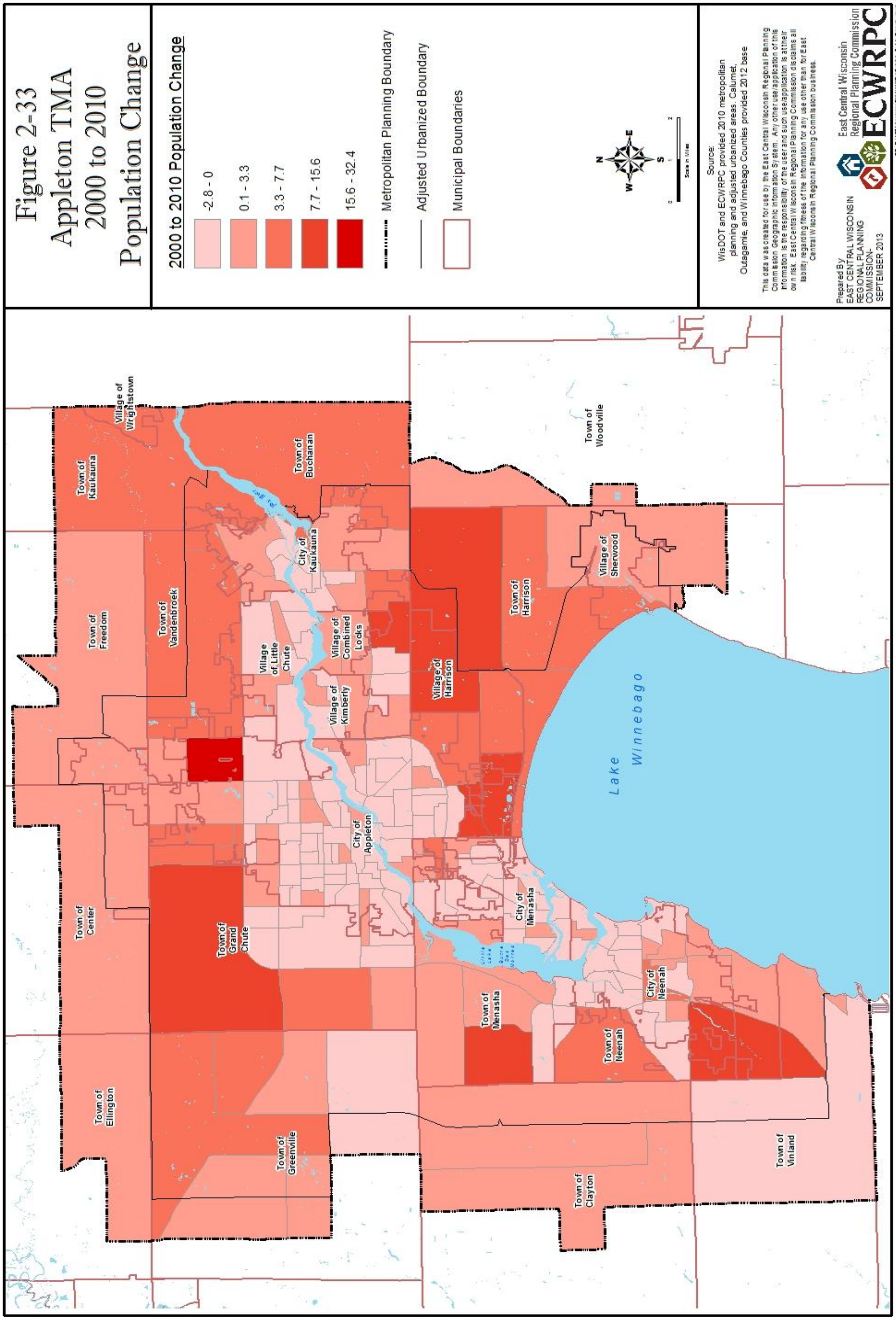
Figure 2-33
Appleton TMA
2000 to 2010
Population Change
2000 to 2010 Population Change
-2.8 - 0
0.1 - 3.3
3.3 - 7.7
7.7 - 15.6
15.6 - 32.4
Metropolitan Planning Boundary
Adjusted Urbanized Boundary
Municipal Boundaries
Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base
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Village of Wrightstown
Town of Kaukauna
Town of Buchanan
Town of Woodville
City of Kaukauna
Village of Sherwood
Town of Freedom
Town of Vandenbroek
Town of Harrison
Village of Little Chute
Village of Combined Locks
Village of Harrison
Village of Kimberly
Lake Winnebago
City of Appleton
Town of Center
Town of Grand Chute
City of Menasha
City of Neenah
Town of Menasha
Town of Neenah
Town of Ellington
Town of Greenville
Town of Clayton
Town of Vinland

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.[26]

Street Network Connectivity Index

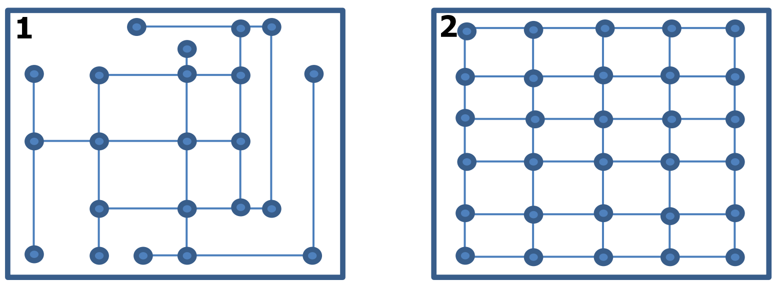
The street network connectivity index is calculated the same as a Beta index. A Beta index measures the level of connectivity by a graph and is expressed by the relationship between the number of links divided by the number of nodes. Simple networks have Beta value of less than one. A connected network 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.[27] 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.[28]

[26] Street Connectivity Zoning and Subdivision Model Ordinance, Prepared by Division of Planning Kentucky Transportation Cabinet March 2009 (4/1/2013)
[27] http://people.hofstra.edu/geotrans/eng/methods/betaindex.html (4/1/2013)
[28] Street Connectivity Zoning and Subdivision Model Ordinance, Prepared by Division of Planning Kentucky Transportation Cabinet March 2009 (4/1/2013)

Appleton TMA Street Network Connectivity Index

The Appleton TMA region 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 **Figures 2-34** (below); as well as **Figure 2-35** and **Exhibit 2-15** (at the end of this chapter) which describe the connectivity index for the Appleton TMA.

Figure 2-34. 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

Accessibility Analysis

Accessibility refers to the ease of reaching goods, services, activities and destinations, which together are called opportunities.[29] 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 TMA region. The street network was geo-processed to determine the exact number of intersections within the Appleton TMA region. 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. **Figure 2-36.** (below) illustrates the intersections per acre throughout the Appleton TMA region. Please refer to **Exhibit 2-16. Accessibility Index Map** at the end of this chapter.

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

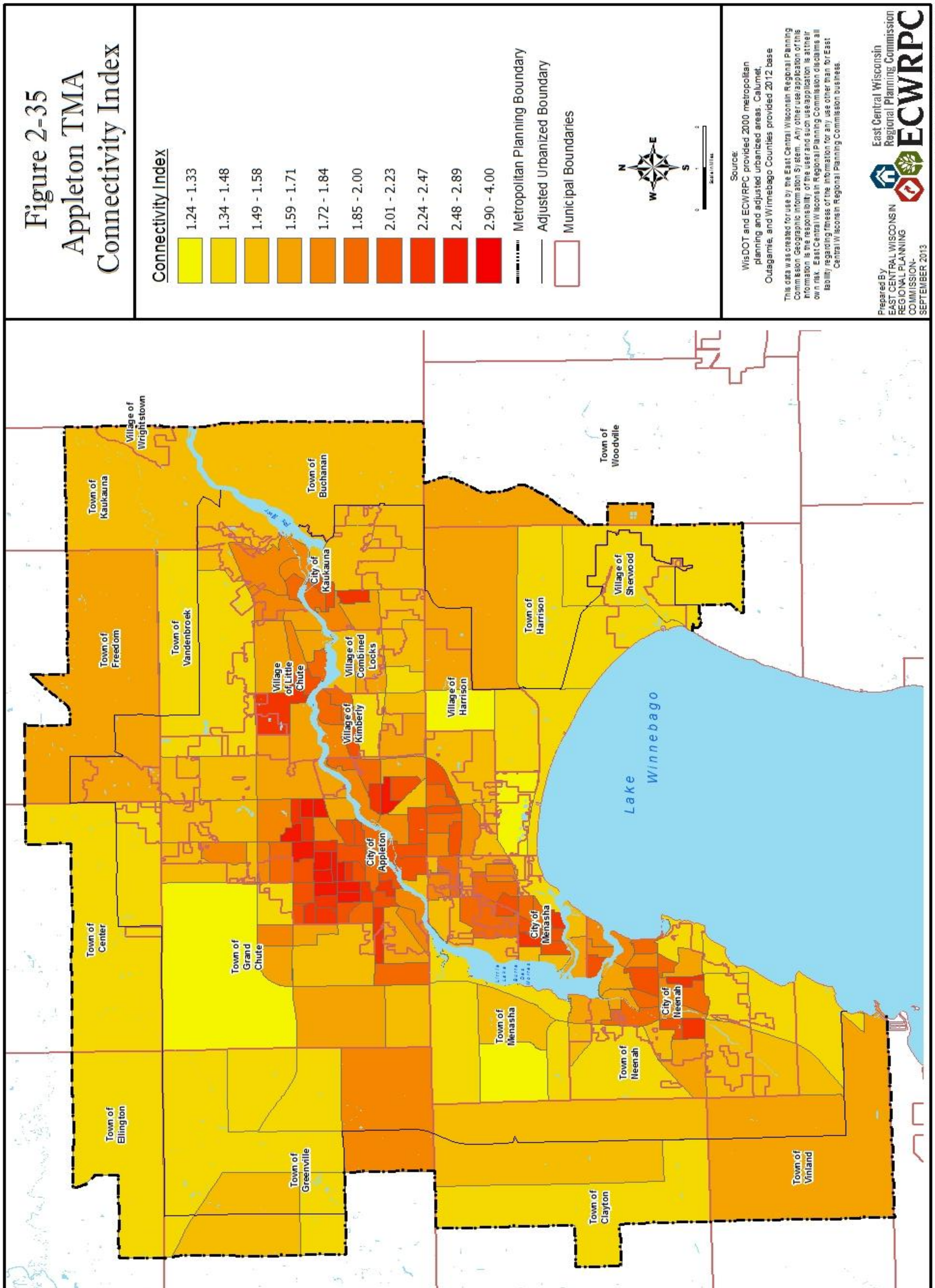


Figure 2-35
Appleton TMA Connectivity Index

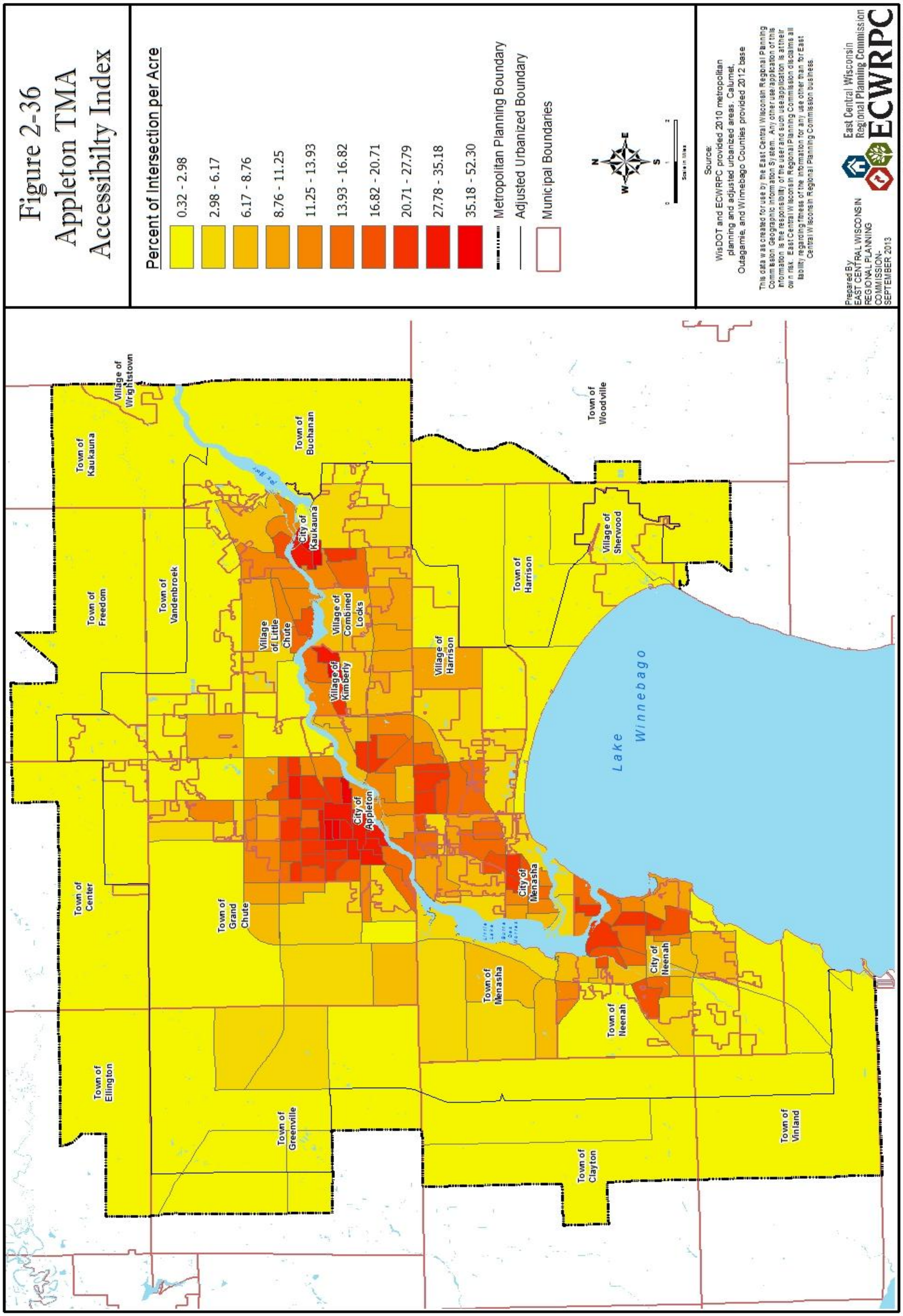


Figure 2-36
Appleton TMA
Accessibilty Index
Percent of Intersection per Acre
0.32 - 2.98
2.98 - 6.17
6.17 - 8.76
8.76 - 11.25
11.25 - 13.93
13.93 - 16.82
16.82 - 20.71
20.71 - 27.79
27.78 - 35.18
35.18 - 52.30
Metropolitan Planning Boundary
Adjusted Urbanized Boundary
Municipal Boundaries
Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base
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Village of Wrightstown
Town of Buchanan
Town of Woodville
Town of Freedom
Town of Vandenbroek
City of Kaukauna
Village of Sherwood
Town of Harrison
Village of Little Chute
Village of Combined Locks
Village of Harrison
Village of Kimberly
Lake Winnebago
City of Appleton
Town of Center
Town of Grand Chute
City of Menasha
Town of Menasha
City of Neenah
Town of Neenah
Town of Ellington
Town of Greenville
Town of Clayton
Town of Vinland

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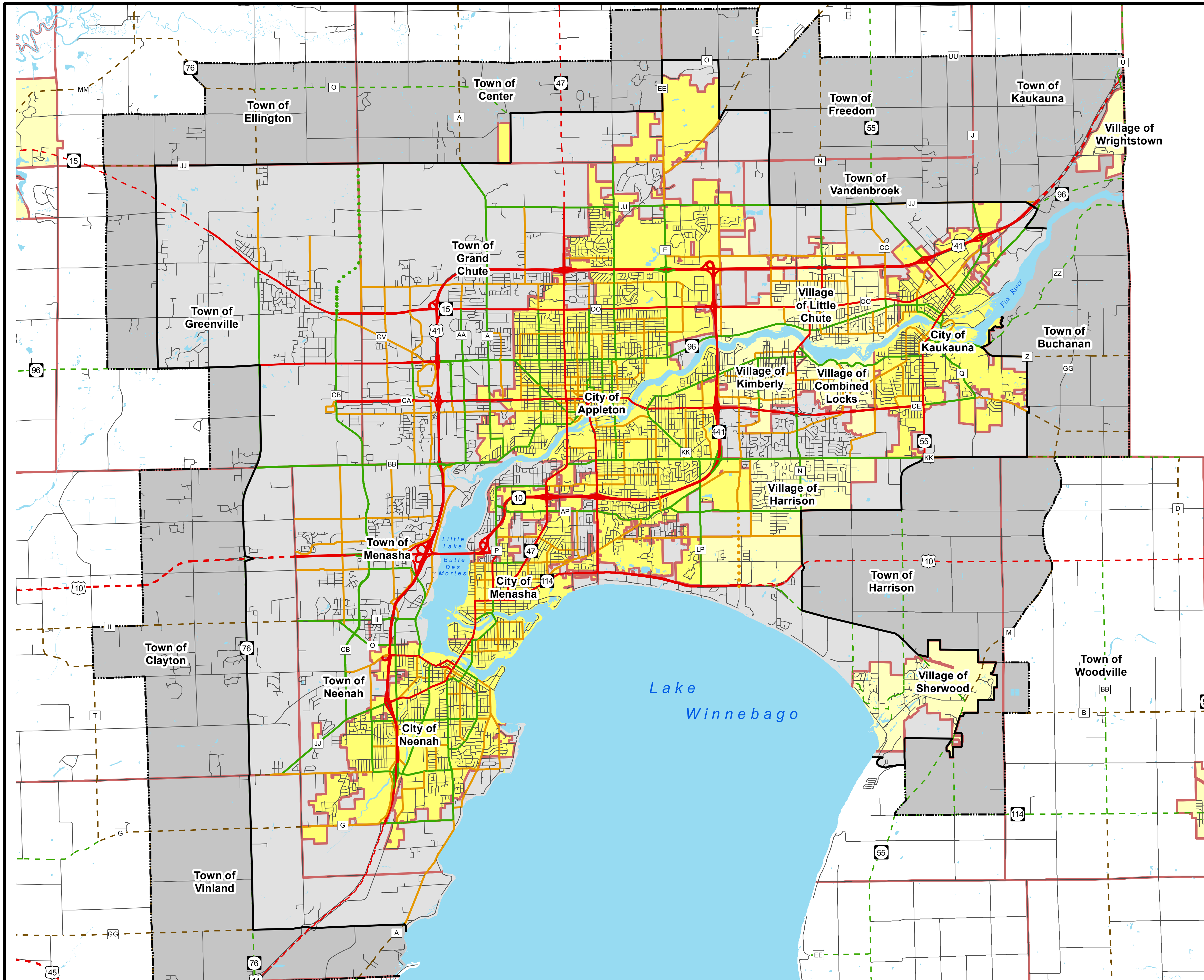

Exhibit 2-1
Appleton TMA Functional Class

- Urban Principal Arterial
- Urban Planned Principal Arterial
- Urban Minor Arterial
- Urban Planned Minor Arterial
- Urban Collector
- Urban Local
- Urban Planned Collector
- Rural Principal Arterial
- Rural Minor Arterial
- Rural Major Collector
- Rural Minor Collector
- Rural Local
- Municipal Boundaries
- City
- Village
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N W E S

0 1 2

Scale in Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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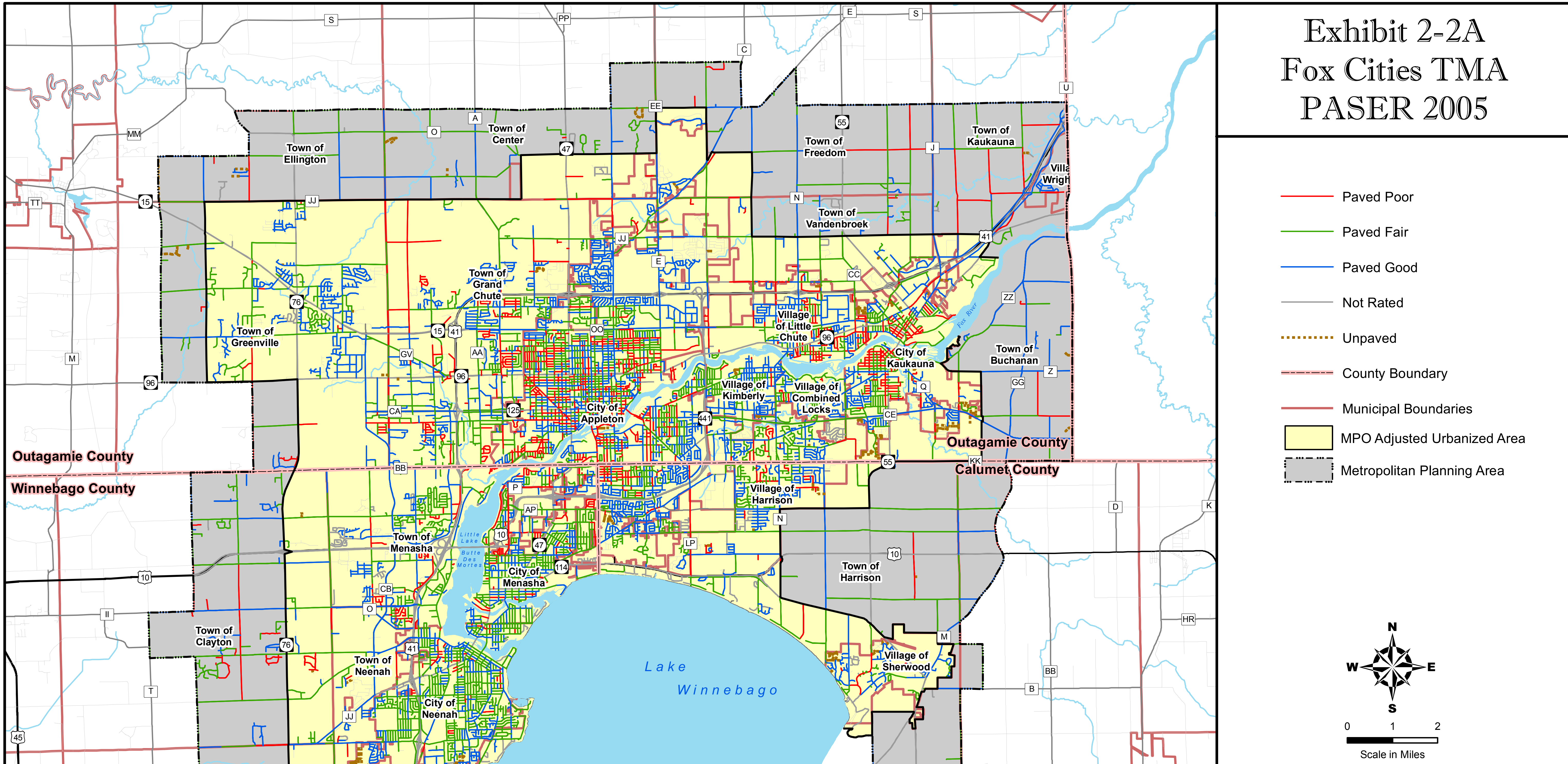
Exhibit 2-2A
Fox Cities TMA
PASER 2005



Source:
Base data provided by Winnebago, Calumet, and Outagamie Counties 2010.
TMA/Adjusted urbanized area provided by WisDOT/ECWRPC
PASER data provided by

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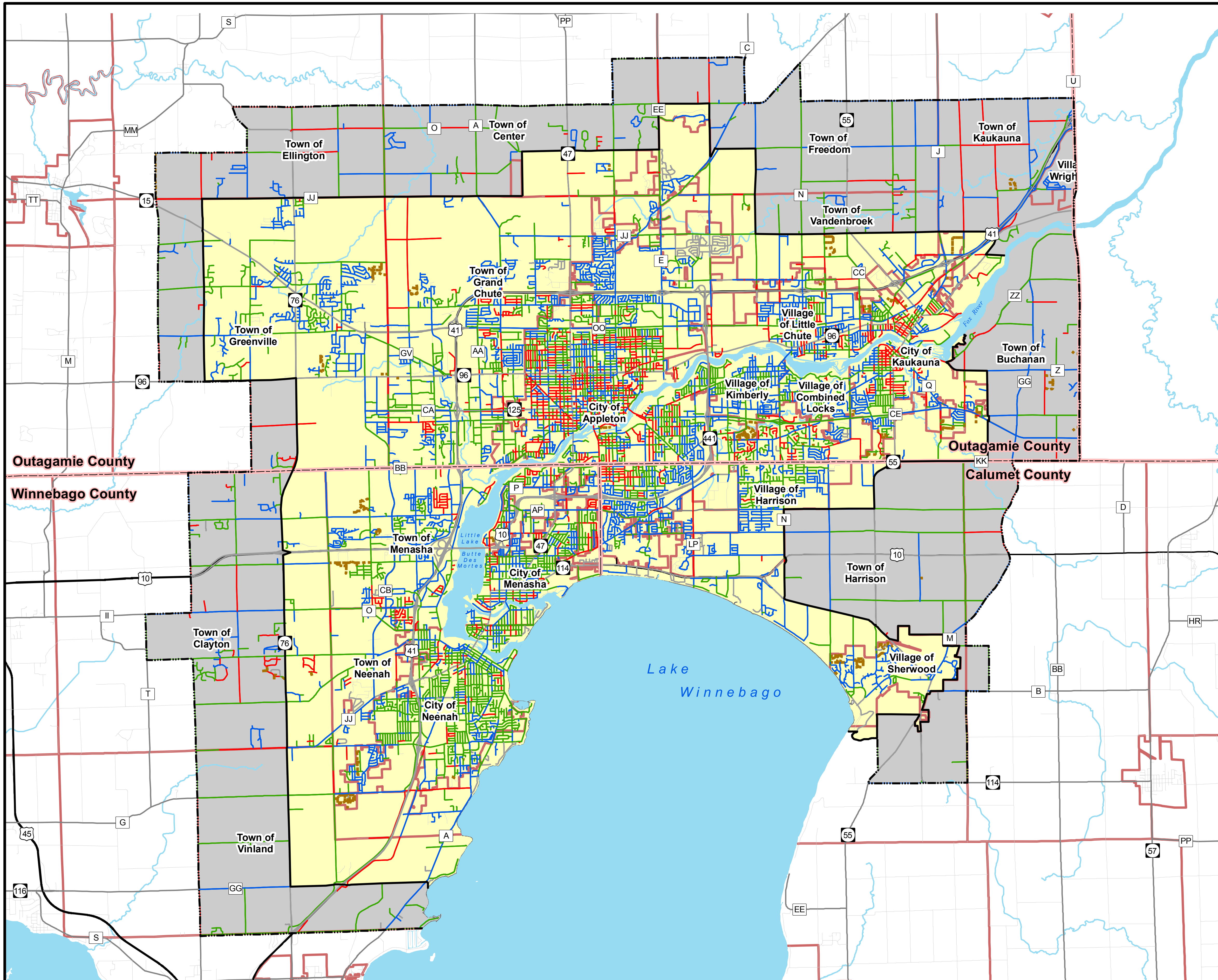
Exhibit 2-2B
Fox Cities TMA
PASER 2007



Paved Poor
Paved Fair
Paved Good
Not Rated
Unpaved
County
Municipal Boundaries
MPO Adjusted Urbanized Area
Metropolitan Planning Area

N W E S
0 1 2
Scale in Miles

Source:
Base data provided by Winnebago, Calumet, and Outagamie Counties 2010.
TMA/Adjusted urbanized area provided by WisDOT/ECWRPC
PASER data provided by

