

MCHENRY COUNTY 2040 LONG RANGE

Transportation Plan

Adopted by:

MCHENRY COUNTY BOARD

March 2014

ACKNOWLEDGEMENTS

The McHenry County 2040 Long Range Transportation Plan (Plan) was written by the McHenry County Division of Transportation (MCDOT) guided by the opinions and comments expressed by the public. The Plan followed a unique and extensive public involvement process. The Plan was funded with competitive federal and local grants and developed through the combined efforts of the Transportation Committee of the County Board, two consultant teams, many government agencies, and local organizations.

The Chicago Metropolitan Agency for Planning (CMAP) awarded a federal Unified Work Program (UWP) grant of \$200,000 to fund these efforts. A consultant team led by Sam Schwartz Engineering was awarded the contract and successfully guided, developed materials, and completed the public involvement process. Other companies on the team included: Baxter and Woodman to help with local engineering coordinating, Shaw Center to help facilitate focus groups, Urban Insight to develop and maintain the project web site, Active Transportation Alliance to undertake high school classroom outreach, and Interface Studio to create information graphics and design public involvement documents.

The Regional Transportation Authority (RTA) awarded a Sub-regional Planning Grant of \$120,000 to the County in order to undertake an analysis of existing transit services and develop a plan to restructure those services. The County hired TranSystems Inc. with Fish Transportation Group to undertake this work. A focus group met regularly to guide the process. Members of the focus group included Pace, Metra, the RTA, the Illinois Department of Transportation, McHenry County Council of Governments, McHenry County Council of Mayors, Pioneer Center for Human Services, and MCDOT. The group worked with the consultant team to study and develop the transit components of the Plan. The modeling and forecasting of future vehicle volumes throughout the County was undertaken by Civiltech Engineering. CMAP awarded \$53,270 in UWP grant monies for the County to develop a computerized model of existing and future travel patterns in the County. This model was then used to forecast future conditions along major highways and performance of the entire highway system in terms of vehicle delay and vehicle miles traveled.

The Transportation Committee of the County Board guided the development of this plan from the beginning. The Committee determined the scope of analysis and public involvement needed, set the Plan's Goals and Objectives, reviewed and edited the individual sections of the Plan, reviewed and discussed the public input, and submitted a draft plan to the County Board. The Committee is chaired by Anna May Miller (District 1); the Vice Chair is Paula Yensen (District 5). Other members include Nick Chirikos (District 1), Kenneth Koehler (District 2), Nick Provenzano (District 3), Sandra Fay Salgado (District 4), and Diane Evertsen (District 6).

Many County agencies volunteered to help develop this plan. Twelve libraries (Algonquin Area, Cary Area, Harvard Diggins, Johnsburg, McHenry, Nippersink, Hebron, Huntley, Marengo, Crystal Lake, McHenry Nunda, and Woodstock), volunteered to have kiosks set inside to enable patrons to mark areas of concern and detail typical travel times. Six High Schools (Crystal Lake Central, Prairie Ridge, McHenry West, Marengo Community, Woodstock, and Marion Central), volunteered class time and made field trips to study transportation planning. The City of Crystal Lake hosted a bicycle and pedestrian workshop to explore local street and highway issues and an open house to present the plan's goals and objectives. In 2013, the draft plan open houses were hosted by and held at the Village of Lake in the Hills, the City of Woodstock, the City of Harvard, the City of Crystal Lake, the City of Marengo, and McHenry Township.

Other local organizations provide key support throughout the process as well. The McHenry County Farm Bureau welcomed the County to share booth space at the County Fair in 2012. The McHenry County Economic Development Corporation played an important role in organizing meetings between industrial and real estate development groups to discuss the County's transportation needs. The Environmental Defenders of McHenry County provided MCDOT two opportunities to include plan articles in their quarterly publication, 'Earth Connect', and helped arrange two focus group meetings with local environmental groups. The Bicycle Advocates of McHenry County helped arrange meetings between MCDOT and the Illinois League of Bicyclists to discuss bicycle policies in neighboring counties.

Last but certainly not least, it is important acknowledge that thousands of residents in the County took the time to participate in activities and meetings held throughout this process. The Plan is a better reflection of the community's needs and desires because these individuals took the time to participate. The comments received from the public facilitated deep conversations between all the groups involved in developing the Plan. These conversations are reflected in the Plan and will most certainly continue and evolve between now and the year 2040.

LETTER *from the* COUNTY BOARD CHAIRWOMAN 5

This plan was written for you and your future in McHenry County.

As Chairwoman of the County Board, I am happy to announce the completion of the 2040 McHenry County Long Range Transportation Plan (Plan). Over the last three years, the public has provided information to the Transportation Committee of the County Board regarding the community's transportation needs and desires. The public involvement process followed to develop the Plan far exceeded past planning efforts. This was done because the transportation needs in the County are great and diverse. Many of our residents and businesses unfamiliar with the planning process were engaged in a positive and constructive manner. Their input into the opportunities and challenges of the County caused the Transportation Committee to have very healthy discussions on new areas of transportation policy. (I understand that the Committee especially enjoyed working with area high school students to explore how they envision streets and highways could be designed better to meet the needs of all users).

The Plan builds off of the opportunities unique to McHenry County. The County has great access to national and international transportation facilities and its soils are incredibly important for global food production. The County also has a strong agriculture heritage, rare environments, and unique communities. In order to take advantage of these opportunities, six Goals and objectives were established by the Transportation Committee to develop the Plan: 1) mitigate highway congestion; 2) make transportation safer; 3) promote mobility for all residents; 4) provide transportation choices 5) preserve environmental quality; 6) link transportation and land use.

After three years of soliciting input from the public, four transportation projects have been identified and consistently supported by the public, local agencies, and local businesses. If considerable progress is made on these projects in the next several years, this Plan will have successfully addressed the County's greatest transportation needs. The top four projects identified as part of this planning process are: 1) Illinois Route 47 between Reed Road in Huntley and U.S. 14 in Woodstock; 2) Illinois Route 47 between U.S. 14 and Charles Road in Woodstock; 3) Illinois Route 31 between IL 176 in Crystal Lake and IL 120 in McHenry; 4) Metra's Union Pacific Northwest Commuter Rail Line Upgrades.

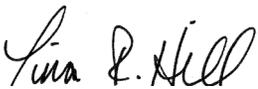
In addition to realizing these projects, the Plan calls for a greater focus on addressing congestion on local streets. Future traffic models indicate that the local streets will likely see more dramatic changes in congestion levels than regional highways. The Plan calls for transportation infrastructure and operations to be coordinated in order to enhance free movement in our towns for all roadway users.

The Plan asks the County Board to look towards the distant future and preserve corridors for future highway expansion. The continued input from the public regarding future transportation needs will be important to realizing this goal. Additionally, it will be important to partner with the Illinois Department of Transportation, the County's Planning and Development Department, municipalities, townships, and property owners to establish and preserve strategic corridors where sensible and possible.

In total, the Plan includes approximately \$1 billion in projects for motorists, \$660 million for transit projects, and \$63 million for bicycle and pedestrian projects. To implement these projects and to best prepare for the future, the following strategies will be key: 1) build legislative support for Metra service upgrades; 2) prioritize preventative maintenance on roadways; 3) leverage State funding for bicycle and pedestrian infrastructure and corridor preservation along State and U.S. Highways; 4) build more robust local road networks including accommodations for all users to mitigate local traffic congestion.

The County Board looks forward to realizing the vision laid out in this plan. As projects are proposed and evaluated in the future, this plan will provide an excellent point of reference to facilitate the needed conversations. In this spirit, the plan is being submitted for public use.

Yours truly,



Tina R. Hill
County Board Chairwoman

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Welcome to the McHenry County **2040** Long Range Transportation Plan

I INTRODUCTION

Good communities do not happen by accident. They are built by an active and engaged population willing to confront challenges head-on and willing to ask many questions and seek answers. Transportation infrastructure shapes our communities and determines how we live. Its characteristics can make travel easier and less costly for some while making it harder and more costly for others. This plan was developed by thousands who engaged in the planning process to dream and express their ideas about how transportation can be improved in McHenry County.

This plan has been developed by the McHenry County Division of Transportation (MCDOT) with guidance provided by the Transportation Committee of the County Board. The MCDOT builds, operates, and maintains over 500 lanes of highway built with over 30,000,000 square feet of pavement. The agency is a global leader in de-icing, snow removal, and other winter highway operations. It partners with other transportation agencies to develop special projects such as working with the Illinois Department of Transportation to design the West Algonquin Bypass and working with Pace suburban bus, Crystal Lake, McHenry, Woodstock, McHenry Township, Dorr Township, and Greenwood Township to create a new dial-a-ride transit service called MCRide. The agency manages the use of over \$20,000,000 in annual transportation maintenance and new project funding. The County is required by state statute to periodically update its long range transportation plan to best manage the use of these transportation funds.

The planning process created an opportunity for everyone who lives, works, or travels through McHenry County to share their thoughts about transportation with the County's planners, engineers, and leaders. Whether it's a road that should be improved, or how transit service could operate



Figure 1: Need for Public Input in the Plan

better, or what could be done to make it easier to walk and bike in the County, we asked for your input, and you provided it.

This plan was developed by the thousands of people who engaged in the planning process to dream, offer constructive criticism, and express their ideas about how transportation can be improved. This plan was written to document your concerns and reflect your ideas. It was written for you and for our collective future in McHenry County by the McHenry County Division of Transportation.



Figure 2: Algonquin Road, Looking East to the Fox River

II PAST PLANNING EFFORTS

Transportation plans adopted by the McHenry County Board have been successful in directing the MCDOT to swiftly execute work. The last long range transportation plan was adopted by the County Board in 2005. The last transit plan was adopted by the County Board in 2006. Although these plans sought to solve different but related problems, successful projects in each plan had the same traits. Projects with the greatest level of detail in these plans were the ones most likely to be implemented.

The plans helped to successfully implement the Western Algonquin Bypass, the ramp additions to the IL 47 and I-90 interchange, the Algonquin Road widening, the IL 47 widening in Huntley, the Rakow Road widening, the Walkup Road widening, the MCRide dial-a-ride transit program, the restructuring of the Pace fixed bus routes, the redesign of the IL 31 and IL 176 intersection, a crash database to monitor safety, and a pavement management system to identify best treatments to extend the useful life of our roadways. The plans have been successfully integrated into the County's 2030 Comprehensive Land Use Plan, the County's Highway Access Management Ordinance, and the Unified Development Ordinance.

Certain projects like a new arterial to the west of IL Route 47 that were vaguely drawn into the transportation plan, and policies such as corridor preservation of strategic regional arterials were not implemented. In the transit plan, the idea of implementing a taxi voucher program was proposed without much discussion regarding administrative responsibilities and costs. These obstacles have not been overcome.

In 2009, the County Board adopted a Strategic Plan directing the MCDOT to focus on replacing aging bridges and to advocate for bicycle, pedestrian, and transit modes of transportation. The Strategic Plan also called for strategic use of limited County funds to leverage funding to help implement projects. In response, an aggressive program for replacing weight-restricted bridges using federal Highway Bridge Replacement Funds has been undertaken. A 110 spot park-and-ride lot at IL 31 and Virginia Road was funded 100% with federal Congestion Mitigation and Air Quality Funds. The County partnered with the Village of Algonquin to build a bicycle and pedestrian structure over Randall Road using Village and Congestion Mitigation and Air Quality Funds. Existing transit programs contracted between Pace Suburban Bus with the City of Crystal Lake, the City of McHenry, and the City of Woodstock were merged with a County program into a new dial-a-ride service called MCRide. Federal Job Access and Reverse Commute and New Freedom grant monies from the Regional Transportation Authority were used to facilitate the creation of MCRide. In July of 2013, the County Board adopted a new Strategic Plan asking the MCDOT to continue funding MCRide, to focus on working with the State to enhance access to the Interstate Highway System, to create a Volunteer Driver and Transit Enhancement Program to fund cost effective transit solutions, and to create a Community Bicycle and Pedestrian Infrastructure Program to fund locally needed projects which would have been unlikely to be funded otherwise.

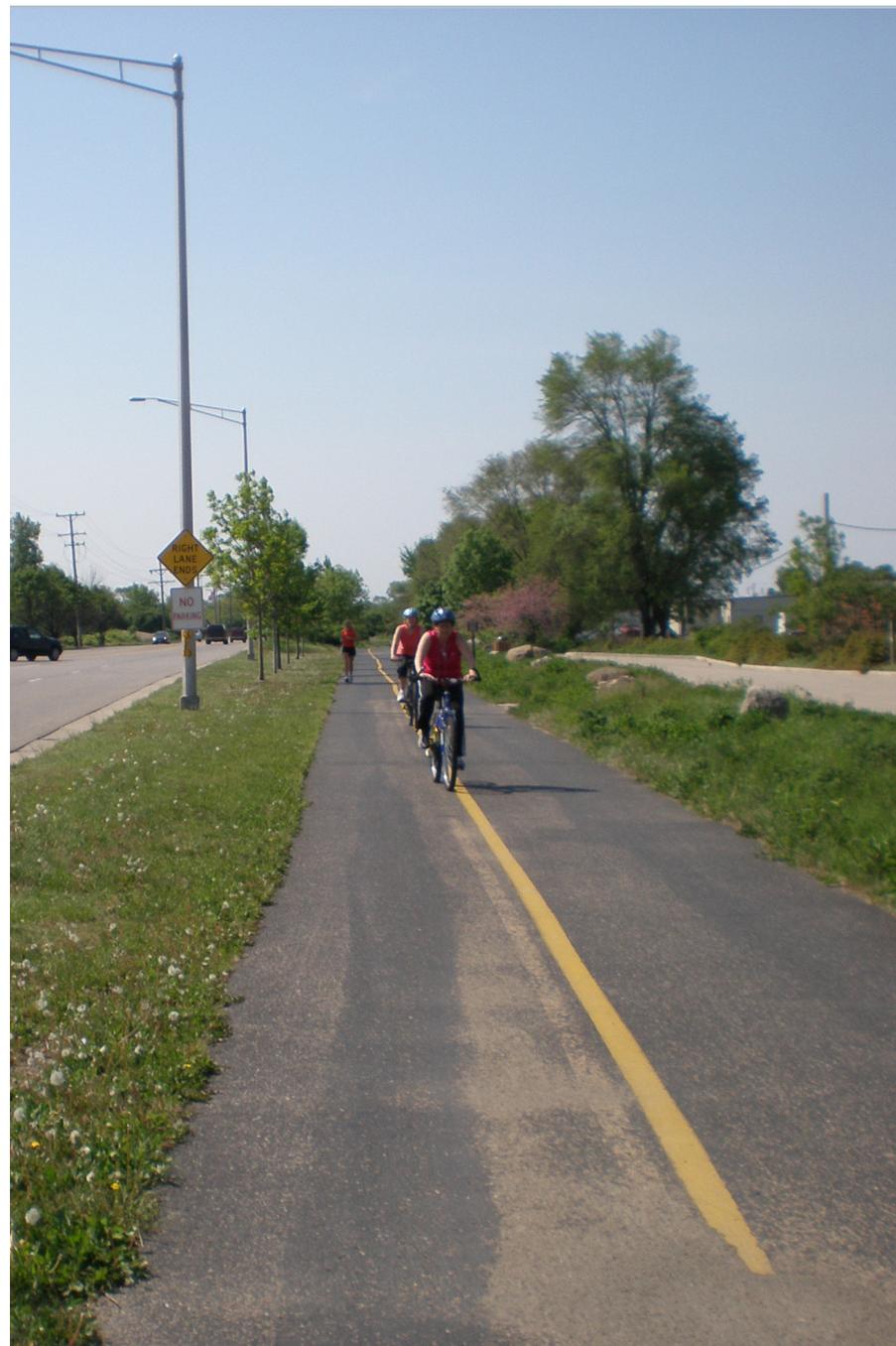


Figure 3: Users of the Prairie Trail in Crystal Lake



ROLE OF THE TRANSPORTATION COMMITTEE OF THE COUNTY BOARD

The Transportation Committee of the County Board served as the lead steering committee for the development of the plan. The Committee selected the consultant team to undertake the public involvement process and received regular updates on the results of the public input process. The consultant team included Sam Schwartz Engineering, Active Transportation Alliance, Baxter & Woodman, Urban Insight, Interface Studio, and the Shah Center. Following the initial public involvement efforts, the Transportation Committee approved the goals and objectives of the plan before a public hearing was held. The Transportation Committee reviewed and discussed all draft materials and ultimately decided which projects and policies were to be included in the plan.

ORGANIZATION OF THE 2040 PLAN DOCUMENT

The 2040 Long Range Transportation Plan begins with an explanation of the public involvement process and the results of that process. Second, the plan details current demographic trends in the County important for transportation planning. These trends include population and employment forecasts, travel patterns, automotive traffic projections, and the mix of economic activity. Then a chapter details the financial resources and policy considerations to help levy existing and additional resources necessary to realize the plan. This is followed by three chapters detailing the plan's project priorities: a chapter for bicycle and pedestrian infrastructure; a chapter on transit services; and then a chapter regarding automotive infrastructure.

III COMMUNITY OUTREACH

Everyone has an opinion on transportation. Whether they drive to work, take a bus to class, or walk to the train station, the entire public has a solution for making their trip better. However, not everyone gets a chance to share these opinions, even during the planning process. Previous planning efforts for the Transportation Plan focused on large, public meetings. While a lot of effort went into these meetings, they were not always well attended, and did not represent the broad spectrum of stakeholders that live and work in McHenry County.

The goal of this plan was to hear from as many people as possible. With a larger group of participants, the plan would reflect the transportation needs and desires of the County's residents, businesses, and leaders. A multi-faceted outreach approach was developed that would provide a number of different ways to make their voice heard. The primary way to accomplish this was to remove the barrier of entry that most public processes require.

The result of the community outreach allowed thousands of residents and workers in McHenry County to make their opinion on transportation heard. Participants ranged from the youngest to the oldest stakeholders in the County. Many ideas in this plan were derived directly from them to address many transportation challenges identified.

The following details the individual outreach activities that were conducted during the time frame of the project.



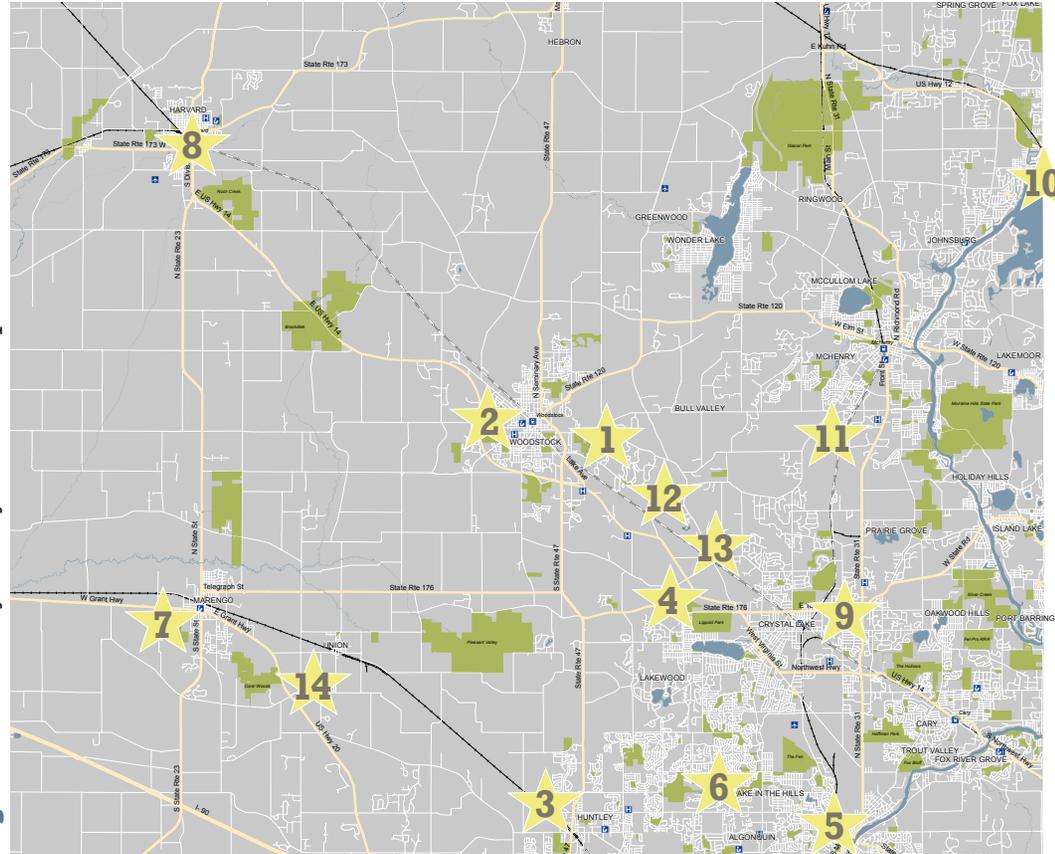


Pop-Up Public Meetings

Most public meetings or open houses typically occur at night and only occur once or twice during the project's lifetime. These limitations can make it difficult for many people to attend due to other responsibilities. Regardless of the number of people that attend the public meeting, there are many more people who have an opinion on a project but can't voice it because they can't attend the meeting.

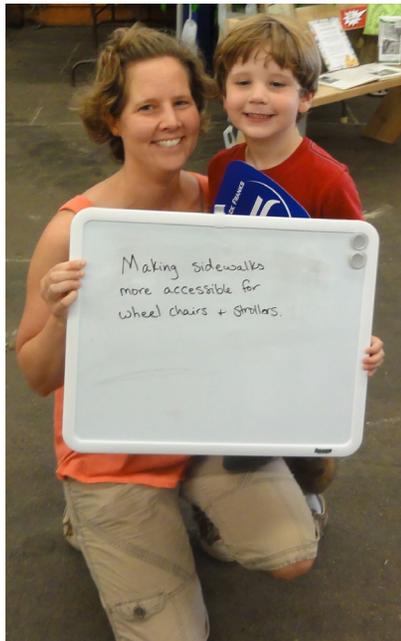
To remove this limitation, the outreach process was developed to go to where people already were. These "pop-up" public meetings were held across the County in 2011 to hear from as many people as possible on the future of transportation in McHenry County. Staff set up these mini-meetings at events where people already were attending, such as the County Fair, the Senior Fair, group meetings, or local farmers markets. Each pop-up meeting included a number of activities that people could participate in and gave staff an opportunity to speak to stakeholders on a one on one basis to learn about their thoughts on transportation and the Long Range Plan.

Figure 4: McHenry County Outreach Map



- ★ 1 McHenry County Fair
- ★ 2 Woodstock Farmers Market
- ★ 3 Huntley Fall Fest
- ★ 4 Centegra Senior Fair
- ★ 5 Algonquin Farmers Market
- ★ 6 Lake in the Hills Summer Sunset Festival
- ★ 7 Marengo Family Fest
- ★ 8 Harvard Farmers Market
- ★ 9 Crystal Lake Farmers Market
- ★ 10 Fox Lake Oktoberfest
- ★ 11 McHenry County Economic Development Meeting
- ★ 12 McHenry County GIS Day
- ★ 13 McHenry County College
- ★ 14 McHenry County Council of Governments

The pop-up meetings were a tremendous success. Over 1,200 people participated in the pop-up meetings and many thousands more were exposed to the project. Hundreds of rich conversations were held with a diverse range of residents.



PEDESTRIAN FACILITIES



ROADS



PUBLIC TRANSPORTATION



BICYCLE FACILITIES

Figure 5: The Big Ideas for improving transportation in McHenry County reflected the community's desire to improve all modes of transportation.

POP-UP ACTIVITIES



Vote for Which Transportation Mode Needs Investment



Informing McHenry County



"More scooters, more walking"

The Piggy Bank

The meetings also featured an activity that allowed residents to “vote” (by putting three coins in piggy banks) on what kind of improvements they would like to see in the 2040 Long Range Transportation Plan: bicycle, pedestrian, public transportation, or roadway improvements. Residents had to make the choice of spreading their coins over multiple areas or focusing on just one area for improvement. The end results showed a desire to dedicate limited resources to meet a variety of transportation needs. Although certain groups may favor one type of transportation over another, the public in general recognizes the need to make improvements to all types of transportation in the County.

Information

In addition to County staff, representatives from other agencies and organizations that are involved in transportation provided information and attended the meetings to engage with participants.

Your Big Idea

Participants were asked to give their one BIG transportation idea for improving transportation in McHenry County. Ideas ranged from improving intersections to flying cars. All of the ideas were posted on a map.

The overall results of the pop-up events indicate a broad desire by the community to invest in all types (or modes) of transportation. The results of these exercises were surprising to the Transportation Committee of the County Board. Public transportation received the most votes, followed by bicycling improvements. Additionally, the Transportation Committee noted that economic development professionals in the area view motor vehicle needs as the most important. A pop-up event held at the Shaw Center for the McHenry County Economic Development Corporation was the only pop-up event that supported this view. At the Shaw Center, the numerous votes placed in the roads piggy bank led to the use of an additional piggy bank to distinguish road maintenance (See Figure 8). The road maintenance category received the second most votes at this event. Former Congressman Donald Manzullo, who had worked for many years to secure funding for transportation projects throughout the County, was the only person to vote for pedestrian facilities.



Figure 6: Former Congressman Donald Manzullo

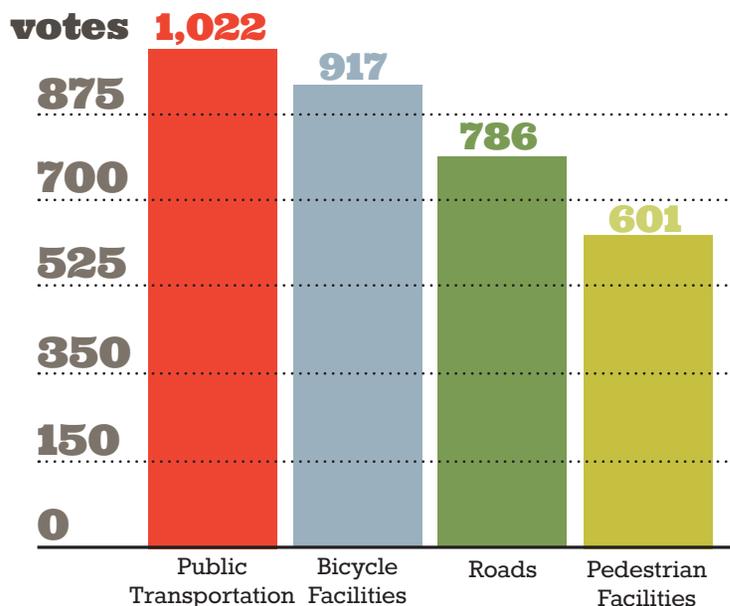


Figure 7: Overall Piggy Bank Results Support a Change of Current Practice

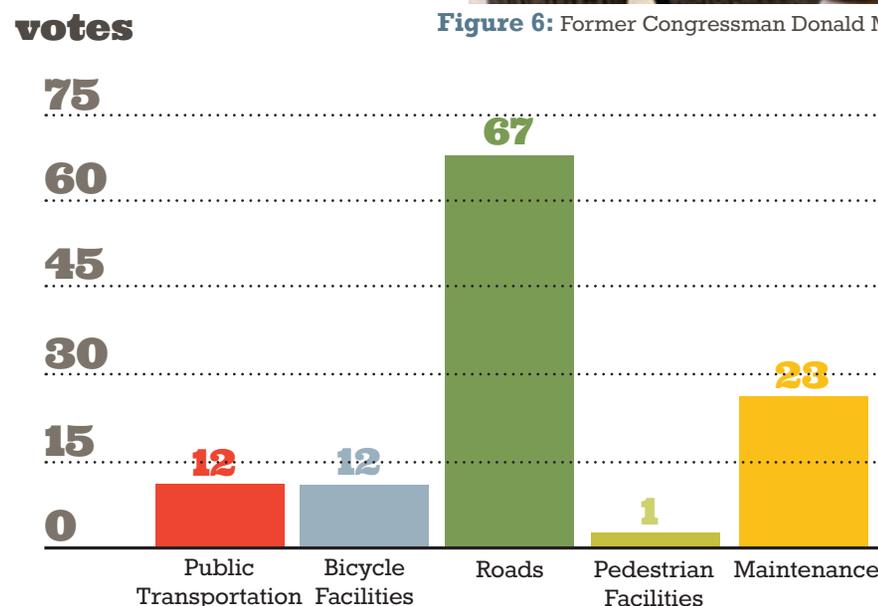


Figure 8: McHenry County Economic Development Corporation results illustrate current practice



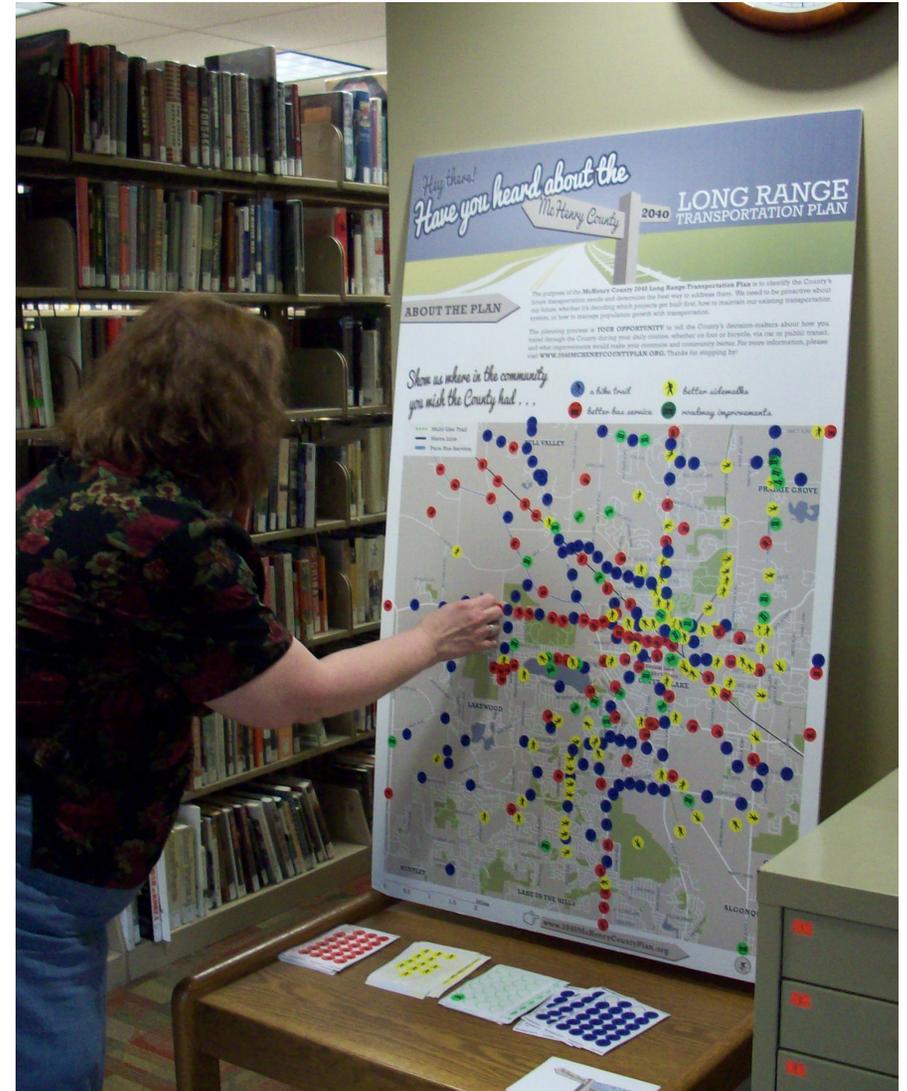
Library Boards

The County's libraries are a popular gathering spot for residents of all ages. This provided another excellent opportunity to involve people in the project that typically would not participate in a planning process. The following libraries provided support for the project by allowing an interactive display to be placed:

- Algonquin Area Public Library
- Cary Area Public Library
- Harvard Diggins Library
- Johnsborg Public Library
- McHenry Public Library
- Nippersink Public Library
- Hebron Public Library
- Huntley Area Public Library
- Marengo Public Library
- Crystal Lake Public Library (pictured right)
- McHenry Nunda Public Library
- Woodstock Public Library

At each library, the display included a large board with a map of that library district. Patrons were asked to place stickers on areas they thought needed improvements for different modes of travel. An additional display was provided at some libraries that had enough space. It asked patrons to show how long it took them to get to common destinations.

Over 1,700 stickers were placed on the maps, and each one was recorded so they could be spatially analyzed. For the eight libraries that had the travel time boards, the single most frequent response for recreation and shopping trip length was 5 - 15 minutes, while 30 - 60 minutes was the single most frequently cited trip length for work or school trips.





Focus Groups

In addition to the broad outreach campaign, focused in-depth conversations were held to better understand the transportation needs of specific groups. These groups included businesses, government agencies, seniors, municipalities, residents, and people who speak English as a second language, were also included as part of the planning process. Each of these stakeholder groups has a unique perspective on how transportation affects their day-to-day life, and the groups were able to articulate the challenges and strengths of the County's transportation system. For example, the business focus group discussed the absolute need for the transportation network to be able to handle freight-hauling trucks efficiently and dependably. These types of insights helped guide projects and goals outlined in the Plan.



Figure 9: A separate focus group was held with engineers that do work in the County to learn from their technical expertise

Date	Group
Nov. 7, 2011	Transit
Jan. 19, 2012	McHenry County Community College
Jan. 24, 2012	Transit
Feb. 22, 2012	Engineering
March 8, 2012	Businesses, County/Other Agency, Residents
April 9, 2012	Transit
April 20, 2012	Seniors in Crystal Lake
April 25, 2012	League of Illinois Bicyclists
May 2, 2012	English as a Second Language
July 24, 2012	Transit
Aug. 22, 2012	McHenry Township Seniors
Aug. 23, 2012	General Public Open House in Crystal Lake
Aug. 25, 2012	Seniors in Woodstock
Aug. 30, 2012	Crystal Lake Bicycle Tour
Sept. 4, 2012	Environmentalists
Sept. 20, 2012	Bicycle and Pedestrian
Sept. 24, 2012	County/Other Agency, Residents
Sept. 26, 2012	Engineers, Municipalities
Oct. 24, 2012	Environmentalists
Nov. 16, 2012	McHenry County Planner's Forum in Algonquin
Nov. 27, 2012	Economic Development/Municipalities
Dec. 17, 2012	Horizon's for the Blind
Dec. 20, 2012	McHenry County Economic Development Corporation
Jan. 26, 2013	People in Need Break-Out Session
April 10, 2013	Transit
April 30, 2013	Seniors in Crystal Lake

Figure 10: List of Meetings Held with Specific Groups



Student Outreach

High school students are rarely considered a stakeholder group for planning projects, even though they are the future residents and business owners of the County. This project provided an opportunity to develop an innovative program that would allow students to learn about transportation planning and provide their own ideas for potential improvements. The concept of including young people in an important plan is not without precedent. For example, Daniel Burnham's Plan of Chicago was taught in schools for years after it was written.

For the 2040 plan, students went on field trips to speak to planning organizations, and they were tasked with choosing a local street or intersection to study and make recommendations. Many students recommended safety improvements on their studied roadways and intersections, including safety improvements for bicyclists and pedestrians. A number of bold, fresh ideas came out of the conversations with the participating students. Students also participated in a field trip to Chicago to visit and hear representatives from CMAP (Chicago Metropolitan Agency for Planning), UIC School of Urban Planning and Public Affairs, Active Transportation Alliance, and CNT (Center for Neighborhood Technology) and spent a day learning at the McHenry County Division of Transportation.

A description of each of the programs at the six participating schools is listed on the following page.



Figure 11: Students presenting their “complete streets” ideas to the Transportation Committee of the County Board

Crystal Lake Central High School

Ten students in the Honors Environmental Science class at Crystal Lake Central High School participated in the instruction portion of the transportation program. Students examined the connection of infrastructure to transportation choices, mentioning that they would be more likely to choose alternate forms of transportation to travel to and from school if they felt safe doing so. The final projects focused on the intersections of Crystal Lake Avenue/Walkup Road and Illinois Route 31/Illinois Route 176.