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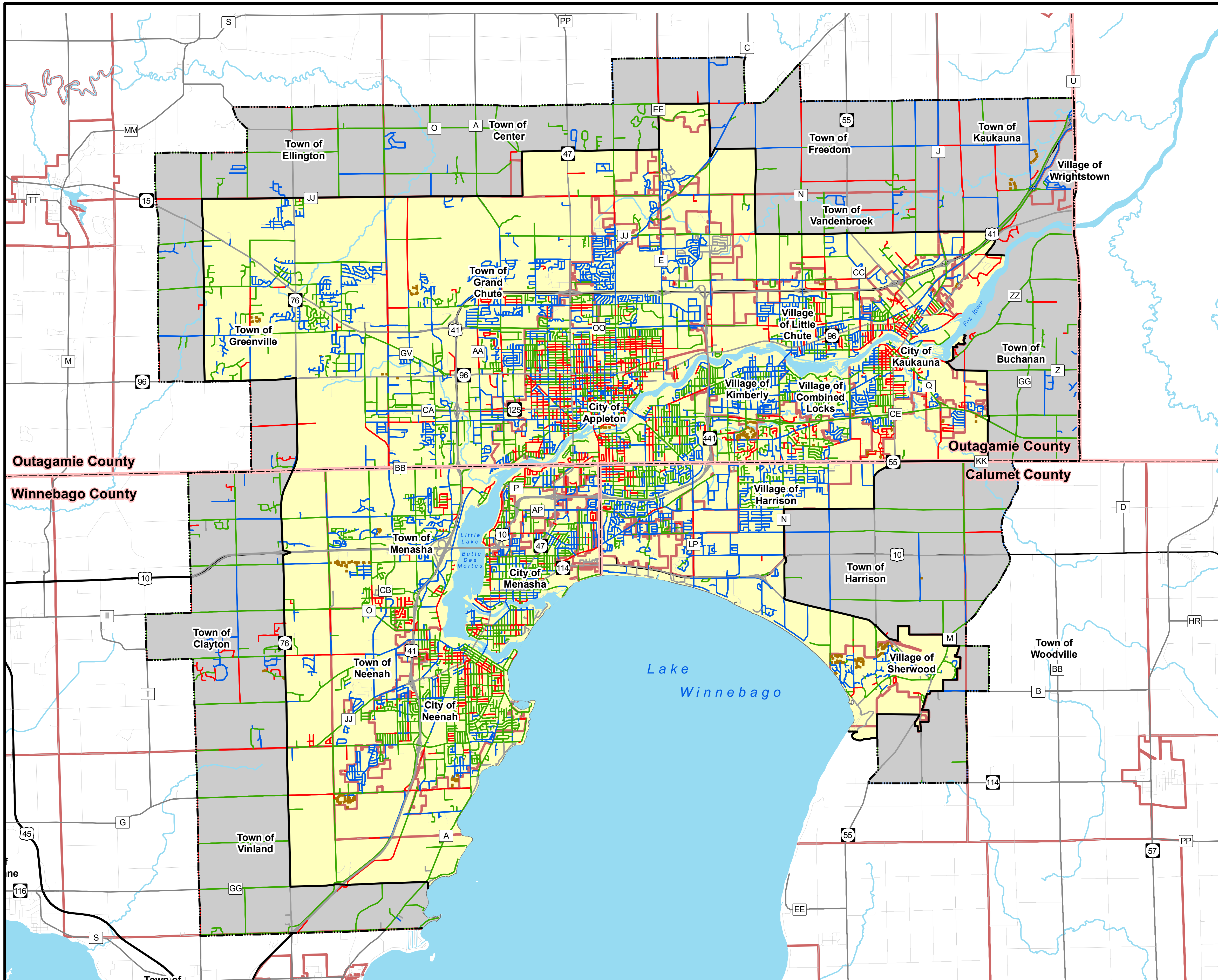
Exhibit 2-2C
Fox Cities TMA
PASER 2009



Paved Poor

Paved Fair

Paved Good

Not Rated

Unpaved

County

Municipal Boundaries

MPO Adjusted Urbanized Area

Metropolitan Planning Area

N W E S

0 1 2

Scale in Miles

Source:
Base data provided by Winnebago,
Calumet, and Outagamie Counties 2010.
TMA/Adjusted urbanized area provided by WisDOT/ECWRPC
PASER data provided by

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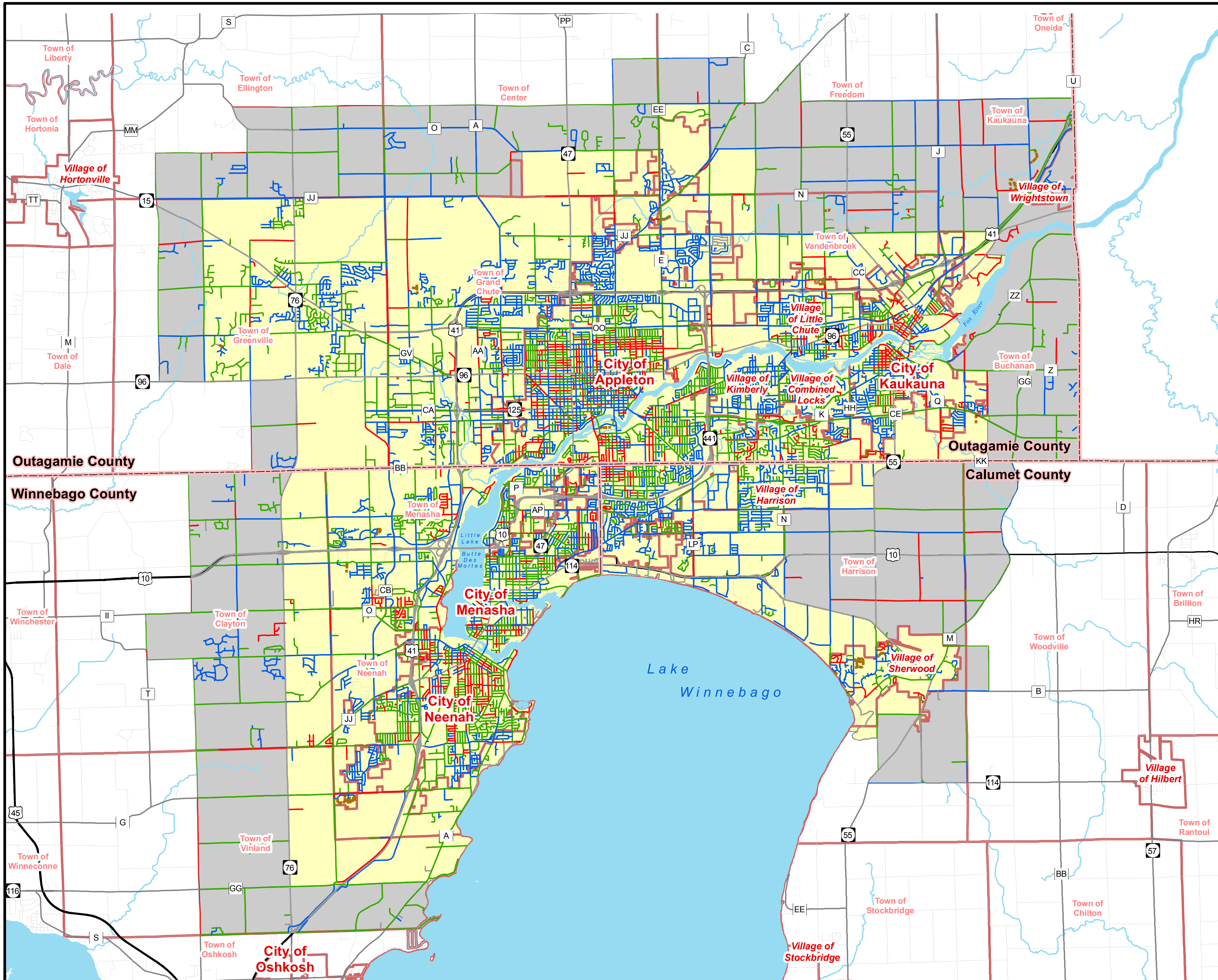
Exhibit 2-2D Fox Cities TMA PASER 2011



Source:
Base data provided by Winnebago, Calumet, and Outagamie Counties 2010.
TMA/Adjusted urbanized area provided by WisDOT/ECWRPC
PASER data provided by

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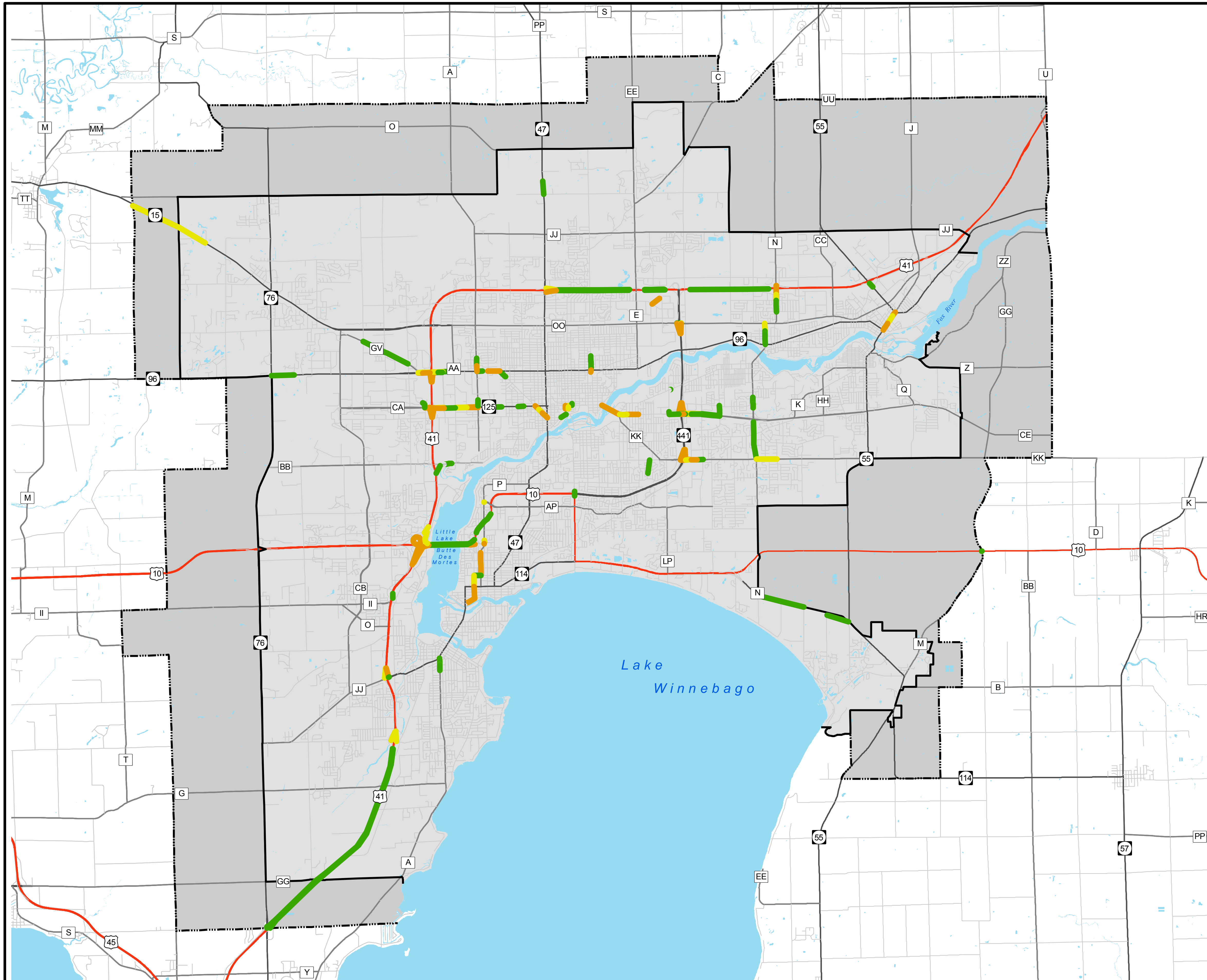
Exhibit 2-3A
Appleton TMA
2010 Deficiencies Status



Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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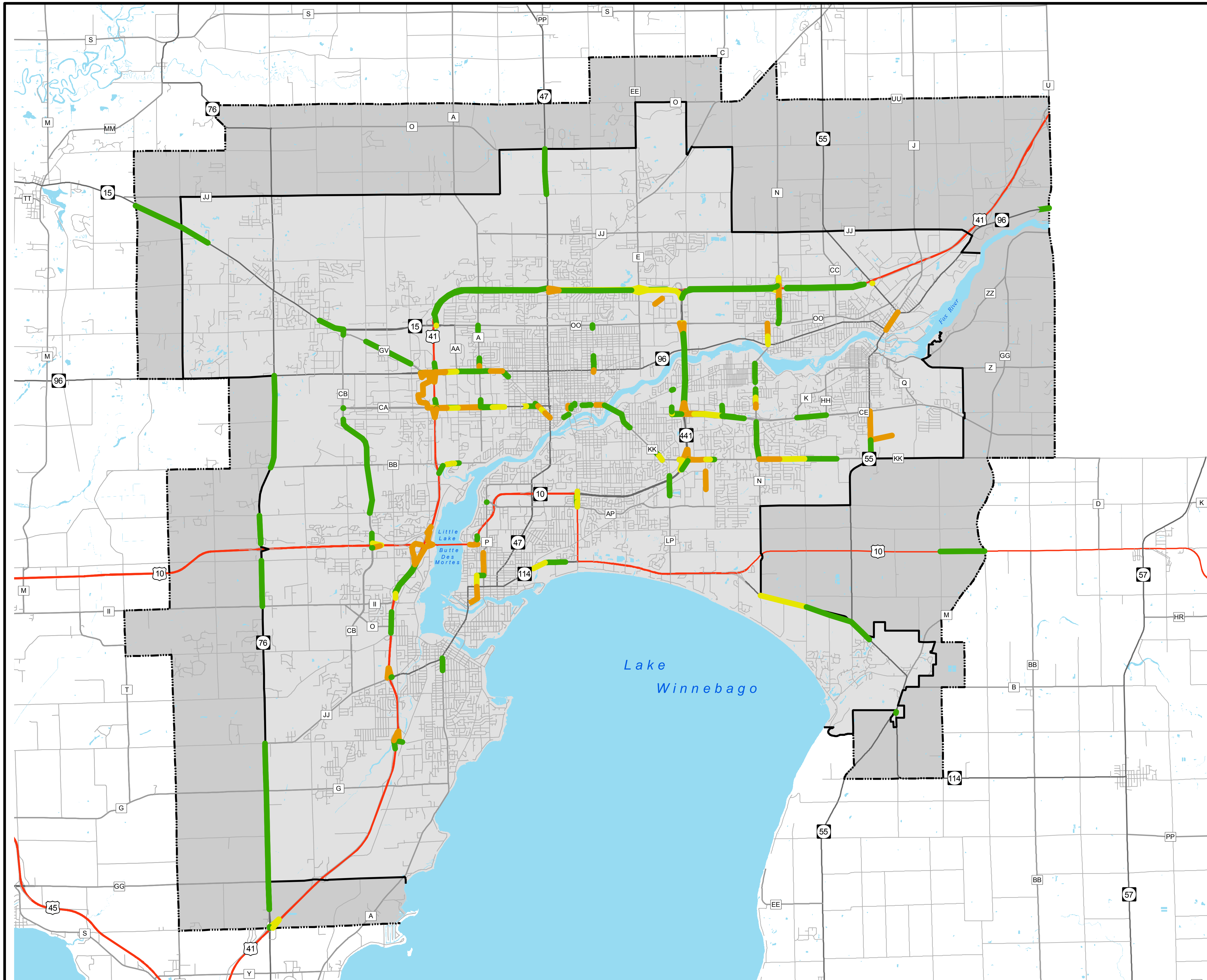

Exhibit 2-3B
Appleton TMA
2020 Deficiencies Status

2020 Congestion
- Deficient
- Potential
- Approaching

Road Type
- USH
- STH
- CTH
- Local Road
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N W E S

0 1 2
Scale in Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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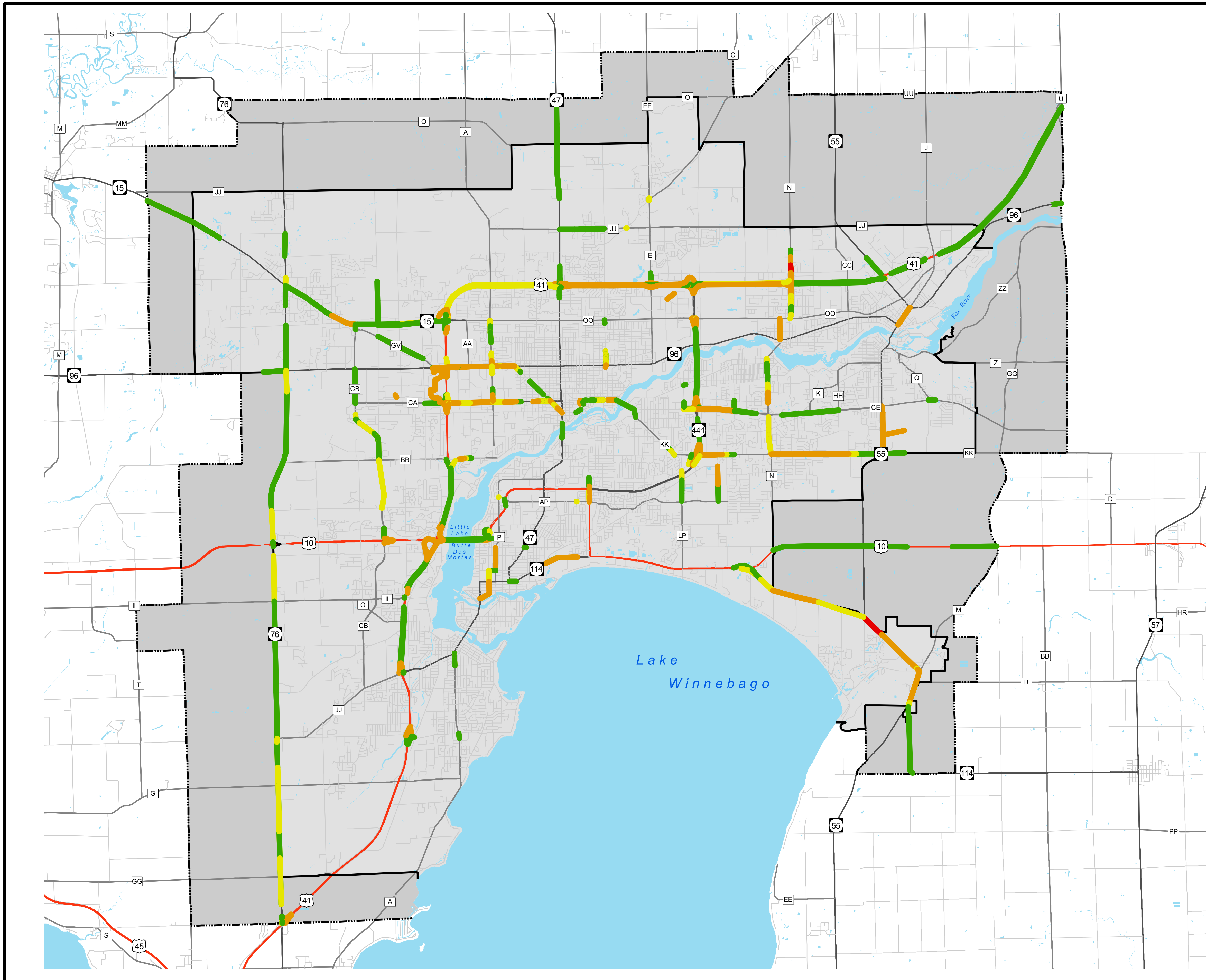

Exhibit 2-3C
Appleton TMA
2035 Deficiencies Status

2035 Congestion

- Severely Deficient
- Deficient
- Potential
- Approaching

Road Type

- USH
- STH
- CTH
- Local Road
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N
W E
S

0 1 2
Scale in Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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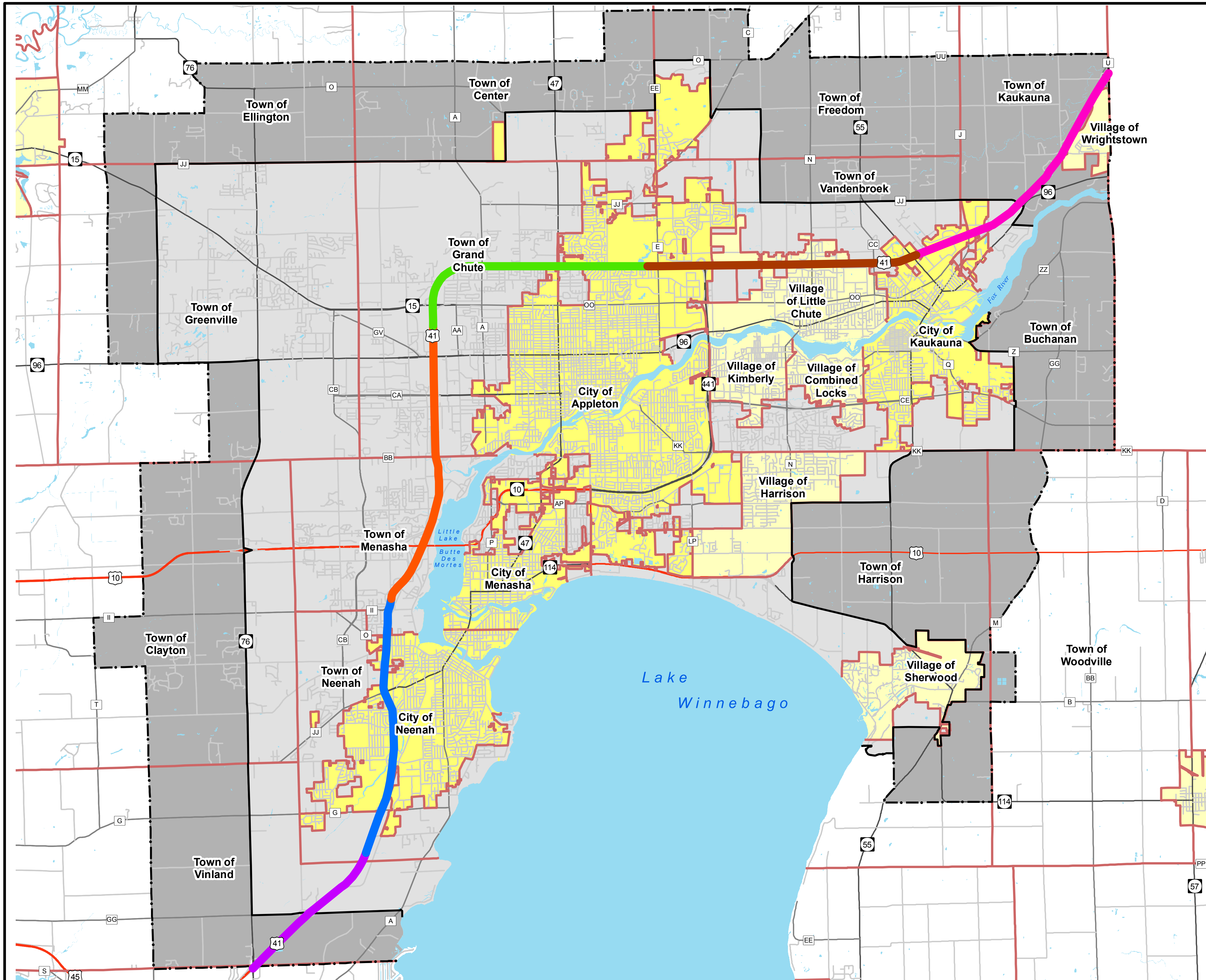

Exhibit 2-4A Appleton TMA Highway 41 2010 Timed Route

Timed Intervals (27.89 Minutes Total)

- 1st 5 Minute Interval
- 2nd 5 Minute Interval
- 3rd 5 Minute Interval
- 4th 5 Minute Inverval
- 5th 5 Minute Inverval
- 2 Minutes 53 Second Interval

Road Type

- USH
- STH
- CTH
- Local Road
- Municipal Boundaries
- City
- Village
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N E S W

0 1 2
Scale in Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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FEBRUARY 2014

East Central Wisconsin Regional Planning Commission
ECWRPC
Calumet•Menominee•Outagamie•Shawano•Waupaca•Waushara•Winnebago

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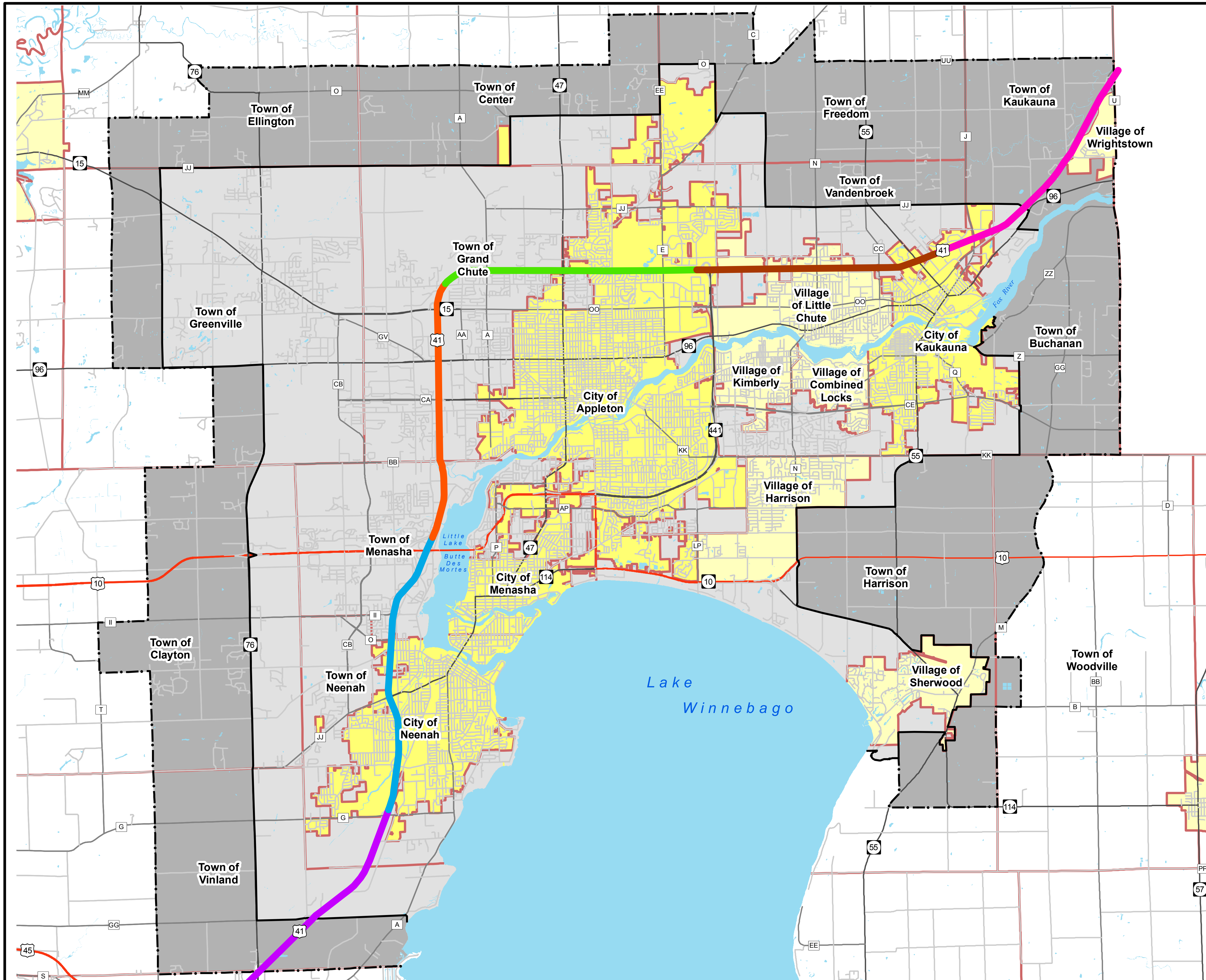
Exhibit 2-4B Appleton TMA Highway 41 2035 Timed Routes



Timed Intervals (28.83 Minutes Total)

- 1st 5 Minute Interval
- 2nd 5 Minute Interval
- 3rd 5 Minute Interval
- 4th 5 Minute Interval
- 5th 5 Minute Interval
- 3 Minute 50 Second Interval

Road Type

- USH
- STH
- CTH
- Local Road
- Municipal Boundaries
- City
- Village
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N W E S

0 1 2
Scale in Miles

Source:
WisDOT and ECWRPC provided 2000 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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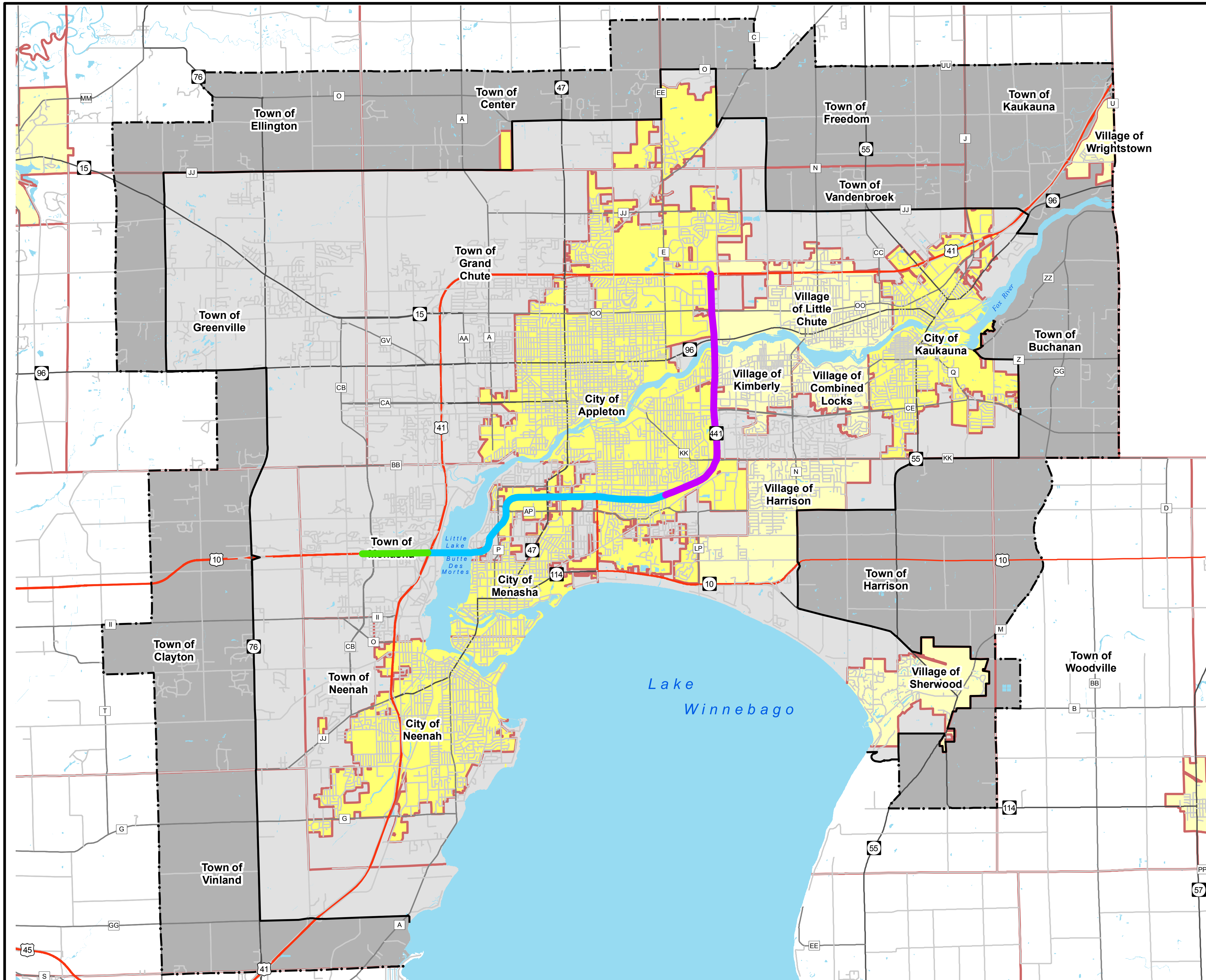
Exhibit 2-5A
Appleton TMA Highway 441 2010 Timed Routes



Timed Routes (10.87 Minutes Total)

- 1st 5 Minute Interval
- 2nd 5 Minute Interval
- 52 Second Interval

Road Type

- USH
- STH
- CTH
- Local Road
- Municipal Boundaries
- City
- Village
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N / W / E / S

0 1 2

Scale in Miles

Source:
WisDOT and ECWRPC provided 2000 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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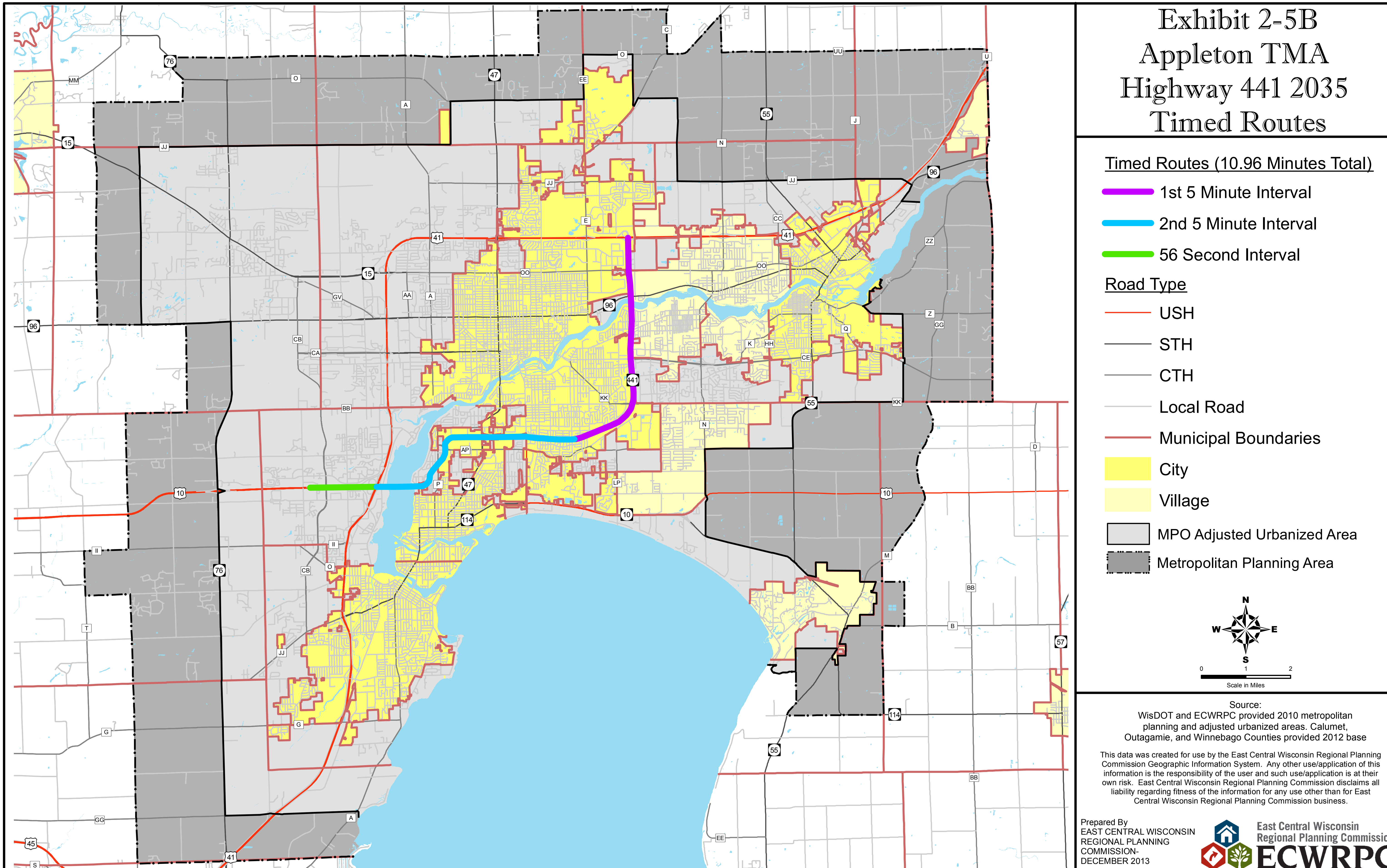

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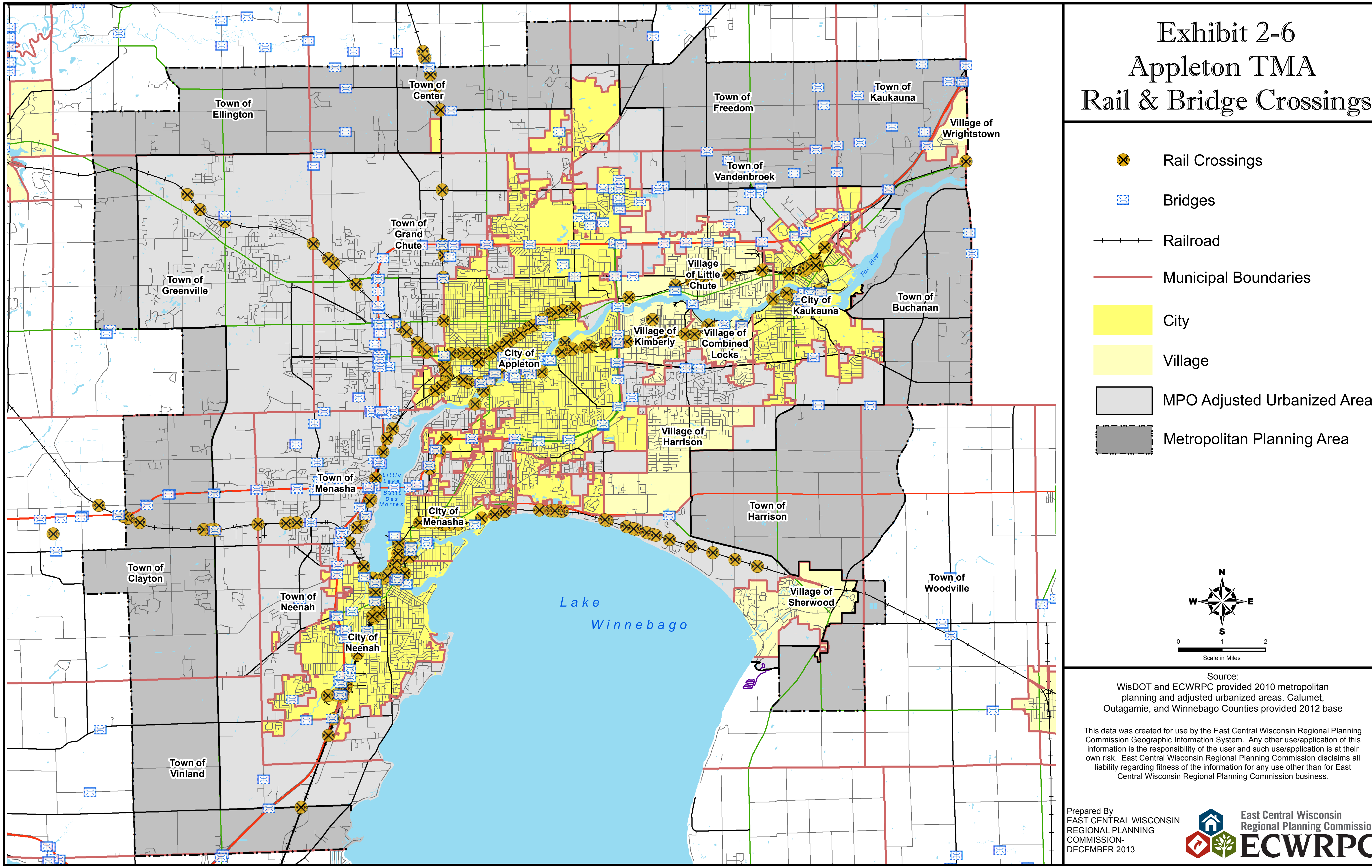
Exhibit 2-6
Appleton TMA
Rail & Bridge Crossings
Rail Crossings
Bridges
Railroad
Municipal Boundaries
City
Village
MPO Adjusted Urbanized Area
Metropolitan Planning Area
Town of Ellington
Town of Center
Town of Freedom
Town of Kaukauna
Village of Wrightstown
Town of Vandenbroek
Town of Grand Chute
Town of Greenville
Village of Little Chute
City of Kaukauna
Town of Buchanan
Village of Kimberly
Village of Combined Locks
City of Appleton
Village of Harrison
Town of Menasha
City of Menasha
Town of Harrison
Town of Clayton
Town of Neenah
Village of Sherwood
Town of Woodville
City of Neenah
Town of Vinland
Lake Winnebago
Little Lake Butte Des Mortes
Fox River
N
W
E
S
0
1
2
Scale in Miles
Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base
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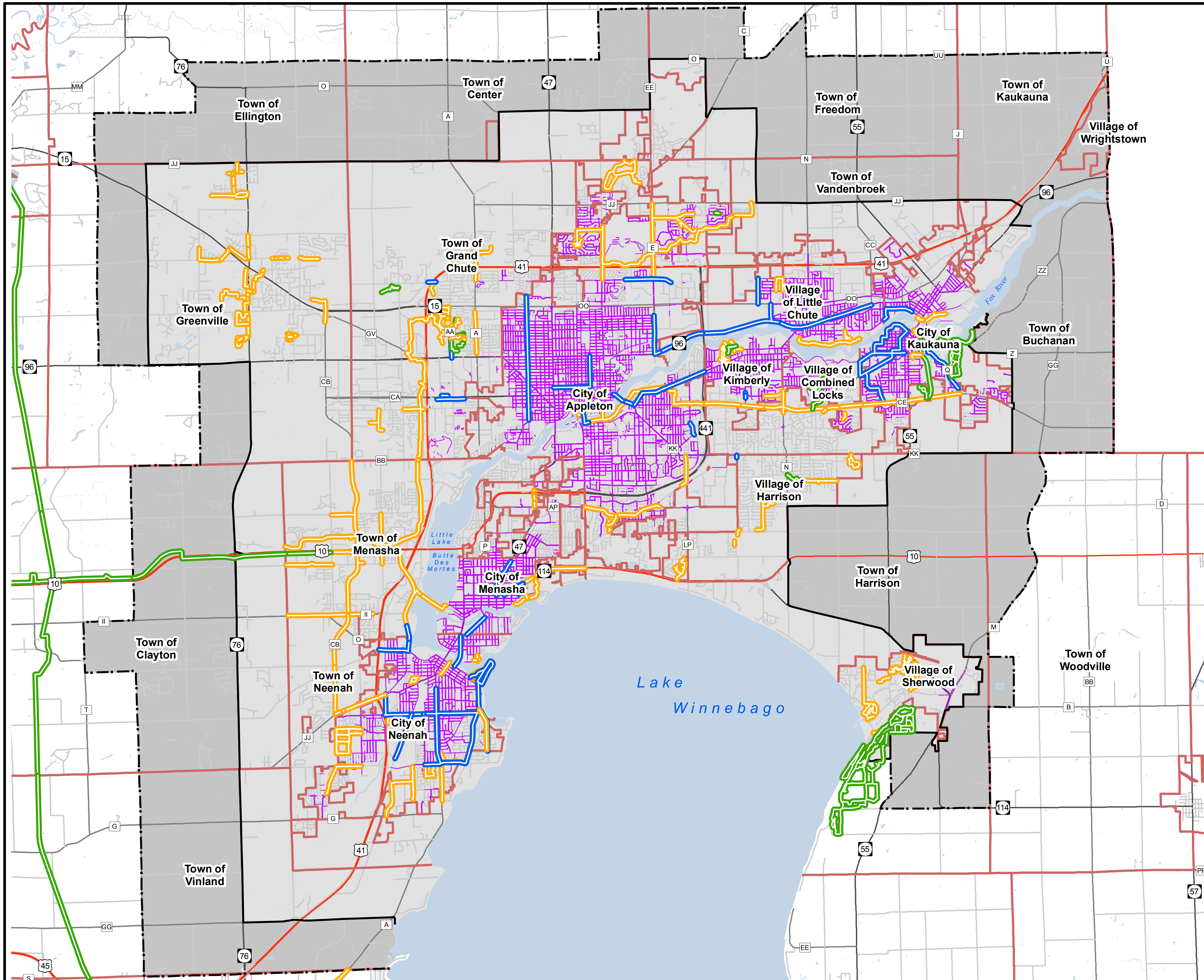

Exhibit 2-7
Appleton TMA Sidewalks, Bike Lanes, & Trails

- Off Road
- Off Road Paved
- On Street Bike
- Sidewalk
- USH
- STH
- CTH
- Local Road
- Municipal Boundaries
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N W E S

0 1 2
Scale in Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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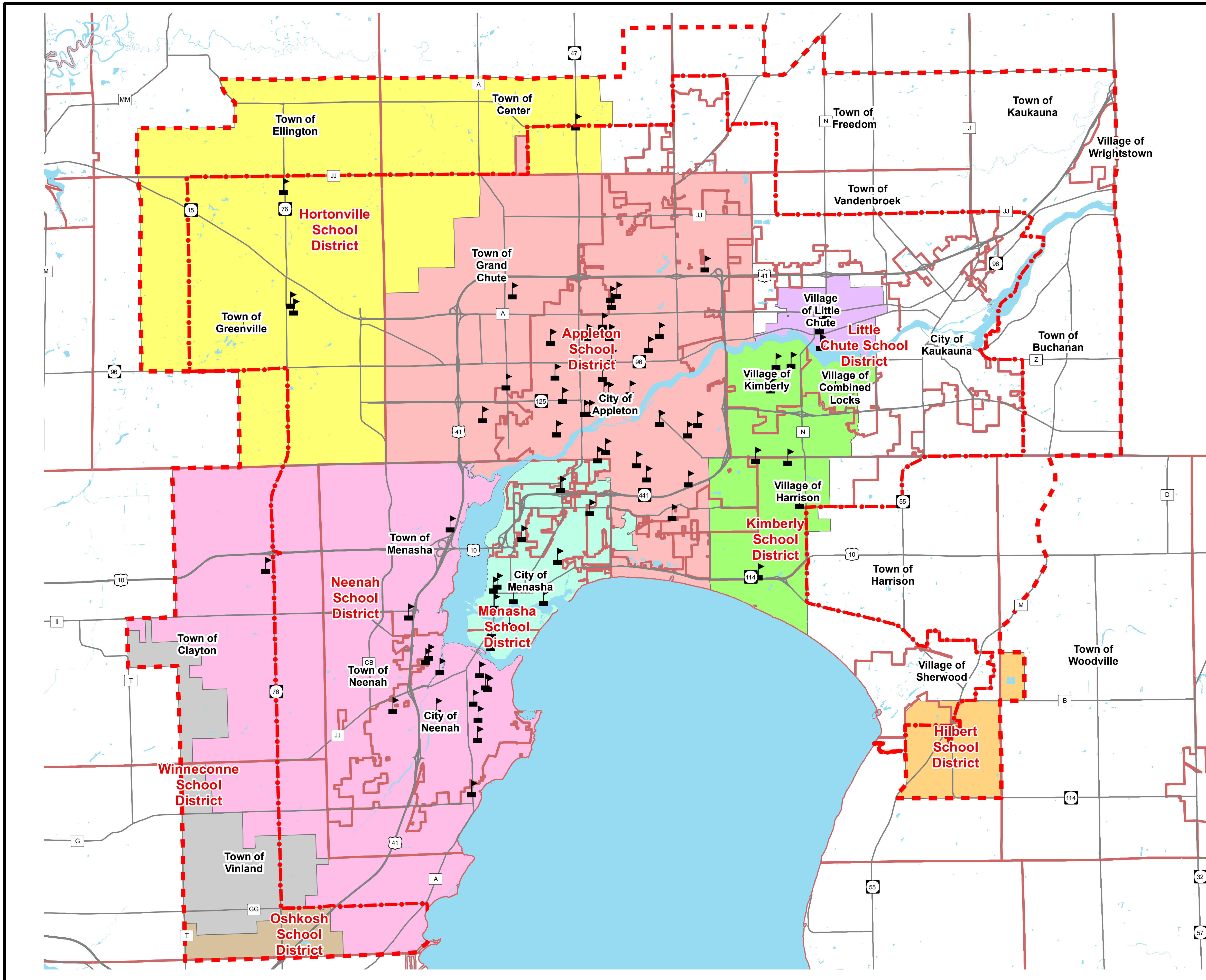
Exhibit 2-8
Appleton TMA
Safe Routes to School



MPO Adjusted Urbanized Area

Metropolitan Planning Area

SRTS Schools

Safe Routes to School District

- Appleton School District
- Hilbert School District
- Hortonville School District
- Kimberly School District
- Little Chute School District
- Menasha School District
- Neenah School District
- Oshkosh School District
- Winneconne School District
- Municipal Boundaries

Source:
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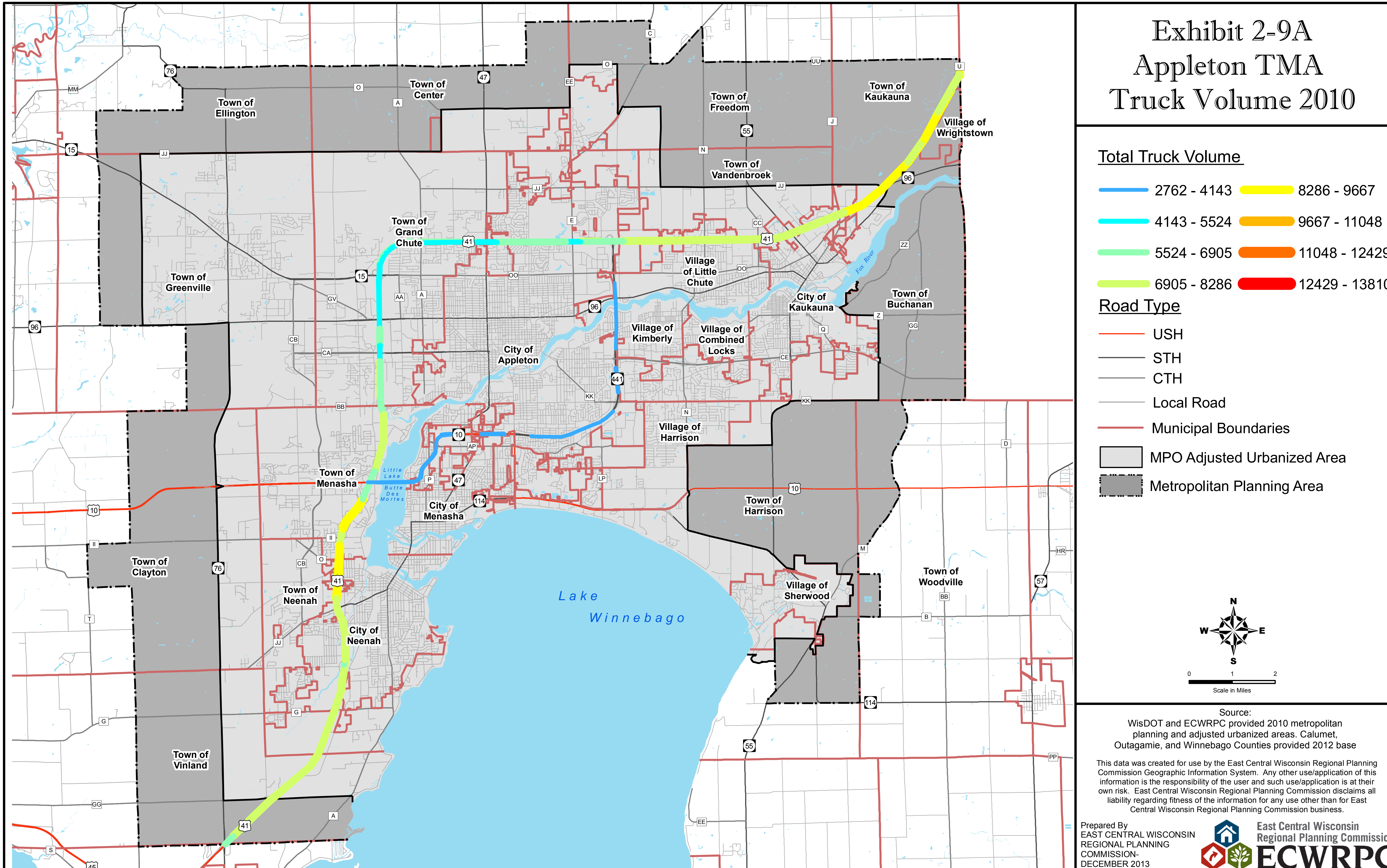

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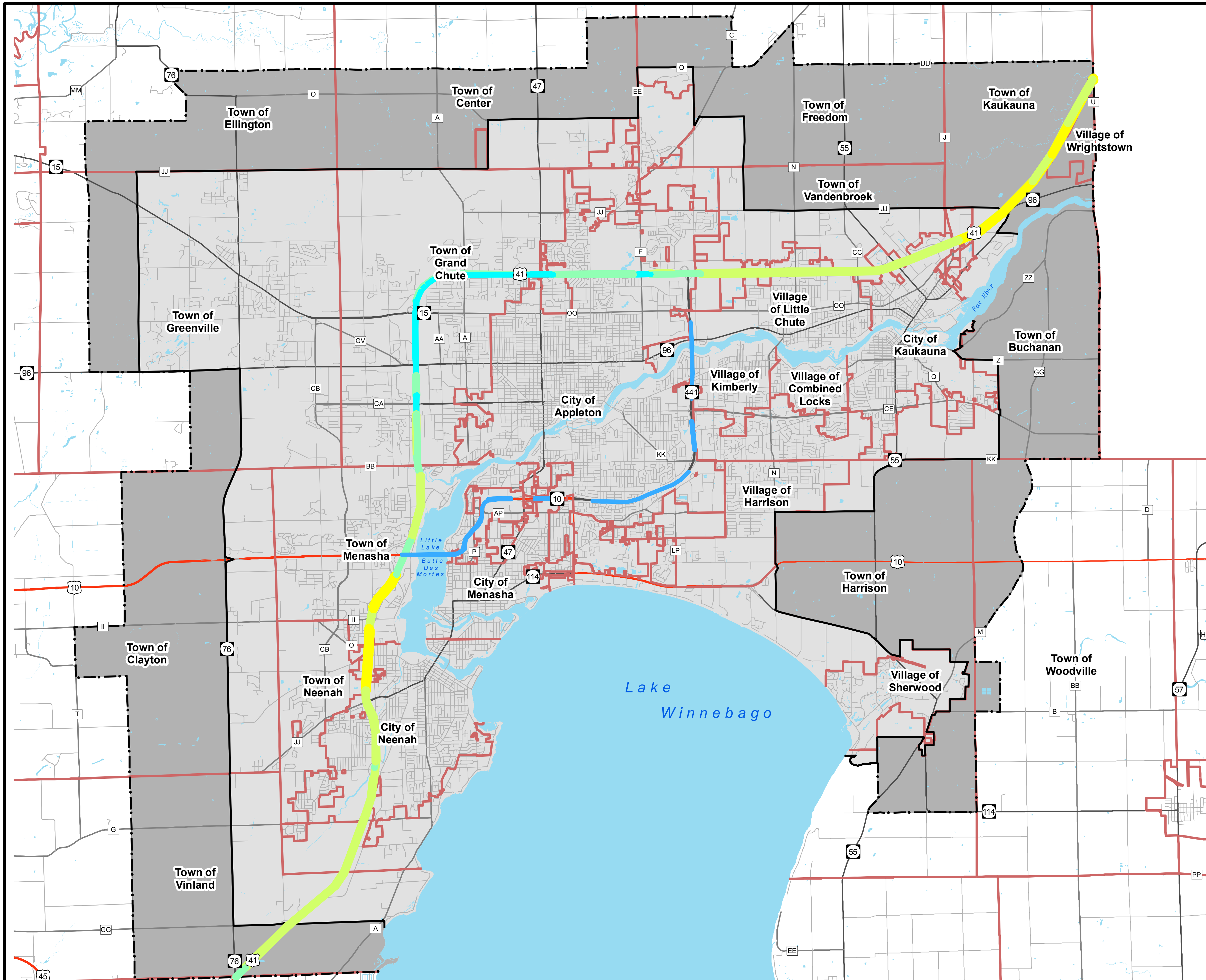
Exhibit 2-9B
Appleton TMA
Truck Volume 2020



Total Truck Volume

- 2762 - 4143
- 4143 - 5524
- 5524 - 6905
- 6905 - 8286
- 8286 - 9667
- 9667 - 11048
- 11048 - 12429
- 12429 - 13810