Prairie Ridge High School

Eighteen students in Architectural Design class at Prairie Ridge participated in the eight week learning program. One particularly good discussion during the program centered on the “true cost of driving” to both the individual and society. Students were paired up to develop their final projects, which focused on a variety of different improvements.

McHenry West High School

A group of Key Club students at McHenry West High School met once a week after school to discuss transportation issues at and around the school. Students engaged in discussion and learned from County staff about transportation planning projects. They decided to examine the neighborhoods surrounding the school, and specifically analyzed the intersection of Dartmoor Drive and West Crystal Lake Road, south of the school, for potential improvements. Students also explored ideas related to public engagement and creating and conducting successful surveys.

Marengo Community High School

Students in the Drafting Occupations class at Marengo Community High School participated in the transportation program. According to their teacher, “students have really been getting into what they feel are the ‘problem areas’ in Marengo.” Students used their knowledge to create suggestions for improvements in Marengo at five corridors and intersections and two general projects on pedestrian improvements and traffic calming.

Woodstock High School

For 5 weeks, students from the Civil Engineering and Architecture class and Engineering Design and Development (EDD) class in Woodstock High School class participated in the Long Range Transportation Plan program. The program was conducted by a Woodstock staff member with an engineering background. After they completed the initial program, students from the class developed a project that focused on Complete Streets.

Marian Central Catholic High School

Students in the engineering club at Marian Central Catholic High School spent two months learning about transportation planning issues and strategies. Students attend the school from across the County, so participants bring a variety of experiences to the program. The club worked during December and January to learn about transportation planning issues and strategies. They created multiple project suggestions for the County plan.



County Board Charrettes

Individual charrettes were conducted in November of 2011, for the board members in each District of McHenry County to present what staff had learned during the outreach process and get their perspective on the goals and priorities of the plan. Activities included a “build a street” workshop, and asking board members to figure out how to get to a destination if they did not own a car.



Figure 12: McHenry County Board Members give their input on the Plan



Open House

A large Open House was held at the Crystal Lake City Hall on August 23, 2012 to provide an overview of the planning process, results from the outreach events, and present the goals of the plan. Over 100 people attended the Open House and provided input through a variety of activities.



Figure 13: Open House Allowed the Public to View Outreach Results

Bike Workshop

On August 30, 2012, a bike workshop was held to discuss and learn about issues facing bicyclists and pedestrians in McHenry County. DOT staff led participants on a short bike tour of Crystal Lake, stopping frequently to discuss elements of “Complete Streets” that make biking and walking a safer transportation option. Approximately 20 people participated in the bike workshop.



Figure 14: Bicycle Workshop Helped Inform the 2040 Plan



Online Outreach

An interactive website was created for the Plan, www.2040mchenrycountyplan.org. Approximately 4,000 people visited the website since its launch in August 2011. The site included information about the plan, alerted visitors on upcoming events, and allowed for residents to leave feedback at their own pace. The site included three transportation surveys: a survey about transit usage, a survey about issues facing bicycle and pedestrians in the County, and a survey about general transportation habits. The surveys provided insight on how residents view transportation in the County. For example, the general survey results stated that increasing traffic and aging infrastructure were the top two overall transportation concerns of participants. The transit survey resulted in participants saying the top two reasons they do not use transit more often are that services are not available to desired destinations and that they are not convenient. Lastly, the bike and pedestrian survey gave insight on popular reasons for both biking and walking.

The website also included a collaborative map for users to pick specific areas that are in need of improvements or to highlight areas that users think currently work well. The map showed users where others have left comments, and DOT staff regularly updated the online map with comments from other outreach efforts (for example, the library boards) so all requests would be in one location. The map was a modified Google map and was fully exportable, so the data could be further analyzed and incorporated into other maps.



ABOUT THE PLAN

So why are we doing a plan? And why do we need your help?

The purpose of the Transportation Plan is to identify the County's



TOP 5

- IL 47 In US 14 i
- IL 47 Ir Wood:
- Metra | District
- Metra | District
- IL 47 Ir Wood:

LATE!

Successful Fri, 22 Nov

Draft Plan Thu, 24 Oc

Public Met Thu, 24 Oc

More >

When asked to select the top three biggest transportation problems from a list, “Increasing traffic/congestion delays” ranked the highest, followed by “Aging and deteriorating infrastructure” and “Lack of transit options” (See Figure 16). Although parking is very commonly cited as inadequate in commercial areas, the survey respondents selected “Lack of parking” less than any other category.

These results suggest that those filling out the survey are aware of basic transportation planning principles. The transportation planning field has recognized that increasing highway congestion and rising transportation costs are linked to having a lack of transit, bicycling, and walking opportunities. These conditions are made worse by a development pattern consisting of large residential, commercial, and industrial areas built separately from each other. The public’s concern of aging and deteriorating infrastructure indicates an understanding of underinvestment in the highways and/or financial stress of the agency’s responsible for maintenance. This understanding is correct. Funding for highway infrastructure is declining in terms of total tax receipts, while material and labor costs are increasing. This problem has been described as a problem of revenue and building more highway infrastructure than can be adequately maintained.

In short, the three biggest problems indicated by the on-line survey are related and their solutions are related. This demonstrates the need for a plan aimed at understanding how short-comings in one area of transportation can be compensated by strengths in another area. Given the pop-up event, library kiosk, focus group, high school engagement, and website results, six goals were created for the plan to comprehensively consider and address the County’s transportation short-comings and advantages.



Figure 15: McHenry County Residents are Hoping for Options

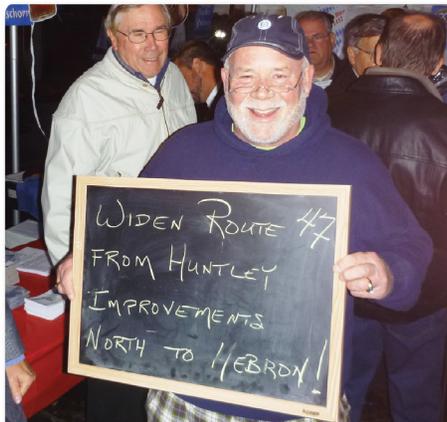
Transportation Problem	Total Selections
Increasing traffic/congestion delays	86
Aging and deteriorating infrastructure	66
Lack of transit options	63
Suburban development pattern	42
Rising transportation costs	40
Travel needs of the elderly	20
Safety	18
Increasing truck traffic on our highways	17
Reliability of our public transportation system	13
Increasing distances we have to travel	13
Other	7
Lack of parking	5

Figure 16: Three biggest problems survey results

The Goals and Objectives establish the purpose, expectations, and ultimately the projects and initiatives included in the Plan. Six goals and their objectives were developed based on a review of all the public input.

Goal 1:

Mitigate Highway Congestion



A request for roadway improvements at a McHenry County Council of Governments meeting.



A roadway in McHenry County.

Businesses, individuals, and agencies emphasized the absolute necessity of a reliable and robust arterial highway network. The Plan addresses highway congestion through the following objectives:

1. Identify highway capacity issues that can be addressed with operational and capacity improvements.
2. Identify tools for preserving needed right-of-way for future arterial improvements.

Goal 2:

Make Transportation Safer



A family wishes for safer streets at the Marengo Fall Family Fest.



A well-marked crossing in Algonquin.

The transportation network of McHenry County needs to be safe for all users and modes. This goal is to have zero fatal collisions in the County, as no number of fatal crashes should be deemed acceptable.

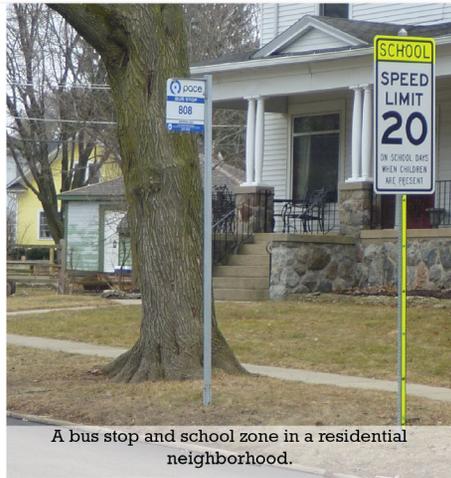
To achieve this goal, an objective of the Plan is to identify projects and initiatives needed to improve transportation safety.

Goal 3:

Promote Mobility for All Residents



A suggestion for improving mobility at the Hearthstone Centegra Senior Fair.



A bus stop and school zone in a residential neighborhood.

The Plan addresses the diverse transportation needs for all of McHenry County's residents, including seniors, children, persons with disabilities, and people without access to automobiles.

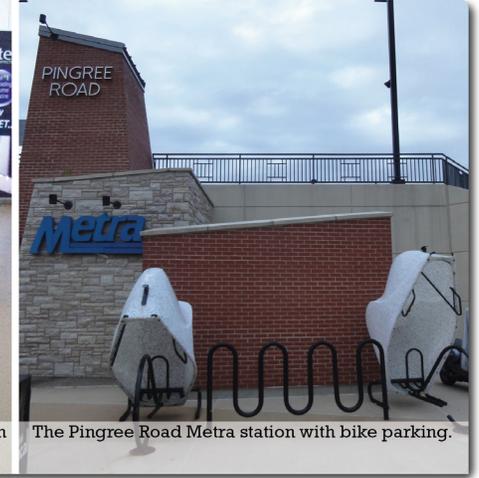
An objective of this goal is to save time and money for individuals, families, businesses, not-for-profit organizations, and government agencies.

Goal 4:

Provide Transportation Choices



A recommendation to improve public transportation in Richmond, from the Fox Lake Oktoberfest.

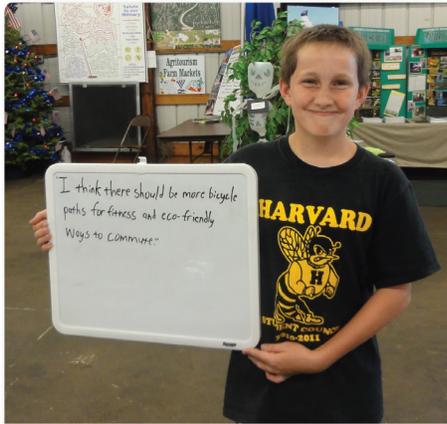


The Pingree Road Metra station with bike parking.

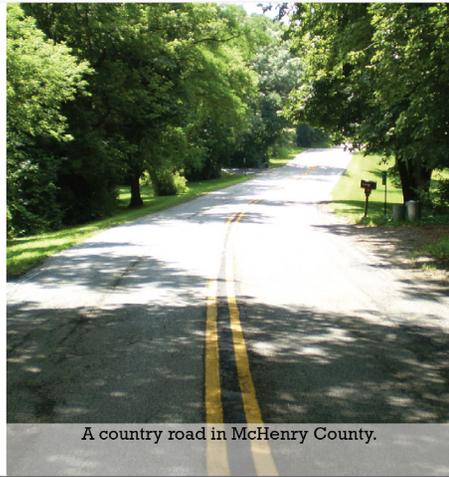
The Plan seeks to create a balanced transportation system that will provide transportation choices for residents and businesses. The Plan includes ways for the County to become more pedestrian and bicycle friendly, and also ways to improve transit services.

Goal 5:

Preserve Environmental Quality



A suggestion at the County Fair to focus on environmentally-friendly transportation modes.



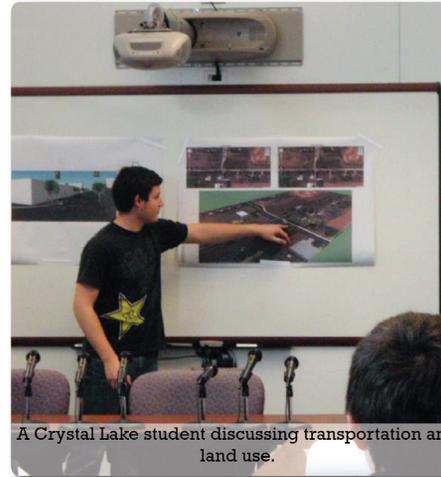
A country road in McHenry County.

The Plan is sensitive to the health of McHenry County's environment and residents. In addition to promoting transportation infrastructure that supports healthy and active lifestyles, the Plan will identify best practices in roadway design to limit negative environmental impacts.

An objective of this goal is to balance transportation needs with the desire to protect natural habitats and improve the quality of life in the County's thriving neighborhoods.

Goal 6:

Link Transportation & Land Use



A Crystal Lake student discussing transportation and land use.



Transportation investments aid in the growth of commercial and industrial areas.

The Plan prioritizes economic development by supporting existing development and industry. The Plan seeks to leverage transportation infrastructure to promote job creation and link residents to jobs.

An objective to this goal is to identify ways transportation investments could either benefit areas of lower employment levels or strengthen areas with high unemployment levels.



Figure 17: Eastern Prairie Fringes Orchid

The geography of McHenry County, who lives here, and the types of jobs they hold are important demographics to study in a transportation plan. These demographics illustrate why certain types of transportation infrastructure are in place. They also provide the analytical foundation for making future transportation recommendations. This chapter provides the geographic, population, and jobs statistics used to develop this plan.

GEOGRAPHY

McHenry County is located in northeastern Illinois along the Wisconsin and Illinois border approximately 20 miles to the west of Lake Michigan, 20 miles to the northwest of Chicago O'Hare International Airport, 20 miles to the east of Rockford International Airport, and 35 miles to the southwest of Milwaukee General Mitchell International Airport. It is over 611 miles square. In order of magnitude, approximately 61% of the County is agricultural, 16% is residential, 11% is designated open space (parks, golf courses, neighborhood open space), 2% is government/institutional, 1% is mining (gravel pits), 1% is industrial, and 1% is commercial. Over 5% of the County is considered vacant.

The County's geography is environmentally and culturally unique. Its rolling hills, marshes, streams, and oak groves offer jaw-dropping views. Many of its town centers are emulated by architects and envied by other communities. The County is also located within a region that is strategically advantageous to many industries.

ENVIRONMENTAL UNIQUENESS

The quality and diversity of McHenry County's environment suggests a bright future for the many flora and fauna that call the County home, as well as the residents, businesses, and tourists who will come to the County because of its biodiversity. According to the Illinois Natural Resource Inventory of the state's most rare natural areas, McHenry County has one of the largest numbers of remaining undisturbed areas. McHenry County is 1% of the state's territory but has 5% of the state's rare natural areas. The McHenry County Green Infrastructure Plan adopted by the County Board in July 2012 provides a detailed

analysis and discussion regarding McHenry County's natural infrastructure. It identified many of the benefits of the County's diversity of plant and animal species including improved water quality and groundwater recharge. It then recommended opportunities and suggested policy approaches to enhance and protect those benefits.

The Green Infrastructure Plan recommended a regional trails network linking municipalities, existing trails, communities, and open space areas. This network of bicycle and hiking trails was recommended to provide important links between the community and natural areas. These links should be designed to promote intercommunity travel, good environmental stewardship, and allow other species the ability to travel along natural corridors with less chance of conflicting with high-speed motorized traffic.

Also in July of 2012, the U.S. Department of the Interior created the Hackmatack National Wildlife Refuge straddling the Illinois and Wisconsin border between Woodstock, Alden, Lake Geneva, Richmond, and Wonder Lake. The boundaries of the authorized 11,200 acre refuge were determined based on watersheds, existing conservation areas, habitat requirements of desired wildlife species, public roads, and public comments. This area includes habitat suitable for 57 plant and animal species that are listed by the State of Illinois as being nearly extinct in Illinois. One of these, the Eastern Prairie Fringes Orchid (see Figure 17), is listed by the United States as a species that is under threat of becoming extinct. This beautiful orchid is rare in part because it is pollinated by a unique moth called the Hawk Moth.

COMMUNITY UNIQUENESS

The characteristics of communities in McHenry County change with the landscape. In the east, the Fox River provided transportation and early industrial power and now provides recreational opportunities. The communities of Algonquin and McHenry have older town centers along the river built when industry relied on water power for mills and milling. Outside of these older centers, residential areas built up along the river to take advantage of the recreational opportunities. This also occurred in communities like Barrington Hills, Fox River Grove, Trout Valley, Holiday Hills, Port Barrington, Johnsburg, and Fox Lake. The nearby communities of Wonder Lake, McCullum Lake, Oakwood Hills, Lake in the Hills, and Crystal Lake developed early vacation homes and recreational areas along their lake shores. In the case of Wonder Lake, the lake was created to encourage this type of housing and vacation opportunities.

The Fox River Valley area is typified by hilly topography with flat flood plains along river inlets. The built environment includes a mixture of old industrial centers, temporary vacation homes made permanent, newer luxury estate homes with boat launches, and pockets of farmland, parks, and equestrian areas. As a whole, the Fox River Valley in McHenry County has ample recreational opportunities (including the Nordic Ski Jump facility in Fox River Grove and the Moraine Hills State Park) and has areas that are difficult to access and traverse given the water features and rolling terrain.

Moving west away from the Fox River, the County is urban in the south where flat farmland and closer proximity to the Interstate Highway favored large scale conversion of land to residential and commercial uses. Huntley, Lake in the Hills,

western Algonquin, and southern Crystal Lake exploded in terms of population and urban foot-print since the mid-1990's. In the heart of this area lies the Exner Marsh Nature Preserve.

Unlike earlier decades of construction, these areas were built with considerable attention given to open space, environmental conservation, and storm water management. Instead of tight neighborhoods built on a linear grid with adequate storm sewer capacity and little open space, this area is typified by large subdivisions with curving roadways, large storm water detention ponds, and planned areas of open space. This geography concentrates traffic onto a few regional roadways while limiting trip choices and increasing average trip distances.

To the north and west of the urban cluster and Fox River Valley, the cities of Woodstock, Harvard, Marengo, Union, Hebron, Richmond, and Spring Grove are dispersed and separated by the County's remaining large agricultural operations. The cores of these communities were built along railroads and still retain a central town square/main street atmosphere. The Woodstock Square, which was built to accommodate the work of the County seat and commercial needs of the community during the late 19th century, is perhaps the most vibrant expression of a rail-centric community in the County. With the construction of the State and U.S. Highways connecting these communities, industrial development in particular became more prominent on the outskirts. Manufacturing plants and freight traffic are as common in these communities as bicyclists and farm tractors.

Other communities such as Bull Valley, Greenwood, Ringwood, Wonder Lake, Lakewood, and Prairie Grove have developed without town centers or community focal points. These communities have zoning and building codes that transition between the urban areas and the type of residential and commercial development occurring in the unincorporated areas. This includes legacy farmsteads, newer large estate housing, and limited commercial areas. While these incorporated communities do not currently have a central area, the unincorporated communities of Ridgfield, Alden, Hartland, and Chemung do have a town center.

Throughout the County, there are small agricultural operations and large row crop areas. A few agricultural operations can be found even along the County's busiest commercial strip, Randall Road. Another industry common to all areas of the County is earth extraction or gravel pits. Unique glacial deposits across the County that support biodiversity also supply local building material for the Chicago region. Over the last 100 years, gravel mining has transformed areas of McHenry County creating transportation barriers in some cases and recreational opportunities in other cases. Illinois Route 31, Rakow Road, and Randall Road handle incredible traffic loads in part because gravel pit operations have dramatically reduced the ability of a network of roadways to be built between Crystal Lake and Algonquin. In the same area, the City of Crystal Lake has been able to reclaim the Vulcan Lakes mining operation and transform it into the Three Oaks Recreational Center.



Figure 18: Three Oaks Recreational Area

STRATEGIC LOCATIONS ADVANTAGE

In addition to McHenry County's unique environmental and cultural resources, the County lies within the most prosperous and productive area of the northern plains of North America. The quality of soils for crop production in this area is greater than the vast majority of soils on the planet. Unlike most of the planet, the soils found in McHenry County and most of the northern plains of North America have very few properties that would limit crop production (See Food and Agriculture Organization of the United Nations: <http://www.fao.org/docrep/u8480e/u8480e0b.htm>). Approximately 89% of the world's soils are not very productive. McHenry County is part of the 11% that produces almost all of the planet's food crops. The extremely productive conditions of these soils and the need to hedge future seed and yield prices require the services of a futures market. These services have been provided by the Chicago Board of Trade and satellite commodities exchanges throughout the Midwest. The unique financial and legal skills required to manage these types of markets coupled with the vast transportation network necessary to distribute food from America's breadbasket to the world helped elevate the Chicago region to be a key player in the world's global economy. The region's infrastructure has been scaled up to meet this international stature.

Over the last two centuries, billions and billions of dollars worth of transportation infrastructure has been built in the region surrounding McHenry County. Most of this infrastructure has been oriented strategically toward Chicago and the south end of Lake Michigan. The County's remaining active railroads, U.S. Routes 12, 14, and 20, and Interstate 90 cross McHenry County based on this orientation. The center of the County is within 35 miles of 5 Interstate Highways, 5 metropolitan areas, and two international shipping channels via the Great Lakes and the Mississippi River. Within 70 miles, the County has access to 5 commercial airports

including O'Hare Airport which provides approximately 100 direct flights to 57 international destinations each day (see Figure 19 below). Intermodal yards in Rochelle and Joliet serve the rail and truck freight industry by taking advantage of standard containerization and the numerous intercontinental railroads that cross the region. Given these investments, Chicago is the transportation hub of North America. According to Dr. Jean-Paul Rodrigue of Hofstra University in New York, the intermodal yards outside of Joliet alone create the largest freight logistics center in North America (The Geography of Transport Systems, 2013).

that is required to access the Chicago central business district, "the Loop". The Loop is home to one of the world's largest and most diverse pool of business and financial experts, as well as incredible cultural attractions. McHenry County also has unparalleled access to the entire world. Within an hour drive and a 10 hour flight, one can eat dinner in Rome outside the Italian parliament. In addition to having excellent Interstate Highway and Transit access to Chicago and the O'Hare Airport area, McHenry County is surrounded by the industrial and research centers of Milwaukee, Madison, and DeKalb and the industrial centers of Janesville, Rockford, Belvidere, Elgin, Gary, Waukegan, Kenosha and Racine.

For McHenry County businesses and residents, a comfortable train ride is all

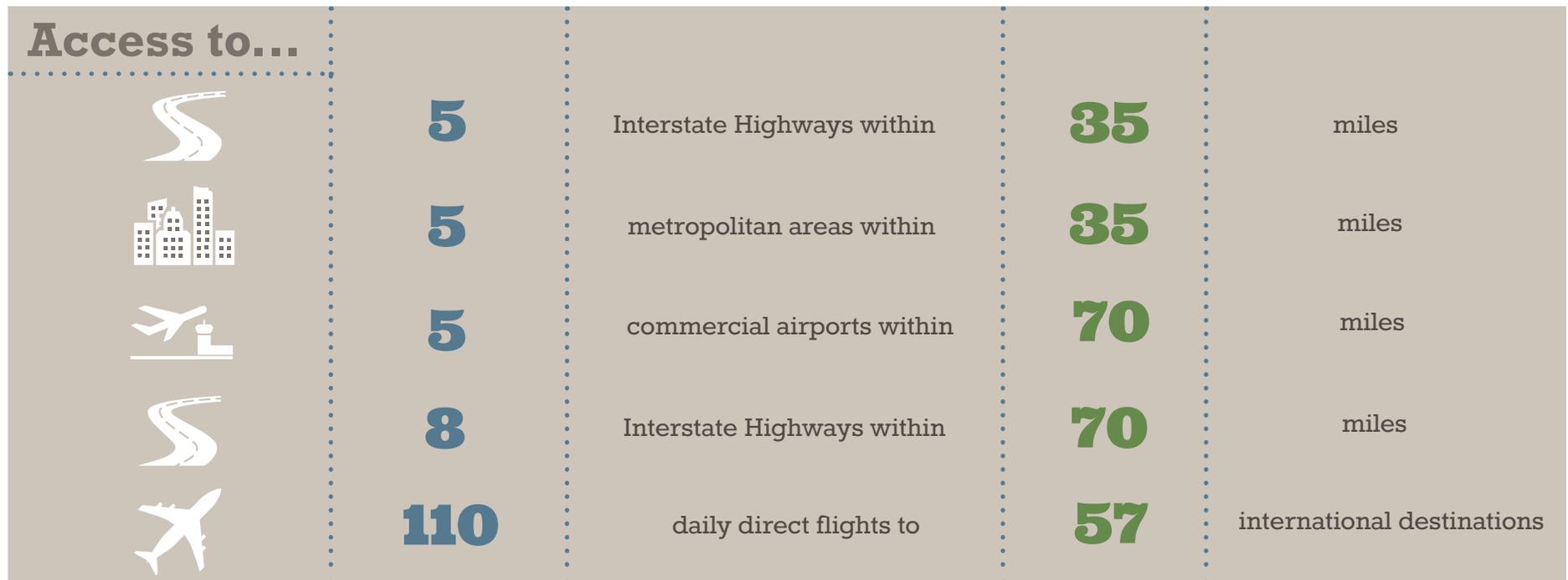


Figure 19: Summary of County's access

POPULATION TRENDS

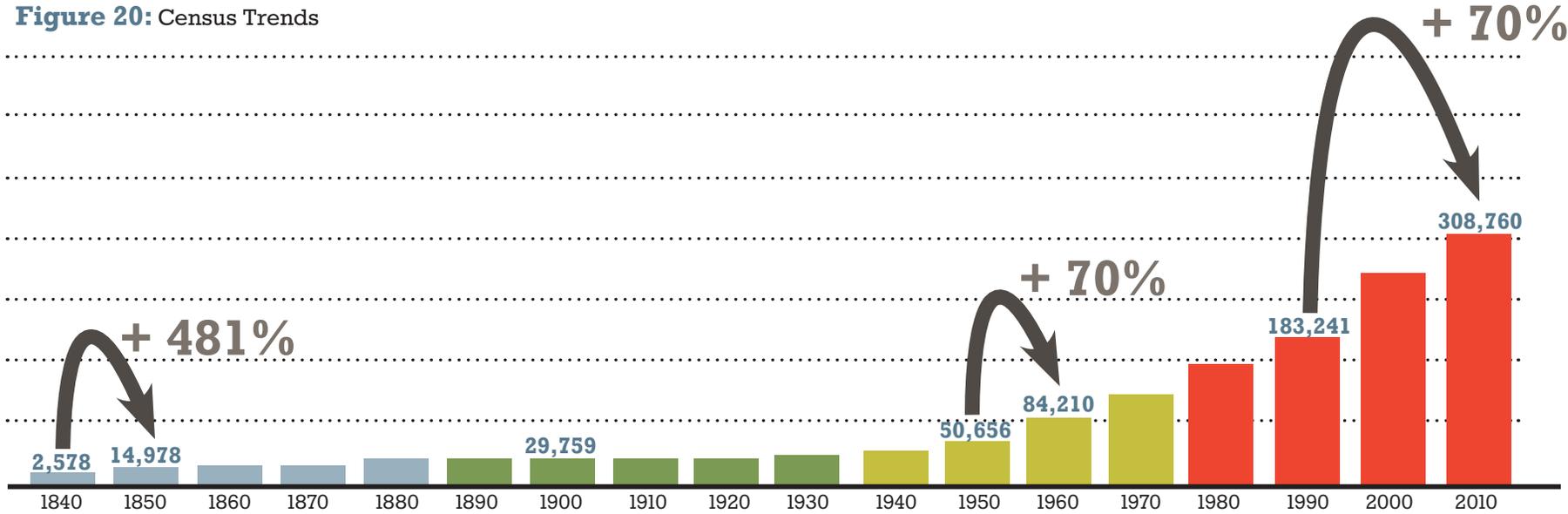
McHenry County is now the sixth most populous county in the fifth largest state. According to the 2010 Census, Cary (2,914 people/mile²), Lake in the Hills (2,791 people/mile²), and Algonquin (2,457 people/mile²) are the most densely populated communities in the County. Since the 1840's the County has experienced three waves of population growth, the largest of which occurred between 1990 and 2010. These waves correspond with changes in transportation technology and the growth of the Chicago housing market.

The first spike in population growth in McHenry County occurred when passenger rail service stretched out from Chicago in the 1840's. Between 1840 and 1850, the County's population exploded 481% from 2,578 to 14,978 (See Figure 20 below). For the next hundred years, population growth in the County occurred at steady rate in and around the communities served by passenger rail. The second great

spike in population growth occurred as are result of the construction of the Toll Highway in the 1950's and O'Hare Airport in the 1960's. The completion of these projects corresponds with a jump in population growth in the County that continued until 2010.

Approximately 90% of the County's current population growth occurred between 1950 and 2010. The Toll Highway and employment opportunities near O'Hare Airport provided more families access to the outdoors, affordable housing, and great communities while being able to access employment opportunities found in the region encompassing Chicago, Milwaukee, Gary, Madison, Janesville, Rockford, and DeKalb. A third wave of population growth occurred between 1990 and 2010. The region between Chicago and the County had been built-out, pushing the housing market to reach further out into McHenry County. At the same time,

Figure 20: Census Trends



housing developers and banks created financial tools to limit the risks associated with the construction of large (200 to 2,000 unit) residential subdivisions. This combination of factors helped facilitate 70% population growth.

During the last wave of growth, the population in McHenry County became older, more ethnically diverse, and poorer. The aging of the baby-boomer generation had been anticipated for some time. This generation resulted from depressed birth rates during World War II changing to very high birth rates following the conclusion of conflicts. However, the ethnic diversification of areas such as McHenry County, and the growth in poverty rates in these areas are new trends. Urban and global financial experts such as Saskia Sassen theorize that the new trends are likely a result of Chicago's rise as a dominant global economic center.

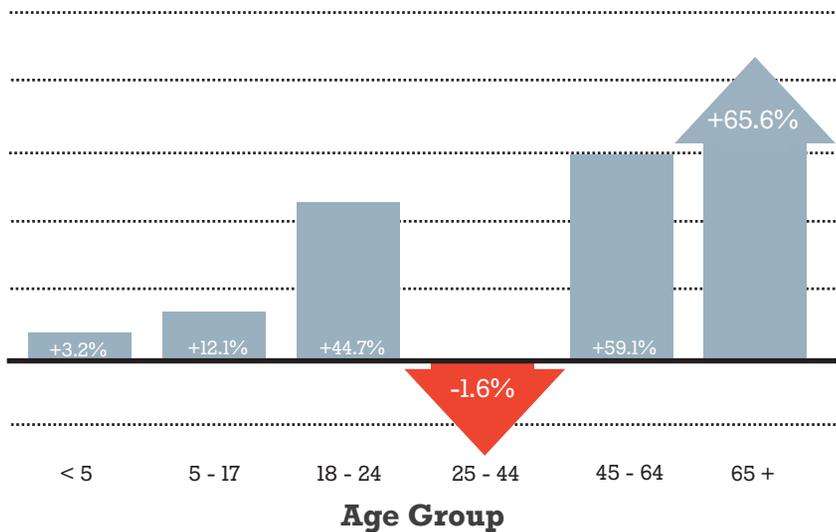


Figure 21: Age Overview

Source: McHenry County 2010 Healthy Community Study

SENIOR BOOM

The number of individuals over the age of 45 in the County has grown faster than any other age group. From 2000 to 2009, the population 45 to 64 years old increased by 59% and 65 and older increased by 66%. The senior population is more prevalent in outlying areas, surrounding Marengo, Huntley and southeast of Harvard. The population of 25 to 44 year old individuals actually decreased. This has risen the median age, as measured by the U.S. Census, from 34 years in 2000 to 38 years in 2010.

MORE ETHNICALLY DIVERSE

McHenry County is becoming more ethnically diverse. Large immigrant populations offer greater access to global trade and cultural networks. To the degree new immigrants have different transportation infrastructure experiences, they also have different transportation expectations.

Today, those who consider themselves to be non-Hispanic Whites comprise 84% of population in McHenry County (down from 89.6 in 2000). Those identifying as Hispanics make up 11%. New immigrants and emigrants to the Chicago region are increasingly living outside of Chicago. Between 2002 and 2009, the Black or African American (+162%), Asian (132%), and Hispanic (85%) groups grew by the largest percentage in McHenry County.

GROWING ECONOMIC HARDSHIPS

The United States now has a great disparity between the rich and poor when compared to other industrialized countries. In order to measure poverty in a country compared to its wealth, the World Bank created a GINI index that tracks income differences between families. The GINI index is named after its developer, Corrado Gini, an Italian statistician. A lower score indicates less difference in family incomes. In 2007, The United States had a GINI rating of 45.0 comparable to the country of China today (47.4). This GINI score for the United States is up from 40.8 in 1997 which is comparable with Russia, which scored a 41.7 in 2011. The income disparity in the United States is very different than the

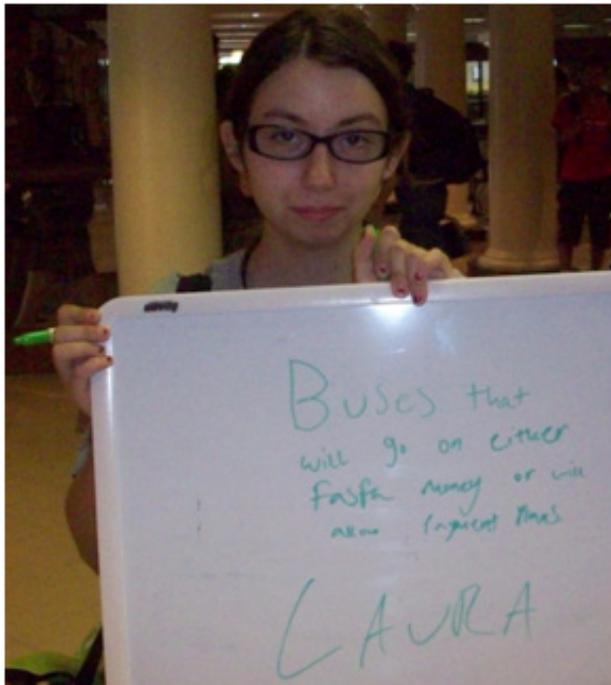


Figure 22: McHenry County College Student Requests Bus Services that Accept Federal Student Aid Money or Payment Plans

countries of Sweden which scored a 23.0 in 2005 and Germany, 27.0 in 2006. The effects of an economic restructuring are evident in McHenry County. According to the U.S. Census Bureau, the poverty rate in McHenry County has grown from 3.7% of the population in 2000 to 7.0% of the population in 2009. During the same period, persons living in extreme poverty (incomes less than 50 percent of the poverty level) increased from 1.7% of the population to 3.5%. In McHenry County, the minimum hourly wage required for ones most basic needs for an adult living alone is \$10.48, as calculated using the “Living Wage Calculator” by Dr. Amy K. Glasmeier of the Massachusetts Institute of Technology Department of Urban Studies (<http://livingwage.mit.edu>). An adult supporting one child would have to work full time for \$20.86 per hour. The typical hourly wages for most occupations in McHenry County do not pay enough for an adult to support one child (See Figure 23 to the right).

The national trend of growing income disparity, increase in local poverty rates, and typical wages below cost of living levels, suggests that a growing number of families may be searching for lower cost forms of transportation. It is possible

Occupational Area	Typical Hourly Wage
Food Preparation and Serving Related	\$9.09
Personal care and Services	\$9.93
Building and Grounds Cleaning and maintenance	\$11.14
Healthcare Support	\$11.68
Sales and Related	\$11.78
Farming, Fishing and Forestry	\$13.16
Transportation and Material Moving	\$13.65
Production	\$14.77
Office and Administrative Support	\$15.09
Protective Service	\$18.39
Community and Social Services	\$19.14
Arts, Design, Entertainment, Sports and Media	\$20.12
Installation, Maintenance and Repair	\$20.59
Education, Training and Library	\$23.48
Construction and Extraction	\$26.24
Healthcare Practitioner and Technical	\$28.25
Business and Financial Operations	\$28.75
Life, Physical and social Science	\$31.48
Architecture and Engineering	\$32.84
Computer and Mathematical	\$34.61
Management	\$41.95
Legal	\$42.09

Figure 23: Working wages and occupations in McHenry County

that many households in the County are already challenged to maintain a motor vehicle and/or are abandoning the prospect of owning a motor vehicle.