Road Type

- USH
- STH
- CTH
- Local Road
- Municipal Boundaries
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N W E S

0 1 2

Scale in Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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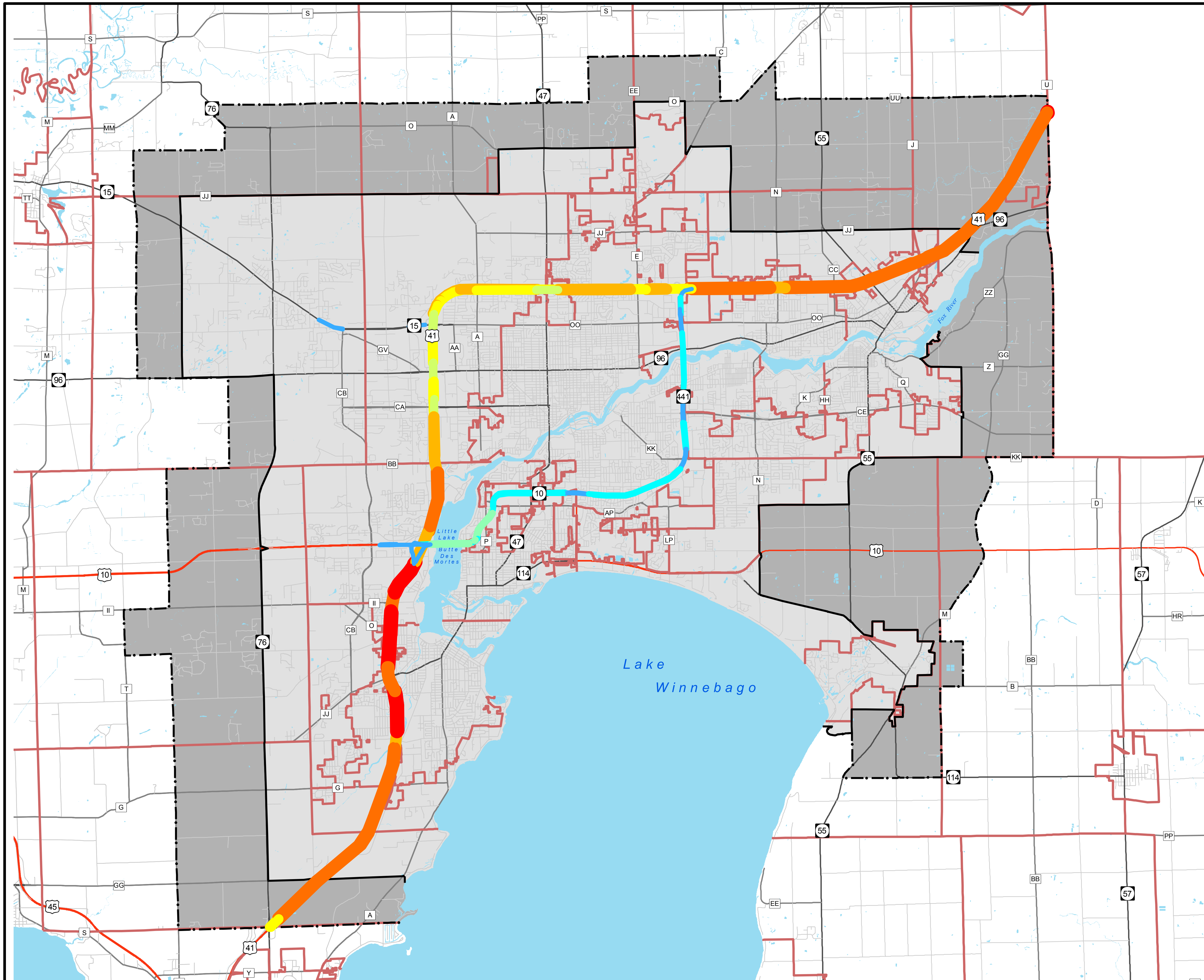

Exhibit 2-9C
Appleton TMA
Truck Volume 2035

Total Truck Volume

- 2762 - 4143
- 4143 - 5524
- 5524 - 6905
- 6905 - 8286
- 8286 - 9667
- 9667 - 11048
- 11048 - 12429
- 12429 - 13810

Road Type

- USH
- STH
- CTH
- Local Road
- Municipal Boundaries
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N E S W

0 1 2
Scale in Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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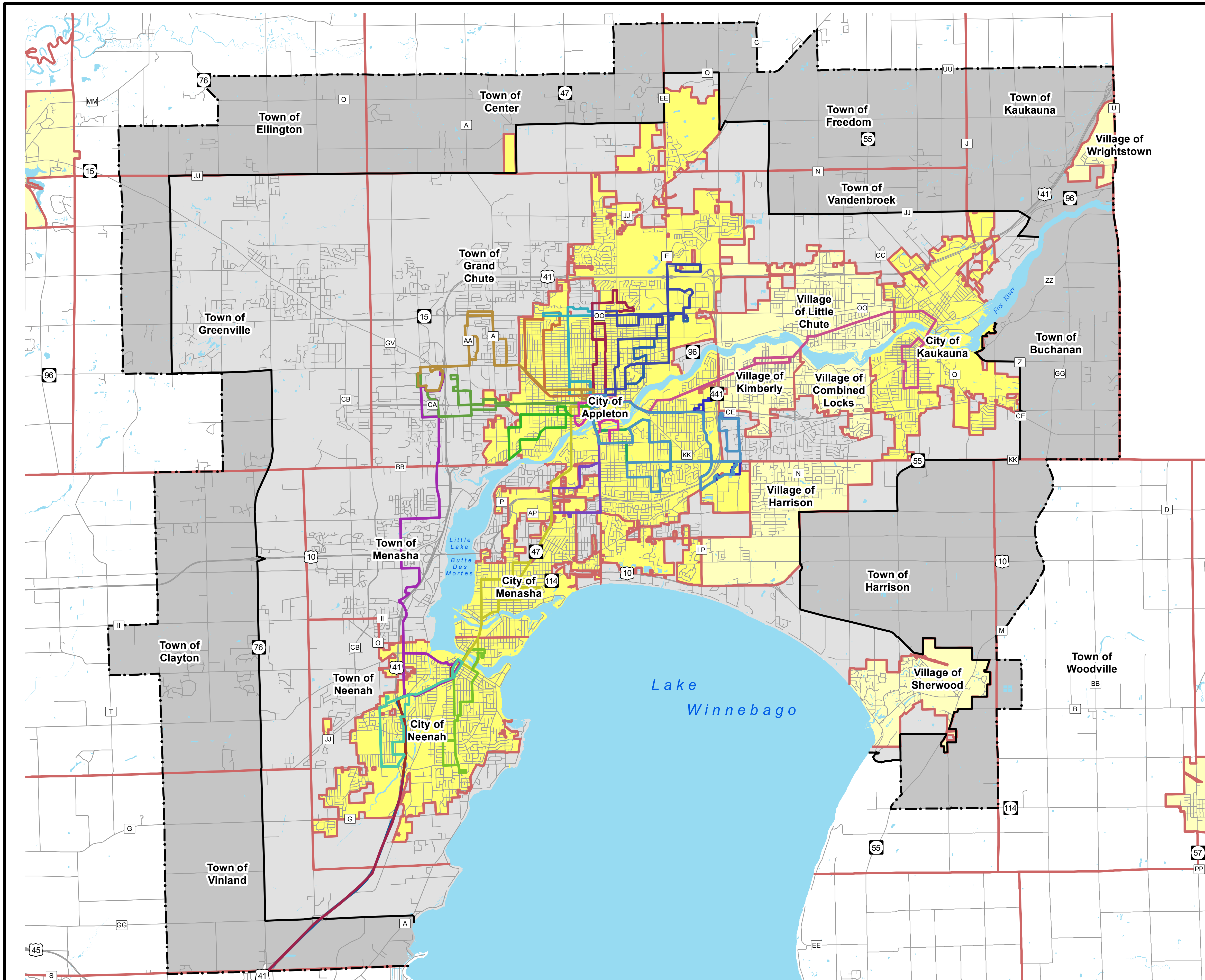

Exhibit 2-10
Appleton TMA
Valley Transit Routes

- Route 1A
- Route 2
- Route 3
- Route 4
- Route 5
- Route 6
- Route 7
- Route 8
- Route 9
- Route 10
- Route 11
- Route 12
- Route 15
- Route 16
- Route 19
- Route 20
- Route 30
- Route 31
- Route 32
- Route 41
- Municipal Boundaries
- Centerline
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N W E S

0 1 2
Scale in Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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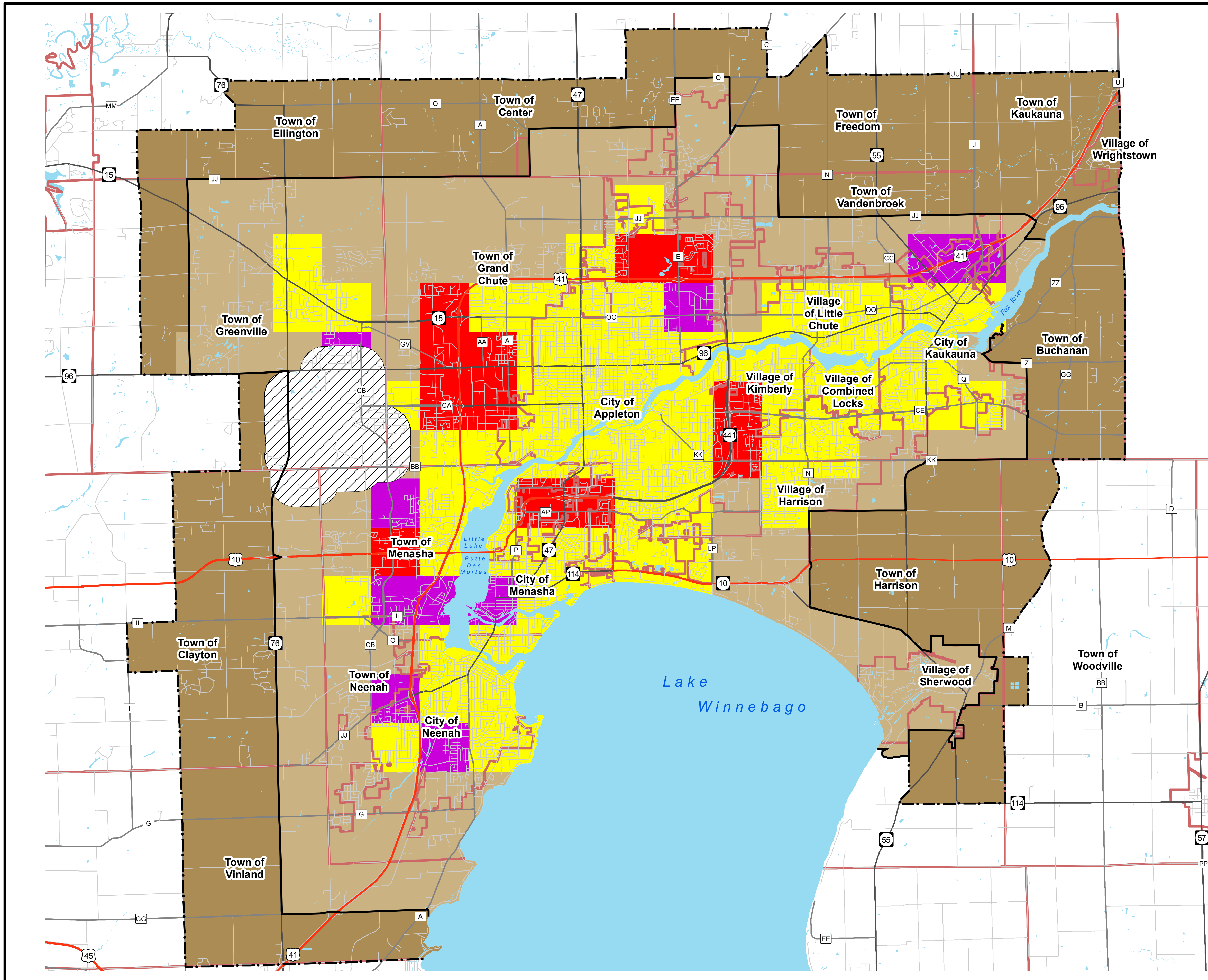

Exhibit 2-11
Appleton TMA
Developed Districts

Road Type

- USH
- STH
- CTH
- Local Road

District Type

- Airport
- Commercial
- Industrial
- Mixed
- Residential
- Rural
- Municipal Boundaries
- MPO Adjusted Urbanized Area
- Metropolitan Planning Area

N W E S

0 1 2 Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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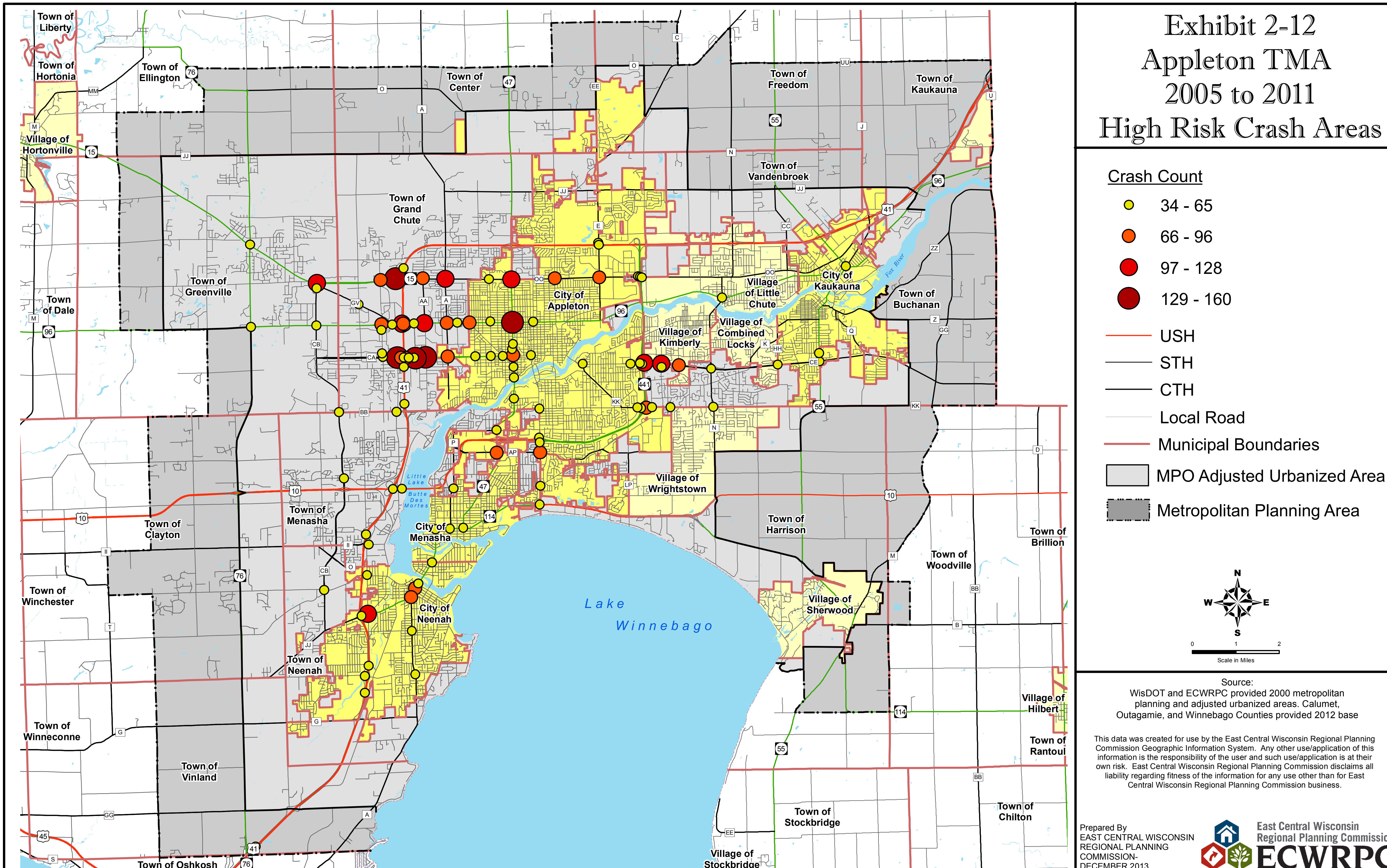

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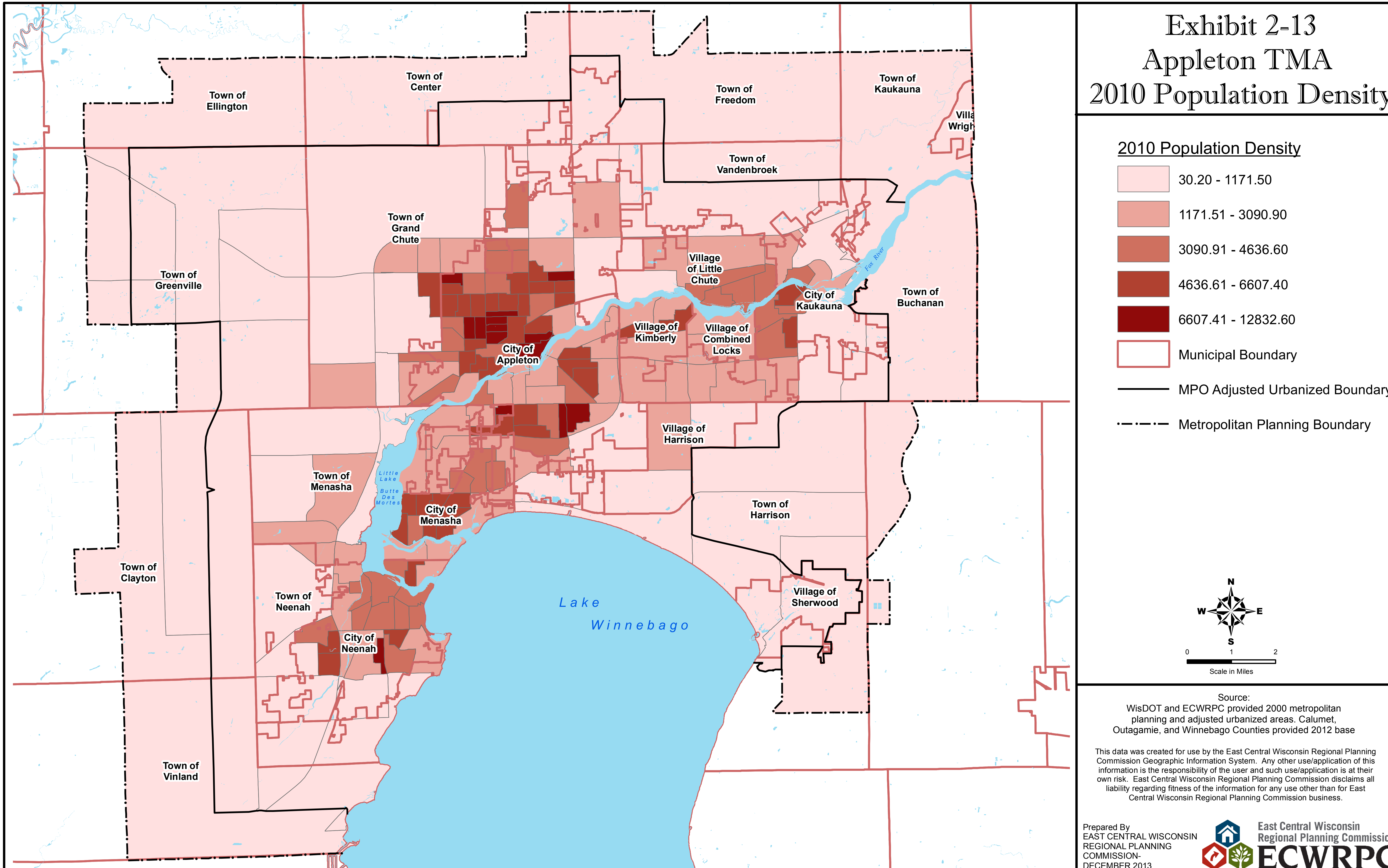

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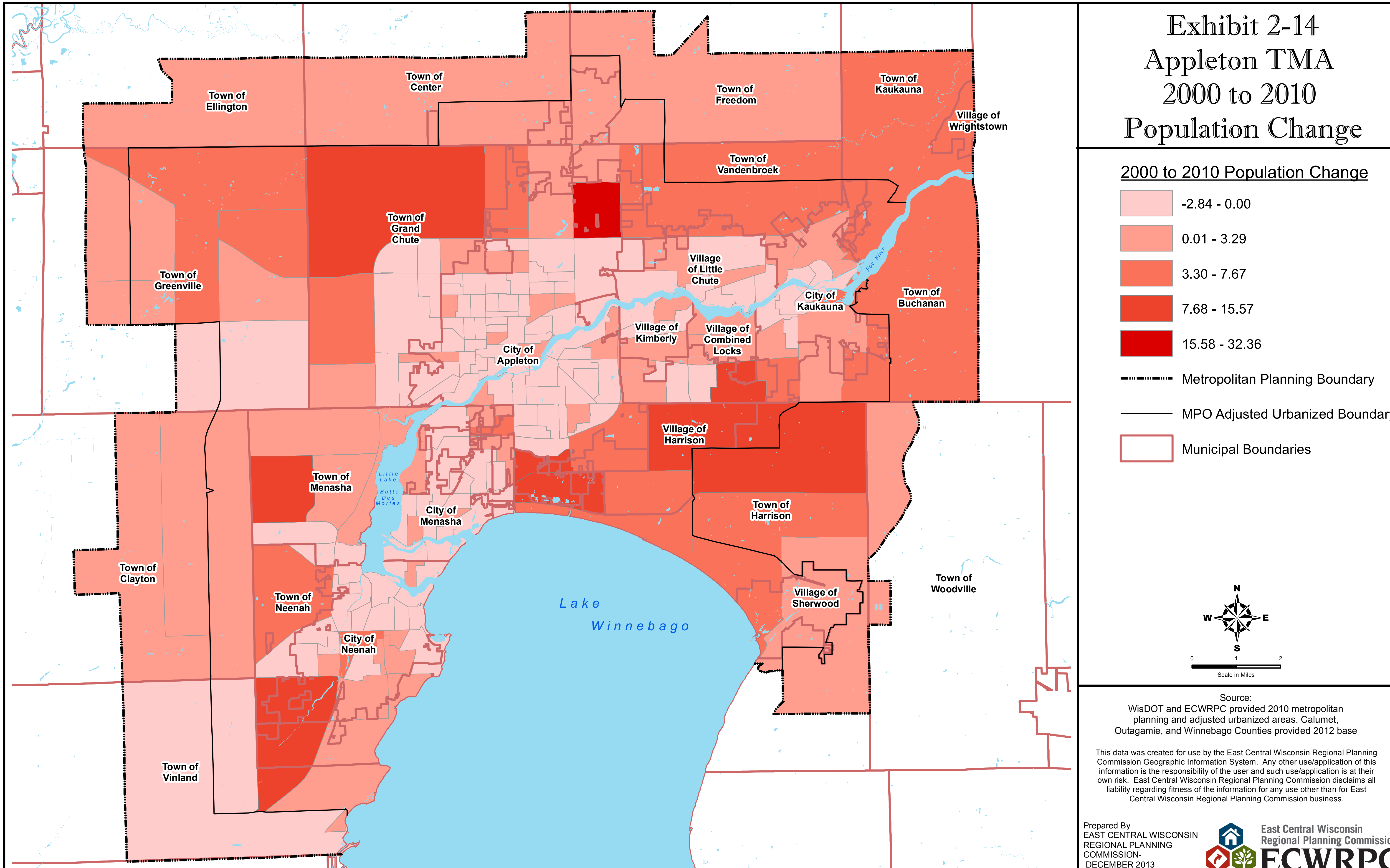

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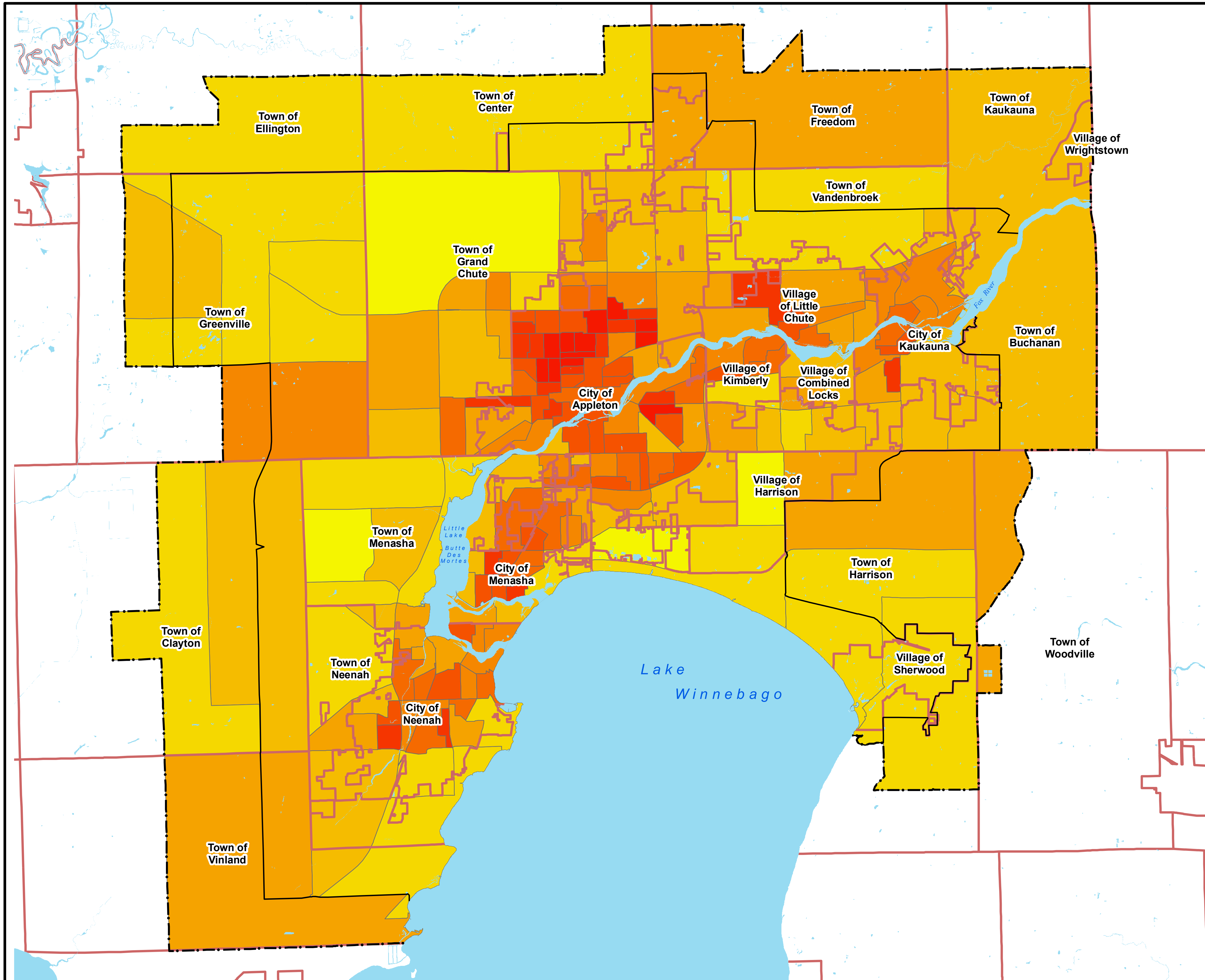

Exhibit 2-15 Appleton TMA Connectivity Index

Connectivity Index

- 1.24 - 1.33
- 1.34 - 1.48
- 1.49 - 1.58
- 1.59 - 1.71
- 1.72 - 1.84
- 1.85 - 2.00
- 2.01 - 2.23
- 2.24 - 2.47
- 2.48 - 2.89
- 2.90 - 4.00
- Metropolitan Planning Boundary
- MPO Adjusted Urbanized Boundary
- Municipal Boundaries

N W E S

0 1 2
Scale in Miles

Source:
WisDOT and ECWRPC provided 2000 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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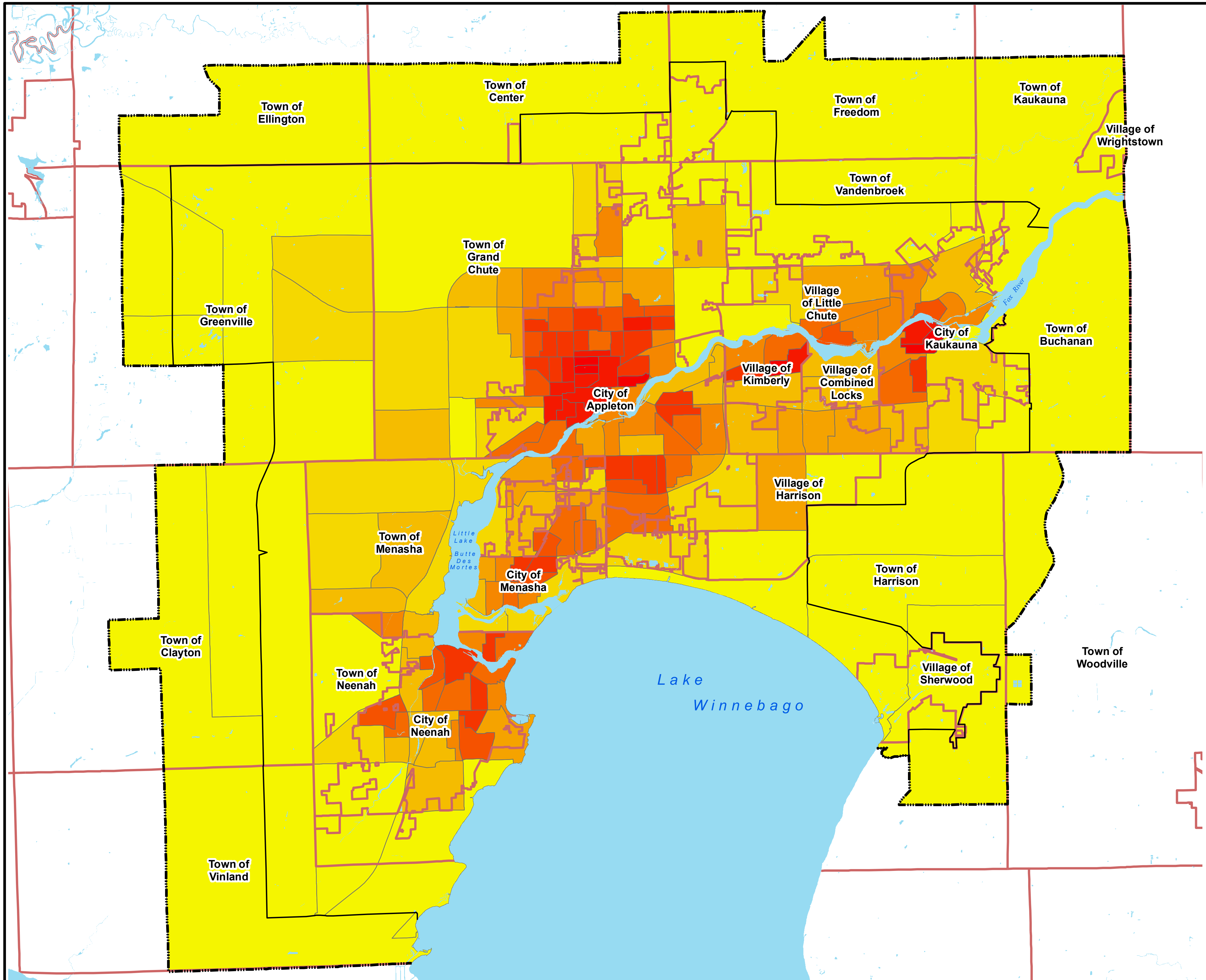
Exhibit 2-16
Appleton TMA
Accessibilty Index



Percent of Intersection per Acre

- 0.32 - 2.98
- 2.98 - 6.17
- 6.17 - 8.76
- 8.76 - 11.25
- 11.25 - 13.93
- 13.93 - 16.82
- 16.82 - 20.71
- 20.71 - 27.79
- 27.78 - 35.18
- 35.18 - 52.30
- Metropolitan Planning Boundary
- MPO Adjusted Urbanized Boundary
- Municipal Boundaries

N W E S

0 1 2

Scale in Miles

Source:
WisDOT and ECWRPC provided 2010 metropolitan planning and adjusted urbanized areas. Calumet, Outagamie, and Winnebago Counties provided 2012 base

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CHAPTER 3

PERFORMANCE MEASURES AND TARGETS

CHAPTER 3: PERFORMANCE MEASUREMENTS & 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 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 TMA.

This chapter provides a summary of current conditions within the Appleton 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 CMP. It is important to note that performance measures can adapt or change over time to better reflect the needs of the 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.

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.

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

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

Appleton TMA Performance Measures & Targets

The Appleton 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. The symbols indicate whether or not performance measure variables are positively above, negatively below, holding/static, or unavailable compared to the performance target. Please refer to the following table which provides a detailed explanation of the status symbology:

Status Symbology:

performance measure is positively above the performance target		**performance measure is negatively below the performance target**	
performance measure is holding or static		**performance measure data is unavailable**	

For Example: Bike rack usage for Valley Transit buses.

From May 2012 to April 2013 the bike rack usage on Valley Transit's buses was recorded at 16,189 and the previous year usage was at 15,224. The current year measure is up from the previous year, thus the performance measure is moving in a positive direction.

Data	Description	Source	Update Cycle	Current Measure	Performance Target	Status
Valley Transit Bike Rack Usage	Annual transit bike rack usage (May to April) compared to previous year (refer to CH 2, page 2-30)	Appleton Valley Transit	Every Year (May to April)	**16,189** (May 2012 to April 2013)	Increase From Previous Year. **15,224** (May 2011 to April 2012)	

Appleton TMA Street Network Performance Measurements & Targets

Data	Description	Source	Update Cycle	Current Measure	Performance Target	Status
Northeast Travel Demand Model (TDM) Congestion Status - LOS C	Calculates congestion status based on volume/capacity for forecasted year 2035. Congestion Status: Deficient and Severely Deficient (refer to CH 2, page 2-13)	ECWRPC	Every 5 Years	**52.4** miles (2013)	Goal: Decrease From Previous Year. Deficient and Severely Deficient equals **0**	
Accessibility	Number of intersections per acre. Percentage of total area by block level that falls below 80 intersections per acre. (refer to CH 2, page 2-46)	ECWRPC	Every 5 Years	**91.4%** (2013) of total area that falls below 80 Intersections per acre	Goal: Decrease From Previous Year. **75%** of total area that falls below 80 Intersections per acre	
Connectivity 1.4	A ratio of links divided by nodes. Percentage of total area by block level that falls below a connectivity index of 1.4 (refer to CH 2, page 2-45)	ECWRPC	Every 5 Years	**13.4%** (2013) of total area that fall below 1.4	Goal: Decrease From Previous Year. **15**% fall below 1.4 Connectivity Index	
Connectivity 1.6	A ratio of links divided by nodes. Percentage of total area by block level that falls below a connectivity index of 1.6 (refer to CH 2, page 2-45)	ECWRPC	Every 5 Years	**65.8%** (2013) of total area that falls below 1.6	Goal: Decrease From Previous Year. **50%** fall below 1.6 Connectivity Index	
PASER Paved (Structurally Deficient, PASER 1-4)	Compare percentage roads that fall in the structurally deficient or PASER 1-4 category from current year to the previous (refer to CH 2, page 2-11)	WisDOT	Every 2 Years	**18.7 %** (2011)	Goal: Decrease From Previous Year. **15.5 %** (2009)	

Appleton TMA Street Network Performance Measurements & Targets

Data	Description	Source	Update Cycle	Current Measure	Performance Target	Status
% of Workers Who Commute Alone to Work	A ratio of workers who commute alone to total workers of a Calumet, Outagamie, and Winnebago counties compared to previous year (refer to CH 2, page 2-40)	County Health Rankings and Roadmaps	Every Year	**84, 83, 84%** (2011) Calumet, Outagamie, Winnebago, respectively	Goal: Decrease From Previous Year. **85, 84, 83%** (2010) Calumet, Outagamie, Winnebago, respectively	
WisDOT Rideshare Program	Rideshare program promotes carpooling where residents can use an online mapping program to find potential carpooling matches; tracks registrants, available year versus previous year (refer to CH 2, page 2-45)	WisDOT	Every Year	**216** (Total for Calumet, Outagamie, & Winnebago Counties, 2012)	**TBD:** Goal: Increase From Previous Year.	
Possible Future Measures						
TDM timed routes versus actual timed routes	Compares the TDM timed routes to actual driving times, available year versus previous year (refer to CH 2, page 2-15)	ECWRP, WisDOT	Every Year	Time	NA	NA

Appleton TMA Non-Motorized Network Performance Measurements & Targets

Data	Description	Source	Update Cycle	Current Measure	Performance Target	Status
Annual Trestle-Friendship Trail Counts	Total annual trail user counts, available year versus previous year (refer to CH 2, page 2-20)	City/ Town of Menasha	Every Year	**153,014** (2012)	Goal: Increase From Previous Year. **348,203** (2011)	
Annual CB Trail Counts	Total annual trail user count, available year versus previous year (refer to CH 2, page 2-20)	City/ Town of Menasha	Every Year	**11,459** (2012)**	Goal: Increase From Previous Year. **18,099** (2011)	
Annual Jacobson Trail Counts	Total annual trail user count, available year versus previous year (refer to CH 2, page 2-20)	City/ Town of Menasha	Every Year	**10,577** (2012)**	Goal: Increase From Previous Year. **15,711** (2010)*	
"Get Up & Ride"	Annual Participation and miles logged (Outagamie, Calumet &Winnebago Counties) available year versus previous year (refer to CH 2, page 2-24)	www.nationalbikechallenge.org	Every Year	**2,585** (2013)	Goal: Increase From Previous Year. 2013 –**2,585** Participants and **1,099,863** miles logged, **27,682,717** kcal burned, **315,186** Pounds of CO2 and **$100,071** Saved	
Fox Cities Bicycle and Pedestrian Facilities	Number of Miles of Trails, Bike Lanes, etc. available year versus previous year (refer to CH 2, page 2-18)	ECWRPC	Every Year	**1,169**	Goal: Increase From Previous Year. **981 miles** of sidewalk; **129 miles** of trails; **59 miles** of bicycle facilities	
Safe Routes To School	Annual Participation, available year versus previous year (refer to CH 2, page 2-24)	ECWRPC	Every Year	**40** (2013) School Participation within the TMA	Goal: Increase From Previous Year. **40** schools within the TMA participate	

Appleton TMA Non-Motorized Network Performance Measurements & Targets

Possible Future Measures						
Data	**Description**	**Source**	**Update Cycle**	**Current Measure**	**Performance Target**	**Status**
Activity Based Model	A model based on integrated system of choices that represents a person's daily activity schedule as an activity pattern	ECWRPC	NA	NA	NA	NA
Walking School Bus Participation	Number of kids participating in the Walking School Bus Program Number of routes, Miles Traveled, Total Miles, Number of School buses (refer to CH 2, page 2-25)	ECWRPC	Every Year	NA	NA	NA
Multi-Modal Connectivity	Connectivity Index for non-motorized facilities	ECWRPC	Every 5 Years	NA	NA	NA

*2011 Annual Jacobson Trail Count data was not used in this analysis because the data was corrupted for the months of July to November. **2012 December data was missing from CB and Jacobson annual trail data totals.

Appleton Valley Transit Performance Measurements & Targets

Data	Description	Source	Update Cycle	Current Measure	Performance Target	Status
Bus - Average Annual UPTVR* **	Compares Appleton Valley Transit's Average Annual UPTVR to peer groups (2000-2011) (refer to CH 2, page 2-27)	National Transit Database	Every Year	**0.98**	Goal: Decrease From Previous Year. **1.16**	
Demand Response - Average Annual UPTVR	Compares Appleton Valley Transit's Average Annual UPTVR to peer groups (2000-2011) (refer to CH 2, page 2-27)	National Transit Database	Every Year	**0.17**	Goal: Increase From Previous Year. **0.19**	
Valley Transit Bike Rack Usage	Annual transit bike rack usage (May to April), available year versus previous year (refer to CH 2, page 2-30)	Appleton Valley Transit	Every Year (May to April)	**16,189** (May 2012 to April 2013)	Goal: Increase From Previous Year. **15,224** (May 2011 to April 2012)	
Possible Future Measures						
On-time Performance by Route	Time routes versus schedule time of stops, available year versus previous year	Appleton Valley Transit	Every Year	Time	NA	NA

***UPTRV equals Unlinked Passenger Trips per Vehicle Revenue Mile. UPT is defined as "the number of passengers who board public transportation vehicles. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination." (Courtesy of National Transit Database) UPTRV is a ratio of unlinked passenger trips to each mile of revenue.

Appleton TMA Rail & Bridge Performance Measurements & Targets

Data	Description	Source	Update Cycle	Current Measure	Performance Target	Status
Crossing Accidents	CN prepares a Leadership in Safety report for Canada and the United States. Crossing accidents are part of that report available year versus previous year (refer to CH 2, page 2-16)	Canadian National	Every Year	**179** (2012) **211** (2011)	Goal: Decrease From Previous Year. 2013 target is 155	
Trespassing Accidents	CN prepares a Leadership in Safety report for Canada and the United States. Trespassing accidents are part of that report available year versus previous year (refer to CH 2, page 2-16)	Canadian National	Every Year	**63** (2012) **89** (2011)	Goal: Decrease From Previous Year. 2013 target is 50	
Total Rail Accidents/Incidents	Federal Rail Administration data for Calumet, Outagamie and Winnebago Counties, available year versus previous year (refer to CH 2, page 2-17)	Federal Rail Administration	Every Year	**6** (2012)	Goal: Decrease From Previous Year. **7** (2011)	
Bridge Ratings	Sufficiency Ratings (SR) of all bridges within the Appleton TMA region. Calculated the percentage of total SR that fall within rehabilitation or replacement; available year versus previous year (refer to CH 2, page 2-17)	WisDOT	Every 2 Years	**28 %** (2012) of total bridges fall within rehabilitation or replacement	Goal: Decrease From Previous Year. **Reduce** 5 percent of bridges that fall within rehabilitation or replacement every 2 years	
Possible Future Measures						
Rail Crossing Closures	Number of rail crossing closings a year	Canadian National	NA	Closures	NA	NA
Rail crossing delay times	Average wait time for passing trains	NA	NA	Time	NA	NA

Appleton TMA Air Quality Performance Measurements & Targets

Data	Description	Source	Update Cycle	Current Measure	Performance Target	Status
Particulate Matter (PM): 2.5 micrometers in diameter and smaller	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, available year versus previous year (refer to CH 2, page 2-35)	WisDNR	Every Year	**9.27** (2011) micrograms per cubic meter of air	Goal: Decrease From Previous Year. Below EPA **12.0** micrograms per cubic meter of air	
PM 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, available year versus previous year (refer to CH 2, page 2-36)	County Health Rankings and Roadmaps, ACS (5-year estimates)	Every Year	9.3, 9.4, 9.5 (2008) Calumet, Outagamie, Winnebago Counties, respectively	Goal: Decrease From Previous Year. 9.3, 9.4, 9.5 (2008) Calumet, Outagamie, Winnebago Counties, respectively	
Ground Ozone (GO) – Parts Per Billion	GO is created by chemical reactions between NOx and VOC. GO samples are taken from April 15 to October 15; the hourly average by year is calculated for this analysis; available year versus previous year (refer to CH 2, page 2-35)	WI DNR	Every Year	**0.0316** (2011) Parts Per Billion	Goal: Decrease From Previous Year. Below EPA **0.075** parts per million	
Possible Future Measures						
Carbon Monoxide	8 hour average Parts Per Million	**9** Parts Per Million	NA			

Appleton TMA Non-Recurring Incident Performance Measurements & Targets

Data	Description	Source	Update Cycle	Current Measure	Performance Target	Status
Total annual crashes for Appleton TMA	Total annual crashes reported WisDOT WisTransPortal Project, available year versus previous year (refer to CH 2, page 2-33)	WisDOT	Every Year	**3,998** (2011)	Goal: Decrease From Previous Year. **3,686** (2010)	
Total annual bicycle crashes Appleton TMA	Total annual bicycle crashes reported by WisDOT WisTransPortal Project, available year versus previous year (refer to CH 2, page 2-33)	WisDOT	Every Year	**43** (2011)	Goal: Decrease From Previous Year. **67** (2010)	
Total annual pedestrian crashes Appleton TMA	Total annual pedestrian crashes reported by WisDOT WisTransPortal Project, available year versus previous year (refer to CH 2, page 2-33)	WisDOT	Every Year	**36** (2011)	Goal: Decrease From Previous Year. **30** (2010)	
Total annual fatalities Appleton TMA	Total annual fatalities reported by WisDOT WisTransPortal Project, available year versus previous year (refer to CH 2, page 2-33)	WisDOT	Every Year	**8** (2011)	Goal: Decrease From Previous Year. **15** (2010)	
Possible Future Measures						
Non-recurring incident delay times	Delay times for accidents, weather and construction, available year versus previous year	WisDOT	Every Year	Time	NA	NA

Data Analysis Sharing

The performance measures and targets discussed within this chapter will be made available to the general public primarily through the Fox Cities and Oshkosh MPO website (www.fcompo.org). 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 hopes to update the performance measures according to the specified update cycles (please refer to the above tables for specific time periods).

In addition, the CMP document will be incorporated in the development of future versions of the LRTP and TIP for the Appleton TMA 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 TMA on behalf of the LRTP and TIP documents. The CMP will also be utilized by the Appleton TMA Technical Policy Advisory Committees for decision-making purposes. More broadly, ECWRPC staff hopes that the data gathered will be useful to other area municipalities when making transportation related decisions.

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CHAPTER 4

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.

ENCOURAGEMENT and EDUCATION:

- **Rideshare** – Is the sharing of vehicle trips so that more than one person travels together, often to a common destination. The goal of rideshare is to have more than one person share a vehicle which will reduce travel cost, stress on the environment, reduce pollution (carbon emissions), parking spaces and for the purpose of this plan, congestion. Wisconsin runs a rideshare program found at the following link: http://www.dot.wisconsin.gov/travel/commuter/index.htm, where participants can register online and search for matches to share a ride. The rideshare program has an interactive mapping feature that accurately matches participants via their origins and destinations.[2] For the Counties of Calumet, Outagamie, and Winnebago, rideshare registrant totals (those **living** in each of these counties) in 2012 were 22, 99, and 95, respectively for a

[1] US Department of Transportation Federal Highway Administration Congestion Management Process: A Guidebook (23 CFR 450.320 (c) 4) (July 2013)
[2] http://www.dot.wisconsin.gov/travel/commuter/contacts.htm (July 2013)

total of 216. For the Counties of Calumet, Outagamie, and Winnebago, rideshare registrant totals (those **working** in each of these counties) in 2012 were 7, 70, and 135, respectively for a total of 212. Please note that this data does have duplications.[3]

- **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 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:** Work with local SRTS programs to promote and encourage walking or biking to school. 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.[4] While distance to school is the most commonly reported barrier to walking and bicycling, private vehicles still account from half of school trips between ¼ and ½ miles – a distance easily covered on foot or bike.[5]

- **Walking School Bus Program:** The walking school bus program is a group of 5-10 children who walk to school with adult supervision. The walking school bus concept was develop to enable children to walk to school safely even when traffic and crime is a concern.[6]

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 Oktoberfest. The City of Appleton sets up temporary park and ride locations outside of the Oktoberfest grounds where participants can park their vehicles and ride a bus for a reduced fare ($0.25) and have direct transportation to the festivities.

- **Park and Ride Lots** – There are several park and ride lots in and surrounding the Appleton TMA region. Lots can be found at http://www.dot.wisconsin.gov/travel/parkride/. 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.

[3] http://www.dot.wisconsin.gov/travel/commuter/contacts.htm (July 2013)
[4] http://www.saferoutespartnership.org/resourcecenter/quick-facts (July 2013)
[5] Ibid. (July 2013)
[6] http://www.pednet.org/programs/walking-school-bus.html (July 2013)

- **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.[7]

- **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:

RAILROAD:

- **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.

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

Transportation Alternative 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:

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

"GET UP AND RIDE" BICYCLE CHALLENGE PROGRAM:

- Encourage the use of bicycling for daily transportation and recreation.
- Promote the health and physical benefits of bicycling on a regular basis.
- Support the "Get Up and Ride" program through promotion and outreach with the business communities.

SAFE ROUTES TO SCHOOL PROGRAM:

- Support and encourage existing schools and districts currently participating in the SRTS program.
- Engage and recruit schools and districts that are not participating in the SRTS program.
- Engage other entities within the community that influence children activities like the health department and the local YMCA as another avenue to implement the SRTS program.
- Encourage the implementation of activities such as the "walking school bus" to reduce vehicular travel trips to and from school.

BICYCLE/PEDESTRIAN SAFETY EDUCATION PROGARMS

- To work with the Bicycle Federation of Wisconsin on the implementation activities of the Share and Be Aware Program.

BICYCLE FACILITY IMPROVEMENTS:

- Secure Bike Racks (secure in terms of physically creating locations where bike racks are anchored in the ground; and in terms of having secure places where people feel safe with parking their bikes at a bike rack location)
- Add new sidewalks and designated bicycle lanes.
- Improved bicycle and pedestrian facilities at transit stops (bicycle racks and bike lockers).
- Support Pedestrian-Oriented Development (building setback restrictions and streetscape enhancements).
- Develop a continuous bicycle and pedestrian network that could include a combination of bike lanes, sharrows, multi-use trails and sidewalks.
- Improved Safety (maintaining lighting, signage, striping, traffic control devices, and pavement quality, and installing curb cuts, curb extensions, median refuges, and raised crosswalks).

- Exclusive Bicycle and Pedestrian Rights-of-Way (abandoned rail lines and other available properties that can be used for bike and walking trails.

INTERSECTION PEDESTRIAN ENHANCEMENTS:

- **Marked Crosswalks/Pavements** - Any portion of a roadway at an intersection or elsewhere distinctly indicated as a pedestrian crossing by pavement marking lines on the surface.

- **Accessible Pedestrian Signals** - An accessible pedestrian signal (APS) is a traffic signal that provides auditory and/or vibrotactile information to pedestrian who are blind or have weak vision.

- **Bike lanes** - A portion of roadway that has been designated for partial or full use by bicyclists by pavement markings and signs.

- **Bump-out** - Extending sidewalk or curb lines that reduce curb-to-curb effective roadway lane widths.

- **Complete Streets** - Roadways designed and operated to enable a safe, attractive, and comfortable access for all users, including pedestrians (sidewalks, crosswalks), bicyclists (bike lanes), motorists, and public transport users of all ages and abilities.

- **Diverters** - Barriers placed diagonally across an intersection, blocking certain movements.

- **In-road State Law Stop or Yield for Pedestrians** - Self-standing yield or stop sign placed in center of roadway to inform motorists that failure to yield or stop, while a pedestrian is in a crosswalk, results in breaking a state statute.

- **Paved Shoulders** - Paved shoulders along higher traffic roads to create space for bicyclists to ride; increases safety for bicyclists and motorists by separating these modes of transportation.

- **Pedestrian Countdown Timers** - Amount of time remaining in which pedestrians have to cross at intersections, before cross traffic begins.

- **Pedestrian Refuge Islands** - Raised median with curb ramps to harbor pedestrians crossing between two opposing directions of traffic. Often curb ramps are equipped with yellow tactile warnings, which allow blind people to take notice of the refuge island.

- **Sharrow** - Bicycle and double arrow are stenciled in an entire lane, designating the use for cyclists.

RIDESHARE'S BIKE BUDDY PROGRAM:

- Promote the use of WisDOT's Bike Buddy Program. Website is located at http://www.dot.wisconsin.gov/travel/commuter/bikebuddy.htm

Freight Strategies

The Appleton 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 citizen in varying degrees; especially the elderly, youth, children at risk, low-income and auto-less residents. 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.
- Reduce transit fares where possible.
- Make transit more convenient and attractive to increase ridership.

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.

District Strategies

Districts within the Appleton TMA region were defined by existing land use plans to allow for specific analysis. Land use plays a critical role in generating traffic demands and it should work with and support the transportation system. Identifying effective land use strategies will help the transportation system become more efficient as well as alleviate congestion. The following are a list of district strategies:

- Increase urban density of buildings and population
- Encourage polices that support growth management
- Support “livable” communities/values
- Promote in-fill development – This strategy takes advantage of infrastructure that already exists, rather than building new infrastructure on the fringes of an urban area.
- Endorse sustainable design/practices.

- Encourage Transit-Oriented Development (TOD) – This strategy clusters housing units and/or businesses near transit stations in walkable communities.

- Promote Mixed-Use Development – This strategy allows trips to be made without automobiles. People can walk to restaurants and services rather than use automobiles.

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 the Appleton TMA could consider include:

- **Complete Streets Policy** – Work with municipalities in the development of complete streets policies to ensure transportation alternatives are available to reduce the amount of vehicle trips traveled. This policy takes into account 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 of (1) core hours and (2) 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.[8]

- **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).
- **Flexible Working Hours (Flextime)** – Employees vary arrival and departure times to meet business needs and the day includes "core" working hours when the employee is at work (e.g. 9am – 3pm).
- Work from home or telecommute

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

CHAPTER 5

IMPLEMENTATION AND 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 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. A well-documented implementation and update process guarantees the plan will be relevant now and in the future.

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 CMP.

Implementation & Evaluation

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

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 now the addition of the CMP. Projects will be scored on a set number of points for each category, resulting in a project ranking and recommendation list for the TIP. The new CMP guidelines will evaluate whether or not a TIP project is in line with the CMP 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 selected 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.

[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)

Although federal regulations require regions over 200,000 in population to develop a CMP plan, specific guidelines and standards are not specified. Each TMA has the discretion to develop and implement a CMP plan that best meets the needs of its planning area. There are a variety of implementation strategies in place that vary from plan to plan. Research was conducted to learn from case studies and "best practices" from a variety of CMP plans to incorporate into the implementation and update processes for the Appleton TMA. The following are recommendations on how the CMP can be integrated into the larger transportation planning process (recommendation concepts used from the Madison, WI CMP document and the Southwestern Pennsylvania Commission CMP document).[3,4]

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.

[3] Congestion Management Process for the Madison Metropolitan Planning Area (2011) (August 2013)
[4] Southwestern Pennsylvania Commission, Pittsburgh, PA:
http://www.fhwa.dot.gov/planning/congestion_management_process/case_studies/spc.cfm (August 2013)

- 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:

As the CMP document is the first edition for the recently designated Appleton TMA, implementation strategies have yet to be implemented and, to date, cannot be evaluated in terms of overall effectiveness. In the future, evaluation of the effectiveness of implemented strategies will take place in conjunction with each major update cycle to the Appleton MPO LRTP. The methods discussed below should serve as a starting point for the evaluation of implemented strategies for the Appleton TMA and include the following two options:

- **Option 1:** Conduct or fund evaluation studies (before and after data collection of a CMP strategy that was implemented to gauge its effectiveness). The evaluation case studies by ECWRPC staff would document the implementation of one or more congestion management strategies outlined in Chapter 4 of this document.[5]
- **Option 2:** Develop guidance for evaluation studies (an ideal option if partnering with agencies/municipalities on congestion management strategies/issues). ECWRPC staff may choose to develop guidance for evaluation studies that could be used by partnering agencies to monitor the effectiveness of congestion management strategies. For example, staff could partner with Valley Transit to help them monitor transit strategies; or staff could partner with regional freight partners to monitor freight strategies.[6]

Data Sourcing and Maintenance

The Data Sourcing and Maintenance table below outlines the procedures for the data collection used for congestion management.