POPULATION FORECASTS

Between now and 2040, population and employment in McHenry County will continue to be driven by a desire for people to have a high quality of life as well as access to world-class academic, cultural, research, financial, and industrial institutions. The challenge for transportation planners and engineers is to balance the need for additional transportation access with the need to preserve and enhance natural areas, to keep housing affordable, and to keep our communities unique and inviting. This challenge will require an ever-changing and flexible approach to the problems as the County’s demographics change over time.

The Chicago Metropolitan Agency for Planning (CMAP) makes population and employment forecasts in the Chicago region for transportation planning purposes. CMAP forecasts have proven to be within 10% of the actual census for McHenry County. By 2040, CMAP forecasts the population of McHenry County will be approximately 525,000 (see Figure 24). Recent declines in population measured across the County by the United States Census Bureau suggest that rapid population growth period first spurred by the Interstate Highway and O’Hare Airport and then accelerated by the housing boom might be over. If so, it is possible that the County might experience the type of flat or slow growth similar to what it experienced between 1850 and 1950.

On the other hand, several projects currently underway will greatly improve the County’s access between Chicago and new markets and thereby encourage more population growth in the County. These projects are of national and international significance including the National High-Speed Rail Initiative, the Chicago Region Environmental and Transportation Efficiency Program (CREATE), and the O’Hare Modernization Program and projects of regional significance including the UPNW Metra Line New Starts project, the western access highway to O’Hare Airport, and improvements to I-90. New transportation infrastructure and services will be needed to mitigate highway congestion and lack of transit coverage as a result of these projects leading to population growth.

As part of the County’s 2030 Comprehensive Land Use Plan efforts, the University of Illinois in Champaign-Urbana created a land use model to illustrate potential demand for new residential, commercial, and industrial development in the County. The Land Use Evolution and Impact Assessment Model, LEAM model, indicated that between today and 2030, much of the growth in the County will likely occur between Woodstock and Crystal Lake along the U.S. 14, IL 47, and IL 176 corridors and between McHenry, Crystal Lake, and Algonquin along the IL 31 corridor (See Figure 25 on the following page from the McHenry County Comprehensive Land Use Plan). The model indicates that by 2040, the southeastern corner of the County will likely be more densely populated, with more multi-family housing units and more single family housing units on smaller lots.

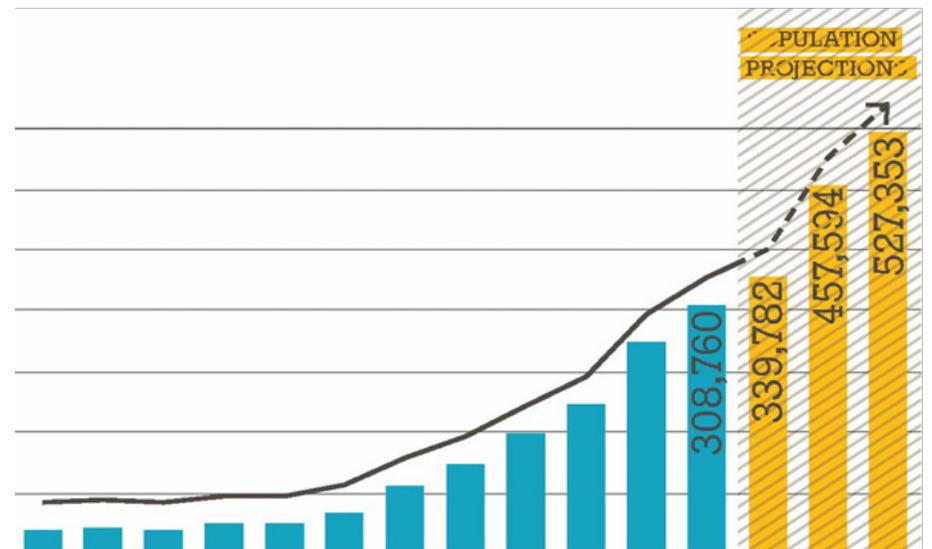
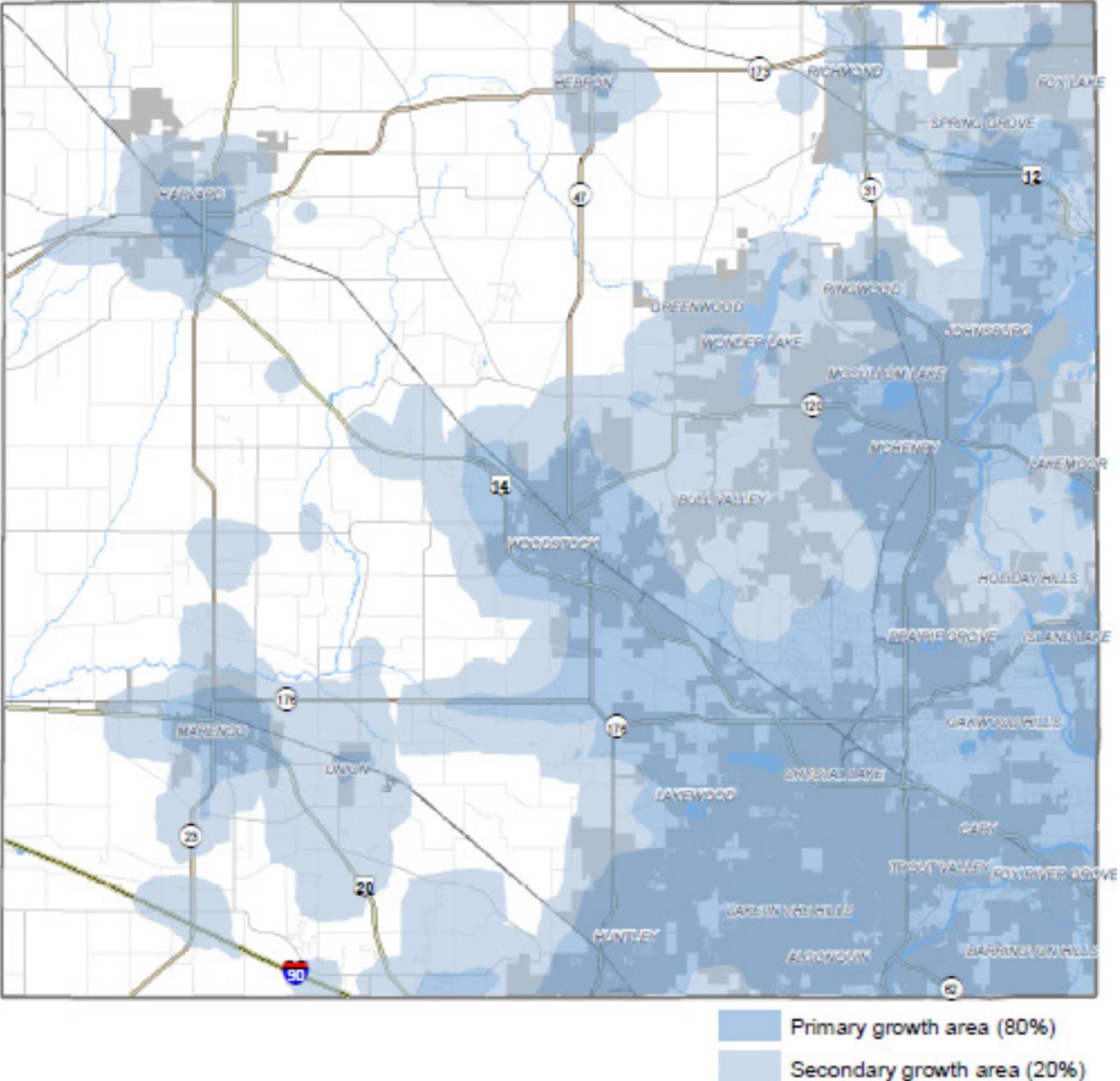


Figure 24: 2020, 2030, and 2040 population projection

Source: U.S. Census. CMAP 2020, 2030, and 2040 forecasts.

Figure 25: LEAM Growth Areas Map



EMPLOYMENT TRENDS AND FORECASTS

In order to understand local travel patterns, it is important to measure changes in the number and type of jobs held by residents and changes in the number and type of jobs in the County. For many industries, the ability to maximize weight limits (80,000 lbs for 65 foot long wide-body semi-trailers) and access reliable arterial highways leading to interstate highways and rail yards is critically important to their expansion and creation of jobs. Manufacturing, wholesale trade, transportation and warehousing, agriculture, and mining (gravel pits) industries require infrastructure for reliable deliveries and shipments.

For other industries, the number of vehicles is more important than the load bearing ability of a roadway. Retailers, accommodation (hotels), foods services (restaurants), arts, entertainment, and recreation industries prefer and seek busy roadways with direct access and high visibility. Other industries generate heavy loads and heavy volumes. The construction industry pushes up the average number of trips generated in an area as numerous trade workers and supervisors access multiple residential subdivisions in one day. Concrete trucks and trucks delivering lumber and other building materials increase the wear and tear on local roads. As construction declines, local road traffic begins to stabilize as new residents establish regular travel patterns and the wear and tear of local roads becomes more predictable.

In 2011, McHenry County had 92,904 jobs (See Figure 26 Jobs in McHenry County table) while 154,137 residents (See Figure 27 Jobs Held by Residents Table) of McHenry County had jobs. The gap between the workforce in the County and the number of jobs in the County creates high demand for commuter rail services and arterial and expressway highways to employment and population centers located outside of the County. At the same time, as the population and employment in the County grows, these regional travel demands will conflict more and more with local traffic.

In McHenry County, over half of the jobs are in four industrial sectors of the North American Industry Classification System (NAICS). Fifty-two percent of all jobs in McHenry County in 2011 were in manufacturing, retail trade, educational services, and in health care/social assistance (See Jobs in McHenry County Table). Between December 2007 and June 2011, McHenry County had 3,950 fewer manufacturing jobs and 3,189 fewer construction jobs. Despite these losses, manufacturing remains the dominant industrial sector in McHenry County. Well beyond the year 2040, manufacturing activity in the County will require a well-maintained arterial highway network and efficient railroad access to handle the freight volume and loads. This need will have to be balanced with accommodations for local trips. In particular, greater local traffic to school and medical offices is predictable as growth occurs in the educational services and health care/social assistance industries. It is also important to note that employment in construction dropped by the greatest percentage between 2007 and 2011 (37.7% less jobs). In 2006, the County had its highest number of construction jobs (9,286 jobs in the County and 11,331 residents employed in construction). If home construction returns to pre-recession levels in the future, it will create spikes in local and regional traffic demand as contractors and materials move to and from trade shops.

CMAQ forecasts there will be approximately 190,000 jobs in the County by 2040. Although it is not known which sectors of the economy will be strongest in the year 2040, McHenry County's current diversity of trained workforce and industrial composition will help the County adapt to the ever-changing global economy. The transportation infrastructure choices made today can help by allowing for adaptive growth and repurposing of land uses.

Figure 26: Jobs in McHenry County by Industry Sector (NAICS)

Industry Sector (NAICS)	2011		2007		2007 to 2011 Change	
	#	%	#	%	#	%
Manufacturing	15,900	17.1%	19,850	20.0%	-3,950	-19.9%
Retail Trade	11,770	12.7%	11,654	11.7%	116	1.0%
Educational Services	10,960	11.8%	9,411	9.5%	1,549	16.5%
Health Care and Social Assistance	9,973	10.7%	9,383	9.5%	590	6.3%
Accommodation and Food Services	6,752	7.3%	6,677	6.7%	75	1.1%
Wholesale Trade	5,721	6.2%	5,625	5.7%	96	1.7%
Administration & Support, Waste Management and Remediation	5,721	6.2%	6,022	6.1%	-301	-5.0%
Construction	5,271	5.7%	8,460	8.5%	-3,189	-37.7%
Public Administration	4,102	4.4%	3,959	4.0%	143	3.6%
Professional, Scientific, and Technical Services	3,722	4.0%	3,918	3.9%	-196	-5.0%
Other Services (excluding Public Administration)	3,268	3.5%	3,289	3.3%	-21	-0.6%
Finance and Insurance	2,243	2.4%	2,228	2.2%	15	0.7%
Arts, Entertainment, and Recreation	2,211	2.4%	1,967	2.0%	244	12.4%
Transportation and Warehousing	1,370	1.5%	1,671	1.7%	-301	-18.0%
Information	1,235	1.3%	1,579	1.6%	-344	-21.8%
Utilities	872	0.9%	1,488	1.5%	-616	-41.4%
Management of Companies and Enterprises	717	0.8%	634	0.6%	83	13.1%
Real Estate and Rental and Leasing	654	0.7%	728	0.7%	-74	-10.2%
Agriculture, Forestry, Fishing and Hunting	406	0.4%	597	0.6%	-191	-32.0%
Mining, Quarrying, and Oil and Gas Extraction	36	0.0%	71	0.1%	-35	-49.3%
	92,904		99,211		-6,307	-6.4%

Figure 27: Jobs Held by McHenry County Residents by Industry Sector (NAICS)

Industry Sector (NAICS)	2011		2007		2007 to 2011 Change	
	#	%	#	%	#	%
Manufacturing	19,620	12.7%	23,486	14.6%	-3,866	-16.5%
Retail Trade	18,443	12.0%	18,648	11.6%	-205	-1.1%
Educational Services	15,774	10.2%	14,922	9.3%	852	5.7%
Health Care and Social Assistance	15,243	9.9%	13,737	8.5%	1,506	11.0%
Accommodation and Food Services	11,319	7.3%	11,308	7.0%	11	0.1%
Wholesale Trade	10,679	6.9%	10,656	6.6%	23	0.2%
Administration & Support, Waste Management and Remediation	10,110	6.6%	10,818	6.7%	-708	-6.5%
Construction	9,363	6.1%	10,480	6.5%	-1,117	-10.7%
Public Administration	7,375	4.8%	7,514	4.7%	-139	-1.8%
Professional, Scientific, and Technical Services	7,027	4.6%	10,826	6.7%	-3,799	-35.1%
Other Services (excluding Public Administration)	6,154	4.0%	5,536	3.4%	618	11.2%
Finance and Insurance	5,310	3.4%	5,785	3.6%	-475	-8.2%
Arts, Entertainment, and Recreation	5,230	3.4%	4,995	3.1%	235	4.7%
Transportation and Warehousing	3,359	2.2%	2,663	1.7%	696	26.1%
Information	3,172	2.1%	3,685	2.3%	-513	-13.9%
Utilities	3,157	2.0%	2,970	1.8%	187	6.3%
Management of Companies and Enterprises	1,661	1.1%	1,850	1.1%	-189	-10.2%
Real Estate and Rental and Leasing	599	0.4%	439	0.3%	160	36.4%
Agriculture, Forestry, Fishing and Hunting	465	0.3%	528	0.3%	-63	-11.9%
Mining, Quarrying, and Oil and Gas Extraction	77	0.0%	158	0.1%	-81	-51.3%
	154,137		161,004		-6,687	-4.3%

EXISTING TRANSPORTATION NETWORK

The transportation network in McHenry County is comprehensive and increasingly accommodating to all users. However, missing system gaps, lack of capacity, and operational constraints limit system efficiency and pit user groups against each other. McHenry County has approximately 2,400 miles of paved roadways, commuter rail service with 7 stations, three bus routes, multiple demand-response transit services, and 41 miles of regional trails. Less than 10 miles of roadway in the County is unpaved. Bicyclists and pedestrians are legal users of over 99% of all roadways, except for the 9 miles of Interstate 90 located in the County. For most users, the current transportation system provides reliable access to local commercial centers, the commuter rail stations, and nearby interstate highways. The system is always a work in progress with adjustments being made each year by the several government transportation agencies with jurisdiction in the County.

The system's multiple layers reflect the County's history. The introduction of railroad service in the late 19th century promoted town centers built around a station on a tight grid street pattern. These areas remain as the County's most active pedestrian zones. In the late 20th century large residential subdivisions, commercial strips, and industrial parks, built along major roadways to leverage

the widespread ownership and use of motorized vehicles, greatly expanded the urban footprint of the County.

Since the last transportation plan was adopted by the County Board in 2005, the transportation network in McHenry County has seen significant improvements. Recent capacity improvements for motorized traffic in Huntley, Lake in the Hills, Algonquin, and Crystal Lake have greatly improved driving conditions on Illinois Route 47, Algonquin Road, and Rakow Road. Additional capacity for motorized traffic is currently being added to Illinois Route 31 in Algonquin, Charles J. Miller Road in McHenry, and Johnsburg Road in Johnsburg. Bicyclists and pedestrians have seen increased capacity in many areas as well. Crystal Lake added approximately 7 miles of bike lanes, a new path has been built to the McHenry County Community College, a side path along U.S. 14 to Woodstock is planned, a side path was built along Walkup Road to the Prairie Ridge High School, and a bridge for the Prairie Trail was built over Rakow Road. Transit users have seen two additional runs between McHenry and Woodstock added to the 807 bus route, and dial-a-ride services in Crystal Lake, McHenry, and Woodstock have been coordinated into a single service known as MCRide.

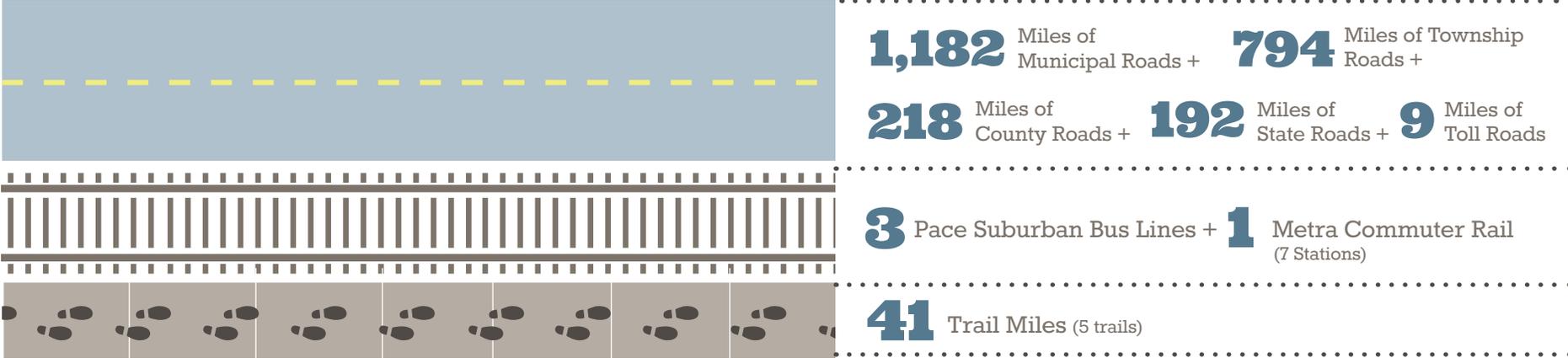


Figure 28: Roads, Transit and Trails in Place

EXISTING TRAVEL PATTERNS

Commuter travel patterns have been the focus of transportation planning in the Chicago region for at least the last century. The existing transportation network in the region resulting from this planning enables a very mobile workforce. McHenry County residents in particular work in a dispersed area encompassed by Milwaukee, Madison, Rockford, DeKalb, and Chicago. Workers come into McHenry County from these same areas. According to the U.S. Census Bureau, the greatest percentage of McHenry County residents (34%) work in McHenry County, with Cook County a close second (See Figure 29). A large number of residents, (12,216 in 2011) travel over 50 miles to work (See Figure 31).

McHenry County's workforce comes from a more diverse area than where McHenry County residents work. McHenry County residents make up over

Figure 29: Where McHenry County Residents Work by County

	2011		2010		2002	
	County	%	County	%	County	%
McHenry County, IL	51,752	33.6%	51,866	34.5%	54,932	38.2%
Cook County, IL	45,593	29.6%	45,190	30.1%	43,007	29.9%
Lake County, IL	19,801	12.8%	18,531	12.3%	17,609	12.3%
Kane County, IL	11,886	7.7%	11,806	7.9%	10,405	7.2%
DuPage County, IL	9,949	6.5%	9,899	6.6%	9,345	6.5%
Will County, IL	2,173	1.4%	2,134	1.4%	1,075	0.7%
Winnebago County, IL	1,939	1.3%	1,851	1.2%	1,318	0.9%
Sangamon County, IL	752	0.5%	581	0.4%	582	0.4%
DeKalb County, IL	733	0.5%	729	0.5%	603	0.4%
Walworth County, WI	711	0.5%	679	0.5%	576	0.4%
All Other Locations	8,848	5.7%	7,059	4.7%	4,220	2.9%
	154,137	100%	150,325	100%	143,672	100%

fifty-five percent of the workforce (Figure 34 on following page). Large numbers (6,700 to 8,200) workers come from Cook, Lake, and Kane counties. Less, (2,400 to 2,600) come from Will and DuPage County; and, fewer (1,450 to 1,825) come from Will, Kenosha, Walworth and Boone Counties.

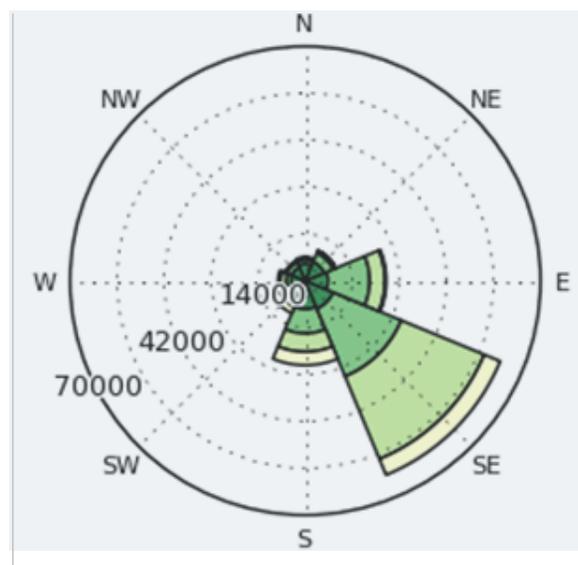
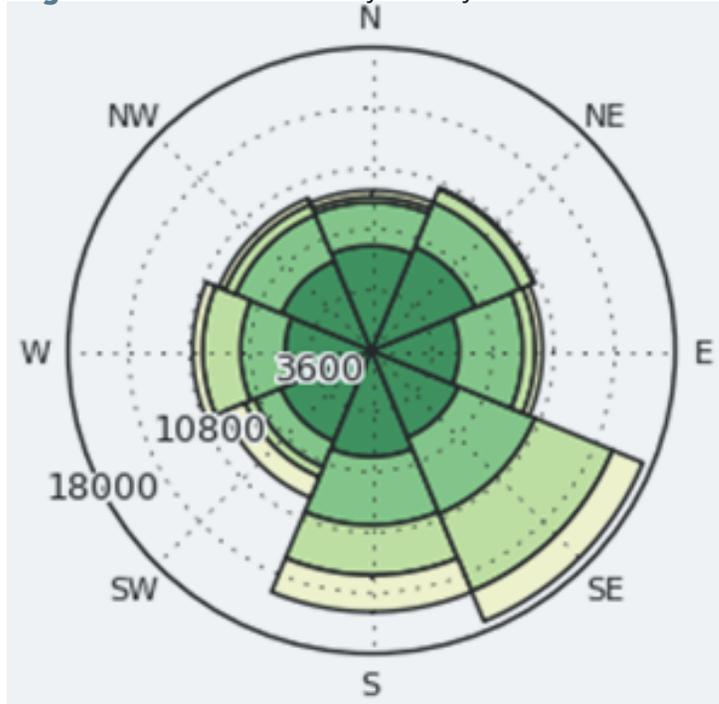


Figure 30: Where McHenry County Residents Work

Figure 31: How Far Residents Lived from Jobs in 2011

	County	Share
Total Primary Jobs	143,125	100.0%
Less than 10 miles	46,286	32.3%
10 to 24 miles	47,096	32.9%
25 to 50 miles	37,527	26.2%
Greater than 50 miles	12,216	8.5%

Figure 32: Where McHenry County Workers Live



	County	Share
Total Primary Jobs	85,390	100.0%
Less than 10 miles	42,686	50.0%
10 to 24 miles	23,667	27.7%
25 to 50 miles	12,298	14.4%
Greater than 50 miles	6,739	7.9%

Figure 33: How Far Workers Lived from Jobs in 2011

Figure 34: Where McHenry County Workers Live by County

	2011		2010		2002	
	County	%	County	%	County	%
McHenry County, IL	51,752	55.7%	51,866	56.0%	54,932	61.3%
Cook County, IL	8,195	8.8%	8,099	8.7%	8,501	9.5%
Lake County, IL	7,115	7.7%	6,936	7.5%	5,947	6.6%
Kane County, IL	6,765	7.3%	6,453	7.0%	5,188	5.8%
DuPage County, IL	2,525	2.7%	2,626	2.8%	2,266	2.5%
Will County, IL	2,430	2.6%	2,343	2.5%	1,947	2.2%
Winnebago County, IL	1,824	2.0%	1,767	1.9%	1,865	2.1%
Sangamon County, IL	1,688	1.8%	1,736	1.9%	2,012	2.2%
DeKalb County, IL	1,556	1.7%	1,474	1.6%	1,336	1.5%
Walworth County, WI	1,473	1.6%	1,602	1.7%	1,214	1.4%
All Other Locations	7,581	8.2%	7,730	8.3%	4,414	4.9%
	92,904	100.0%	92,632	100.0%	89,622	100.0%

Given that over a third of McHenry County residents and over one-quarter of the workers in the County travel more than 25 miles, it is very likely that workers would drive alone, carpool, or use commuter rail. The most recent census data and a survey conducted by CMAP indicate this to be the case in McHenry County. The American Community Survey conducted in 2005, 2006 and 2007 conducted by the Census Bureau suggests that 90% (see Figure 35 of next page) of all work trips were done by driving along or carpooling. The next most important mode of travel to work was using transit, predominately Metra commuter rail. CMAP completed a comprehensive travel and activity survey for northeastern Illinois between January 2007 and February 2008. This survey is consistent with the results of the American Community Survey.

To gain a better understanding of the amount of time McHenry County residents spend traveling, special display boards were set up in eight libraries across the

County allowing patrons to note their travel times to general locations. Over 10 percent noted traveling more than an hour to work (see Figure 36 below). This is consistent with the census data indicating almost 9% percent of commuters from the County travel over 50 miles to work. An even greater percentage reported traveling less than 5 minutes to work or school. Given this short amount of time to work or school, it could be that the American Community and CMAP surveys on journey to work are under-reporting the number of individuals that walk or ride a bicycle to work or that other factors are deterring people from making short bicycle or pedestrian trips.

	ACS (2005-2007)	CMAP (2008)
Motorized Vehicle	89.8	94.5
Transit Services	3.0	3.7
Walk/Bicycle	1.5	1.6
Other	5.7	0.2

Figure 35: Journey to Work by Transportation Mode

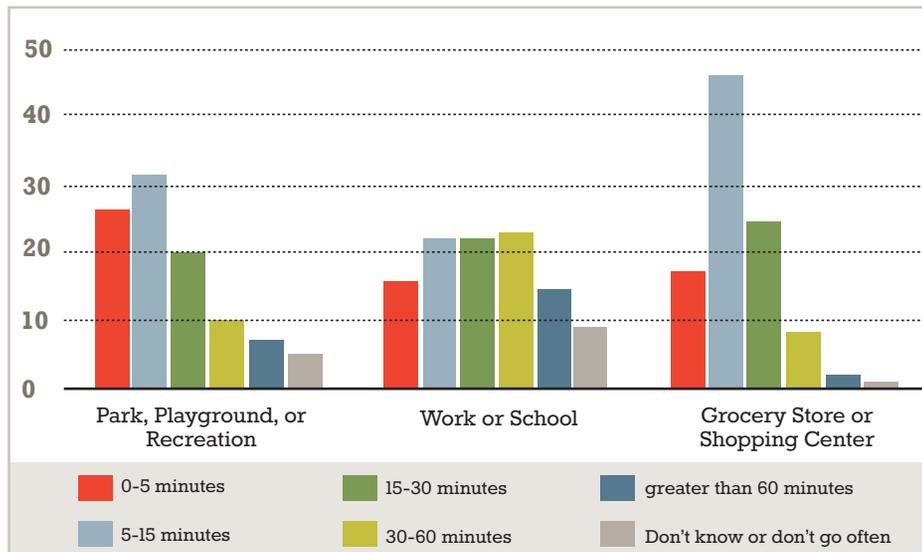


Figure 36: Results of Travel Time Library Display Boards

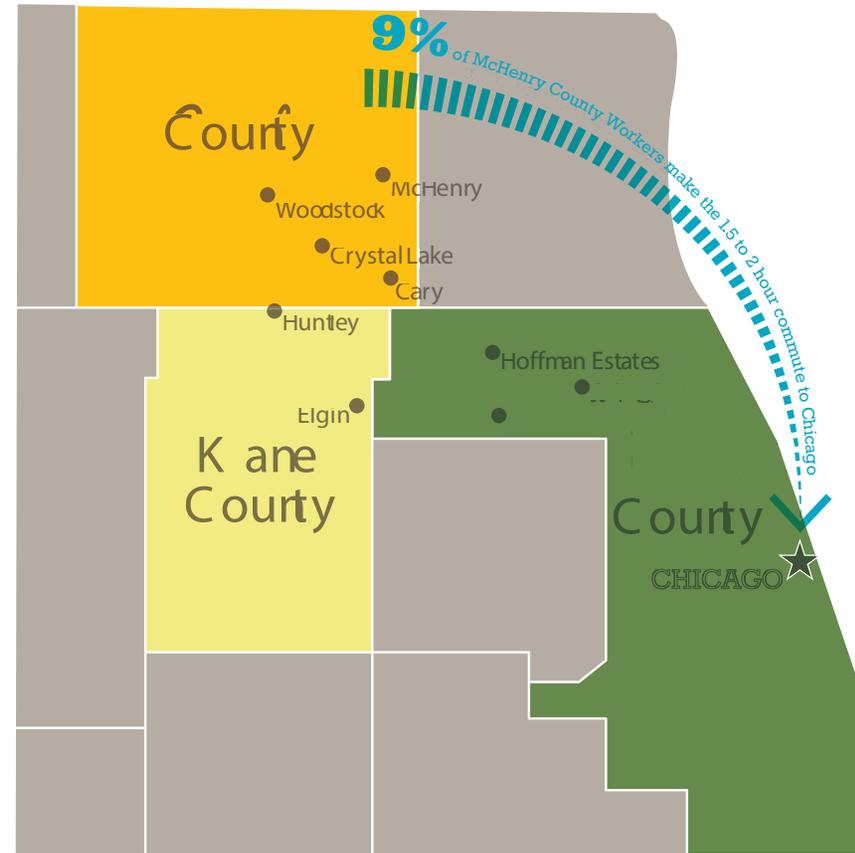
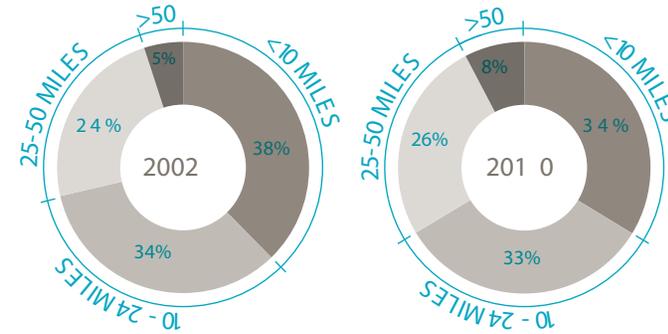


Figure 37: Job and Housing Balance

There is a mismatch between the residents of the County and the jobs in the County. Increasingly, local jobs are being held by non-residents while residents work outside the County. As such, the distance between jobs and workers is increasing. For instance, the overall percentage of people traveling greater than 25 miles increased from 2002 to 2010.

EXISTING TRAVEL CONDITIONS

Motorists in McHenry County have nearly uninterrupted travel between communities but experience frequent delays in towns. Bicyclists and pedestrians have good networks within neighborhoods but have difficulty crossing and traveling along roadways with heavy, motorized traffic. Outside of towns, bicyclists find the low traffic paved roadways west of Illinois Route 47 adequate, while pedestrians lack basic accommodations.

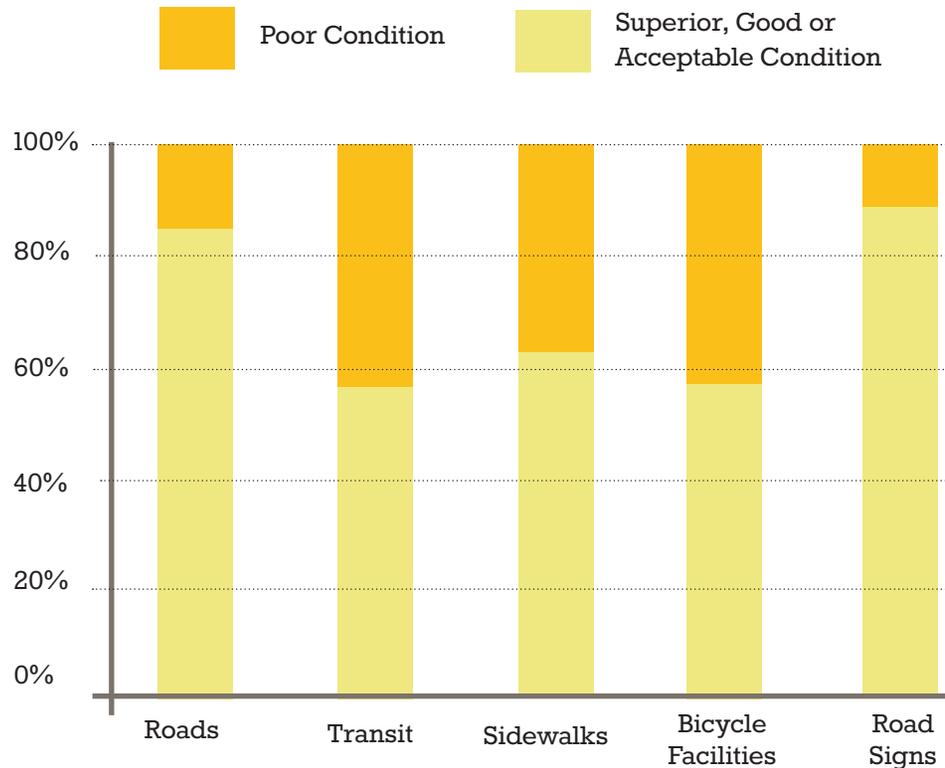


Figure 38: Current Conditions Survey Results

As part of the public involvement process, a survey was created on-line to gauge how people felt about transportation in the County and what were the most pressing priorities. The general survey had 127 responses. Transit received the greatest number of high and medium priority



responses with additional responses suggesting transit is poor to just acceptable in the County (see Figure 38). Roads received the next highest priority ranking even though most indicated a belief that the roads are in good condition in the County. Bicycle facilities and sidewalks were not as high of a priority as roads, but were rated as being in poorer condition. The network in McHenry County supports mixed commercial, residential and industrial areas, new commuter rail stops and has enabled large agglomerations of retail, entertainment, and restaurants along U.S. 14, Randall Road, and Illinois Route 31. The traffic attracted to these areas often conflicts with commuter travel during the week and with tourists on the weekends. To comprehensively evaluate existing and future traffic conditions, a digital model was created based on population and employment forecasts provided by CMAP and current travel patterns. To understand transit use, ridership and service frequency reports from Pace and Metra were used. For both the motorized vehicle modeling and the transit use analysis, predicted conditions were visually verified. McHenry County Division of Transportation staff set-up special bicycle and pedestrian counters at several locations throughout the County to gauge bicycle and pedestrian volumes as well.

BICYCLE AND PEDESTRIAN ANALYSIS RESULTS

In 2008, the McHenry County Division of Transportation undertook a comprehensive effort to identify and map the County's paths and trails implemented by the McHenry County Conservation District, local park districts, local public works departments, and others. During this exercise, large networks were identified in Cary and in Lake in the Hills. These and other local networks tend to build off of McHenry County Conservation District paths, especially the Prairie Trail. However, many gaps in the networks were identified, in particular near railroad and major highway crossings.

To measure current use levels, the McHenry County Division of Transportation purchased and has been using cameras along bicycle and pedestrian facilities to count daily use. Since October 2011, daily bicycle and pedestrian counts have been conducted at seven locations. The highest daily count recorded (895) was on a Saturday in August on the Prairie Trail over Rakow Road (See Figure 39).