Motorized Transportation Network Performance Measures & Targets			
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	Rideshare program promotes carpooling where residents can use an online mapping program to find potential carpooling matches. The mapping software matches potential riders based on common origins and destinations for places of employment.	WisDOT	Every Year

[5] http://www.nysmpos.org/pdf/CMS_FINAL_REPORT.pdf (12-12-2013)
[6] Ibid. (12-12-2013)

Motorized Transportation Network Performance Measures & Targets			
Railroad and Bridge Analysis	The Appleton 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 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 Performance Measures & Targets			
Data	**Description**	**Source**	**Update Cycle**
Trail Counts	Trail counts compiled by local municipalities.	Local Municipalities/WisDOT	Every Year
Transit Bike Rack Usage	The number of times a bus bike rack is used annually.	Valley Transit	Every Year
"Get Up and Ride" Bike Challenge	The Bike Challenge is a health and wellness initiative intended to encourage people to bike for transportation and recreation; data on the number of riders, number of miles, pounds of CO_2, and money saved are recorded.	Kimberly-Clark Corporation/League of American Bicyclists; ECWRPC	Every Year
SRTS (Safe Routes to School)	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
Outreach Presentations	Do a short presentation to employers (i.e. Well City Fox Cities) on the benefits of Transit, Rideshare, Get Up and Ride, bicycle commuting, etc.	ECWRPC	Every Year
Bike Lanes/Bicycle Facilities	Total bike lanes and sharrows miles within the Appleton TMA region.	Local Municipalities	Every 1-2 Years
Trail Miles	Total trail miles within the Appleton TMA region.	Local Municipalities	Every 1-2 Years
Sidewalks	Total sidewalk miles within the Appleton TMA region.	Local Municipalities	Every 5 Years

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
District Analysis	The Appleton TMA region was categorized into districts based on developed land use. The developed districts include residential, commercial, industrial, rural, mixed and airport. Each district experiences unique congestion related issues and requires a deeper analysis of its functions and goals to recommend congestion reduction strategies.	ECWRPC	Every 5 Years
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.[7] To increase accessibility is to increase ones 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

[7] 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)

CHAPTER 6

LONG RANGE TRANSPORTATION PLAN COORDINATION

CHAPTER 6: LRTP COORDINATION

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

Both the CMP and the MTP 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 can identify 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 and the MTP, TIP, and LRTP 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 MTP, 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 in the Implementation and Update section of this document (Chapter 5), it is also important that there is an agreed upon level of consistency of the goals and objectives between the CMP, the MTP, TIP, and LRTP. The CMP as a stand-alone document provides guidance in the selection of projects for the rolling 5-year TIPs. The TIPs, consequently impact which projects are initiated in both the short and long term future; which have a ripple effect on the MTP and LRTP. It is vital that these plans work together to meet the demands of the regional transportation network.

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

- Coordinate the annual update cycle of the CMP to occur before each TIP update cycle; this is important in identifying where CMP goals and objectives can coordinate with TIP projects.[1]

- The 2010 edition of the Fox Cities LRTP identifies the following goal for Transportation:

    - *In 2035, the Fox Cities Urbanized 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.*

[1] Congestion Management Process for the Madison Metropolitan Planning Area (2011) (August 2013)

- The plan continues: *To obtain this goal, the following issue categories have been identified:*
  - *Integrated Planning;*
  - *Maximum system effectiveness for all residents;*
  - *An efficient street and highway system;*
  - *Minimum environmental disruption;*
  - *Compatibility with land use patterns;*
  - *Conservation of energy; and*
  - *Multimodal interaction*

- 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 Management Area.* This vision statement should be used to coordinate efforts of the LRTP goal mentioned above.

Conclusion

The CMP is a federally mandated requirement for regions that have surpassed 200,000 in population; however there are no set standards as to how the document should be integrated with a region's MTP, TIP, and LRTP. The CMP plan presented here should be used as a document that works within the larger context of the above mentioned plans 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 people it serves.

APPENDIX A

LEGAL NOTICE OF PUBLIC
INFORMATION MEETING

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Signed and sworn before me

Notary Public, Outagamie County, Wisconsin

My commission expires 3-27-16

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

As the Metropolitan Planning Organization (MPO) for the Fox Cities (Appleton-Neenah) Urbanized Area, the East Central Wisconsin Regional Planning Commission has prepared a draft Congestion Management Process Plan (CMP) for the newly designated Transportation Management Area (TMA). A CMP is required for all urbanized areas exceeding 200,000 in population, and the Fox Cities metropolitan area surpassed that mark based on the 2010 census. 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 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. The CMP public information meeting for the Fox Cities TMA will be located at:

University of Wisconsin-Fox Valley, 1478 Midway Road,

Menasha, WI 54952
Room: Student Union
Date: Tuesday, July 16, 2013

Time: 5:00pm to 7:00pm
Please contact East Central Wisconsin Regional Planning Commission if you have any questions at (920)-751-4770. Visit the Fox Cities and Oshkosh Metropolitan Planning Organization (MPO) Web Site; fcompo.org

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APPENDIX B

APPLETON TMA CONGESTION SURVEY

Purpose

As the Metropolitan Planning Organization (MPO) for the Fox Cities (Appleton-Neenah) Urbanized Area, the East Central Wisconsin Regional Planning Commission (ECWRPC) has begun preparing a Congestion Management Process Plan (CMP) for the newly designated Appleton Transportation Management Area (TMA). A CMP is required for all urbanized areas exceeding 200,000 in population. The CMP is being developed in an effort to develop appropriate strategies to improve safety and reduce traffic congestion on area roadways. 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.

Instructions

Please read the following survey questions and provide the appropriate response as indicated. Your confidential responses to this survey are greatly appreciated and will only be used by the ECWRPC in developing recommendations for the CMP Plan.

Definition of Congestion

Congestion in reference to transportation relates to an excess of vehicles on a portion of roadway at a particular time resulting in speeds that are slower—sometimes much slower—than normal or "free flow" speeds. Congestion often means stopped or stop-and-go traffic – *FHWA - Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation*. Congestion should not only be thought of as only automobile traffic; it includes other types of transportation such as public transit, bicycles, walking, rail, rail crossings, draw bridges, construction and freight trucking which impact the broader transportation system.

Did you know!

The American Automobile Association (AAA) publishes an annual 'Your Driving Costs' Study which estimates car ownership costs for different car segments. AAA has published this report since 1950. An average sedan costs almost $9000 per year in 2012.

Based on Driving 15,000 miles annually	*Small Sedan*	*Medium Sedan*	*Large Sedan*	***Sedan Average***	*SUV 4WD*	*Minivan*
Cost Per Mile	44.9 cents	58.5 cents	75.5 cents	**59.6 cents**	75.7 cents	63.4 cents
Cost Per Year	$6,735	$8,780	$11,324	**$8,946**	$11,360	$9,504

(Source: http://newsroom.aaa.com/2012/04/cost-of-owning-and-operating-vehicle-in-u-s-increased-1-9-percent-according-to-aaa%E2%80%99s-2012-%E2%80%98your-driving-costs%E2%80%99-study/)

Did you know!

The cost of operating a bicycle for a year is about $350.
(Source: League of American Bicyclists, www.bicyclinginfo.org)

Did you know!

According to the American Public Transportation Association's (APTA) February *Transit Savings Report*, individuals who ride public transportation instead of driving can save, on average, more than $826 this month, and $9,917 annually.
(Source: http://www.apta.com/mediacenter/pressreleases/2013/Pages/130212_Transit-Savings.aspx)

Survey Questions 1-10

1. What is congestion to you? **(Circle all that apply)**







2. What type(s) of congestion are problematic to you on a daily basis? **(Please Respond Below)**

3. What do you feel is the source behind congestion in the Fox Cities Area? **(Please Respond Below)**

4. How high of a priority is congestion in the Fox Cites Area? (1-5, 1 being the highest and 5 being the lowest priority)

5. Congestion in the Fox Cities can be improved by: **(Please Respond Below)**

6. Congestion impacts how I choose my travel patterns. (Choose only one response) **(1 Strongly Disagree, 2 Disagree, 3 Neither Agree or Disagree, 4 Agree, 5 Strongly Agree)**

7. What is your preferred mode of transportation (in summer) to and from your place of employment? **(1 Walk, 2 Bike, 3 Bus, 4 Car, 5 Other [Please Specify]__________________________)**

8. If additional plans and funding were set aside for alternative transportation modes (i.e. sidewalks, bicycle lanes/paths, public transportation) would I use these facilities? **(Please Respond Below)**

9. What would it take to get you to use public transportation more in your daily routine? **(Please Respond Below)**

10. What would it take to get you to bike or walk more in your daily routine? **(Please Respond Below)**

11. To effectively deal with congestion, transportation funding should be spent on: **(Please Respond Below):**

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APPENDIX C

CRASH LOCATION ANALYSIS

Location Analysis

STH 96 (Wisconsin Ave) & STH 47 (Richmond St)

A total of 160 crashes occurred from 2005 to 2011, resulting in a total of 69 injuries. Two of which were bicycle related crashes. Nine were traffic signal related crashes. In 2011 there were a total of 84 crashes, resulting in a significant increase from the previous years.

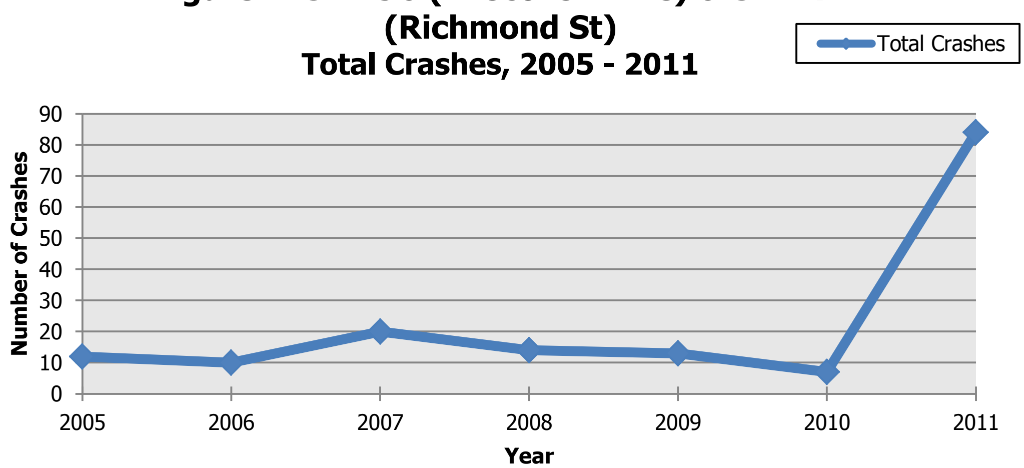
Table 1. STH 96 (Wisconsin Ave) & STH 47 (Richmond St) (2005 - 2011)

Year	Total Crashes
2005	12
2006	10
2007	20
2008	14
2009	13
2010	7
2011	84

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	69
Property	91
Bike and Pedestrian	**# of Crashes**
Bike	2
Pedestrian	0
Vehicle only	158
Accident Type	**# of Crashes**
Bike	2
Curb	1
Other Not Fixed	1
Other Object Fixed	1
Other Non-Collision	1
Parked Vehicle	1
Traffic Sign	1
Traffic Signal	9
Not Labeled	143

Figure 1. STH 96 (Wisconsin Ave) & STH 47 (Richmond St) Total Crashes, 2005 - 2011



CTH CA (College Ave) & Mall Dr/Nicolet Dr

A total of 150 crashes occurred, resulting in a total of 55 injuries; one of which was a bicycle related crash and another was a pedestrian related crash. Total crashes in 2011 decreased from 30 to 21 for the previous year and marked a new 4 year low last reached in 2007 (17 crashes).

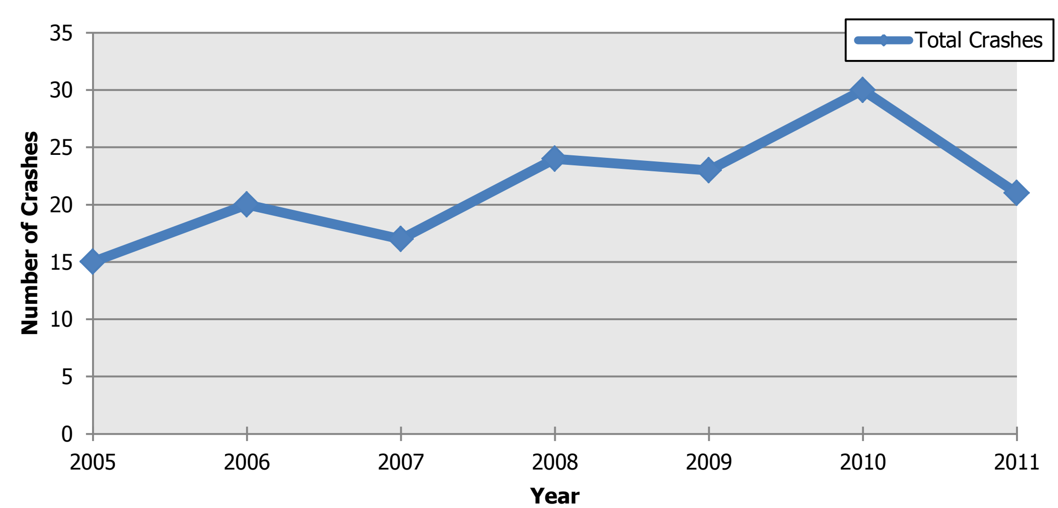
Table 2. CTH CA (College Ave) & Mall Dr/Nicolet Dr Crash Overview (2005 - 2011)

Year	Total Crashes
2005	15
2006	20
2007	17
2008	24
2009	23
2010	30
2011	21

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	55
Property	95
Bicycle and Pedestrian	**# of Crashes**
Bike	1
Pedestrian	1
Vehicle only	148
Accident Type	**# of Crashes**
Bike	1
Ditch	1
Other Object Fixed	1
Overturn	1
Pedestrian	1
Traffic Signal	1
Not Labeled	144

Figure 2. CTH CA (College Ave) & Mall Dr/Nicolet Dr Total Crashes, 2005 - 2011



STH 125 (College Ave) & CTH AA (Bluemound Dr)

A total of 135 crashes occurred, resulting in a total of 54 injuries. Two of which were pedestrian related crashes. Six crashes were traffic signal related. In 2011 there were 43 total crashes which is a significant increase from the previous years.

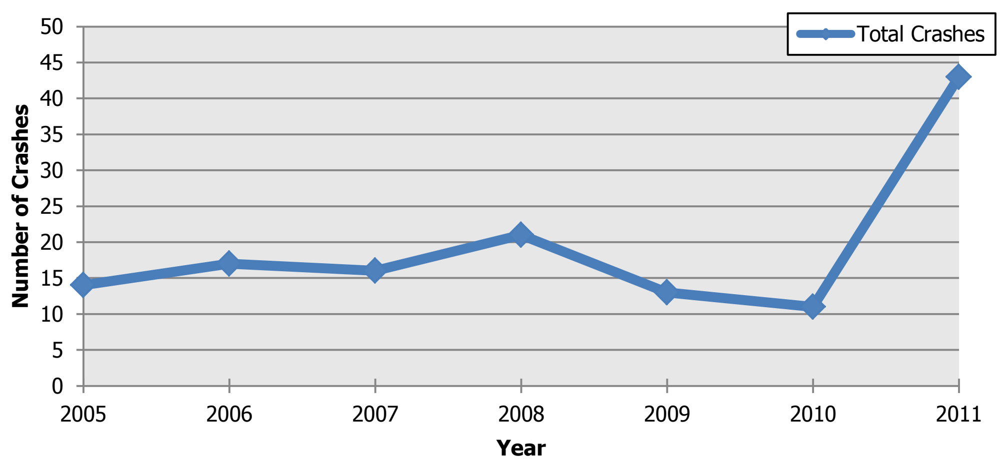
Table 3. STH 125 (College Ave) & CTH AA (Bluemound Dr) Crash Overview (2005 - 2011)

Year	Total Crashes
2005	14
2006	17
2007	16
2008	21
2009	13
2010	11
2011	43

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	54
Property	81
Bicycle and Pedestrian	**# of Crashes**
Bike	0
Pedestrian	2
Vehicle only	133
Accident Type	**# of Crashes**
Bike	1
Ditch	1
Lum Light Support	1
Pedestrian	1
Traffic Sign	1
Traffic Signal	6
Not Labeled	124

Figure 3. STH 125 (College Ave) & CTH AA (Bluemound Dr) Total Crashes, 2005 - 2011



STH 125 (College Ave) & Westhill Blvd/Kools St

A total of 133 crashes occurred, resulting in 39 injuries. Six crashes were traffic signal related. In 2011 there were only four total crashes which is a significant decrease from the previous years where total crashes were in the mid to high 20s.

Table 4. STH 125 (College Ave) & Westhill Blvd./Kools St. Crash Overview (2005 - 2011)

Year	Total Crashes
2005	14
2006	19
2007	28
2008	20
2009	20
2010	28
2011	4

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	39
Property	94
Bicycle and Pedestrian	**# of Crashes**
Bike	0
Pedestrian	0
Vehicle only	133
Accident Type	**# of Crashes**
Bike	1
Other Non-Collision	1
Traffic Signal	6
Not Labeled	125

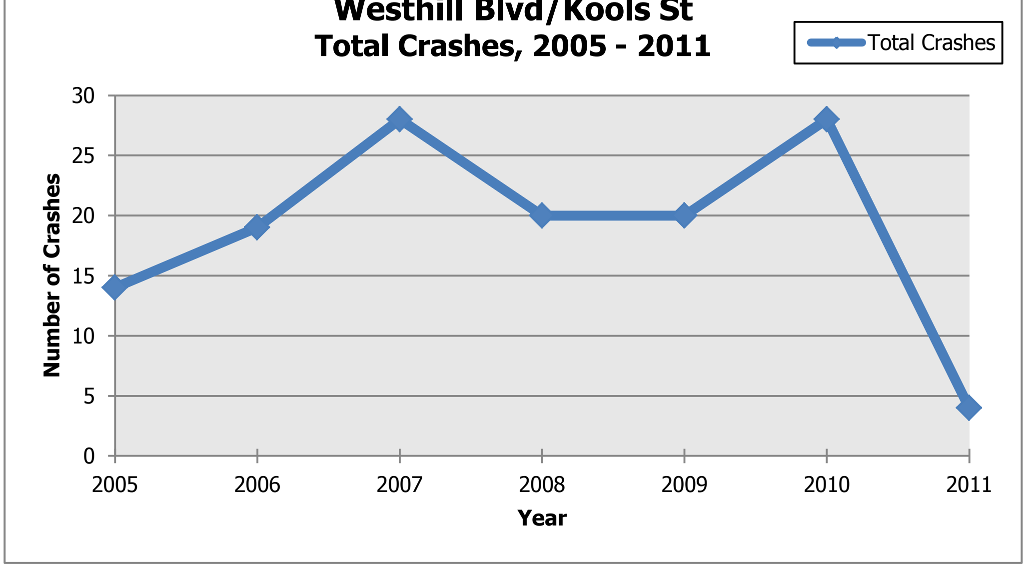


Figure 4. STH 125 (College Ave) & Westhill Blvd/Kools St Total Crashes, 2005 - 2011

Casaloma Dr & Northland Ave

A total of 133 crashes occurred, resulting in 62 injuries.

Table 5. Casaloma Dr. & Northland Ave. Crash Overview (2005 - 2011)

Year	**Total Crashes**	**Accident Severity**	**# of Crashes**
2005	27	Fatality	0
2006	23	Injury	62
2007	15	Property	71
2008	13	**Bicycle and Pedestrian**	**# of Crashes**
2009	12	Bike	0
2010	21	Pedestrian	0
2011	22	Vehicle only	133
		Accident Type	**# of Crashes**
		Deer	2
		Traffic Sign	1
		Not Labeled	130

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

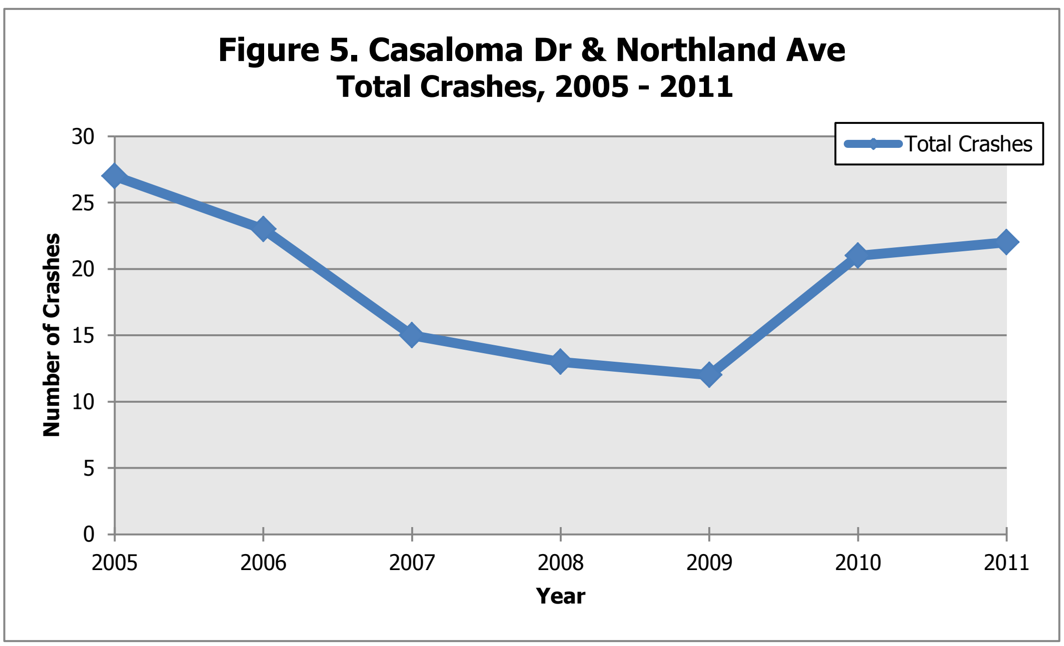


Figure 5. Casaloma Dr & Northland Ave
Total Crashes, 2005 - 2011

STH 96 (Wisconsin Ave) & STH 41

A total of 125 crashes occurred, resulting in 39 injuries. In 2007, a high of 42 total crashes occurred at this intersection but has steadily declined since this time.

Table 6. STH 96 (Wisconsin Ave.) & STH 41 Crash Overview (2005 - 2011)

Year	Total Crashes
2005	3
2006	23
2007	42
2008	22
2009	8
2010	13
2011	14

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	39
Property	86
Bicycle and Pedestrian	**# of Crashes**
Bike	0
Pedestrian	0
Vehicle only	125
Accident Type	**# of Crashes**
Curb	1
Deer	1
Ditch	1
Guardrail End	2
Guardrail Face	1
Traffic Signal	2
Not Labeled	117

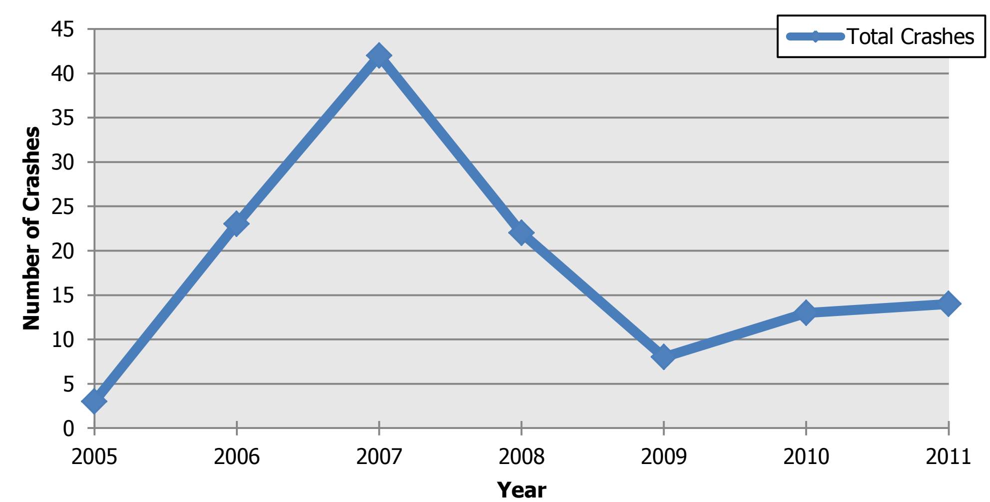


Figure 6. STH 96 (Wisconsin Ave) & STH 41
Total Crashes, 2005 - 2011

STH 47 (Richmond St) & CTH OO (Northland Ave)

A total of 126 crashes occurred, resulting in 49 injuries. Three of which were bicycle related and one that was pedestrian related. Eight crashes were traffic signal related.

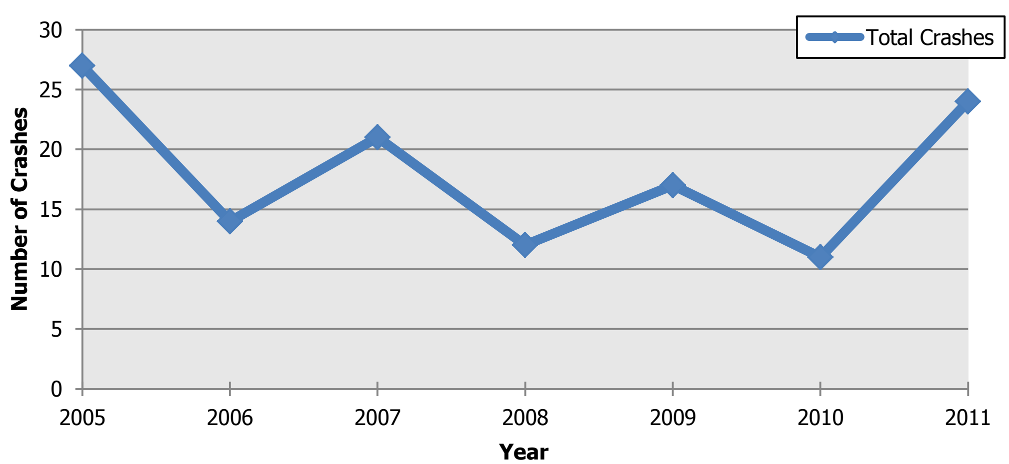
Table 7. STH 47 (Richmond St.) & CTH OO (Northland Ave.) Crash Overview (2005 - 2011)

Year	Total Crashes
2005	27
2006	14
2007	21
2008	12
2009	17
2010	11
2011	24

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	49
Property	77
Bicycle and Pedestrian	**# of Crashes**
Bike	3
Pedestrian	1
Vehicle only	122
Accident Type	**# of Crashes**
Bike	1
Pedestrian	1
Traffic Sign	1
Traffic Signal	8
Vehicle Trans Other Roadway	1
Not Labeled	114

Figure 7. STH 47 (Richmond St) & CTH OO (Northland Ave)
Total Crashes, 2005 - 2011



CTH CE & Eisenhower Dr

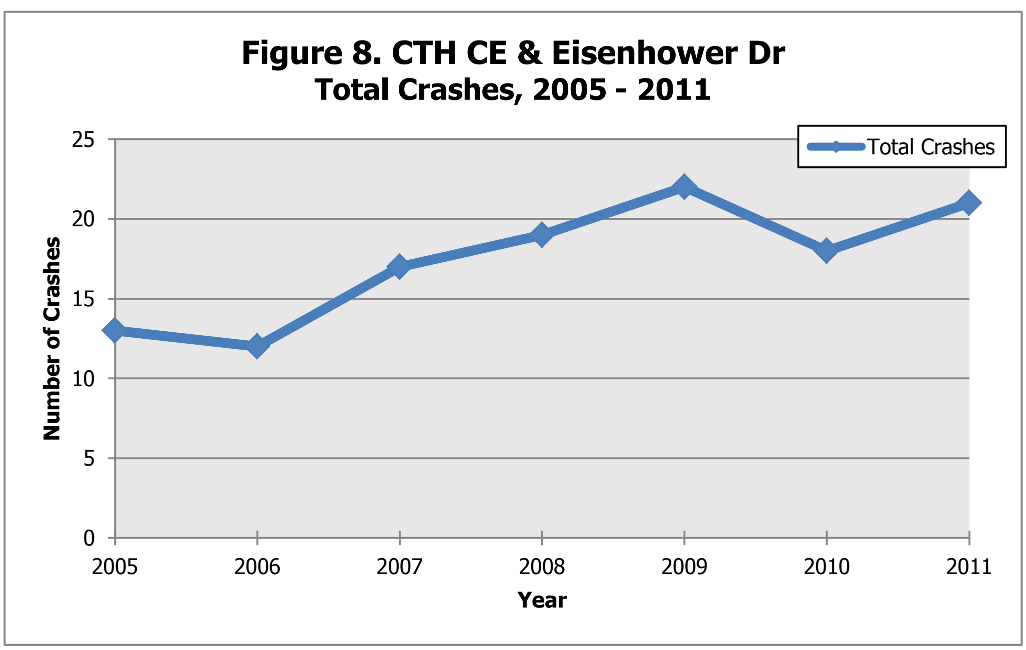
A total of 122 crashes occurred, resulting in 45 injuries; one of which was pedestrian related. Two accidents were traffic signal related. The total yearly crashes have remained steady during this time frame ranging from the mid-teens to low 20s.