It is assumed that dry days with comfortable temperatures are ideal for bicycling and walking and would therefore have the greatest counts. Late season counts were taken on the Prairie Trail in McHenry at Illinois Route 120 to measure demand on bad weather days. Even with snow on the ground, the Prairie Trail in McHenry had 33 bicycle and pedestrian trips on November 30, 2011.

Figure 39: Bicycle and Pedestrian Daily Counts

	Low Count	High Count	Dates
Prairie Trail at Rakow Road Overpass	844	895	August 11 and August 12, 2012
Prairie Trail in Crystal Lake at Berkshire Dr.	184	488	October 6 through October 9, 2011
Prairie Trail at U.S. 14 Underpass	272	390	August 23 and August 24, 2012
Walkup Road at Veteran's Acres Park (after path completed)	174	256	July 13 and July 14, 2013
Ridgefield Trace between Walkup Rd. and Community College	30	44	August 24 through August 26, 2013
Walkup Road at Hillside (before path completed)	20	37	September 11 and September 12, 2012
Prairie Trail in McHenry at IL 120	33		November 30, 2011

TRANSIT USE ANALYSIS RESULTS

Consultants TransSystems and Cindy Fish were hired to undertake an analysis of the current transit operations and market for transit services in the County. A group was formed to guide the study. This group included the RTA, Metra, Pace, IDOT, McHenry County Council of Governments, Pioneer Center, Council of Mayors and MCDOT. The analysis identified that Harvard, Woodstock, Crystal Lake, and McHenry have the highest levels of transit service yet still have unmet needs. These areas have regular commuter rail service, scheduled bus service, and dial-a-ride transit services available. Huntley, Algonquin, Lake in the Hills, Marengo, Island Lake, and Spring Grove have sizeable transit markets that are being served only by local and limited dial-a-ride transit services. The unmet demand for transit services in these areas will only grow with time along with these communities.

Like motorized vehicles, meeting the County's transit service needs requires a balance of regional and local transit services. The ability to meet the identified needs requires effective regional transit services through expanded commuter rail, regional bus services, park and ride lots while providing frequent and reliable local services.

The analysis called for the restructuring of the existing Pace routes 806 and 807 as well as refining the scheduling of Route 808. The analysis also indicated that the Metra Union Pacific Northwest Upgrades being pursued by Metra Commuter Rail would help meet existing needs.

A traffic demand model for motorized vehicles was completed by Civiltech Engineering, Inc. in 2008 for McHenry County. The model measured the distribution and volume of motorized vehicle use during peak travel periods. In the morning and afternoon, the model measured vehicle volumes for a two-hour peak period. The modeling tool confirmed significant motorized vehicle traffic congestion along Illinois Route 47, Illinois Route 31, U.S. Route 14, and Randall Road. Major intersection bottlenecks were identified in Algonquin, Barrington Hills, Crystal Lake, Huntley, Lakewood, Lake in the Hills, Marengo, McHenry, Prairie Grove, Richmond, and Woodstock. The model measured a greater concentration (14% more miles and 19% more hours) of motor vehicle traffic during the afternoon rush hour than the morning rush hour. This causes the afternoon to have 48% more miles of congested travel and 41% more hours of delay than the morning (see Figure 40).

FUTURE TRAVEL CONDITIONS

Based on population and employment forecasts provided by CMAP and current travel patterns, the demand model created by Civiltech Engineering, Inc. was used to measure the County’s roadway system’s ability to accommodate increases in traffic volumes. The forecasted year used for the modeling was the year 2030. Because of the deep economic recession beginning in 2007, little growth has occurred in the County in the last 6 years. For the purposes of this plan, the model outputs for the year 2030 are applied to the year 2040 based on an assumption of urban growth in the County responding again to growth in the Chicago region. For these reasons, the future model of motorized traffic is useful in studying the County’s needs but cannot be used independently to define the County’s needs.

The model predicts that current travel flow patterns will be maintained for the foreseeable future. There is no evidence that the widely dispersed commuter patterns will tighten or consolidate in any noticeable fashion. Overall travel times for motorists in McHenry County will increase modestly between today and the year 2040. Rush hour times will likely increase significantly. By 2040, a trip taken between McHenry County and Cook County during the afternoon rush will take 51% longer (see Figure 41). Outside of the morning and afternoon rush hours, the trip will take 12% longer (see Figure 42). By 2040

	A.M. Peak	P.M. Peak	% Difference in Peaks
Vehicle Miles of Travel	820,684	937,746	14%
Vehicle Hours of Travel	21,568	25,696	19%
Congested Vehicle Miles of Travel	101,515	150,032	48%
Vehicle Hours of Delay	2,793	3,930	41%

Figure 40: Existing Peak Hour Motor Vehicle Use

Figure 41: Existing Peak Hour Motorized Vehicle Performance Measures

Morning Peak	Today	2040	Percent Change
Miles Traveled	820,684	1,162,223	41.6
Hours Traveled	21,568	32,304	49.8
Congested Miles	101,515	190,080	87.2
Hours of Delay	2,793	5,946	112.9
Afternoon Peak	Today	2040	Percent Change
Miles Traveled	937,746	1,315,137	40.2
Hours Traveled	25,696	38,822	51.1
Congested Miles	150,032	302,495	101.6

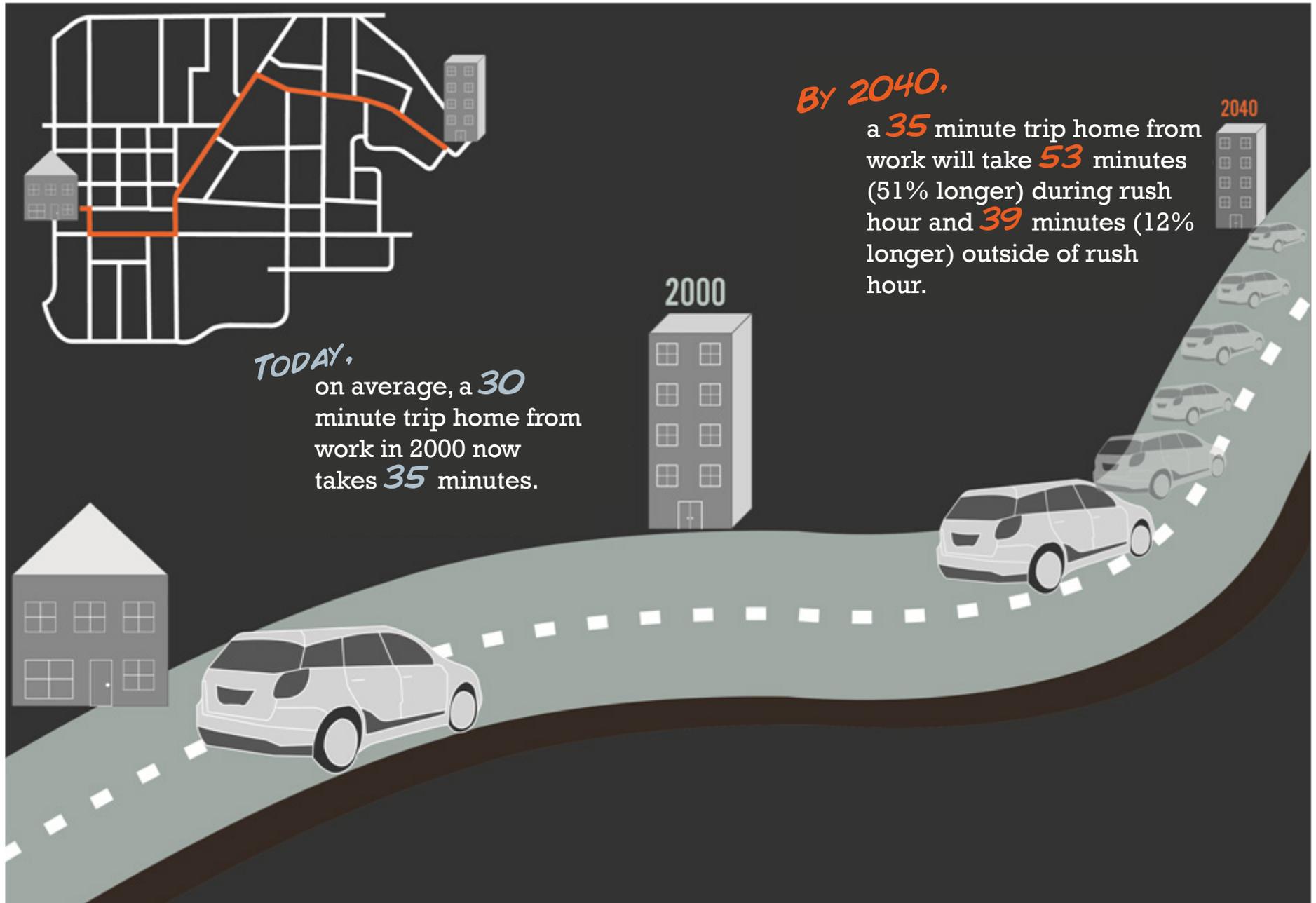


Figure 42: McHenry County Commute Times

By 2040, the model forecasts motorized traffic to stress the capacity of nearly the entire road network east from Illinois Route 47 during the afternoon peak period. Additional congestion is likely in Harvard and Marengo at the intersections of State and U.S. Highways. The total number of miles traveled by motorized vehicles in the County is forecasted to increase 42% during the morning rush hour and 40% during the afternoon rush hour (see Figure 40). By 2040, the model forecasts that the 40% increase in motorized traffic during peak hours will double the number of miles traveled in congestion and will more than double the amount of hours of delay experienced by drivers.

The model predicts that the greatest increases in congestion will happen on the municipal street networks. Between today and the year 2040, local streets will handle a growing percentage of congestion (in terms of hours of delay and miles of congested travel). This seems reasonable as many of the major highways in the southeast have been or will shortly be built to maximum capacity.

Figure 43: Miles Traveled by Road Volume / Capacity at PM Peak

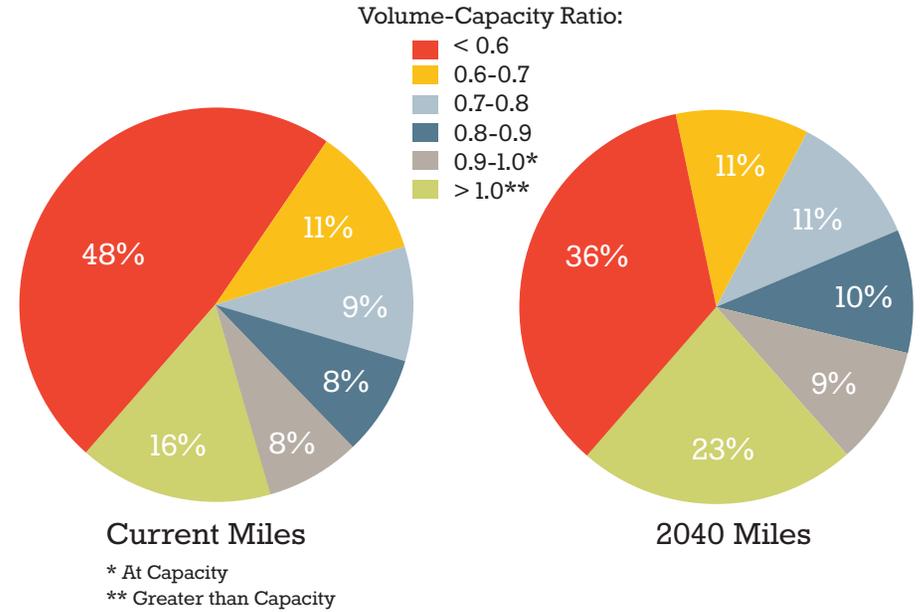


Figure 44: Current Congested Roadway Miles Traveled During PM Peak

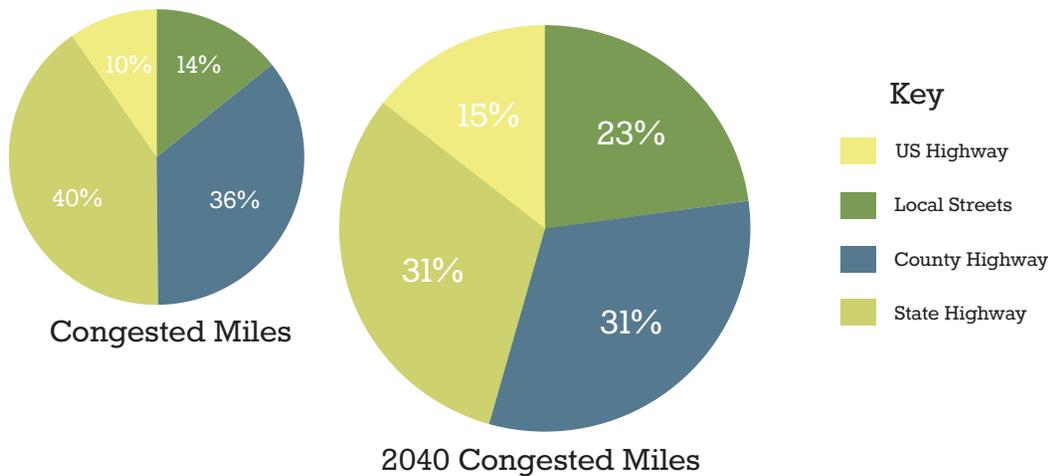
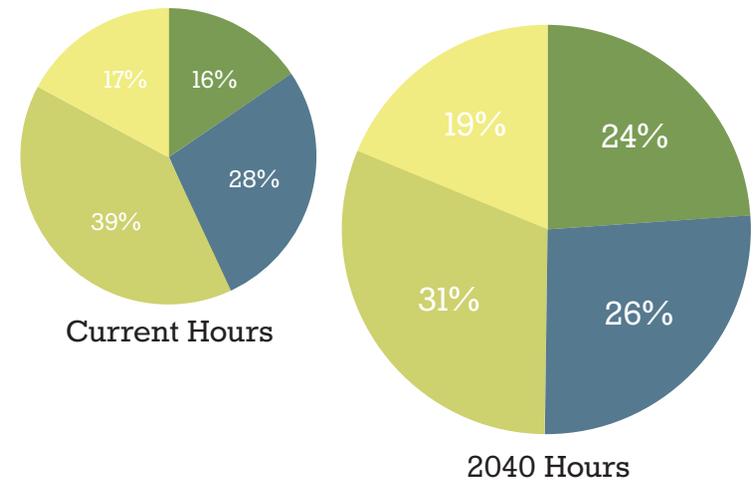


Figure 45: Hours of Delay by Roadway Type during PM Peak



Congestion has different effects depending on what has been built on either side of the roadway. Unlike federal, state, and County routes, most of the local street networks have not had and are not likely to have substantial increases in capacity or operational capability. This would be done by adding lanes of traffic and/or adding more traffic control measures such as median barriers, roundabouts, and traffic signals. Houses and businesses are typically built with inadequate setbacks for new lanes of traffic to be added.

As congestion builds on local streets, access to adjacent properties becomes limited and tends to lower residential property values or increase demand for other land uses. Congestion on major highways has less of an effect on adjacent land use. Property owners along major highways are more likely to have bought the property because of existing or anticipated heavy volumes of motorized vehicle traffic. Although a business may have fewer customers during certain times of the week as roadway congestion increases, the business is still likely to remain because other roadways do not provide such exposure to the public. As the old business saying goes, it is all about “location, location, location!”

Given the growth of congestion on the local street network, a two-pronged approach to addressing congestion seems prudent. First, additional capacity for motorized vehicles should be added to highways to accommodate peak hour volumes in ways that fully consider the costs of the new controls and restrictions. For example, adding lanes to accommodate peak hour traffic and then prohibiting right-turns on red during the entire day encourages people to disobey the prohibition in light traffic conditions. Additionally, limiting access to a major highway at few locations helps peak hour flows but increases the time and distance for locals trying to access businesses unnecessarily during off-peak hours.

Secondly, encouraging people to walk or bicycle to local destinations is likely to result in real declines in motor vehicle volumes in certain areas of the County. As motorized traffic loads grow on the local street networks, people will increasingly choose walking or bicycling because of convenience. The pace of this process by which people drive less will depend on many factors including land use zoning changes that encourage commercial and industrial uses closer to neighborhoods and whether or not public works departments work to accommodate a growing demand for bicycle and pedestrian transportation infrastructure.



Figure 46: Woodstock Square

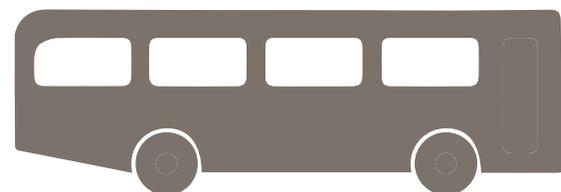
44 VI FINANCIAL CONSTRAINTS

Financial constraints are used in transportation planning to communicate a plan's priorities. Projects that are part of a financially constrained plan are of greater priority than those projects not included. The amount of funding estimated is based on past and current trends as well as assumptions about future revenues and infrastructure maintenance costs (see Figure 47). As such, financial constraints represent a balance between a strong desire to meet the infrastructure needs of the County and known financial limitations.

The planning process anticipates priorities will change over time and new funding opportunities may arise. Since the 2020 Long Range Transportation Plan was adopted in 2006, the County has noted a change in attitude towards increasing funding for transit, bicycle, and pedestrian infrastructure. Regarding funding, some new funding has been found to be temporary or intermittent. The federal transportation bill passed in 2005, known as SAFETEA-LU, included \$32.86 million in earmarks for McHenry County projects. The bill passed in 2012, called MAP-21, included no funding earmarks for the County. Other funding can come from unexpected places. In 2008, the County began receiving a portion of the RTA Sales Tax as part of the State's efforts to reform and finance the Regional Transportation Authority and Service Boards.



\$39 million each year for new highways



\$21 million each year for new transit



\$2.5 million for new bicycle / pedestrian facilities

Figure 47: Estimated Available Funding by Mode for 2040 Transportation Plan

CURRENT TRENDS

As funding is very unpredictable, it is prudent to pursue important projects beyond identified funding. This plan anticipates modest amounts of engineering and land acquisition for projects even though the total project costs are beyond revenue estimates.

The entire nation relies heavily on the motor fuel tax to fund highway maintenance and expansion. Motor fuel tax revenue levels are a function of the number of miles traveled and the efficiency of the vehicles in use. The use or “spending power” of the funding for roadways is largely a function of asphalt prices.

A federal motor fuel tax is an excise tax of 18.4 cents per gallon for regular gasoline used by most vehicles. The State of Illinois applies an additional 19.0 cents per gallon; and, McHenry County has a 4.0 cents per gallon County Option Motor Fuel Tax. In McHenry County, a total of 41.4 cents in motor fuel taxes are collected for each gallon purchased. These are excise taxes that are based on quantity purchased not the price of gasoline. As gas prices go up, the amount of gas tax collected per gallon sold remains the same. Recent trends indicate that people are driving less and are driving more efficient vehicles. These trends are dramatically reducing the amount of funding available for transportation.

"At 9,363, miles per capita in 2012 reached its lowest level since 1996."

<http://www.planetizen.com/node/60962>

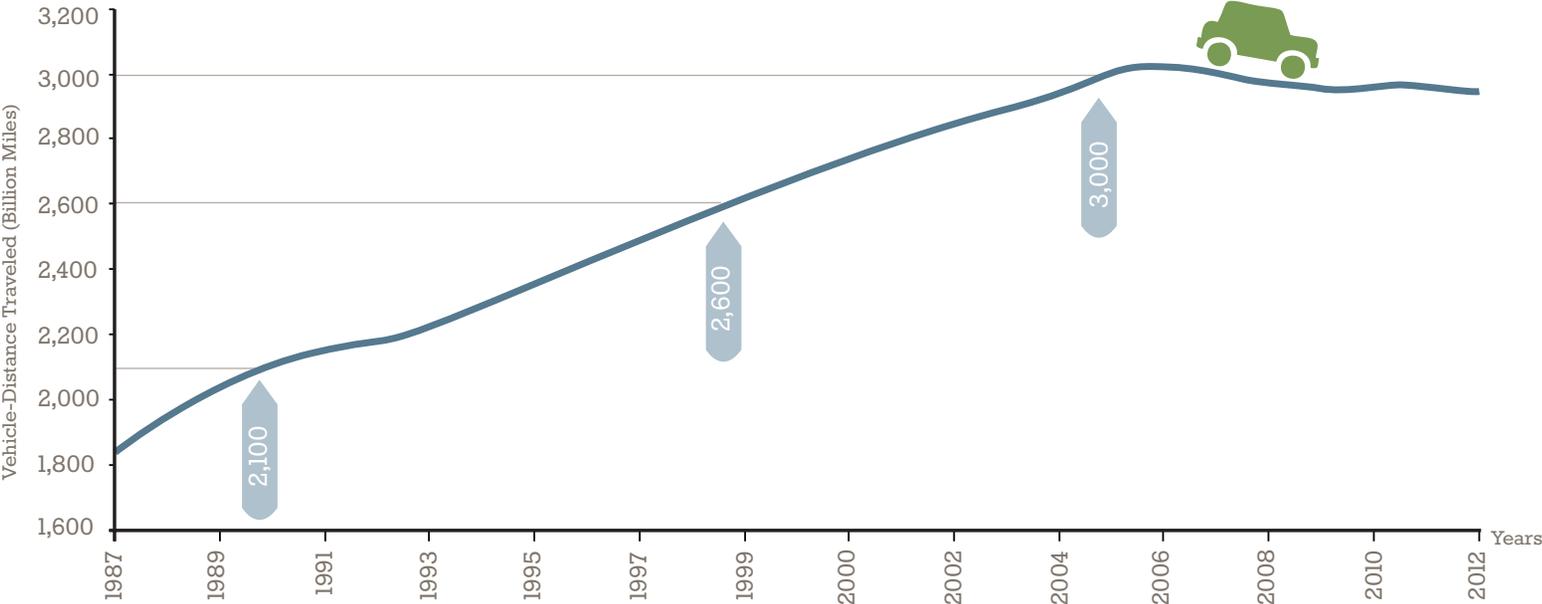


Figure 48: Total Vehicles Miles Traveled Began to Decline before the Recession

Between 2007 and 2012, the amount of local motor fuel tax collected in McHenry County, (County Option Motor Fuel Tax) dropped 10.2 percent from \$4.7 million to \$4.2 million. When taking into account inflation (using the consumer price index), the 2012 tax receipts were \$3.79 million representing a drop of 18.9% in the purchasing power of the County Option More Fuel Tax Fund. Figure 48 illustrates a fairly steep and regular incline in the total number of vehicle miles traveled (VMT) in the country between 1987 and 2007. There are no sustained dips in this line until the economic recession of 2007. The economic recessions

of 1990 and 2001 are visible as VMT was flat during those periods. However, as the economy recovered, travel increased.

The total number of vehicle miles traveled by people in the United States has not increased since 2007. This is despite continued population growth from 301.2 million estimated in 2007 to 313.9 million estimated in 2012. On a per capita basis, Americans are now driving 9,363 miles per year which is the measure's lowest level since 1996.



“In February 2013 there was an 18% reduction of emissions per driver of newly purchased vehicles compared to the situation in October 2007.”

http://www.umich.edu/~umtriswt/EDI_values.html

Figure 49: Average Vehicle Miles per Gallon in the US

This trend has been identified in other research (see Figure 49). This research has focused on changes in vehicle efficiency in terms of distance traveled, fuel consumed, and fuel emissions. The University of Michigan Transportation Research center has created an Eco-Driving Index (EDI) and the two sub-indexes (EDId and EDIf) that have measured changes in travel behavior and vehicle efficiency. This is a national index that uses the fuel economy of new vehicles purchased each month to create a monthly index of estimated emissions, fuel consumed, and distance driven by these new vehicles. Since 2007, new vehicles are being driven less far and have much greater fuel efficiencies. Compared to October 2007, vehicles sold in February 2013 are driven 2% less, use 16% less fuel, and produce 18% less emissions.

According to the Environmental Protection Agency (EPA), transportation accounts for 28% of all greenhouse gas production in the United States (see Figure 50). As such, an additional 18% reduction in vehicle emissions over the next 6 years would reduce greenhouse gas production in the United States by approximately 5% if production remained steady in the other sectors.

This reduction in emissions is very important for McHenry County as the County is designated as being in non-attainment for clean-air standards. This means that the air quality in McHenry County persistently exceeds the national ambient levels of air pollution. This type of pollution is being monitored as it causes asthma and can be particularly harmful to young children and our older population. All transportation projects in McHenry County must be modeled to measure conformity to the air quality standards. If a project is found to be non-conforming, it is not eligible for federal funding. Projects that are often non-conforming include new highways.

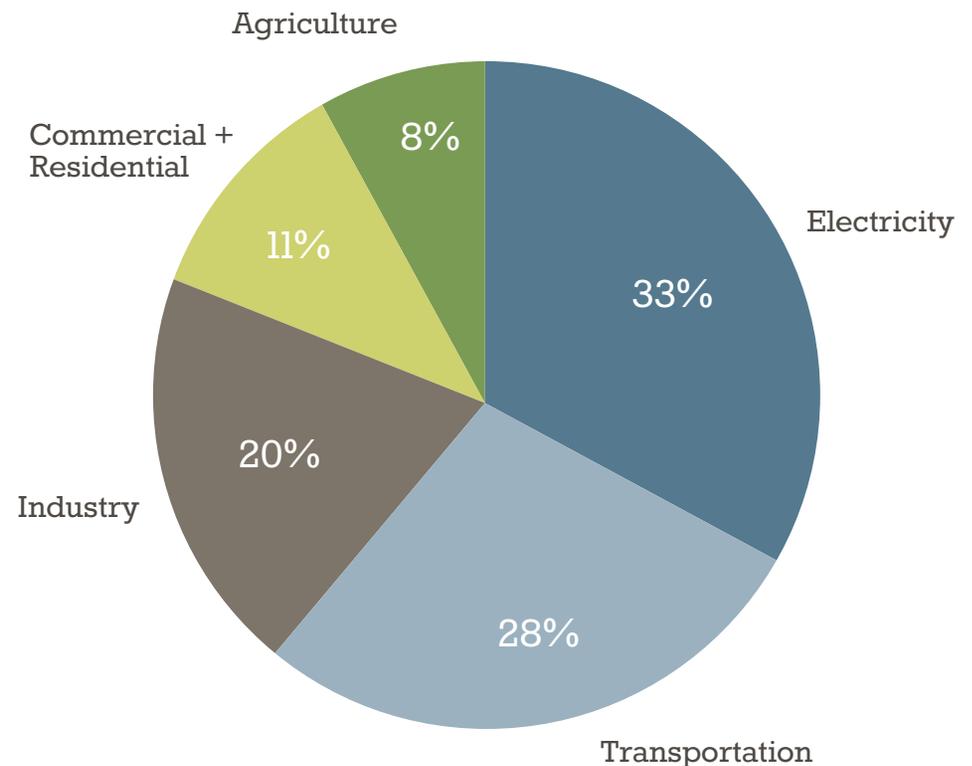


Figure 50: Sources of Greenhouse Gas in the United States

Source: Environmental Protection Agency

<http://www.epa.gov/climatechange/ghgemissions/sources.html>

Learn more at: <http://www.epa.gov/oaqps001/greenbk/index.html>

The trend in vehicle efficiency is accelerating. According to the Energy Information Administration, motor vehicle gasoline consumption will be less than previously estimated. Compared with the last Annual Energy Outlook (AEO), the 2013 AEO shows lower gasoline use, reflecting the introduction of more stringent Corporate Average Fleet Economy, or CAFE, standards. The report also indicates that growth in diesel fuel consumption will be moderated by the increased use of natural gas in heavy-duty vehicles.

In the 85 years between 1923 and 2008, average vehicle efficiency changed by 3.4 miles per gallon. Vehicle efficiency has increased more than this in the last five years. Between October 2007 and October 2012, the fuel economy of the average vehicle sold in the United States increased by 6.7 miles per gallon or 20 percent. This trend of greater fuel efficiency will continue as a matter of law. The CAFE standards set by the National Highway Traffic Safety Administration calls for an increase in average vehicle miles per gallon to 34.5 mpg in 2016 and 54.5 by 2025.

This report can be found at:
http://www.eia.gov/forecasts/aeo/er/executive_summary.cfm

The latest press release about CAFE changes can be found at:
<http://www.nhtsa.gov/About+NHTSA/Press+Releases/2012/Obama+Administration+Finalizes+Historic+54.5+mpg+Fuel+Efficiency+Standards>

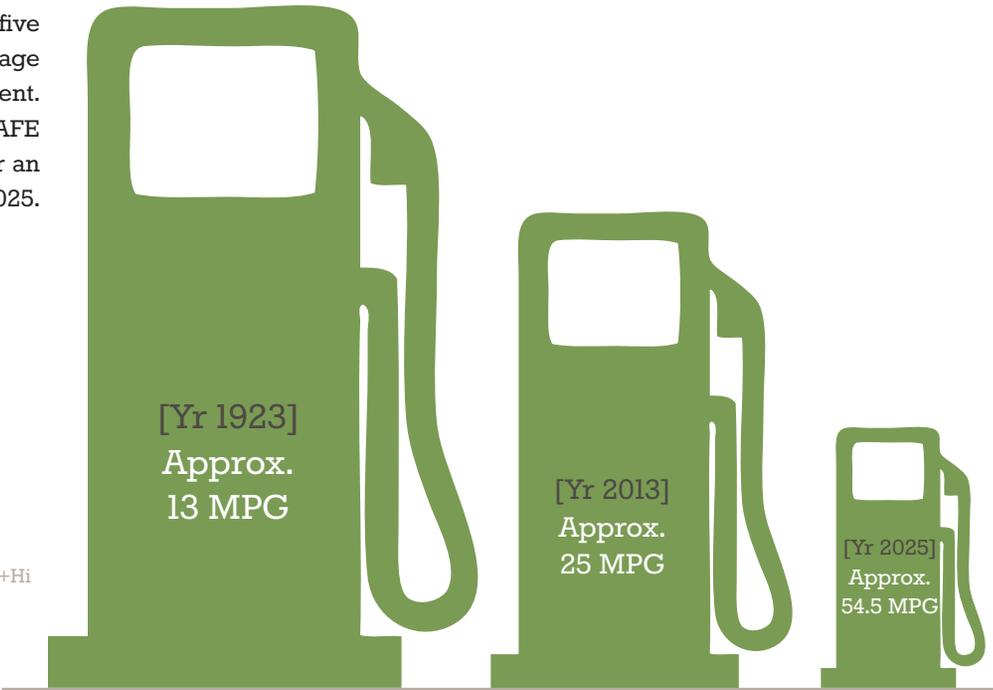


Figure 51: Average Vehicle Miles per Gallon in the US



Figure 52: Cost of Road Construction Continues to Rise

The data shows Americans are driving less and using less fuel. At the same time, the costs for road construction continue to rise. In 2012 alone, asphalt prices jumped 11.2% from 2011. McHenry County is one of the first counties in North America to pursue what is called a pavement management system to better preserve and maintain its existing and new roadways while reducing costs. These efforts are important to make the best use of available funding, but are unlikely to produce savings great enough to offset the current trends of declining revenues.

When taking into account declining revenues and increasing costs, the assumptions used to measure the benefits of large public works are changing. Increasingly, transportation agencies are adapting to find ways to finance the maintenance and expansion of their transportation systems.

There has been a shift in use of taxes by McHenry County. In 2007, project funding for the McHenry County Division of Transportation was funded 77% with a combination of State Motor Fuel Tax and County Option Motor Fuel Tax, and 23% from property taxes allocated to two funds, the Bridge and Matching funds. By 2012, motor fuel taxes accounted for only 46%, property taxes equaled 10%, and sales tax collected through the County RTA Sales Tax equaled 44% of tax revenues (see Figure 53).

When taking into account inflation and needed debt service resulting from the County using alternative debt revenue bonds to finance the Algonquin Road widening project, the County's tax revenues in 2012 available for transportation projects was down slightly (\$200,000) from 2007. The County's tax revenues for transportation are not able to keep pace with inflation.

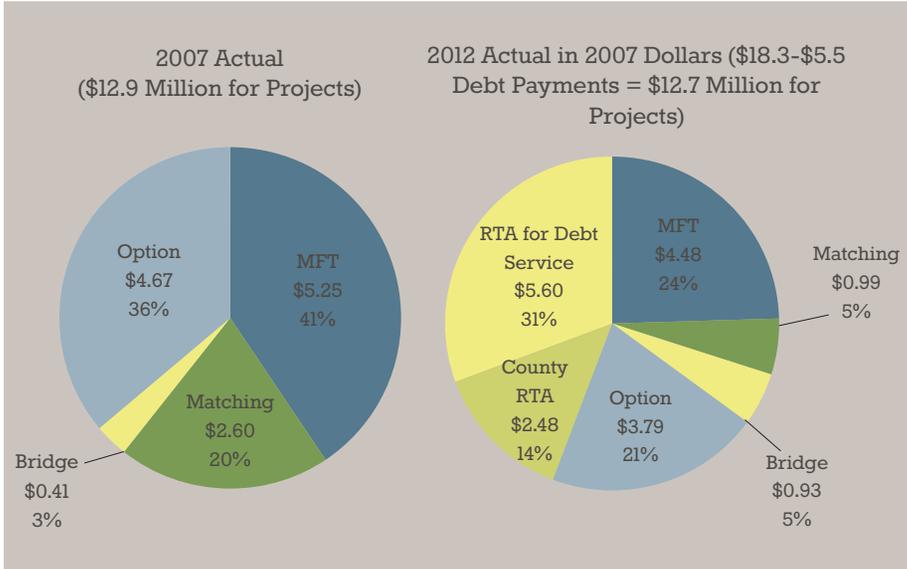


Figure 53: Transportation Project Funding for McHenry County

The total amount of revenues estimated to be collected between 2015 and 2040 will accommodate approximately \$39 million in new highway work each year in McHenry County (see Figure 54). This is a future where the amount of new highway construction each year is only slightly lower than what it has been over the last three years.

Transit funding depends largely on decisions to dedicate more or less of the RTA sales tax and limited IDOT funding to expand and maintain the highway system. After accounting for approximately \$1.5 billion in revenues for highway maintenance and expansion, modest increases in the amount of funding for transit can be realized given current trends. Most of this is a result of assuming federal funding for Metra's Union Pacific Northwest line upgrades (\$380 million) and for Metra's Milwaukee District West Extension (\$123.5 million).

Like transit, funding for bicycle and pedestrian accommodations depend heavily on the allocation of funding for highways. Unlike transit, there are more grants available and the projects tend to be much smaller in terms of engineering requirements, costs, and implementation timelines. Between 2015 and 2040, an additional \$2.5 million each year is estimated to add new bicycle and pedestrian facilities throughout the County.

In total, approximately \$822 million or \$33 million each year will be available and needed to maintain the existing transportation network. Approximately \$1.7 billion or \$68 million each year will be available to expand the system.

Estimated Bicycle and Pedestrian Funding by Source

County MFT	County RTA	RTA	IDOT ISTHA	USDOT	Local	Total	Per Year	
\$0	\$11	\$0	\$16	\$20	\$16	\$63	\$2.5	New

Estimated Transit Funding by Source

County MFT	County RTA	RTA	IDOT ISTHA	USDOT	Local	Total	Per Year	
\$0	\$24	\$275	\$0	\$0	\$12	\$311	\$12.4	Operation
\$0	\$0	\$70.9	\$83	\$503.5	\$3	\$660.4	\$26.4	New
\$0	\$24	\$345.7	\$83	\$503.5	\$15	\$971.4	\$38.9	Total

Estimated Motorized Vehicle Funding by Source

County MFT	County RTA	RTA	IDOT ISTHA	USDOT	Local	Total	Per Year	
\$177	\$0	\$0	\$239	\$16.5	\$78	\$511	\$20	Maintenance
\$127	\$264	\$0	\$480	\$60.2	\$37	\$969	\$38.7	New
\$304	\$264	\$0	\$719	\$77	\$115	\$1,479	\$58.7	Total

Figure 54: Funding Sources



VII BICYCLE *and* PEDESTRIAN PLAN

This chapter presents the long term transportation plan for bicycle and pedestrian infrastructure in McHenry County. It highlights the need for this type of infrastructure investment in order to meet the goals and objectives of the plan. Then, the County's potential role in implementing these types of projects is discussed.

McHenry County is well served at the local level by an extensive municipal bike and pedestrian network, especially in the south-east corner of the County (see Figure 55). There are also three existing regional trails: the Prairie Trail, Huntley-Union-Marengo Trail and Hebron Trail which allow for inter-community travel. While much of the existing mileage of trails are maintained by local municipalities or park districts, the regional trails are maintained by the McHenry County Conservation District (MCCD).

In addition to the trail network described above, a network of sidewalks in urban areas of the County (not shown) allows for the safe movement of pedestrians around town centers. This existing system of bicycle and pedestrian accommodations is vital to providing residents of McHenry County with a high quality of life no matter their age, mobility, or income level.

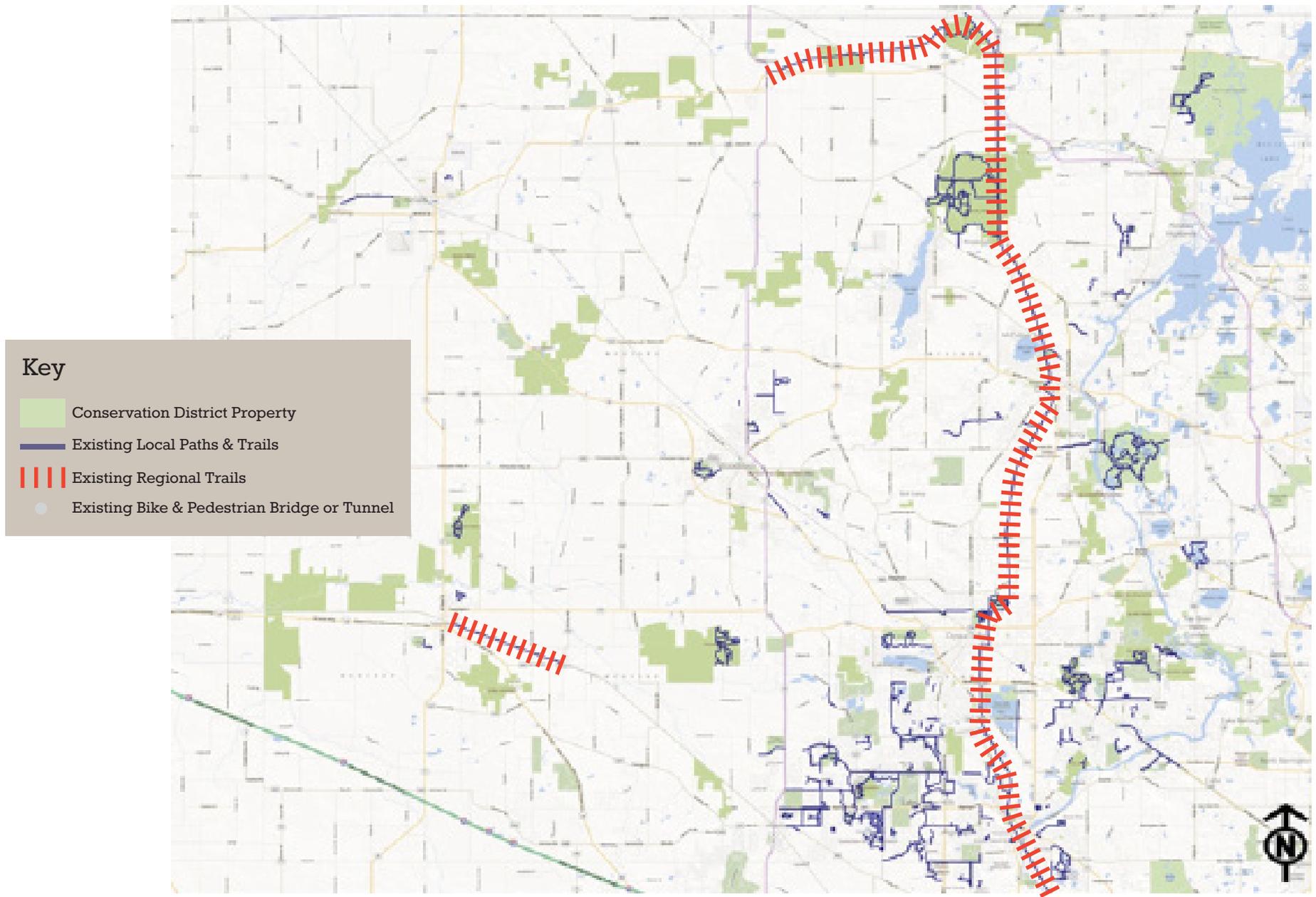


Figure 55: Existing Bicycle Trail Network in McHenry County

Goal 1. Highway Congestion Mitigation

The Transportation Committee of the County Board established 6 goals for the long range transportation plan. All of these goals are directly supported through the general enhancement of bicycle and pedestrian facilities in the County. The following section reviews these goals and documents how bicycle and pedestrian infrastructure is needed to meet these goals. The goal is to have a reliable arterial road network. This goal is to be balanced with the need to preserve the character of McHenry County and the ability to maintain the existing transportation infrastructure.

The transportation benefits associated with providing facilities for non-motorized trips result in a reduction in congestion, lost time and money. Americans spend tens of millions of dollars purchasing, operating, insuring, and maintaining automobiles, along with the cost of road construction, maintenance, oil production, and environmental damage. On average, it costs about \$3,000 per year to own and operate an automobile, not including \$2,000 for gasoline. Improving bike/pedestrian facilities can have a great impact on a large percentage of trips, providing an affordable and efficient transportation option.

A network of bikeways and sidewalks throughout McHenry County will connect communities, which increases the mobility of residents and maximizes access to housing, community centers, transit stops, commercial areas, parks, schools, and places of work. Bicycle and pedestrian facilities encourage merging exercise with daily routine, making it easier to stay healthy and fit, and reduce automobile demand on roads. When safe facilities are provided, more people are willing to bike or walk for many daily trips that would otherwise be made by car.



Figure 56: Bicycle Accommodations can Reduce the Number of Cars on the Road

Bicycle and pedestrian accommodations are also necessary for the success of public transit. Transit stops need to be fully integrated into the surroundings and accessible to as many people as possible. This can be done by using bicycle and pedestrian facilities as “feeder systems” for transit, leading people safely to the stops. Doing this can potentially divert long automobile trips to walking-plus-transit trips.

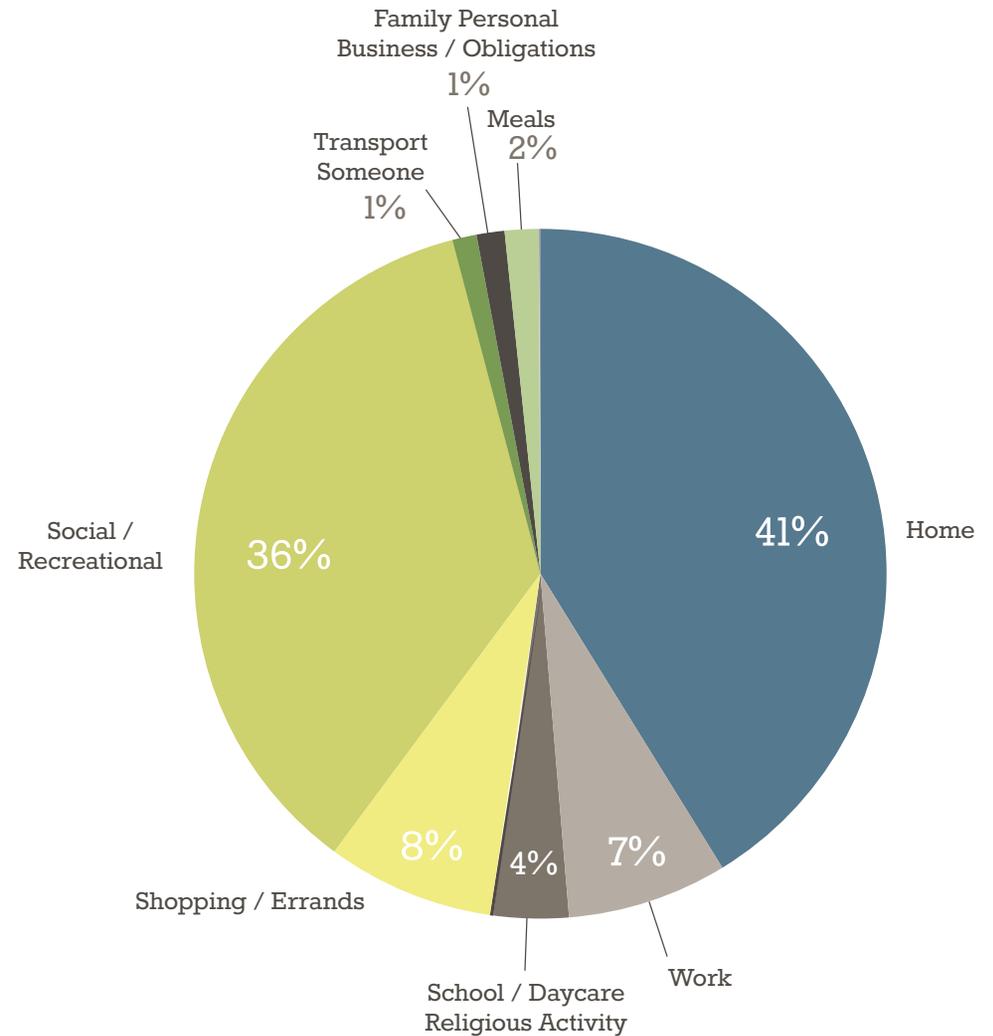


Figure 57: National Survey of Bike Trips by Purpose

Source: 2009 National Household Travel Survey (NHTS)

Goal 2. Safety

The goal is to have zero fatal collisions in the County. One objective of the plan is to identify projects and initiatives needed to improve transportation safety in the County.

In the last six years, the total number of crash fatalities has been reduced by 50%. As seen in Figure 59, the annual number of fatalities has dropped from approximately 30 each year to approximately 14 each year. However, the annual number of bicycle and pedestrian fatalities has remained constant and trending higher from 2 to 3 each year.

As a result, the percentage of fatalities in the County resulting from pedestrian and bicycle crashes with automobiles is on the rise. Since 2005, the percentage of traffic fatalities involving bicyclists and pedestrians has increased from 7% (0% bicyclist plus 7% pedestrian) to 21% (7% bicyclist plus 14% pedestrian). In order to meet the goal of zero fatal collisions in the County, it is important to provide safe places to walk or ride a bike physically separated from motorized vehicles.

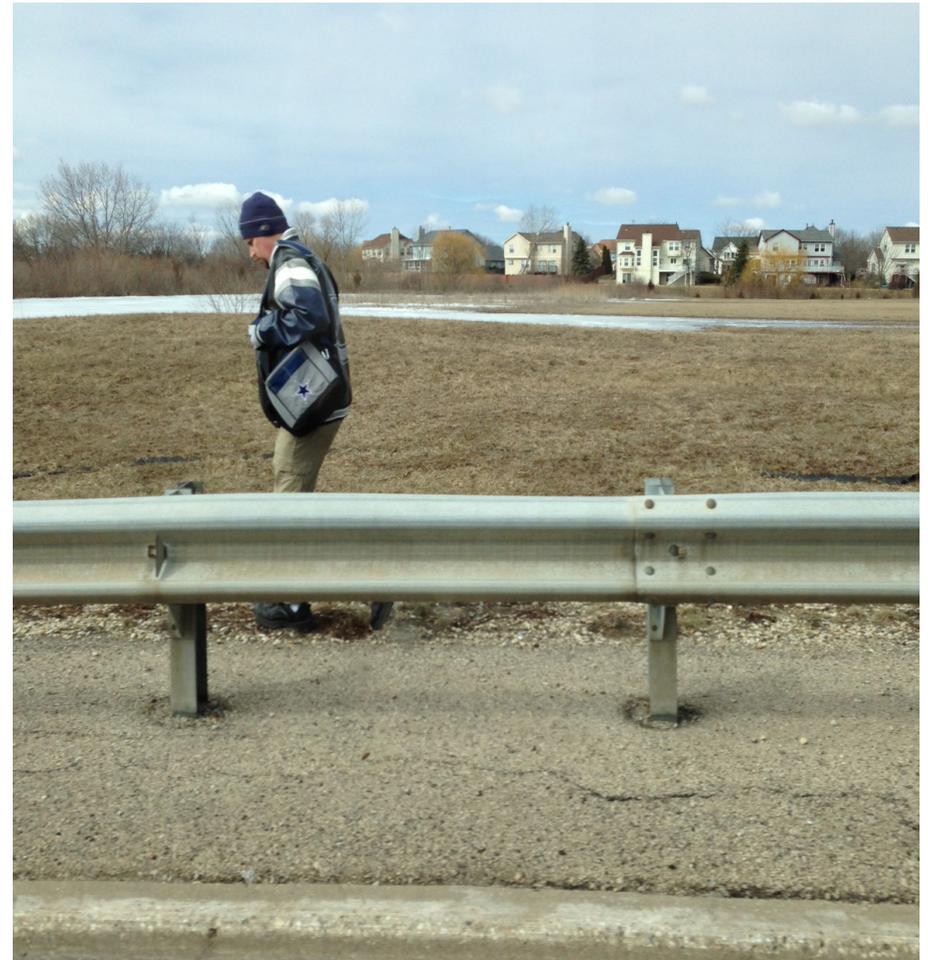


Figure 58: Pedestrian Navigates the Shoulder of Randall Road

Since 2005, the percentage of traffic fatalities involving bicyclists and pedestrians has increased from 7% (0% bicyclist plus 7% pedestrian) to 21% (7% bicyclist plus 14% pedestrian).

Crash Type	2005		2006		2007		2008		2009		2010		2011	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Angle	4	13%	2	6%	10	33%	2	11%	1	7%	1	7%	1	7%
Animal	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Fixed object	8	27%	11	34%	6	20%	4	22%	6	40%	4	29%	3	21%
Head on	9	30%	7	22%	7	23%	4	22%	2	13%	1	7%	1	7%
Other non collision	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Other object	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Overtaken	1	3%	2	6%	0	0%	4	22%	3	20%	1	7%	1	7%
Parked motor vehicle	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Bicyclist	0	0%	0	0%	0	0%	0	0%	0	0%	1	7%	1	7%
Pedestrian	2	7%	1	3%	2	7%	2	11%	2	13%	2	14%	2	14%
Rear end	4	13%	0	0%	0	0%	1	6%	1	7%	1	7%	0	0%
Sideswipe opposite direction	2	7%	3	9%	1	3%	0	0%	0	0%	0	0%	1	7%
Sideswipe same direction	0	0%	2	6%	0	0%	0	0%	0	0%	0	0%	0	0%
Train	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Turning	0	0%	4	13%	4	13%	1	6%	0	0%	3	21%	4	29%
Unknown	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total	30		32		30		18		15		14		14	

Figure 59: Fatal Crashes in McHenry County by Crash Type from IDOT Crash Data 2005 - 2011

Goal 3. Mobility for All

The goal is to improve the transportation in the County to meet the needs of seniors, children, persons with disabilities, and people without automobiles. The objective is to lower the costs incurred by individuals, families, not-for-profit organizations, and government agencies related to accessing basic services. Throughout one's lifetime, obstacles are overcome to increase mobility as shown in the picture to the right. For most people, gravity is defeated when the first step is taken and mastered upon learning to ride a bicycle. Then, maximum personal mobility is achieved after receiving a driver's license and being able to rent a car. That period of increasing mobility takes 25 years and lasts approximately 45 years (age 25 to 70). With age, poorer sight and slowing reflexes diminish the ability to drive whenever and wherever desired. The rate of this decline in driving ability depends on the person. However, for many, driving was never an option or became impossible at an earlier point in life. For them, mobility in McHenry County remains limited throughout their life. As older adults, this group enjoys slightly greater mobility than drivers because a lifetime of not driving has prepared them to live without a car.

Bicycle and pedestrian infrastructure is critical to increase the mobility of those that cannot drive towards the levels of drivers today. Even for those that cannot walk or ride a bike, this basic infrastructure is necessary to accommodate bus and commuter rail stops. Without this basic infrastructure in place, more people than necessary must rely on family, friends, and a patch-work of groups to make basic trips such as to the grocery store or medical office. Other methods of increasing mobility include rezoning and building more mixed commercial and residential areas, educating children and adults on how to use the transit system and how to safely ride a bicycle, and increase law enforcement of speed, cross-walk, and snow shoveling laws. In McHenry County, many of these methods will also expand transportation choices for those that can drive. An index created by

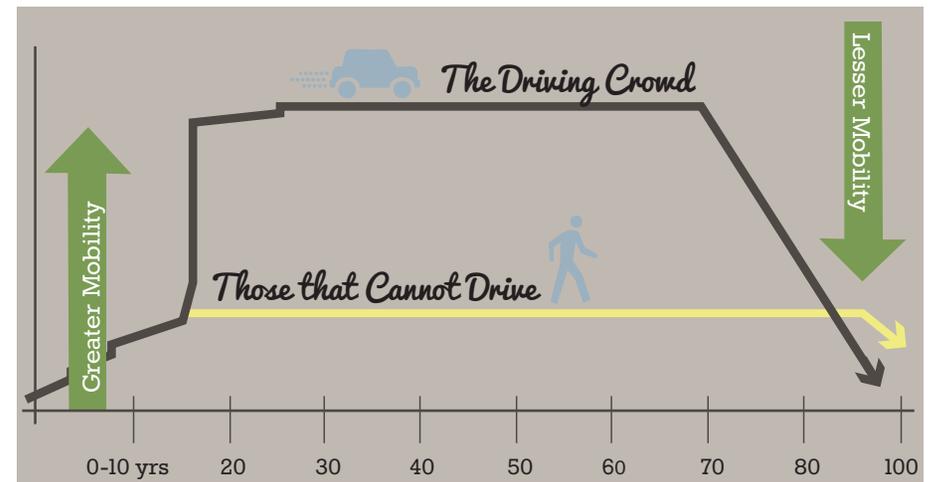


Figure 60: Age and Mobility in McHenry County

a company called Walk Score to help people find walkable places to live has rated every community in Illinois with over 10,000 residents (<http://www.walkscore.com>). McHenry County communities are all towards the bottom of this list with the City of McHenry being the most walkable and the Village of Huntley being the least (See Figure 61). Unlike many neighboring communities, every municipality in McHenry County is rated car-dependent, requiring a car for most or all errands.

Walk Score for Illinois Municipalities

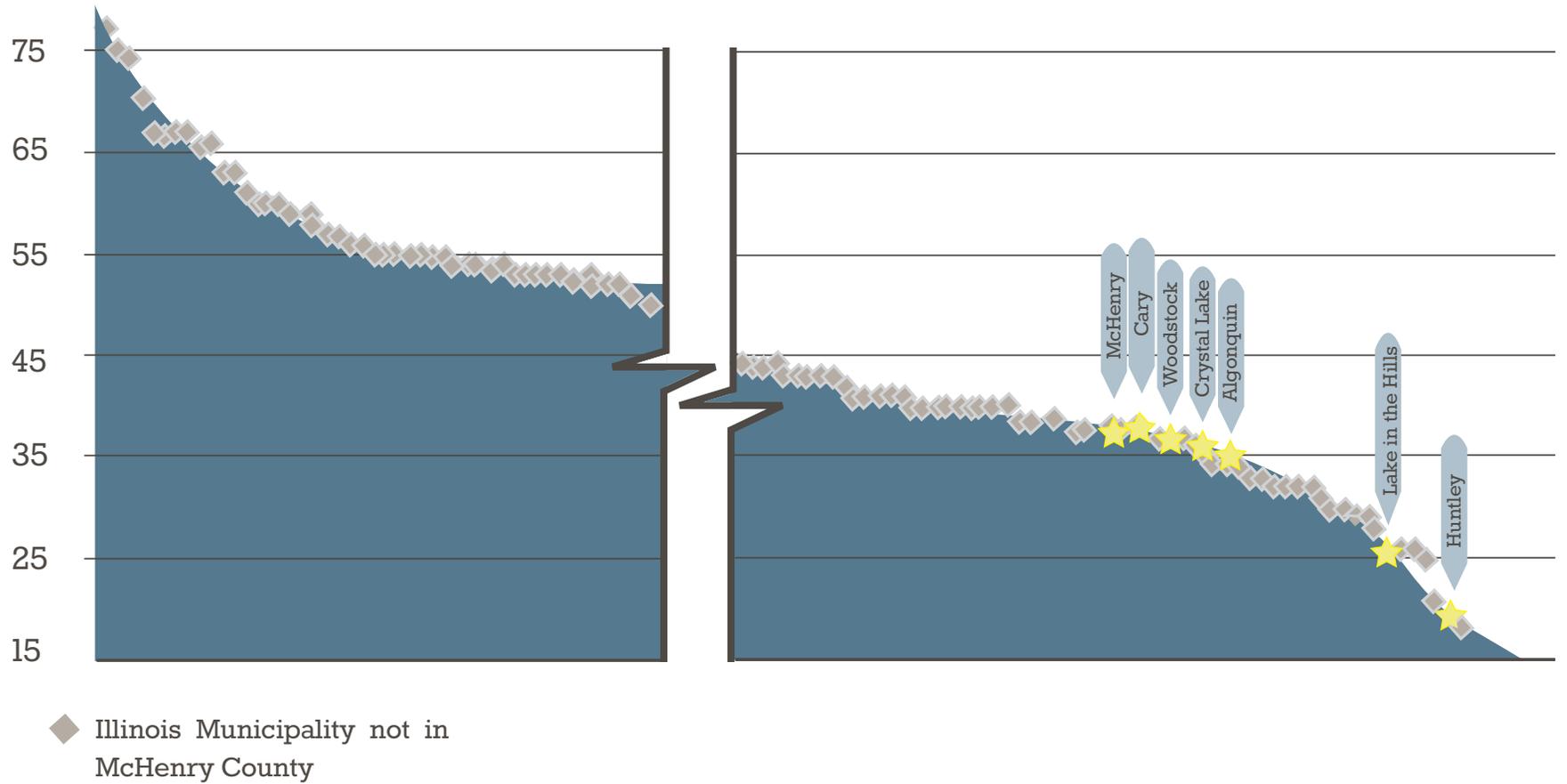


Figure 61: Municipalities in McHenry County (shown in yellow) are less “Walkable” than other Municipalities in Illinois

Goal 4. Transportation Choices

The goal is to become a bicycle and pedestrian friendly County with improved commuter rail and local bus services. One objective of this plan is to identify where missing links to the sidewalks and bikeways are needed. Another objective of the plan is to restructure local bus services and add additional commuter rail services.

Sidewalks are typically added as residential and commercial areas are built.

However, older areas, industrial areas, and empty lots lead to many cases of sidewalks simply ending at a developed property line. In many areas, the pedestrian is forced to use poorly graded highway shoulders and must be careful to avoid signs and other obstacles (See Figure 62).

For bicyclists and pedestrians, conditions have grown worse as automobile volumes have increased. Bicyclists were major political powers driving the



Figure 62: Pedestrian walking along McHenry Avenue near Crystal Lake South High School, before the addition of a sidepath

road pavement movement at the beginning of the 20th century. Now, paved roads are dominated by the automobile and most have little to no specific design accommodation for bicyclists and pedestrians. At high rates of speed, bicyclists and pedestrians are barely visible from a car.

During the course of designing the Rakow Road widening project built in 2011, the Transportation Committee of the County Board discussed the value of building a multi-use trail as part of the project. The discussion centered on whether or not it was a County Division of Transportation responsibility to design, build, and maintain a facility for recreational purposes. To investigate these concerns, in 2011, the County Division of Transportation counted the number of bicyclists and pedestrians on the Prairie Trail and conducted a survey on trip purposes.

On Saturday October 8, 2011, 428 bicyclists and pedestrians were counted on the Prairie Trail near Berkshire Drive in Crystal Lake; 488 were counted the following day on Sunday. On Saturday August 11, 2012, 895 bicyclists and pedestrians were counted crossing the bridge over Rakow Road on the Prairie Trail. On Friday October 23, 2012, 390 bicyclists and pedestrians were counted on the Prairie Trail passing under U.S. 14. For two hours on Friday, October 21, 2011, staff stopped and interviewed 41 users of the trail. As seen in Figure 64, a large majority, 34 (83%), were using the trail as designed for recreational and exercise purposes. However, 4 (10%) were on their way to work and 3 (7%) were on their way to go shopping.

Based on this initial result, additional bicycle and pedestrian counts were made and an online bicycle survey was created to gain a broader measure of why people use bicycles in the County. Between August 2012 and March 2013, 54 individuals completed the on-line survey. When asked in a broader context, bicyclists indicate a wider-range of purposes for using a bicycle. As seen in Figure 63, “Exercise” is the most widely reported purpose followed by “Work/School”.

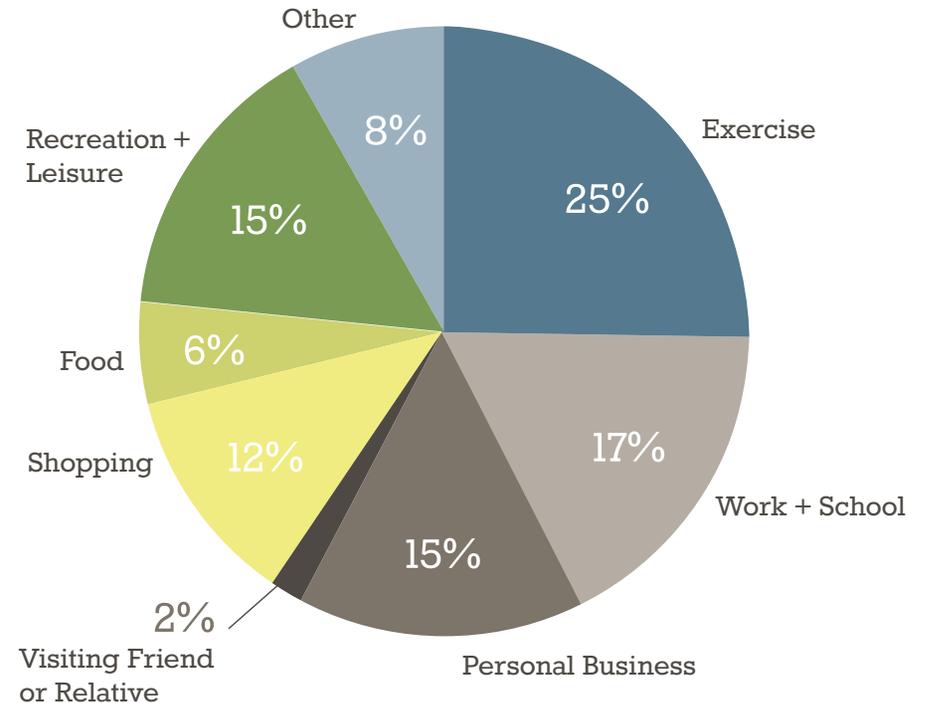


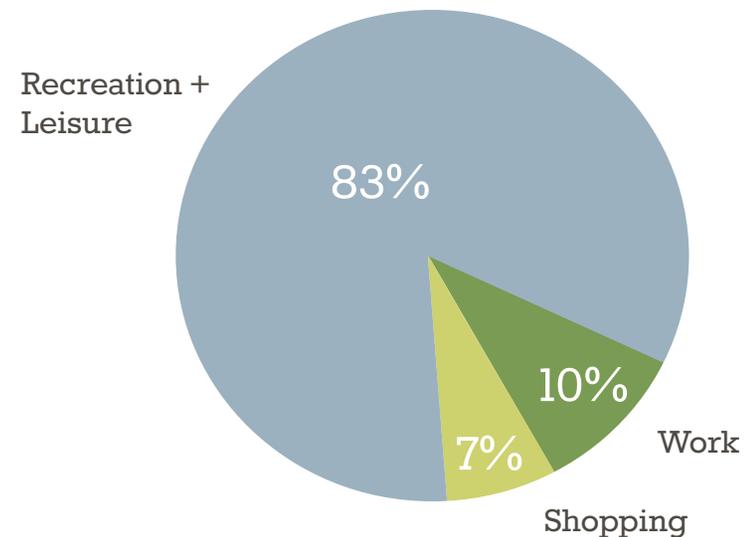
Figure 63: What was the Reason for your Bicycle Trip?

Given the reality of regular bicycle and pedestrian use on the County's streets and highways for broad purposes, adequate accommodations should be included in the design of all new roads as well as future road widening and reconstruction projects. Additionally, consideration of bicycle and pedestrian infrastructure is simply common practice in the United States. Nearly 100 years ago in 1914, the American Association of State and Highway Transportation Officials (AASHTO) was founded. AASHTO is responsible for establishing highway design parameters in the United States. Regarding bicycle infrastructure, AASHTO reminds all transportation officials of the importance of bicycling on our roadways:

"All roads, streets, and highways, except those where bicyclists are legally prohibited, should be designed and constructed under the assumption that they will be used by bicyclists. Therefore, bicyclists' needs should be addressed in all phases of transportation planning, design, construction, maintenance, and operations. All modes of transportation, including bicyclists, should be jointly integrated into plans and projects at an early stage so that they function together effectively."

On September 9, 2013 the United States Federal Highway Administration encouraged engineers to be flexible in bike design. The memorandum asks engineers to use the guidelines of the National Association of City Transportation Officials (NACTO) that had up to this date been rejected. This endorsement of the NACTO guidelines should help engineers working on projects in McHenry County by providing new solutions to difficult problems and by making these ideas mainstream.

Figure 64: Why are You Using the Prairie Trail on October 21, 2011?



Goal 5. Environmental Quality

The goal is to promote ecological and human health. One objective of this plan is to balance the other objectives with the need to protect and enhance natural habitats and improve the quality of life in certain neighborhoods. One objective is to adopt innovative best practices in roadway design to limit or mitigate negative impacts to surface and ground water. Another objective of the plan is to identify transportation infrastructure to promote healthy and active living.

Increased levels of bicycling and walking would result in significant benefits in terms of health and physical fitness, the environment, and transportation-related effects. Bicycle and pedestrian facilities are also often an expression of community pride and character, and improve the general livability of the community. HUD, USDOT, and USEPA use 6 livability principles to guide their joint decision making. They stress that quality of life factors should be a central component in determining public investment at all planning levels. Two of these principles are directly related to implementing bike/ped facilities: 1.) Provide more transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.; and 2.) Value communities and neighborhoods by investing in healthy, safe and walkable neighborhoods – rural, urban, or suburban. The following are some benefits resulting from the implementation of bicycle and pedestrian facilities.

DIRECT ENVIRONMENTAL BENEFITS

Replacing automobile trips with non-motorized and non-polluting bicycling or walking trips can lead to significant environmental benefits. Increased use of non-motorized transportation modes can help reduce levels of carbon monoxide and other pollutants. These pollutants from automobile usage are detrimental to ecosystem health, contributing to acid rain, global climate change, and excess nitrogen levels in aquatic and terrestrial systems. The EPA reported that every gallon of gas burned releases 20 pounds of carbon dioxide (CO₂) into the air. By comparison, walking and biking for short trips (less than 1 mile), instead of taking a car, can reduce CO₂ emissions by 12 to 22 million tons per year.

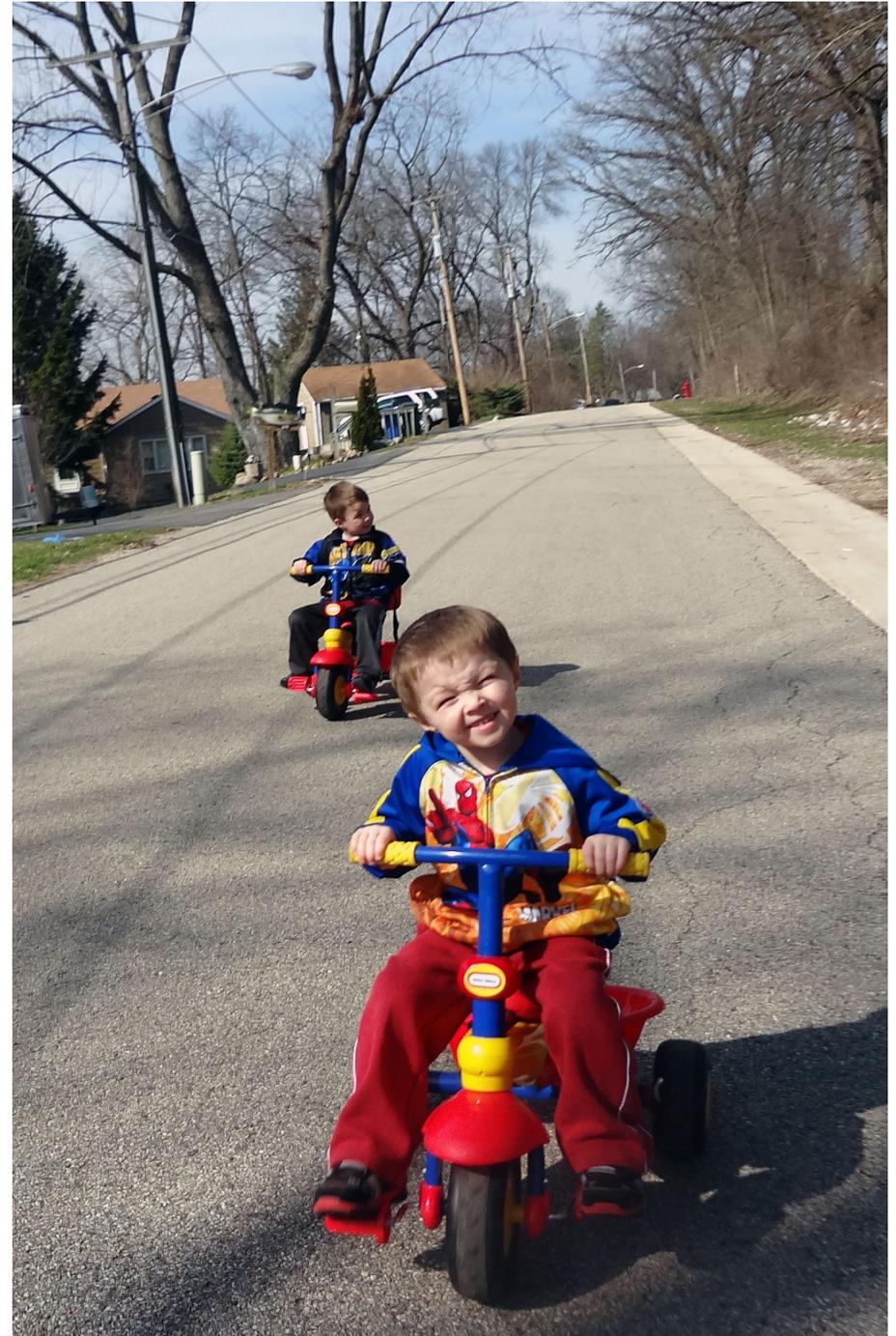
DIRECT HEALTH BENEFITS

Bicycle and pedestrian facilities give residents of all ages the opportunity to integrate moderate exercise with daily trips to shop, work, or school. There is strong scientific evidence that regular physical activity promotes health and reduces risk of many diseases and premature death. Such moderate exercise has been proven to reduce the risk of developing coronary heart disease, diabetes, obesity, depression and several other medical conditions. A recent report by the Centers for Disease Control and Prevention has shown that 38% of US adults fail to even take a ten minute walk in a given week. According to the U.S. Department of Health and Human Services (HHS), "approximately 300,000 U.S. deaths a year are associated with obesity and overweight." Additionally, the U.S. Surgeon General recommends moderate physical activity for 30 minutes a day, five days a week.