Table 8. CTH CE & Eisenhower Dr. Crash Overview (2005 - 2011)

Year	Total Crashes
2005	13
2006	12
2007	17
2008	19
2009	22
2010	18
2011	21

Accident Severity	# of Crashes
Fatality	0
Injury	45
Property	77
Bicycle and Pedestrian	**# of Crashes**
Bike	0
Pedestrian	1
Vehicle only	121
Accident Type	**# of Crashes**
Vehicle Trans Other Roadway	1
Pedestrian	1
Traffic Sign	1
Traffic Signal	2
Not Labeled	117

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/



CTH OO (Northland Ave) & CTH A (Lyndale Dr)

A total of 114 crashes occurred, resulting in 39 injuries; one of which was bicycle related. In 2011, a total of 26 crashes occurred (an increase of 13 crashes from the previous year).

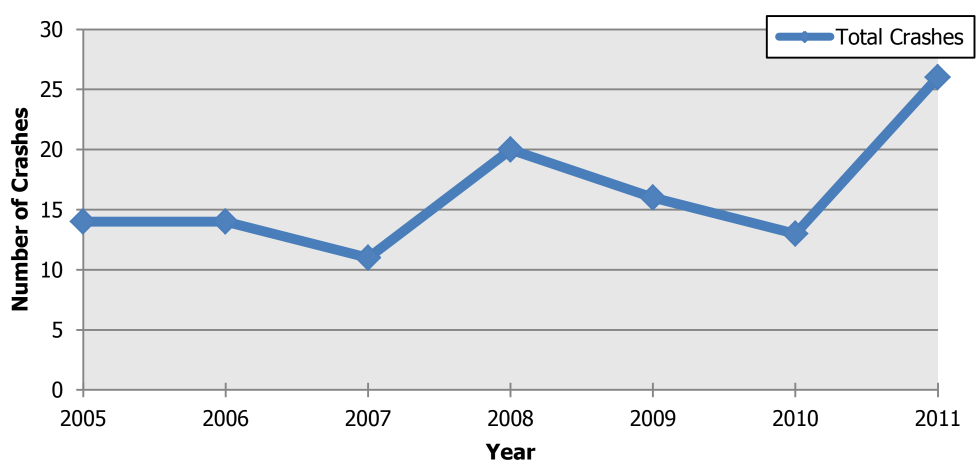
Table 9. CTH OO (Northland Ave.) & CTH A (Lynndale Dr.) Crash Overview (2005 - 2011)

Year	Total Crashes
2005	14
2006	14
2007	11
2008	20
2009	16
2010	13
2011	26

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	39
Property	75
Bicycle and Pedestrian	**# of Crashes**
Bike	1
Pedestrian	0
Vehicle only	113
Accident Type	**# of Crashes**
Bike	1
Curb	1
Guardrail Face	1
Object Not Fixed	1
Traffic Signal	2
Not Labeled	108

Figure 9. CTH OO (Northland Ave) & CTH A (Lynndale Dr)
Total Crashes, 2005 - 2011



Winneconne Ave & Green Bay Rd

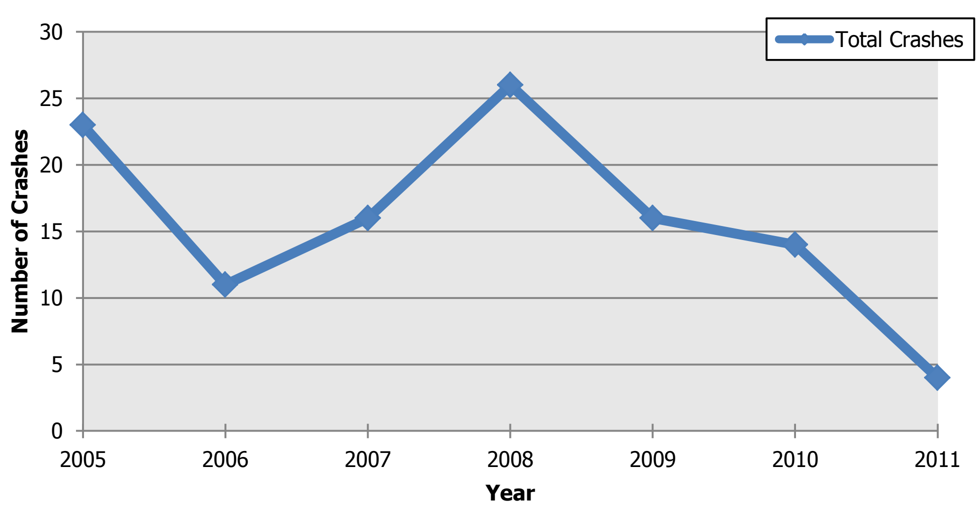
A total of 110 crashes occurred, resulting in 44 injuries. In 2011 there were only four crashes which is a significant decrease from a high of 26 total crashes in 2008.

Table 10. Winneconne Ave & Green Bay Rd Crash Overview (2005 - 2011)

Year	Total Crashes	Accident Severity	# of Crashes
2005	23	Fatality	0
2006	11	Injury	44
2007	16	Property	66
2008	26	**Bicycle and Pedestrian**	**# of Crashes**
2009	16	Bike	0
2010	14	Pedestrian	0
2011	4	Vehicle only	110
		Accident Type	**# of Crashes**
		Median Barrier	1
		Other Non-Collision	1
		Overturn	1
		Traffic Signal	1
		Not Labeled	106

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Figure 10. Winneconne Ave & Green Bay Rd Total Crashes, 2005 - 2011



STH 441 & CTH CE

A total of 105 crashes occurred, resulting in 35 injuries. One of which was bicycle related.

Table 11. STH 441 & CTH CE Crash Overview (2005 - 2011)

Year	Total Crashes
2005	1
2006	14
2007	22
2008	18
2009	21
2010	15
2011	14

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	35
Property	70
Bicycle and Pedestrian	**# of Crashes**
Bike	1
Pedestrian	0
Vehicle only	104
Accident Type	**# of Crashes**
Bike	1
Curb	1
Ditch	2
Object Not Fixed	2
Other Non-Collision	1
Traffic Sign	1
Traffic Signal	3
Not Labeled	94

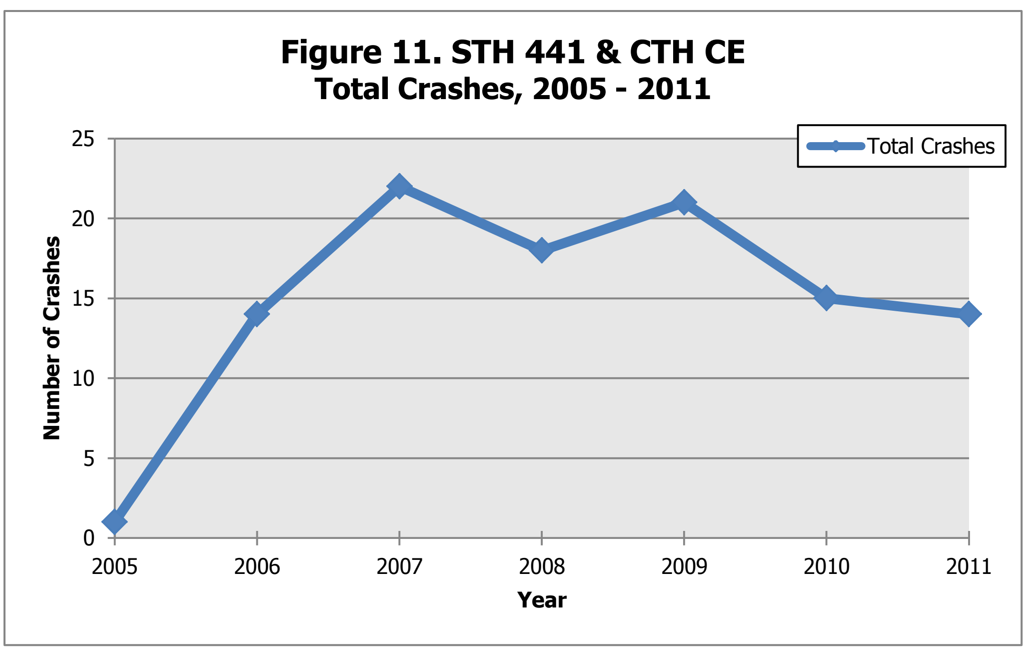


Figure 11. STH 441 & CTH CE
Total Crashes, 2005 - 2011

STH 96 (Wisconsin Ave) & CTH AA (Bluemound Dr)

A total of 103 crashes occurred, resulting in 42 injuries. One of which was a bicycle related crash and one that was a pedestrian related crash. In 2011, there were 24 total crashes, which is a record high for since 2005.

Table 12. STH 96 (Wisconsin Ave) & CTH AA (Bluemound Dr) Crash Overview (2005 - 2011)

Year	Total Crashes
2005	15
2006	12
2007	12
2008	15
2009	9
2010	16
2011	24

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	42
Property	61
Bicycle and Pedestrian	**# of Crashes**
Bike	1
Pedestrian	1
Vehicle only	101
Accident Type	**# of Crashes**
Bike	1
Deer	3
Lum Light Support	1
Pedestrian	1
Traffic Signal	1
Not Labeled	96

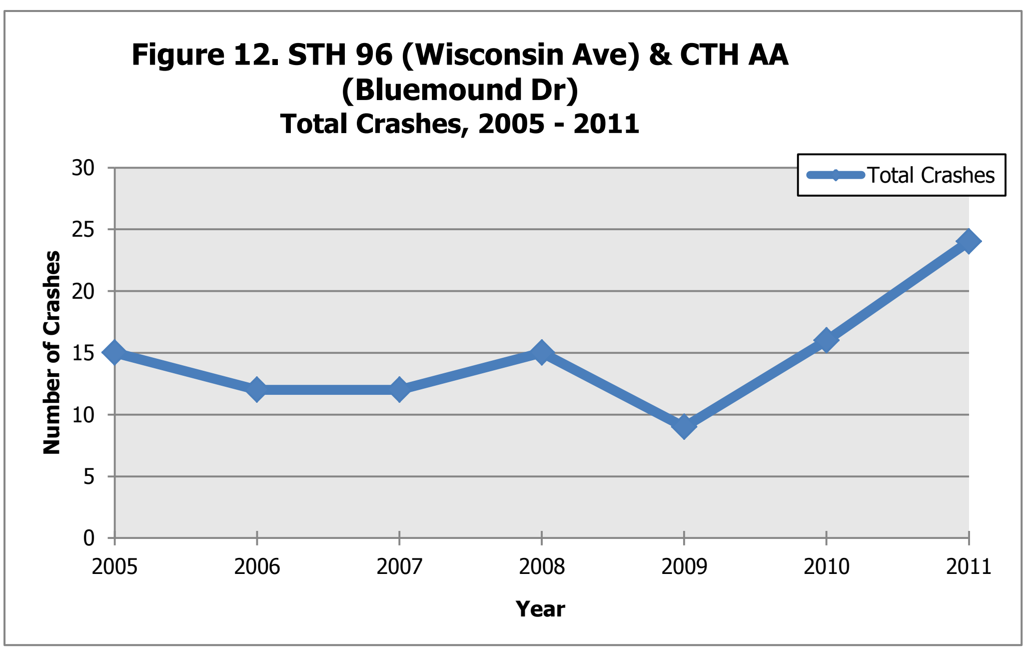


Figure 12. STH 96 (Wisconsin Ave) & CTH AA (Bluemound Dr) Total Crashes, 2005 - 2011

STH 15 & CTH CB

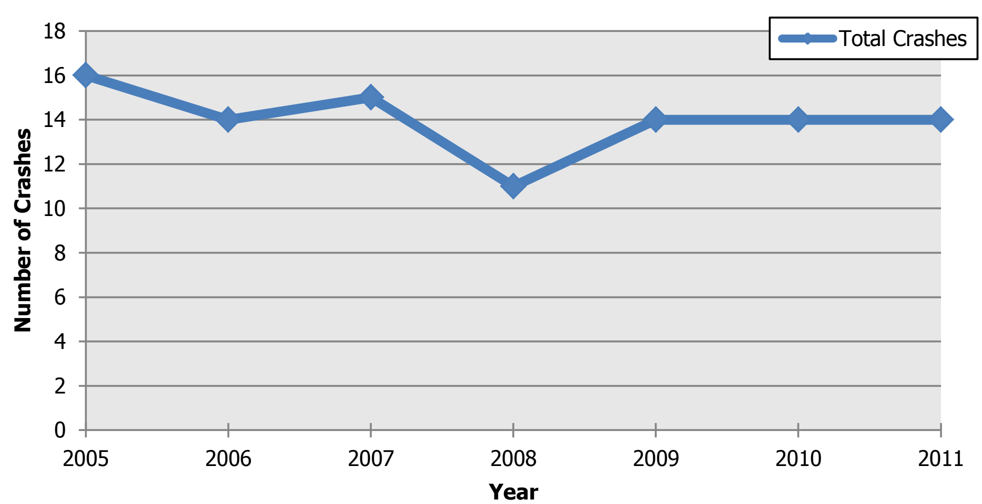
A total of 98 crashes occurred, resulting in 31 injuries; four of which were deer related crashes and 3 of which were traffic signal related. Total crashes for each year since 2005 have remained steady in the mid-teens.

Table 13. STH 15 & CTH CB Overview (2005 - 2011)

Year	Total Crashes	Accident Severity	# of Crashes
2005	16	Fatality	0
2006	14	Injury	31
2007	15	Property	67
2008	11	**Bicycle and Pedestrian**	**# of Crashes**
2009	14	Bike	0
2010	14	Pedestrian	0
2011	14	Vehicle only	98
		Accident Type	**# of Crashes**
		Curb	1
		Deer	4
		Other Non-Collision	1
		Overturn	1
		Lum Light Support	1
		Traffic Signal	3
		Not Labeled	87

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Figure 13. STH 15 & CTH CB
Total Crashes, 2005 - 2011



STH 96 & STH 41

A total of 92 crashes occurred, resulting in 27 injuries. In 2011, there were 27 total crashes, which is a significant increase from the previous years. Only 4 crashes were documented in 2005.

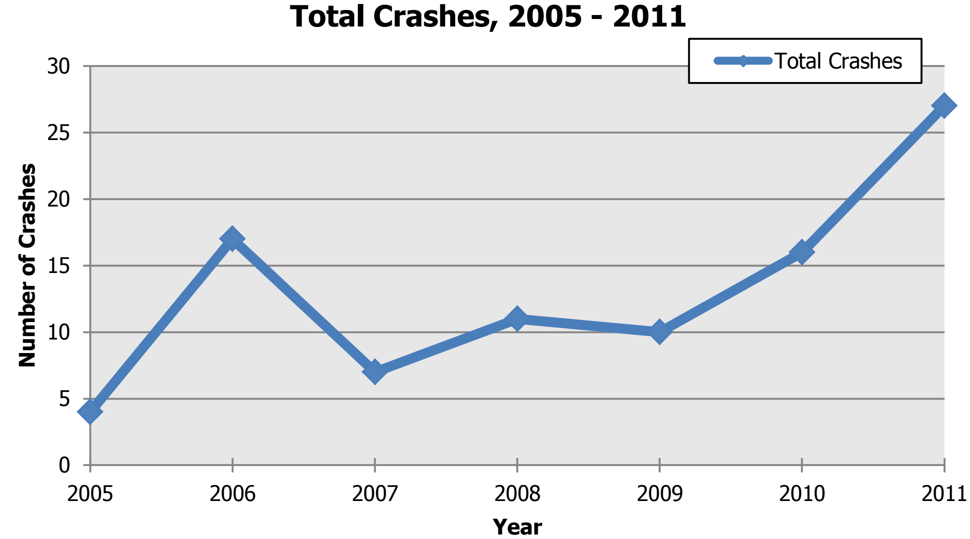
Table 14. STH 96 & STH 41 Crash Overview (2005 - 2011)

Year	Total Crashes
2005	4
2006	17
2007	7
2008	11
2009	10
2010	16
2011	27

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	27
Property	65
Bicycle and Pedestrian	**# of Crashes**
Bike	0
Pedestrian	0
Vehicle only	92
Accident Type	**# of Crashes**
Curb	1
Guardrail Face	1
Median Barrier	1
Other Object Fixed	1
Traffic Sign	1
Traffic Signal	1
Not Labeled	86

Figure 14. STH 96 & STH 41
Total Crashes, 2005 - 2011



STH 41 & STH 15 (Northland Ave)

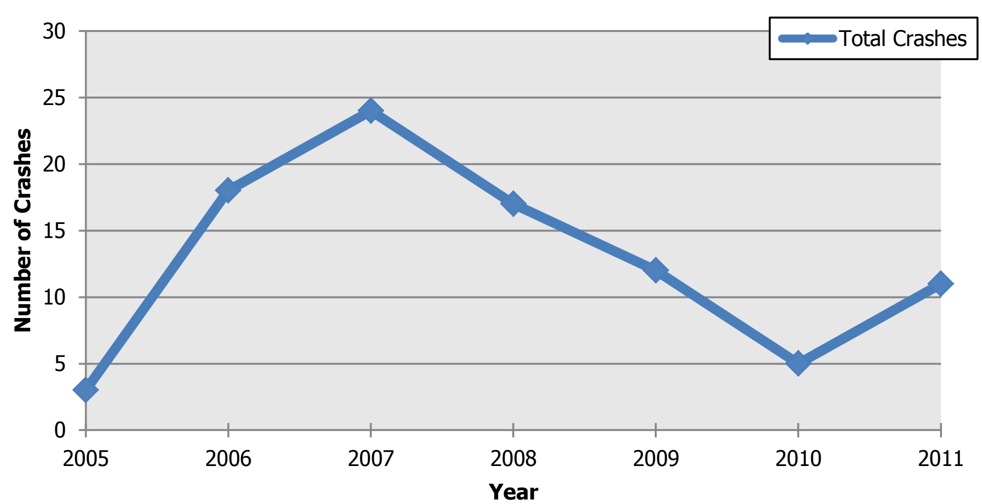
A total of 90 crashes occurred, resulting in 33 injuries; five of which were traffic signal related crashes.

Table 15. STH 41 & STH 15 (Northland Ave) Crash Overview (2005 - 2011)

Year	Total Crashes	Accident Severity	# of Crashes
2005	3	Fatality	0
2006	18	Injury	33
2007	24	Property	57
2008	17	**Bicycle and Pedestrian**	**# of Crashes**
2009	12	Bike	0
2010	5	Pedestrian	0
2011	11	Vehicle only	90
		Accident Type	**# of Crashes**
		Curb	1
		Deer	2
		Over Turn	1
		Traffic Sign	2
		Traffic Signal	5
		Not Labeled	79

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Figure 15. STH 41 & STH 15 (Northland Ave)
Total Crashes, 2005 -2011



STH 96 (Wisconsin Ave) & STH 41

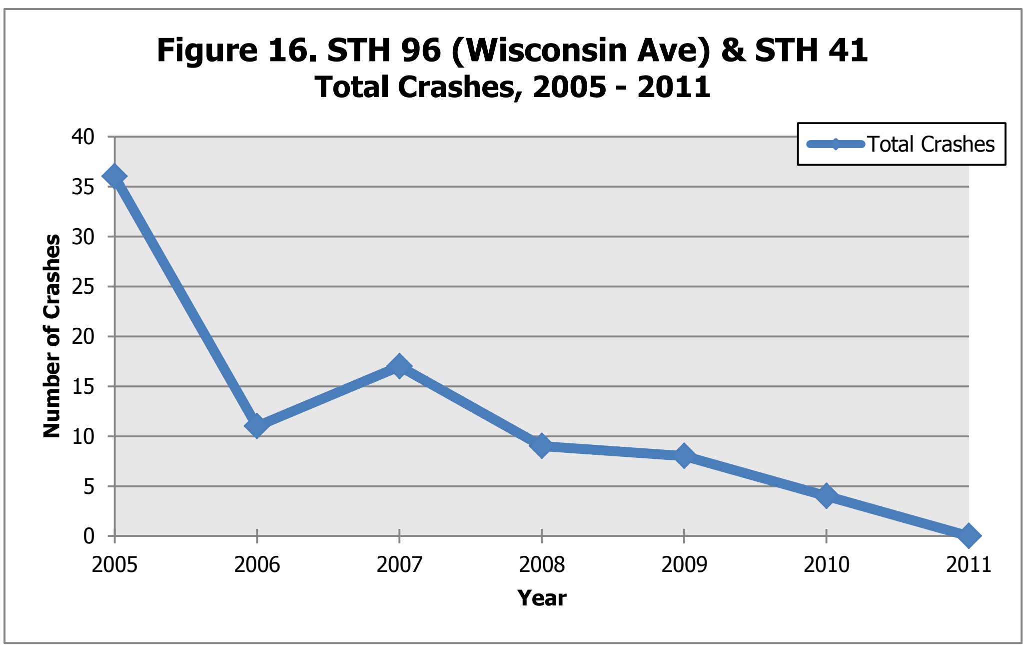
A total of 84 crashes occurred, resulting in 23 injuries. One of which was a bicycle related crash. In 2011, there were zero crashes reported, which is a significant decrease from the previous years. In 2005, there were a total of 36 crashes.

Table 16. STH 96 (Wisconsin Ave) & STH 41 Crash Overview (2005 - 2011)

Year	Total Crashes
2005	36
2006	11
2007	17
2008	9
2009	8
2010	4
2011	0

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	23
Property	62
Bicycle and Pedestrian	**# of Crashes**
Bike	1
Pedestrian	0
Vehicle only	84
Accident Type	**# of Crashes**
Curb	1
Deer	2
Median Barrier	3
Guardrail Face	2
Other Non-Collision	1
Parked Vehicle	1
Traffic Signal	1
Not Labeled	74



CTH OO (Northland Ave) & CTH AA (Bluemound Dr)

A total of 84 crashes occurred, resulting in 29 injuries. Accidents at this intersection have remained steady in the low-mid teens.

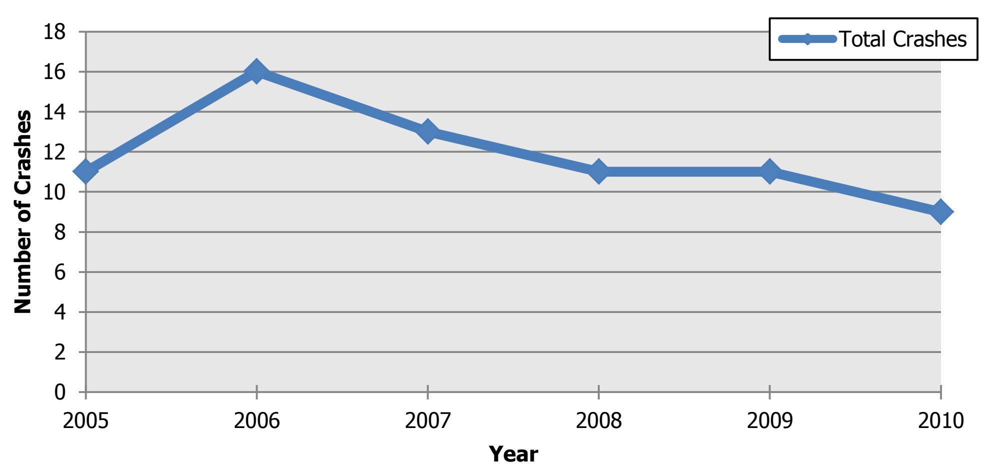
Table 17. CTH OO (Northland Ave.) & CTH AA (Bluemound Dr.) Crash Overview (2005 - 2011)

Year	Total Crashes
2005	11
2006	16
2007	13
2008	11
2009	11
2010	9
2011	13

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	29
Property	55
Bicycle and Pedestrian	**# of Crashes**
Bike	0
Pedestrian	0
Vehicle only	84
Accident Type	**# of Crashes**
Curb	3
Deer	1
Ditch	1
Embankment	1
Fence	1
Other Non-Collision	1
Traffic Sign	1
Not Labeled	75

Figure 17. CTH OO (Northland Ave) & CTH AA (Bluemound Dr) Total Crashes, 2005 - 2011



CTH OO (Northland Ave) & Meade St

A total of 81 crashes occurred, resulting in 21 injuries; one of which was a bicycle related crash. Five were traffic signal related crashes. Fifteen total crashes occurred in 2011, a high-water mark since 2005.

Table 18. CTH OO (Northland Ave.) & Meade St. Crash Overview (2005 - 2011)

Year	Total Crashes	Accident Severity	# of Crashes
2005	8	Fatality	0
2006	13	Injury	21
2007	14	Property	60
2008	11	**Bicycle and Pedestrian**	**# of Crashes**
2009	10	Bike	1
2010	10	Pedestrian	0
2011	15	Vehicle only	80
		Accident Type	**# of Crashes**
		Bike	1
		Lum Light Support	1
		Other Non-Collision	2
		Traffic Signal	5
		Not Labeled	72

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

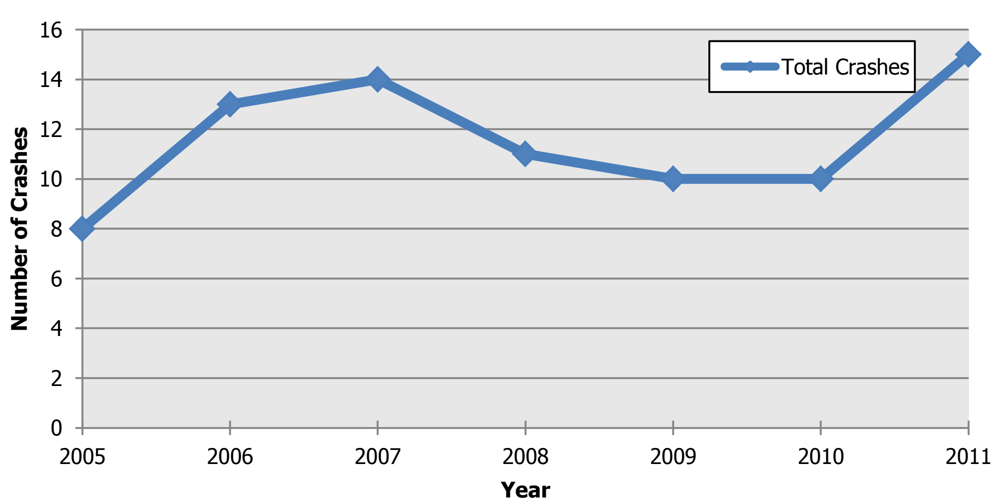


Figure 18. CTH OO (Northland Ave) & Meade St Total Crashes, 2005 - 2011

STH 125 (College Ave) & CTH A (Lyndale Dr)

A total of 77 crashes occurred, resulting in 28 injuries.