Creating safe places for people to bicycle and walk are critical to allowing inactive people to become more active. Even though individuals must choose to exercise, communities can make that choice easier by providing attractive and safe networks of sidewalks, bike lanes and trails. Dr. William Dietz, director of the Division of Nutrition and Physical Activity for the Centers for Disease Control and Prevention in Atlanta, said most communities designed since World War II are unfriendly to pedestrians and cyclists. He noted that, “A quarter of all trips taken by Americans are under a mile, but 75% of those trips are done by car.” And people living in the most sprawling areas are 25-30% less likely to walk, and are likely to weigh about 6 pounds more (Barnett 29-30). Another benefit of bicycling and walking in terms of physical health is a reduction in health care costs. According to a National Parks Service study on the Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors, people who exercise regularly have 14% lower claims against their medical insurance and spend 30% fewer days in the hospital. In one local example, McHenry County’s Wellness Committee encourages County employees to get at least 30 minutes of exercise a day in an effort to reduce health insurance costs. In addition, the McHenry County Health Department has begun advocating for active transportation by awarding “We Choose Health” grants to local school districts and municipalities for “complete streets” projects.

IN-DIRECT HEALTH BENEFITS

Transportation related air pollution also increases public health costs. Air pollution from tailpipe emissions is linked with pulmonary, coronary, and neurological diseases, including asthma, cancer, heart disease, heart attacks, strokes, high blood pressure, birth defects, and brain damage. Any reduction in tailpipe emissions resulting from individuals choosing to walk or bike will indirectly improve the environment and health of the community.



Goal 6. Transportation and Land Use

The goal is to prioritize economic development by supporting development and industry. An objective of the plan is to identify areas of high employment and areas of higher unemployment levels that can positively benefit from new transportation infrastructure investments.

Bicycle and pedestrian facilities enhance the quality-of-life of communities by providing greater opportunities for outdoor recreation. The presence of these facilities helps communities build pride by ensuring that neighborhoods are good places to live and that children can safely walk or bike to a park or school. Safe bicycle and pedestrian facilities promote an increase in social activity. Residents can get out of their cars and connect with their neighbors using paths as a safe and healthy common ground for social interaction.

A well planned system of bicycle and pedestrian facilities is a desirable amenity and can contribute to the economic vitality of McHenry County. Linking paths to commercial areas is crucial to developing, attracting, and retaining a talented workforce since opportunities for walking and biking are increasingly desired by young professionals. By providing commuting options for employees and safe places for physical activity during breaks, bicycle and pedestrian facilities can attract high-quality businesses. Businesses choosing a location that will help attract and retain employees have been cited as the top factor when deciding on office locations. Corporate real estate executives have stated that employee quality of life issues are as important as cost when selecting a new office location.

Many development plans for homes, apartments and townhouses across the United States include pathways to create recreational opportunities along with increasing property values. Real estate agents look at trails as an amenity to attract buyers and to sell property. In a study done by American Lives, walking and biking paths

ranked third out of 39 features identified by homebuyers as important factors in their home buying decisions (NBPC Technical Brief). Having a pathway nearby has also been proven to increase the value of properties by as much as 5-20% (Transportation Outlook 2040).



Source: Woodstock Library

2040 MCHENRY COUNTY BICYCLE AND PEDESTRIAN PROJECTS

Bicycle and pedestrian projects ideas were taken from previous plans, the on-line community map, and library kiosks. Projects were prioritized if they were voted on-line with an average of 3.0 or greater, requested by an agency in writing, and

met four or more goals of the plan (See Figure 65). These are the projects that are included in the Plan Map in Figure 66. A full explanation of this evaluation is included in Appendix A.

Label	Project Name	Project Costs (\$2013)	Votes	Agency	Goals	Priority
M4	U.S. 14 Side Path from Community College to Woodstock*	\$0	Yes	Yes	Yes	High
M3	IL 31 Side Path from IL 176 to 120*	\$0	Yes	Yes	Yes	High
M1 & M2	IL 47 Side Path from Reed Road to Charles Road*	\$0	Yes	Yes	Yes	High
M9	Randall Road Side Path*	\$0	Yes	Yes	Yes	High
B1	Community Bicycle and Pedestrian Program*	\$9,600,000	Yes	Yes	Yes	High
B2	U.S. 14 Side Path from Crystal Lake to Cary	\$2,100,000	Yes	Yes	Yes	High
B3	Prairie Trail Extension between Ackman Road and Illinois Route 31 via Rakow Road Side Path	\$1,300,000	Yes	Yes	Yes	High
B4	Prairie Trail Extension to Moraine Hills State Park via Bull Valley Rd. and Charles Miller Rd. Side Path	\$2,800,000	Yes	Yes	Yes	High
B5	Huntley Union Marengo (H.U.M.) Trail Extension	\$2,000,000	Yes	Yes	Yes	High
B6	Lakewood Road and Ackman Road Side Path	\$800,000	Yes	Yes	Yes	High
B7	Prairie Trail Extension to Pleasant Valley via IL 176 Side Path	\$6,200,000	Yes	Yes	Yes	High
B8	U.S. 14 Side Path and IL 120 Side Path from Woodstock to Wonder Lake	\$6,400,000	Yes	No	Yes	Medium
B9	Prairie Trail Extension to Wonder Lake via McCullum Lake Road Side Path	\$1,300,000	Yes	No	Yes	Medium
B10	IL 120 Side Path between Woodstock to Wonder Lake	\$3,900,000	Yes	No	Yes	Medium
B11	IL 173 Side Path between Richmond and Chain O'Lakes Park	\$2,500,000	Yes	No	Yes	Medium
B12	IL 176 Side Path between Prairie Grove and Island Lake	\$1,600,000	Yes	No	Yes	Medium
B13	Prairie Trail Extension from Prairie Grove to Moraine Hills State Park	\$8,000,000	Yes	Yes	No	Medium
B14	Moraine Hills State Park to Lake County Trail	\$5,400,000	Yes	Yes	No	Medium
B15	Huntley Union Marengo (H.U.M) Connector to Pleasant Valley Trail	\$1,400,000	Yes	Yes	No	Medium
B16	IL 120 Side Path between McHenry and Lakemoor Corridor Preservation	\$1,500,000	No	No	Yes	Preservation
B17	IL 173 Side Path between Harvard and Hebron Corridor Preservation	\$2,300,000	Yes	No	No	Preservation
B18	IL 23 Side Path between Harvard and Marengo Corridor Preservation	\$2,200,000	Yes	No	No	Preservation
B19	Greenwood Road Side Path Corridor Preservation	\$500,000	Yes	No	No	Preservation
B20	U.S. 20 Side Path from Marengo to Boone County Line Corridor Preservation	\$600,000	Yes	No	No	Preservation
M8	Ringwood Road and Spring Grove Road Corridor Preservation	\$300,000	Yes	No	No	Preservation
B22	IL 173 Side Path between Chemung and Boone County Line Corridor Preservation	\$300,000	Yes	No	No	Preservation
*Note: Costs for these are included as part of the motorized vehicle plan.		\$63,000,000				

Figure 65: Project Evaluation of Goals Met

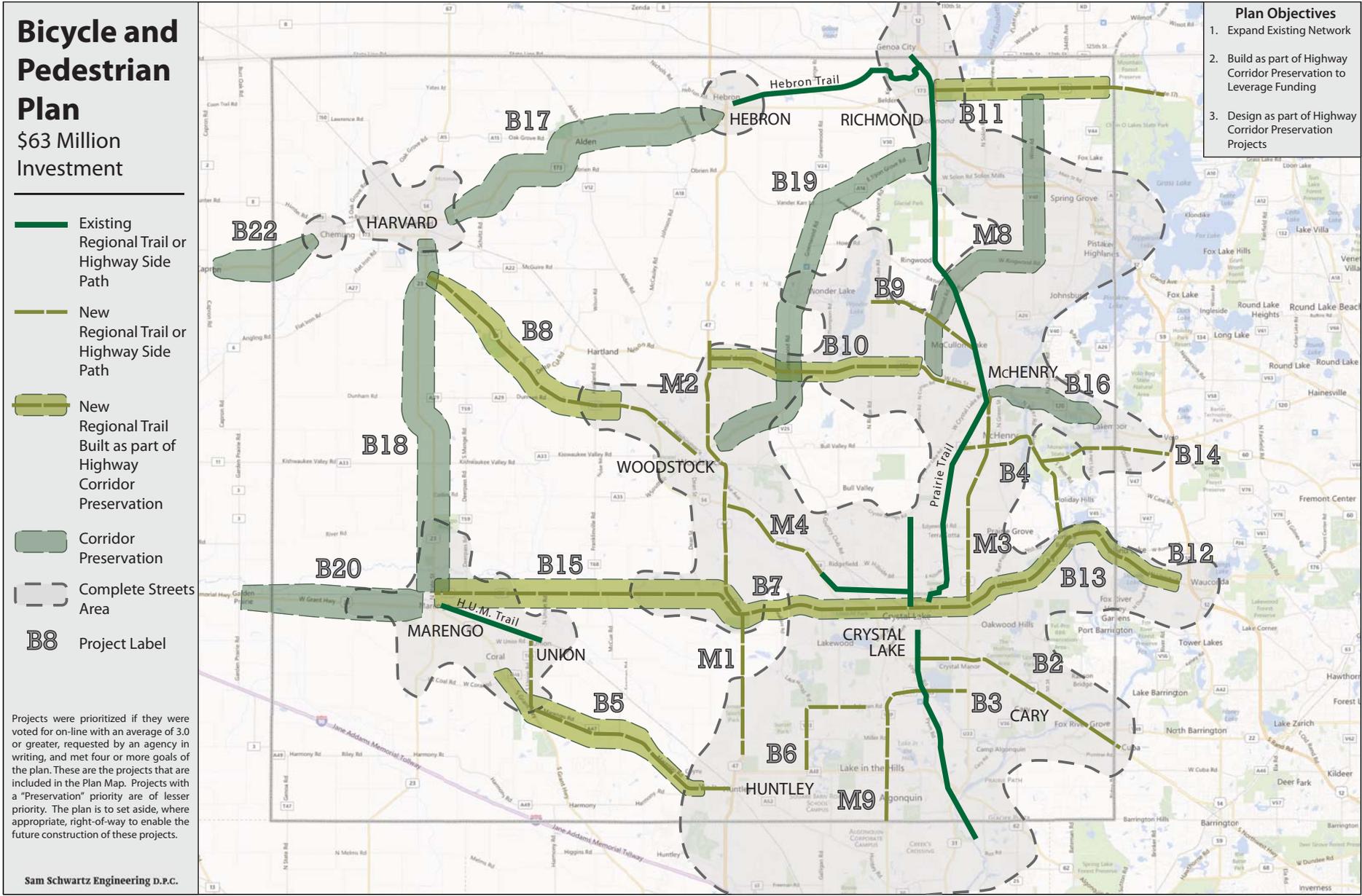


Figure 66: Bicycle and Pedestrian Plan

A multi-use greenways trail is a facility designed to accommodate longer distance travel and includes amenities such as paved surface, directional signage, and heavy native vegetation for shade. Complete streets area encompasses existing and future urbanized areas of the County where bicycles and pedestrians should be expected users of the streets and highways. Complete Streets is an initiative to provide pedestrians a comfortable walking environment and easy access to walkable

destinations, bicyclists with clearly marked bike lanes and adequate bicycle parking and transit users with connections to bicycle and pedestrian facilities. Complete Streets aims at providing communities a greater ability to gather, exercise, and relax in the town center, as well as improving property values by facilitating sidewalk dining and street sales. A full detailed description of each project and associated public comments are included in Appendix A.

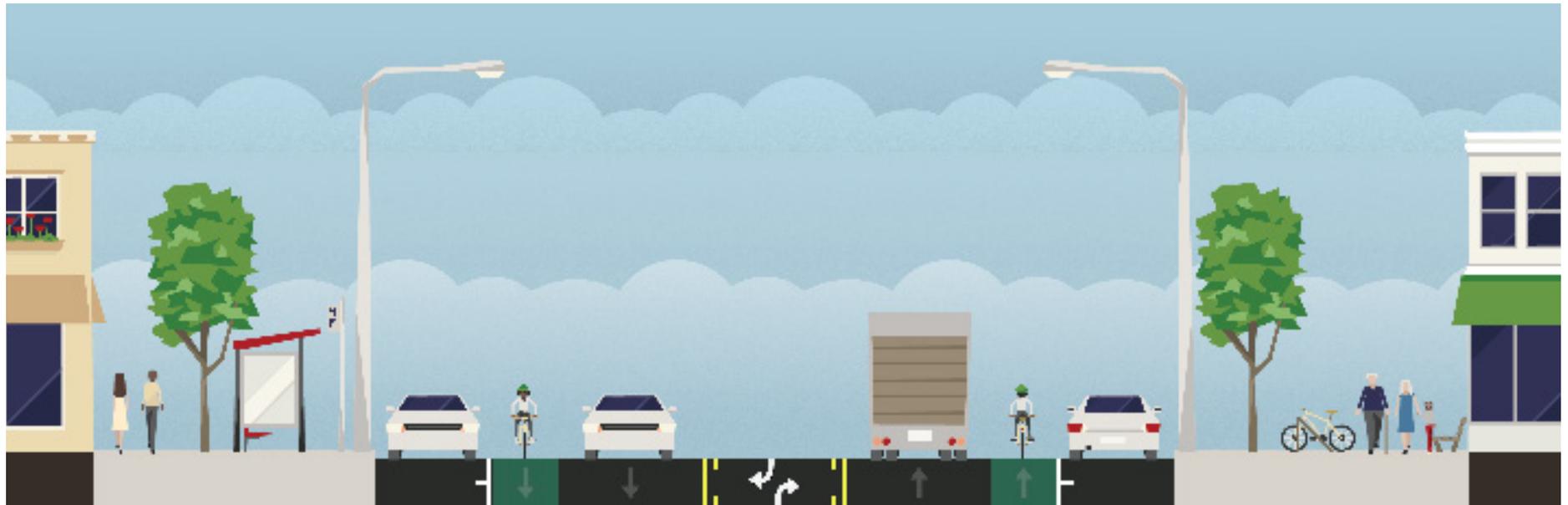


Figure 67: Cross-section of a Street Built to Accommodate All Users (Project B1)

Image Credit: Streetmix.net

Funding for bicycle and pedestrian accommodations depends heavily on the allocation of funding for highways. Many grants are available and the projects tend to be much smaller than highway projects in terms of engineering requirements, costs, and implementation time-lines.

Between 2015 and 2040, \$63 million (\$2.5 million each year), is estimated for new bicycle and pedestrian facilities in the County. Of this, \$11 million could be available from County funds. An additional \$36 million is likely to be available from state and federal grants. The plan estimates the municipalities will be able to contribute approximately \$16 million in local public works funding for projects based on historic financial efforts of the local municipalities.

County MFT	County RTA	RTA	IDOT ISTHA	USDOT	Local	Total	Per Year	
\$0	\$11	\$0	\$16	\$20	\$16	\$63	\$2.5	New

Figure 68: Estimated Bicycle and Pedestrian Funding by Source

One manner to maximize the effectiveness of local tax revenues is to leverage the Illinois Department of Transportation's Complete Streets policy which requires the Department to design and construct sidewalks and sidepaths (shared use paths adjacent to roadways) as part of any major State Highway project. IDOT will design, purchase right-of-way to accommodate, and build sidewalks and sidepaths if local funding to match 20% of the construction costs is identified and a local agency(ies) takes responsibility for facility maintenance. At this time, IDOT is designing sidepaths, sidewalks, and adequate crossings as part of the Illinois Route 47 between Reed Road and U.S. 14 project, the Illinois Route 47 between U.S. 14 and Charles Road project, and the Illinois Route 31 from Illinois Route 176 to Illinois Route 120 project. Should a local funding source be identified

to match the construction costs and assume future maintenance responsibilities, the state will then include the designed bicycle and pedestrian infrastructure as part of the highway construction. If no local match is identified, the designed facilities will not be built.

A second way to maximize the effectiveness of local tax revenues is to not make existing conditions for bicyclists and pedestrians worse. For example, conditions can be made more difficult through the elimination of usable shoulders or construction of impassable highways.

This chapter presents the long term transportation plan for transit services and infrastructure in McHenry County. It highlights the need for this type of infrastructure investment and service operations in order to meet the goals and objectives of the plan. Then, the County’s potential role in implementing these types of projects is discussed.



Figure 69: Residents Access the McHenry County Administration Building using Transit

MCHENRY COUNTY'S EXISTING TRANSIT SYSTEM

Let's look at what's in place now.

The County is served by the Union Pacific Northwest commuter rail service to Chicago and limited bus service. The County has commuter rail stations in Harvard, Woodstock, Crystal Lake, Pingree Road, Cary, Fox River Grove and a branch that goes to McHenry. Many County residents also access the Milwaukee District West service at the Big Timber Road station in Elgin and the Milwaukee District North service in Fox Lake. Pace operates three bus routes in the County, the 806 between Crystal Lake and Fox Lake via McHenry and Johnsburg, the 807 between Woodstock and McHenry, and the 808 between Harvard and Crystal Lake via Woodstock. These routes, referred to as fixed-routes, operate during the week on regular fixed schedules.

Richmond, McHenry, Nunda, Algonquin, and Grafton Townships provide seniors, and some individuals with disabilities, some demand-response services. Demand-response refers to a service that requires individuals to call in advance to schedule a vehicle to provide a single trip. When these services are designed to serve the senior population and individuals with disabilities they are considered paratransit services. The City of Harvard and the City of Marengo have dial-a-ride services open to the general public. The cities of Crystal Lake, McHenry, and Woodstock are under one demand-response service called MCRide, provided through a contract between McHenry County and Pace. Other services are provided by non-profit organizations such as the Senior Care Volunteer Network and agencies such as the Veteran's Affairs Commission.

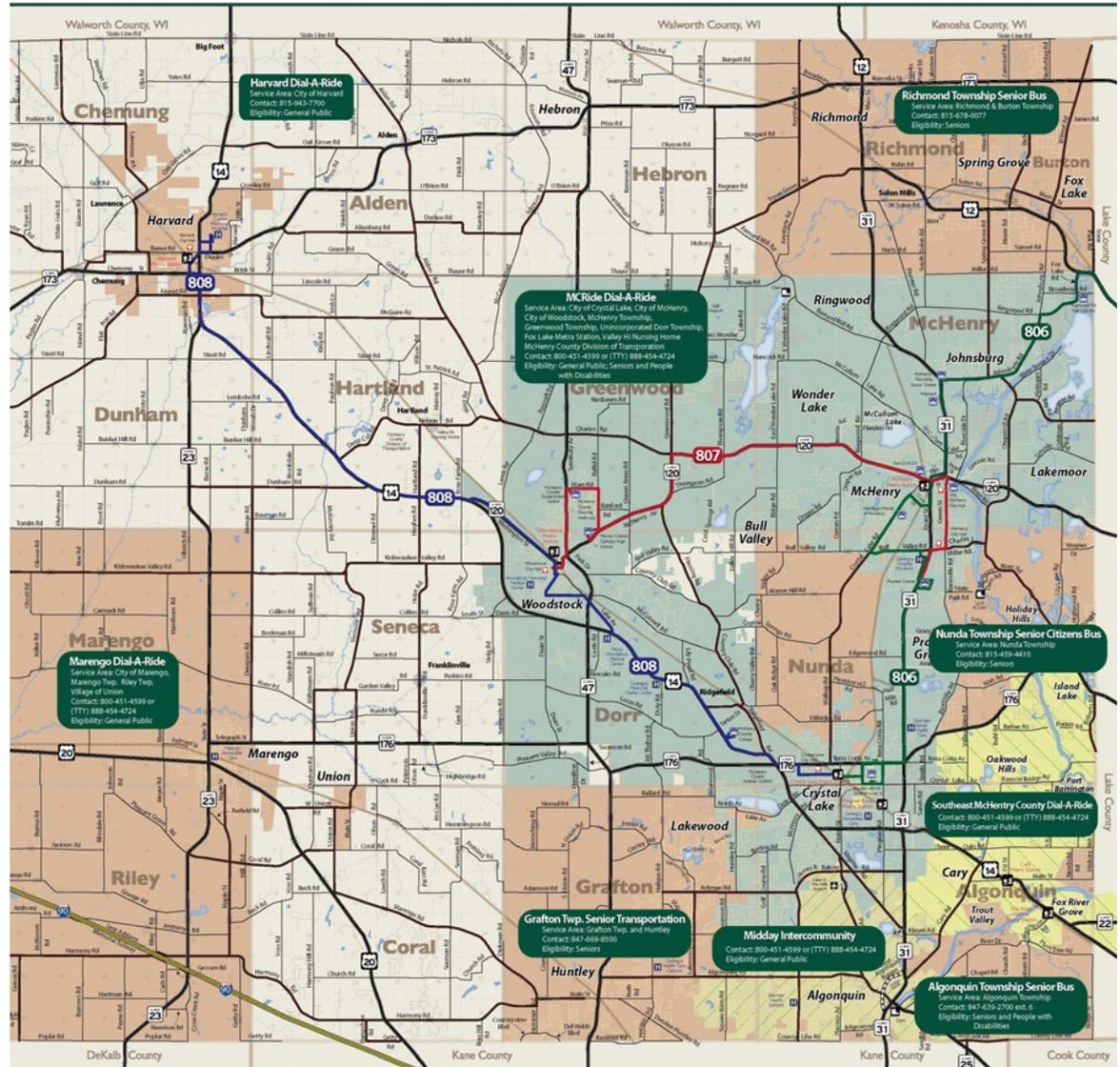


Figure 70: Existing Transit Services in McHenry County

Goal 1. Highway Congestion Mitigation

The goal is to have a reliable arterial road network. This goal is to be balanced with the need to preserve the character of McHenry County and the ability to maintain the existing transportation infrastructure.

Since 2002, the number of individuals living and working in McHenry County has declined while the number of residents working outside the County and the number of workers living outside the County have grown (See Figure 71).

The pressure to accommodate the nearly 100,000 workers commuting out of the County, over 40,000 workers coming into the County, and 50,000 workers commuting within the County has created a demand to widen highways everywhere and to expand commuter rail service to new areas. As these work pattern trends continue, the pressure on the existing transportation network to accommodate conflicting flows will grow more difficult to address. In recent years, many highway projects have been completed or initiated to address

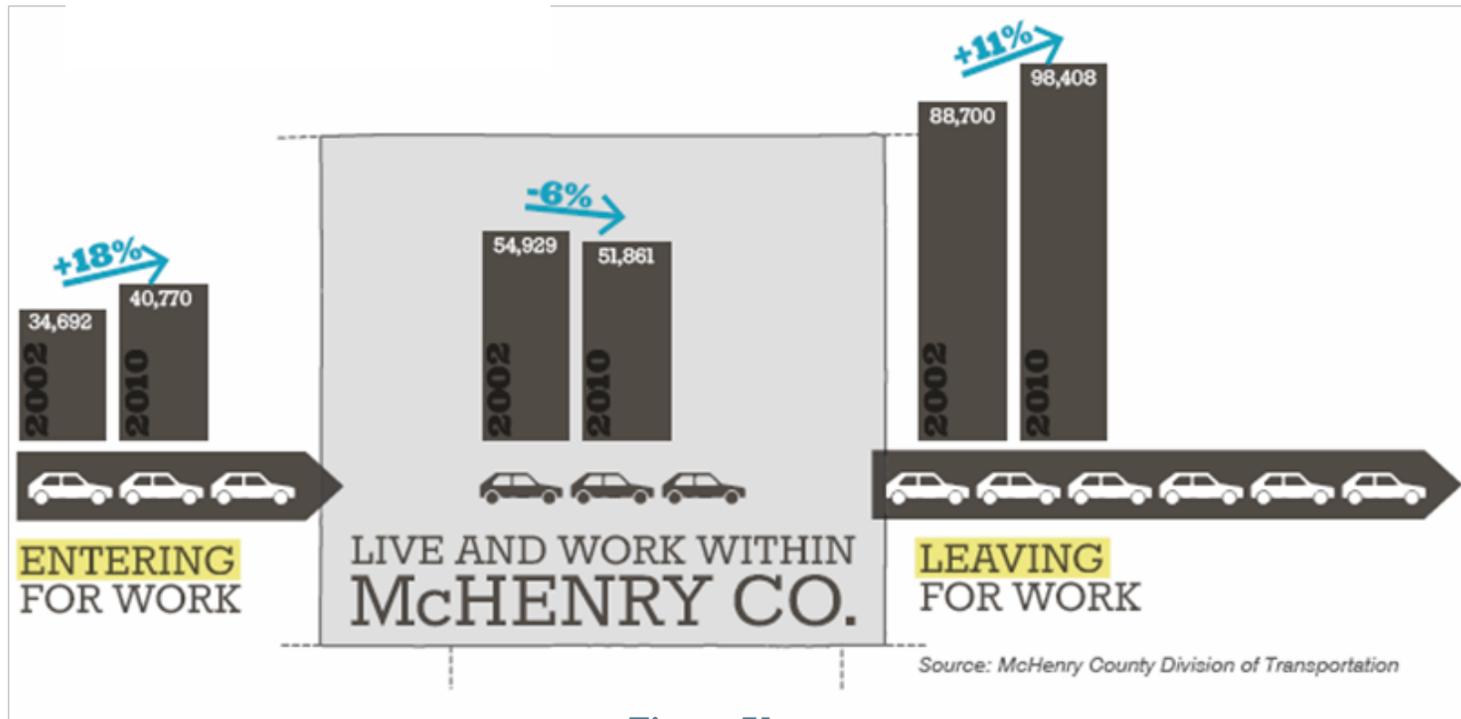


Figure 71: McHenry County Employment Travel Patterns (2002-2010 Change)

these concerns. These efforts will by design fall short of accommodating the County's future traffic needs.

By the end of 2012, U.S. 14 in Crystal Lake, IL 120 in McHenry, IL 31 from Washington Street to Running Brook Farm Road in McHenry, IL 47 south of Reed Road in Huntley, Algonquin Road, and Rakow Road had been built with what can be considered their ultimate automobile capacity. Current construction of the Western Algonquin Bypass might be the last major project to relieve chronic congestion in Algonquin. Charles J. Miller Road in McHenry is also being built to what is likely its ultimate highway capacity. Designers are currently drafting what is likely the ultimate highway capacity for U.S. 14 between Crystal Lake and Woodstock, IL 47 from Reed Road north through Woodstock to Charles Road, IL 31 from IL 176 to IL 120, and Randall Road.

Highways are designed to handle just the amount of traffic forecasted to use the highway on any given day twenty years in the future. It has generally been assumed that a new design process will begin as a highway reaches capacity in order to provide greater capacity. In the near future, a sizeable portion of McHenry County's main highways will be nearly impossible to widen to accommodate additional traffic. Traffic models predict that the average 35 minute trip today in the County will take 53 minutes in 2040 during the afternoon rush hours. This average jumped 5 minutes between 2000 and 2010. Under such circumstances, mass transit, sidewalks, and bicycle trails increasingly become the only capacity that can be added.



Figure 72: MCRide Transit Service

As highway congestion grows, transit in particular will become a quicker, more reliable, and more cost effective choice if a service is provided. When given a choice, people choose to ride transit if it is faster, more reliable, and cheaper than driving. For McHenry County residents, the largest destination for work is Chicago; and, it has been served well by passenger rail for over 100 years (See Figure 71). Between 2002 and 2010, ridership on the Union Pacific Northwest line serving McHenry County grew more than 20% from 9.1 million to 11.0 million trips/year.

In 2010, 8.7% (12,276) of the workers living in McHenry County commute to Chicago each day. This percentage has grown from 7.5% in 2002 and is now

greater than the percentage working in Crystal Lake. Of these commuters to Chicago, an estimated 40% use Metra each day (See Note). If each one of these individuals drove to work, the regional highways would have to accommodate approximately 8,400 additional vehicle trips per day, and the parking garages in Chicago would need space for an additional 4,200 spots for McHenry County residents. The high percentage of commuters using Metra to travel to Chicago is predictable because the service is faster, more reliable and much cheaper than driving and paying for parking. However, the use of transit to other destinations today is generally impossible. Where possible, the current options are slower, far less reliable, and only slightly cheaper than driving.

Note: This estimate is based on the number of Metra riders in 2006 that boarded on an average day in McHenry County and the number of workers traveling to Chicago ($4,192/10,236 = 41\%$).



Figure 73: Woodstock Station around 1910 (Source: Woodstock Library)

Goal 2. Safety

The goal is to have zero fatal collisions in the County. One objective of the plan is to identify projects and initiatives needed to improve transportation safety in the County.

Providing safe bicycle and pedestrian access to transit services is a critical aspect of making transit a real option for people. Every transit trip begins with a bicycle or pedestrian trip. In six years, the number of transportation-related fatalities in the County has been reduced by 50%. The annual number of fatalities has dropped from approximately 30 each year to approximately 14 each year. However, the annual number of bicycle and pedestrian fatalities has remained constant and trending higher, from 2 to 3 each year. These statistics suggests that bicycle and pedestrian facilities are not being improved as they are being used more. As such, improvements to bicycle and pedestrian infrastructure in the County would likely improve safety, accommodate greater bicycle and pedestrian trips, and thereby promote transit use.

Although personal safety on a vehicle has not been an issue in McHenry County, personal safety in Chicago continues to steer many away from using Metra to connect to CTA trains and buses. In a June 23, 2012 Chicago Tribune article “CTA thefts, robberies on rise since 2009”, Hilkevitch, Bodens, and Germuska provide an analysis of crime trends on the CTA. In 2011, about 5,800 crimes were reported on the CTA. Thefts were the highest number of crimes, climbing 42 percent between 2009 and 2011. CTA officials reminded the Tribune at the time that over 532 million rides were provided on the CTA in 2011. This means that a crime occurs for about every 100,000 trips.

The CTA offers safety tips including staying alert and awake. The CTA specifically asks riders to not become too engrossed in a book, an activity enjoyed by many

Metra riders. Additionally, the wooden CTA platforms drop down to electrified tracks. Those traveling with children are urged to allow extra time and to carry small children through the turnstiles and to hold them back from the edges of the platform. Parents with strollers have to use the stairs except where elevators have been installed.



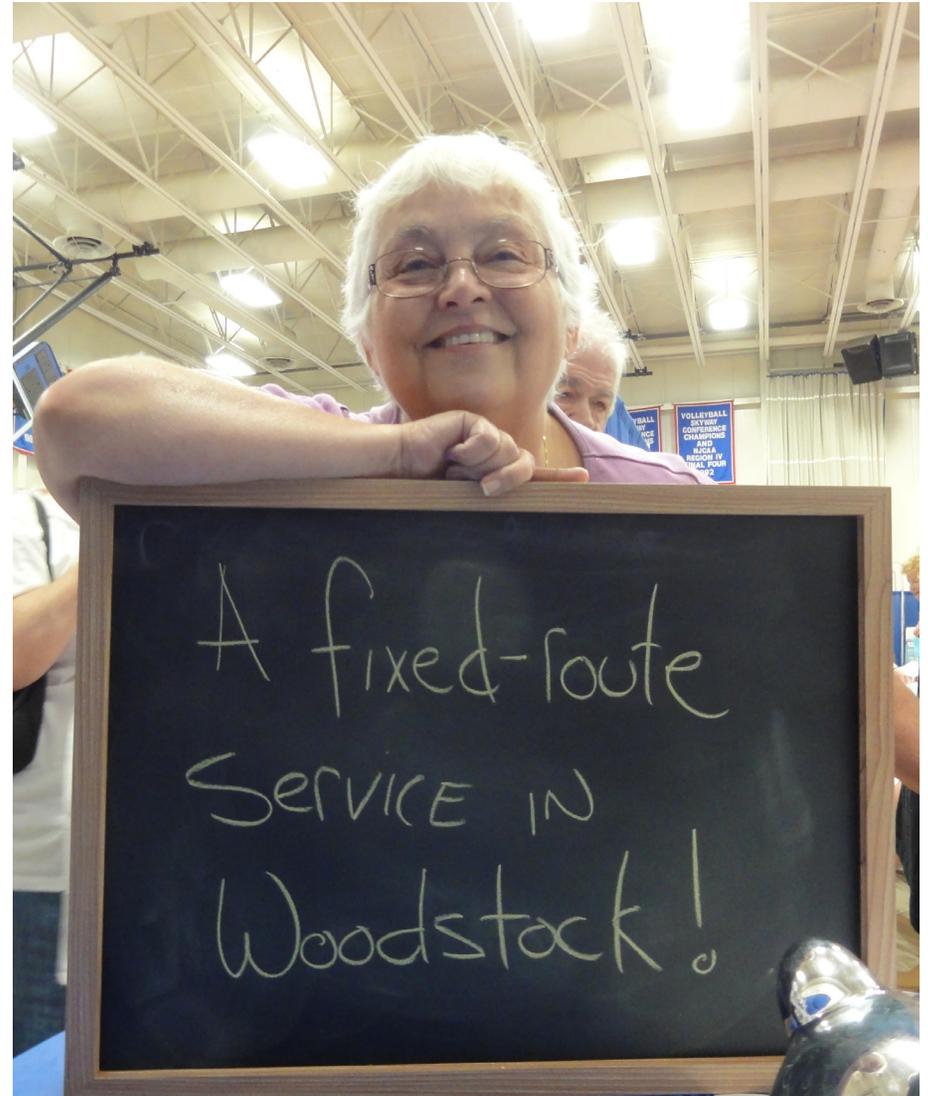
Figure 74: Pace Provides Limited Fixed Route Transit Service in McHenry County

Goal 3. Mobility for All

The goal is to improve the transportation in the County to meet the needs of seniors, children, persons with disabilities, and people without automobiles. The objective is to lower the costs incurred by individuals, families, not-for-profit organizations, and government agencies related to accessing basic services. Throughout one's lifetime, mobility generally changes with age. In McHenry County, those that drive have far greater mobility during most of their lifetime than those that cannot drive.

At a point in life where driving is no longer an option, those that learned how to access and use the limited transit services available while they were younger are likely to have greater mobility than life-long drivers. That time can come early in life following an accident or a medical procedure. For some, this could occur temporarily due to economic hardship. For all, basic and regularly scheduled transit services provide greater mobility than having to rely solely on the automobile.

With the growing elderly population, many of the senior residents are underserved by public transportation. Based on input from stakeholders in the community and research of issues and best practices, McHenry County needs to make certain improvements to accommodate the transportation needs of senior citizens. Some recommendations include coordination with other entities and public education. Also, volunteer organizations will continue to serve a critical role in senior transportation in the County. The American Association of Retired Persons (AARP) Public Policy Institute found that in order to accommodate "the mobility needs of an aging population, the focus of transportation planning and policy must shift from increasing road capacity to providing more multimodal solutions". Improvements for the aging population will also improve the quality of life for the entire community.



Goal 4. Transportation Choices

The goal is to become a bicycle and pedestrian friendly County with improved commuter rail and local bus services. One objective of this plan is to identify where missing links to the sidewalks and bikeways are needed. Another objective of the plan is to restructure local bus services and add additional commuter rail services.

Like drivers, transit riders pattern their lives based around their commutes. Unlike drivers, transit riders must conform their schedules to fit the service schedules and service types provided in McHenry County. These services have a small geographic foot-print and can be limited to early morning and early afternoon. Many make hard choices about where and how to live in order to access basic services. As such, providing transit as a true choice is a function of geographic coverage, service duration and frequency, and service type.