Table 19. STH 125 (College Ave.) & CTH A (Lynndale Dr.) Crash Overview (2005 - 2011)

Year	Total Crashes
2005	17
2006	10
2007	7
2008	14
2009	4
2010	12
2011	13

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	28
Property	49
Bicycle and Pedestrian	**# of Crashes**
Bike	0
Pedestrian	0
Vehicle only	77
Accident Type	**# of Crashes**
Deer	1
Other Object Fixed	1
Traffic Sign	1
Traffic Signal	3
Not Labeled	71

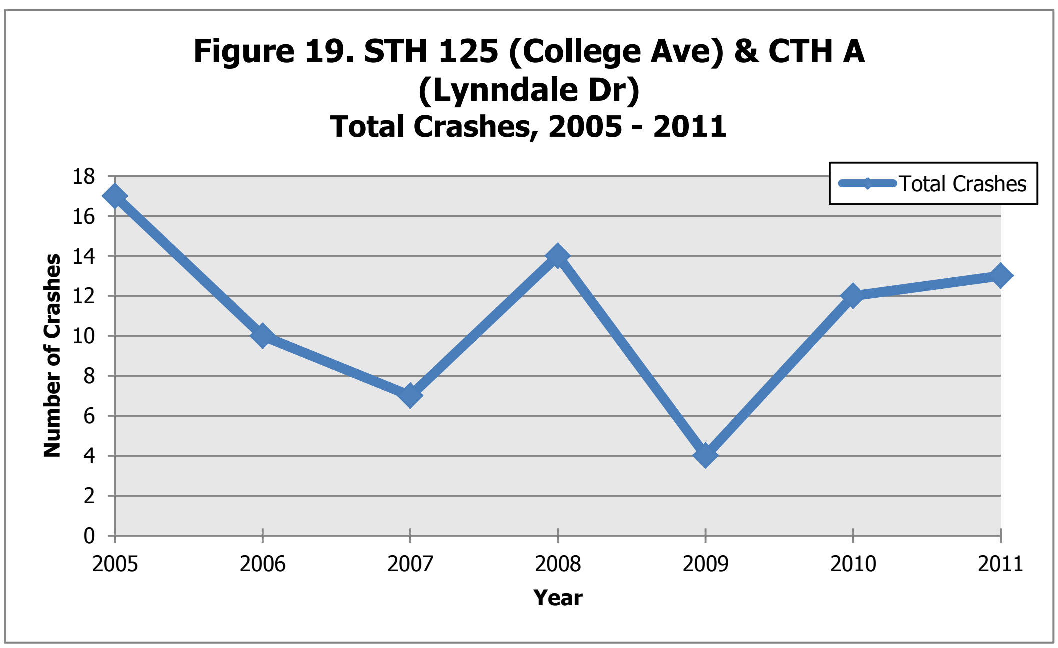


Figure 19. STH 125 (College Ave) & CTH A (Lynndale Dr)
Total Crashes, 2005 - 2011

STH 125 (College Ave) & STH 41

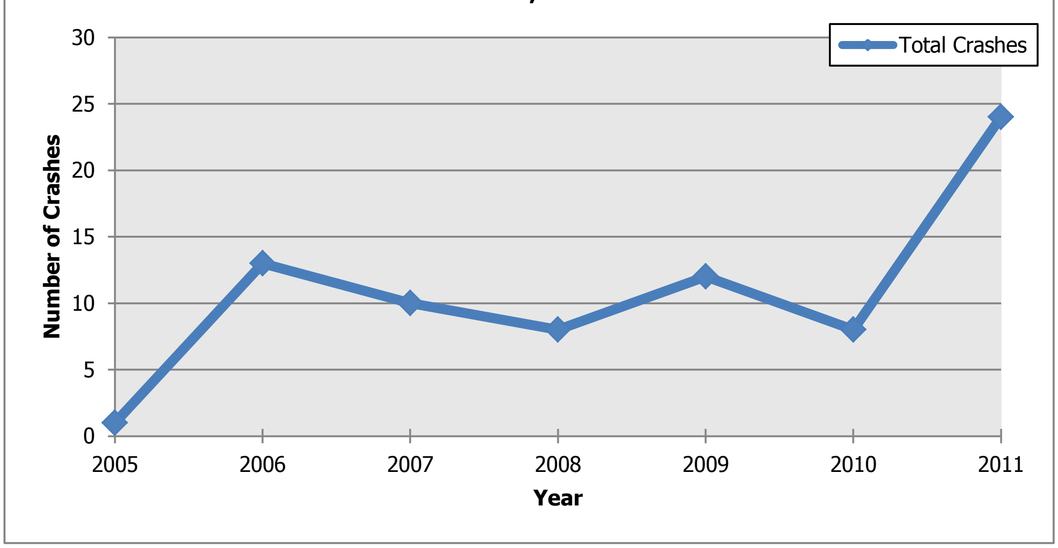
A total of 76 crashes occurred, resulting in 29 injuries. In 2011, there were 24 total crashes, which is a record high since 2005.

Table 20. STH 125 (College Ave.) & STH 41 Crash Overview (2005 - 2011)

Year	Total Crashes	Accident Severity	# of Crashes
2005	1	Fatality	0
2006	13	Injury	29
2007	10	Property	47
2008	8	**Bicycle and Pedestrian**	**# of Crashes**
2009	12	Bike	0
2010	8	Pedestrian	0
2011	24	Vehicle only	76
		Accident Type	**# of Crashes**
		Curb	1
		Guardrail Face	1
		Not Labeled	74

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

**Figure 20. STH 125 (College Ave) & STH 41
Total Crashes, 2005 - 2011**



STH 47 (Appleton Rd) & CTH AP (Midway Rd)

A total of 74 crashes occurred, resulting in 21 injuries. One was a bicycle related crash; five of which were traffic signal related crashes. In 2011, there were four total crashes, which is a significant decrease from the previous years.

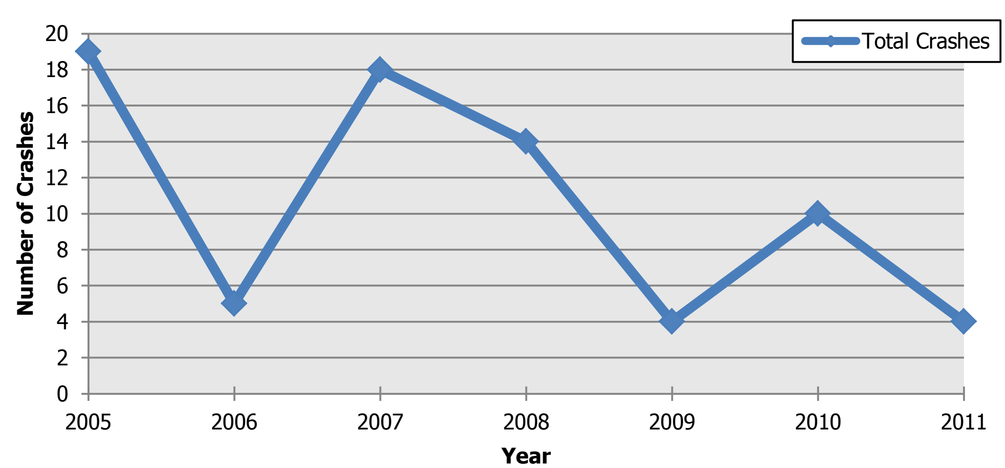
Table 21. STH 47 (Appleton Rd.) & CTH AP (Midway Rd.) Crash Overview (2005 - 2011)

Year	Total Crashes
2005	19
2006	5
2007	18
2008	14
2009	4
2010	10
2011	4

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	21
Property	53
Bicycle and Pedestrian	**# of Crashes**
Bike	1
Pedestrian	0
Vehicle only	73
Accident Type	**# of Crashes**
Bike	1
Curb	1
Ditch	1
Other Non-Collision	1
Traffic Sign	1
Traffic Signal	5
Not Labeled	64

Figure 21. STH 47 (Appleton Rd) & CTH AP (Midway Rd) Total Crashes, 2005 - 2011



STH 441 & CTH KK (Calumet St)

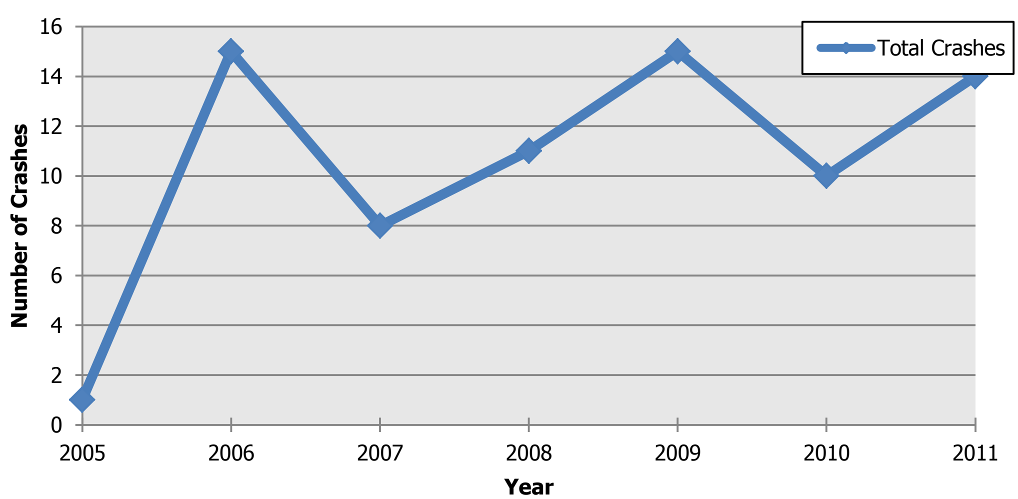
A total of 74 crashes occurred, resulting in 27 injuries. Reported accidents at this intersection have remained steady in the low to mid-teens.

Table 22. STH 441 & CTH KK (Calumet St.) Crash Overview (2005 - 2011)

Year	Total Crashes	Accident Severity	# of Crashes
2005	1	Fatality	0
2006	15	Injury	27
2007	8	Property	47
2008	11	**Bicycle and Pedestrian**	**# of Crashes**
2009	15	Bike	0
2010	10	Pedestrian	0
2011	14	Vehicle only	74
		Accident Type	**Number Crashes**
		Deer	1
		Other Object Fixed	1
		Traffic Sign	2
		Traffic Signal	1
		Not Labeled	69

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Figure 22. STH 441 & CTH KK (Calumet St)
Total Crashes, 2005 - 2011



STH 10 (Oneida St) CTH AP (Midway Rd)

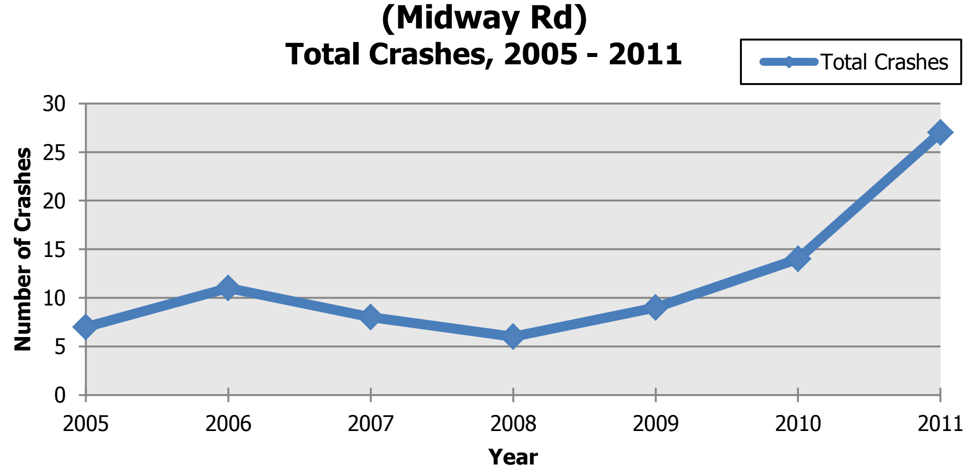
A total of 82 crashes occurred, resulting in 39 injuries. Two were bicycle related crashes and one was a pedestrian related crash. Five were traffic signal related crashes. In 2011, there were 27 total crashes, which is a significant increase and record high since 2005.

Table 23. STH 10 (Oneida St.) & CTH AP (Midway Rd.) Crash Overview (2005 - 2011)

Year	Total Crashes	Accident Severity	# of Crashes
2005	7	Fatality	0
2006	11	Injury	39
2007	8	Property	43
2008	6	**Bicycle and Pedestrian**	**# of Crashes**
2009	9	Bike	2
2010	14	Pedestrian	1
2011	27	Vehicle only	79
		Accident Type	**# of Crashes**
		Bike	2
		Ditch	1
		Median Barrier	1
		Other Non-Collision	1
		Other Post	2
		Traffic Sign	1
		Traffic Signal	5
		Tree	1
		Not Labeled	68

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Figure 23. STH 10 (Oneida St) & CTH AP (Midway Rd)
Total Crashes, 2005 - 2011



STH 96 (Wisconsin Ave) & Badger Ave

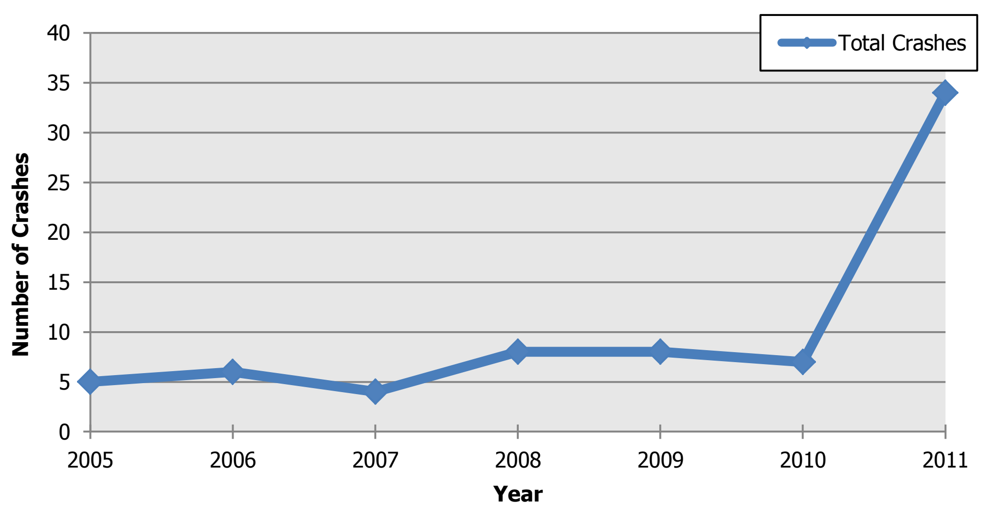
A total of 72 crashes occurred, resulting in 25 injuries; one of which was a bicycle related crash. In 2011, there were 34 total crashes, which is a significant increase and record high since 2005.

Table 24. STH 96 (Wisconsin Ave.) & Badger Ave. Crash Overview (2005 - 2011)

Year	Total Crashes	Accident Severity	# of Crashes
2005	5	Fatality	0
2006	6	Injury	25
2007	4	Property	47
2008	8	**Bicycle and Pedestrian**	**# of Crashes**
2009	8	Bike	1
2010	7	Pedestrian	0
2011	34	Vehicle only	71
		Accident Type	**# of Crashes**
		Curb	1
		Median Barrier	1
		Other Non-Collision	1
		Traffic Sign	2
		Traffic Signal	1
		Not Labeled	66

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Figure 24. STH 96 (Wisconsin Ave) & Badger Ave
Total Crashes, 2005 - 2011



CTH CE & Railroad St

A total of 72 crashes occurred, resulting in 30 injuries. Reported accidents have remained steady since 2005.

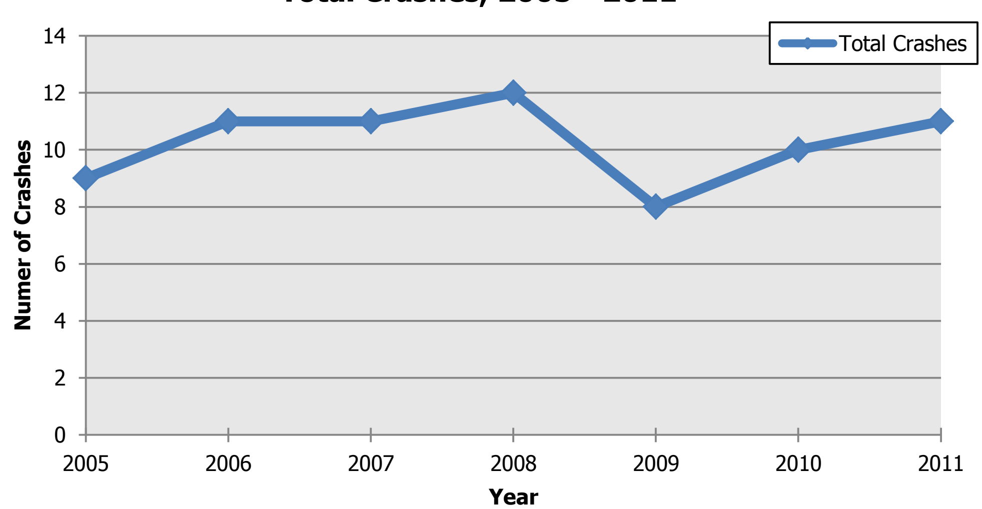
Table 25. CTH CE & Railroad St. Crash Overview (2005 - 2011)

Year	Total Crashes
2005	9
2006	11
2007	11
2008	12
2009	8
2010	10
2011	11

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	30
Property	42
Bicycle and Pedestrian	**# of Crashes**
Bike	0
Pedestrian	0
Vehicle only	72
Accident Type	**# of Crashes**
Deer	1
Other Non-Collision	1
Other Post	1
Traffic Sign	1
Traffic Signal	1
Tree	1
Not Labeled	66

Figure 25. CTH CE & Railroad St
Total Crashes, 2005 - 2011



STH 114 (Commercial Ave) & Columbia Ave

A total of 71 crashes occurred, resulting in 28 injuries. Two were bicycle related crashes and one was a pedestrian related crash. Six were traffic signal related crashes. Reported accidents have remained steady other than a low of 5 crashes observed in 2010.

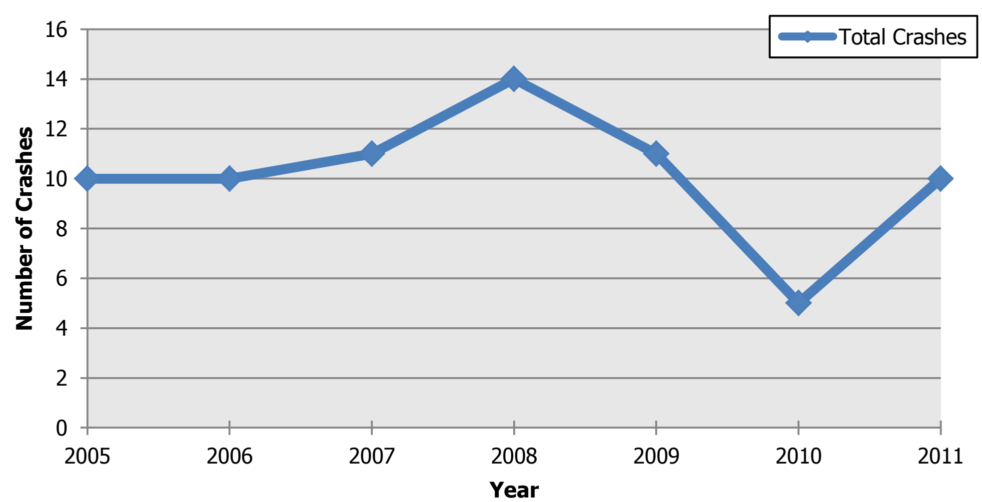
Table 26. STH 114 (Commercial Ave.) & Columbia Ave. Crash Overview (2005 - 2011)

Year	Total Crashes
2005	10
2006	10
2007	11
2008	14
2009	11
2010	5
2011	10

Source: WisDOT WisTransPortal Project http://transportal.cee.wisc.edu/

Accident Severity	# of Crashes
Fatality	0
Injury	28
Property	43
Bicycle and Pedestrian	**# of Crashes**
Bike	2
Pedestrian	1
Vehicle only	68
Accident Type	**# of Crashes**
Bike	2
Other Object Fixed	1
Traffic Signal	6
Not Labeled	62

Figure 26. STH 114 (Commercial Ave) & Columbia Ave
Total Crashes, 2005 - 2011



APPENDIX D

WISCONSIN RAILROAD MAP

Wisconsin Railroads & Harbors 2013

Port or Harbor

Amtrak Station

Local Rail Bank[1]

Rails-to-Trails

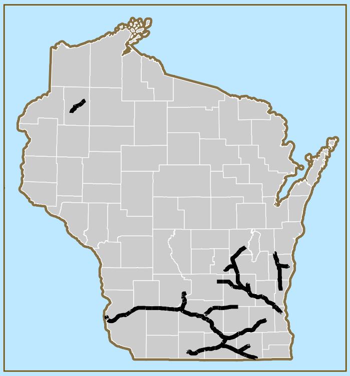
Out of service rail line

State-owned

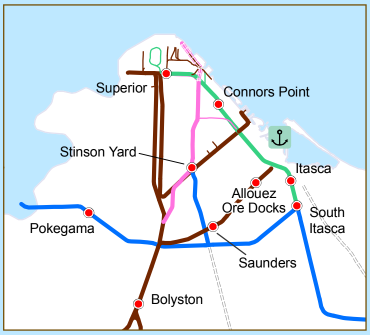
Abbreviation	Railroad
BNSF	Burlington Northern-Santa Fe
CN	Canadian National[2]
CPRS	Canadian Pacific
ELS	Escanaba & Lake Superior
METWR	East Troy Railroad Co.
PGR	Progressive Rail
TR	Tomahawk Railway
UP	Union Pacific
WGN	Wisconsin Great Northern
WSOR	Wisconsin & Southern Railroad

NOTES:
1 Rail bank refers to an out of service rail line, held in public ownership, with track in place, for future rail use.
2 Canadian National is the parent company of Wisconsin Central Limited and the Sault St. Marie Railroad.
- Switching and terminal operations (Madison Terminal Railway, LLC, Rail & Transload, Inc. in Watertown, and the Port of Milwaukee) are not shown.
- Map displays rail lines and corridors owned by operating freight railroads and government agencies.
- Industrial leads, utility company spurs, museum tracks are not shown.
- Line color represents principal operator, may not be owner.

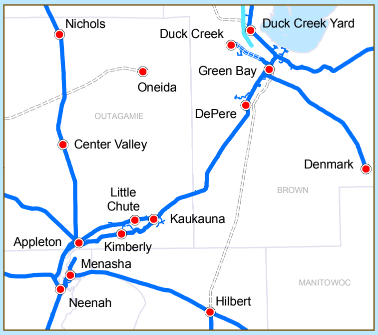
State-owned lines



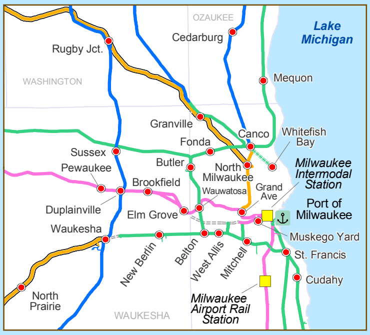
Superior



Fox River Valley



Milwaukee



Wisconsin Department of Transportation - March 2013

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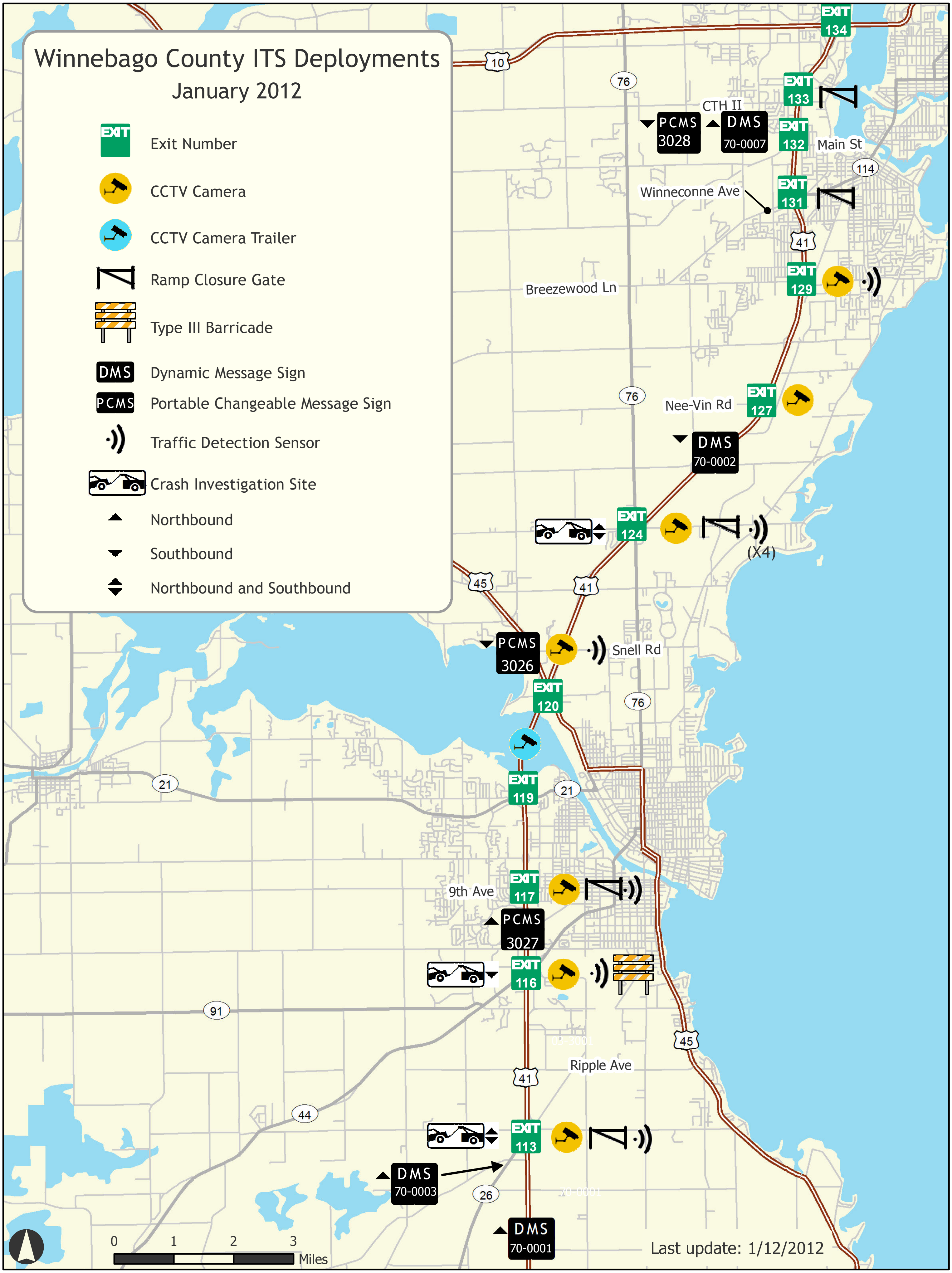
APPENDIX E

WINNEBAGO COUNTY INTELLIGENT TRANSPORTATION SYSTEM IMPROVEMENTS


Winnebago County ITS Deployments
January 2012
Exit Number
CCTV Camera
CCTV Camera Trailer
Ramp Closure Gate
Type III Barricade
DMS Dynamic Message Sign
PCMS Portable Changeable Message Sign
Traffic Detection Sensor
Crash Investigation Site
Northbound
Southbound
Northbound and Southbound
EXIT 134
EXIT 133
EXIT 132
EXIT 131
EXIT 129
EXIT 127
EXIT 124
EXIT 120
EXIT 119
EXIT 117
EXIT 116
EXIT 113
PCMS 3028
DMS 70-0007
DMS 70-0002
PCMS 3026
PCMS 3027
DMS 70-0003
DMS 70-0001
CTH II
Main St
Winneconne Ave
Breezewood Ln
Nee-Vin Rd
(X4)
Snell Rd
9th Ave
Ripple Ave
10
76
114
41
45
21
91
44
26
0
1
2
3
Miles
Last update: 1/12/2012

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APPENDIX F

RESOLUTION 33-13

RESOLUTION NO. 33-13

ADOPTION OF THE FOX CITIES (APPLETON) 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 Fox Cities (Appleton) Urbanized Area; and,

WHEREAS, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141) (MAP-21) and prior federal law requires that MPO areas exceeding 200,000 in population develop and adopt a Congestion Management Process (CMP); and,

WHEREAS, MAP-21 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,

WHEREAS, all required public participation procedures have been followed; and,

WHEREAS, in accordance with the Moving Ahead for Progress in the 21st Century Act: (MAP-21), the Fox Cities (Appleton) Transportation Management Area has submitted the Congestion Management Process (CMP) Plan under the applicable provisions of Federal law.

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

That the Commission, as the designated MPO, adopt the Fox Cities (Appleton) Transportation Management Area Congestion Management Process Plan.

Effective Date: October 25, 2013
Prepared for: Transportation Committee
Prepared By: Nick Musson, Transportation Planner

Robert G. Hermes, Chair – Menominee Co.

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