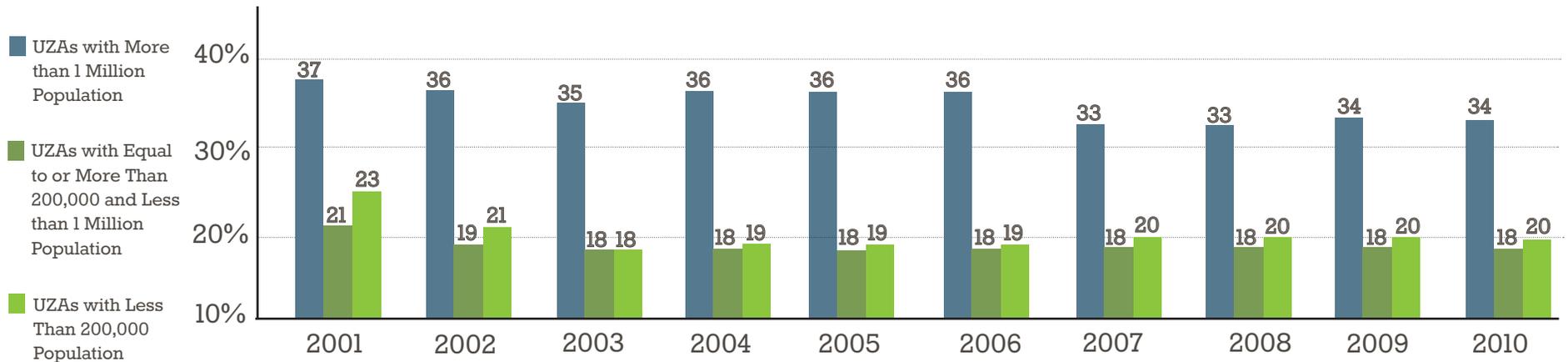
In the last thirty years, little has changed in the County in terms of transit. Metra added its first station in over 100 years in the County when the Pingree Road Station opened in 2005. In 2012, after decades of operating independently, the Crystal Lake, McHenry, and Woodstock dial-a-ride services were combined into a single service called MCRide. The McHenry Township Senior Express service is coordinated with MCRide to provide users in the Township a single contact point and greater choices. In December 2012, Pace restructured Bus Route 806 along IL 31 in McHenry and Route 807 more directly between Woodstock and McHenry, and refined the Route 808 schedule.



Figure 75: Route 807 in Woodstock

Wanting to have transit as a choice and actually using transit are two distinct indicators of need. To better predict the likely level of transit service that a given geographic area will actually support, planning staff at the Regional Transportation Authority (RTA) developed a Transit Demand Index (TDI) based on an analysis of existing service in the RTA service area. These have been correlated with a number of demographic characteristics and the ones with the most direct relationships identified. This means that areas shown to be able to support a certain level of transit service by the TDI are not based on general transit market indicators but on very specific indicators of where and when transit meets the performance expected in the Chicago region. The threshold for the provision of transit services in Chicago is in general far more difficult to meet than other areas of the Midwest. For example, urban areas with over 1,000,000 persons tend to have fare box recovery ratios, an indicator of how much the costs are covered by fare revenues, between 30 and 40 percent. Urban areas less than a million will have recovery ratios around 20% (See Figure 76).

The RTA Analysis shows that an increased potential for transit ridership is based on adult population and senior population. People in households with children are less likely to ride transit. More cars in a household will reduce transit demand. Also, retail workers have a high likelihood of riding transit, while other types of employment do not. The RTA has created an online map of the region (<http://www.rtams.org/RTG>) showing areas of high, medium, and low transit demand based on the TDI factors. Figure 77 shows the map for McHenry County, and adjacent areas of the RTA service area. Areas that offer medium to high levels of support for transit in McHenry County include Woodstock, McHenry, Crystal Lake, Cary, Fox River Grove, Algonquin, Marengo, Spring Grove, Richmond and the Harvard area have some quarter mile sections that show medium or high levels of support.



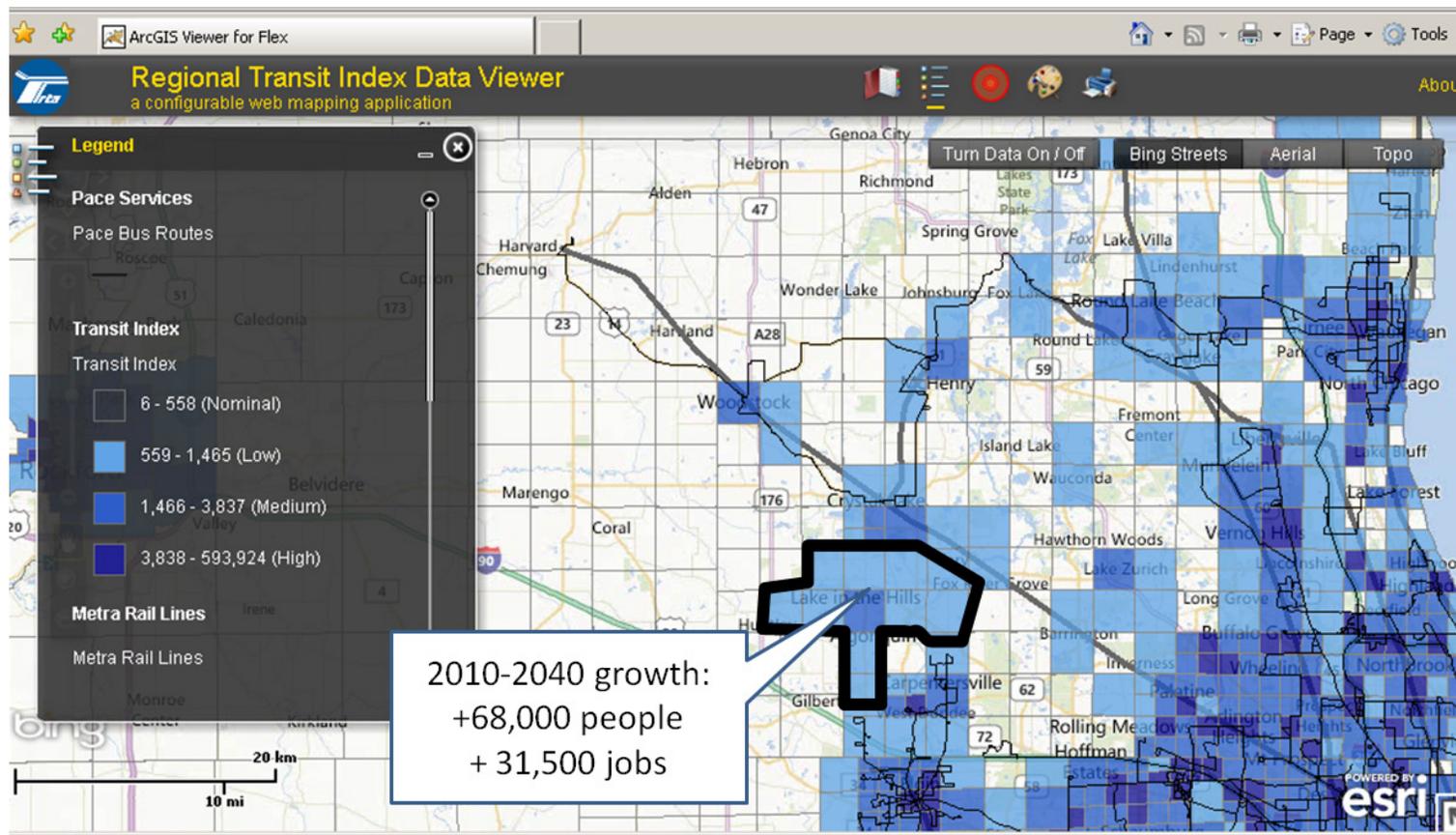
Source: Federal Transit Administration, (2011), 2010 National Transit Summary and Trends, Recovered from <http://www.ntdprogram.gov/ntdprogram/pubs/NTST/2010%20National%20Transit%20Summaries%20and%20Trends-Complete.pdf>

Figure 76: 2010 Farebox Recovery Ratios in the United States by Urban Zone Area Size (UZAs)

An area over 9 miles square between Crystal Lake, Huntley, and Elgin that has no commuter rail, bus routes, and limited demand-response/paratransit services meets the criteria for low to medium transit service. This area encircled in Figure 77 had 106,000 residents and 26,600 jobs in 2010. By 2040, this area will become far more transit supportive. Between 2010 and 2040, over 30% of the population

growth of the County will likely occur in this area. An estimated 68,000 additional persons will be living here for a total of 174,000 and an additional 31,500 jobs are to be added making the total jobs in this area 58,100.

The factors used by the RTA develop the regional TDI, in their order of significance, are:



1. Demographic

- Number of adults (18 to 64)
- Number of seniors (65 and older)
- Number of children (17 and under) – negatively correlated
- Number of vehicles in household – negatively correlated

2. Employment

- Retail employment
- Non-retail employment

Figure 77: Regional Transit Index

Goal 5. Environmental Quality

The goal is to promote ecological and human health. One objective of this plan is to balance the other objectives with the need to protect and enhance certain habitats and improve the quality of life in certain neighborhoods. One objective is to adopt innovative best practices in roadway design to limit or mitigate negative impacts to surface and ground water. Another objective of the plan is to identify transportation infrastructure to promote healthy and active living.

Increased levels of transit use would result in significant benefits in terms of health and physical fitness, the environment, and transportation-related effects. The following are some benefits resulting from the implementation of expanded transit services in the County.



DIRECT ENVIRONMENTAL BENEFITS

Replacing automobile trips with shared mass transit trips can have significant environmental benefits. Between 30 and 45 percent of Americans live in areas impacted by traffic-related air pollution. A single person, who replaces a 20-mile round-trip car commute with public transit can reduce his annual CO2 emissions by 4,800 pounds per year, equal to a 10 percent reduction in all greenhouse gases produced by an average two-adult, two-car household (Davis, Todd, and Monica Hale. (2007) Public Transportation’s Contribution to US Greenhouse Gas Reduction. McLean, VA: American Public Transportation Association). McHenry County residents, with their longer than average commutes, will see even greater health benefits when using transit.

DIRECT HEALTH BENEFITS

Transit is inherently linked with active modes of transportation, such as walking and biking. In fact, each transit trip typically generates two trips by foot: one for the rider to reach the transit vehicle; and another for the rider to get from the vehicle to their destination. These short trips taken by “active” modes of transportation are important in helping to improve community health. It is estimated that public transit users take 30 percent more steps and spend roughly eight more minutes walking each day than drivers (Edwards, R. 2008. Public Transit, Obesity, and Medical Costs: Assessing the Magnitudes. Preventative Medicine, 46(1); 14-21. January.).

Goal 6. Transportation and Land Use

The goal is to prioritize economic development by supporting development and industry. An objective of the plan is to identify areas of high employment and areas of higher unemployment levels that can positively benefit from new transportation infrastructure investments.

Transit oriented development (TOD) is a recognition of the difficulties and opportunities of transit services. Difficulties include providing service in areas of large single land use, such as 2,000 unit residential subdivisions and 500,000 square foot commercial strips. Opportunities include encouraging and supporting mixed-use developments of smaller residential, industrial, and commercial developments that are walkable and easier to serve with transit services. Land use patterns that are dense and diverse are critical to the success of fixed route bus services.

When developing the Transit Demand Index (TDI), the RTA found that retail employment in particular is a strong indicator for transit suitability. Service jobs pay less than other jobs. As such, those within the retail sector are more likely than the rest of the work force to seek transit as a superior economic choice. This might be particularly true in McHenry County. Transportation and housing costs exceed 60% of household income throughout much of the County. A housing and transportation affordability index created by the Center for Neighborhood technology shows that McHenry County has costs much higher than other populated areas of northern Illinois (Figure 78). This is an important factor as economic growth in the County may be less as a result of high housing and transportation costs.

According to the McHenry County 2030 Comprehensive Plan, the County should advocate for best practices and work with other jurisdictions to ensure that the

regional transportation network provides adequate access to transit stations for pedestrians, bicyclists, and motorists alike. The County should also look to expand transit service into areas with high transportation and housing costs in order to make these areas more affordable. According to the American Public Transportation Association, a household in the Chicago region can save almost \$12,000/year if they can eliminate one car by using transit.

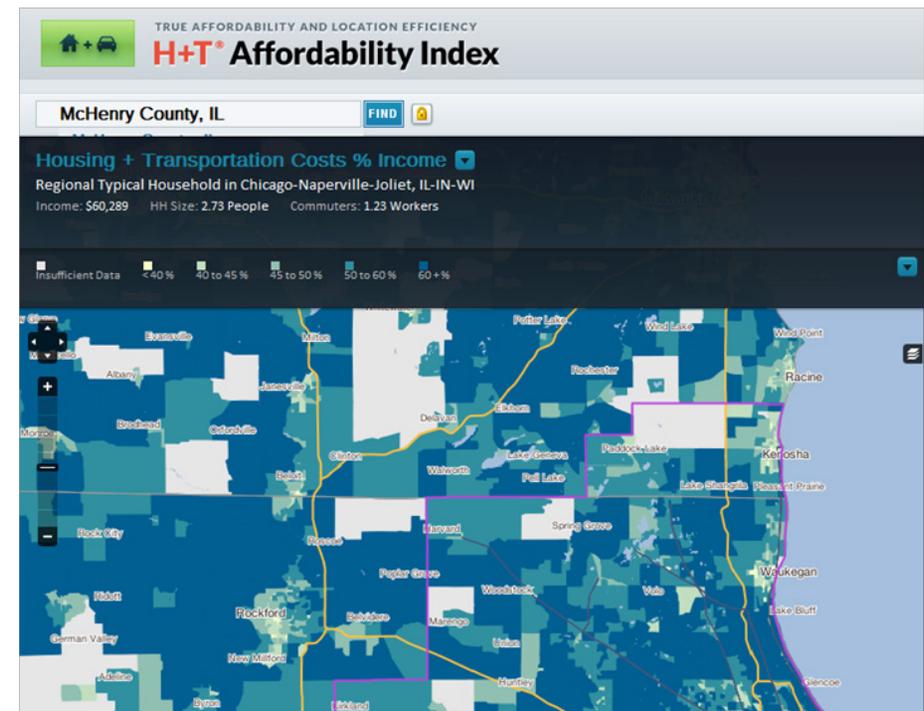


Figure 78: Housing and Transportation Affordability Index

Transit service concepts were developed by a consultant team led by TranSystems Inc. over the course of a year of study. A Transit Steering Committee was created including representation from the Illinois Department of Transportation, the Regional Transit Authority, Pace Suburban Bus, Metra Commuter Rail, McHenry County Council of Mayors, Pioneer Center, and the McHenry County Council of Governments. The steering committee reviewed market conditions for transit service and contemplated the best solutions to pursue over the next several years with consideration for distant future services. These projects were presented to individual focus groups and posted on the 2040 Plan website for individual rankings. The projects, estimated project costs, and a review of plan goals met are summarized in the following table (See Figure 79). These are the projects that are included in the Plan Map in Figure 80. A full explanation of this evaluation is included in Appendix D.

The Randall Road, IL 31, and Algonquin Road bus service projects and the Huntley Area Dial-a-Ride service are proposed to meet the gap of service and needs indicated by the RTA’s TDI index in Huntley, Lake in the Hills, southern Crystal Lake, and Algonquin. The Richmond Area Dial-a-Ride and the Richmond to Fox Lake Metra Shuttle are proposed to better serve the growing communities of Richmond and Spring Grove. All of the transit projects listed in Figure 79 would require additional financial resources.

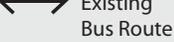
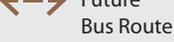
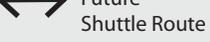
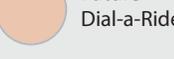
Public comments are summarized in Appendix E. During the open houses for the draft plan held in November 2013, the need to provide County-wide paratransit services to meet the basic transportation needs of seniors and individuals with disabilities was cited multiple times. Future coordination of efforts of demand-response services should keep this goal in mind.

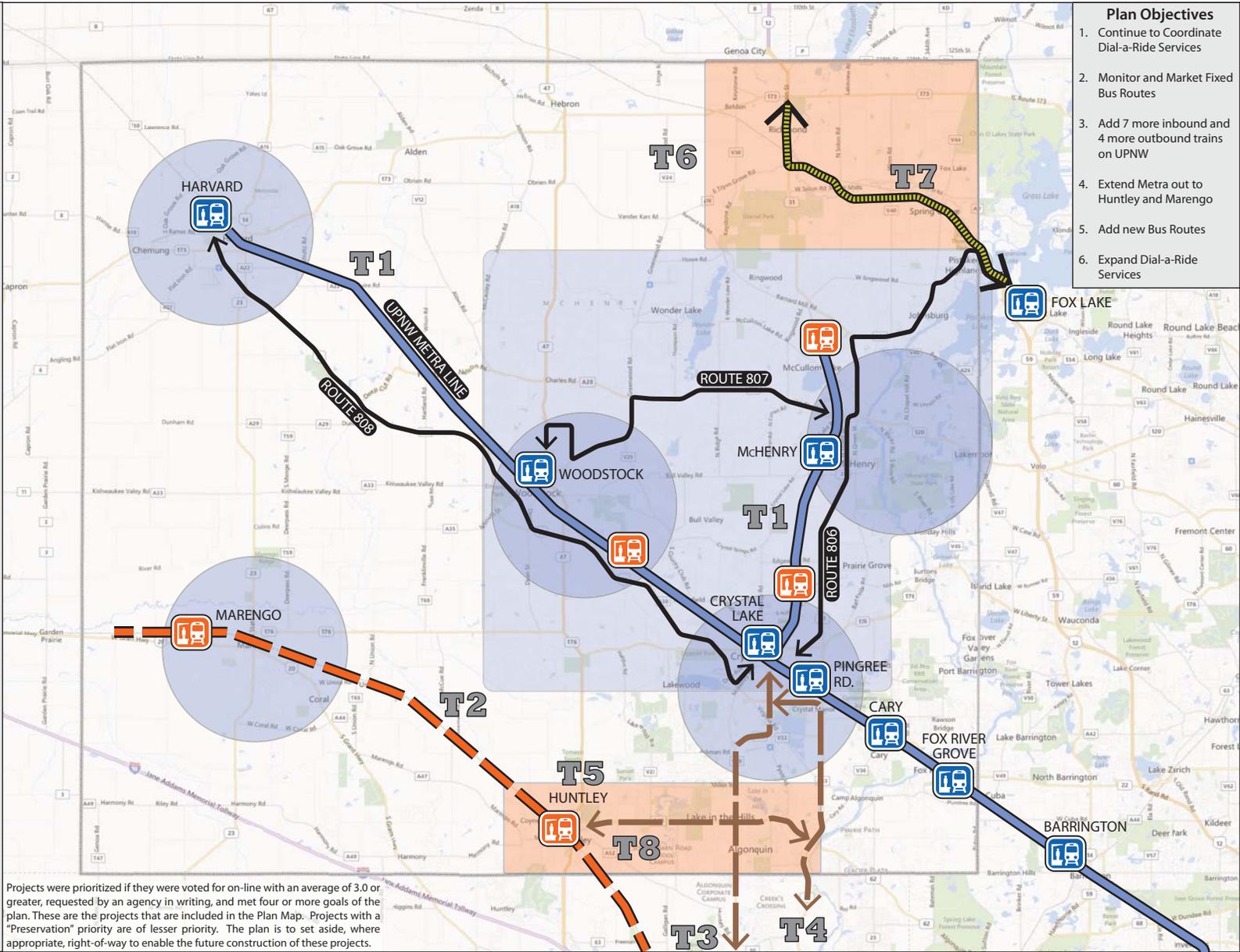
Label	Project Name	Project Costs (\$2013)	Votes	Agency	Goals	Priority
T1	Metra Union Pacific Northwest Line Capital and Capacity Upgrades	\$442,600,000	Yes	Yes	Yes	High
T2	Metra Milwaukee District West Line Extension to Huntley, Union, and Marengo	\$154,400,000	Yes	Yes	Yes	High
T3	Randall Road from Crystal Lake Metra to Elgin Transportation Center Bus Service	\$23,600,000	No	Yes	Yes	High
T4	IL Route 31 between Crystal Lake and Elgin Transportation Center Bus Service	\$13,200,000	No	Yes	Yes	High
T5	Algonquin Road Bus Service from Del Webb/Future Metra station to downtown Algonquin	\$13,200,000	No	Yes	Yes	Medium
T6	Richmond Area Dial-a-Ride Service	\$3,600,000	No	Yes	Yes	Medium
T7	Richmond and Spring Grove to Fox Lake Metra Station Shuttle	\$2,600,000	No	Yes	Yes	Medium
T8	Huntley Area Dial-a-ride Service	\$6,500,000	No	No	Yes	Low
		\$659,700,000				

Figure 79: Project Evaluation of Goals Met

Transit Plan

\$660 Million Investment

-  Existing Metra Station
-  Future Metra Station
-  Existing Metra
-  Future Metra
-  Existing Bus Route
-  Future Bus Route
-  Future Shuttle Route
-  Existing Dial-a-Ride
-  Future Dial-a-Ride
- T8** Project Label



- ### Plan Objectives
1. Continue to Coordinate Dial-a-Ride Services
 2. Monitor and Market Fixed Bus Routes
 3. Add 7 more inbound and 4 more outbound trains on UPNW
 4. Extend Metra out to Huntley and Marengo
 5. Add new Bus Routes
 6. Expand Dial-a-Ride Services

Projects were prioritized if they were voted for on-line with an average of 3.0 or greater, requested by an agency in writing, and met four or more goals of the plan. These are the projects that are included in the Plan Map. Projects with a "Preservation" priority are of lesser priority. The plan is to set aside, where appropriate, right-of-way to enable the future construction of these projects.

Sam Schwartz Engineering D.P.C.

Figure 80: 2040 Transit Services Map

Federal funding is critical for new transit service and capital infrastructure. On the other hand, local funding from the RTA, County, and other local agencies is very important to fund transit operations. Between now and 2040, modest increases in the amount of funding for transit are estimated given current trends. Most of this is a result of assuming federal funding for Metra’s Union Pacific Northwest line upgrades (\$380 million).

It is important to note that transit funding for new projects must compete for limited funds. As such, it is imperative that McHenry County puts a strategy in place to most effectively and efficiently pursue the limited dollars. It will be important for the County to team with other entities. For example, to implement bus service along Randall Road, partnerships with Kane County and the City of Elgin will be needed.

County MFT	County RTA	RTA	IDOT ISTHA	USDOT	Local	Total	Per Year	
\$0	\$24	\$275	\$0	\$0	\$12	\$311	\$12.4	Operation
\$0	\$0	\$70.9	\$83	\$503.5	\$3	\$660.4	\$26.4	New
\$0	\$24	\$345.9	\$83	\$503.5	\$15	\$971.4	\$38.9	Total

Figure 81: Estimated Transit Funding by Source

Partnerships should be pursued to build park and ride lots and make infrastructure improvements like sidewalks and transit stop amenities. The County should also continue to meet with Pace and monitor service on the fixed bus routes and local dial-a-rides. The Transit Plan Implementation Task Force, created in 2006 to help implement the coordinated demand-response recommendations of the County’s 2005 Transit Plan, should continue to meet in order to facilitate these conversations and to explore actionable partnerships.



Figure 82: McHenry Township Senior Express



**McHenry County Democrat Article
May 19, 1901**

“A New Automobile”

This chapter presents the long term transportation plan to support the variety of motorized vehicles used in McHenry County. It highlights the need for this type of infrastructure investment in order to meet the goals and objectives of the plan. Then, the County’s potential role in implementing these types of projects is discussed.

Motorized vehicles have evolved considerably over the last century and now include motorcycles, sports cars, sedans, mini-vans, pick-up trucks, SUVs, numerous heavy delivery vehicles types, standard semi-trailers, and farm implements such as combines and tractors. With so many types of vehicles for almost every purpose, the total number of licensed vehicles in McHenry County has on occasion been greater than the total population. The wide-spread and enthusiastic adoption of the motorized vehicle for household uses has supported the development of local, state, and federal agencies to build and maintain a vast network of paved roadway facilities specifically designed to accommodate these vehicles.

Dr. Emil Windmueller returned a few days ago from Milwaukee, Wis., with his new steam automobile, making the trip overland, leaving Milwaukee at 2 p.m. and arriving home at 10:30 p.m. He purchased the new vehicle of the Milwaukee Automobile Company and it is one of the best and handsomest the company turns out. It is of the carriage pattern and combines all the latest improvements of modern horseless vehicles. A speed of thirty miles per hour can be maintained on good roads if the operator so desires and the doctor now has the best and fastest machine in the northwest, outside of Chicago. He found his trip from Milwaukee a most delightful one and says that in Milwaukee and Racine counties he found good roads but as soon as he crossed the borders of McHenry County he encountered horrible roads and is inclined to the belief that our roads are sadly deficient in comparison with those of our neighboring counties. The trouble seems to be that no pains are taken here to keep the loose stones off the roads.

It is a certain fact that the automobile has come to stay and we expect ere long to see several more of them in this city. The cost of these machines has now been brought within reasonable limits and they will soon come into use quite generally in the country towns. The one owned by the doctor can be used on any road a horse can travel, can be operated slow or fast, as desired, and mud or steep hills are no hindrance to it, while cobble stones only serve to help “settle the operator’s dinner” and prevent indigestion, while to scare horses they are a complete failure. -Source: Woodstock Library

Figure 83: Dr. Windmueller Drives through Woodstock

Unlike bicycle and pedestrian infrastructure, the type of facilities needed for heavy vehicles traveling at high speeds requires more rigorous engineering design. Additionally, users of motorized vehicles are required to have licenses, hold insurance, and follow the legal rules of the road to avoid being fined by police departments. The additional regulations on motorized vehicles are practical given the potential hazards and the costs to society associated with crashes and legal actions.

EXISTING MOTORIZED VEHICLE ROAD NETWORK

All but a few properties in McHenry County have direct access to a paved public roadway adequate for legally licensed motor vehicles. Most of the roads are local municipal or rural township roads (See Figure 84). The difference between the amount of travel on local roads and the amount on County, State and Federal Highways is going to grow larger over the next couple decades.

Agency	Centerline Miles	Current Afternoon Peak Use in Miles	2040 Afternoon Peak Use in Miles
Township & Municipal	1,976	330,965	496,730
County	218	241,338	348,462
State	141	246,490	311,457
Federal	58	118,947	158,927

Figure 84: Road Network by Agency



Figure 85: Intersection of Rakow Road and Pyott Road

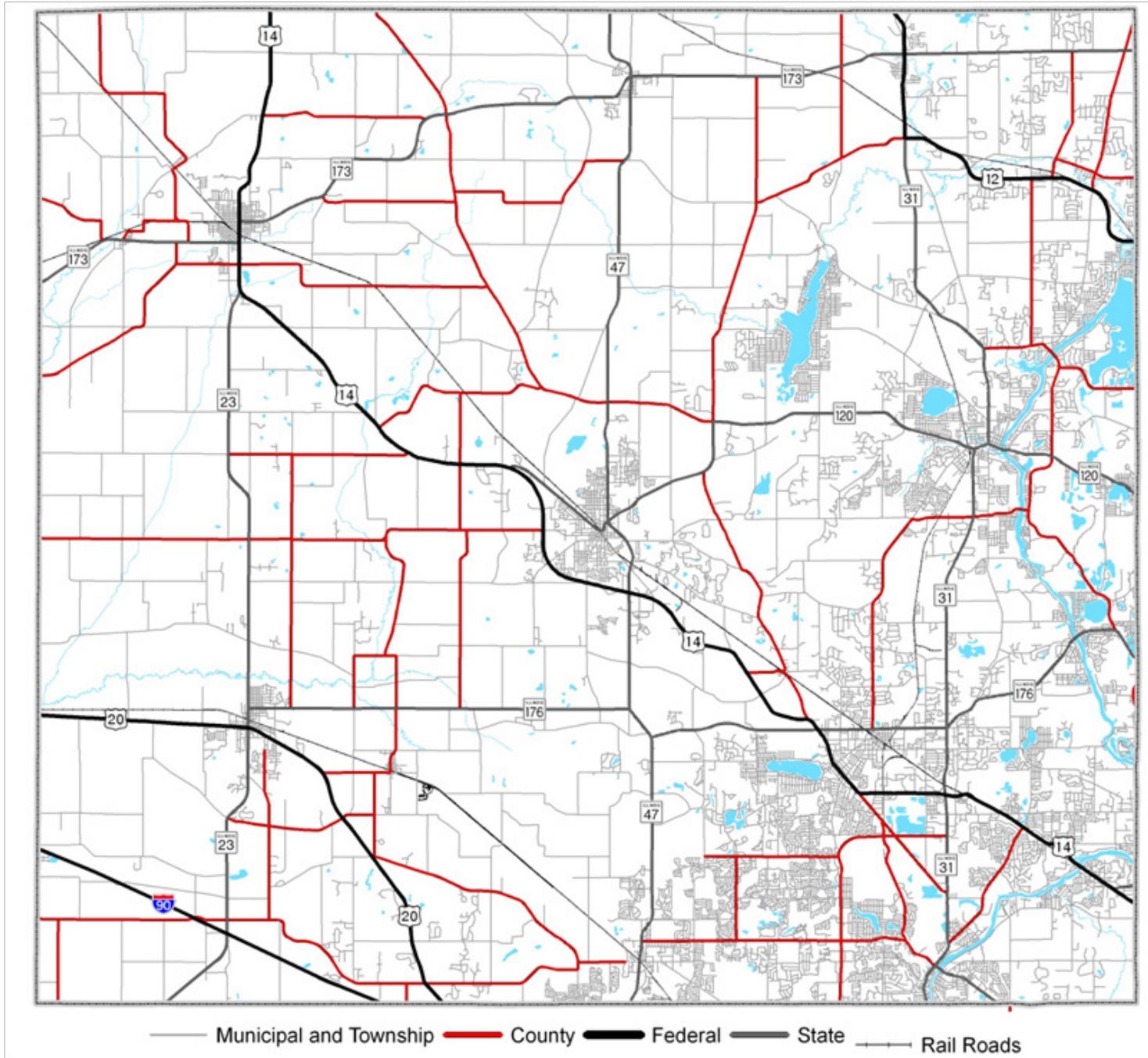


Figure 86: Existing Motorized Vehicle Road Network

Goal 1. Highway Congestion Mitigation

The goal is to have a reliable arterial road network. This goal is to be balanced with the need to preserve the character of McHenry County and the ability to maintain the existing transportation infrastructure.

An arterial highway is a roadway that serves as a major roadway within a community connecting multiple land uses (residential to industrial for example). A principal arterial is a roadway that serves as a major roadway between communities. According to the County's model for future road use, during the heaviest rush hours the number of miles traveled on arterial highways is likely to increase 50%, and by 39% on principal arterials between today and the year 2040. This increase in use will lead to the number of hours of delay during the afternoon peak on arterial roadways to increase from 751 to 2,182 or 190%, and the number of hours of delay on principal arterial roadways to increase from 2,694 to 4,969 or by 85%. Additional capacity and operational improvements to serve motorized traffic during peak hours is clearly warranted on many existing arterial highways because the amount of delay on the system is two to three times greater than the increase in use. To summarize and highlight where congestion is most likely to occur, a deficiencies analysis was undertaken and resulted in a map color-coding the areas with the highest afternoon motor vehicle capacity problems (See Figure 87 on page 90).

Currently, capacity and operational improvements for motorists are warranted on five principal arterials in the County:

- Illinois 47 in Woodstock and between Woodstock and Huntley
- Illinois 31 in McHenry and between McHenry and Crystal Lake
- Randall Road between Crystal Lake and Algonquin
- U.S. 12 in Richmond and between Richmond and Fox Lake
- U.S. 14 between Woodstock and Crystal Lake

U.S. 14 between Woodstock and Crystal Lake has been redesigned to include two additional through lanes for motorists, geometric improvements at existing signalized intersections, and to have a side path built north of the Community College for bicyclists and pedestrians. U.S. 14 from Illinois 176 in Crystal Lake to Fox River Grove has already been built to provide four through travel lanes for motorists. Initial engineering work has been completed for, Illinois Route 47, Illinois Route 31, and Randall Road. To date, the preliminary engineering for U.S. 12 has been led by the Village of Richmond and has focused on mitigating motorized traffic loads during weekends in the Village. The portion of U.S. 12 between Richmond and Fox Lake has not undergone any engineering design work.

By 2040, the deficiencies analysis indicates that capacity and operational improvements are likely to be warranted on additional principal arterials. These include Illinois Route 120/Charles Road between Woodstock and McHenry, U.S. 14 between Harvard and Woodstock, IL 176 from Marengo to Island Lake, and IL 23 between Harvard and Marengo. The traffic model forecasts much greater motorized traffic volumes on the local street network. The deficiencies analysis shows several arterial highways with high capacity deficiencies during the afternoon peak period. These include McHenry Avenue in Crystal Lake, Ringwood Road in McHenry Township, Harmony Road in Coral Township, River Road between McHenry and Island Lake, and Cary-Algonquin Road between Cary and Algonquin.

DESIGN CONSIDERATIONS

The general design elements necessary to add capacity and to make operations improvements for motorists include adding lanes to roadways and adding appropriate turning movement and vehicle queuing accommodations at roadway intersections. These design elements are typically very expensive and require years of engineering study, design, and analysis. Certain design elements can be implemented faster, such as retiming and coordinating traffic signals. Other elements can be done over time as part of the building permit process such as promoting joint access points from adjacent properties along the roadway, and requiring adequate setbacks from the roadway to enable future capacity additions.

Outside of the peak travel hours, other factors than roadway vehicle capacity influence system functionality. Special weight limits on bridges are required because of structural deficiencies and bridge closure place additional regulatory burdens and create physical barriers for truck drivers hauling heavy loads across the County. Crash incident response, reporting, and clean-up operations create unexpected delays for all users.

BRIDGE CONSIDERATIONS

To mitigate bridge related congestion, an aggressive program is needed to maintain adequate and rehabilitate deficient bridge structures. The County Board has been pursuing such a program since 2008 when the County Board's Strategic Plan tasked the McHenry County Division of Transportation to undertake more aggressive inspection cycles along with bridge maintenance and replacement practices. Since 2008, the County has increased the number of County and township bridges rehabilitated or replaced in any given year from approximately 1 to 3. As this program moves from addressing the worse structures into maintaining the best structures, it will be important to continue to evaluate and prioritize bridges in order to avoid unnecessary reductions in load weights.

INCIDENT MANAGEMENT

Coordination between road agencies and all police departments helps increase emergency response times and thereby minimizes congestion on arterial and principal arterial highways. This helps improve emergency response times to



crash incidents as well as making fast weather related repairs such as clearing of downed trees or repairing a ruptured frozen water main. A typical roadway design element to facilitate emergency response and maintenance activities includes additional roadway shoulder space.

Most roadways have been designed to accommodate peak hour volumes of motorized vehicles. Few common roadway design elements are able to improve peak hour capacity and operations, improve off peak hour capacity and operations, as well as reduce incident delays such as crash reporting and snow removal. Common design elements that fit these criteria are roundabout intersection designs, adequate bicycle, and pedestrian accommodations, and bus turn-outs.

ROUNDABOUTS

Where suitable, roundabouts are a common design element of roadways that are able to improve off peak hour capacity and operations while providing superior peak hour capacity and operations. The roundabout design has some low-tech capabilities that lead to very cost-effective operations. For example, an intersection designed as a roundabout does not require a vehicle to trigger a signal and can provide equal or greater benefits to off peak users as peak users. Almost all vehicle detectors currently in use are impossible for bicyclists and

Note: The model made assumptions based on pursued project in 2005. The model assumes additional through lanes for motorists will be added to U.S. 14 between Woodstock and Crystal Lake, to Illinois Route 47 between Charles and U.S. 14 in Woodstock, to Lamb Road between Charles and Illinois Route 120 in Woodstock, and to Randall Road between Crystal Lake and Algonquin. A few new roads are also anticipated and included in the model. A new road is assumed in McHenry extending south from the Ringwood Road and IL 120 intersection to Illinois Route 31. Ackman Road is assumed to have been extended west from Haligus Road to Illinois Route 47. Kretzner Road is assumed to have been extended south to Huntley Dundee Road. A new roadway diverting traffic west of downtown Richmond and a new bridge extending Lamb Road to U.S. 14 in Woodstock are also included.

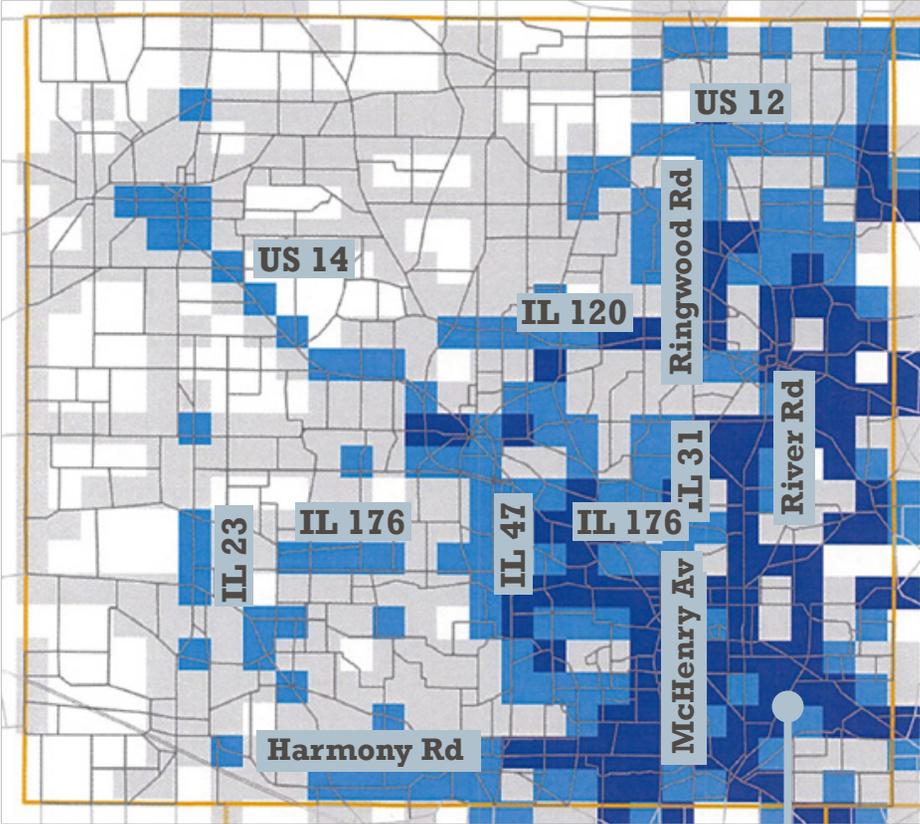


Figure 87: 2040 Roadway Capacity Deficiencies

Legend:

- Low (0-3)
- Medium (4-10)
- Medium High (11-15)
- High (16-20)

difficult for motorcyclists to trigger. Intersections without electronic control measures do not lose functionality during storm events resulting in power disruptions.

By maintaining an even flow of traffic through the intersection, roundabouts reduce energy and maintenance costs for motorists and reduce maintenance costs to roadway agencies. Roundabouts eliminate right angle turns into an intersection. This has proven to reduce the energy needed by trucks to stop and accelerate. In areas with heavy semi-trailer volumes, the need to stop and accelerate produces significant noise and traffic flow delays as the vehicles down-shift multiple gears and then up-shift multiple gears. The physical damage to the pavement is also dramatically reduced as a result. At intersections with heavy semi-trailer traffic, it is common for the pavement to fail and begin to roll or buckle like a blanket due to very heavy loads pressing hard into the pavement to make full stops.

The elimination of right angle turns at an intersection also reduces the possibility of severe injuries or fatalities occurring. Compared to a head on or angle collision at higher velocities, physics dictates how a glancing blow at reduced velocities results in exponentially less kinetic energy being transferred through the frame and panels of a vehicle onto the passengers. By all but eliminating the most powerful crash types, standard safety equipment in motor vehicles allows vehicles involved in a crash to move out of the intersection for incident reporting. This reduces the reporting and forensics necessary to be undertaken for legal and insurance purposes to a minimum. After a crash, all users benefit if injuries and fatalities are avoided. Intersections closures are minimized allowing traffic to flow at predictable rates. Medical costs are reduced as paramedic, ambulatory, County Coroner, and hospital costs are avoided. Police costs are also minimized as much less forensic work is necessary to report and make appropriate citations.

Improve Options

Other common roadway design elements that provide peak, off peak, and reduce incident delays are roadway side paths, sidewalks, and cross-walks. The County's traffic model forecasts much greater increases of motorized traffic on the local

street networks. As local streets become congested, motorists will search for alternate routes, alternate destinations, and increasingly find it more efficient to simply walk or bike to local destinations. During off peak periods, these facilities continue to provide the same benefits while limiting unsafe interactions with motorists. Following major weather events that may lead to multiple road closures for motorists, these facilities can provide a minimum level of local transportation such as allowing a short trip to purchase water or to a pharmacy to fill prescriptions.

Along bus routes, the placement of bus stops and building adequate accommodations for buses to decelerate, pull off, safely allow passengers to board and depart the bus, and then accelerate back into traffic is very important during peak hours. Without adequate space called turn-outs built for buses, the regular stopping of buses along a route can cause system-wide delays as well as temporarily close a travel lane for motorists. Space is needed to allow buses to decelerate while exiting traffic and to accelerate while reentering traffic to minimize disruptions to the expected flow.



Figure 88: Sidewalks and Bus Stops are Also Common Design Elements that Help Mitigate Congestion

Goal 2. Safety

The goal is to have zero fatal collisions in the County. One objective of the plan is to identify projects and initiatives needed to improve transportation safety in the County. As seen in Figure 89, the annual number of fatalities has dropped from approximately 30 each year to approximately 14 each year. In particular, fixed object, head on, and rear end collisions have been reduced. However, the

annual number of turning crashes remains at about 4 each year. Intersection designs that eliminate or reduce the number of potential conflicting movements would be helpful in reducing this number. Fixed object crashes also remain high. Shoulder treatments that allow for adequate vehicle recovery typically are at least 4 feet wide at 55 miles per hour and are compact enough to not cause a vehicle to rollover.

Crash Type	2005		2006		2007		2008		2009		2010		2011	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Angle	4	13%	2	6%	10	33%	2	11%	1	7%	1	7%	1	7%
Animal	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Fixed object	8	27%	11	34%	6	20%	4	22%	6	40%	4	29%	3	21%
Head on	9	30%	7	22%	7	23%	4	22%	2	13%	1	7%	1	7%
Other non collision	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Other object	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Overtaken	1	3%	2	6%	0	0%	4	22%	3	20%	1	7%	1	7%
Parked motor vehicle	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Bicyclist	0	0%	0	0%	0	0%	0	0%	0	0%	1	7%	1	7%
Pedestrian	2	7%	1	3%	2	7%	2	11%	2	13%	2	14%	2	14%
Rear end	4	13%	0	0%	0	0%	1	6%	1	7%	1	7%	0	0%
Sideswipe opposite direction	2	7%	3	9%	1	3%	0	0%	0	0%	0	0%	1	7%
Sideswipe same direction	0	0%	2	6%	0	0%	0	0%	0	0%	0	0%	0	0%
Train	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Turning	0	0%	4	13%	4	13%	1	6%	0	0%	3	21%	4	29%
Unknown	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total	30		32		30		18		15		14		14	

Figure 89: Fatal Crashes in McHenry County by Crash Type from IDOT Crash Data 2005-2011

Goal 3. Mobility for All

The goal is to improve the transportation in the County to meet the needs of seniors, children, persons with disabilities, and people without automobiles. The objective is to lower the costs incurred by individuals, families, not-for-profit organizations, and government agencies related to accessing basic services. For many years, the idea of providing mobility for all has been largely a call for alternatives to the personal automobile. In recent years, technology advancements promise to make motorized personal vehicles central to addressing mobility limitations.

Motorized vehicles greatly expand the travel range of individuals that can drive or can share the ride with someone else. However, many residents will never be able to drive and or will not be able to afford owning and operating a motorized vehicle. Recent technology advances have made driverless systems a reality. Motorized vehicles that could drive through the existing road network without a person to pilot the vehicle could revolutionize the configuration and use of motorized vehicles. Internet search engine giant Google Incorporated has developed many of the basic systems necessary to enable these vehicles (See Figure 90). Car manufacturers, Nissan Corp. and General Motors, have announced that they will develop multiple driverless models for the year 2020.

While meeting with a group at Horizons for the Blind Incorporated in Crystal Lake, the Executive Director Camillee Caffarelli asked 2040 Transportation planners when driverless vehicles were going to be permitted. Given recent technological developments, it is not entirely unreasonable to assume substantial adoption of these systems by the year 2040 in McHenry County. Furthermore,

Transportation and Infrastructure Committee Chair of the U.S. House of Representatives Bill Shuster described driverless cars in a Politico magazine article that ran on September 9, 2013 as “the future of transportation and it’s here”. As such, it is not too early to begin reviewing design and permitting issues that may present obstacles to the use of this technology.

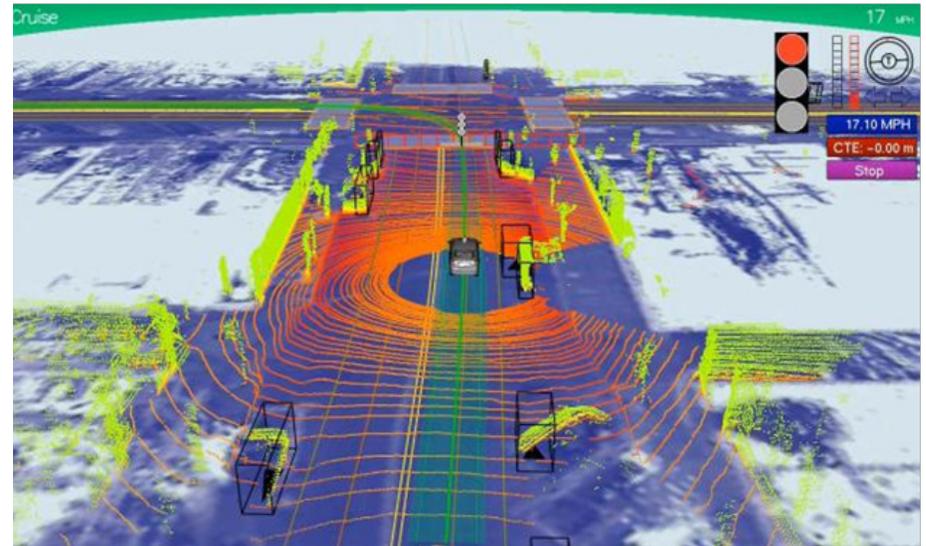


Figure 90: World View of a Driverless Google Car

Source: CNet article, Sept. 3, 2013

Goal 4. Transportation Choices

The goal is to become a bicycle and pedestrian friendly County with improved commuter rail and local bus services.

Nearly 100 years ago in 1914, the American Association of State and Highway Transportation Officials (AASHTO) was founded. AASHTO is responsible for establishing highway design parameters in the United States. Regarding bicycle infrastructure, AASHTO reminds all transportation officials of the importance of adding design components for bicyclists and pedestrians on our roadways.

“All roads, streets, and highways, except those where bicyclists are legally prohibited, should be designed and constructed under the assumption that they will be used by bicyclists. Therefore, bicyclists’ needs should be addressed in all phases of transportation planning, design, construction, maintenance, and operations. All modes of transportation, including bicyclists, should be jointly integrated into plans and projects at an early stage so that they function together effectively.” (This is also quoted in the Bicycle and Pedestrian Plan).

Collectively, this approach to roadway design and accommodation of all modes is called “Complete Streets”. In addition to including bicycle and pedestrian accommodations into future roadway designs, it is very important, as part of Complete Streets, to maintain the existing highways adequately to reduce the number of physical barriers, such as rutted shoulders and potholes, that prevent bicycling and walking. Between today and the year 2040, an estimated \$511 million dollars in highway and roadway maintenance will be needed in McHenry County. It is important to keep roadways open to bicyclists and pedestrians as well as motor vehicles during construction. During snow and heavy rain events, the effects of standard highway maintenance such as snow plowing on bicyclists and pedestrians should be considered.



Figure 91: Sidewalks Provide Accessibility for Pedestrians

Goal 5. Environmental Quality

The goal is to promote ecological and human health. One objective of this plan is to balance the other objectives with the need to protect and enhance certain habitats and improve the quality of life in certain neighborhoods. One objective is to adopt innovative best practices in roadway design to limit or mitigate negative impacts to surface and ground water. Another objective of the plan is to identify transportation infrastructure to promote healthy and active living.

Motorized vehicles require solid and dry hard surfaces built in such a way that allows for stormwater and snow melt to drain off of the surface. Additionally, motorized vehicles require adequate clear zones to avoid collisions associated with vehicles running off the road and hitting fixed objects such as trees. These requirements physically divide the habitats of McHenry County's wildlife and native vegetation as well as change the ambient water flows that these species have adapted to utilize. Over the last fifty years, the direct and accumulated effects to the environment resulting from road construction have been studied and used to develop new practices for the design process.

Generally, it is important to prioritize improving existing roadways instead of building new ones. Existing roadways have already disturbed the surrounding ecosystems and new design standards applied to existing roadways hopefully will mitigate these disturbances. When widening a road surface or building needed new roadways, best management practices are needed to minimize impacts to the natural infrastructure that enables life as we know it. Road work should protect soils seeded to recharge the region's fresh water lakes, rivers, and aquifers (where we get our drinking water). Road agencies should consider planning low-maintenance native vegetation species along highways to create a filter or buffer between local streams and the stormwater runoff from roadways.

Additional consideration should be given to understanding the transportation needs of animals living in the area to minimize fragmentation of mating pairs and dangerous encounters with motorized vehicles.



Figure 92: Algonquin Road Curb Designed for Turtles

Goal 6. Transportation and Land Use

The goal is to prioritize economic development by supporting development and industry. An objective of the plan is to identify areas of high employment and areas of higher unemployment levels that can positively benefit from new transportation infrastructure investments.

At the time of the 2010 U.S. Census, McHenry County's five largest cities had the largest number of unemployed individuals. Of these, McHenry and Woodstock had over two percentage points more unemployed than Crystal Lake, Algonquin, and Lake in the Hills. Some of McHenry County's smallest communities had the greatest percentage of the workforce that is unemployed. Union with a population of 580 had 16.6% unemployed. McCullom Lake with a population of 1,049 had 15.9% unemployed. McHenry County's medium sized cities of Fox Lake, Harvard, and Wonder Lake had relatively large numbers of unemployed residents and the second, third, and fourth greatest percentage.

Given the superior access that McHenry County has to the world when compared to other communities in North America, new transportation infrastructure investments are not likely to draw new industries into the greater Chicago-Milwaukee-Rockford region but rather incentivize where these industries locate. To minimize the possibility that workers will have to relocate and to maximize the possibility that the unemployed can find a job close to home, roadway improvements for motorists should be focused in communities with large numbers and percentages of unemployed. Given the low wages offered by many industries and the high costs of transportation and housing in McHenry County, communities with transit services and neighborhoods within walking distance of improved roadways will likely provide more workers a certain amount of disposable income thereby improving the larger economy.



Figure 93: Residence in Woodstock

MOTORIZED VEHICLE PROJECTS

Roadway improvement ideas for motorized vehicle were taken from the County's 2020 Long Range Transportation Plan adopted in 2005, from the on-line community map and library kiosks, and by reviewing current community and state transportation plans. Projects were prioritized if they were voted for on-line with an average of 3.0 or greater, requested by an agency in writing, and met four or more goals of the plan. These are the projects that are included in the Plan Map in Figure 94). A full explanation of this evaluation is included in Appendix F.

Label	Project Name	Project Costs (\$2013)	Votes	Agency	Goals	Priority
M1	Woodstock to Huntley Capacity, Operations, and Side Path (IL 47 from US 14 to Reed Road)	\$104,800,000	Yes	Yes	Yes	High
M2	Woodstock Traffic Circulation (IL 47 from US 14 to Charles Road)	\$94,900,000	Yes	Yes	Yes	High
M3	Crystal Lake to McHenry Capacity, Operations, and Side Path (IL 31)	\$101,100,000	Yes	Yes	Yes	High
M4	Crystal Lake to Woodstock Capacity, Operations, and Side Path (US 14)	\$75,700,000	Yes	Yes	Yes	High
M5	Richmond to Fox Lake Capacity, Operations, and Side Path (US 12)	\$125,800,000	Yes	Yes	Yes	High
M6	Marengo Access to Interstate 90, South Bypass, IL 23 Intersections	\$93,900,000	Yes	Yes	Yes	High
M7	North McHenry Fox River Crossing from Chapel Hill to IL 31	\$47,000,000	Yes	Yes	Yes	High
M8	Ringwood Road and Spring Grove Road Corridor Preservation	\$5,100,000	Yes	Yes	Yes	High
M9	Randall Road Commercial Center Development (Add Capacity for Motorists, Bicycles, Pedestrians, and Transit Users)	\$90,800,000	No	Yes	Yes	Medium
M10	North Algonquin Fox River Crossing	\$76,500,000	Yes	No	Yes	Medium
M11	New Congestion Mitigation Route Southwest of McHenry	\$51,300,000	Yes	No	Yes	Medium
M12	New Southern Arterial from IL 23 to IL 47	\$62,600,000	No	Yes	Yes	Medium
M13	Zimmerman Road Extension from Country Club Road to IL 120 in Woodstock	\$8,500,000	Yes	No	Yes	Medium
M14	Ackman Road Mixed Residential and Commercial Development	\$32,300,000	Yes	Yes	No	Medium
M15	Ackman Road and Miller Road Extension to IL 47	\$10,200,000	Yes	Yes	No	Medium
M16	Mt. Tabor/Haligus and IL 176 Connectivity	\$7,500,000	Yes	Yes	No	Medium
M17	Industrial Park Connection between McConnell Road and US 14	\$18,600,000	Yes	No	No	Low
M18	Extension from Lakewood Road to Huntley Dundee Road	\$6,800,000	No	Yes	No	Low
B5	Marengo Road Corridor Preservation from US 20 to Main Street*	\$0	Yes	Yes	Yes	Preservation
B7,B12,B13,&B15	IL 176 Corridor Preservation from IL 23 to US 12*	\$0	Yes	Yes	Yes	Preservation
B8	US 14 Corridor Preservation from IL 120 to IL 23*	\$0	Yes	No	Yes	Preservation
B11&B17	IL 173 Corridor Preservation from IL 23 to IL 47 and East of US 12*	\$0	Yes	No	Yes	Preservation
B18	IL 23 Corridor Preservation from IL 176 to US 14*	\$0	Yes	No	No	Preservation
*Note: Costs for these corridor preservation projects are included as part of the bicycle and pedestrian plan.		\$1,013,400,000				

Funding for motorized vehicle infrastructure depends heavily on the ability to keep maintenance costs of the existing system low. Low-cost preventative maintenance can dramatically increase the life of good roads. This has been hard to implement in McHenry County as many agencies have been challenged to keep up with the constant maintenance required for roadways built on poor soils and subject to multiple freeze-thaw cycles during the winter.

Between 2015 and 2040, approximately \$1.5 billion, \$59 million each year, is estimated for new construction and maintenance of highway facilities in the County (see Figure 95). Of this \$1.5 billion, \$568 million could be available from County funds. An additional \$796 billion is likely to be available from IDOT, ISHTA and the USDOT. The plan estimates the municipalities will be able to contribute approximately \$115 million in local public works funding for projects based on historic financial trends.

The total estimated cost to maintain the road network between 2015 and 2040 is \$511 million. After maintenance is taken into account, approximately \$1 billion is estimated to be available to fund the \$1.013 billion in projects identified as part of this plan. If adequate funding is not provided for maintenance in the short-term, the long-term costs of maintenance will be much larger. It will be very important for all agencies responsible for highway maintenance to take advantage of innovative pavement management techniques when prioritizing maintenance of the existing roadway system. Prolonging the life of County roadways will mean more financing for new projects.



Figure 96: In the Future, Preventative Maintenance will be Important

County MFT	County RTA	RTA	IDOT ISTHA	USDOT	Local	Total	Per Year	
\$177	\$0	\$0	\$239	\$16.5	\$78	\$511	\$20	Maint.
\$127	\$264	\$0	\$480	\$60.2	\$37	\$969	\$38.7	New
\$304	\$264	\$0	\$719	\$77	\$115	\$1,479	\$58.7	Total

Figure 95: Total Motorized Vehicle Funding



BICYCLE *and* PEDESTRIAN PROJECTS AND PLAN GOALS EVALUATION

The following table represents an evaluation undertaken by the McHenry County Division of Transportation of the ability of each project to meet the Plan's Goals. Seven "yes" or "no" questions were asked of each project: Goal #1: Does this mitigate existing congestion? Goal#2: Does this improve travel safety? Goal #3: Does this improve transportation conditions for motor vehicles and non-drivers?

Goal #4: Does this improve other modes of transportation? Goal #5: Does this improve human and ecological health? Goal #6A: Does this support existing land uses? Goal #6B: Does this support large scale development or redevelopment? When the answer was clearly debatable, a Yes & No response was given.

	Project	Estimated Costs (\$2013)	Highway Congestion Mitigation	Safety	Mobility for All	Transportation Choices	Environmental Quality	Transportation and Land Use (Future Large Scale Development)	Transportation and Land Use (Existing Development)	Number of Plan Goals Met
B1	Complete Streets Area	\$9,600,000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7
M9	Randall Road Trail	\$4,280,000	Yes & No	Yes	No	Yes	Yes	Yes	Yes	5.5
B2	U.S. 14 from Crystal Lake to Cary Trail	\$1,610,000	Yes & No	Yes	No	Yes	Yes	Yes	Yes	5.5
B3	Prairie Trail Extension to McHenry Ave. and Ackman Rd.	\$6,070,000	Yes & No	Yes	No	Yes	Yes	Yes	No	4.5
B4	Prairie Trail in McHenry to Moraine Hills State Park Trail	\$4,620,000	No	Yes	No	Yes	Yes	Yes	No	4
B8	Woodstock to Harvard Trail	\$4,180,000	No	Yes	No	Yes	Yes	Yes	No	4
B5	Huntley Union Marengo (H.U.M.) Trail Extension	\$1,930,000	No	Yes	No	Yes	Yes	Yes	No	4

	Project	Estimated Costs (\$2013)	Highway Congestion Mitigation	Safety	Mobility for All	Transportation Choices	Environmental Quality	Transportation and Land Use (Future Large Scale Development)	Transportation and Land Use (Existing Development)	Number of Plan Goals Met
B9	Wonder Lake Prairie Trail Extension	\$1,210,000	No	Yes	No	Yes	Yes	Yes	No	4
B16	McHenry to Lakemoor Trail	\$1,180,000	No	Yes	No	Yes	Yes	Yes	No	4
B6	Lakewood Rd. and Ackman Rd. Trail	\$720,000	Yes & No	Yes	No	Yes	Yes	No	No	3.5
B7	Pleasant Valley to Prairie Trail Extension	\$4,970,000	No	Yes	No	Yes	Yes	No	No	3
B17	Harvard to Hebron Trail	\$3,440,000	No	Yes	No	Yes	Yes	No	No	3
B13	Prairie Trail in Prairie Grove to Moraine Hills State Park Extension	\$3,170,000	No	Yes	No	Yes	Yes	No	No	3
B8	Woodstock to Wonder Lake Trail	\$3,120,000	No	Yes	No	Yes	Yes	No	No	3
B18	Marengo to Harvard Trail	\$3,040,000	No	Yes	No	Yes	Yes	No	No	3
B19	Richmond and Wonder Lake West Glacial Park Trail	\$2,400,000	No	Yes	No	Yes	Yes	No	No	3
B20	Marengo to County Line Trail	\$1,810,000	No	Yes	No	Yes	Yes	No	No	3
B11	Richmond to Chain O'Lakes Trail	\$1,570,000	No	Yes	No	Yes	Yes	No	No	3
B21	Wilmot Road to Chain O'Lakes Trails	\$1,250,000	No	Yes	No	Yes	Yes	No	No	3

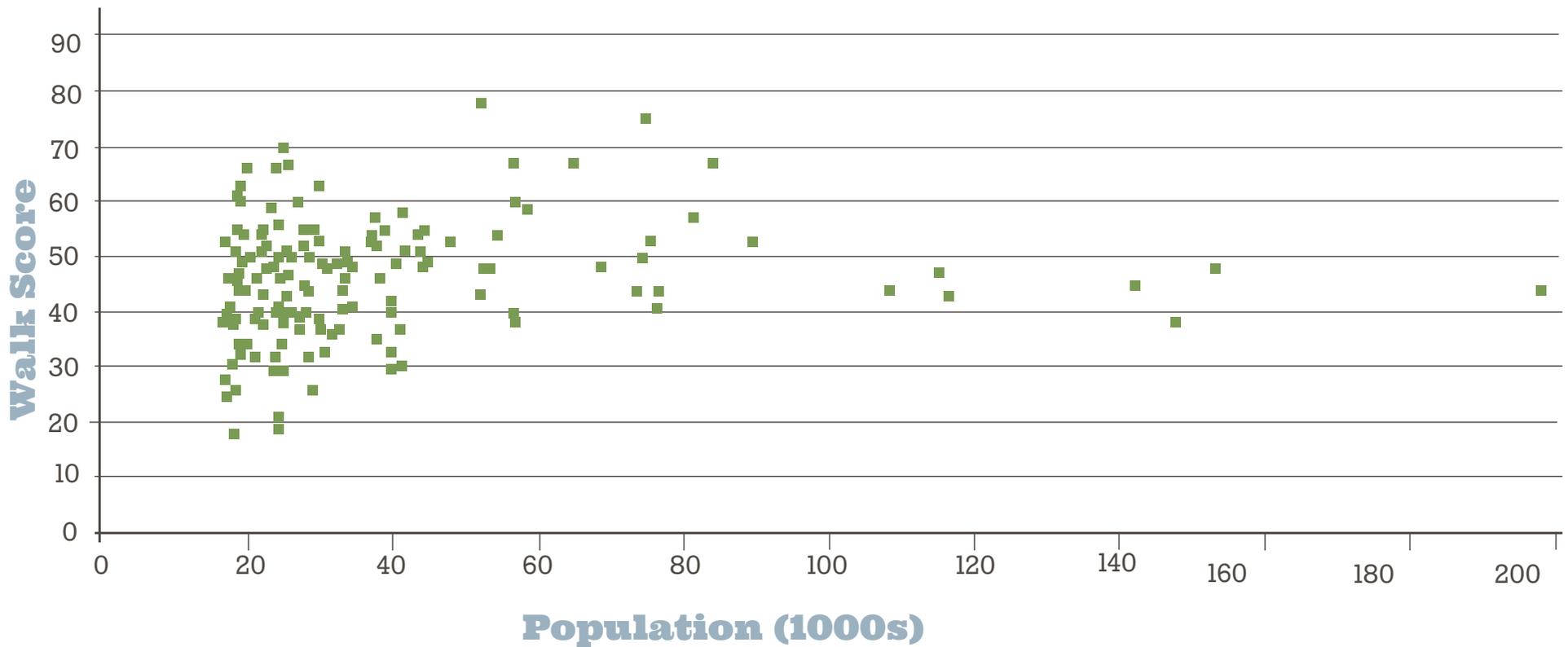
	Project	Estimated Costs (\$2013)	Highway Congestion Mitigation	Safety	Mobility for All	Transportation Choices	Environmental Quality	Transportation and Land Use (Future Large Scale Development)	Transportation and Land Use (Existing Development)	Number of Plan Goals Met
B14	Moraine Hills State Park to Lake county Trail	\$1,220,000	No	Yes	No	Yes	Yes	No	No	3
B12	Prairie Grove to Island Lake Trail	\$960,000	No	Yes	No	Yes	Yes	No	No	3
B22	Chemung to Boone County Connecting Trail	\$900,000	No	Yes	No	Yes	Yes	No	No	3
B5	H.U.M. Trail to Pleasant Valley Trail	\$860,000	No	Yes	No	Yes	Yes	No	No	3

WALK SCORE ANALYSIS OF MUNICIPALITIES IN MCHENRY COUNTY

Right: All Municipalities in McHenry County Rank as “Car-Dependent”

Below: Population of municipality appears to not to be correlated with a higher Walk Score (excluding the City of Chicago)

City	Walk Score	Population		
McHenry	39	26,992	90-100	Walker's Paradise Daily errands do not require a car.
Cary	39	18,271	70-89	Very Walkable Most errands can be accomplished on foot.
Woodstock	38	24,770	50-69	Somewhat Walkable Some errands can be accomplished on foot.
Crystal Lake	37	40,743	25-49	Car-Dependent Most errands require a car.
Algonquin	37	30,046	0-24	Car-Dependent Almost all errands require a car.
Lake in the Hills	26	28,965		
Huntley	19	24,291		



BICYCLE AND PEDESTRIAN PROJECTS *and* PUBLIC COMMENTS FROM THE WEBSITE

The County received on the project website 45 individual comments regarding bicycle and pedestrian infrastructure. The implementation of complete streets received the highest amount of overall support. The project associated with this initiative is the “Community Bicycle and Pedestrian Program” or “Complete Streets Area” (Project B1) which is included in the 2040 Long Range Transportation Plan. This program is aimed at expanding the existing networks of pedestrian and bicycle infrastructure at the local level consistent with the plan objective number one: “Expand Existing Network”.

106 APPENDIX D: TRANSIT PROJECTS *and* PLAN GOALS EVALUATION

The following table represents an evaluation undertaken by the McHenry County Division of Transportation of the ability of each project to meet the Plan's Goals. Seven "yes" or "no" questions were asked of each project: Goal #1: Does this mitigate existing congestion? Goal#2: Does this improve travel safety? Goal #3: Does this improve transportation conditions for motor vehicles and non-drivers?

Goal #4: Does this improve other modes of transportation? Goal #5: Does this improve human and ecological health? Goal #6A: Does this support existing land uses? Goal #6B: Does this support large scale development or redevelopment? When the answer was clearly debatable, a Yes & No response was given.

	Project	Estimated Costs (\$2013)	Highway Congestion Mitigation	Safety	Mobility for All	Transportation Choices	Environmental Quality	Transportation and Land Use (Future Large Scale Development)	Transportation and Land Use (Existing Development)	Number of Plan Goals Met
T1	Metra Union Pacific Northwest Line Upgrades	\$381,510,000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7
T2	Metra Milwaukee District West Line Extension to Huntley, Union and Marengo	\$133,085,855	Yes	No	Yes + No	Yes	Yes	Yes	Yes	5.5
T3	Randall Road Bus Service	\$1,320,000	Yes + No	No	Yes + No	Yes	Yes	Yes	Yes	5
T5	Algonquin Road Bus Service	\$720,000	Yes + No	No	Yes + No	Yes	Yes	Yes	Yes	5
T4	IL 31 Bus Service	\$720,000	Yes + No	No	Yes + No	Yes	Yes	Yes	Yes	5
T8	Huntley Area Dial-a-Ride	\$240,000	No	No	Yes	Yes	Yes	Yes	Yes	5
T6	Richmond Area Dial-a-Ride	\$120,000	No	No	Yes	Yes	Yes	Yes	No	4
T7	Richmond to Fox Lake Metra Shuttle	\$50,000	No	No	Yes + No	Yes	Yes	Yes	No	3.5

TRANSIT PROJECTS *and* PUBLIC COMMENTS FROM THE WEBSITE

The County received on the project website 60 individual comments regarding transit services and infrastructure. Metra Union Pacific Northwest Line Upgrades was the top ranked project in all six County Board Districts. Strong support was given for the Milwaukee District West Line Extension to Huntley, Union, and Marengo with a desire to locate stations in the centers of town. General bus service throughout the County to meet basic needs was mentioned in terms of geographic coverage, extended service hours, and weekend service. New bus routes in the southern third of the County and expanded demand response services did not receive great support.

MOTOR VEHICLES PROJECTS *and* PLAN GOALS EVALUATION

The following table represents an evaluation undertaken by the McHenry County Division of Transportation of the ability of each project to meet the Plan's Goals. Seven "yes" or "no" questions were asked of each project: Goal #1: Does this mitigate existing congestion? Goal#2: Does this improve travel safety? Goal #3: Does this improve transportation conditions for motor vehicles and non-drivers?

Goal #4: Does this improve other modes of transportation? Goal #5: Does this improve human and ecological health? Goal #6A: Does this support existing land uses? Goal #6B: Does this support large scale development or redevelopment? When the answer was clearly debatable, a Yes & No response was given.

	Project	Estimated Costs (\$2013)	Highway Congestion Mitigation	Safety	Mobility for All	Transportation Choices	Environmental Quality	Transportation and Land Use (Future Large Scale Development)	Transportation and Land Use (Existing Development)	Number of Plan Goals Met
M1	Woodstock to Huntley Capacity, Operations, and Side Path (IL 47)	\$104,779,855	Yes	Yes	Yes	Yes	Yes & No	Yes	Yes	6.5
M3	Crystal Lake to McHenry Capacity, Operations, and Side Path (IL 31)	\$101,143,636	Yes	Yes	No	Yes	Yes & No	Yes	Yes	5.5
M5	Richmond to Fox Lake Capacity, Operations, and Side Path (US 12)	\$100,830,000	Yes	Yes	No	No	No	Yes	Yes	4
M2	Woodstock Traffic Circulation (IL 47)	\$94,881,364	Yes	Yes	Yes	Yes	Yes & No	Yes	Yes	6.5
M9	Randall Road Commercial Center Development	\$90,837,009	Yes	Yes	No	Yes	No	Yes	Yes	5
B7, B12, B13, B15	IL 176 Corridor Preservation	\$88,860,715	Yes & No	No	No	No	No	Yes & No	Yes	2

	Project	Estimated Costs (\$2013)	Highway Congestion Mitigation	Safety	Mobility for All	Transportation Choices	Environmental Quality	Transportation and Land Use (Future Large Scale Development)	Transportation and Land Use (Existing Development)	Number of Plan Goals Met
M10	North Algonquin Fox River Crossing	\$76,479,545	Yes	Yes	No	No	No	Yes	Yes	4
M4	Crystal Lake to Woodstock Capacity, Operations, and Side Path (US 14)	\$75,683,636	Yes	Yes	No	Yes	No	Yes	Yes	5
B17, B11	IL 173 Corridor Preservation	\$63,714,545	Yes & No	No	No	No	No	Yes	Yes	2.5
M6	Marengo Access to Interstate 90	\$58,000,000	Yes & No	No	No	No	No	Yes	Yes	2.5
M11	New Congestion Mitigation Route Southwest of McHenry	\$51,287,182	Yes	Yes	No	No	No	Yes	Yes	4
M7	North McHenry Fox River Crossing	\$47,003,636	Yes	Yes	No	No	No	Yes	Yes	4
M12	Extension of Algonquin Road to Huntley High School	\$43,751,818	Yes & No	Yes	No	Yes	Yes & No	No	Yes	4
M6	New Congestion Mitigation Route in South Marengo	\$35,877,697	Yes	Yes	No	No	No	Yes	Yes	4
M14	Ackman Road Mixed Residential and Commercial Development	\$32,270,636	Yes	Yes	No	No	No	No	Yes	3
B8	US 14 Corridor Preservation	\$32,138,909	Yes	No	No	No	No	Yes	Yes	3

	Project	Estimated Costs (\$2013)	Highway Congestion Mitigation	Safety	Mobility for All	Transportation Choices	Environmental Quality	Transportation and Land Use (Future Large Scale Development)	Transportation and Land Use (Existing Development)	Number of Plan Goals Met
M5	Richmond Bypass Corridor Preservation	\$25,000,000	Yes	No	No	No	No	Yes	Yes	3
M17	Industrial Park Connection between McConnell Road and U.S. 14	\$18,622,061	Yes	No	No	No	No	Yes	Yes	3
M15	Ackman Road and Miller Road Extension to IL 47	\$10,166,182	Yes	No	No	No	No	No	Yes	2
M13	Zimmerman Road Extension from Country Club Road to IL 120 in Woodstock	\$8,502,000	Yes	Yes	No	No	No	Yes	Yes	4
M16	Mt. Thabor/ Haligus and IL 176 Intersections Improvements	\$7,499,636	No	Yes	No	No	No	No	Yes	2
B5	Kreutzer Road Extension to Main Street	\$6,981,309	Yes	No	No	No	No	No	Yes	2
M18	Extension to Lakewood Road to Huntley Dundee Road	\$6,837,273	Yes	Yes	No	No	No	No	Yes	3

MOTOR VEHICLE PROJECTS *and* PUBLIC COMMENTS FROM THE WEBSITE

The County received on the project website 110 individual comments regarding motorized vehicle infrastructure. Three State of Illinois projects were supported at levels far greater than any other motorized vehicle projects. These were the IL 47 project from Woodstock to Huntley (M1), the IL 47 project in Woodstock (M2), and the IL 31 project (M3) from Crystal Lake to McHenry. The top rated County Highway project was the Ackman Road and Miller Road Extension project (Project M14). The Randall Road (Project M9) and North Algonquin Road Fox River Crossing (Project M10) projects were debated with about half the comments in favor of the projects and half against.